

Annual Report 2007

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Report  
2007



Research Institute for Humanity and Nature



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Research Institute for Humanity and Nature

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Inter-University Research Institute Corporation, National Institutes for the Humanities  
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## Research Activities

### Full-Research

<b>Project No.</b>	<b>1-2FR (Project leader: FUKUSHIMA, Yoshihiro)</b>	<b>p. 4</b>
<b>Project Name</b>	Recent Rapid Change of Water Circulation in the Yellow River and Its Effects on Environment	
<b>Project No.</b>	<b>1-3FR (Project leader: UMETSU, Chieko)</b>	<b>p. 10</b>
<b>Project Name</b>	Vulnerability and Resilience of Social-Ecological Systems	
<b>Project No.</b>	<b>2-2FR (Project leader: ICHIKAWA, Masahiro)</b>	<b>p. 14</b>
<b>Project Name</b>	Sustainability and Biodiversity Assessment on Forest Utilization Options	
<b>Project No.</b>	<b>2-3FR (Project leader: SHIRAIWA, Takayuki)</b>	<b>p. 16</b>
<b>Project Name</b>	Human Activities in Northeastern Asia and Their Impact on the Biological Productivity in North Pacific Ocean	
<b>Project No.</b>	<b>2-4FR (Project leader: TANIGUCHI, Makoto)</b>	<b>p. 23</b>
<b>Project Name</b>	Human Impacts on Urban Subsurface Environments	
<b>Project No.</b>	<b>2-5FR (Project leader: SATO, Yo-Ichiro)</b>	<b>p. 29</b>
<b>Project Name</b>	Agriculture and Environment Interactions in Eurasia: Past, Present and Future –The Ten-thousand – year History	
<b>Project No.</b>	<b>3-2FR (Project leader: TAKASO, Tokushiro)</b>	<b>p. 38</b>
<b>Project Name</b>	Interactions between Natural Environment and Human Social Systems in Subtropical Islands	
<b>Project No.</b>	<b>3-3FR (Project leader: OSADA, Toshiki)</b>	<b>p. 43</b>
<b>Project Name</b>	Environmental Change and the Indus Civilization	
<b>Project No.</b>	<b>4-2FR (Project leader: AKIMICHI, Tomoya)</b>	<b>p. 48</b>
<b>Project Name</b>	A Trans-Disciplinary Study on the Regional Eco-History in Tropical Monsoon Asia: 1945-2005	
<b>Project No.</b>	<b>4-4FR (Project leader: UCHIYAMA, Junzo)</b>	<b>p. 66</b>
<b>Project Name</b>	Neolithisation and Modernisation: Landscape History on East Asian Inland Seas	
<b>Project No.</b>	<b>4-5FR (Project leader: KUBOTA, Jumpei)</b>	<b>p. 74</b>
<b>Project Name</b>	Historical Interactions between the Multi-cultural Societies and the Natural Environment in a Semi-arid Region in Central Eurasia	
<b>Project No.</b>	<b>5-2FR (Project leader: NAKAWO, Masayoshi)</b>	<b>p. 82</b>
<b>Project Name</b>	Interaction between Environmental Quality of the Watershed and Environmental Consciousness: With Reference to Environmental Changes Caused by the Use of Land and Water Resource	

<b>Project No.</b>	<b>5-3FR (Project leader: YUMOTO, Takakazu)</b>	<b>p. 91</b>
<b>Project Name</b>	A New Cultural and Historical Exploration into Human-Nature Relationships in the Japanese Archipelago	
<b>Project No.</b>	<b>5-4FR (Project leader: KAWABATA, Zen`ichiro)</b>	<b>p. 101</b>
<b>Project Name</b>	Effects of Environmental Change on the Interactions between Pathogens and Humans	
<b>Pre-Research</b>		
<b>Project No.</b>	<b>2-8PR (Project leader: MOJI, Kazuhiko)</b>	<b>p. 106</b>
<b>Project Name</b>	Environmental Changes and Infectious Diseases in Tropical Asia	
<b>Project No.</b>	<b>3-4PR (Project leader: OKUMIYA, Kiyohito)</b>	<b>p. 114</b>
<b>Project Name</b>	Human Life, Aging, and Disease in High-Altitude Environments: Physio-medical, Ecological and Cultural Adaptation in the Three Great "Highland Civilizations"	
<b>Project No.</b>	<b>3-5PR (Project leader: YAMAMURA, Norio)</b>	<b>p. 120</b>
<b>Project Name</b>	Collapse and Restoration of Ecosystem Networks with Human Activity	
<b>Feasibility Study</b>		
<b>Project No.</b>	<b>2-7FS (FS Proposer: ZHENG, Yuejun)</b>	<b>p. 129</b>
<b>Project Name</b>	Relationships between Human Activities and Atmospheric Changes, Possibilities of Harmonious Society for Environmental Issues in the East Asia	
<b>Project No.</b>	<b>2-9FS (FS Proposer: SATO, Tadashi)</b>	<b>p. 132</b>
<b>Project Name</b>	Sustainable Food Production Concept Based on Evaluation of Traditional Agricultural Practices	
<b>Project No.</b>	<b>2-10FS (FS Proposer: MURAMATSU, Shin)</b>	<b>p. 133</b>
<b>Project Name</b>	Migration, Sojourn, and Possibilities in Cities	
<b>Project No.</b>	<b>2-11FS (FS Proposer: YAMAUCHI, Taro)</b>	<b>p. 137</b>
<b>Project Name</b>	Environmental Problems and Human Security for Children as Our Future: Asia-Pacific Children and the Environment (ACE) Project	
<b>Project No.</b>	<b>3-6FS (FS Proposer: NAWATA, Hiroshi)</b>	<b>p. 141</b>
<b>Project Name</b>	A Study of Human Subsistence Ecosystems among Arab Societies: To Combat Livelihood Degradation	
<b>Project No.</b>	<b>3-7FS (FS Proposer: KITAZAWA, Daisuke)</b>	<b>p. 145</b>
<b>Project Name</b>	The Effects of Economic Activities on the Ecosystem in the Caspian Sea and Cooperative Environmental Protection System	

**Project No.** FS (FS Proposer: INOUE, Gen) **p. 147**  
**Project Name** Global Warming and the Human-Nature dimension in Siberia –The social adaptation to the changes of the terrestrial ecosystem with an emphasis on the water environment

**Incubation Studies** **p. 154**

1. Study of regional diversity of water quality: toward water management based on circulation  
NAKANO, Takanori (RIHN)
2. History of Mesopotamia in the context of environmental fluctuations: — based on evidence from agricultural activities —  
WATANABE, Chikako E. (Osaka Gakuin Junior College)

**Stage: FR**

**Project No.: 1-2**

**Project Name: Recent Rapid Change of Water Circulation in the Yellow River and Its Effects on Environment**

**Project Leader: FUKUSHIMA, Yoshihiro**

**Research Axis: Circulation**

**URL: <http://www.chikyu.ac.jp/yris/>**

### ■ Research Objectives and Topics

Objectives of our research project were to identify below questions.

- ◆ Why were river water of the Yellow River disappeared in the downstream channel almost during 226days in 1997?
- ◆ What did the effects on environment of the Yellow River basin and Bohai Sea been occurred by a dry-up of the river water?
- ◆ Which general problems and local issues have been suggested by the results of the project research?
- ◆ We would like to propose some materials that a wise use keeping long-term period for natural resources like river water in semi-arid area is

### ■ Progress of Project

First of all, we newly found why such a severe dry-up had occurred during 30 years from 1970 to 1997 downstream in the Yellow River. It was because of the decrease of river discharge almost 15 billion m<sup>3</sup> from Loess Plateau area occupying 41% of the whole Yellow River basin. The real reason was due to the success of reforestation works on Loess Plateau area by having been carried out conservation works of water and soil since 1950.

The Yellow River Commission has understood agricultural, industrial and cities' water demands. I, however, felt that the Yellow River Commission, Chinese scientists and engineers never have become aware of such a large amount of the decrease on river water except of intake irrigation agricultural fields. Our conclusion is that the situation has brought water shortage in the Yellow River.

Concerning the effects against atmosphere by human activities for agriculture on Loess Plateau, we have still not conclusive results because of topographic effect and fluctuation of magnitude in Asian Monsoon. But, we have to continue analysis after the ending of our project because we have got so many observed data in Loess Plateau.

By the shortage of the Yellow River has induced Bohai Sea to change environment, also. Inflow of phosphorus decreased remarkably to Bohai Sea and the amount of exchanging water of both sea and fresh water between Yellow Sea and Bohai Sea.

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- ◎ FUKUSHIMA Yoshihiro ( Research Institute for Humanity and Nature, Professor, Synthetic suggestion for managing the Yellow River and irrigated agriculture in arid region )

## ■ Research Plan

### 1. Before planning of the Yellow River Study Project

The leader of this project has experienced large scale of experiments to understand land-atmosphere interaction from Siberia to tropics in the eastern region of Eurasian Continent, previously. I was engaged in Lena River Project to clarify the role of Siberian Taiga forest. We have proposed a new hydrological model to evaluate the role of Taiga forest cover, permafrost layer and a role as a active

layer in the summer season (Ma, Xieyao and Y. Fukushima, 2002). It was evaluated by so many scientists and engineers in the world. I have already applied our primitive hydrological model called as HCYMODEL to humid Japanese small mountain area (Fukushima, 2006), and expand its model to tropical monsoon Jawa, Indonesia (Yudi, 1998) and to the southern China under sub-tropical climate (Tanaka et al., 1998) and semi-arid area in the Central Asia (Kosugi et al., 1996). Therefore, I have already understood humid region from tropics to cold region. The remained issue seems to be water cycle in arid and semi-arid regions.

2. Why was the Yellow River chosen as a study area

Sever dry-up occurred in the Yellow River downstream in 1997. Collected information, I have felt to study by ours much more because most of studies aimed countermeasures. I, however, thought that it needs a study more long-term aspect. Therefore, I took a framework of the research which included from atmosphere to ocean and hydrological changes have to be a main connecting role and it should clarify actual conditions from agricultural engineering, social economy and Chinese historical analysis. Finally, it should aim at the effects by human activities such as agricultural and industrial water use and so on. In the same time, protecting flood issue should be implied in the study by build up a new hydrological model which is able to evaluate natural change and human activities like reservoir control, agricultural necessities of river water.

3. Irrigated agriculture in arid region seems to not keep sustainability, generally. It should be clarified how sustainability was hold in the Yellow River and what a effect affect to Bohai Sea circumstance.

4. The problems occurred in the Yellow River basin, are seen in other arid and semi arid regions. Therefore, we should inform to living people relevant to region how wise use of river water is.

(References used here)

Ma, Xieyao and Y.Fukushima (2002): Numerical model of river flow formation from small to large scale river basin. Mathematical models of large watershed hydrology. Edited by V.P.Singh and D.K.Frevert, Water Resources Publications, 433-470, 2002

Fukushima, Y. (2006): The role of Forest in forested wetland. Environmental Role of Wetlands in Headwaters. NATO Environmental Series, Vol.63, Springer, 17-48.

Yudi Iman (1998): Evapotranspiration in Chitarum River Basin, West Jawa, Indonesia, Thesis for Master Course, School of Science, Nagoya University

Tanaka, H., Y.Fukushima, C.Li, J.Kubota, T.Ohta, M.Suzuki & K.Kosugi(1998): Water discharge property of evergreen broad-leaved forest basin -Jiulianshan, Jangxi Province, China J.Jpn.Soc.Hydro. & Water Resour., 11-3, 240-252

Kosugi, K., K.Nakajima and Y.Fukushima (1996): Estimation of Evapo-transpiration in bothy Irrigated and Non-irrigated Lands in the Arid District of central Asia, Proc. Of Symposium on the Aral Sea and the surrounding region, UNEP/IETC Technical Pub. Series 4, 92-100

Liu, Jingshi, Y.Fukushima and T.Hiyama(1999): Hydrological Response of meltwater from glacier covered mountain basins to climate change in northwest China. IAHS Pub. No.256, 193-208

### ■Problems for implementation or points need to change plan

Methods on implementation

The Yellow River basin has 750×103 km<sup>2</sup> in basin area, and the length of a main channel is 5,500km.

Its basin area is second following to Chang Jiang River in China and it exceed twice of Japanese whole land area. By the objectives, we composed of the following seven sub-study themes;

1. Analysis of water demand on socio-economical view point
2. Investigation of actual large irrigation agriculture hold in the Yellow River Basin
3. Analysis of observation on energy and water vapour between land surface and atmospheric boundary layer in Loess Plateau
4. Investigation of performance for groundwater and surface water including water amount and chemical materials in delta area to Bohai Sea

#### 5. Changes of Oceanography and basic bio-production in Bohai Sea

Historical analysis during 2000 years for changes of river channel and flood control downstream in c), we have composed of seven sub-study teams except of sub-study theme No.8 because this team took a synthetic role through the whole project. The sub-study teams No.3 to No. 5 teams are to clarify from field observation and investigations using by high prices equipments such as a Wind Profiler Radar and a resistivity instrument with tomography. Sub-study team 1, 2 and 7 are to clarify real status and its yearly changes relevant to social-economic demand of water, irrigated agricultural and meteorological, hydrological and water intake amount on the Yellow River during recent 40~50 years by the generally open data and investigated data. But sub-study team No. 6 is to clarify what a basic idea for protecting flood disasters in each dynasty over 2000 years was.

6. Fortunately, we have shared the same study room. Therefore, there were so many discussions among researchers in different research fields. I as a project leader was very lucky because every questionable problem were almost resolved by our sincere talks. Whether this is true or not will be judged by distinguished evaluators.

7. Analysis of water budget changes of six sections in the Yellow River basin using by improved hydrological model which is possible to separate natural phenomena and human activities as parameters

8. Synthetic suggestion for managing the Yellow River and irrigated agriculture in arid region.

Results obtained by the project is as follows:

First of all, we newly found why such a severe dry-up had occurred during 30 years from 1970 to 1997 downstream in the Yellow River. It was because of the decrease of river discharge almost 15 billion m<sup>3</sup> from Loess Plateau area occupying 41% of the whole Yellow River basin. The real reason was due to the success of reforestation works on Loess Plateau area by having been carried out conservation works of water and soil since 1950.

The Yellow River Commission has understood agricultural, industrial and cities' water demands. I, however, felt that the Yellow River Commission, Chinese scientists and engineers never have become aware of such a large amount of the decrease on river water except of intake irrigation agricultural fields. Our conclusion is that the situation has brought water shortage in the Yellow River.

Concerning the effects against atmosphere by human activities for agriculture on Loess Plateau, we have still not conclusive results because of topographic effect and fluctuation of magnitude in Asian Monsoon. But, we have to continue analysis after the ending of our project because we have got so many observed data in Loess Plateau.

By the shortage of the Yellow River has induced Bohai Sea to change environment, also. Inflow of phosphorus decreased remarkably to Bohai Sea and the amount of exchanging water of both sea and fresh water between Yellow Sea and Bohai Sea.

Future issues considered are as follows:

The raising period of human population might have to increase irrigated agricultural fields to rather dry area in climate condition in order to get more food crop. Nevertheless, an effort of the efficiency of water use seems too late to improve in agricultural field with rather small amount of precipitation. And salt accumulation is apt to cause even the Yellow River Basin. The water supply from Chang Jiang River to Beijing, Tianjin and North China Plain are to realize soon.

But it may have so many problems because water pollution of the Yellow River water is not solved now. Therefore, Diversion of water may have cause expansion of water pollution to Bohai Sea.

## Books

### 【Authored/Co-authored】

- Fukushima, Y. 2007 Dry-up of the Yellow River. RIHN publication series. Showado Press, Kyoto, 1-187 (in Japanese) Y.Fukushima as a leader of YRiS project.

## Editing

### 【Editing / Co-editing】

- TAKEUCHI, Kuniyoshi and Yoshihiro FUKUSHIMA (ed.) 2007 Mekong and the Yellow Rivers. , 1-267 (in

Japanese) Report on Changes of water resources by natural and human activities under Asian Monsoon, Research Revolution 2002, MEXT.

## Papers

### 【Original Articles】

- Xie, Pingping, A. Yatagai, M. Chen, T. Hayasaka, Y. Fukushima, C. Liu and S. Yang Jun, 2007 A Gauge-Based Analysis of Daily Precipitation over East Asia. *Journal of Hydrometeorology, American Meteorological Society* :607-626.
- Cui, Guoqing and T Yanagi 2007 Dispersion of suspended sediment originated from the Yellow River in the Bohai Sea. *Coastal Marine Science* 31(1) :9-18.
- Sato Yoshinobu, X. Ma, M. Matsuoka and Y. Fukushima 2007 Impacts of human activity on long-term water balance in the middle-reaches of the Yellow River basin. *International Association of Hydrological Science* 315 :85-91.
- Chen, Jianyao, M. Taniguchi, G. Liu, K. Miyaoka, S. Onodera T. Tokunaga and Y. Fukushima 2007 Nitrate pollution of groundwater in the Yellow River delta. *Hydrological Journal, Springer-Verlag* .DOI 10.1007/s10040-007-007-0196-7.

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**Stage: FR**

**Project No.: 1-3**

**Project Name: Vulnerability and Resilience of Social-Ecological Systems**

**Abbreviated Title: Resilience Project**

**Project Leader: UMETSU, Chieko**

**Research Axis: ECOSOPHY**

**URL: <http://www.chikyu.ac.jp/resilience/>**

**Key Words: resilience, poverty, social-ecological system, resource management, environmental variability, vulnerability, human security, semi-arid tropics**

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### ■ Research Objectives and Topics

<Research Objectives>

The objective of the research is 1) to consider impacts of environmental variability through vulnerability and resilience of human activities in semi-arid tropics; 2) to study factors affecting social-ecological systems and the recovery from impacts and shocks; 3) to analyze factors determining an ability of households and communities to recover from environmental shocks and the roles of institutions in improving household resilience; and 4) to identify the factors affecting resilience of social-ecological systems and ways in which resilience of the subsistence farmers in semi-arid tropics against environmental variability can be strengthened.

<Background>

A vicious cycle of poverty and environmental degradation such as forest degradation and desertification is a major cause of global environmental problems. Especially in semi-arid tropics (SAT) including Sub-Saharan Africa and South Asia where a majority of the poor concentrates, poverty and environmental degradation widely prevails. People in this area largely depend on rainfed agricultural production systems and their livelihoods are vulnerable to environmental variability. Environmental resources such as vegetation and soil are also vulnerable to human activities. In order to solve this “global environmental issues”, a key is a quick recovery from or a resilience of human society and ecosystems to impacts of environmental shocks. Thus in this project we consider society and ecology as one social-ecological system and try to perform empirical analysis for its resilience in semi-arid tropics.

<How do you utilize the results of the project to help solving “global environmental issues” ?>

We consider environmental degradation caused by the “vulnerability” of social-ecological systems as “global environmental issues” and the ways to enhance “resilience” of social-ecological systems as a primary goal of solving “global environmental issues”. During the research project, data collection, observation and analysis will be conducted to find out some key indicators to resilience. By using those indices, our goal is to provide some options of the ecosystems and resources management at the end of the project.

### ■ Progress of Project

During the FY2006 (PR), we focussed on establishing research collaboration with various institutions in Zambia. During the FY2007 (FR1), we set up weather stations, rain gauges, prepared experimental fields, conducted extensive household survey. After the start of rainy season in November, we started the field monitoring.

I. At the experimental site in a village in Eastern Province, survey on vegetation and topography was conducted. After land clearing, maize cultivation was commenced with the monitoring of meteorological and soil conditions. In the same villages as Theme II in Southern Province, the field trials were commenced to identify the soil fertility parameters.

II. We identified three zones in the Sinazongwe area, Southern Province based on agro-ecology, selected

study sites (5 villages) in each zone, and conducted census in July 2007. Then, using the census results, 16 households were drawn as samples in each study site. In September/October, rain gauges were installed in plots of the sample households and rainfall measurement started. In November, weekly household survey was launched.

III. Shimada participated the seminar at the Oxford University “Resilience, realities and research in African environment” and collected information on research on resilience and vulnerability and their application to development assistance. Also Nakamura studied strategies for diversifying farm livelihood, and Ito studied the role of migrant labor. Hanzawa and Kodamaya continued research on drought prone C village in the Central Province.

IV. IV-1 We have installed meteorological observation sensors and rain gauges to monitor atmospheric environment at Southern Province, Zambia in this September. We started analysis of objective analysis data and observational data by Zambia Meteorological Department.

IV-2 The satellite imageries were obtained through the internet during the FY2006. In this year, we have searched and purchased the useful satellite images which were observed before and after the agricultural and meteorological droughts in order to identify the landuse/cover changes caused by serious droughts. Also, we investigated some principal study sites to collaborate with the theme I. Furthermore, we collected some documents and statistical data. IV-3 We have collected documents about food security policies of Zambian government and donors, and conducted research about the food relief programme in Sinazongwe district (Southern Province). IV-4 During the field survey in September, we visited some of the sample household for the extensive survey early 2007. Also we reviewed the methods for analyzing socio-economic data with GIS data.

### ○Co-Researchers

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- TANAKA Ueru ( Graduate School of Global Environmental Studies, Kyoto University, Associate Professor, Soil degradation and erosion )
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- SAKURAI Takeshi ( Policy Research Institute, MAFF, Senior Economist, Household survey and analysis )
- KANNO Hiromitsu ( National Agricultural Research Center for Tohoku Region, Team Leader, Measurement of rainfall data )
- YAMAUCHI Taro ( School of Medicine, Hokkaido University, Associate Professor, Community health and nutrition )
- SHIMADA Shuhei ( Graduate School of Asian and African Area Studies, Kyoto University, Professor, Village society and institution )
- ARAKI Minako ( Faculty of Letters and Education, Ochanomizu University, Associate Professor, Village society and institution )
- ITO Chihiro ( Graduate School of Asian and African Area Studies, Kyoto University, Graduate student (MA), Labor migration in rural area )
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- Kajoba, Gear M. ( University of Zambia, Senior Lecturer, Land tenure system and food security )
- Mulenga, Chileshe ( University of Zambia, Senior Lecturer, Analysis of social behaviors )
- YOSHIMURA Mitsunori ( Remote Sensing Technology Center of Japan (RESTEC), Senior Researcher, Ecological change monitoring )
- IITSUKA Yukiko ( The International Peace Cooperation Headquarters, Cabinet Office, Secretariat, Early warning system )
- MATSUMURA Keiichiro ( Graduate School of Human and Environmental Studies, Kyoto University, Assistant Professor, Land tenure system and rural livelihood )
- SAEKI Tazu ( Research Institute for Humanity and Nature, Assistant Professor, Climate monitoring )
- YAMASHITA Megumi ( Survey College of Kinki, Lecturer, Vegetation monitoring )
- Lekprichakul, Thamana ( Research Institute for Humanity and Nature, Senior Project Researcher, Household survey and analysis )
- Palanisami, K. ( Tamilnadu Agricultural University, Director, Household survey and analysis )
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- Ranganathan, C. R. ( Tamilnadu Agricultural University, Professor, Economic modelling )
- Chandrasekaran, B. ( Tamilnadu Agricultural University, Director, Rice production analysis )
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- Savadogo, Kimseyinga ( University of Ouagadougou, Professor, Household data analysis )

## ■ Research Plan

### ■ Problems for implementation or points need to change plan

During the FY2007 (FR1), we set up weather stations, rain gauges in Southern Province, prepared experimental fields in Eastern Province, and conducted extensive household survey in both Provinces. After the start of rainy season in November, we started the intensive field monitoring. In Southern Province, Research Researcher (Miyazaki) is staying during the 2007/2008 cropping season and monitoring crop growth in sample villages. Data analysis from extensive household survey in early 2007 is underway.

## Books

### 【Authored/Co-authored】

- Keijiro Otsuka and Takeshi Sakurai Nov, 2007 Poverty and Economic Development. Tokyo-Keizai-Shimpo-sha, Tokyo (in Japanese)

### 【Chapters/Sections】

- Yamauchi, T. 2007 Modernization, nutritional adaptability, and health in Papua New Guinean Highlanders and Solomon Islanders.. R. Ohtsuka R, S. J. Ulijaszek (ed.) Health Change in the Asia-Pacific Region, . Cambridge University Press, Cambridge.
- Shinjo, H. and Kosaki, T. 2007 “Global environmental problems related with soils” ,” Soil erosion” and Salinization” . Kamon, M., Kusakabe, O. and Nishigaki, M., (ed.) Handbook of Environmental Geotechnics. Asakura Shoten, Tokyo, pp.19-41. (in Japanese)

## Papers

### 【Original Articles】

- Chakravorty, Ujjayant, Donna Fisher, Chieko Umetsu 2007 Environmental Effects of Intensification of Agriculture: The Livestock Production and Regulation. *Environmental Economics and Policy Studies* 8(4) :315-336.
- Yamauchi, T., Midorikawa, T., Hagihara, J., and Sasaki, K. 2007 Quality of life, nutritional status, physical activity, and their interrelationships of elderly living on an underpopulated island in Japan. *Geriatrics and Gerontology International* 7 :26-33.

- Yamauchi, T. , Kim, S.N., Lu, Z., Ichimaru, N., Maekawa, R., Natsuhara, K., Ohtsuka, R., Zhou, H., Yokoyama, S., Yu, W., He, M., Kim, S.H., and Ishii, M. 2007 Age and gender differences in the physical activity patterns of urban school children in Korea and China. *Journal of Physiological Anthropology* (26) :101-107.
- Takeshi Sakurai and Kimseyinga Savadogo Nov,2007 Civil War Shock and Poverty: The Case of Rural Burkina Faso. Keijiro Otsuka and Takeshi Sakurai (ed.) Poverty and Economic Development. Tokyo-Keizai-Shimpo-sha, Tokyo, pp.159-186. (in Japanese)



**Stage: FR**

**Project No.: 2-2**

**Project Name: Sustainability and Biodiversity Assessment on Forest Utilization Options**

**Project Leader: ICHIKAWA, Masahiro**

**Research Axis: Diversity**

**URL: <http://www.chikyu.ac.jp/ichikawa-pro/top/top.html>**

### ■ Research Objectives and Topics

We tried to evaluate the sustainability of forest utilization with particular emphasis on biodiversity. Biodiversity was assessed to identify the impact of various forest utilizations. The ecosystem services that may be lost with decreasing biodiversity needed to be identified, as well as the goods that biodiversity provides us. The driving forces and incentives behind recent changes in forest utilization systems were also to be studied. Thus, the evaluation both from the aspects of ecology and socio-economy would be assessed for every forest utilization systems including the traditional, and so-called sustainable systems in the region. Finally we tried to present new criteria or ways to evaluate the forest utilization systems with smaller long-term costs, or of long-lasting stable yields.

### ■ Progress of Project

We clarified the following items.

(1) Historical change in forest utilization and its driving force.

- The changing patterns of forest utilization during recent 50-100 years were clarified in the four sites. The results were shown as land-use change maps and matrices.
- Driving forces and incentives behind the change were clarified.

(2) Impacts of forest utilization on biodiversity

- The biodiversity losses in each utilization option were elucidated for selected taxonomic groups. The results were shown as biodiversity maps.
- The mechanisms for maintaining and losing biodiversity in natural and disturbed systems were studied for selected taxonomic groups, and their interactive relationships.

(3) Functions and ecosystem services provided by forest biodiversity

- Ecosystem functions of biodiversity in each study site were evaluated in the sites. The results were shown as ecosystem function maps.
- For selected ecosystem services of biodiversity in each study site were studied. The results were shown as ecosystem services maps.

(4) Integrated evaluation of forest utilization

- Environmental economy of each utilization option were studied for several systems.
- Ecological and socioeconomic values of each utilization option were evaluated in selected sites.

(5) An integrated assessment method on sustainable uses of forest and biodiversity

- (6) Published or upcoming products: Academic papers with peer review: 203 (English 165, Japanese 38). Papers in books: 67 (English 21, Japanese 46). For the Future of Biodiversity (11 chapters), a teaching resource for undergraduate students (RIHN and Showa-do, in Japanese). Forest degradation in Tropics of Southeast Asia (Jinbun shoin, in Japanese), Special issue in Ecological Research (2007), Sustainability and Diversity of Forest Ecosystem (2007 Springer), Photo Album on Biodiversity (CD), Project Final Report

### ○Co-Researchers

- ◎ Masahiro Ichikawa ( RIHN )
- Kaoru Niiyama ( Forestry and Forest Products Research Institute, Abukuma group )
- Shinichiro Aiba ( Faculty of Science, Kagoshima University, Yakushima group )
- Takao Ichioka ( Graduate School of Human and Environmental Studies, Kyoto University, Lambir )

- group )
- Kanehiro Kitayama ( Center for Ecological Research, Kyoto University, Sabah group )
  - Kenichi Akao ( Graduate School of Social Sciences, Waseda University, Theoretical and economics studies )

### ■ Research Plan

#### ■ Problems for implementation or points need to change plan

As a main product from the project, a method of integrated assessment on sustainable uses of forest and biodiversity was developed, though some issues are still remained to be developed, which are: 1. Forest utilization with different scenarios could be shown using the matrix. However, more examination is necessary in order to reflect drivers behind forest changes on the matrix. 2. Regarding ecological services, continuous studies will be necessary for further evaluation. Several more kinds of ecosystem services could be evaluated in similar ways as we have done. 3. The assessment method of institutions should be refined for practical use. The evaluation will vary depending on sites, situation and local life of the people. Such variations should be considered in the assessment in actual.

**Stage:** FR

**Project No.:** 2-3

**Project Name:** Human Activities in Northeastern Asia and Their Impact on the Biological Productivity in North Pacific Ocean

**Abbreviated Title:** Amur-Okhotsk Project

**Project Leader:** SHIRAIWA, Takayuki

**Research Axis:** Circulation

**URL:** <http://www.chikyu.ac.jp/AMORE/>

**Key Words:** fish-breeding forest, land-use, land surface disturbance, material circulation, dissolved iron, phytoplankton, Sea of Okhotsk, Amur river, Oyashio current, Asian dust

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### ■ Research Objectives and Topics

The objective of the project is to elucidate the role of the Amur River on primary productivity in the Sea of Okhotsk and Oyashio region and then evaluate possible human impacts such as land surface disturbances in the Amur River basin on the marine ecosystem of the ocean. In this study, we attempt to answer 1) how dissolved iron is transported from the Amur River basin to the Sea of Okhotsk and Oyashio region, 2) to what extent the supply of dissolved iron regulates the primary production in these open waters, 3) how the land surface disturbances affect the material circulation in the Amur-Okhotsk system, 4) how human activity will impact the system in the future, and 5) how we can conserve this transboundary system. By answering these five questions, we will be able to propose a new global environmental concept, the “giant” fish-breeding forest (GFBF), in which there are physical and humanistic interactions between upstream and downstream and determine a way of conserving the system in a cooperative effort among China, Russia, Mongolia and Japan.

The Amur-Okhotsk Project attempts to create a new global environmental concept referred to as the GFBF by expanding the traditional Japanese idea of Utsuki-Rin (fish-breeding forest), which relates upstream forest with the coastal ecosystem both physically and conceptually. The GFBF hypothesis presents new perspectives in global environmental issues: an ecological linkage between the continent and open sea, networking less dependent stakeholders in the system, and finding environmental common ground across complex international boundaries. Multidisciplinary approaches are indispensable in studying and conserving the GFBF because stakeholders need to understand how to achieve a sustainable marine ecosystem in the Sea of Okhotsk and Oyashio region without limiting human activity on land.

We believe the GFBF can be a test bed for global environmental problems in general. Connecting less dependent stakeholders could be a first step in coping with complicated environmental issues. We attempt to visualize socio-economic relationships inside the GFBF system to demonstrate how stakeholders are related to each other unconsciously. Establishment of the concept will help bring together people who have been separated for many years under political tensions.

The physical structure of the GFBF was jointly studied by collaborators in the fields of biogeochemistry, geography, hydrology, climatology, glaciology and oceanography. Economic flow, land-use background, and conservation strategies in the system were studied by scientists in the fields of forest management, agronomy, economic geography, international law and politics.

The GFBF and its impacted area encompass nearly 4 million km<sup>2</sup>. It includes parts of Mongolia, China and Russia as well as Russian and Japanese exclusive economic zones and international waters. The area has been under extreme political tension since the middle of the 19th century and there has been little transboundary cooperation. This situation has resulted in the Amur River becoming one of the most seriously polluted waters in Russia.

### ■ Progress of Project

In 2007, we conducted the 2nd research cruise in the Sea of Okhotsk and in the lower course of the Amur River. Monthly routine water samplings were conducted at Khabarovsk and Bogorodskoe in the main

channel of the Amur River. Hydrogeochemical water samplings were continued at mountain sites (Anuy River, Greater and Lesser Khingan Ranges, and Donjiang). Hydrogeochemical researches were carried out in wetlands, paddy fields, and dry land in the middle of the Amur River. Hydrogeochemical data collected by ROSHYDROMET were analyzed. Atmospheric depositions of aerosol were monitored in the Okhotsk coast of Hokkaido island. Agro-economical data were collected at Sanjiang plain, while forest-economical data were collected at Northeast China. Constructions of hydrogeochemical model for the Amur River basin and ocean ecological model for the Sea of Okhotsk were simultaneously attempted.

As a result, we found a significant peak flux of dissolved iron in the Amur River culminating from 1996 to 1998 in the ROSHYDROMET data obtained at Khabarovsk. It was also found that the phytoplankton was also increased in the period in the Oyashio region of the northern North Pacific. We are still not certain whether the coincidence was causal or not. If this phytoplankton peak were due to the increase of the dissolved iron from the Amur River, this finding will be the first evidence which relates the inland hydrogeochemical condition with ocean ecosystem.

The contribution of the Sanjiang plain as a source of iron was considered to be weakened because the groundwater for irrigation was found to be re-cycled in this region. The contribution of the dissolved iron from the forested mountains areas is then considered to be more important than initially anticipated because the relative area of the forest is significant in the Amur River basin. Although the assessment was never done before, contribution of the iron from the wetlands and forests in the lower reach of the Amur River region should be evaluated as a possible important source.

## ○Co-Researchers

### Project leader

◎ SHIRAIWA, Takayuki ( Research Institute for Humanity and Nature, Associate Professor, Organization of the project )

### Group 1: Physical oceanographic conditions

○ OHSHIMA, Kay I. ( Institute of Low Temperature Science, Hokkaido Univ., Professor, Physical oceanographic analysis on the north pacific intermediate water )

○ WAKATSUCHI, Masaaki ( Institute of Low Temperature Science, Hokkaido Univ., Professors emeritus, Physical oceanographic analysis on the north pacific intermediate water )

FUKAMACHI, Yasushi ( Institute of Low Temperature Science, Hokkaido Univ., Assistant Professor, Physical oceanographic analysis on the north pacific intermediate water )

YASUDA, Ichiro ( Graduate School of Frontier Science, Univ. of Tokyo, Professor, Tidal mixing of water in the bussol strait )

### Group 2: Geochemical and biological conditions.

○ NAKATSUKA, Takeshi ( Graduate School of Environmental Studies, Nagoya University, Professor, Transport of materials by dense shelf water and north pacific intermediate water )

○ KUMA, Kenshi ( Graduate School of Fisheries Science, Hokkaido Uni., Professor, Analysis of iron of open waters )

NISHIOKA, Jun ( Institute of Low Temperature Science, Hokkaido Univ., Associate Professor, Transport of iron in the sea of okhotsk and oyashio region )

SUZUKI, Koji ( Graduate School of Environmental Earth Sciences, Hokkaido Univ., Associate Professor, phytoplankton dynamics in the sea of okhotsk and oyashio region )

SEKI, Satoshi ( Institute of Low Temperature Science, Hokkaido Univ., Research Fellowship, analysis on bottom sediment in the sea of okhotsk )

SOURIN, Rumi ( Faculty of Science, Shizuoka Univ., Assistant Professor, microbial process in the open waters )

TUDA, Atsushi ( Graduate School of Frontier Science, Univ. of Tokyo, Associate Professor, zooplankton dynamics in the sea of okhotsk and oyashio region )

MATSUNAGA, Katsuhiko ( Yokkaichi Univ., Professor, fulvic acids and iron complex in the sea water )

YOSHIMURA, Takeshi ( Environmental Science Research Laboratory, Central research Institute of Electric Power Industry, Chief Researcher, Transport of iron in the sea of okhotsk )

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- NAKAMURA, Yohei ( GraduateSchool of Environmental Earth Sciences, HokkaidoUniv, Graduate, DOC analysis in the sea of okhotsk )
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**Group 3: Transport of biogeochemical materials.**

- NAGAO, Seiya ( GraduateSchool of Environmental Earth Sciences, HokkaidoUniv, Associate Professor, biogeochemical analyses on Amur- river water )
- KAWAHIGASHI, Masayuki( Nihon University College of Bioresource Sciences, Instructor, analyses on organic-iron complex in the amur river basin )
- KODAMA, Hiroki ( Analytical Research Center for Experimental Sciences, Saga University, Associate Professor, analysis on organic matter in the river water )
- TERASHIMA, Motoki ( Research Institute for Humanity and Nature, Research Fellow, experimental study on dynamics of organic matter and iron )

**Group 4: Biochemical transport from terrestrial ecosystem.**

- SHIBATA, Hideaki ( FieldScienceCenter for Northern Biosphere, HokkaidoUniv., Associate Professor, biogeochemical characteristics of river waters from different land surfaces )
- YOH Muneoki ( Environmental Conservation, Tokyo Univ. of Agriculture & Technology, Associate Professor, biogeochemical characteristics of river waters from different land surfaces )
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**Group 5: Background of the anthropogenic impacts.**

- KAKIZAWA, Hiroaki ( Graduate School of Agriculture, Hokkaido Univ., Professor, background analysis on russian forest management )
- IWASHITA, Akihiro ( Slavic Research Center, Hokkaido Univ., Professor, politics between russia and china )
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- YAMANE, Masanobu ( Kanagawa Prefectural Nature Conservation Center, Special Researcher, background analysis on timber trades among russia, china and japan )

**Group 6: Spatial and historical monitoring of land-use changes.**

- HARUYAMA, Shigeo ( Graduate School/Faculty of Bioresources, Mie University, Professor, landform classification in the amur river basin )
- KONDO, Akihiko ( Chiba Univ. EnvironmentalRemoteSensingCenter, Professor, remote sensing on land cover changes in the amur river basin )
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- HIMIYAMA, Yukio ( Hokkaido Univ. of Education, Professor, land-use changes and its background analysis )

**Group 7: Estimate of atmospheric transports of terrestrial materials.**

- UEMATSU, Mitsuo ( Ocean Research Institute, Univ. of Tokyo, Professor, deposition of various materials from atmosphere )
- MATOBA, Sumito ( Institute of Low Temperature Science, Hokkaido Univ., Assistant

- NARITA, Hideki ( Professor, historical changes of iron deposition by means of ice core analysis )  
 ( Institute of Low Temperature Science, Hokkaido Univ., Former Project leader  
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- NAKAWO, Masayoshi ( national Institutes for the humanities, the board of directors, ice core analysis )
- MINAMI, Hideki ( School of Biological Science and Engineering, Tokai Univ. Hokkaido Sapporo  
 Campus, Associate Professor, chemical analysis on aerosol and ocean sediments )
- SASAKI, Hiroataka ( Graduate School of Environmental Earth Sciences,  
 Hokkaido Univ., Graduate, reconstruction of iron flux from atmosphere by means of ice  
 core analysis )
- HONDOU, Takeo ( Institute of Low Temperature Science, Hokkaido Univ., Professor, Physical analyses  
 in ice core )

**Group 8: Natural variability of the hydro-metrological and hydro-chemical conditions.**

- ONISHI, Takeo ( Research Institute for Humanity and Nature, Senior Researcher, numerical  
 modelling of hydrological as well as geochemical transports in the amur river  
 basin )
- TACHIBANA, Yoshihiro ( JAMSTEC, Institute of Observational Research for Global Change )
- KUBOTA, Jumpei ( Research Institute for Humanity and Nature, Associate Professor, hydrological  
 analyses )
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 amur river basin by pollen analysis )

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- MATSUDA, Hiroyuki ( Graduate School of Environment and Information Sciences, Yokohama National  
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 fish-breeding forest )
- KISHI, Michio ( Graduate School of Fisheries Science, Hokkaido Univ., Professor, numerical  
 modelling of phytoplankton production in the sea of okhotsk and oyashio region )
- MITSUDERA, Fumio ( Institute of Low Temperature Science, Hokkaido Univ., Professor, numerical  
 modelling of north pacific intermediate water )
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 the sea of okhotsk )
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 ecosystem analyses )
- SAITO, Seiichi ( Graduate School of Fisheries Science, Hokkaido Univ., Professor, satellite  
 observation on primary production )
- SUGIMOTO, Takashige ( School of Marine Science and Technology, Tokai Univ., Professor, assessment of  
 terrestrial impact on estuary ecosystem )

**International Researchers**

- SERGIRNKO, Valentine. ( Russian Academy of Sciences, Far Eastern Branch, Chairman, organization of  
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 amur river )
- MAKHINOV, Alexey N. ( Institute of Water and Ecological Problems, FEBRAS, Deputy Director, hydrological  
 analysis on amur river )
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 of amur river )
- SHAMOV, Vladimir V. ( Institute of Water and Ecological Problems, FEBRAS, The scientific  
 Coordinator, ground water monitoring in the amur river basin )
- SHESTERKIN, Vladimir P. ( Institute of Water and Ecological Problems, FEBRAS, Senior  
 researcher, geochemical analysis on waters from amur river )
- KIM, Vladimir. ( Institute of Water and Ecological Problems, FEBRAS, Hydrologist, geochemical  
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- BAKLANOV, Peter Ya. ( Pacific Institute of Geography, FEBRAS, Director, economic geographical analysis on amur river basin )
- GANZEI, Sergry S. ( Pacific Institute of Geography, FEBRAS, Deputy Director, land-use changes in the amur river basin and its transboundary problems )
- YERMOSHIN, Victor V. ( Pacific Institute of Geography, FEBRAS, GIS-Center .Head, gis compilation of land-uses in the amur river basin )
- MISHINA, Natalia. ( Pacific Institute of Geography, FEBRAS, Scientific Researcher, land-use changes and the analysis on material flows in the far east )
- ISHONIN, Mikhail. ( ROSHYDROMET, Director, aerosol monitoring in kamchatka )
- GAVRILOV, Alexandr V. ( ROSHYDROMET, Head of administration, hydro-geochemical monitoring in the amur river )
- VOLKOV, Yuri N. ( Far Eastern Hydrometeorological Research Institute, Director, oceanographic observations in the sea of okhotsk )
- YAROSLAV, D. Muravyev. ( Institute of Volcanology Seismology, Directore of the Institute, ice core drilling in Kamchatka )
- ZHANG, Bai ( Northeast Institute of Geography and Agricultural Ecology, CAS, Deputy Director, Professor, land-use changes in sanjiang plain )
- YAN, Baixing ( Northeast Institute of Geography and Agricultural Ecology, CAS, Professor, geochemical analyses of waters in sanjiang plain )
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- GU Jinfeng ( Northeast Forest Univ., Researcher, reconstruction of forest fire in the northeast of china )
- SHI, Fuchen ( Nankai Univ., Professor, forest ecology in the northeast of china )
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## ■ Research Plan

The objective of the project is to elucidate the role of the Amur River on primary productivity in the Sea of Okhotsk and Oyashio region and then evaluate possible human impacts such as land surface disturbances in the Amur River basin on the marine ecosystem of the ocean. In this study, we attempt to answer 1) how dissolved iron is transported from the Amur River basin to the Sea of Okhotsk and Oyashio region, 2) to what extent the supply of dissolved iron regulates the primary production in these open waters, 3) how the land surface disturbances affect the material circulation in the Amur-Okhotsk system, 4) how human activity will impact the system in the future, and 5) how we can conserve this transboundary system. By answering these five questions, we will be able to propose a new global environmental concept, the "giant" fish-breeding forest (GFBF), in which there are physical and humanistic interactions between upstream and downstream and determine a way of conserving the system in a cooperative effort among China, Russia, Mongolia and Japan.

## ■ Problems for implementation or points need to change plan

The most significant finding of this project so far was the coincidence of the peaks in the iron

flux of the Amur River and the phytoplankton in the Oyashio region around 1996–1998. If the mechanism behind the coincidence is clarified, it would be the first evidence that supports the idea of the GFBF.

The mechanism which changes the flux of iron in the Amur River is being studied. The contribution of the Sanjiang plain as a source of iron was considered to be weakened because the groundwater for irrigation was found to be re-cycled in this region. The contribution of the dissolved iron from the forested mountains areas is then considered to be more important than initially anticipated because the relative area of the forest is significant in the Amur River basin. Although the assessment was never done before, contribution of the iron from the wetlands and forests in the lower reach of the Amur River region should be evaluated as a possible important source.

While clarifying the mechanism of the GFBF, we attempted to distribute the idea in an academic society. Our project presented the basic idea of the GFBF in the Far Eastern Economic Forum which was held at Khabarovsk, Russia in September 2007. The Russian DUMA accepted the concept of the GFBF and included it in its policy making paper for the Russian government. Our project also tries to introduce the concept in several Journals like “Japanese Journal of Foreign Affairs” and a news letter “Ship & Ocean Newsletter” .

Next task of the project will be to quantify various aspects of the GFBF system and this will be attempted in the 4th year of the project. Numerical models for the hydrogeochemical transport in the Amur River basin and ocean-ecological model for the Sea of Okhotsk and the Oyashio region will be completed to simulate the impact of land-uses on the iron flux and then to the ocean primary production.

The conservation strategy of the GFBF system will be studied by quantifying the economical linkages between the stakeholders in the system.

## Papers

### 【Original Articles】

- Kakizawa, H. 2007 Local attitude toward participatory management in the Russian Far East. *Journal of Forest Economics* 52(1). (reviewed).
- Nishioka, J., T. Ono, H. Saito, T. Nakatsuka, S. Takeda, T. Yoshimura, K. Suzuki, K. Kuma, S. Nakabayashi, D. Tsumune, H. Mistudera, W. Keith Johnson and A. Tsuda 2007 Iron supply to the western subarctic Pacific: Implication of iron export from the Sea of Okhotsk. *Jour. Geophys Res.*, 112, C10012, doi:10.1029/2006JC004055. (reviewed).
- Seki O, T. Nakatsuka, K. Kawamura, S. Saitoh, M. Wakatsuchi 2007 Time-series sediment trap record of alkenones from the western Sea of Okhotsk. *Marine Chemistry* 104 :253-265. (reviewed).
- Yasunari, T., T. Shiraiwa, S. Kanamori, Y. Fujii, M. Igarashi, K. Yamazaki, C.S. Benson and T. Hondoh 2007 Intra-annual variations in atmospheric dust and tritium in the North Pacific region detected from an ice core from Mount Wrangell, Alaska. *Jour. Geophys Res.*, 112, D10208, doi:10.1029/2006JD008121. (reviewed).
- Nakanowatari T., K. I. Ohshima, M. Wakatsuchi 2007 Warming and oxygen decrease of intermediate water in the northwestern North Pacific, originating from the Sea of Okhotsk, 1955–2004. *Geophysical Research* 34(L04602, doi:10.1029/2006GL028243.). (reviewed).
- Matoba, S., S. V. Ushakov, K. Shimbori, H. Sasaki, T. Yamasaki, A. A. Ovshannikov, A. G. Manevich, T. M. Zhideleeva, S. Kutuzov, Y. D. Muravyev, and T. Shiraiwa 2007 The glaciological expedition to Mount Ichinsky, Kamchatka, Russia. *Bulletin of Glaciological Research* 24 :79-85. (reviewed).
- M. Murooka, S. Haruyama, Y. Masuda 2007 Land Cover Change on the Sanjiang Plain, China. *KSRP-RPA International Symposium-Country-wide rural planning and the Amenity in 21st Century* :110-111.
- Pan Yue-Peng, Yan Bai-Xing, Lu Yong-Zheng, Yoh Muneoki and Zhang Feng-Ying 2007 Distribution of water-soluble iron in water environment of Sanjiang plain. *Scientia Geographica Sinica* 27 :820-824. (reviewed).
- SHIRAIWA, Takayuki 2007 The Amur-Okhotsk Project: How we protect the “Giant Fish-Breeding Forest” ?.



Russia. pp.79–81. (in Russian)

- Ono, K., K. I. Ohshima, T. Kono, M. Itoh, K. Katsumata, Y. N. Volkov, and M. Wakatsuchi 2007 Water mass exchange and diapycnal mixing at Bussol' Strait revealed by water mass properties.. *Journal of Oceanography* 63 :281-291. (reviewed).
- Okunishi, T., M. Kishi, Y. Ono and T. Yamashita 2007 A lower trophic ecosystem model including iron effects in the Sea of Okhotsk. *Cont. Self Res.* in press. (reviewed).

## Research Presentations

### 【Oral Presentation】

- Okazaki T., H. Minami and M. Uematsu Long-term observation results of atmospheric aerosols in Sapporo. The Geochemical Society of Japan annual meeting in 2007, 2007, Okayama. (in Japanese)
- M. Murooka, S. Haruyama, Y. Masuda Land Cover Change on the Sanjiang Plain, China. 007KSRP-RPA International Symposium, 2007, Seoul.
- Nishioka, J., T. Ono, A. Ooki The oceanographic Society of Japan, Spring Conference. Annual iron cycle in the Oyashio and Oyashio/Kuroshio transition zone, 2007, . (in Japanese)
- Nishioka, J., D. Tsumune, T. Nakatsuka, F. Mitsudera, A. Tsuda Transportation by North Pacific Intermediate Water. The oceanographic Society of Japan Iron, Spring Conference, 2007, . (in Japanese)
- Ono, T., J. Nishioka Variation of dissolved iron in the winter Oyashio region. The oceanographic Society of Japan Interannual, Fall Conference, 2007, . (in Japanese)
- Nishioka, J., T. Ono, H. Saito Seasonal variability of iron concentration in the Oyashio region. PICES annual meeting, 2007, Victoria.
- Minami H., T. Okazaki, N. Fujitani, Y. Fukuda, J. Nishioka, T. Nakatsuka, S. Nagao and Y. Kato Geochemical behavior of metals at sediment-porewater interface in the Sea of Okhotsk. The Oceanographic Society of Japan Spring meeting in 2007, 2007, Tokyo. (in Japanese)
- Okazaki T., H. Minami, N. Fujitani, J. Nishioka, T. Nakatsuka and Y. Kato Accumulation processes and horizontal distribution of metals in sediments from the Sea of Okhotsk. The 2th geochemical ocean sedimentology workshop, 2007, Hokkaido, Sapporo. (in Japanese)
- Matoba, S. et al. Glaciological Expedition on Mt. Ichinsky, Kamchatka, Russia. Conference of Japanese Society of Snow and Ice, 2007, Toyama Univ..
- OUJI, Baku., and YOH, Muneoki Spatial distribution of dissolved iron in stream water and soil water in wetland and forested catchments in Russia. Japan Geoscience Union meeting 2009, May 19, 2007, Japan, Chiba. (in Japanese)
- KAKU, Yougyoku., YOU, Muneoki., Yan Baixing and Wang Dexuan Impact of the land use changes on the concentration and chemical forms of dissolved iron in the Sanjiang plain China. Japan Geoscience Union meeting 2009, May 19, 2007, Chiba. (in Japanese)
- YAMANE Masanobu Current situation of Sino-Russo border timber trade. The 1st seminar for fairwood procurement held by Global environment forum, July 2007, .
- YAMANE Masanobu Recent situation and development of Sino-Russo timber trade. . Workshop on Chinese wood market's impact to forestry and wood industry in Japan, August 2007, Forestry and forest products research institute.
- Kakizawa Hiroaki Towards collaborative forest governance in the Russian Far East. IUFRO Division VI Symposium Integrative science for integrative management, Aug 15, 2007, Saariselka, Finland.

### 【Invited Lecture / Honorary Lecture / Panelist】

- SHIRAIWA, Takayuki The Amur-Okhotsk Project: How we protect the "Giant Fish-Breeding Forest"?. Second Far Eastern International Economic Forum, Sep 17, 2007–Sep 17, 2007, Khabarovsk, Russia.

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**Stage:** FR

**Project No.:** 2-4

**Project Name:** Human Impacts on Urban Subsurface Environments

**Abbreviated Title:** Urban Subsurface Environment

**Project Leader:** TANIGUCHI, Makoto

**Research Axis:** Circulation

**URL:** <http://www.chikyu.ac.jp/USE/>

**Key Words:** subsurface environment, groundwater, urbanization, heat island, contamination, subsurface thermal anomaly, development stage of the city

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## ■ Research Objectives and Topics

### 1. Research Objectives

Securing water resources and preventing contamination of water caused by human activities in urban areas are global environmental issues in the 21st century. Heat island phenomena caused by human activities is also a big environmental problem in addition to global warming. These global environmental issues which are caused by urbanization, should be addressed strongly and prevented as population and density increases occur rapidly in urban areas.

Most global environmental studies have long been focused on the environmental issues above ground, such as air pollution, global warming, seawater pollution, and decrease in biodiversity. Subsurface environmental issues are also important for human life in the present and future, but have been largely ignored because of the invisibility of the phenomena and difficulty of evaluations.

Subsurface environmental problems such as subsidence due to excessive pumping and groundwater contamination, have occurred repeatedly in Asian major cities with a time lag depending on the development stage of urbanization. Therefore, we may be able to assess future scenarios if we can evaluate the relationships between subsurface environmental problems and the development stage of the city.

### 2. Research Content

This project deals with; (1) Relationships between the development stages of the cities and subsurface environmental problems which will be assessed by socio-economic analyses and reconstructions of urban areas using historical records; (2) Serious problems in subsurface environments and changes in reliable water resources which will be studied after evaluations of groundwater flow systems and changes in groundwater storage using hydrogeochemical data and in-situ/satellite-GRACE gravity data; (3) Evaluation of accumulation of materials (contaminants) in subsurface and their transport from land to ocean including groundwater pathways using chemical analyses of subsurface water, sediments and tracers; and (4) Subsurface thermal contamination due to the “heat island” effect in urban areas by reconstruction of surface temperature history and urban meteorological analyses.

Tokyo, Osaka, Bangkok, and Jakarta are targeted as main study cities, and Taipei, Manila and Seoul are selected as secondary study cities, depending on the four sub-themes. The project will focus on the urban subsurface environments however, we will treat the problems on a basin scale, because subsurface water, heat, and material transports are interconnected on this scale. We will assess the relationships between subsurface environmental changes and human activities during the past 100 years.

## ■ Progress of Project

### Outline of results

(1) Field surveys at Seoul, Taipei, Bangkok, Jakarta, Manila, Tokyo and Osaka have been made 12 times

during 2007, and monitoring of subsurface environment have been made at 7 cities.

(2) Assessments of subsurface environment in 7 cities have been done based on natural and social environmental data.

(3) Land use/cover maps based on GIS have been made with 0.5 km mesh at three ages in Tokyo and Osaka, and current status at 7 cities.

(4) The second international symposium on this project has been made at Bali, Indonesia on December, 2007 as a side event of COP13, and the proceeding of the symposium has been published.

(5) Some papers related to this project with UNESCO GRAPHIC (Groundwater Resources Assessment under the Pressure of Human Activities and Climate Change) have been published in

Vadose Zone Journal, and cited by Open Science News Scitizen.

(6) Model developments have been done for GRACE (Gravity Recovery and Climate Experiment), groundwater flow, and DOSIR.

(7) Preliminary results of the link between temples and groundwater discharge into cannels have been made in Bangkok, Thailand.

(8) Newsletter of the project Vol. 3(April, 2007) and Vol.4 (October, 2007) have been published.

### ○Co-Researchers

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## ■ Research Plan

The interim results (one overview paper and 15 original papers) of the project will be published by special issue of STOTEN (Science of the Total Environment). A new cross cutting WG of Law/ institution and religion/groundwater will be launched. The integrated indicators of the subsurface environment will be evaluated. Inter-calibration by uses new techniques such as CFC, KR, gravity meter will be made.

## ■ Problems for implementation or points need to change plan

Eight sub-groups (Social economy G, Urban Geography G, Groundwater G, Gravity G, Material G, Sedimentation G, Urban heat G, and Subsurface heat G) which were set up at the beginning of the project have been merged to six groups (Social economy G, Urban Geography G, Groundwater G, Gravity G, Material G, and Subsurface heat G). To integrate the project results, cross cutting working groups, Model WG, GIS/Database WG have been established.

## Papers

### 【Original Articles】

- Taniguchi, M., T. Ishitobi, W. C. Burnett, and G. Wattayakorn 2007 Evaluating ground water - sea water interactions via resistivity and seepage meters. *Ground Water* 45(6) :729-735.
- Taniguchi, M., T. Ishitobi and S. Kasahara 2007 Infrared measurements to evaluate groundwater discharge in the coastal zone.. *IAHS Publ* 316 :22-26. (reviewed).
- Taniguchi, M., T. Ishitobi, W. C. Burnett and J. Shimada 2007 Comprehensive evaluation of the groundwater-seawater interface and submarine groundwater discharge. *IAHS Publ* 312 :86-92. (reviewed).
- Yu Umezawa, T. Ishitobi, S. Rungsupa, S. Onodera, T. Yamanaka, C. Yosimizu, I. Tayasu, T. Nagata, G. Wattayakorn, M. Taniguchi 2007 Evaluation of fresh groundwater contributions to the nutrient dynamics at shallow subtidal areas adjacent to metro-Bangkok. *IAHS Publ* 312 :169 -179 .(reviewed).
- Burnett, W.C., G. Wattayakorn, M. Taniguchi, H. Dulaiova, P. Sojisuporn, S. Rungsupa, and T. Ishitobi 2007 Groundwater-derived nutrient inputs to the Upper Gulf of Thailand. *Continental Shelf Research* 27 :176-190. (reviewed).
- Taniguchi, M. Uemura, T., Jago-on, K 2007 Combined effects of urbanization and global warming on subsurface temperature in four Asian cities. *Vadose Zone Jour* 6(3) :591-596. (reviewed).

- Ishitobi T., Taniguchi M., Umezawa Y., Kasahara S., Onodera S., Hayashi M., Miyaoka K., Hayashi M., & Miyake K 2007 Investigation of submarine groundwater discharge using several methods in the inter-tidal zone. *IAHS publication* 312 :60-67. (reviewed).
- Harmoko, U., Fujimitsu, Y. and Ehara, S 2007 Shallow Ground Temperature Anomaly and Thermal Structure of Merapi Volcano, Central Java, Indonesia, *J. Geotherm. Res. Soc. Japan* 29 :25-37. (reviewed).
- Yamamoto, K., Fukuda, Y., Nakaegawa T. and Nishijima J 2007 Landwater variation in four major river basins of the Indochina peninsula as revealed by GRACE. *Earth Planets Space* 59 :193 -200. (reviewed).

## Research Presentations

### 【Oral Presentation】

- Yu Umezawa Groundwater contributions to the nutrient dynamics at shallow inter- and sub- tidal areas adjacent to a mega city, Bangkok. IUGG2007, July 2007, Perugia, Italy.
- Takahiro Hosono Human impacts on groundwater flow and quality of the Seoul City, deduced by multiple isotopes ( $\delta D$ , T,  $\delta^{18}O$ ,  $\delta^{34}S$ , and  $87Sr/86Sr$ ). IUGG2007, July 2007, Perugia, Italy .
- Makoto Taniguchi Comprehensive evaluations of groundwater/seawater interface . IUGG2007, July 2007, Perugia, Italy .
- Makoto Taniguchi Infrared measurements to evaluate groundwater discharge in the coastal zone. IUGG2007, July 2007, Perugia, Italy.
- Huang, S Transient effect of the last glaciation on the continental heat flow. IUGG2007, July 2007, Perugia, Italy..
- Makoto Taniguchi Degradation of Groundwater in Asian Cities. AOGS2007, August 2007, Bangkok, Thai .
- Makoto Taniguchi Human and climate impacts on subsurface environments in Asia. Bali International Symposium and Workshop, December 2007, Bali, Indonesia .
- Shinji Kaneko Research Achievements of the Socio-economic group. Bali International Symposium and Workshop , December 2007, Bali, Indonesia .
- Karen Ann B. Jago-on Summary of fieldwork achievements and future research needs. Bali International Symposium and Workshop, December 2007, Bali, Indonesia .
- Akihisa Yoshikoshi Hydro-environmental changes and their influence on the subsurface environment in the. Bali International Symposium and Workshop , December 2007, Bali, Indonesia.
- Toshiaki Ichinose Analysis on Surface Temperature Trends. Bali International Symposium and Workshop, December 2007, Bali, Indonesia .
- Takahiro Endo Groundwater Management from the Viewpoint of Law and Institution -Japanese Experience-. Bali International Symposium and Workshop , December 2007, Bali, Indonesia .
- Jun Shimada Use of groundwater age tracers to understand the effect of urbanization in Asian cities- Progress report of water group -. Bali International Symposium and Workshop, December 2007, Bali, Indonesia.
- Tsutomu Yamanaka Tracing Deep Groundwater Underneath the Bangkok Metropolitan Area. Bali International Symposium and Workshop , December 2007, Bali, Indonesia.
- Yoichi Fukuda Overview of the gravity group activities and GRACE application for monitoring terrestrial water storage. Bali International Symposium and Workshop, December 2007, Bali, Indonesia .
- Jun Nishijima Gravity and GPS preliminary survey at Jakarta and Bangkok. Bali International Symposium and Workshop, December 2007, Bali, Indonesia .
- Shin-ichi Onodera Role of sediment discharge and submarine groundwater discharge as contaminant discharge process to ocean at coastal mega-cities. Bali International Symposium and Workshop , December 2007, Bali, Indonesia .

- Takahiro Hosono Result of Material Group study (terrestrial part): Pollution status and mechanism in each Asian mega city. Bali International Symposium and Workshop , December 2007, Bali, Indonesia.
- Makoto Yamano Evolution of the Subsurface Thermal Environment in Urban Areas. Bali International Symposium and Workshop, December 2007, Bali, Indonesia .
- Rachmat Fajar Lubis Reconstruction of the thermal environment evolution in Jakarta. Bali International Symposium and Workshop, December 2007, Bali, Indonesia.
- William C. Burnett Groundwater Discharge and Nutrient Fluxes off Metro Manila, Philippines Based on <sup>222</sup>Rn Measurements. Bali International Symposium and Workshop , December 2007, Bali, Indonesia.
- Chung-Ho Wang Warming Effects on Surface and Subsurface Thermal Environment of Taipei, Taiwan. Bali International Symposium and Workshop, December 2007, Bali, Indonesia.
- Shaopeng Huang The Status and Outlook of Land Warming as Part of Global Warming. Bali International Symposium and Workshop , December 2007, Bali, Indonesia .
- Fernando P. Siringan Reconstructing the metal pollution history of Metro Manila from depth profiles of sediments from three water bodies. Bali International Symposium and Workshop , December 2007, Bali, Indonesia .
- Yu Umezawa Role of GIS working group - the progress in 2007 and future plan. Bali International Symposium and Workshop , December 2007, Bali, Indonesia .
- Makoto Taniguchi Effects of submarine groundwater discharge on seashell ecosystem in the coastal zone. Ocean Science 2008, March 2008, Orland, America .

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**Stage: FR**

**Project No.: 2-5**

**Project Name: Agriculture and Environment Interactions in Eurasia: Past, Present and Future -The ten-thousand-year History**

**Project Leader: SATO, Yo-Ichiro**

**Research Axis: Ecohistory**

**URL: <http://www.chikyu.ac.jp/sato-project/>**

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## ■ Research Objectives and Topics

### Aim of research

The present Project plans to clarify the influence of environmental change agricultural activity and vice versa, over a long period of time (Reconstruction of the history of interactions between agriculture and environment).

### Background

The present Project aims to reconstruct “Ten-thousand-year history of interactions between agriculture and environment”. The term “agriculture” here includes farming, animal husbandry, forestry and fisheries. Previously, it has been widely considered that climate and environment were the determining factors for agricultural types in different times and regions. The present Project, on the other hand, attempts to demonstrate the dynamism of mutual interaction between agriculture and environment over ten thousand years, focusing especially on issues such as how agriculture and human activity stimulated changes to the natural environment, and how those resulting changes were related to, or led to, the collapse of agricultural activity.

### How our Project can contribute to global environmental issues

Acknowledging that there were frequent collapses of agricultural production in history requires a paradigm shift from the generally accepted “developmental view of history”, and will no doubt leave a large impact not only on environmental history but also on other fields of human history. Especially in today’s world where globalization is progressing rapidly, in order to solve regional agricultural problems, it is essential to reconstruct specific “histories of interactions between agriculture and environment” in regions with different climate conditions, such as the Monsoon and Mugi zones. In the past, although there was interest in agricultural issues from a range of different points of view, there was little research on the subject connected to global environmental issues. There has been little critical research on the history of agricultural activity from its origin, that treats it as the key environmental factor. In this respect, the significance of our Project, which presents agriculture as a central global environmental issue, is evident.

### ■ Progress of Project

The initial plan formulated at the beginning of our Project has been more or less fulfilled, although with some variation between the research groups. The Monsoon Zone and Mugi Zone Groups are both making progress as planned. The former conducted research on the Ikeshima Fukuman-ji site, Osaka and the latter on the Xiaohe Tombs in Xinjiang Uygur Autonomous Region, China. The Tuber crop Zone Group had difficulties in concluding research agreements with local institutions and its plans had to be postponed for one year. Since then, the agreement was concluded and it became possible to conduct research, but the research area had to be changed. The newly created Slash-and-burn Agriculture Group managed to achieve its goals for Heisei 19th fiscal year. In the summer of the same year, we organized the First International Symposium “Recent Advances of Archaeobotany in Eurasia” where a suggestion was made to create an “archaeobotanical seed database”. Since our Project was asked to carry out this work, we have made a start with it. We are therefore also achieving goals that had not been planned initially.



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HIDE Robin	( The Australian National University, Affiliated professor )
HOTTA Mitsuru	( Southwest Japan Plant Information Institute, Director )
YAMAMOTO Naoto	( Nagoya University, Professor )

#### ■ v) Research Results Promotion Group

AKIMICHI Tomoya	( RIHN, Deputy director, Professor )
ABE Kenichi	( RIHN, Professor )
SAITO Kiyooki	( RIHN, Professor )
YUMOTO Takakazu	( RIHN, Professor )
OGURA Ichio	( Ogura Ichio Institute of Edit Plan, CEO )
YOSHIZAWA Yasuki	( Kinokuniya Co. LTD., General manager )

### ■ Research Plan

#### I. Research methods and system

Out of the ten thousand years of history, we will focus on periods when agricultural production or society experienced major change, and will conduct research on the environment and agricultural systems, notably on genetic diversity and environmental change surrounding that period. We will use written records if available, otherwise proxy data such as DNA in order to make hypotheses on the climate and vegetation of the particular periods. We will evaluate genetic diversity employing various cultivated plants and accompanying weed species, such as rice, wheat, pulses, gourds etc., and genetically analyzing their DNA polymorphism and mutation of seed size.

In order to achieve these goals, we have established five research groups. Three of them, namely the Monsoon Zone, Mugi Zone and Tuber crop Zone Groups, cover regions corresponding to the three climate zones proposed by Tetsuro Watsuji, and focus on past events. The Slash-and-burn Agriculture Group will provide materials that will assist addressing future issues, based on the research results of the first three groups and by focusing also on cultural and ideological issues surrounding agricultural heritage. The Research Results Promotion Group was established in order to publicize the achievements of the other four groups. All groups cover the period from ten thousand years ago, when the Last Ice Age ended, until the present. We will now turn to the research methods used by each group.

### **1. The Monsoon Zone Group:**

Its research covers East, Southeast and South Asia. Each research area will be about the size of a Japanese province and would include a few archaeological sites. So far, we have selected the Tian-luo-shan site in Zhejiang Province, China, the Ikeshima Fukuman-ji Site in Osaka Prefecture (Late Jomon Period to Modern Period), the Shimonosato Site in Shiga Prefecture (Middle Yayoi Period) and the Sannai Maruyama Site in Aomori Prefecture (Late Jomon Period), all therefore mainly in East Asia. We are currently selecting archaeological sites in Thailand, Cambodia, Indonesia and Philippines, with whom we have concluded research agreements (MOU). We will progressively begin research in the whole of the Monsoon zone, including the tropical zone. The analytical methods employed for this research will be from both micro and macro perspectives, including the identification of plant seeds, DNA, pollen, phytolith and soil property analysis. We will reconstruct ancient environments of each period and, by comparison with historical records if possible, try to understand the interrelations of environmental change and agricultural activity throughout Asia.

### **2. The Mugi Zone Group:**

This group conducts research to achieve two goals described below. Analytical methods adopted by this group are similar to those of the Monsoon Zone Group. For the identification of crops and fauna and the analysis of genetic diversity, we will use DNA analysis.

**a. First goal:** As mentioned earlier, the impact of agricultural activity on environmental change has received little attention until now. Desertification is a serious environmental issue and there are several theories explaining its cause. Xinjiang Uygur Autonomous Region in China is a large and very dry desert area, but there are traces of rivers and archaeological sites, which demonstrate that people used to live here. The first goal of our group is to reconstruct the ancient environment of this region, and especially the agricultural production and animal husbandry system. We seek to clarify the process of desertification and to supply information for understanding the history of interactions between environmental change and agricultural production.

**b. Second goal:** Yasuda (2001) reports that ten thousand years ago when the Last Ice Age ended, the quantity of tree pollens decreased, and animal husbandry and agricultural activity developed in addition to hunting and gathering activities, showing that there was environmental change. From the decrease in the quantity of tree pollen, we can assume that people settled down, enjoying a more stable life resulting in population increase. In the initial stages of agriculture, people probably used wild plants, which they improved and domesticated. It is therefore important to figure out when and where wild plants were domesticated, in order to place this information in the history of interrelations between agricultural activity and environmental change. It seems that the speed of wheat domestication was slower than had been considered previously (Tanno and Willcox, 2006; reference 6) and the beginning of agriculture was therefore a very gradual process. As our second goal, we will try to discover the time and location of wheat domestication and clarify the relationship between changes in agricultural production and environment during that period. Research will be conducted mainly in West Asia, where the Fertile Crescent is located.

### **3. The Tuber crop Zone Group:**

Rootcrop cultivation developed in tropical Asia and the Western Pacific islands. But compared to the prehistory of grain cultivation, relatively little is known, since botanical, ethnological or folkloric studies are far less developed. Our group aims to clarify where and when rootcrop cultivation began and how it expanded and influenced the environments in which it was practiced. Methods will include species

identification of starch grains, DNA analysis and ethnological and botanical methods. Our research area covers, apart from archaeological sites in the Philippines with whom we have concluded MOU agreements, also sites ranging from Papua New Guinea to Australia, where we will conduct research in cooperation with the Australian National University.

#### **4. The Slash-and-burn Agriculture Group:**

Under the influence of environmentalist ideology and policy, the agricultural use of fire methods such as slash-and-burn and open burning has been condemned widely as environmentally destructive. But after the cessation of such fire practices, mountains were covered by old growth forests and many uncontrollable fires occurred (e.g. Australia), and wild animals made increasingly frequent appearance in “sato” (e.g. Japan). Such effects have had serious consequences on livelihoods. Although practices such as slash-and-burn and open burning do destroy forests in the short term, they need to be understood in the context of fifty to hundred year-scale of time and its ‘improvement’ of the environment (called “sato” in our project). In the longer term, these practices appear to have acted to conserve forest and mountains, and the livelihoods of people occupying these environments. Fire, as part of agriculture, was a significant component supporting the balance between human ecosystem and environment. Our group will study these technologies and the ideologies supporting these practices, reevaluate biological, cultural and ideological aspects of environmental diversity, and investigate sustainable ways for agriculture for the future.

## **II. Changes from previous proposal**

The Project started originally with three research groups, i.e. the Monsoon Zone, Mugi Zone and Tuber crop Zone Groups. Following requests from researchers within and outside the Project, we subsequently established the Slash-and-burn Agriculture Group and the Research Results Promotion Group. The original three groups aim mainly at understanding events of the past, but in order to demonstrate clearly the goal of the Project to contribute to current global environmental issues, we added the Slash-and-burn Agriculture Group. The Research Results Promotion Group was established in order to disseminate research results to the public more effectively, while allowing the researchers to concentrate on their research. Through their activity, there will hopefully be an active exchange of information not only with outside researchers but also amongst members of different groups, leading eventually to wider regional researches. Details of the promotion methods to be adopted are still under discussion.

### **■ Problems for implementation or points need to change plan**

#### **I. Results in 2007**

##### **a) Achievement of the Project as a whole**

- 1) During two years of FR, we organized the Slash-and-burn Agriculture Forum in November 2006, the first Slash-and-burn Agriculture Summit in November 2007 and the First International Symposium “Recent advancements of archaeobotany in Eurasia” in August 2007. During this symposium, it was decided to create a database of ancient seeds.
- 2) Considering the origins of rice agriculture and wheat agriculture in their respective climatic zones, it seems increasingly likely that they occurred over a long period of time, instead of resulting from a short-term ‘event,’ as was formerly thought. It is therefore unlikely that the beginning of agriculture was triggered by a single event, such as climatic change or population pressure.
- 3) Even in the Monsoon zone where high productivity was generally assured, there seem to have been frequent collapses at the community level. There are many possible reasons for these collapses. But it seems that there have been two ways to solve the problem. One is to acquire new means of subsistence by increasing the types of cultivated plants or by changing location and the other is to devise ways to recover the circulation system of materials.

##### **b) Achievements of different research groups**

#### **1. The Monsoon Zone Group**

- a) Ikeshima Fukuman-ji site: In this site that existed from the middle Yayoi Period to the Modern Age,

we have reconstructed several aspects of the ancient environment. Firstly, we discovered traces of multiple floods. The flood which occurred at the end of the Ancient Age seems to have been of larger scale than the others, judging from the thick layer of sand. Subsequently, vegetation around this site was simplified, but plant species diversity increased. In addition, we discovered many plant seeds of species rarely seen today (probably weeds), from the Middle Age layer. Until the end of the Ancient Age, various types of rice, in general closer to tropical Japonica that is well suited to extensive cultivation, coexisted, but after the flood, we can observe breed change and decreases of both diversity and yield. Secondly, we recovered a structure called 'shimabata (ridge field)' just beneath the layer of the flood that happened through during the Medieval to Pre-Modern periods. This is a temporary structure constructed by heaping soil and sand. It is considered that dry field crops were planted on the 'shimabata' ridge, whereas rice was planted in-between them. Thirdly, we estimated the frequency of rice cultivation during all the periods of the site based on phytolith analyses. As the result, it was discovered that there were intermission periods of rice cultivation: three years out of every four years during the Medieval, and every other year in the Pre-Modern period. This probably maintained high ecological diversity.

**b) Long-que-zhuang site, Jiangshu Province, China:** Research is conducted here in order to examine the relationship between agriculture and environment in the period of initial rice cultivation. This site seems to have been occupied without interruption for two thousand years, from seven thousand years ago to five thousand two hundred years ago (Fig. 6). Through time, rice cultivation progressed and seed size increased. There is evidence that dependence on hunting-and-gathering economy declined at the same time. This period is contemporary to the hypsithermal period, which means that it is inappropriate to associate the beginning of agriculture with decreasing temperature.

## **2. The Mugi Zone Group**

This group conducts research in two regions, namely west Asia and northwest China. In west Asia, we focus on the period when wheat cultivation began, and examine its relationship to environmental change. In northwest China, we focus on the relationship between desertification and agriculture.

**a) West Asia:** Focusing on the cultivation of wheat species, proxy data (e.g. pollens) and animal domestication, we examined how they evolved through time and interacted with each other. Both wheat cultivation and animal domestication evolved over three thousand years, and there is no evidence to specify when they actually began. Nor was there any notable change in vegetation during that time, compared to other periods. These facts do not agree with traditional hypotheses suggesting climatic change as a reason for the origin of agriculture.

**b) Northwestern China:** A research agreement was concluded with Xinjiang Cultural Relics and Archaeology Institute, Xinjiang Uygur Autonomous Region, China, to conduct joint research for four years until 2010. As we already reported last year, in the Xiaohe site, we have discovered the remains of common wheat (bread wheat) dating from three thousand years ago. For understanding water requirement of wheat then, we experimentally planted four types of domesticated wheat and gave them a draught stress in the seeding season. As the result, it turned out that the weight of bread wheat seed was most affected by the stress. This year, for a further developed experiment, we cultivated the same four types of domesticated wheat in water-rich environment (Kyoto, Japan) and arid environment (Syria), to examine the relationship between water quantity requirements and harvest volume. The results showed that bread wheat was most affected by water availability: the harvest volume was four times as much in the water-rich environment, whereas with other types of wheat the harvest volume was only twice as much. In short, bread wheat requires a much larger quantity of water to produce a rich harvest. This suggests that, in the region of the Xiaohe site, there was either enough rainfall (400 mm/year) or an irrigation system. In the Xiaohe site, we have also found remains of cattle skin and skulls, and succeeded in extracting DNA from eight cattle skulls discovered in the site (currently undergoing analysis for species identification). Based on assumptions about the estimated harvest volume per unit area, the genetic variety of wheat species and the population size of Loulan, at the time of the site there must have been at least 17,000 ha of wheat cultivated. Similarly, if there were 2,000 cows, 11,000 ha of pasture land would have been needed. We are still analyzing how and why agricultural production eventually collapsed

in the period of the Xiaohu Tombs, using proxy analysis of sediment cores. For this, we could refer to the case of the Kingdom of Loulan (400 B.C.–400 A.D.). Although it is not yet known why agricultural production collapsed in Loulan, salt damage caused by excessive irrigation seems the most likely explanation. We will need to undertake diatom analysis to verify this in the future.

In August 2007, the Monsoon Zone and Mugi Zone Groups successfully co-organized the first International Symposium on "Recent Advancements of Archaeobotany in Eurasia" and hosted fourteen speakers from seven countries.

### **3. The Tuber crop Zone Group**

This group was established together with the Monsoon and Mugi Zone Groups, but began its activities much later, due to delayed research agreement negotiations with Australian institutions. Research agreement with the University of Philippines has already been concluded and we plan to conduct the first field research in Philippines in February 2008.

### **4. The Slash-and-burn Agriculture Group**

This group was newly established this year to focus on evaluating the impact of slash-and-burn agriculture concerning global environmental issues, mainly in Japan. As the first stages of this work, bibliographical research was carried out on its history in Japan, and comparative study of the practice in Southeast Asia and Japan has been commenced. In addition, research on land utilization with the slash-and-burn method, its productivity, and the significance of food produced through this practice was also begun. Since the aim of this group is to provide useful suggestions for the future concerning the relationship between agriculture/man and nature, below six seminars on environmental ideology were organized at the RIHN and we will continue this seminar series next year.

- (1) "The life and view of nature of Buddhist priest Myoe" by Prof. Harumichi Ishizuka (honorary professor of Hokkaido University)
- (2) "Forest and Minakata Kumagusu" by Prof. Ryugo Matsui (associate professor of Ryukoku University)
- (3) "The Ideology of the sacred tree and the creation of the sacred statue" by Dr. Mitsunobu Horikoshi (Senior researcher and curator of Yokkaichi Municipal Museum)
- (4) "Shugendo and nature" by Prof. Toji Kamata (professor of Kyoto University of Arts and Design)
- (5) "The view of nature in Eurasia seen by the Celts - 'water' and 'fire' in mythology, art and popular beliefs" by Prof. Mayumi Tsuruoka (professor of Tama Art University)
- (6) "The view of nature and lifestyle in folkloric movement, through Bernard Leach" by Prof. Sadahiro Suzuki (associate professor of Ochanomizu Women's University).

## **II. Activities in the future**

### **a) Achieving our goal before the term of next evaluation**

Until next evaluation in 2009, we will conduct research following the research plan below.

#### **[2008 (FR3)]**

We will select more sites where we will conduct research, while continuing analytical studies. Each group will create a database of botanical remains. Activities of each sub group will be as follows:

#### **The Monsoon Zone Group:**

This group will integrate the Ikeshima-Fukumanji site data of plant seeds, pollens and phytoliths that have been collected to date, check them in relation to historical documents and reconstruct the ancient environments at different time periods. The region of this site suffered from regular floods of the ex-Yamato River until the end of the 17th century. However, the river route was changed by large-scale construction work in 1703, which reduced flood frequency and probably affected the post-flood activities. We can thus study how the construction work of 300 years ago influenced the local environment based on both scientific and literature analyses, and make suggestions for modern construction works. In addition, the group will also select sites from Japan (Kyushu), China and the Philippines in order to assemble data from different regions and time periods.

#### **The Mugi Zone Group:**

This group will conduct research on the following topics.

- i. Xiaohu Tombs, Xinjiang Uygur Autonomous Region, China: Establish an appropriate method for pollen

analysis in desert areas. Establish a method for DNA analysis from artifacts, in cooperation with the Monsoon Zone Group.

ii. West Asia and North Africa: Conclude research cooperation agreement in order to conduct archaeological excavation. Continue research at different sites, especially those of West Asia. Continue wheat yield test in the setting of assumed initial agriculture.

**Tuber crop Zone Group:**

We will begin archaeological excavation in the Philippines and Papua New Guinea, as well as select local research collaboratos. We will establish methods for species identification using starch grain and conduct pollen analysis, if necessary. Apart from taro that we have selected previously as a research subject, we will try to select other types of rootcrop for study.

**Slash-and-burn Agriculture Group:**

This group will conduct research on the following topics.

- i. Research on whether it is socially acceptable to use nature with the help of fire
- ii. Research on the diversity of slash-and-burn agriculture and its legacy in the contemporary world
- iii. Practical research on the potentialof slash-and-burn agriculture for the future

**Research Results Promotion Group:**

This group will conduct the following activities.

- i. Organize a regional seminar on the Ikeshima Fukuman-ji site, Osaka, where the Monsoon Zone Group conducts research, to promote research results.
- ii. Organize a symposium at Xinjiang Uygur Autonomous Region, China, which is the Monsoon Zone Group' s research area, and at RIHN, to promote research results. Publish "A Natural History of Wheat" (planned for spring 2008), as a synthesis of research by group members.
- iii. Publish the results of the International Symposium "Recent Advances of Archaeobotany in Eurasia," which was organized last year.
- iv. Organize, as last year, the Slash-and-burn Agriculture Summit (subtitle: Slash-and-burn Agriculture of the North) in Tsuruoka on 15th - 16th November and promote research results and exchange opinion with citizens.

**[2009 (FR4)]**

Integrate the databases of botanical remains created by each group and allow access firstly to group members. Activities of each group will be as follows:

**Monsoon Zone Group:**

Integrate data on archaeological sites selected the previous year and earlier. Create a map demonstrating vegetation distribution, using the archaeobotanical database.

**Mugi Zone Group:**

This group will conduct research on the following topics.

- i. Xiaohe Tombs, Xinjiang Uygur Autonomous Region, China: Check the results of pollen and DNA analyses of fauna and flora with historical facts, and try to reconstruct the environment of the period when the site was inhabited.
- ii. West Asia and North Africa: Integrate analytical data from different sites and compare their ancient environments.

**Tuber crop Zone Group:**

Following results from previous year, we will select research areas in the region ranging from the Philippines to Australia, through negotiations with the ANU and the University of the Philippines.

**Slash-and-burn Agriculture Group:**

We will continue to conduct research on the topics from previous year. However, when it is judged necessary, research on further topics will be conducted also.

Research Results Promotion Group: This group will conduct the following activities.

- i. Organize an International Symposium on Wild Rice, focusing on both ancient and modern rice, together with research institutions with whom the Monsoon Zone Group has concluded agreements in the past, and promote the research results internationally.
- ii. Integrate research results of the Monsoon Zone Group and the Tuber crop Zone Group and organize an

international symposium, in order to inform public about ancient environments of the Pan-Pacific Region and make suggestions on environmental change caused by agricultural activity.

iii. Organize a public dialogue between the project leader and members of each research group and publish it as “A History of Agriculture in Eurasia: Interaction between ‘Fudo’ and agriculture (tentative title, publisher decided).”

By comparing the research results of the different groups, we will attempt to clarify ten thousand years of global history of interactions between agriculture and environment, and suggest forms of human activity, from an agricultural point of view, that are sustainable in environmental terms.

## Books

### 【Authored/Co-authored】

- Habu, J., C. Fawcett and J. M. Matsunaga (eds.) Oct, 2007 *Evaluating Multiple Narratives: Beyond Nationalist, Colonialist, Imperialist Archaeologies*. Springer, New York, 228pp.

### 【Chapters/Sections】

- Tanno, K 2007 Nishi Asiasenshijidai no syokubuturiyo -Dederyeh Iseki, Sekur, al, Aheimar-Iseki, Kosak, Shamal-Iseki wo reini. Nishiaki, Y. RHIN (ed.) *Ikyu to Megami*. the University Museum, the University of Tokyo, Tokyo, pp.64-73. (in Japanese)
- Sasaki, K., Sato, Y. I., Hotta, M., and Yasuda, Y. discussion. Nov, 2007 *Dai Sanbu Toron Syoyozyurinbunka to Inasakubunka wo Megutte*. T. Sasaki (ed.) *Syoyozyurinbunka toha nanika Higashi Asia no Mori ga umidashita Bunmei*. Cyuoushinsyo, 1921. cyuoukoronsya, Tokyo, pp.200-309. (in Japanese)

## Papers

### 【Original Articles】

- Kurata, T. 2007 Lifestyle toshiteno Mingei-seikastu no betunaru” KATACHI” wo motomete. *NingenKankyouronsyu* (7). (in Japanese)
- Hosoya, A. 2007 Sentousyoto ni okeru Syokiinasaku to Syokubutu-Kokogaku. Ebisawa, C. RHIN (ed.) *Japonica no kigen to Denpan IyokokuYugeshimaso no Cyosa*. Koza Mizuine Bunka-Kenkyu, 3. Research Institute of Paddy Culture, Tokyo, pp.41-43. (in Japanese)
- Hosoya, A. 2007 ‘SYAKAISYOKUBUTU-KOKOGAKU’ no Shiten ni yoru BaritoInasaku no Minzokucyosa. *Tonan-Asia Kokogaku* (27) :19-38. (in Japanese) (reviewed).
- Muguruma, Y. 2007 Yamayaki no Minzokushiso-Hi wo kaishita Shizenriyo no hoho no Gendaitekikanosei-. *Kikan Tohokugaku* (11) :56-71. (in Japanese)
- Luo, M. C., Z. L. Yang, F. M. You, T. Kawahara, J. G. Waines and J. Dvorak 2007 The structure of wild and domesticated emmer wheat populations, gene flow between them, and the site of emmer domestication.. *Theoretical and Applied Genetics* (114) :947-959.
- Hiroaki Tabuchi, Yo-Ichiro Sato and Ikuo Ashikawa 2007 Mosaic structure of Japanese rice genome composed mainly of two distinct genotypes.. *Breeding Science* 57(3) :213-221.



**Stage: FR**

**Project No.: 3-2**

**Project Name: Interactions between Natural Environment and Human Social Systems in Subtropical Islands**

**Project Leader: TAKASO, Tokushiro**

**Research Axis: Ecosophy**

**URL: <http://iriomote.chikyu.ac.jp/>**

### ■ Research Objectives and Topics

Islands are faced with various environmental problems including water shortages, loss of topsoil, disappearing biodiversity, waste disposal issues, and those caused by the factors outside the islands including air and oceanic pollutions. The main purposes of this project are to understand the multifacetedness of these environmental problems and to indicate their solutions. We focus on the case of Iriomote Island in Okinawa Prefecture as a typical subtropical island but also intend to apply our research data and results to the cases of other islands. We strongly believe that economical independence of the local residents of the island is essential for creating a society in which the residents could hope for a better future. We also conduct various activities for conservation of the natural environment and the succession of the unique cultures of Iriomote Island

### ■ Progress of Project

In the research of water balance and water quality, we have collected precious data concerning those of the rain and the rivers, which will be applicable to our research on the usages of water for everyday life, agriculture, and tourism. In the research of the forests, we deepened our understanding of the transitional processes of the broad-leaved forests and the Ryukyu pine forests. We also revealed an important role of typhoons in the death and growth of trees in the forests and understood that especially giant typhoons require a longer-term investigation because of their force that could devastate the forests. The research of island economy that is an important aspect of our project as a basis of everyday life of the islanders has not progressed as much as we first planned since our request to employ a specialist researcher has been rejected. However, we will continue to consider how the circulatory economy could contribute to the development of island economy and how it would be possible to introduce an environmental tax. In the research of the decision-making process, we have reassured of the complexity of each local community on the island and the importance of its community centres through our close contacts with the local residents. In addition, we have realised how important it is for us to introduce our research results to the subject areas. We also made a good progress in other research themes. This project has a large collection of photographic materials concerning Iriomote wildcats and local events, which will be most useful for our further research and activities.

### ○ Co-Researchers

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- Yoshimura, Kazuhisa ( Graduate School of Sciences, Kyusyu University, Professor, analysis of water balance and quality group: chemical analysis of land water, analysis of impacts of land-derived substances )
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- Sekino, Tatsuki ( Research Institute for Humanity and Nature, Associate Prof., forest / interaction between organisms group: limnological and ecological studies using information technology, management of database, Literatures on Iriomote Island )
- Setoguchi, Hiroaki ( Graduate School of Human and Environmental Studies, Kyoto University, Associate Prof., forest / interaction between organisms group: analysis of introduced plants )
- Taira, Tsuyoshi ( Faculty of Law, Okinawa International University, Lecturer, island economics group: study of public finance )
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- Tadauchi, Osamu ( Graduate School of Bioresource and Bioenvironmental Studies, Kyusyu University, Professor, forest / interaction between organisms group: insect taxonomy, ELKUType (database on type specimen collected in Nansei islands) )
- Nakagawa, Masato ( Research Institute for Humanity and Nature, Researcher, forest / interaction between organisms group: population biology, analysis of genetic diversity (plants) )
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- Hidaka, Toshitaka ( Kyoto Seika University, Visiting Professor, forest / interaction between organisms group: analysis of animal behavior including Iriomote cat )
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CHIANG Tzen-Yuh	( Faculty of Biology, Cheng-Kung University, Professor, forest / interaction between organisms group: analysis of plant diversity )
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## ■ Research Plan

In order to identify and contribute to solve the environmental problems of the island, we have divided our project into several themes as below. In this project, we first conduct various research programs such as monitoring and then integrate their results to grasp the current conditions of the island. In the first half of the project, we learned the importance of local communities in the decision-making processes; therefore we have been spending a considerable amount of time to create good relations with the local communities. Halfway in the project, we added a new theme concerning the promotion of local industry, because we realized how important it is to establish the basis of everyday life before solving any communal problems. The research group working under the theme of the coral reef eco-system was granted a separate source of funding and consequently completed its research for this project in 2005.

### Water Balance and Water Quality (Land and Ocean)

1) To estimate precipitation, the amount of river flow, and the level of evaporation and transpiration and build a model showing incomings and outgoings of water in Iriomote Island as a guide to water usage in the future.

To show a chronological transition of the amount of topsoil loss at the time of overflow and its mechanism.

2) To understand acidic rain in quality and quantity to consider its influence on the natural environment.

3) To examine the water quality of the ocean in view of assessing the influence of the river water on it.

### Functions and Maintenance Mechanisms of the Forestry Eco-system, and the Interactions between the Organisms in the Forest

1) To set up guidelines for the usage and management of forests by examining the dynamics of evergreen broad-leaved forests, mangrove forests, and Ryukyu pine forests, including the aspect of biomass production.

To consider the influence of typhoons upon the forests.

2) To reveal the dynamics of the colonies of seagrasses and to better understand the life cycle of seagrasses. .

3) To conduct a research on the movement of Iriomote wildcats.

4) To examine the current condition of foreign plants on the island, the pollination mechanism of mangrove plants, and the relations between flowers and insects.

#### Functions and Maintenance Mechanism of Coral Reef (completed in 2005)

1) To monitor the biodiversity in the coral reef around the island.

2) To examine the manner of propagation of fish inhabiting the coral reef.

#### Economy and the Decision-Making Process on the Island

1) To examine the transition of industry and demography on the island and link our findings to administration policies.

To overview the circulatory economy on the island.

To explore possibility of introducing an environment tax.

2) To conduct interviews concerning the decision-making processes and rules of the island communities by attending various local events, and to consider how different local organizations could cooperate with each other toward the solution of environmental problems.

#### Promoting Local Industries

1) To analyse the composition of kaolin from the island and consider how it could be used in the best possible way.

2) To experiment on natural dyes extracted from the local plants on the island and conduct interviews on dyeing techniques

### ■Problems for implementation or points need to change plan

In the past, some researchers maintained that all the islanders should move out of the island in order to protect Iriomote wildcats. Many researchers would not report the results of their researches to the islanders in return for their interviews and plant-animal-collecting on the island. In addition, on conducting fieldwork there, some researchers simply persisted on their own ideas that they had already developed and fixed beforehand and did not consider the actual conditions on the island at all. These facts led to antipathy to researchers shared among many local residents. It may not be as strong as hostility; but the researcher and the local resident still tend to conflict with each other. In such circumstances, it requires patience and careful consideration to develop a research project. In fact, we spent the great amount of time and energy on establishing our communications with the local residents in this project. This kind of problem may accompany any projects concerning regional communities in one way or another. Therefore, it may have to be included in any discussion on regional environmental issues. We have attempted to overcome this problem by contacting with the local residents as frequently as possible. We have also taken up the issues that particularly concern the islanders into our research project. It was particularly effective in establishing good relations between the project and the local resident to introduce our research results at elementary and junior-high schools.

## Books

### 【Chapters/Sections】

- Peng, C.I., D.E. Boufford, T. Takaso, T.Z. Chiang eds. 2007 . . A Selection of Plants from Iriomote Island, Japan. Endemic Species Research Institute and Research Center for Biodiversity, Academia Sinica, Taiwan, English

## Papers

### 【Original Articles】

- Hannan, A.M. and Y. Maeta 2007 Nesting biology and the nest architecture of *Lithrugus collaris* Smith (Hymenoptera: Megachilidae) on Iriomote island, southwestern subtropical archipelago,. *Journal of Kansas Entomological Society* 80 :213-222.
- Nomura N., H.Setoguchi, K. Yasuda, and T. Takaso 2007 Genetic structure of rheophytic and

nonrheophytic populations of *Farfugium japonicum* on Yaeyama Islands, Japan. *Canadian Journal of Botany* 85 :637-643. (reviewed).

- Tobe H., Y. Kimoto and N. Prakash 2007 Development and structure of female gametophyte in *Austrobaileya scandens* (Austrobaileyaceae). *Journal of Plant Research* 120 :431-436. (reviewed).
- Takashima, A., K. Yoshimura, K. Kurisaki, Y. Inokura, T. Takaso 2007 River water quality on Iriomote Island, a subtropical island of the Ryukyus, and the effect of acid deposition,. *Journal of Japan Society of Water Environment* 30 :325-328. (in Japanese)
- Otsuka Y. 2007 Raw sugar, pine, black rice - transportation and nature in Iriomote Island. *Gendai shisou* 35 :162-177.

## Research Presentations

### 【Oral Presentation】

- Nakagawa, M., T. Ohkawa, A. Naiki, Y. Kimoto Population structure and gene flow of *Quercus miyagii* (Fagaceae) in Iriomote Island, Japan. Annual Meeting of the Botanical Society of Japan, Sep 07, 2007, Tokyo University of Science, Noda, Chiba. (in Japanese)
- Nomura, N., H. Setoguchi, T. Takaso Molecular phylogeny of two Japanese *Farfugium* species. Annual Meeting of the Botanical Society of Japan, Sep 07, 2007, Tokyo University of Science, Noda, Chiba. (in Japanese)

### 【Poster Presentation】

- Eriguchi K., K. Yoshimura, K. Kurisaki, A. Takashima, Y. Inokura, T. Takaso Effect of acid rain on the water quality formation of river waters in Iriomote Island, the Ryukyus. Joint Meeting of Kyushu Branches of Chemical Societies, Jul 07, 2007, Kitakyushu, Fukuoka. (in Japanese)
- Nomura N. H. Setoguchi, K. Yasuda and T. Takaso Rheophyte vs non-rheophyte: evolution of polymorphic leaf shape on Ryukyu Islands. Japan-US cooperative science program "Phenotypic plasticity in response to environmental changes," , Oct 23, 2007, Nikko Sougou Kaikan, Nikko, Tochigi.

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**Stage: FR**

**Project No.: 3-3**

**Project Name: Environmental Change and the Indus Civilization**

**Abbreviated Title: Indus Project**

**Project Leader: OSADA, Toshiki**

**Research Axis: ECOHISTORY**

**URL: [http://www.chikyu.ac.jp/indus/Indus\\_project/index.html](http://www.chikyu.ac.jp/indus/Indus_project/index.html)**

**Key Words: Indus civilization, human-environment interaction, Ghaggar-Hakra (Sarasvati) river, climate change, disintegration of Indus civilization networks**

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### ■ Research Objectives and Topics

(1) Research objectives:

Human beings have changed and utilized natural environment for agriculture and construction of cities since their birth. Ancient texts tell us that environmental problems such as deforestation and land pollution have existed since olden times. The Indus Civilization (2600-1900 BC), one of the four ancient civilizations, is known for its characteristic seals and scripts, impressive citadels and well-planned drainage systems. Its sites spread over 680,000 sq. km., not only along the Indus River but also along the Ghaggar-Hakra River and in the Gujarat state of India. This civilization, unlike the other three civilizations, didn't last long; Indus cities flourished only for 700 years.

Our project aims to examine the causes of the decline of the Indus Civilization, taking a multidisciplinary approach. We consider that it is likely to have been triggered by some sort of environmental change which influenced its regional subsistence systems and trade networks with other regions including Mesopotamia.

We thus consider that it is important to investigate both global-level environmental change such as climate change, and local-level change such as the drying up of the Ghaggar River and sea-level change, and, in addition, palaeo-seismology. Palaeo-environmental analysis of this kind will expand our understanding of interactions between humans and nature, not only in the past but also in the present and future. Our project particularly emphasizes on the reconstruction of climate change over a large time-scale like hundreds of years. We will thus be able to provide data which is useful for predicting future climate change.

(2) Contents of research:

(i) In order to investigate the socio-cultural factors which contributed to the decline of the Indus Civilization, we need to investigate both historical remains using archaeological methods, and inherited cultures using linguistic/ethnological methods.

Archaeological study has been conducted in collaboration with Indian and Pakistan archaeologists. We have started excavations in Kachchh, Gujarat, India. We aim to reconstruct the societies and cultures during the Indus period by examining the plans of Indus cities and other archaeological remains in detail.

There are two groups of scholars who have been working on inherited cultures. A group of Indologists study Rig Veda to reconstruct the cultures and societies in the post-Harrapan India. A group of anthropologists, on the other hand, study contemporary South Asian cultures which are considered to inherit some aspects of the Indus cultures. Through this kind of study we will shed light on the socio-cultural aspects of the Indus Civilization.

(ii) Some scholars claim that global climate change has caused the decline of the Indus Civilization, but no consensus has so far been reached among scholars on this issue. We focus our study on the

Ghaggar-Hakra River which has been dried up, since many sites of Indus cities have been found along this river. We will conduct a wide-areal field survey, and also use high-resolution satellite imagery to analyze the topography of the region in detail. We will reconstruct the palaeo-channels of the Ghaggar-Hakra and other geographical/geological features of the region.

(iii) We will also investigate how the life in Indus cities has been maintained before they declined. Through palaeo-botanical and -zoological analysis of the archaeological remains, we will reconstruct the subsistence system (especially agriculture) of the Indus Civilization, and examine its relationship with environmental change in the region.

(iv) As regards the project organization, our project consists of four groups according to the research methodology they employ: material culture research group, inherited culture research group, palaeo-environment research group and subsistence system research group.

### ■ Progress of Project

The palaeo-environmental research group has been investigating the following issues:

- (1) field survey in the upper range of the Ghaggar-Hakra and examination of high-resolution satellite imagery to find out when and how the Ghaggar-Hakra was dried up;
- (2) coral analysis to obtain data on sea-level change and climate change during the period of the decline of the Indus Civilization; and
- (3) boring survey to obtain lake core samples for the analysis of climate change.

As regards (1), they consider that it is possible to reconstruct the palaeo-channel of the Ghaggar-Hakra through the analysis of satellite imagery. Through their preliminary field survey they have hypothesized that some palaeo-seismological activities in the mountainous areas might have caused the change of the river channel. Next year they will conduct detailed field research to pursue this issue.

As regards (2) and (3), they will conduct survey in the places where they plan to collect core and coral samples. Next year they will start collecting data. Through preliminary survey they find it possible to collect enough data to reconstruct climate change during the Indus period.

The material culture research group has conducted archaeological excavations in the following sites:

- (A) Kanmer in Kachchh, Gujarat, India (since 2005);
- (B) Farmana in Haryana, India (since 2006); and
- (C) Ganweriwala in Punjab, Pakistan (we planned to start excavations from this year, but postponed due to political turmoil).

This year they discovered a seal and a sealing, fireplaces and beads in (A), and four seals/sealings, remains of buildings and a cemetery with human bones in (B). They have also discovered rice remains in a site near (B) which go back to the pre-Harappan period. Their achievements so far are quite remarkable. The excavations have been directed mainly by the Indian archaeologists, and Japanese members support have helped them keep records using GIS and photogrammetry.

It is to be noted that (C) is a very large city site along the old Ghaggar-Hakra comparable in size with those in Harappa and Mohenjo-Daro. It has never been excavated. It is located in the middle of a desert, and very little human disturbance has been observed since the Indus period. We plan to conduct a full-scale excavation of this site from the next season. Once it starts, we will be able to obtain data to shed light on the relationship between the old Ghaggar-Hakra and the Indus Civilization.

### ○ Co-Researchers

- ◎ OSADA, Toshiki ( RIHN, Professor, Project Leader )
- UNO, Takao ( International Research Center for Japanese Studies, Professor, Material culture research group )
- OHTA, Shoji ( Fukui Prefectural University, Professor, Subsistence system research group )
- OHNISHI, Masayuki ( RIHN, Professor, Inherited culture research group )
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- OKUNO, Junichi ( National Institute of Polar Research, Researcher, Paleo-environment research group )
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- KUMAHARA, Yasuhiro ( Gunma University, Lecturer, Paleo-environment research group )
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- CHIBA, Hajime ( Tohoku Gakuin University, Lecturer, Subsistence system research group )
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- TERAMURA, Hirofumi ( RIHN, Researcher, Material culture research group )
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- NAKANO, Takanori ( RIHN, Professor, Paleo-environment research group )
- PARPOLA, Asko ( Helsinki University, Professor, Inherited culture research group )
- FUJII, Masato ( Kyoto University, Professor, Inherited culture research group )
- FUJIMOTO, Takeshi ( University of Human Environments, Associate Professor, Subsistence system research group )
- POKHARIA, A. K. ( Birbal Sahni Institute of Paleobotany, Associate Professor, Subsistence system research group )
- MAEKAWA, Kazuya ( Kokushikan University, Professor, Inherited culture research group )
- MATSUI, Takeshi ( University of Tokyo, Professor, Inherited culture research group )
- MATSUOKA, Hiromi ( Kochi University, Associate Professor, Paleo-environment research group )
- MIURA, Reiichi ( Kyoto University, Research Associate, Subsistence system research group )
- MIYAUCHI, Takahiro ( Chiba University, Professor, Paleo-environment research group )
- MORI, Wakaha ( RIHN, Senior Researcher, Inherited culture research group )



YAGI, Hiroshi ( Yamagata University, Professor, Paleo-environment research group )  
 YAMASHITA, Hiroshi ( Tohoku University, Professor, Inherited culture research group )  
 YUMOTO, Takakazu ( RIHN, Professor, Subsistence system research group )

### ■ Research Plan

Modifications from the original plan:

(1) Following our plan of start excavations in Pakistan this year, we conducted a preliminary survey in the sites in Ganweriwala. However, we were forced to postpone our plan till next year or later due to the political turmoil after the assassination of the former prime minister Mrs Bhutto.

(2) We originally planned to work only on the geological reconstruction of the Ghaggar-Hakra, but we have decided to work on the reconstruction of climate change as well, examining the change of seawater temperature through the analysis of coral samples. Following this plan we collected coral samples along the coast of Gujarat, but we didn't find appropriate data. We now plan to collect coral data in the Maldives from next year onwards.

### ■ Problems for implementation or points need to change plan

Outcome in 2007:

(1) It has become increasingly clear, through our research till now, that previous theories based on the environmental determinism, e.g. drastic climate change, is not appropriate to explain the decline of the Indus Civilization which extends over such a large area.

(2) Through our study of archaeological remains it has also become clear that the Indus sites have shown both common characteristics and regional differences. Common characteristics presuppose the existence of networks connecting different regions. Regional differences presuppose the existence of a distinct culture in each region.

(3) For example, regional differences are seen in the contrast of stone-made walls in Kanmer versus constructions with sun-dried bricks in Farmana. However, we have also found common remains such as beads and Indus seal in both sites.

(4) We hypothesize that the Ghaggar River, the old Saraswati on the Indian side, was not a mighty river. If this hypothesis is proved, it will become a major discovery overturning the general assumption that the Indus Civilization was supported by mighty rivers.

(5) In 2007 we published Occasional Paper 3. We also organized an international workshop, inviting two scholars from India and one each from Pakistan and USA.

## Books

### 【Chapters/Sections】

- Uesugi, A 2007 Chapter 1 Archaeological achievements, Section 3 Historical periods.. History of South Asia (1) prehistoric and ancient periods. The outline of world history. Yamakawa Shuppansha, Tokyo, pp.41-49. (in Japanese)
- Osada, T., T. Uno and H. Teramura 2007 Study in the distribution of Indus cities using GIS. UNO, T. (ed.) National Institutes for the Humanities, Tokyo, pp.85-93. (in Japanese)
- Uno, T. Mar, 2008 Cities and kingship of the Indus Civilization. Kingship and Cities. Shibunkaku Shuppan, Kyoto, pp.143-169. (in Japanese)

## Editing

### 【Editing / Co-editing】

- Uno, T. (ed.) Mar, 2008 High-level collaborative research on archaeological, historical, ethnological and environmental information using GIS integrating cultural resources. Inter-university Research Institute Corporation, (in Japanese)

## Papers

### 【Original Articles】

- Chiba, H 2007 In search of ancient wheat in the Nilgiri Hills of South India. *Studies in the History of Market* (27) :159-166. (in Japanese)
- Koiso, M. 2007 Understanding the Indus Civilization - a report on recent achievements. *Studies in South Asia* (19) :114-123. (in Japanese)
- Teramura, H., T. Uno, K. Miyahara, and Y. Kondo. Sep, 2007 Photogrammetric survey at Kanmer, Gujarat, India. *Japan Society for Archaeological Information (24th Meeting)* (4.) :11-16. (in Japanese) (reviewed).
- Uesugi, A. Mar, 2008 Indus Project 2007 - field research in the Indus sites in India and Pakistan. *West Asia No. 15 - Ancient Orient through archeology* :132-138. (in Japanese)

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**Stage: FR**

**Project No.: 4-2**

**Project Name: A Trans-Disciplinary Study on the Regional Eco-History in Tropical Monsoon Asia: 1945-2005**

**Project Leader: AKIMICHI, Tomoya**

**Research Axis: Resources**

**URL: <http://www.chikyu.ac.jp/ecohistory/index.htm>**

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### ■ Research Objectives and Topics

This Research project aims to demonstrate human-environmental interactions in tropical monsoon Asia (Yunnan, Thailand and Laos) as the regional eco-history during the past 50-60 years when rapid socio-economic and political changes have occurred. For this goal, three major themes such as subsistence complex, nutrition and health, and resource management are selected in order to apply various sets of approaches such as long-term fieldwork, bibliographical inquiries, analyses of historical inscription and material culture for the integrative research.

Research sites are Yunnan Province, China, northern Thailand, and Laos. The region belongs to tropical and sub-tropical monsoon zone in Asia, and is characterized by distinct seasonality of wet and dry climate. The elevation is between 100m and 2,000m, and a diverse vegetation is found according to the altitude and geography. The great Mekong river is originated from Tibetan Plateau, and runs almost from north to souths, and flows into the South China Sea.

In this region, a number of ethnic minorities belonging to the Mon-Khmer, Tibet-Burman, Tai-Kadai, and Miao-Yao linguistic groups, besides major groups such as Han-Chinese (China), Tai (Thailand), Lao (Laos). Since the end of WW II up until early 21st century, rapid socio-economic and political changes have occurred in this region. How these external changes have given impacts upon local environments and societies as well as people's physical and cultural traits deserves important inquiries in order to clarify the regional eco-historical consequences. Major historical events and changes that made up the upheaval of the region are China's Revolution, Indo-China Wars, infiltration of market economy, population growth, modernization policies, and globalization.

As academic fields of sciences, we have adopted various fields such as natural (agriculture, forestry, fisheries, ecological anthropology, human ecology, botany, ecology, genetics, and hydrology) and socio-cultural sciences (economics, sociology, history, ethnology, cultural anthropology, and folk-lore) and conducted trans-disciplinary analyses. In addition to these, analyses of historical inscription, database and archives synthesis using collections of artefacts, movies and photos, eco-chronicle in Yunnan Gazettee, various sources and GIS and GPS techniques are employed.

We have organized six research groups that can work as a team; (1) agroforestry group working in mountain areas of northern Laos, (2) plains ecology group working in central plains of Laos, (3) human ecology group working in central-south parts of Laos, (4) China group consisting of three sub-groups: historical ecology sub-group studying historical inscriptions and documents, forestry ecology sub-group working on use of forest products, and eco-history working in more than 30 communities by Chinese scholars, (5) northern Thailand group studying changes of subsistence among ethnic minorities in Miao, Yao and Mraburi groups, and (6) material culture and information archives group aiming to synthesize database and archives of material culture, photographs, movies and information collected by Japanese scholars in the past 30-40 years in Laos and Thailand.

### ■ Progress of Project

We have planned to summarize our research outcomes in the final year of the research project. For this goal, we focus our efforts in publications, exhibition and database synthesis. After the presentation in December RIHN's meeting, followed by the final presentation in the Evaluation Committee Meeting in February, 2008, the Eco-history Project was completed in March.

## ○Co-Researchers

- ◎ Akimichi Tomoya ( RIHN, Professor, Integration, freshwater resource management in southern Laos )
- Abe Kenichi ( Kyoto University, Associate Professor, Integration of sub-group, Forestry policy in Yunnan, China )
- Ikeya Kazunobu ( National Museum of Ethnology, Professor, Group integration, eco-history of hunter and gatherers )
- Kubo Masatoshi ( National Museum of Ethnology, Professor, Group integration, database synthesis )
- Kono Yasuyuki ( Kyoto University, CSEAS, Professor, Group integration, History of land use in northern Laos )
- Daniels, Christian ( Tokyo University of Foreign Studies, Institute of Languages and Culture in Asia and Africa, Professor, Group integration, A study of historical inscription in rural areas in Yunnan, China )
- Nakamura Satoshi ( National Institute for Health, Head, Epidemiological study of water-borne diseases in Mekong river basin )
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- Moji Kazuhiko ( RIHN, Professor, Group integration, Public health of central Laos )
- Asakura Ryuji ( Tokyo Gakugei University, Professor, School health in rural area of central Laos )
- Ajisaka Tetsuro ( Kyoto University, Assistant Professor, Use of edible waterweed in the Mekong River Basin )
- Ataka Yuji ( Kwansai Gakuin University, Associate Professor, Food consumption in rural areas in Laos )
- Adachi Shinpei ( Kyoto University, Post-graduate student, Cash crop in Yunnan, China )
- Adachi Yoshinori ( Gifu University, Post-graduate student, Paddy field cultivation in the rural area of the Vientiane Plain )
- Abe Taku ( Meiji University, Associate Professor, Human Ecology in the rural area of central Laos )
- Ando Saori ( Nanzan University, Anthropology Museum, Part-time researcher, Analysis of research materials of a Research Expedition of the History and Culture in Northwestern Thailand )
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- Okamoto Kohei ( Nagoya University, Professor, GIS analysis of daily activity in the rural area in the Vientiane Plain )
- Okumiya Kiyoto ( RIHN, Associate Professor, Eco-epidemics of diabetes in the rural area of central Laos )
- Odani Shingo ( Chiba University, Associate Professor, Medical anthropology in the rural area of central Laos )
- Ochiai Yukino ( Kagoshima University, Associate Professor, Millet and useful plants in northern Laos )
- Ono Eisuke ( Niigata University, Associate Professor, Topography and water fluctuation in the rural area, of central Laos )

- Kashinaga Masao ( National Museum of Ethnology, Assistant Professor, Ethnic relations and economic network in northern Vietnam )
- Kato Kumiko ( Nagoya University, Associate Professor, Village history and salt production in the rural area of central Laos )
- Kato Makoto ( Kyoto University, Associate Professor, Symbiosis system in tropical monsoon forest in Laos )
- Kaneshige Tsutomu ( Shiga Medical University, Associate Professor, A compilation of the eco-chronicle of "Yunnan Gazette" )
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- Kawabata Masato ( Kobe University, Professor, Epidemics in the rural area of central Laos )
- Kawabe Toshio ( Takasaki University of Economics, Professor, Child development in the rural area of central Laos )
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- Kuchikura Yukio ( Gifu University, Professor, Academic adviser to the study of ecological anthropology )
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- Kosaka Yasuyuki ( Kyoto University, Institute of Southeast Asian Study, Research Fellow, Paddy field environment in the rural area of central Laos )
- Kojima Mabun ( Kagoshima Junshin Women's College, Associate Professor, Harness and use of horse in northern Laos and Yunnan, China )
- Kotegawa Takashi ( Kochi University, Post-graduate student, Soil informatics in the paddy fields, northern Laos )
- Goto Akira ( Nanzan University, Professor, Freshwater fishing gears in northern Laos )
- Kobayashi Jun ( JICA, Specialist (in Laos) , Epidemiology of tropical infectious disease in the rural area of central Laos )
- Kobayashi Toshio ( Hiroshima University, Professor, Health and medical operation in the rural area of central Laos )
- Saito Haruo ( RIHN, Project Research Fellow, Mushroom culture and resource use in rural area of the Vientiane Plain )
- Sakagami Teiji ( Kyoto University, Post-graduate student, Epidemiology of adult disease in the rural area of central Laos )
- Sakurai Katsutoshi ( Kochi University, Professor, Soil informatics in the paddy field of northern Laos )
- Sasaki Satoshi ( National Institute of Health, Program Leader of nutritional epidemiology, Nutritional ecology in the rural area of central Laos )
- Sasaki Komei ( National Museum of Ethnology, Professor Emeritus, Academic adviser for Sho-yo-jurin Bunka (Broad-leaved forest culture) )
- Sato Yo-ichiro ( RIHN, Professor, Genetics of glutinous rice in northern Laos )
- Shimizu Ikuro ( Daido University of Industry, Associate Professor, Village history and housing culture in northern Laos )
- Shimizu Toru ( Nihon University, Part-time Lecturer, Study of stone inscription in rural areas of Yunnan, China )
- Shirakawa Kazuo ( Kobe University, Assistant Professor, Epidemiology in rural areas of central Laos )
- Suzuki Kentaro ( Kyoto University, Post-graduate student, Epidemiology of adult disease in the rural area of central Laos )

- Suyama Naruhiko (Nanzan University, Anthropology Museum, Temporary Officer, Analysis of research materials of a Research Expedition of the History and Culture in Northwestern Thailand )
- Seko Maki (Gifu University, Post-graduate student, Growth of rice in the paddy fields and its relation to forest in the Vientiane Plain )
- Takai Yasuhiro (Otani University, Professor, Culture and socio-economic change associated with cattle and buffalo in northern Laos )
- Takasaka Koichi (Kyorin University, Professor, Population dynamics in rural areas of central Laos )
- Taki Chiharu (National Museum of Ethnology, Visiting Researcher, Analysis of documents of French Indo-China Government )
- Taguchi Rie (Tokai University, Associate Professor, Use of bamboo in urban suburbs in Laos )
- Takei Hideo (Chiba University, Professor, Academic adviser to medical anthropological study )
- Takeda Sinya (Kyoto University, ASAFAS, Associate Professor, Ecology of non-timber forest products and slash-and-burn agriculture )
- Takenaka Chisato (Nagoya University, Professor, Chemical analysis of underground water and soil in the Vientiane Plain )
- Tateishi Kenji (Kokugakuin University, Part-time Researcher, Study of stone inscription in rural areas of Yunnan, China )
- Tanaka Koji (Kyoto University, center for Area Study, Professor, Academic adviser to the study of tropical agriculture )
- Tomita Shinsuke (University of Tokyo, Special Assistant Professor, Population fluctuation and exploitation of paddy fields in northern Laos )
- Tomooka Norihiko (Institute of Agricultural and Biological Resources, Senior Researcher, Genetics of rice bean in tropical Monsoon region )
- Tomokaw Sachi (Hiroshima University, Post-graduate student, Fish eating culture in rural areas of central Laos )
- Nakai Shinsuke (Graduate School of Advanced Study, Post-graduate student, Pig breeding by the Hmong in northern Thailand )
- Nakazawa Shusuke (Nagasaki University, Institute of Tropical Medicine, Assistant Professor, Epidemiology of infectious disease in rural areas of Laos )
- Nakazawa Minato (Gunma University, Associate Professor, Bodily measurement of inhabitants in rural areas of central Laos )
- Nakata Tomoko (Nanzan University, Research Institute of Anthropology, Part-time Researcher, Ethnic relations and subsistence complex in southern Laos )
- Nagatani Chiyoko (RIHN, Project Research Fellow, A compilation of eco-chronicle of the "Yunnan Gazette" )
- Nakanishi Mami (Kyoto University, Assistant Professor, Vegetational change in the slash-and-burn alluvial fields in northern Laos )
- Nakanishi Masami (RIHN, Professor Emeritus, Academic adviser to ecological study )
- Natsuhara Kazumi (Fukuoka Prefectural University, Associate Professor, Nutritional ecology in agricultural societies in central Laos )
- Nawata Eiji (Kyoto University, Professor, Plant use and its diversity in home gardens in central and southern Laos )
- Nishikawa Kazutaka (Chuo University, Post-graduate student, Study of stone inscription in agricultural villages in Yunnan, China )
- Nishimura Yuichiro (Aichi University of Industry, Post-doctoral Researcher, GIS analysis of daily activity in the Vientiane Plain, Laos )
- Nishimoto Futoshi (RIHN, Part-time Researcher, A compilation of database of the eco-history project )
- Nomoto Kei (Gakushuin University, Post-graduate student, A compilation of database of the eco-history project )
- Ogihara Jun (Miyagi University, Lecturer, Child growth in agricultural societies in central Laos )
- Hashimura Osamu (RIHN, Project Research Fellow, Freshwater fishery and fishing gears in central

- and southern Laos )
- Hyakumura Kimihiko ( Institute for Global EnvironmentalStrategiess, Researcher, Forest resource management in central Laos )
- Hirota Isamu ( Kyoto University, Post-graduate student, Vegetation change in slash-and-burn fallow land innorthern Laos )
- Fukuda Megumi ( Otani University, Assistant Professor, Livestock in northern Laos )
- Fujita Yuko ( Lake Biwa Museum, Special Researcher, Water algae in the paddy fields in northern Laos )
- Hotta Mitsuru ( Kagoshima University, Professor Emeritus, Academic advise to the studies of ethno-botany )
- Masuda Atsuyuki ( Tokai University, Post-graduate student, Study of stone inscription in agricultural villages inYunnan, China )
- Masuno Takashi ( Graduate Schoool of advanced Study, Post-graduate student, Pig husbandry by the Yao in northern Thailand )
- Matsura Miko ( Kyoto University, Post-graduate student, Change in the subsistence life strategy in northern Laos )
- Matsuda Akira ( Kyoto University, Post-graduate student, Water algae in the paddy fields in northern Laos )
- Mtsubayashi Kozo ( Kyoto University, Professor, Medicine of the elderly in agricultural societies in central Laos )
- Matsumura Yasuhiro ( National Institute of Health and Nutrition, Project leader of the information on health and nutrition, Nutritional epistemology in agricultural societies in central Laos )
- Mato Toru ( Kyoto Univeersity, Professor, Environmental impacts by slash-and-burn agriculture in northern laos )
- Midorikawa Hiroshi ( Suzuka University of Medical Science, Associate Professor, Water-borne diseases in central and southern Laos )
- Miyagawa Shuichi ( Gifu University, Professor, Analysis of paddy rice yields in the Vientiane Plain )
- Miyawaki Chie ( National Museum of Ethnology, Post-graduate student, A compilatiobn of the eco-chronicle of “Yunnan Gazette” )
- Muto Chiaki ( Gifu University, Post-graduate student, Genetics of glutious rice in northern Laos )
- Murayama Nobuko ( Niigata University of Health and Welfare, Professor, Nutritional ecology in agricultural societies in centralLaos )
- Mori Seiichi ( Gifu University of Economics, Professor, Fish ecology in rural areas in the Vientiane Plain )
- Yamauchi Taro ( Hokkaido University, Associate Professor, Human ecology in agricultural societies in central Laos )
- Yamazaki Go ( Nanzan University, Anthropology Museum, Temporary Officer, Analysis of research matgerials of a Research Expeditionof the History and Culture in Northwestrn Thailand )
- Yamada Isamu ( Ritsumeikan Asia Pacific University, Visiting Professor, Academic adviser to the eology of tropical rain forest )
- Yokoyama Satoshi ( Kumamoto University, Associate Professor, Space perception and plant use in northern Laos )
- Yosida Hirohiko ( Tennri University, Sankokan Museum, Chief Researcher, History of non@governmental exchange between Laos and Japan )
- Yoshino Akira ( Tokyo Gagugei University, Professor, Social anthropology regarding upland rice cultuvationof the Yao )
- Li Kei Gyo ( Takasaki University of Economics, Post-graduate student, Child growth in agricultural societies in central laos )
- Wakana Isamu ( Akan Cho lOffice, Vice Head of the Section, Use of edible freshwater algae in northern Laos )
- Wada Taiji ( Kyoto University, Post-graduate student, Plant use in home gardens in central

	Laos )
Anoulom Vilayphon	( Kyoto University, Post-graduate student, Ecology of non-timber forest products and slash-and-burn agriculture in northern Laos )
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Souraxay Phommala	( National Institute of Public Health, Ministry of Health, Lao, Deputy Director, Public health operation in agricultural societies in central Laos )
Khampheng Phonglusa	( Department of Health, Savannakhet Province, Public health operation in agricultural societies in central Laos )
Panom Phongmany	( Station for Malariology, paracitology and entomology of the Savannakhet Province, Deputy Director, Public health operation in agricultural societies in central Laos )
Tiengkham Pongvongsa	( Station for Malariology, paracitology and entomology of the Savannakhet Province, Director, Public health operation in agricultural societies in central Laos )
Sisaveuy	( Department of Health, Son Khon Province, Director, Public health operation in agricultural societies in central Laos )
Yos Santasombat	( Chiang Mai University, Professor, Change in resource use of mountain people in northern Thailand )

### ■ Research Plan

1. Initially, we planned to use "Yunnan Daily" a news paper published in Kunming, Yunnan Province, China as a material to compile database of the Eco-chronicle. However, we found it unfitted as the volumes are so large that we cannot have enough time and budget. In stead, we decided to use summarized chronicle (*Dashi-ji*) in "the County Gazette". We have purchased 126 sets of County Gazette in Yunnan Province and to translate into Japanese.

2. We first planned to have the international workshop in 2007 in Bangkok. But, we have changed the place to Udom Xai, northern Laos so as to present our research outcomes in the field sites. Also, instead of Bangkok meeting, we have conducted the international workshops in Kunming three times.

3. Our initial plan to study in the tributaries of the Mekong River in northern Thailand was changed and we combined research in Thailand with the Vientiane Plain in Laos together, and added the research in southern part of Laos.

### ■ Problems for implementation or points need to change plan

Our project was completed in 2007. Major research outcomes are described below.

#### Changes and Eco-historical Process

##### 1) Environmental deterioration and conservation and policy changes:

The subsistence complex typically found in monsoon Asia region such as paddy cultivation, swidden agriculture, freshwater fishing, hunting, gathering has greatly been transformed during the past few decades. The process of the transformation has been verified through intensive field researches in several villages. In particular, the reforms in political regimes (revolution of China, migration policy, the Great Leap Forward, the second Indo-China War, the new economic policy, the privatization policy, and the forest conservation policy) have had significant impacts on environments. Various kinds of factors, external and internal, are associated with the eco-historical transformation in the region. We have shown these associations as fifty five flow charts, shown in the illustrated catalogue. Each set of flow chart is expected to be combined together for further integrative figures.

##### 2) Transformation in nutrition and health:

We have clarified the transformation processes that have been indicated in nutrition, health and



population dimensions from intensive human ecological studies. For instance, high incidence of diabetes was detected even among rural inhabitants in Laos. This may be associated with rapid change in food consumption among villagers due to the introduction of high yield rice and the irrigation system.

**3) The analysis of stone inscriptions in Yunnan during the 18th and 19th centuries:**

From the examination, it was clarified that community-based conservation laws were established to avoid environmental hazards. In other words, environmental deterioration had already proceeded even during the 18th and 19th centuries in southwestern China.

**4) A new conservation regime for fish resources:**

Despite the introduction of fish conservation zone policy since the early 1990s, it was revealed only partly effective as local inhabitants could not find it satisfactory both for fish populations and local demand of fish. In stead, community-based ideas have been newly adopted to compensate the top-down policy.

**5) Transformation in daily life in mountain areas in northern Thailand:**

In northern Thailand, inter-ethnic relations among Yao, Mraburi, and Mon ethnic minorities were scrutinized in line with the recent changes of cash cropping and modernization.

**6) Urbanization and changes in daily life in the Vientiane Plain:**

From intensive studies in local communities of Vientiane Plains, impacts of urbanization and changes in resource use have been clarified that extend to time allocation, daily activities, and food consumption pattern of the people.

**7) Eco-historical Linkage:**

Some 80 items or proxies were chosen to analyse historical consequences, transoformation and interactions involved among the environment, local communities, states, and external world. The changes are shown as linkage flow charts in which major drivers and cuase-and-effects are visualized. By combining each flow chart, we are able to overview the eco-historical consequences in the region as a whole. Although complex at a glance, it is much easier for us to elicit relevant factors, drivers of the changes in each item. Particularly, states policies in China, Thailand and Laos have directly and indirectly affected not only people's way of life, physical aspects but also the sourrounding environments. Yet, it has been confirmed that local food tradition such as raw fish consumptiand preference to glutinous rice is likely to persist despite of socio-economic changes.on eating This approach is expected to be applied in other area, region and themes.

**Exhibition and Database**

1. Between Oct. 17th, 2007 and Jan. 9th, 2008, we have opened a Special Exhibition entitled "Khao nyew Glutinous Rice, People and Life in Laos" at Tenri Sanko-kan, Nara. In the exhibition, we have displaed artifacts and photographs collected by the Japanese anthropologists during the past few decades and by our collegues. During the opening, there were some 5,000 visitors.
2. Yunnan Eco-chronicle has been compiled, based on the description of the major events in each "County Gazette" of the 126 cases in southern and western parts of Yunnan Province. The Chinese texts were translated into Japanese and served as sources for the database after proof reading.
3. Database as to the material cultures and photographs collected in Thailand and Laos during the past 60 yearts are invented in which information about each collection and photographs are integrated in the database IDOM (Integrated Database on Mekong Basin).
4. Meta data on the documents, books and papers that the Eco-history project has stored so far were compiled as the database.

**Future Themese**

After completing the research project, we have continued the research activity to expand the eco-history oriented research more in details and further an elaborated way. For this purpose, we have organized the research group, "the Eco-history", heade by Satoshi Yokoyama (Nagoya University) and Kazuhiko Moji (RIHN). So far we have had the seminars three times, and have intention.

## Books

### 【Authored/Co-authored】

- Akimichi, Kawano, Kida, Kubo, Kosaka, Kojima, Satoh, Shimizu, Taguchi, Tastumi, Thongvanh, Natsuhara, Nishimoto, Hashimura, Mutoh, Murayama & Yoshida 2007 “Khao Neaw” Glutinous Rice, People and Life in Laos, Catalogue of “56th Exhibition “Khao Neaw” Glutinous Rice, People and Life in Laos.. Tenri University Sankokan Museum (in Mongolian)
- Chiyoko Nagatani 2007 *Politics of Culture and Poetics of Life: on the Everyday-life Practice of the Dehong Dai in Yunnan, China..* Fukyo-sha. (in Japanese)
- Nonaka, Kenichi and Nozomi Yanahara 2007 *The Use of Geographical Illustration in Representing the Relationship between People and the Environment.* Cambridge Scholars Press.
- Saito, H., A. Ikeguchi, and K. Nonaka 2007 *The biodiversity of vegetables in Vientiane..* National Agriculture and Forestry Research Institute (NAFRI) & Research Institute for Humanity and Nature (RIHN)
- Nonaka, Kenichi Aug, 2007 *Mushihamu Hitobito no Kurashi.* NHK Books, Tokyo, Jqapan, 219pp. (in Japanese)

### 【Chapters/Sections】

- Katsumata, Makoto, Norihiko Tomooka, Kenji Irie, Yuzo Kobayashi 2007 From production to distribution of pulses in West Africa. *Tropical Agriculture Handbook . Tropical Agriculture Handbook* , No.33. Japan Association for International Collaboration of Agriculture and Forestry..
- Kawano, K 2007 Cultural History of Bamboo in Southern Kyushu and Southeast Asia.. *Exhibition Catalogue: Southern Kyushu in Yayoi Period.* Osaka Prefectural Museum of Yayoi Culture, Osaka. (in Japanese)
- Kawano, K. 2007 MI: Bamboo-made grain winnower in Japanese Archipelago. Reimeikan Exhibition Catalogue: Cultural History of Wood and Bamboo. Reimeikan, Kagoshima. (in Japanese)
- Katsumata, Makoto, Norihiko Tomooka, Kenji Irie, Yuzo Kobayashi 2007 From production to distribution of pulses in West Africa. *Tropical Agriculture Series. Tropical Agriculture Handbook* . .
- Donovan, Deanna, Wil de Jong, Ken-ichi Abe 2007 Tropical Forests and Extreme Conflict. *Extreme Conflict and Tropical Forests.* World Forests Volume, V. Springer, The Netherland, pp.1-16.
- Abe Ken-ichi 2007 Resources Management in Tropical Forests. In Uchibori Motomitsu, Sugawara Kazutaka and Intoh Michiko (ed.) *Anthropology of Resources: Textbook for the Open University of Japan.* The Open University of Japan, pp.162-175. (in Japanese)
- Abe Ken-ichi and Uchibori Motomitsu 2007 Environment and Resources. In Uchibori Motomitsu, Sugawara Kazutaka and Intoh Michiko (ed.) *Anthropology of Resources: Textbook for the Open University of Japan, .* The Open University of Japan, pp.176-190. (in Japanese)

## Editing

### 【Editing / Co-editing】

- Hidaka, Toshitaka and Akimichi Tomoya (ed.) 2007 *Who can claim the Ownership of the Forest: The Future of Forest and People in Asia.* Chikyuken Soshu. Showado, Sakyoku, Kyoto, 186pp. (in Japanese)
- Schyvens, Henry, Hyakumura Kimihiko and Seki Yoshiki (ed.) 2007 *Decentralisation and State-Sponsored Community Forestry in Asia.* nstitute for Global Environmental Strategies, Tsukuba, Japan,
- Okamoto, Kohei et al. (ed.) 2007 *The Handicapped and Urban Space - Dialogue between Geography and Research Projects Psychology, .* Kokon-Shoin, (in Japanese)
- Jong, Wil de, Deanna Donovan, and Ken-ichi Abe (ed.) 2007 *Extreme Conflict and Tropical Forests.* World Forests Volume, V. Springer, The Netherland,
- Bouahom, B., Kono, Y. and Nonaka, K. (ed.) 2007 *Thammasat, Manut lae Saphapweadlon (Nature, Humand and Environment).* National Agriculture and Forestry Research Institute, Vientiane,

- Akimichi, Tomoya (ed.) 2007 *Water and World Heritage-Thinking Landscape, Environment and Life*. Shogakukan, (in Japanese)

## Papers

### 【Original Articles】

- Pagamas P. and E. Nawata 2007 Effect of high temperature during the seed development on quality and chemical compositions in chili pepper seed.. *Japan. J. Trop. Agric.* 51 :22-29.
- Okamoto, T., A. Kawakita, and M. Kato 2007 Interspecific variation of floral scent composition in Glochidion and its association with host-specific pollinating seed parasite (Epicephala).. *Journal of Chemical Ecology* 33 :1065-1081.
- Odermatt P, S. Habe, D. Tran, V. Duong, W. Zwang, K. Phommathet, S. Nakamura, H. Barennes, M. Strobel and G Dreyfuss 2007 Pragonimiasis and its intermediate hosts in a transmission focus in Lao PDR.. *Acta Tropica* 103 :108-115.
- Nishikawa, Kazutaka 2007 The Circumstances Surrounding the Erection of a Stone Inscription Concerning Prohibitions against Felling Trees in Yuanyang County, Honghe Prefecture, Yunnan Province. *Journal of the Institute of Cultural Science, Chuo Universtiy* 61 :101-129. (in Japanese)
- Narong Koonkhunthod, Katsutoshi SAKURAI, and Sota TANAKA, 2007 Composition and Diversity of Woody Regeneration in a 37-year-old Teak (*Tectona grandis* L.) Plantation in Northern Thailand. *Forest Ecology and Management* 247 :246-254.
- Nakazawa, T., N. Ishida, N. Kato and N. Yamamura 2007 Larger body size with higher predation rate. *Ecology of Freshwater Fish* 16 :362-372.
- Kuroda, Y., Y. Sato, Bounphanousay C., Y., Kono, and K. Tanaka 2007 Genetic Structure of Three *Oryza* AA Genome Species (*O. rufipogon*, *O. nivara* and *O. sativa*) as Assessed by SSR Analysis on the Vientiane Plain of Laos.. *Conserv. Genet.* 8 :149-158.
- Kotera, A. and E. Nawata 2007 Role of plant height in the submergence tolerance of rice: A simulation analysis using an empirical model.. *Agric. Water Manage.* 89 :49-58.
- Chen, Z., He, M., Sakurai, K., Kang, Y., and Iwasaki, K. 2007 Concentrations and chemical forms of heavy metals in urban soils of Shanghai, China. *Soil Sci. Plant Nutr.* 53(4) :517-529.
- Yokoyama, S. 2007 Formation of a Rural Backpacker Enclave in a Developing Country: Case Study of Vang Vieng, Laos.. *Geographical Review of Japan* 80 :591-613. (in Japanese)
- Yamamoto, S., Misumi M and E. Nawata 2007 Effects of various photoperiods on flowering. *Capsicum frutescens* and *C. annuum*. *Envir. Cont. Biol.* 45 :133-142.
- Ultra V. U. Y., Tanaka, S., Sakurai, K., and Iwasaki, K., 2007 Arbuscular mycorrhizal fungus (*Glomus aggregatum*) influences biotransformation of arsenic in the rhizosphere of sunflower (*Helianthus annuus* L.). *Soil Sci. Plant Nutr.* 53(4) :499-508.
- Tanaka, S., Wasli, M.E.B., Kotegawa, T., Seman, L., Sagang, J., Kendawang, J.J., Sakurai, K., and Morooka, Y. 2007 Soil properties of secondary forests under shifting cultivation by the Iban of Sarawak, Malaysia in relation to vegetation condition. *Tropics*, 16(4) :385-398.
- Tanaka, S., Wawli, M.E.B., Seman, L., Jee, A., Kendawang, J.J., Sakurai, K., and Morooka, Y. 2007 ecological study on site selection for shifting cultivation by the Iban of Sarawak, Malaysia. A case study in the Mujong River area.. *Tropics*, 16(4) :357-371.
- Tanaka, Kenzo, Tomoaki Ichie, Tomoko Ozawa, Seiichi Kashimura, Daisuke Hattori, Kazuo O. Irino, Joseph Jawa Kendawang, Katsutoshi Sakurai and Ikuo Ninomiya 2007 leaf physiological and morphological responses of seven dipterocarp seedlings to degraded forest environments in Sarawak, Malaysia: A case study of forest rehabilitation practice. *Tropics* .
- Suphawatt Laohachaiboon and Shinya Takeda, 2007 Teak logging in a trans-boundary watershed: A historical case study of the Ing River basin in Northern Thailand. *The Journal of The Siam Society* 95

:123-141.

- Scheyvens Henry, Hyakumura Kimihiko and Seki Yoshiki 2007 Forest Governance in a State of Transition. Decentralisation and State-Sponsored Community Forestry in Asia,. Institute for Global Environmental Strategies, pp.1-31.
- Sasaki, A., S. Takeda, M. Kanzaki, S. Ohta, and P. Preechapanya 2007 Population dynamics and land-use changes in a miang (chewing tea) village, Northern Thailand.. *Tropics* 16(2) :75-82.
- Kaneshige, Tsutomu 2007 Fengshui Judgment on Village Landform: A Case Study on Village Fengshui of Dong People, Southwest China. *Bulletin of Shiga University of Medical Science (General Education)* 13 :19-44. (in Japanese) Shiga-University of Medical Science.
- Tanaka, Kenzo, D. Hattori, K. Sakurai, J.J. Kendawang, I. Ninomiya 2007 Effect of crown liberation to the growth and leaf photosynthetic traits on some dipterocarp seedlings in the logged over tropical rainforest, Sarawak, Malaysia.. *Kanto Shinrin Kenkyu* 58 :105-108. (in Japanese)
- Takenaka, C., R. Tomioka, K. Yoshida, and Y. Suzuki 2007 Chemical characteristics of well water in the Xaythani distinct.. *Nature, Human and Environment (The Lao Agriculture and Forestry Journal, Special Issue)* :12-17. Bounthong, B. et al. eds.
- Takeda, Shinya 2007 Subsistence Landscape in Arnachal Pradesh.. *Journal of the Himalaya* 8 :77-88. (in Japanese)
- Miyagawa, Shuichi, Maki Seko, Yoshinao Adachi, Kozo Kamiya, Sengdeane Sivilay, and Chisato Takenaka 2007 Relationships between Forest and Rice Growth in a Rain-fed Rice Growing Village of Vientiane Plain, Laos.. *Japanese Journal of Tropical Agriculture* 51(ex.1) :25-26. (in Japanese)
- Nakamura, Satoshi 2007 Schistosomiasis mekongi endemic in the Mekong watershed: Present situation of the schistosomiasis in Lao PDR. *Modern Media* 53 :217-227. (in Japanese)
- Nonaka, K. 2007 Resource-use dynamics and changes in the Vientiane Plain, Lao PDR.. *Nature, Human and Environment (The Lao Agriculture and Forestry Journal, Special Issue)*: :40-46. BOUNTHONG, B. et al. eds..
- Nonaka, K 2007 Humanity and Nature in Vientiane Plain, Lao PDR. *Nature, Human and Environment (The Lao Agriculture and Forestry Journal, Special Issue)* :1-2. BOUNTHONG, B. et al. eds.
- Kubo, Masatoshi 2007 A Framework of Developing Time-space Integrated Archives: Back and forth in micro-macro level, Cychronicle. Report of Study on Sharing System for Cultural Information Resources. pp.51-54. National Institute of Japanese Literature.
- Ochiai, Yukino 2007 Food culture based on swidden agriculture of hill peoples.. *Shizen to Bunka Soshite Kotoba* 3 :42-49. (in Japanese)
- Adachi, Yoshinao, Shuichi Miyagawa, and Sengdeane Sivilay 2007 Changes in Rice Production in a Rain-fed Rice Growing Village of Vientiane Plain, Laos and the Significance of Off-Season Cropping on Drained Paddy Fields. *Proceeding of the 17th Annual Meeting of the Japan Society of Tropical Ecology*: 74. (in Japanese)
- Yokoyama, S. and Ochiai Y. 2007 Plant uses and spatial cognition of mountain people in rural Laos.. *Proceedings of the General Meeting of the Association of Japanese Geographers*, 72 :147. (in Japanese)
- Yokoyama, S. 2007 Current Swidden agriculture in Southeast Asia. *Proceedings of the 10th anniversary symposium of Siiba Museum of Folk Performing Arts*, :35-38. (in Japanese)
- Kida, Ayumi 2007 On the Collection by St. Sophia University Research Expedition to Northwestern Thailand with Special Reference to the Research Objectives. *Bulletin of the Anthropological Museum of Nanzan University* 25 :55-72. (in Japanese)
- Iwasa, Mitsuhiro 2007 Bo pen nyang, Bo khit lai: "Life Posture" in Lowland Village of Laos. *The Health Care* 49 :328-332. (in Japanese)
- Iwasa, Mitsuhiro 2007 Medical Resources in Laos: For the Appropriate Understanding of Medical System

- in Laos. *Studies of Humanity and Social Sciences of Chiba University* 14 :44-61. (in Japanese)
- Ikeguchi, A., H. Saito, K. Nonaka, Y. Adachi, S. Sivily and Y. Nishimura 2007 Food plants and Animals in a marketplace in the Vientiane suburb, Lao PDR. *Nature, Human and Environment (The Lao Agriculture and Forestry Journal, Special Issue)* :47-57. Bounthong, B. et al. eds..
  - Ajisaka, Tetsuro 2007 Food Use of Waterweed in Central-South Laos. *Waterweeds* 56(1) :82. (in Japanese)
  - Adachi, Y., S. Miyagawa, S. Sivily and K. Nonaka 2007 Diversification in the villages of Xaythani district, Vientiane municipality of Lao PDR in terms of the Resources Utilization and Agricultural Production. *Nature, Human and Environment (The Lao Agriculture and Forestry Journal, Special Issue)* :19-38. Bounthong, B. et al. eds..
  - Ochiai, Yukino 2007 Decorating with plants: Coix seed beads for everyday life in mainland Southeast Asia. Takeshi Matsui (ed.) *Shizen no Shigenka*. Koubundo, pp.123-159. (in Japanese)
  - Tanaka, K., Yokoyama, S. and Phalakhone, K. 2007 Land Allocation Program and Stabilization of Swidden Agriculture in the Northern Mountain Region of Laos. *Shifting Agriculture in Asia: Implications for Environmental Conservation and Sustainable Livelihood*. Bishen Singh Mahendra Pal Singh, .
  - Takeda, Shinya 2007 Land Allocation Program in Lao PDR: The Impacts on Non-Timber Forest Products (NTFPs) and Livelihoods in Marginal Mountainous Area. *Local Knowledge and Its Potential Role for Sustainable Agro-Based Development in Lao PDR*. Center for Southeast Asian Studies Research Report Series, 113. Kyoto, pp.93-99.
  - Ochiai, Yukino 2007 Shifting agriculture and millet cultivation in southern Chin State, Myanmar. K. G. Saxena. L. Liang and K. Rekasem (ed.) *Shifting Agriculture in Asia: Implications for Environmental Conservation and Sustainable Livelihood*. Bishen Singh Mahendra Pal Singh,
  - Kobayashi, C., Y. Fukasawa, D. Hirose and M. Kato 2007 Contribution of symbiotic mycorrhizal fungi to larval nutrition of a leaf-rolling weevil. *Evolutionary Ecology* DOI 10.1007/s 10682-007-9196-2.
  - Kobayashi, C. and M. Kato 2007 Effects of leaf quality and microhabitat on the survival of a leaf-rolling weevil (Attelabidae). *Ecological Research* 22 :150-155.
  - Kendawang, JJ, Ninomiya, I., Tanaka, K., Ozawa, T., Hattori, D., Tanaka, S., and Sakurai, K. 2007 Effects of burning strength in shifting cultivation on early stage of secondary succession in Sarawak, Malaysia. *Tropics*, 16(4) :309-321.
  - Kato, M. and K. Ohsuga 2007 A new tellinoidean bivalve in seagrass beds in the Ryukyu Archipelago. *Venus* 65 :291-297.
  - Kameda, Y., A. Kawakita and M. Kato 2007 Cryptic genetic divergence and associated morphological differentiation in the arboreal land snail *Satsuma (Luchuhadra) largillierti* (Camaenidae) endemic to the Ryukyu Archipelago, Japan. *Molecular Phylogenetics and Evolution* 45 :519-533.
  - Jaruntorn Boonyanuphap, Katsutoshi Sakurai, Sota Tanaka 2007 Soil nutrient status under upland farming practice in the Lower Northern Thailand. *Tropics* 16(3) :215-231.
  - Goto, R. and M. Kato 2007 Obligate commensalism of *Curvemysella paula* (Bivaldia, Galeommatidae) with hermit crabs. *Marine Biology* 151 :1615-1622.
  - Funakawa, S., T. Minami, Y. Hayashi, S. Naruebal, C. Noichana, T. Panitkasate, R. Katawatin, T. Kosaki and E. Nawata 2007 Process of runoff generation in different cultivated slopes in Northern and Northeast Thailand. *J. Trop. Agric.* 51 :12-21.
  - Isemura, T., A. Kaga, S. Konishi, T. Ando, N. Tomooka, O. Han and D. A. Vaughan Oct, 2007 Genome dissection of traits related to domestication in azuki bean (*Vigna angularis*) and their comparison with other warm weather legumes. *Annals of Botany*. 100 :1053-1071.

## Research Presentations

### 【Oral Presentation】

- Duncan A. Vaughan, Norihiko Tomooka, Akito Kaga, S. Yamanaka, Rosa Kambuou, Janet Poafa, T. Isemura and Y. Kuroda, The framework and results of genetic resources collaboration with Papua New Guinea. Annual Congress of the Japanese Society for Tropical Agriculture, Mar 31,2007–Apr 01,2007, Tokyo University of Agriculture, Tokyo.
- Norihiko Tomooka, Kenji Irie, Yuzo Kobayashi A survey of leguminous crops cultivation in Republic of Benin, West Africa. Annual Congress of the Japanese Society for Tropical Agriculture,, Mar 31,2007–Apr 01,2007, Tokyo University of Agriculture, Tokyo..
- Norihiko Tomooka, Souvan Thadavong, Phoumi Inthapanya, D. A . Vaughan, Akito Kaga, Takehisa Isemura, Yosuke Kuroda, A survey of legume genetic resources in Lao PDR.. Annual Congress of the Japanese Society for Tropical Agriculture,, Mar 31,2007–Apr 01,2007, Tokyo University of Agriculture, Tokyo..
- Norihiko Tomooka, AkitoKaga, Bubpa Chaitieng, Peerasak Srinives, Prakrit Somta, Anat Watanasit, D.A. Vaughan, Takehisa Isemura, Yosuke Kuroda, Growth analysis of a Multiple Organ Gigantism (MOG) mutant of black gram (*Vigna mungo*) cultivar (BC48).. Annual Congress of the Japanese Society for Tropical Agriculture,, Mar 31,2007–Apr 01,2007, Tokyo University of Agriculture, Tokyo..
- Piyanath Pagamas and Eiji Nawata Sensitivity of Shishito pepper (*Capsicum annum* L.) to high temperature stress at fruit and seed development. Japanese Society for Tropical Agriculture,, Apr 01,2007, Tokyo University of Agriculture, Tokyo..
- Ono R. and E. Nawata Status of self-sufficient crops in villages of Karen, an ethnic minority in Northern Thailand. Japanese Society for Tropical Agriculture, Apr 01,2007, Tokyo University of Agriculture, Tokyo..
- Wada, Y. and E. Nawata Differences of home garden between villages –A case study of middle southern Laos-. Japanese Society for Tropical Agriculture,, Apr 01,2007, Tokyo University of Agriculture, Tokyo..
- Tomoko Nakata Socioeconomic change in the villages situated along Route 23, Southern Laos. The Second International Conference on Lao Studies., May 05,2007, Arizona State University.
- Kongsap Akkhavong, Satoshi Nakamura, Hajime Matsuda, Masashi Kirinoki, Jun Matsumoto, Shigehisa Habe, Viroj Kitikoon, Toru Watanabe, Naoko Nihei, Kotoko Suzuki, and Boungnong Boupcha Evaluation of control of schistosomiasis mekongi in Lao PDR. 5th European Congress on Tropical Medicine and International Health,, May 24,2007–May 28,2007, Amsterdam RAI, Amsterdam, Netherland.
- Kashinaga Masao Les outils de la pensée : étude comparative des «textes» et de leurs fonctions sociales. Les usages des chroniques dans les funérailles aux villages taï -noirs, Viet-nam, Table Ronde, co-organisée par le Musée National d’Ethnologie et la Maison des Sciences de l’ Homme, May 29,2007, Maison des Sciences de l’ Homme, Paris. (in French)
- Tsutomu Kaneshige Fengshui Judgment on Village Landform: A Case Study on Village Fengshui of Dong People, Southwest China. the 41st meeting of the Japanese Society of Cultural Anthropology., Jun 02,2007, Nagoya University.
- Nagatani Chiyoko, The Dynamics of the Formation of Cultural Genres: on Tourism and ‘Religious Culture’ in Dehong, Yunnan province. the 41st meeting of the Japanese Society of Cultural Anthropology, Jun 02,2007, Nagoya University.
- Mitsuhiro Iwasa Anthropological Turn in Bioethics, Bioethical Turn in Medical Anthropology: Case Study of the dying process in lowland village of Laos” . Japanese Society of Cultural Anthropology, The 41st Annual Meeting,, Jun 02,2007, Nagoya University,.
- Ochiai Yukino and Yuuka Sato Traveling Museum activity in Laos. Annual meeting of the Japan University Museum Society, Jun 08,2007, Kyusyu Univ., Fukuoka.
- Ochiai Yukino Ensete glaucum, Musaceae, for everyday life in the periphery of Burma. Annual meeting of the Japan Society of Tropical Ecology, Jun 16,2007, Kochi Univ., Kochi..

- Narong Koonkhunthod, Katsutoshi Sakurai and Sota Tanaka Composition and diversity of woody regeneration in 37-year-old teak (*Tectona grandis* L.) Plantation in Northern Thailand. Annual Congress of the Japan Society of Tropical Ecology, Jun 16,2007–Jun 17,2007, Kochi University, Kochi..
- Ram Krishna Shrestha, Katsutoshi Sakurai and Sota Tanaka Organic matter based farming practices and their effect on soil fertility of upland soils in Midhills of Nepal: A case study of Kavrepalanchok, Nepal. Annual Congress of the Japan Society of Tropical Ecology, Jun 16,2007–Jun 17,2007, Kochi University, Kochi..
- C.N. Kien, K. Sakurai, Y. Kang, S. Tanaka, and K. Iwasaki, Distribution of metals and metalloids in soils around tin and tungsten Mines in Vietnam. Annual Congress of the Japan Society of Tropical Ecology,, Jun 16,2007–Jun 17,2007, Kochi University, Kochi..
- T. Kotegawa, S. Tomita, Y. Kono, S. Tanaka, and K. Sakurai Selection of the rice variety in the paddy field at the mountainous region of Northern Laos. Case study of a village at Namo District, Udomxay. Annual Congress of the Japan Society of Tropical Ecology, Jun 16,2007–Jun 17,2007, Kochi University, Kochi..
- I. Ninomiya, R. Furutani, K. Tanaka, D. Hattori, S. Tanaka, and K. Sakurai Biomass of secondary forest at Sarawak, Malaysia. (II) Allometry equation for four forest types.. Annual Congress of the Japan Society of Tropical Ecology, Jun 16,2007–Jun 17,2007, Kochi University, Kochi..
- Yukino Ochiai, Yuuka Sato, Mariko Ue and Testu Kubota Traveling Museum activity in Laos for sharing research results. Joint research meeting, Jun 21,2007, Center for Integrated Area Studies, Kyoto University.
- Sachi Tomokawa Preliminary research for identify the risk factors related children' s *Opisthorchis viverrini* infection in rural southern Lao: Eating habit of risk- fish of *Opisthorchis viverrini* infection in family and eating raw fish in children.. 39th Association of School Health in Chugoku-Shikoku,, Jun 24,2007, Hiroshima University, Hiroshima.
- Sachi Tomokawa Health education that extends from Hiroshima to the world : Children' s physical and intellectual ability in Africa and Asia: Power for me to survive there. 39th Association of School Health in Chugoku-Shikoku, Jun 24,2007, Hiroshima University, Hiroshima.
- Hashimura Osamu River fishery in Tropical Monsoon. the 3rd meeting in Kansai of the ecoculture-study, Jul 01,2007, Kinki University.
- Mizuki Ikehara, Hiromichi Yamaguchi, Takahito Yamamoto, Satoshi Nakamura, Masanori Kawanaka, Yasuo Ono A case report on paragonimiasis which was found by chest pain patient of Laos. 178th Kanto branch meeting of Japanese Respiratory Society, , Jul 21,2007, Keio Plaza Hotel, Tokyo.
- Yukino Ochiai and Satoshi Yokoyama Plant uses mapping in villages of northern Laos: An ecological approach to allocation and process. International workshop on sustainable land management network in the mountainous region of mainland Southeast Asia., Aug 11,2007, Shinyua Hotel, Yunnan Province, China.
- Yukino Ochiai Community challenge to conservation and commercialization: A case study of *Aobana* (*Commelina communis* var. *hortensis*) in Kusatsu City, Japan. International forum on protecting intellectual property rights of traditional knowledge and sustainable development., Aug 12,2007, Kunming Institute of Botany, Yunnan Province, China.
- V.U. Ultra, A. Nakayama, S. Tanaka, Y. Kang, K. Sakurai, K. Iwasaki Influence of amorphous iron hydroxide amendments on soil microbial community in the rhizosphere of rice irrigated with arsenic contaminated water. Annual Congress of the Japanese Society of Soil Science and Plant Nutrition,, Aug 22,2007–Aug 24,2007, Tokyo University of Agriculture, Tokyo..
- T. Kotegawa, S. Tomita, Y. Kono, S. Tanaka, and K. Sakurai Analytical pedology on the selection of the rice variety in the paddy field by the local people. Case study of a village at Namo District, Udomxay, Laos.. Annual Congress of the Japanese Society of Soil Science and Plant Nutrition,, Aug

22, 2007–Aug 24, 2007, Tokyo University of Agriculture, Tokyo..

- S. Tachibe, S. Tanaka, Joseph Jawa Kendawang, Logie Seman, Jonathan Lat, and K. Sakurai Evaluation on soil fertility of the hill agriculture in Sarawak, Malaysia. (Part 1) Secondary forest, rubber plantation, pepper plantation. Annual Congress of the Japanese Society of Soil Science and Plant Nutrition,, Aug 22, 2007–Aug 24, 2007, , Tokyo University of Agriculture, Tokyo..
- Maki Seko The Influence of Trees on the Growth and Completion of Rice Crops in Rain-fed Paddy Fields in Laos. 138th Lecture Meeting of the Tokai Branch of Crop Science Society of Japan, Sep 06, 2007, Shizuoka Convention & Arts Center, Shizuoka City.
- Satoshi Nakamura, Yutaka Midorikawa, Kaoru Midorikawa, Bounpheng Sonsangsack, Trykhouane Phoutavane, Kampheng Chomlasak, Toru Watanabe, Nanthasane Vannavong, Shigehisa Habe, Yasuyuki Kosaka, Kongsap Akkhavong, Michel Strobel, Bounnong Boupha, Water, livelihood and health at a resettlement village in Lao PDR. A case study of Attoupeu Province. 14th International Symposium on Health-Related Water Microbiology, Sep 09, 2007–Sep 15, 2007, The University of Tokyo, Tokyo .
- Satoshi Yokoyama Current Swidden agriculture in Southeast Asia.. 10th anniversary symposium of Siiba Museum of Folk Performing Arts., Sep 22, 2007, Siiba Development Center, Siiba, Miyazaki, Japan.
- Chiaki Muto Genetic diversity of upland black rice landrace "Gohiyan" in Northern Laos, using mPing marker. The 112th annual meeting of Japanese Society of Breeding, Sep 22, 2007, Yamagata University, Tsuruoka-city..
- Takehisa Isemura, Akito Kaga, Norihiko Tomooka, D.A. Vaughan, QTL analysis for domestication related traits in rice bean (*Vigna umbellata*). Annual Congress of the Japanese Society of Breeding, Sep 22, 2007–Sep 23, 2007, Yamagata University, Tsuruoka..
- Yutaka Midorikawa, Kaoru Midorikawa, Satoshi Nakamura, Bounkong Syhavong, Seng-Khygnavong Vikham, Chantharavady Chounlamany, Rattanaphone Phetsouvanh, Sayamong Kohoun, Valy Keoluangkhot Kongsap Akkhavong Alzheimer' s disease, life style related disease and infectious disease research in Lao PDR. National Health Research Forum to Promote the Health Research Systems Strengthening in Lao PDR., Sep 24, 2007–Sep 26, 2007, Don Chan Palace Hotel, Vientiane, Lao PDR..
- Kiyohito Okumiya, Masashi Kirinoki, Yuichi Chigusa, Shigehisa Habe, Naoko Nihei, Miki Miyoshi, Kotoko Suzuki, Kongsap Akkhavong, Michel Strobel, Bounnong Boupha, and Satoshi Nakamura Is paragonimiasis still infested in Savannakhet? -A case study of Sonkong district-. National Health Research Forum to Promote the Health Research Systems Strengthening in Lao PDR., Sep 24, 2007–Sep 27, 2007, Don Chan Palace Hotel, Vientiane, Lao PDR..
- Sachi Tomokawa Identification of risk factors related *Opisthorchis viverrini* infection of primary school children in rural southern Lao PDR: Frequency of eating high risk fish and preference of cooking methods. National Health Research Forum to Promote the Health Research Systems Strengthening in Lao PDR., Sep 24, 2007–Sep 27, 2007, Don Chan Palace Hotel, Vientiane, Lao PDR..
- Mitsuhiro Iwasa Middle Ground for Making Health Policy in Laos. National Health Research Forum to Promote the Health Research Systems Strengthening in Lao PDR., Sep 24, 2007–Sep 27, 2007, Don Chan Palace Hotel, Vientiane, Lao PDR..
- Abe Ken-ichi, Comment on Session 6 :The Sea of Japan and Satoyama. yposium on Environment around The Sea of Japan, Sep 28, 2007, Kanazawa University.
- Ken-ichi Nonaka our-dimensional Topography: Diverse Resource Utilization on the Vientiane Plain in Laos, and its Background... Symposium at the Autumn 2007 Study Meeting of the Association of Japanese Geographers., Oct 06, 2007, Faculty of Letters at Kumamoto University, Kumamoto City.
- Kumiko Kato, Yanatan Isara, and Akiko Ikeguchi War, Development, and Marketization: A History of the Villages of the Vientiane Plain. Symposium at the Autumn 2007 Study Meeting of the Association of Japanese Geographers, Oct 06, 2007, Kumamoto University, Kumamoto City.
- Akiko Ikeguchi, and Yuichiro Nishimura Generation Gaps and Resource Utilization Activities in Family



- Labour.. Symposium at the Autumn 2007 Study Meeting of the Association of Japanese Geographers., Oct 06,2007, Kumamoto University, Kumamoto City.
- Yoshinao Adachi, Ken-ichi Nonaka, and Norihito Itabashi Diverse Utilization brought about by the Behaviour of Living Things. ymposium at the Autumn 2007 Study Meeting of the Association of Japanese Geographers., Oct 06,2007, Kumamoto University, Kumamoto City.
  - Chisato Takenaka and Rie Tomioka Water-related Issues in Rain-fed Rice Growing Regions - From the Perspective of Water Quality. Symposium at the Autumn 2007 Study Meeting of the Association of Japanese Geographers, Oct 06,2007, Kumamoto University, Kumamoto City.
  - Shuichi Miyagawa, Yoshinao Adachi, and Maki Seko The Present and Future of Paddy Field Rice Cultivation - Survival Strategies for Rice Cultivation in Villages left out of Irrigation Schemes.. Symposium at the Autumn 2007 Study Meeting of the Association of Japanese Geographers., Oct 06,2007, Kumamoto University, Kumamoto City.
  - Kumiko Kato and Yanatan Isara alt Manufacture from Flower of Salt in the Vientiane Plain. Symposium at the Autumn 2007 Study Meeting of the Association of Japanese Geographers., Oct 06,2007, Kumamoto University, Kumamoto City.
  - Tetsuro Ajisaka, and Akiko Ikeguchi Diversity of Natural Resource Utilization in Water Areas. Symposium at the Autumn 2007 Study Meeting of the Association of Japanese Geographers., Oct 06,2007, Kumamoto University, Kumamoto City.
  - Yuichiro Nishimura, and Kohei Okamoto The Emergence of Commuting Factory Workers in Rural Villages on the Outskirts of Vientiane, and the Resulting Changes in Daily Life.. Symposium at the Autumn 2007 Study Meeting of the Association of Japanese Geographers., Oct 06,2007, Kumamoto City.
  - Ken-ichi Nonaka, Hye-Sook Park, and Kohei Okamoto Four-dimensional Topography: Diverse Resource Utilization on the Vientiane Plain in Laos, and its Background (Explanation of the main points).. Symposium at the Autumn 2007 Study Meeting of the Association of Japanese Geographers., Oct 06,2007, Kumamoto University, Kumamoto City.
  - Haruo Saito, and Yasuyuki Kosaka The Fertility of the Flatland Forests - The Diversity of Plant and Fungi Resources on the Vientiane Plain. Symposium at the Autumn 2007 Study Meeting of the Association of Japanese Geographers, Oct 07,2007, Kumamoto University, Kumamoto City.
  - Satoshi Fukuda The formation of forest management in Japan: from relationship between villagers and experts in forestry.. The Folklore Society of Japan, Oct 07,2007, Otani Univ. Kyoto..
  - Sachi Tomokawa Examination of risk factors for effectiveness control of *Opisthorchis viverrini* infection for primary school children in rural central-southern Laos: Relationship between parents and their children' s raw eating fish custom. 22t h Japan Association for International Health,, Oct 08,2007, Osaka University, Osaka.
  - Abe Ken-ichi Objectives of the symposium. International Symposium :Forest Stewardship and Community Empowerment: Local Commons in Global Context, Oct 11,2007-Oct 12,2007, Kyoto International Community House. Kyoto.enter for Integrated Area Studies (CIAS), Kyoto University / Biodiversity and Ecosystem Restoration Research Project, COE program, The University of Tokyo/ Afrasian Center for Peace and Development Studies, Ryukoku University.
  - Abe Ken-ichi, "Regional Aspects on Chinese Environmental Issues". The 4th Study Meeting on RIHN Initiative for Chinese Environmental Issues,, Oct 18,2007, 3-4 Seminar Room, Research Institute for Humanity and Nature.
  - Abe Ken-ichi, Comments on Session 1 Biodiversity Changes and Land Use, Session 2 Bio-resources and Indigenous Knowledge and Session 3 Eco-politics and Conservation Asian Green Belt. The 2nd RIHN International Symposium on Asian Green Belt: Its Past, Present and Future,, Oct 31,2007, Miel Parque Kyoto.
  - Chiaki Muto Observation of Glutinous in Laos. The 56th Planning Exhibition Tenri University Sankokan

Museum “Khao Neaw” Glutinous Rice, People and Life in Laos,, Nov 10,2007, Tenri University Sankokan Museum, Tenri-city, Nara.

- Abe Ken-ichi, Only Wild Forest is important for Creature?. The 22nd RHIN Civil Seminar, Nov 19,2007, Lecture Room, Research Institute for Humanity and Nature.
- Shinya Takeda “Lac cultivation as a strategy for the ‘stabilization’ of shifting cultivation: A case study from a Khmu village in Luang Prabang Province, Lao PDR. International Workshop on Sustainable Natural Resources Management of Mountainous Regions in Laos, Nov 30,2007–Dec 01,2007, Provincial Hall of Luang Nam Tha, Laos..
- Yukino Ochiai and Satoshi Yokoyama The use of plants in everyday life: The cultural landscape and complex subsistence activities practiced in a hill villages of northern Laos. International Workshop on Sustainable Natural Resources Management of Mountainous Regions in Laos,, Nov 30,2007–Dec 01,2007, Provincial Hall of Luang Nam Tha, Laos..
- Satoshi Yokoyama Panelist for International Workshop on Sustainable Natural Resources Management of Mountainous Regions in Laos. nternational Workshop on Sustainable Natural Resources Management of Mountainous Regions in Laos, Dec 01,2007, Luang Nam Tha, Laos.
- Hyakiumura Kimihiko Avoiding Land Conflict is The Key to Promoting Suitable Rehabilitation in Asia. JICA triaging for forester on Reforestation of degraded land in Asia and Africa, Dec 06,2007, JICA Yokohama, Yokohama-city, Kanagawa.
- S. Tachibe, S. Tanaka, Joseph Jawa Kendawang, Logie Seman, Jonathan Lat, and K. Sakurai valuation on soil fertility of the hill agriculture in Sarawak, Malaysia. (Part 2) Characteristics of pepper garden and oil palm plantation. Annual Congress of the Japanese Society of Soil Science and Plant Nutrition, Kansai Branch,, Dec 07,2007, Hiroshima University, Higashi-Hiroshima.
- Norhaidi Yunus, Sota Tanaka, Atsushi Torii Yoshiyuki Inagaki, Katsutoshi, Sakurai Soil nutrient fluxes in Hinoki (*Chamaecyparis obtuse*) forest in comparison with invaded Bamboo (*Phyllostachys pubescens*) site at Naruyama, Kochi prefecture, Japan. Japanese Society of Soil Science and Plant Nutrition, Dec 07,2007, Hiroshima University, Higashi-Hiroshima.
- Sachi Tomokawa Examination for identify the risk factors related children’ s *Opisthorchis viverrini* infection for primary school children in rural central–southern Laos: Influence on the parent’ s consciousness ,attitude , practice about children’ s eating raw fish give to the children’ s *Opisthorchis viverrini* infection. 3rd Society for child health in Hiroshima,, Dec 09,2007, Hiroshima city hospital, Hiroshima.
- Ngoc Kien Chu, Noi Nguyen Van, Sota Tanaka, Yumei Kang, Katsutoshi Sakurai, and Kozo Iwasaki. Distribution of metals and metalloids in soils around tin and tungsten mines in Vietnam. Annual Congress of the Japanese Society of Soil Science and Plant Nutrition, Kansai Branch, Dec 17,2007, Hiroshima University, Higashi-Hiroshima.

#### **【Poster Presentation】**

- A. Sueyasu, M. Tanasombat, S. Tanaka, and K. Sakurai Agroforestry on the Northern Thailand aiming at the development of agriculture of the mountainous area. Annual Congress of the Japan Society of Tropical Ecology, Jun 16,2007–Jun 17,2007, Kochi University, Kochi..
- S. Tachibe, S. Tanaka, Joseph Jawa Kendawang, Logie Seman, Jonathan Lat, and K. Sakurai Current status of agriculture on the hilly area and their soil fertility at Sarawak, Malaysia. Annual Congress of the Japan Society of Tropical Ecology, Jun 16,2007–Jun 17,2007, Kochi University, Kochi..
- Mohd. Effendi bin Wasli, Sota Tanaka, Yoshinori Morooka, Joseph Jawa Kendawang, Jonathan Lat, and Katsutoshi Sakurai Vegetation succession after shifting cultivation practices in Sarawak; Comparison between the lands dominated by *Imperata cylindrica* and *Dicranopteris linearis*. Annual Congress of the Japan Society of Tropical Ecology,, Jun 16,2007–Jun 17,2007, Kochi University, Kochi..
- D. Hattori, K. Tanaka, S. Tanaka, T. Ichie, I. Ninomiya, J.J. Kendawang, and K. Sakurai Experimental

- silviculture at Sarawak, Malaysia. - Influence of soils and light intensity on the growth of the seedling of several Dipterocarpaceae. Annual Congress of the Japan Society of Tropical Ecology, Jun 16, 2007–Jun 17, 2007, Kochi University, Kochi..
- Arifin Abdu, Sota Tanaka, Shamshuddin Jusop, nik Muhamad Majid, Daisuke Hattori, and Katsutoshi Sakurai Acacia mangium as nurse tree for rehabilitation on degraded forestland in Perak, Peninsular Malaysia.. Annual Congress of the Japan Society of Tropical Ecology, Jun 16, 2007–Jun 17, 2007, Kochi University, Kochi..
  - Narong Koonkhunthoda, Katsutoshi Sakurai, Sota Tanaka, Estimation of Site Quality Index of Teak by Using Soil Properties in Northern Thailand. a, International Symposium on Forest Soils and Ecosystem Health, 69–70, August 2007, Noosa, Australia.
  - Arifin Abdu, Sota Tanaka, Shamshuddin Jusop, Zahari Ibrahim, Nik Muhamad Majid, Daisuke Hattori, Katsutoshi Sakurai Soil nutrient status of rehabilitated degraded forestland in Perak, Peninsular Malaysia. International Symposium on Forest Soils and Ecosystem Health, 69–70, August 2007, Noosa, Australia.
  - Yosuke Kuroda, Akito Kaga, Yoshitake Takada, Shin Kato, Hiroshi Yano, Norihiko Tomooka, D.A. Vaughan, Effect of genes from *G. max* on fitness-related traits of *G. soja*. II. QTL regarding seed number and seed winter-survival in a *G. soja* x *G. max* BC1 population. Annual Congress of the Japanese Society of Breeding, Sep 22, 2007–Sep 23, 2007, Yamagata University, Tsuruoka..
  - Akito Kaga, Norihiko Tomooka, Takehisa Isemura, Yosuke Kuroda, D.A., Genetic characteristics of adaptation and fitness related traits in backcross progenies between azuki bean and its close relative, *V. nepalensis*. Annual Congress of the Japanese Society of Breeding, Sep 22, 2007–Sep 23, 2007, Yamagata University, Tsuruoka..
  - Yokoyama Satoshi, Ochiai Yukino Plant uses and spatial cognition of mountain people in rural Laos. The General Meeting of the Association of Japanese Geographers,, Oct 06, 2007, Kumamoto, Japan.
  - Mohd. Effendi bin Wasli, Sota Tanaka, Joseph Jawa Kendawang, Jonathan Lat, Yoshinori Morooka, Katsutoshi Sakurai Soils under Secondary Vegetation Succession after Shifting Cultivation Practices: A Comparison of Imperata cylindrical and Dicranopteris linearis Dominated Fallow Lands.. Eighth Conference of the East and Southeast Asian Federation of Soil Science, 134, Oct 23, 2007, Tsukuba.
  - Takashi Kotegawa, Shinsuke Tomita, Yasuyuki Kono, Sota Tanaka, Katsutoshi Sakurai Indigenous Knowledge to Select Rice Varieties in Lowland Paddy Fields: A Case Study in Ay village, Northern Laos.. Eighth Conference of the East and Southeast Asian Federation of Soil Science, 134, Oct 23, 2007, Tsukuba.
  - V. U. Ultra, Jr., A. Nakayama, S. Tanaka, Y. Kang, K. Sakurai, and K. Iwasaki, Potential of Amorphous Iron-(Hydr)Oxide Amendment for Alleviating Arsenic Toxicity in Paddy Rice.. Eighth Conference of the East and Southeast Asian Federation of Soil Science, 134,, Oct 23, 2007, Tsukuba.
  - Thanakorn Lattirasuvan, Katsutoshi Sakurai, Sota Tanaka Ecological Characteristics of Home-Gardens under Traditional and Modern Management Practices in Northern Thailand. Eighth Conference of the East and Southeast Asian Federation of Soil Science, 134, Oct 23, 2007, Tsukuba.
  - C.N. Kien, K. Sakurai, S. Tanaka, T. Nishina, L.T. Son, and K. Iwasaki, Distribution of Chromium, Cobalt and Nickel in Soils near Chromium Mine in Vietnam. Eighth Conference of the East and Southeast Asian Federation of Soil Science, 134, Oct 23, 2007, Tsukuba.
  - Ken-ichi Nonaka and Nozomi Yamahara The Use of Geographical Illustration in Representing the Relationship between People and the Environment.. The Autumn 2007 Study Meeting of the Association of Japanese Geographers,, Oct 24, 2007, Kumamoto University, Kumamoto City.
  - Eisuke Ono Satoshi Yokoyama and Ken-ichi Nonaka Beginning Research on Nature and Society.. The Autumn 2007 Study Meeting of the Association of Japanese Geographers, Oct 24, 2007, Kumamoto University, Kumamoto City.

**【Invited Lecture / Honorary Lecture / Panelist】**

- Abe Ken-ich and Yokoyama Satoshi Laotian and Chinese research collaboration for sustainable natural resources management. International Workshop on Sustainable Natural Resources Management of Mountainous Regions in Laos, Nov 30, 2007–Dec 01, 2007, Provincial Hall of Luang Nam Tha, Laos..
- Nakamura Satoshi, Lecturer, International Medical Centre of Japan, Mitsuo Kida, Yoshio Ono, Masayuki Okada, Yoshimi Hirayama, Paneslists. Symposium of Medical Care and livelihood among people in the Mekong watershed, Dec 08, 2007, .

**Stage: FR**

**Project No.: 4-4**

**Project Name: Neolithisation and Modernisation: Landscape History on East Asian Inland Seas**

**Abbreviated Title: NEOMAP**

**Project Leader: UCHIYAMA, Junzo**

**Research Axis: Ecohistory**

**URL: <http://www.chikyu.ac.jp/neo-map/>**

**Key Words: landscape change, inland seas, Neolithisation, Modernisation, cultural landscape, landscape preservation**

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## ■ Research Objectives and Topics

### 1. Research Objectives

This project aims at reconsidering the notion of “cultural landscape protection” by way of reconstructing the historical landscape (hereinafter *LS*) change on East-Asian inland seas during the two most notable revolutionary periods in the history of human-nature relations, i.e. Neolithisation (hereinafter *NLS*) and Modernisation (hereinafter *MDS*), through the analyses of sustenance activities, trade and mental or cultural structures (political system, art, literature, festivals etc), climatic and topographical analysis in eight regions on the shores of East-Asian Inland Sea (Japan and East China Sea). The primary goals of the project are to:

- (1) Reconstruct the changes in the naturally and culturally conditioned spheres of *LS*.
- (2) Explicate the functioning of inland seas as a network creating cultural unity and diversity.
- (3) Reconsider the idea of “cultural *LS*” in order to put the cultural *LS* protection policies into a new perspective. Comparing *NLS* and *MDS* processes can give us a better understanding of possible future developments and solutions to present environmental issues.

### 2. Topics and Methodology

#### 1) Research Areas

The project focuses mainly on the East Asian inland sea, i.e. the Japan Sea Rim and the East China Sea Rim. Historically, inland sea coastal areas were densely populated and played a major role as worldwide trading spots and collision spots for various cultures and civilizations. Throughout the duration of this research project, results will be compared to those of the *LS* research in the North European inland seas.

Eight research areas were chosen around the East Asian inland seas to represent the full variety of cultural and natural settings. The selected research areas are: 1. Hokuriku, 2. Biwako and 3. Northern Kyushu for mainland Japan, 4. Hokkaido and 5. Ryukyu for marginal Japan, 6. Southern Coast of Korea, 7. Northern Zhejiang for China, and 8. Primorye for Far-East Russia.

In order to foster interdisciplinarity, the work groups (hereinafter *WG*) are organised according to regions rather than by research subjects.

#### 2) Research Methods

As a basis for studies on both *NLS* and *MDS*, a geographical database will be created for each region for both of the periods with available cartographical data in the form of both historic and modern maps, information on the distribution and spatial structure of archaeological sites, and other related archaeological data. Land use, settlement patterns and population dynamics will be mapped on the basis of cartographic data, historical documents, pollen analyses, and other environmental and ecological datasets.

Since *LS* is a holistic phenomenon that entails both a cultural and a natural side, and develops through the influence of human practices and interactions of the natural environment, a large part of *LS* research has to be based on qualitative rather than quantitative research methods. Specific research

methods would depend on each discipline and on one of the highlighted periods of study (NLS or MDS).

### 3) Project Organisation

Eight research areas were chosen around the East Asian inland seas to represent the full variety of cultural and natural settings: Hokuriku, Biwako, Northern Kyushu, Hokkaido, Ryukyu Islands, Northern Zhejiang, Southern Coast of Korea, Primorye. In order to foster interdisciplinarity, the work-groups (hereinafter: *WG*) are organised according to regions rather than by research subjects. Each regional *WG* includes *NLS* and *MDS* researchers carrying out research in the area. It is highly recommendable that each member belongs to at least two of the *WGs*, in order to facilitate the comparative discussion between the area groups. Information exchange inside the project is facilitated by frequent *WG* meetings, two general meetings per year and other seminars and work groups. In some cases, the researchers carry out joint field work.

In addition, there are three database *WGs* that are responsible for the creation of the GIS database and the basic data collection (Neolithisation *WG*, Modernisation *WG* and technical GIS *WG*).

This project has signed memoranda and research cooperation agreements with research institutes in Korea, Russia and UK in order to promote international integrative research.

### ■ Progress of Project

Based on the preliminary research carried out in each *WG* during the Pre-Research year, detailed research plans were built by each of the groups and individual members. The topics that are addressed by the individual researchers in all the research groups can be divided into four major common themes. (1) The birth and expansion of agriculture; (2) *LS* change at waterfronts; (3) Migration and colonisation as major forces of *LS* change; (4) Travelling and creation of mental *LS* images. Since April, the emphasis has been mainly on data collection and analysis. The first *WG* meeting was held to discuss the progress of each research and the incipience analysis, and debate improving their own goals and research strategies determined at the beginning of the project. Primorye *WG* in Russia (in July) and Southern Coast of Korea *WG* (in September) started carrying out research in the specific areas.

Concerning the database construction, data collection and input has been almost finished for the *MDS* database of Biwako and Hokuriku areas and the GIS analyses on the basis of the data has been started. The input of the basic *NLS* data for Biwako and Hokuriku areas has been finished; input of Hokkaido, Northern Kyushu and Ryukyu data would be finished in the first part of the next fiscal year. To foster international exchange and promote the project ideas abroad and at the same time to carry out a comparison with the Northern European Inland Seas, the North European Inland Seas *WG* based in UK (University of East Anglia) was launched in February.

Two-days general meetings with simultaneous interpreting were held in September 28-29 and March 21-22 where both Japanese and overseas members presented their results. Inside the institute, the project has opened two seminar series, "Landscape Research" and "Wild Boar and Landscape". NEOMAP organized a session at Society of Biosophia Studies on June 22, and Okinawa University co-organized the Symposium on Minami-daito Island and its landscape on March 15. Abroad, NEOMAP co-organized the International Conference "Neolithic and Neolithisation in the Japanese Sea Basin: Individual and the Historical Landscape" in Vladivostok, Russia in March 18-19.

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- TEZUKA, Kaoru ( Historical Museum of Hokkaido, Senior Curator, Hokkaido WG, Analysis of LS change on islands brought by immigration )
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### ■ Research Plan

1. We have increased and changed the number of members according to necessity.
2. We have changed the leaders of Hokuriku WG and Southern Coast of Korea WG.

### ■ Problems for implementation or points need to change plan

1. Outcomes up to Now

Based on the preliminary research carried out in each *WG* during the Pre-Research year, detailed research plans were built by each of the groups and individual members. The topics that will be



addressed by the individual researchers in all the eight research groups can be divided into the following four major common themes:

- (1) The birth and expansion of the archetypal East Asian landscape: research on rice paddy system, migratory water fowl hunting, raised floor stock houses on one hand and on archetypal urban planning and Feng Shui on the other.
- (2) Waterfronts, i.e. the system of the inner/ outer sea, rivers and lakes as a source of living and an object of worship, but also the function of water ways as a passage for the trade of local produce.
- (3) Migration and colonisation as a major force of landscape change, including the change of settlement patterns in side one culture, as well as colonisation and immigration as a forced landscape shift from indigenous/ traditional landscape systems to introduced ones.
- (4) Travelling and creation of mental landscape images: Eight Omi Landscapes, the landscape imports in colonization (ghost sand spirits transferred to new areas) and the role of temples as a landscape axis.

Information exchange inside the project is facilitated by frequent *WG* meetings, two general meetings per year and other seminars and workshops. In some cases, the researchers carry out joint field work. Each *WG* has to set their own goals and research strategies, keeping in mind both the peculiarity of the region and the four common topics that have surged during the first years of project research. Primorye *WG* in Russia, in July, and Southern Coast of Korea *WG*, in September, started carrying out research in the specific areas.

First general meeting was held in September. Each *WG* reported their research results on the first day, and on the second day; each member introduced their own individual studies.

Inside the institute, the project has opened two seminar series, "Landscape Research" and "Wild Boar and Landscape". Project has participated in, organized and co-organized several workshops and seminars in Japan (at Society of Biosophia Studies, Lake Biwa Museum, Okinawa University) and abroad (SISJAK in UK, Far-East National University in Russia).

## 2. Future Topics

During the next fiscal year, we will continue the field research as planned, and analyze the collected data. Each *WG* will hold *WG* meetings twice a year to interchange research results. We will continue our research and analysis as outlined in the 4 common themes, and also focus on publishing activities. We plan to present the results not only at workshops or seminars in Japan, but also hold sessions at the Sixth World Archaeological Congress and the Society for East Asian Archaeology, and participate at the Permanent European Conference for the Study of the Rural Landscape.

## Books

### 【Authored/Co-authored】

- ODAGI, Harutaro Apr, 2007 The People Japanese Envoy Met in China During the Sui and the Tang Dynasty. Tenri University Press, Tenri, Nara (in Japanese)
- TEZUKA, Kaoru • IKEDA, Takao • DERIHA, Koji • SAITO, Reiko • KAWAKAMI, Gentaro Apr, 2007 Canadian Rocky and Great Plain: Multicultural Society in Alberta. Historical Museum of Hokkaido, Sapporo, Hokkaido (in Japanese)

### 【Chapters/Sections】

- SASAKI, Shiro Apr, 2007 Bear Ceremony in the North. KIMURA, Hideaki and HONDA, Yuko (ed.) Bear Ceremony in the Ainu culture. History of Material Cultures, 13. Doseisha, Tokyo, pp.2-32. (in Japanese)
- ONISHI, Hideyuki Jul, 2007 A Study on the Pottery Manufacturing Technology in Highlanders' society, Northern Luzon. GOTO, Akira (ed.) Ethnoarchaeology of Pottery. Doseisha, Tokyo, pp.27-41. (in Japanese)
- NAKAMURA, Shin' ichi Sep, 2007 Chinese Archaeology Today. IWASAKI, Takuya. TAKAHASHI, Ryuzaburo (ed.) Archaeology in Contemporary Society. Contemporary Archaeology, Volume 1. Asakura Publishing Co., Ltd., Tokyo, pp.55-69. (in Japanese)

- HARUTA, Naoki Sep, 2007 The Kenmu Restoration (Kenmu no shinsei) and Civil War during the Period of the Northern and Southern Dynasties in Medieval Japan. Udo City (ed.) General History. The History of New Udo City, Volume 2. Udo City, Udo, Kumamoto, pp.45-68. (in Japanese)
- HARUTA, Naoki Sep, 2007 Shurines and Historical Documents in Medieval Aso Region. Cultural Heritage in Aso Region. The Library of Kumamoto University, Kumamoto, pp.41-59. (in Japanese)
- TAKAMIYA, Hiroto Oct, 2007 How did agriculture spread? - Case Studies from Japan. KOMOTO, Masayuki (ed.) A Study on the Environmental Change and Adaptation System in Prehistoric Northeast Asia. Kumamoto University, Kumamoto, pp.110-118.
- SASAKI, Shiro Dec, 2007 Social Control and Intervention of Authority of Resources - Selective Utilization of Natural Resource and its Symbolization Process in Northeast Asian Woodland. INTO, Michiko (ed.) Selective Utilization of Natural Resource and its Symbolization. Resource Anthropology, 07. Kobundo, Tokyo, pp.161-207. (in Japanese)
- TAKAMIYA, Hiroto Dec, 2007 Message from Prehistoric Okinawa Islands. INTO, Michiko (ed.) Selective Utilization of Natural Resource and its Symbolization. Resource Anthropology, 07. Kobundo, Tokyo, pp.27-64. (in Japanese)
- YASUMURO, Satoru Mar, 2008 Folklore of Subsistence - An Approach to Complex Subsistence Model-. Japanese History of Subsistence. Yoshikawa Kobunkan Inc., Tokyo, pp.197-215. (in Japanese)

## Editing

### 【Editing / Co-editing】

- NAKAJIMA, Tuneo and SATOGUCHI, Yasufumi (ed.) Jul, 2007 Carp and Crucian in the Lake Biwa - Lake and Human in the Eastern Asia. Lake Biwa Museum, Kusatsu, Shiga, 67pp. (in Japanese)
- KATO, Yuzo, Hideyuki ONISHI and Shiro SASAKI (ed.) Feb, 2008 History of Social Interactions among the Inland Sea in East Asia. Jimbunshoin, Kyoto, 300pp. (in Japanese)

## Papers

### 【Original Articles】

- MIZUNO, Toshiaki • NAKAO, Hiroyuki • NAKAJIMA, Tsuneo • Lake Biwa Area Fish Survey Group May, 2007 Risk Analysis of Habitat Utilization by Bluegill (*Lepomis macrochirus*) in the Lake Biwa Basin. *Japanese Journal of Conservation Ecology* 12(1) :1-9. (in Japanese) (reviewed).
- NAKAI, Seiichi Sep, 2007 Area Study and "National Map of Dialectal Grammar" - New Perspectives for Dialect Study in Japan -. *Japanese Linguistics* 26(11) :117-132. (in Japanese) (reviewed).
- TAKETANI, Toshio Oct, 2007 The Survey Report of Gyeongju-si, Daegu and Pusan Area. *Bulletin of Tenri University Sankokan Museum* (20) :45-60. (in Japanese) (reviewed).
- ODAGI, Harutaro. (20) :29-34. Oct, 2007 Painted Pottery at the Hishika site in China collected by KIYONO Kenji . *Bulletin of Tenri University Sankokan Museum* (20) :29-34. (in Japanese) (reviewed).
- YASUMURO, Satoru Oct, 2007 Folk Technique and Wise Use for Paddy Fields. *Human and Water* (3) :9-12. (in Japanese) (reviewed).
- KIM, Jangsuk Oct, 2007 Settlements and Social Complexity of the Bronze Age in Korean Peninsula. *Journal of the Hoseo Archaeology Society* (17) :4-25. (in Hangeul) (reviewed).
- TAKAMIYA, Hiroto Oct, 2007 Beginning of Agriculture in Okinawa Archipelago. Proceedings for Kumamoto Convention in 2007. The Committee for Kumamoto Convention in 2007, Japanese Archaeological Association, Kumamoto, pp.420-431. (in Japanese)
- POPOV, Alexander, TABAREV, Andrei, UCHIYAMA, Junzo Nov, 2007 NEOMAP New International Archaeological Project in the Far East. *Annual Scientific Session in the Institute of Archaeology and Ethnography* :146-148. (in Russian)
- LIM, Sang-taek Dec, 2007 The Process for Appearance of Comb-marked Pottery in Southern Korean

- Peninsula. *Plaza of Archaeology* (1). (in Hangeul)
- YASUMURO, Satoru Dec, 2007 Agriculture as Pleasure. *Agriculture and Horticulture* 83(1) :1-6. (in Japanese)
  - UCHIYAMA, Junzo Mar, 2008 Why did shell-middens disappear?: Considerations on the drastic decrease of shell-middens in the Jomon Period. *Neolithic and Neolithisation in Japanese Sea Basin: Individual and Historical Landscape*. Far East National University, Vladivostok, Russia, pp.225-236.
  - HOSOYA, Aoi Mar, 2008 Storage Facilities and the Agricultural 'routine-scape' in Japanese Prehistory - Archaeological and Ethnographic Approaches. *Neolithic and Neolithisation in Japanese Sea Basin: Individual and Historical Landscape*. Far East National University, Vladivostok, Russia, pp.236-246.
  - HARUTA, Naoki Mar, 2008 Society in 15th Century from the Viewpoint of Materials. *Japanese Historical Studies* (546) :22-45. (in Japanese) (reviewed).
  - BELUSHKIN, Mikhail, POPOV, Alexander, UCHIYAMA, Junzo, TABAREV, Andrei, TKACHEV, Sergei, TITOVA, Kseniya Mar, 2008 Application Concept of Geographic Information Systems and Data Presentation in NEOMAP Project. *Neolithic and Neolithisation in Japanese Sea Basin: Individual and Historical Landscape*. Far East National University, Vladivostok, Russia, pp.27-35.

## Research Presentations

### 【Oral Presentation】

- TAKAMIYA, Hiroto Spread of Agriculture in Okinawa Archipelago. The 72nd Annual Meetings of the Society for American Archaeology, Apr 26, 2007, Austin, Texas, USA.
- TAKAMIYA, Hiroto It's Only Strombus Spp... but: Historical Ecology of the Okinawa archipelago. Pacific Science Congress, Jun 15, 2007, Naha, Okinawa.
- ONISHI, Hideyuki Traditional Handicraft Reproduced by Market Economy: A Study on Philippine Highlanders' Weaving in Northern Luzon.. 21st. Pacific Science Congress, Jun 16, 2007, Naha, Okinawa. (in Japanese)
- LINDSTROM, Kati Sea giveth and taketh away: Sea as the Living Space for Sentient Beings. "Landscape and Living Beings II - Sea and the Sentient Beings", the 5th Yearly Congress of the Society of Biosophia Studies, Jun 22, 2007, Fujisawa, Kanagawa, Japan. (in Japanese)
- IIDA, Taku Landscape in Maritime Life - Coral-reef Lagoon and Minami-Daito Island. "Landscape and Living Beings II - Sea and the Sentient Beings" the 5th yearly Congress of Society of Biosophia Studies, Jun 22, 2007, Fujisawa, Kanagawa, Japan. (in Japanese)
- BORRE, Caroline The Lost Masters of the Waters. "Landscape and Living Beings II - Sea and the Sentient Beings", the 5th yearly Congress of Society of Biosophia Studies, Jun 22, 2007, Fujisawa, Kanagawa, Japan. (in Japanese)
- SEGUCHI, Shinji Changes in Utilization of Resources around Lake Biwa Area in the Jomon period. "Landscape and Living Beings II - Sea and the Sentient Beings" the 5th yearly Congress of Society of Biosophia Studies, Jun 22, 2007, Fujisawa, Kanagawa, Japan. (in Japanese)
- TAKANISHI, Seisuke Lakes and Humans in Medieval Narratives of China. "Landscape and Living Beings II - Sea and the Sentient Beings" the 5th yearly Congress of Society of Biosophia Studies, Jun 22, 2007, Fujisawa, Kanagawa, Japan. (in Japanese)
- BAUSCH, Ilona The Tale of Sea of Jadeite. "Landscape and Living Beings II - Sea and the Sentient Beings" the 5th yearly Congress of Society of Biosophia Studies, Jun 22, 2007, Fujisawa, Kanagawa, Japan. (in Japanese)
- UCHIYAMA, Junzo When People First Set out to the Sea: From the Perspective of Jomon Cultures in Kanto Area. Landscape and Living Beings II - Sea and the Sentient Beings. The 5th yearly Congress of Society of Biosophia Studies, Jun 22, 2007, Fujisawa, Kanagawa, Japan. (in Japanese)
- TAKAMIYA, Hiroto The Agriculture in the Gusuku Age, Okinawa, Japan. International Symposium "Recent

Advancements of Archaeobotany in Eurasia” , Aug 24, 2007, Kyoto.

- ONISHI, Hideyuki Subsistence Activities for Bio-resource Use in the Agricultural Society. 1st Preliminary Conference for 2008 Symposium, Japanese Archaeological Society, Oct 28, 2007, Nagoya. (in Japanese)
- TAKAMIYA, Hiroto Okinawa's Earliest Inhabitants and Life on the Coral Islands. Presented at Kingdom of the Coral Seas: A Symposium on the Archaeology and Culture of the Ryukyu Islands, Nov 17, 2007, Norwich, UK.
- BELUSHKIN, Mikhail, POPOV, Alexander, UCHIYAMA, Junzo, TABAREV, Andrei, TKACHEV, Sergei, TITOVA, Kseniya Application Concept of Geographic Information Systems and Data Presentation in NEOMAP Project. Neolithic and Neolithisation in Japanese Sea Basin: Individual and Historical Landscape, Mar 18, 2008-Mar 19, 2008, Vladivostok, Russia.
- HOSOYA, Aoi Storage Facilities and the Agricultural 'routine-scape' in Japanese Prehistory - Archaeological and Ethnographic Approaches. Neolithic and Neolithisation in Japanese Sea Basin: Individual and Historical Landscape, Mar 18, 2008-Mar 19, 2008, Vladivostok, Russia.
- UCHIYAMA, Junzo Why did shell-middens disappear?: Considerations on the drastic decrease of shell-middens in the Jomon Period. Neolithic and Neolithisation in Japanese Sea Basin: Individual and Historical Landscape, Mar 18, 2008-Mar 19, 2008, Vladivostok, Russia.
- UCHIYAMA, Junzo Why did shell-middens disappear?: Considerations on the drastic decrease of shell-middens in the Jomon Period. 73rd Annual Meeting of the Society for American Archaeology, Mar 26, 2008-Mar 30, 2008, Vancouver, Canada.

**【Invited Lecture / Honorary Lecture / Panelist】**

- UCHIYAMA, Junzo Creating neighbours or creating periphery? The long-term perspectives on the landscape history of the East Asian Inland Seas. The East Asian Mediterranean: Maritime Crossroads of Culture, Commerce, and Human Migration, Nov 02, 2007, Munich University, Munich, Germany.

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**Stage:** FR

**Project No.:** 4-5

**Project Name:** Historical Interactions between the Multi-cultural Societies and the Natural Environment in a Semi-arid Region in Central Eurasia

**Abbreviated Title:** Ili Project

**Project Leader:** KUBOTA, Jumpei

**Research Axis:** Resources

**URL:** <http://www.ilipro.com/index.html>

**Key Words:** arid and semi-arid region Central Eurasia ethnic groups border agriculture nomadic pastoralism historical interactions

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## ■ Research Objectives and Topics

### Background

Historically and geographically, Central Asia has been a key area of interaction, transit and exchange between East and West. While many Central Asian peoples are well recognized in historical records as skilled nomads, merchants and traders, it is more recently acknowledged that these peoples also assimilated the ideas and artifacts passing through their territories into their own cultures, often with material effect on landscapes and livelihoods. At the same time, Central Eurasia is an excellent location for tracing human reactions to both past climate changes and anthropogenic activities. In this climatically sensitive area, which alternates between semi-arid and arid conditions, human influence can be historically traced. The area with extended arid and semiarid deserts has potential agricultural plains along rivers, flowing from high mountains with many glaciers, which were actively cultivated far back in historical time. These border regions could record both natural environmental and anthropogenic changes very sensitively.

After the long transition marked by the rise and fall of various ethnic groups and countries, the Yuan Dynasty governed the whole of Eurasia as a loosely controlled unity during the 13th and 14th centuries. In 18th century, however, a tight and well-defined border divided the region between Russia and Qing. At the same time, the people of this area experienced a great change in their lifestyle, caused by the migration of farmers, settlement of nomads and development of agriculture in association with the expansion of Russia and Qing. For nomadic peoples living in semi-arid regions, relocation was one of the major means for adapting environmental changes, demographic expansion and political conflicts between groups. Settlement policies and borders prevented these people from following their way of adaptation. Finally, with the weakening of the Soviet Union, the Russian side was divided into many republics. Man-made trans-boundary issues, between countries or ethnic groups, religions, agriculture and nomadic pastoralism, or between cities and their surrounding areas, commonly lie behind the various environmental problems in the world. This is one of keys to understand present environmental problems.

Although interactions between environmental changes and human reactions have rarely been studied in Central Eurasia (Boroffka et. al, 2006), agricultural development in the Aral Sea basin has caused the severe lake-level regression that started in the 1960' s. This regression has received considerable attention since the political opening of the former Soviet Union (e.g., Aral´skij krizis, 1991; Létolle and Mainguet, 1996; Micklin and Williams, 1996). This regression was clearly triggered by man, and its effects on the environment and the life of local populations have become a subject of discussion far beyond the scientific community. Recent agricultural development in arid to semi-arid regions, especially in the latter half of the 20th century associated with modern irrigation technology, has contributed to increasing agricultural production. However, considerable environmental issues have resulted. It is important, therefore, to balance resource development and preservation in arid and semi-arid regions.

### **Objectives**

This project aims to study and clarify the historical interaction between human activities and natural systems in the semi-arid region of Central Eurasia, with particular emphasis on trans-boundary issues. In order to accomplish this purpose, the project attempts to clarify historical changes, the rise and fall of nomadic groups and countries, their removal, changes in subsistence, the use of natural resources, and climate change through the analysis of historical documents and archaeological investigations as well as various natural proxies such as ice cores, lake sediment samples, tree rings and wind-blown deposits. At the same time, we will investigate the present status of the area and the effects of human activities on the natural environment, with particular emphasis on their social, religious and cultural background. Finally we will compare both sides of the border within the context of historical changes and their current status, examining areas that were previously similar but that have subsequently developed differently, to understand the meaning of boundaries in the context of environmental issues. This project should provide important keys not only for evaluating the effects of projected human activities on ecosystems in arid to semi-arid regions, but also for elucidating fundamental perspectives to examine a desirable mode of living in multi-cultural regions.

### **Focus of the project as a RIHN project**

Global environmental issues are recognized as a conflict or inconsistency between human activities or cultures and environments that form the basis of human survival. The causes and effects of problems have become more complex and widespread. This is especially apparent with the recent expansion of human activities. Historically, however, human beings have strived to adapt to changes in the environment. This projects aims not to search for a so-called historical understanding of the rise and fall of the ethnic groups of the semi-arid regions in Central Eurasia, but to find the history of adaptations by human beings in the context of man-made boundaries, which is one of the fundamental issues behind present environmental problems. It can be said that the study area has a variety of environmental problems caused by modern developments in both the former Soviet Union and China. We will try not only to investigate these visible environmental problems, but also to think about the significance of human activities or cultures, which are invisible, but essential to understand environmental problems.

The present project is placed within the framework of the programs in the RIHN, “Resources” and “Ecohistory” through investigating the historical interactions of human activities and the environment. The project plans to elucidate the evolution of the culture and the criteria for balancing natural resources development (agricultural development) and preservation of the environment, which should contribute to examining a desirable mode of living for the future. The project plans to cover the time period of about 1,000 years in the past, because written documents are available in the time period in general, without which detailed study is considered difficult. It also plans to concentrate the study in arid and semi-arid regions in Central Eurasia, because Central Eurasia is the region, where people have been most active historically and our present culture is considered attributed to those developed in the region.

### **How to organize interdisciplinary research**

In keeping with our understanding of the present status, the project will attempt to clarify historical changes, the rise and fall of nomadic groups and countries, their removal, the change in their subsistence, the use of natural resources and climate change through the analysis of historical documents and archeological monuments as well as those of various natural proxies such as ice cores, lake sediment samples, and tree ring. Compared with other areas such as the eastern part of China, historical documents written by nomadic peoples are rare; hence, archaeological investigations will be one of the important research methods used in this project.

### **■Progress of Project**

## RESEARCH METHODS, ORGANISATION AND PLAN

### 1) Research area

The study area is the Ili River watershed, which flows from China to Kazakhstan, terminating at Lake Balkhash as well as the surrounding areas, including Kyrgyz and Uzbekistan. Fig-2 shows the map of the study area. Geographically, the Ili-Balkhash Basin is recognized as a fertile area with relatively high precipitation, lying to the north of the Tian Shan Mountains. Within a historical context, the Ili-Balkhash Basin and the surrounding areas have been a key area of East-West interaction, and in which many ethnic groups and countries have risen and fallen. The region also has areas that face current environmental issues because of modern development under planned-economy of socialism. The main reason why we choose the area is that Central Eurasia is an excellent location for tracing human reactions to both past climate changes and anthropogenic activities. In this climatically sensitive area, which alternates between semi-arid and arid conditions, human influence can be traced historically. The area with extended arid and semiarid deserts has potential agricultural plains along rivers, flowing from high mountains with many glaciers, which were actively cultivated far back in historical time. These border regions could record both natural environmental and anthropogenic changes very sensitively.

### 2) Research groups

The project consists of two research groups: one will clarify historical changes in both human activities and natural systems through the analysis of historical documents as well as a variety of natural proxies, and the other group is to investigate the current processes of human activities and natural systems for interpreting the historical information. Fig-2 shows the framework of the project.

### 3) International cooperation

We have been cooperating with various research institutions:

**in Kazakhstan:** Institute of Geography, Institute of Archaeology, Kazakhstan Scientific Research Institute on Problems of the Cultural Heritage on Nomads, Tethys Scientific Society, Institute of Geological Sciences, Institute of Soil Science, Institute of History and Ethnology

**in China:** Renmin University of China, Institute of Ethnology, Cold and Arid Region Environment and Engineering Institute, Xingjian Institute of Archeology,

**Other:** Central Asia Deep Ice-Coring Project (CADIP)

### 4) Time frame:

The project aims to clarify historical interactions during the past 1000 years, divided into two eras:

a) the era prior to the 18th century or the time of the rise and fall of nomadic groups and countries, and b) the era following the 18th century, during which the area was divided by the border between Russia and Qing.

### 5) Contents:

A) To clarify historical changes, the rise and fall of nomadic groups and countries, their removal, changes in subsistence, the use of natural resources, and climate change analyzed by using historical documents and archaeological investigations as well as various natural proxies such as ice cores, lake sediment samples, tree rings and wind-blown deposits. We will compile the information obtained from archaeological investigations and from the analysis of historical documents into a GIS database with chronological segments. This will allow us to investigate historical human adaptation to external forcing caused by both natural environmental changes and political, socio-economical shifts. We will also develop a hydrological model for a tool to integrate the information analyzed by various proxies. The inputs for the model will be reconstructed series of precipitation and temperature revealed from tree-rings and ice cores. The energy and water balance calculation on various surface conditions

classified by using the chronological GIS information about land use will be taken into account. The model will be validated by lake level changes analyzed by lake sediment cores and geomorphological surveying. Reconstructed river flow will then give the capacity of water resources in the middle and lower reaches, which closely relates to the change in subsistence.

B) To investigate the present status of the area and the effects of human activities on the natural environment, with particular emphasis on their social, religious and cultural background. We will focus on the impact of agricultural development under planned economy of socialism. Both China and the former Soviet Union are recognized as countries which have exploited natural resources under planned economy of socialism, the initial conditions at the beginning of the modern development in each country, such as population density, were quite different. This should be taken into account when we investigate historical interactions between human and nature in both countries. Policies of settlement of nomadic peoples, change in subsistence from nomadic pastoralism to agriculture, collectivization, and their chronological order are key issues to understand current environmental problems in this area. The effect of these policies relating agricultural development on people's life will be recovered by interviews and analysis of various statistics. The impact of agricultural development on ecosystems in the area will be analyzed from various perspectives, such as ecology, soil science, and hydrology. This information will be compiled into the GIS database.

C) To compare both sides of the border within the context of historical changes and their current status, examining areas that were previously similar but that have subsequently developed differently, to understand the meaning of boundaries in the context of environmental issues.

#### **OUTCOMES UP TO NOW**

##### **a) Outcomes of the project as a whole**

During these two years as the beginning of FR, we have focused on gathering materials necessary for historical reconstruction, including natural proxies such as ice cores, lake sediment samples, tree rings as well as historical documents and images. We have also collected data of the present status of the area. The analysis has just started in both groups; hence, integrated outcomes are still tentative. However, two major outcomes in both the historical analysis and the present status analysis are described below.

Tentative analysis of reconstructing the lake level of Lake Balkash indicated that there was a decreasing trend of lake level from the 10th century, and the lake level at the beginning of the 13th century was the lowest during past 2000 years, which is almost same as that of the present status. After this significant regression, the lake level showed rapid recovery, and remained relatively high until the modern regression that started in the 1960's (Fig-3). The regression in the medieval times corresponds to that of the Aral Sea (Boroffkka, et. al., 2006) and the Issyk-Kul Lake in Kyrgyz (Giral, et. al., 2004). Considering results from other proxies, such as the accumulation late at the Guliya ice-cap in China (Thompson et. al., 1995), the events of advance and retrieval of glaciers in Tian Shan Mountains (Narama and Okumura, 2006) and the reconstructed temperature trend (Esper et. al, 2002), we suppose that the so-called Medieval Warm Period (MWP) was warm and dry, and the Little Ice Age (LIA) was cold and wet. More detailed and precise analyses, including effects of human activities on lake level change, will be carried out by using results of our own materials.

After the division of the area by Russia and Qing, the balance between human capability and impacts of environmental change, such as climate change, drastically changed. Modern agricultural development under the planned economy of socialism had a significant impact on both ecosystems and social systems. In Kazakhstan, this process could be divided into several sub periods. After the expansion of Russia, the first attempt at changing subsistence from nomadic pastoralism to agriculture in association with the settlement of nomadic people started from the late 19th century. The collectivization of agricultural



sector from 1929 exerted the serious confusion to the society in the area, resulting in the loss of a large number of nomadic populations. In the Virgin Lands Programme of Khrushchev's Agricultural Policy, Kazakhstan was forced to be one of the major crop production areas in the Soviet Union, causing excessive development ignoring the environmental capacity and exerting significant impacts on the area. In addition, nature transformed by human activities (artificial nature) was fragile to climate and social changes. The collapse of the Soviet Union deteriorated terms of trade for agricultural sector. The amount of state purchase and subsidies were reduced. Consequently, many farms established during the planned economy were abandoned. This caused a drastic reduction in demand and reduced the pressure on natural resources, ironically resulting in the recovery of the ecosystem. In China, the commencement of modern development was delayed, starting until the 1950' s. Recent development has been strong however, and increasing demand for natural resources is projected.

#### **b) Results of each work group**

- The ice-core research group drilled two ice core samples 85.35m and 63.1m in depth at the Gregoriev Glacier (4600m asl) in the Tian Shan Mountains of Kyrgyz in collaboration with CADIP (Central Asia Deep Ice-coring Project). The deeper drilling actually reached the bottom of the glacier. We recovered soil including organic materials under the 85 m core. The result of AMS carbon dating of the soil under the ice and dust particles included in the bottom layers of the core show that the 85 m core dates back more than 10,000 years. The potential time span of this core is greater than we expected. We suppose, tentatively at the moment, that the soil under the ice was formed in the Bølling-Allerød interstadial, indicating the possibility of the disappearance of glaciers up to this elevation.

- In collaboration with the Institute of Geological Sciences in Kazakhstan and the Cold and Arid Region Environment and Engineering Institute in China, a 6-m lake sediment core sample was obtained near the north shore of Lake Balkhash. This lake sediment core dates back around 2,000 years. A tentative analysis of level changes of Lake Balkhash indicates that there was the decreasing trend from the 10th century, and the lake' s level at the beginning of the 13th century was the lowest for 2,000 years.

- A comparative analysis of Corona images in 1971 and a Landsat image in 2002 exhibits significant glacier area reduction; 12 to 20 % in the northern side of the Tian Shan Mountains. This suggests that damage to water resources is possible in the area.

- Several research groups, including researchers with various kinds of disciplines, such as geography, hydrology, ecology, archaeology, sociology and anthropology, made field works to Kazakhstan, focusing on evaluating the impact of human activities, especially the use of natural resources on regional ecosystems, and its historical transition. A large amount of basic information concerning vegetation, soil, meteorological and hydrological conditions was gathered. This information is being compiled into the GIS database.

- Various kinds of historical documents and images were collected through cooperative studies with research institutions in Kazakhstan, China and Russia. Especially, there are many historical documents and maps describing nomadic groups, including their locations, populations and numbers of animals written in Manchurian. These documents and maps have not been investigated before because few researchers can read; hence we are currently trying to analyze documents.

- We are trying to compile information obtained from archaeological investigations and the analysis of historical documents and images into the GIS database in chronological order.

#### **○Co-Researchers**

- ◎ Kubota, Jumpei ( Research Institute for Humanity and Nature, Associate Professor, Project leader )
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- Oji, Toshiaki ( Ritsumeikan University, Professor, Analysis on Agricultural system )
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- Jean-Marc Deom ( Kazakhstan Scientific Research Institute on Problems of the Cultural Heritage on Nomads, Senior researcher, Development GIS database of Archaeological information )
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- Zhulduzbek Abylkhodzhi ( Institute of History and Ethnology, Professor, Analysis of agriculture development in Kazakhstan )
- Roman Jashenko ( Institute of Zoology, Senior researcher, Evaluation of impacts of agricultural development in Kazakhstan )
- Vladimir Aizen ( University of Idaho, Professor, Ice core analysis, )

## ■ Research Plan

### ■ Problems for implementation or points need to change plan

In fiscal year 2008, it was difficult to conduct field investigations because of high tension in Chinese side. The situation has improved recently. We will resume our activities in February 2009. It is possible to safely carry out the project with the cooperation of collaborating researchers in China. This social tension did not affect the activities of collecting historical documents and materials.

## Books

### 【Chapters/Sections】

- Funakawa S, Yanai J, Takata Y, Karbozova-Saljniov E, Akshalov K and Kosaki T 2007 Dynamics of water and soil organic matter under grain farming in Northern Kazakhstan. Eds. R. Lal, M. Suleimenov, B.A. Stewart, D.O. Hanson and P. Doraiswamy. (ed.) *Toward sustainable land use both from the agronomic and environmental viewpoints. In Climate Change and Terrestrial Carbon Sequestration in Central Asia.* Taylor & Francis, Leiden, Netherlands, pp.279-331.

## Papers

### 【Original Articles】

- Y. Nakayama, T. Yanagi, S. Yamaguchi, J. Nishimura, G. Mu 2007 Monitoring of Environmental Change in Dzungar Basin by the Analysis of Multi Temporal Satellite Data Sets. *Advances in Space Research* 39 :52-59.
- Funakawa, S., R. Suzuki, S. Kanaya, E. Karbozova-Saljniov, and T. Kosaki 2007 Distribution patterns of soluble salts and gypsum in soils under large-scale irrigation agriculture in Central Asia. *Soil Science and Plant Nutrition* 53(2) :150-161.
- Kitamura, Y., Kozan, O., Sunada, K., and Oishi, S. 2007 Water problems in Central Asia. *Journal of*

*Disaster Research* 2(3) :134-142.

- Noda Dzhin 2007 “Kazhak step in 19th century between China and Russia, World civilization and Kazakhstan, part 2. . (in Russian)
- Narama, C., Kondo, R., Tsukamoto, S., Kajiura, T., Ormukov, C., and Abdrakhmatov, K. 2007 OSL dating of glacial deposits during the Last Glacial in the Terskey-Alatoo Range, Kyrgyz Republic.. *Quaternary Geochronology* 4 :249-254. (reviewed).

## Research Presentations

### 【Oral Presentation】

- Narama, C Spatial variability of recent glacier area and volume changes in central Asia using Corona, Landsat, ASTER and ALOS optical satellite data. EGU, Apr 15, 2007, Vienna, Austria.
- Narama, C Timing of glacier expansion during the last Glacial in the northern and central Tien Shan, Kyrgyz Republic by OSL dating. EGU, Apr 18, 2007, Vienna, Austria.
- NODA Jin The Qazaq nomadism reflected in the imperial documents: Between the Qing and Russian Empires (19 c.). Central Eurasian Studies Society, Eighth Annual Conference, Oct 21, 2007, The university of Washington, Seattle (WA), USA.

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**Stage: FR**

**Project No.: 5-2**

**Project Name: Interaction between the Environmental Quality of a Watershed and the Environmental Consciousness: With Reference to Environmental Changes Caused by the Human Use of Land and Water Resources**

**Project Leader: NAKAWO, Masayoshi**

**Research Axis: Ecohistory**

**URL: <http://www.chikyu.ac.jp/idea/>**

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## ■ Research Objectives and Topics

### Research Objectives

People's intentions to natural environments must be adequately taken into consideration when human impacts will affect to natural environments. What kinds of values are recognized in natural environments? It is difficult to determine items in nature to be conserved without people's value judgment on natural environment. What kinds of environmental qualities are perceived as values? Since people may not share the same natural scientific information about the natural environment and the value judgment, people's decision may not be always rational. Clarifying the relationship between people's environmental consciousness and environmental quality and estimating the environmental changes occurred by human actions may provide more suitable action plan toward natural environments. In this project, a methodology using both natural and humane-sociological ways will be tested.

### Background

#### I. Basic concept of the project

When people are placed in an environment, one may use it to get some benefits, another may conserve it because of existence of endangered organisms, and another may ignore it. Why do these differences in attitudes among people occur toward the same environment? Understanding this question is one of the objectives for elucidating relationships between humans and the nature. People's perception of the environment affects their value judgments on the environment as a basis to determine their attitudes toward it. We define this value judgment system as the "environmental consciousness". To clarify the relationship between the value judgment of environment and the environmental quality would be an essential to solve global environmental issues.

#### II. Contribution of the project to the global environmental issues

Forest ecosystem is one of the most important ones under the global environmental change. How does the forest logging change the forest environment? How do people evaluate such environmental changes and the implication of the logging? The aim of the project is relating to the public involvement, which is thought to be the most important in the environmental impact assessment to reach the relevant decision-making.

#### III. Fitness of the project in the framework of the RIHN

Although natural scientific information about the environment is thought to be important, its application to the public involvement in the environmental impact assessment process has been still immature, particularly in Japan. The project will contribute to make the public involvement being more substantial through the collaboration between the natural science, which analyzes environmental changes, and the social science, which analyzes the environmental consciousness and human activities. The project matches with the main framework of the RIHN, in which the interactive cycle between humans and nature is one of the most important targets.

#### IV. Relationship between study area and global environmental issues

Various kind of environmental plans have been implemented worldwide. It is very important to assess the environmental impact before the implementation. However, the inadequacies of the environmental impact assessment has been recognized. Although the public involvement (PI) is an important measure for the relevant decision-making and consensus building in the environmental policy, the procedure for the PI in the environmental impact assessment and in the strategic environmental assessment has been still ambiguous. The result of the project will be applicable to the PI procedure.

### **Significance as an RIHN Project**

Analyses on environmental valuation and the relationship between humans and nature have been studied in academic fields, such as environmental economics and environmental sociology. Although natural scientific information about the environment is thought to be important, its application has been still immature, particularly in Japan. The project has been conducted under the basic understanding of the RIHN that "the root of these-called global environmental problems lies behind the human culture". The project has been planned to elucidate the interactive cycles between humans and nature, which is a main framework of the RIHN. The project will contribute to make the public involvement being more substantial through the collaboration between the natural science which analyzes environmental changes and the social science which analyze the environmental consciousness and human activities. The project matches with the main framework of the RIHN, in which the interactive cycle between humans and nature is one of the most important targets. It is very important to assess the environmental impact before the implementation. However, the inadequacies of the environmental impact assessment has been recognized. Although the public involvement (PI) is an important measure for the relevant decision-making and consensus building in the environmental policy, the procedure for the PI in the environmental impact assessment and in the strategic environmental assessment has been still ambiguous. The number of researches on environmental planning, in which simulation models of environmental changes are applied, has been increasing (cf. Kaga 2006, Takamura 2007). In some researches on the environmental restoration and conservation, the techniques based on the environmental economics such as contingent valuation method (CVM) have been applied (Takamura 2007). Although they resemble our project, their main contribution is not the construction of the substantial PI, but the evaluation of the environmental policies. Relationship between environmental qualities and people's environmental consciousness has been less considered in these research. Various kind of environmental plans have been implemented worldwide. The result of the project will be applicable to the PI procedure.

## **■ Progress of Project**

### **I. Development of the response-prediction model**

To estimate material cycles and vegetation dynamics, we chose and run the PnET-CN model developed by US forest scientists, using measured data as an input. We found that the PnET-CN model could be applicable to our project. Water and nutrient loads from forest ecosystem to stream and a lake were calculated using a hydrologic model. Flow model of lake water and simulation model for biogeochemical material cycling in lake environments were newly prepared. Forest logging impacts were applied to the model and outputs were used to construct a scenario questionnaire.

### **II. Attitude survey**

#### 1) Survey on people's interests in a forest-agricultural-aquatic system

Results of the questionnaire on people's interests on a forest-agricultural-aquatic system revealed that people seemed to evaluate environments similarly, with respect to the categories such as direct use value, indirect use values and environmental functions. Assuming several parameters based on direct and indirect use values, we can analyze people's interests in the watershed environment from the viewpoints of environmental values and people's attitudes.

#### 2) Surveys on people's preferences to forest logging plans

Conjoint analysis has been applied to elucidate people's preference on the object and the way of forest logging. Comparing with the scale and strength of logging, the plantation after logging was recognized as the most important measure. Only agriculturists preferred larger logging at adjacent areas.

### 3) Scenario questionnaire

From the preliminary analysis of the scenario questionnaire surveyed in November 2007, people largely minded the change in water quality in river and lake ecosystem among changes in environmental qualities in the watershed caused by forest logging.

### ○ Co-Researchers

- ◎ Nakawo, Masayoshi ( RIHN, Professor, Management )
- Yoshioka, Takahito ( Kyoto Univ., Professor, Integration of the response-prediction model and scenario questionnaire )
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- Shibata, Hideaki ( Hokkaido Univ., Associate Professor, PnET model )
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### ■ Research Plan

#### I. Changes from the previously proposed plan

The project was evaluated at the interim evaluation committee in March 2006. Some changes have been made in the project. Project leader has been changed in May 2007.

#### II. Research methods

##### (1) Outline of the methods

The methodology to be developed in this project must include several functions, as follows:

- 1) Quantitative prediction of changes in environmental elements caused by virtual environmental modifications, such as logging and dairy farming,
- 2) Informing people of the environmental changes in an appropriate manner,  
and
- 3) Analysis of relationships between changes in the people's value judgment and in the environmental qualities.

##### (2) Subject areas

The Lake Shumarinai watershed is selected as a main study area, which is located in the northern Hokkaido, Japan. Since the university forest (Hokkaido University) is located in the watershed, we can use abundant data for simulation models and facilities for field surveys. We will also study in a university forest (Kyoto University) and a private forest in Wakayama and Nara Prefectures. In the private forest, the 90-yr cycle of clearcutting and plantation has been repeated at a small watershed

level. Therefore, long-term changes in forest environments after forest cutting can be traced. The surveys in this forest are applicable to validate the simulation models.

Social surveys will be conducted not only for the residents in these watersheds, but also nationwide in Japan, in order to elucidate relationships between people's environmental consciousness and their physical and mental distances to subject environments.

### III. Organization

The project is composed of two research work groups and liaison

○ Work Group 1: Development of a response-prediction model (RPM) of a watershed environment to the changes in land and water resource uses (RPM group)

Several existent simulation models have been considered their application to the project. Observational data obtained in the project are used to modify and validate the models. The range of specialties of the group members is wide such as ecology, hydrology, biogeochemistry and so on. Followings are the list of research items in the Group 1.

\* Application of the process-based model for biogeochemical material cycling in the forested watershed in northern Hokkaido, Japan (Dr. Hideaki Shibata)

\* Long-term assessment of the effect of forest disturbance (Dr. Naoko Tokuchi)

\* Hydrological processes in forest and riverine systems (Dr. Nobuhito Ohte and Dr. Mitsuo Yamashita)

\* Connection between forest biogeochemical model and hydrological model (Dr. Masanori Katsuyama)

\* Water quality and plankton dynamics in the Lake Shumarinai watershed (Dr. Shuji Hino)

\* Development of biogeochemical model coupled with hydrodynamic model of Lake Shumarinai (Dr. Kisaburo Nakata)

\* Factors influencing early vegetation establishment following soil-scarification in a mixed forest of northern Japan (Dr. Toshiya Yoshida)

\* Reconstruction of past environmental changes in the Lake Shumarinai watershed using pollen and dendrochronological analyses (Dr. Hikaru Takahara and Dr. Koh Yasue)

\* Nation-wide survey of the stream hydrochemistry (Dr. Eiichi Konohira)

○ Work Group 2: Elucidation of the relationship between the environmental quality and the sense of value for environments in the environmental consciousness (Social survey group)

This group conducted several social surveys elucidating the environmental consciousness. Since natural scientific information should be included in the questionnaire, natural scientists as well as social scientists were participated in this group.

\* Surveys on the interest in the watershed environment (Dr. Nagata)

\* Design of the interest questionnaire (Dr. Zheng)

\* Keyword analysis (Dr. Sekino and Mr. Matsukawa)

\* Conjoint analyses for sample surveys (Mr. Matsukawa and Dr. Kuriyama)

\* Relationship between environmental consciousness and action toward environmental conservation (Dr. Hayashi)

\* Application of the system control theory to environmental education (Mr. Fujihira)

\* Design of the scenario questionnaire and coordination of the project (Dr. Yoshioka)

○ Liaison (Dr. Tateno and Dr. Katsuyama)

Liaison facilitates the collaboration between two groups. Liaison participates discussions in the Group 1 and grasps the procession of the response-prediction model.

### IV. Research plan

(1) RPM group: Development of a response-prediction model of a watershed environment to the changes in land and water resource uses

The response-prediction model simulates the environmental changes caused by the virtual impacts to the environment. Specifically, physical, chemical and biological characteristics are predicted quantitatively. In this project, the impacts on changes in land and water resource uses will be applied to the watershed environment. The response-prediction model is composed of following sub-models.



#### 1. Carbon and nitrogen cyclings in forest environments

PnET model is applied for simulating material cycles in a forest environment. The model can evaluate effects of logging, acid deposition and so on. Since the model has been developed for North American forests, some modification will be needed for its application to Japanese forests.

#### 2. Rainfall-runoff model

For simulating quality and quantity of stream and river waters supplied from forests, runoffs from small catchment areas should be integrated. For this purpose, a rainfall-runoff model based on a distributed model will be developed.

#### 3. Nutrient loading from agricultural fields

Supplies of nutrients from agricultural fields in the watershed are estimated using a generator method. Data from the field survey are used for calculation of the nutrient loads.

#### 4. Flow model of lake water

To develop a lacustrine model on biogeochemical material cycle, flow of lake water should be simulated first. Applying three-dimensional hydrodynamic model, the flow model of lake water is constructed. Since the model includes thermal balance, water temperature is also formulated in the model.

#### 5. Biogeochemical material cycling in a lake environment

Biogeochemical model is needed to analyze the material cycles in an ecosystem. Materials and water inputs from a watershed to a lake generated by the forest and river models are the input to the flow model and the lacustrine biogeochemical model.

The performance of the response-prediction model will be validated with observational datasets including the nationwide survey on the stream chemistry.

(2) Social survey group: Elucidation of the relationship between the environmental quality and the sense of value for environments in the environmental consciousness

The social survey group implements and analyzes attitude surveys.

##### 1) Interviews to residents in the Lake Shumarinai watershed and nearby city and town

In order to elucidate the social and environmental situations from the viewpoints of the ordinary sense of residents, interview surveys are conducted in and around the Lake Shumarinai watershed. Collected scripts from residents are analyzed with the evaluation grid method.

##### 2) Survey on people's interests in a forest-agricultural-aquatic system

Interests in the watershed environment are studied based on the interviews and questionnaires. Questionnaire should be carefully developed in such a way that the preparation procedure is traceable, in order to assure the universal applicability of this method to other environments and stakeholders. Results of the analyses are used for selecting and scoping virtual impacts applied for the scenario questionnaire. The questionnaire is also analyzed using factor analyses to verify a model that assumes the relationships between people's interests in the environment and their environmental valuation.

##### 3) Keyword analysis

Many changes in environmental qualities will be caused by the virtual impact. Since people cannot recognize too many information about environmental changes, it is important to winnow the environmental change information for designing the scenario questionnaire. For accomplishing this purpose, keywords on forest and freshwater environments will be collected from people. Keywords, such as "clean water" and "beautiful green colour", are collected in the questionnaire mentioned in 2), and are put together with respect to their meanings, in order to select environmental qualities, which are noted by people. Selected environmental qualities are candidates to be used in the scenario questionnaire.

##### 4) Scenario questionnaire

Relationships between people's environmental consciousness and environmental change are analyzed using the responses to the questionnaires regarding the environmental change scenarios generated by the response-prediction model. When the project was planned, we intended to conduct questionnaires with

methods used in environmental economics, such as a contingent valuation method (CVM). In the feasibility study of the project, it was suggested that the economic valuation would not be always needed for our purpose. Therefore, we will consider a wider range of the methods for scenario questionnaires, for example the conjoint analysis. Questionnaire will be conducted not only to the residents who have some connection to the watershed considered, but also to the residents who do not have any connection to the watershed, in order to elucidate the general features of the relationship between environmental qualities and environmental consciousness.

### ■ Problems for implementation or points need to change plan

#### Outcomes up to Now

##### Outcomes of the project as a whole

I. Development of a response-prediction model of a watershed environment to the changes in land and water resource uses

The PnET-CN model developed by the US forest scientists was applicable to simulate material cycling and vegetation dynamics in the study areas. A hydrologic model (HYCYMODEL, Fukushima 1988) was used for estimating nutrient and water loads from forest to river. Lake water flow model and biogeochemical simulation model have been developed for Lake Shumarinai. Virtual impacts of forest logging were introduced into the models and assessed their impacts to the watershed environment.

II. Elucidation of the relationship between the environmental quality and the sense of value for environments in the environmental consciousness

Questionnaire on people's interests in a forest-agricultural-aquatic system was conducted to determine ranges of type and scale of virtual impact to the environment. Factor analyses of the questionnaire revealed that people seemed to evaluate environments similarly, with respect to the categories such as direct use value, indirect use values and environmental functions. Assuming several parameters based on direct and indirect use values, we can analyze people's interests in the watershed environment from the viewpoints of environmental values and people's attitude. There were differences in preferences of objectives and plans of forest loggings among people. Agriculturists tended to prefer larger logging at adjacent areas. Among environmental changes caused by logging plans in the forested watershed, deteriorations of water quality in rivers and lake was the most disreputable one.

##### Results of each work group

###### *I. RPM group*

Review papers (the Japanese Journal of Limnology, vol. 67, 2006) and summary report have been published (Katsuyama and Yoshioka 2006). Research results of each subgroups are as follows.

(1) Carbon and nitrogen cyclings in forest environments

To estimate material cycles and vegetation dynamics, we chose and run the PnET-CN model developed by US forest scientists, using measured data as an input. The model simulated well the patterns of the biomass increment and leaf nitrogen concentration, and the variations in stream NO<sub>3</sub><sup>-</sup> concentrations observed in the forested watershed with different forest ages in Wakayama and Nara prefectures. It suggested that the PnET-CN model could be applicable to our project. Recovery processes of forest biomass were different among type of vegetation (broadleaf and conifers) logged (Fig. 4). Temporal changes in NO<sub>3</sub><sup>-</sup> loading to streams were also different (Fig. 5). The model was also applicable to other type of environmental changes. It suggested that the effect of the increase in atmospheric nitrogen deposition on the stream NO<sub>3</sub><sup>-</sup> concentration was compensated by the increase in atmospheric CO<sub>2</sub> concentration (Fig. 6).

(2) Rainfall-runoff model The simulation using the hydrologic cycle model developed for the Japanese forested watershed (HYCYMODEL) was able to reproduce the seasonal pattern of the monthly NO<sub>3</sub><sup>-</sup> concentration. Monthly water and nutrient loads from forests calculated by the PnET-CN model were distributed into streams using the HYCYMODEL. (3) Lake model Simulation model of the water flow and biogeochemical cycling in a lake has been completed. The model suggested that the increase in NO<sub>3</sub><sup>-</sup> loading from the forest would cause an increase in abundance of phytoplankton (Chl. a concentration) in a

restricted area of the lake (Fig. 7). (4) Other results relating to the response-prediction model. • Effects of soil-scarification on early vegetation establishment: At the scarification site, light intensity showed a negative effect on the demography of tall-tree species, such as *Abies sachalinensis*. • Reconstruction of the past environment: From the densitometric analyses the past summer temperature and precipitation in the northern Hokkaido were reconstructed back to A.D. 1651. It was suggested that the Uryu-dam (or, Lake Shumarinai) construction did not affect the micro-meteorological condition in the watershed. Pollen and biogenic silicate analyses have elucidated regional and local climatic and vegetation changes for more than 7000 years. The long-term climate change is not only useful for validating the response-prediction model, but it is also used in the questionnaire to the examinees as environmental information. • Japan-Wide Stream Monitoring: This survey is practically the first comprehensive survey on the stream chemistry in Japan. Spatial distributions of ionic composition in Japanese natural streams (1278 streams in total) were obtained. Atmospheric nitrogen deposition, annual precipitation, annual air temperature, slope of catchment area and direction of the slope contributed to the stream NO<sub>3</sub>-concentration. The most effective factor was the atmospheric deposition. On the other hand, dissolved inorganic phosphorus concentration in natural streams seemed to be controlled by the geology of the catchments. • Microbial characteristics of Lake Shumarinai: Bacterial biomass ( $6.83 \times 10^7$  cells ml<sup>-1</sup>) was higher than that in eutrophic lakes, although the cell size was rather small in Lake Shumarinai. Picophytoplankton was also abundant ( $3.8 \times 10^4$  cells ml<sup>-1</sup>) in the lake. Data set obtained in this survey will be introduced in the biogeochemical model.

## II. Social survey group

(1) Survey on people's interests in a forest-agricultural-aquatic system Questionnaire on people's interests in a forest-agricultural-aquatic system was conducted to determine ranges of type and scale of virtual impact to the environment. Procedure for preparing the questionnaire was considered to keep high versatility and applicability to other environments. The questionnaire was distributed to 120 sites and 1800 residents in Japan. The collection rate was 49.2%. The tabulation is presented in the homepage of the project (<http://www.chikyu.ac.jp/idea/QS/interestQS.htm>, in Japanese).

Factor analyses of the questionnaire revealed that people seemed to evaluate environments similarly, with respect to the categories such as direct use value, indirect use values and environmental functions. Assuming parameters of direct use values (DUV) and indirect use values (IDUV), we can analyze people's interests in the watershed environment from the viewpoints of environmental values (Fig. 8).

### (2) Preferences on forest logging plans

Loggings for conservation of forest environment and for preventing global warming were approved more (>90%) than that for enlargement of national wood production (ca. 70%). Using the conjoint analysis, variations in people's preference on plans of forest loggings were surveyed. Plantation after logging was preferred more than strength and area of logging. Agriculturists tended to prefer larger logging at adjacent areas.

### (3) Scenario questionnaire

Five environmental qualities (forest landscape, amount and diversity of plant species, recreational use in the forest environment, turbidity of water, and deterioration of water quality in river and lake) were selected as a result of the analysis of keywords expressing images on forest, river and lake environments collected in the questionnaire on people's interests in a forest-agricultural-aquatic system (Fig. 9). Environmental changes in these five environmental qualities caused by artificial impact scenarios (as virtual plans) to the forested watershed were estimated using the response-prediction model applied in the project and observational data. Different scales and places for forest logging were selected in different plans. Conjoint analysis was conducted to determine the importance of these environmental qualities to the people's value judgment of plans. Among environmental changes caused by logging plans in the forested watershed, the deterioration of water quality in river and lake was the most disreputable one (Fig. 9). Detail analyses have been continued.

(4) Other results relating to the social survey • Conceptual consideration of the project: The methodology to be developed in the project has been considered from the viewpoint of the system control theory. It was suggested that the system control theory was applicable to the systematic environmental education (Fujihira et al. submitted).

### Problems and possible solutions

There are several disadvantages to elucidate the relationship between people's environmental consciousness and environmental quality using the conjoint analysis. Although it may be difficult to overcome them, preliminary approaches have been considered.

(1) In the conjoint analysis used in the scenario questionnaire, number of attributes (environmental qualities) that can be treated in the questionnaire is limited (<7). On the number of attributes treated in the conjoint analysis, we winnowed five environmental qualities by the keyword analysis, as mentioned in (b)-II-(3). Although excluded environmental qualities may be important ones for people's value judgment on environmental changes, scoping out less interested environmental qualities seems to be rational.

(2) Interactions among environmental qualities interfered the freedom in the profile design for the conjoint analysis. Usually the profile design is prepared by the orthogonal layout of the attributes and their levels. However, unrealistic profiles would be included, when the orthogonal layout was used to prepare the profiles. We prepared two questionnaires, one was designed by the orthogonal layout and the other was designed taking realistic condition of the environment into consideration. The differences between these two questionnaires will be analyzed to consider the applicability of the conjoint analysis to the SEA and EIA.

(3) Translation of the environmental changes to the level of the attribute extinguished the detail information predicted by the simulation model. It is difficult to include precise and detail information on the environmental change into the conjoint analysis. Group interview with presentation and explanation about predicted environmental changes may be applicable to solve this type of problem.

## Papers

### 【Original Articles】

- Fujimaki, R. and Tateno, R. 2007 Tokuchi, N. Root development across a chronosequence in a Japanese cedar (*Cryptomeria japonica* D. Don) plantation. *Journal of Forest Research* 12 :96-102..
- Kawano, T., Takahara, H., Nomura, T., Shibata, H., Uemura, S., Sasaki, N. and Yoshioka, T. 2007 Holocene phytolith record at *Picea glehnii* stands on the Dorokawa Mire in northern Hokkaido, Japan. *The Quaternary Research* 46 :413-426.
- Xu X. and Shibata H. 2007 Landscape patterns of overstory litterfall and related nutrient fluxes in a cool-temperate forest watershed in northern Hokkaido, Japan. *Journal of Forestry Research* 18 :249-254.
- Koshikawa, K.M., Takamatsu, T., Nohara, S., Shibata, H., Xu, X., Yoh, M., Watanabe, M. and Satake, K. 2007 Speciation of aluminium in circumneutral Japanese stream waters. *Applied Geochemistry* 22 :1209-1216.
- Noguchi, M. and Yoshida, T. 2007 Regeneration responses influenced by single tree selection harvesting in a mixed-species tree community in northern Japan. *Canadian Journal of Forest Research* 37 :1554-1562.

## Research Presentations

### 【Oral Presentation】

- Kawano, T., Nomura, T., Takahara, H., Shibata, H., Uemura, S., Sasaki, N. and Yoshioka, T. Holocene dynamics of spruce-hardwood mosaic stands and open swamp vegetation on the Dorokawa mire, northern Hokkaido, Japan based on phytolith and pollen analyses. 17th INQUA Congress, August 2007, Cairns, Australia.
- Hishi, T., Fujimaki, R., Tateno, R., Fukushima, K., Tokuchi, N. Chronological changes of a fine root cluster in anatomy, morphology and mycorrhizal infection in *Cryptomeria japonica* plantations. 4th

International symposium on physiological processes in roots of woody plants, September 2007, Bangor, UK.

- Shibata, H. Changes and response of ecosystem functions to the anthropogenic disturbances in a natural forest basin of northern Japan. 1st China-Japan Science Forum on Environmental Changes, Bio-resources, and Global Warming, March 2008, Beijing, China.

**【Poster Presentation】**

- Nagata, M. Bridging discourses of ordinary people and experts on environment change. 7th biennial conference of the Asian Association of Social Psychology, July 2007, Kota Kinabalu, Malaysia.

**Stage: FR**

**Project No.: 5-3**

**Project Name: A New Cultural and Historical Exploration into Human-Nature Relationships in the Japanese Archipelago**

**Project Leader: YUMOTO, Takakazu**

**Research Axis: Diversity**

**URL: <http://www.chikyu.ac.jp/retto/retto.htm>**

## ■ Research Objectives and Topics

### Research Objectives

The Japanese Archipelago has been extremely densely populated since the Neolithic Age, and most of the natural environment has been strongly influenced by human activities. The life patterns of humans have, in turn, been shaped by their use of biological resources, by their fauna and flora. Moreover, although the Japanese biota is derived from life forms which migrated from the continental mainland during periods when sea levels were lower, it has been further augmented by human beings, who have introduced additional species at various times. However, in spite of the intensive intervention by humans in the natural environment, there is still a rich biota in the Japanese Archipelago, which includes, for example, an abundance of indigenous species of angiosperm and freshwater fish. Because of this, it has been widely assumed that human-nature relations in pre-modern Japan were governed by some kind of traditional wisdom that prevented people from exhausting biological resources; or even that it was the moderate human activity itself that preserved the abundant biota and sustainability of biological resources in Japan.

However, the question of exactly how stable the coexistence between the nature and humans was in the past has not been resolved. Could it be that even in the Japanese Archipelago there has been a history of exhausting biological resources? If the wisdom and will to use biological resources in a sustainable way existed, how common were they? Moreover, could there have been any major social changes that occurred as a result of exhausting certain biological resources?

Although each of these questions has been tackled within the limits of one historical period, region, or one academic discipline, they have not been researched using a trans-disciplinary approach, over an area that would represent the whole Japanese Archipelago, or over a time span that encompasses the whole period from the earliest human habitation of Japan to modern times. The objective of the present project is to reconstruct as historical processes. It will examine, first, how the natural environment has been changed since the late Paleolithic Age, when human beings are first known to have existed in the Japanese Archipelago; second, how the biota has changed during that process; and third, what kind of perceptions, knowledge and skills the humans possessed, concerning both nature in general, and specific life forms. Our aim is to present a foundation for contemplating how human-nature relations should be developed, and to suggest concrete measures for preventing mass extinction of species in the near future.

### Background

The Japanese Archipelago extends over 3000 km from North to South, and includes subarctic, cool temperate, warm temperate and subtropical climatic zones. It is evident that, even during the global environmental changes that have taken place over the past 100 000 years, these various climatic zones were present. As a result, the characteristics of the natural environment and the human subsistence activities within the Japanese Archipelago varied greatly, as did the relationships between nature and human activity. Under the influence of climatic change and human activities, the distributions of individual species of plants and animals in the Japanese Archipelago and its surrounding landmasses have been constantly changing. Populations have repeatedly divided, expanded and diminished in response to changes in the availability of suitable habitat. Where suitable habitat was not available, the species became extinct.

The knowledge and skills that humans have developed concerning individual species can be considered to contain both the idea that biological resources should be used in a sustainable way, and the desire to harvest without fear of exhausting the resources. Although ethnological research has highlighted phenomena such as public management of lands and resources, and environmental preservation through limited harvest, it is still unclear when, in which region and among whom the philosophy of preservation was put into practice, or under which social conditions it became an influential way of thinking. Throughout the period of human habitation, the Japanese Archipelago has been blessed with a warm climate and abundant rainfall, and consequently abundant biological resources. But what is the history of overuse and exhaustion of those resources? And how did individual species fare in this historical process? These are the central issues of the present project.

Significance as a RIHN project

1) Reconstructing Japanese history from an unprecedented point of view in the following three respects.

(a) Taking the climatic changes over the last tens of thousands of years as an axis, the project will examine both the history of the living organisms and human history, interpreting history as the sum total of all human-nature relationship vectors in all the periods (for example, the *Satoyama*, a traditional rural agro-ecosystem which has established in early modern Japan).

(b) By comparative analysis of the social and economic factors that shaped and supported the human-nature relationships in each of six climatically and historically different regions of the Japanese Archipelago, the project will explicate the connections between those regions. At that we understand the present-day biota in each of the regions as a result of the history of the division, relocation and local or overall extinction of species.

(c) From the point of view of human ecology and using materials such as archaeological remains, historical records, and oral tradition, we will attempt to reconstruct the network of natural resource usage in each of the regions in each period. Based on the results of this analysis, we aim to identify the main cause of change in human-nature relationships, and to verify the extent to which the concept of using biological resources in sustainable ways existed in each period.

2) Building a theoretical method for reconstructing the history of human beings based on the interaction with the environment using a trans-disciplinary approach. The project attempts to establish a new research method, which can be applied in other regions, by explicating the mechanisms underlying human culture and environmental issues through an approach which is wide, both in its time and space scale, and which takes into account both the impact that natural environment has on the formation and change of human cultures, and the influence that human activities exert on the natural environment.

3) Proposing some guidelines for avoiding future threats to the environment. By understanding the long-term impact that human activities have on the natural environment through the change in subsistence/economic systems, it is possible to predict the future environmental dangers, e.g. the loss of biological diversity, and to propose a realistic policy for handling them. A special effort will be made to explain the mechanisms by which species or populations have become extinct in the past, and to provide a policy to avoid the extinction of species taking place at present.

## ■ Progress of Project

Progress as a whole project

1) A series of chronological charts of environmental history for each district is being compiled from epoch-making events on environmental issues and policy changes on resource managements. It will be completed by adding data of estimated vegetation changes (based on pollen analysis) and population change (based on historical demography).

2) The word "wise use" has been examined from various aspects in a workshop. Consequently, it is defined as knowledge and skills which have been able to use the regenerable natural resources without exhausting, and to obtain ecosystem services (provisioning, regulating, cultural, and supporting, *insensu*

Millennium Ecosystem Assessment (2005)) in sustainable ways. Examples of “wise use” and “unwise use” from each district are being sorted out and categorized by identifying which governance (e.g. community, local government, national government, international organization) took an initiative role, and according to what kind of incentive it concerned to.

3) Paleo-ecosystem WG and Plant geography WG held a cooperative workshop to combine each achievement. One of their outcomes is to identify the refugees for warm temperate plants and cold temperate plants in Last Glacial Maximum. The results were presented in a symposium of Japanese Society of Botany. Based on the discussion then, an estimated vegetation map in Last Glacial Maximum in Japan Archipelago (including Sakhalin) is now preparing for publication.

4) Analyses on old bones have been conducted, focusing to the comparison among Jomon period (high self-sufficiency, by hunting and gathering), Edo period (high self-sufficiency, by developed agriculture with national-wide trade) and Present (low self-sufficiency, food supported by international trade).

Progress in each working group

1) Paleo-ecosystem WG: Data of pollen analysis in Japan from various authors are being compiled to register in Global Pollen Database. Comparative pollen analysis is undergoing dated back to Last Interglacial Period in Lake Biwa, Kamiyoshi Basin, and the Osaka Group in Kinki region, and revealing the human activities and vegetation changes. Symposia were held in the annual meetings of Ecological Society of Japan and of The Japanese Association of Historical Botany.

2) Plant geography WG: Plants from various climate zones were selected and analyzed by DNA makers. Especially, nuclear DNA markers have successively developed on *Persea thunbergii* as a climax species and *Zanthoxylum maianthoides* as a pioneer species in warm temperate zone where less information is available.

3) Old human bone WG: Stable isotope analysis on present human based on hair was conducted to reveal the more-dependency on meats than on fish, and the extreme vegetarian lifestyle for some subjects. Also, stable isotope analysis of the collagen from old human bone of Edo Period revealed the considerable regional variations of food intake: from coastal fish to millets which produced in slash-and-burn cultivation.

4) Sakhalin WG: The locality known as Cyurui where molartooth of Naumann's elephants (*Palaeoloxodon naumanni*) were excavated 30 years ago was re-excavated to obtain environmental proxy as pollen and tephra.

5) Hokkaido WG: Documents, either official and private, in Shiribeshi region were examined to study the history of herring catch and destruction of forests owing to firewood and boiling fish. Governmental policy on resource managements in historical context is being analyzed.

6) Tohoku WG: The local extinction of large mammals, wolves, boars, monkeys and deer was studied based on old documents to reveal the year of extinction and its presumed reason. The present-absent map of monkeys in Edo Period, Meiji-Taisho Era, Showa 30s, the beginning of Heisei, and present in whole Tohoku region has completed.

7) Chubu WG: Documents in Edo Period were analyzed on the managements of *Osutaka-yama* (a area of the protected forest for rearing young hawks which provide to lords used for hunting birds). A lot of letters, which shows the conflicts between people who obtained the benefits from young hawks and people who wanted to log trees, was discovered.

8) Kinki WG: History of forests which have been providing timbers to old capitals (Nara, Kyoto, Osaka and others) were studied, and the exhausting of large trees, conflicts between lords and villagers, and the developments of transportation were related to each other. Domestic use of timber as housing in a village was studied by breaking down an old house, and the size and species of each timber were analyzed intensively to reveal the forest use surrounding the village.

9) Kyushu WG: Fire which maintains grassland in Aso and Kuju was analyzed by documents which recorded the ceremony of lord's hunting by firing. Also, a boring core analysis on pollen, tephra, plant opal revealed that the fire and grassland was observed before Akahoya tephra (ca. BP 6300).

10) Okinawa WG: Excavation of bone accumulation and documental works revealed that the extinction of dugong (*Dugong dugong*) in Yaeyama Islands was occurred by over-killed in Meiji Era, after the end



of sustainable managements by Shuri Dynasty which monopolized the resource use.

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- Toyama, Masanao ( Board of Education, Okinawa Prefecture, Chief, Okinawa WG:Ecological analyses on human-nature relationships )

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- Nakai, Sei'ichi ( Faculty of Humanities, Toyama University, Associate Professor, Conceptualization WG: Historico-linguistic analysis of the human-nature relationships )
- Sasaki, Naoko ( Research Institute for Humanity and Nature, Research Fellow, Conceptualization WG: Reconstruction of historical environmental from plant remains )
- Seo, Akihiro ( Research Institute for Humanity and Nature, Research Fellow, Conceptualization WG: Analysis of the distribution and genetic constitution of living plants )
- Shimizu, Isamu ( Center for Ecological Research, Kyoto University, Professor, Conceptualization WG: Empirical study on conservation of species )
- Tsuji no, Ryou ( Research Institute for Humanity and Nature, Research Fellow, Conceptualization WG: Ecological analyses on human-nature relationships )

## ■ Research Plan

### Fiscal year 2008

Paleo-ecosystem WG: Completing the vegetation map in Last Glacier Maximum. Conducting paleo-environmental analysis on each region where District-based WGs are studying, especially for recent 1,000 years.

Plant geography WG: Completing the genetic variation map of plants so far studied. Beginning the DNA analysis on human-planted plants in historical period (e.g. chestnuts, some species of oak trees).

Old bone WG: Continuing the stable isotope analysis on the materials in Jomon Period, Edo Period, and present.

District-based WGs: Continuing to compile chronological charts of environmental history from epoch-making events on environmental issues and policy changes on resource managements. Elucidating the examples of "wise use" and "unwise use", and analyzing which "environmental governance" led "wise use" or "unwise use".

Conceptualization WG: Generalizing the evidences and ideas from each WG, and proposing a tentative policy and guidelines for better human-nature relation.

### Fiscal year 2009

Paleo-ecosystem WG: Publishing the vegetation map in Last Glacier Maximum. Completing paleo-environmental analysis on each region to provide District-based WGs.

Plant geography WG: Publishing the genetic variation map of plants so far studied. Completing the DNA analysis on human-planted plants in historical period.

Old bone WG: Completing the stable isotope analysis on the materials in Jomon Period, Edo Period, and present, and making comparisons among them.

District-based WGs: Completing to compile chronological charts of environmental history from epoch-making events on environmental issues and policy changes on resource managements. Completing to elucidate the examples of "wise use" and "unwise use", and analyzing which "environmental governance" led "wise use" or "unwise use". Preparing a series of books

Conceptualization WG: Continue to generalize the evidences and ideas from each WG, and proposing a tentative policy and guidelines for better human-nature relation.

Preparing an international conference on "Biodiversity and Sustainable Use of Natural Regenerable Resources and Ecosystem Services" for 2010 COP10 Biodiversity Convention in Nagoya.

### ■ Problems for implementation or points need to change plan

- 1) Each district-based WG has already identified the target matter to be solved, but the synthesis of them is in a just beginning phase. We will make every effort to conduct it, mainly based on two ideas: “wise use” and “environmental governance”. As for chronological charts of environmental history for each district, the progress in each district is much different. So we will compile them, by adding standardized data of estimated vegetation changes (based on pollen analysis) and population change (based on historical demography).
- 2) The collaboration between Paleo-ecosystem WG and Plant geography WG is satisfactory one. Before this project, there has been no discussion between them on the same topics they are studying from different approaches (e.g. refugia in Last Glacial Maximum). They will publish the results in the next fiscal year on vegetation map and estimated refugia in Last Glacial Maximum.
- 3) To make up a policy and guidelines for better human-nature relations, more concentrated efforts and strategy are needed. Especially, for public communication, an international symposium should be designed as a satellite meeting of COP on Biodiversity Convention which will be held in 2010, the last year of the project, in Nagoya, Japan.

### Books

#### 【Chapters/Sections】

- Iketani K. 2007 Mobility and territoriality among hunting-farming-trading societies: the case study of bear hunting in mountain environments of Northeastern Japan. Grier, C., J. Kim, J. Uchiyama (ed.) *Beyond Affluent Foragers: Rethinking Hunter-Gatherer Complexity*. Oxbow books, UK., pp.34-44.
- Sato, H. and T. Tsutsumi 2007 The Japanese microblade industries: technology, raw material procurement and adaptation. Kuzmin, Y. V. et al. (ed.) *Origin and Spread of Microblade Technology in Northern Asia and North America*. Archaeology Press, Canada, pp.53-78.
- Igarashi, Y. 2007 Pollen. Tsujii, T., M. Okada and M. Maeda (ed.) *Moor in Hokkaido*. The Hokkaido Shimbun Press, pp.172-174. (in Japanese)
- Sato, H. 2007 Human history on sustainable use of resources. Japan Association for Quaternary Research (ed.) *Environment in the Near Future Viewed from the Earth History*. University of Tokyo Press, pp.145-163. (in Japanese)
- Fukamachi, K. 2007 Nature restoration: cultural perspective. Morimoto, Y. and Y. Shirahata (ed.) *Environmental Design*. Asakura Publishing Co., Ltd, pp.177-189. (in Japanese)
- Yumoto, T. 2007 An exploration into the coexistence of humans and wildlife. The Association of Japanese University Presses (ed.) *Time of Natural History*. The Association of Japanese University Presses, pp.51-54. (in Japanese)
- Yumoto, T. 2007 From 10,000-year history of forests. Akimichi, T. and Hidaka, T. (ed.) *Who owns the forests?*. Showado, pp.93-107. (in Japanese)

### Editing

#### 【Editing / Co-editing】

- Morimoto, S. (ed.) 2007 *Forestry and Life in Mountain Areas in Yoshino: Special Exhibition Commemorating the Designation of Important Tangible Folklore Cultural Properties*. Nara Prefectural Folk and History Museum, 102pp. (in Japanese)

### Papers

#### 【Original Articles】

- Setoguchi, H., W. Watanabe and Y. Maeda 2007 Molecular phylogeny of the genus *Pieris* (Ericaceae) with special reference to phylogenetic relationships of insular plants on the Ryukyu Islands. *Plant Systematics and Evolution*. (reviewed).
- Sato, H. 2007 Hunting culture in East Asia from the perspective of ethno-archeology. *Quarterly Journal*

*of Tohoku Studies* 10 :86-101. (in Japanese)

## Research Presentations

### 【Oral Presentation】

- Ogura, J. Forest history of Tadasu-no-mori. Regular Meeting of Kansai Branch of Japanese Society for Shrine Forests, September 2007, Kyoto. (in Japanese)
- Izuho, M. Geoarchaeological survey of late stone age site in Moi, Kami-horonai, Hokkaido. Symposium in the 114th Annual Meeting of The Geological Society of Japan “Geological phenomena in archaeological sites, September 2007, Sapporo.

### 【Poster Presentation】

- Igarashi, Y., H. Takahara, F. Katamura, Y. Mikishin, M. Klimin, V. B. Bazarova, S. Ikeda, A. Takehara Late glacial and Holocene vegetation changes in Sakhalin, Russian Far East. XVII INQUA Congress 2007, August 2007, Cairns, Australia.
- Takahara, H., R. Hayashi, K. Tanida, T. Danhara and H. Sakai Pollen record over the last 450,000 years dated by widespread tephra layers from Kamiyoshi Basin, Kyoto, Western Japan. XVII INQUA Congress 2007, August 2007, Cairns, Australia.
- Sasaki, N., H. Takahara. and G. Kishimoto Fire and human impacts on vegetation changes during the Holocene in the northern part of Kyoto. XVII INQUA Congress 2007, August 2007, Cairns, Australia.
- Tsujino R, K. Nakura, J. Takahashi, D. Kawase and T. Yumoto Plant distribution and human use in Akiyama region, Nagano Prefecture. The 55th Annual Meeting of the Ecological Society of Japan, March 2008, Fukuoka, Japan. (in Japanese)

**Stage:** FR

**Project No.:** 5-4

**Project Name:** Effects of Environmental Change on the Interactions between Pathogens and Humans

**Abbreviated Title:** Environmental Diseases

**Project Leader:** KAWABATA, Zen' ichiro

**Research Axis:** Circulation

**URL:** <http://www.chikyu.ac.jp/z/>

**Key Words:** Freshwater ecosystem, Environmental alterations, Koi herpes virus (KHV) disease, Human life, Interactions, Model

## ■ Research Objectives and Topics

### *Research Objectives*

The rapid spread of emerging infectious diseases is threatening human lives. Our project team aims to reveal the interactions between environmental alterations by human activities, outbreaks of pathogens, and changes in human lifestyle. We will suggest ways to prevent the outbreak and spread of infectious diseases and explain how to facilitate the safe coexistence of humans and pathogens.

### *Background*

The spread of emerging infectious diseases is becoming a serious global environmental problem. To predict outbreaks of infectious diseases and to prevent epidemics, it is essential not only to conduct pathological studies but also to understand the interactions between humans and environments that generate infectious diseases.

The objectives of this study are to clarify the relationships between anthropogenic environmental changes, pathogens that emerge under these environmental changes, and the effects on humans of diseases caused by those pathogens. Our project is based on the hypothesis that anthropogenic environmental changes mediate the spread of disease. Outbreaks of mass mortality in carp, which have long been part of human food resource and culture, caused by the koi herpes virus (KHV) disease have occurred worldwide since 1998. Specifically, we will focus on the relationships between environmental changes in a freshwater ecosystem, KHV, common carp (*Cyprinus carpio carpio*), KHV disease and humans. We regard this system as a model of interactions between pathogens and humans, because parameters common to other diseases are involved in the system and also this system allows us to conduct experiments to verify the interactions. We will then establish a general model for the emergence and spread of diseases.

This study could help deal with emerging infectious diseases proactively, before they become a major health threat, through an understanding of the nature of disease, and contribute to the safe coexistence of humans with pathogens to realize long-term societal security.

## ■ Progress of Project

Our project is organized into five research groups, an executive group, and an advisory group. The progress of each group is as follows:

### 1) Environmental alteration by humans (Group 1):

We surveyed the topology, bottom quality, and water quality of four satellite lakes of Lake Biwa that seemed to be important habitat for common carp. We found heterogeneous environments in these lakes.



These environments may affect the behavior of common carp. A mathematical model, based on the hypothesis that common carp migrate between the satellite lakes seeking better habitats, predicted that lower connectivity among satellite lakes increases the stress carp experience and enhances the spread of KHV.

2) Ecology of pathogens and their hosts (Group2):

We developed a method to detect KHV in lake water and bottom sediments. We collected 528 common carp from seven sites in Lake Biwa to obtain materials for stable isotope analyses and to identify their behavioral range. We studied a method to measure cortisol as a stress-induced hormone. We installed breeding tanks for common carp with a controlled water temperature for the stress experiment.

3) Infectious process and ecosystem effects (Group 3):

We collected blood samples from 120 common carp that were captured in Iba-naiko, a satellite of Lake Biwa, to measure antibodies against KHV.

4) Economics and culture (Group 4):

We began our study of the effect of common carp extinction on humans based on the concept of "usefulness in uselessness". This idea is that the value of common carp seems to have already disappeared from our daily life; however, we are not conscious of this value and it remains hidden as an indispensable element for our life. We have initiated our study of the requirements for converting uselessness to usefulness and the economical understanding of uselessness.

5) Feedback (Group 5):

We reviewed the case of *Legionella* infection in the context of our project to determine if our model will apply to other infectious diseases. We also exchange information about avian influenza and *Vibrio* enteritis with other research groups to find common parameters involved in infectious disease outbreaks.

6) We have established the research topics for each group and have integrated them into the basic structure of the interactions between pathogens and humans through 14 seminars.

7) We have recommended our research framework on infectious diseases in aquatic ecosystems and humans to an international program of biodiversity science (DIVERSITAS).

8) A pre-survey was conducted in Lake Ehai, China, with a Chinese collaborator.

9) We are preparing an international workshop in 2008.

### ○Co-Researchers

- ASANO, Kota ( Graduate School of Human and Environmental Studies, Kyoto University, Associate Professor, Model for Economical Effects )
- DIVERSITAS ( International Programme of Biodiversity Science Members, Secretariat in France, 11 members of 9 countries, Biodiversity and disease, Advisory )
- HISHIDA, Tatsuya ( Center for Ecological Research, Kyoto University, Graduate Student, Food Web Analysis )
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### ■ Research Plan

Our research is proceeding as originally planned.

1. We had two times core-member meetings, and 7 times conferences. Reports of conferences are under preparation.
2. We focus on collaborating with researchers of Shanghai Jiao Tong University.
3. We could get the concrete data to show “interactions between KHV diseases and humans” as the model “interactions between pathogens and humans”.

### ■ Problems for implementation or points need to change plan

1. It is necessary to collect more data to establish “interactions between pathogens and humans”.
2. Collaboration between researchers and local administrative agencies are needed for further survey in

Lake Ehai, China.

3. To construct the model of "interactions between pathogens and humans", it is important to have close contacts and frequent discussion between researchers of each group.

#### ■ Results in 2007

- 1) We surveyed the topology, bottom quality, and water quality of four satellite lakes of Lake Biwa that seemed to be important habitat for common carp. We found heterogeneous environments in these lakes. It was suggested that these environments may affect the behavior of common carp. A mathematical model, based on the hypothesis that common carp migrate between the satellite lakes seeking better habitats, predicted that lower connectivity among satellite lakes increases the stress carp experience and enhances the spread of KHV.
- 2) A pre-survey was conducted in Lake Erhai, China, with Chinese collaborators.
- 3) We established a method to detect KHV in lake water.
- 4) We collected carp from seven sites in Lake Biwa to obtain materials for stable isotope analyses and identified their behavioral range.
- 5) We developed a method to measure cortisol in water as a stress-induced hormone. We conducted a preliminary stress experiment using breeding tanks for common carp with a controlled water temperature.
- 6) We measured antibodies against KHV in blood and detected KHV in tissues of common carp.
- 7) We began our study of the effect of common carp extinction on humans.
- 8) We exchanged information about some infectious diseases with other research groups to find common parameters involved in infectious disease outbreaks.
- 9) We have integrated results from each group into the basic structure of the interactions between pathogens and humans.

#### ■ Scheduled Research Activities in 2008

- 1) Clarify the behavior of the common carp in a lake using radio telemetry system.
- 2) Clarify the behavior of the common carp with a KHV antibody that reveals the history of KHV infection, and shows the places where the infection is likely to occur.
- 3) Reveal the distribution of KHV in Lake Biwa.
- 4) Clarify the environmental characteristics of the places where KHV and the carp are both present.
- 5) Reveal the relationship between environmental factors and stress through experiments.
- 6) Try to assess the economic impact of the disappearance of the carp.
- 7) Create a preliminary model of the effect of environmental change on the interactions between KHV and humans.
- 8) Analyze cases of other infectious diseases from the viewpoint of their interaction with humans.
- 9) Conduct a survey on spatial distribution in water temperature in Lake Erhai, China.
- 10) Provide multidimensional assessment of environmental change on the interactions between pathogens and humans from the perspective of the local residents.
- 11) Collaborate with an international program of biodiversity science (DIVERSITAS).
- 12) Hold an international symposium on Environmental Change, Pathogens and Human Linkages at RIHN, Kyoto.

#### Books

##### 【Chapters/Sections】

- Kakehashi, M. 2007. Inaba H (ed.) Perspectives of modern human demography of infectious diseases - influence and mathematical theory of infectious diseases -. Minerva-Shobo, pp.196-217. (in Japanese)

#### Papers

##### 【Original Articles】

- Yamanaka, H., Y. Kohmatsu and M. Yuma 2007 Difference in the hypoxia tolerance of the round crucian carp and largemouth bass: implications for physiological refugia in the macrophyte zone. *Ecological*

*Research* 54 (3) :308-312. (reviewed).

- Miki, T., Ueki, M., Kawabata, Z. and Yamamura, N. 2007 Long-term dynamics of catabolic plasmids introduced to a microbial community in a polluted environment: mathematical model. *FEMS Microbiology Ecology* 62 :211-222. (reviewed).
- Honjo, M., Matsui, K., Ishii, N., Nakanishi, M. and Kawabata, Z. 2007 Viral abundance and its related factors in hypolimnion of a stratified lake.. *Archiv fuer Hydrobiologie* 168(1) :105-112. (reviewed).
- Sekino, T., Genkai-Kato, M., Kawabata, Z., Yoshida Y., Kagami, M., Gurung, T. B., Urabe, J., Higashi, M. and Nakanishi, M. 2007 Role of phytoplankton size distribution in food web structure: a comparison between Lakes Baikal and Biwa. *Limnology* 8 :227-232. (reviewed).

**Stage: PR**

**Project No.: 2-8**

**Project Name: Environmental Changes and Infectious Diseases in Tropical Asia**

**Abbreviated Title: Ecohealth Project**

**Project Leader: MOJI, Kazuhiko**

**Research Axis: Resources**

**URL: <http://www.chikyu.ac.jp/ecohealth/>**

**Key Words: Environmental changes, Infectious Disease, Malaria, breakbone fever, Filaria, Leishmania, Clonorchiasis Thailand, water-borne diseases, Tropical Asia**

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## ■ Research Objectives and Topics

### Objectives:

This project is to clarify the relationship between various environmental changes and rise and fall of infectious diseases in tropical Asia. The project studies the effects of human societal and environmental changes on the ecology and epidemiology (or endemiology) of vector-borne diseases such as malaria, dengue fever, opisthorchiasis (liver fluke infection) in tropical monsoon Asia. Population increase, urbanization, deforestation, spread of wet rice cultivation, economic development, changes in life style or so-called modernization, and population migration are the factors changing the ecological relationships among human beings, pathogens, and vectors.

The project also investigates the relation among climate changes (temperature, rainfall, etc.), flood and drought and some infectious diseases (water-borne diseases such as cholera). The study aims at offering new disease-ecological insights for evaluating the relation of infectious diseases with local and global environmental changes.

### Basic concept:

Incidence of human infectious diseases is a kind of biological interaction between pathogens and human beings. It is directly related to both the ecology of pathogens and the ecology of human beings. The ecology of pathogens is a part of the environment of human beings, while the ecology of human beings is a part of the environment of pathogens. Therefore, all the infectious disease, necessarily having links with environments, can be considered as environmental problems.

Moreover, incidence of many human infectious diseases is related with non-human reservoirs and/or vectors of the pathogens. Incidence of vector-borne diseases such as malaria, for example, is related to the ecology of pathogens, vectors, and humans (and of non-human reservoirs in some diseases). These ecological settings have been changing very rapidly in tropical Asia because of man-made environmental changes. How the environmental changes have effects on the rise and drop of the diseases is of interest of this project.

### Background:

The Millennium Ecosystem Assessment (MA) was called for by United Nations Secretary-General Kofi Annan in 2000 in a report to the General Assembly entitled *We the Peoples: The Role of the United Nations in the 21st Century*. The MA should help to achieve the United Nations Millennium Development Goals (MDGs) and to carry out the Plan of Implementation of the 2002 World Summit on Sustainable Development. In MA reports, harmful effects of ecosystem change on human health was extensively studied. Infectious disease is one of the important health impacts. The present project is on the same direction. The project leader identifies the following three global problems for the present world:

- 1) health problems and starvation of poor people who have never benefited by development (problems of failure; poor people in Sub-Saharan Africa and ethnic minorities in Southeast Asia),
- 2) health and environmental problems of sustainability in developing countries. They are creating

environmental problems and reducing future possibility (problems of success; many areas in China, ethnic majority of Southeast Asia and India), and

3) health and environmental problems in “developed” countries. They produce and reproduce the modern value system which is by no means sustainable. This modern value system creates the first and second problems above.

We need to tackle these problems of development in the modern era as common issues for all humanity. The project will address the challenges from the standpoint of human infectious diseases.

So far, modern human society has been studying and fighting with infectious diseases by applying the bio-medical approach. Nowadays, this tendency seems very strong. Human society depends heavily on biomedical measures in terms of control and management of infectious diseases. Ironically, however, this dependency itself makes mistrust of medical measures/services.

The project is thus aimed to provide a view of seeing an infectious disease as an environmental issue. Because human activities is expanding beyond national borders, problem of infectious diseases become a global environmental issue, as well as a local or national environmental issue.

There has been a tendency that study of pathogens, vectors, and human behaviour was independently executed. Long-term integrated epidemiological study of infectious diseases has been rare. The project leader tried to integrate the studies of pathogens, vectors, and human behaviour for studying epidemiology of malaria in Vietnam and Indonesia. This integration is important and necessary, but not sufficient. We need to collect more information from the viewpoints of area studies and history, geography and ecology, agricultural science and forestry, climatology, and so on. The project was thus launched at RIHN to realize this kind of comprehensive study.

#### **Contributions to global environmental issues:**

The project has no aim to provide a direct and practical solution to the global environmental issues. If we can control infectious diseases more effectively and efficiently, it would be possible to reduce the number of those affected. At the same time, however, that would reduce mortality and then create more development needs; there is no guarantee of orderly development.

Unlike medical control programs/projects which usually aim at short-term problem-solving approaches of infectious diseases, this project tries to understand the fundamental relations of human life and ecology of pathogens and vectors, by making trans-disciplinary and integrated approaches. If the project can provide a long-term view of human survival and health toward the future, the impact should be substantial not only for the tropical Asia, but also for the other parts of the world.

#### **Research methods and area:**

1) Long-term observation of a local population in Lahanam area, Songkhone district, Savannakhet province, Lao PDR by establishing Demographic Surveillance System (DSS). Since 2005 we are following about 4,500 residents. In Bangladesh, we use data from the Matlab DSS and others.

2) Collection and analyses of community-based information on environmental changes and health including infectious diseases.

3) Collection and analyses of national-based information on environmental changes and health including infectious diseases (analyses should be the district level and/or provincial level).

4) Discussion on global ecohealth concept.

#### **Project Organization:**

The project team can be divided into two groups; the field study group and the integration group.

**Field group** can be further divided into two major groups (Lao and Bangladesh) and small groups.

1) Lao team: with National Institute of Public Health and other institutions.

Site and theme: Savannakhet (DSS, MCH, liver fluke, malaria).

National level population health and policies.

Other small specific studies.

2) Bangladesh team: with ICDDR,B, IEDCR, NIPSOM and others.

Site and theme: Matlab, Dhaka, other area (climate and health on national level).

Filariasis, malaria, leishmaniasis.

National level infectious disease data base.

3) Small field teams: Vietnam, Myanmar, Indonesia (malaria).

Sri Lanka (diarrhoea and others).

China (HIV/AIDS).

### **Integration group**

4) Integration team: Establishment of ecohealth view

In collaboration with other international project on ecohealth, the project tries to contribute to the establishment of concept of ecological health. At the same time, this concept must be reflected in the change of human behaviour, disease control and health promotion. Under the new concept, the project seeks to provide people with new measurements and/or tools to change the population health (like bednet score, HIV related ART-adherence score, etc.).

5) Study of regional environmental change and infectious diseases epidemiology

After collecting and analyzing district-level information on environmental change and infectious diseases in Lao PDR and Bangladesh, the research possibility will be studied to develop the standard method to analyze the data through the tropical Asia. And the framework to do this should be sought out.

6) Historical study group

This group works on some episodes between environmental and societal changes and occurrence of infectious diseases during the war in the battle field. Other historical studies are also conducted by recruiting historians of the countries studied.

7) Demographic study group

Demographic transition and health transition are studied in Lao and other tropical Asian countries. The decrease of each infectious disease in the course of health transition must be studied.

8) Agro-forestry group

Information of changes in forest and agriculture are collected and methodology to related it with occurrence of infectious diseases is developed.

### **■Progress of Project**

1) Vietnam team:

Abe, Sunahara, Nakazawa, Moji and others developed "bednet score" which indicate effective use of bednet for protecting malaria infection. The paper is under submission.

2) Laos team:

We jointly organized the first National Health Research Forum with National Institute of Public Health (NIOPH) in September in Vientiane, Lao PDR. We presented the plan of our study for the next five years

as well as results of our study of the RIHN eco-history project for the last five years. We are now making the detailed plan for the next five years.

### 3) Bangladesh team:

Dr. Hashizume published three papers on climate and diarrhoea. Collaboration with Dr. Hayashi's team of Kyoto University Institute of Disaster Prevention has been promoted, and they are jointly preparing the collaborative work with ICDDR,B (International Centre for Diarrhoeal Disease Research, Bangladesh).

4) The leader's integration team published a translation of "Modern Infectious Disease Epidemiology (2nd edition, London, Arnold)" by Professor Johan Giesecke. Another translation of "Rising Life Expectancy" by Professor James Riley will be published soon. Also a Japanese book titled "Anthropology and International Health Cooperation" edited by Matsuzono, Moji, and Shirakawa will be published soon.

5) Historical study team and ecological study team also had meetings. The activity reports will be made by March.

## ○Co-Researchers

- MOJI, Kazuhiko ( Research Institute for Humanity and Nature, Professor, Project Leader )
- MASCI-TAYLOR, Nicholas CG ( Cambridge University, Professor, Bangladesh Filariasis and STH studies )
- KOBAYASHI, Shigeo ( Kyoto University, Graduate school of Asian and African Area Studies, Professor, Agro-forestry, Agro-forestry and human security )
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- OHBA, Tamotsu ( Blue ecology research, senior researcher, Demographic Transition and Lao Lahanam DSS )
- BOUPHA, Bounngong ( National Institute of Public Health, Lao PDR, Director/Professor, Lao Public Health )
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- PONGVONGSA, Tiengkham ( Savannakhet Malaria Centre, Lao PDR, Center chief, Malaria, Liver fluke of a sea bream )
- ISLAM, Sirajul ( ICDDR, B, Bangladesh, department/head )
- HUNTER, Paul ( University of East Anglia, UK, Professor )
- LE Khanh Thuan ( NIMPE, Vietnam, Director/Professor, Malaria, control in Vietnam )
- KOBAYASHI, Jun ( JICA )
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- SOURAXAY, Phrommala ( National Institute of Public Health, Lao PDR, Deputy Director )
- PANOM, Phongmany ( Ministry of Health Savannakhet province, Lao PDR, Deputy Director )
- SAMLANE, Phompida ( Center Of Malariology, Parasitology And Entomology, Lao PDR, Director )
- SACK, David ( ICDDR, B, Bangladesh, Director/Professor )
- CAIRNCROSS, Sandy ( London School of Hygiene and Tropical Medicine, Professor )



## ■ Research Plan

### Objectives:

This project is to clarify the relationship between various environmental changes and rise and fall of infectious diseases in tropical Asia. The project studies the effects of human societal and environmental changes on the ecology, endemiology and epidemiology of infectious diseases. Main targets are 1) vector-borne diseases such as malaria, dengue fever, filariasis, leishmaniasis; 2) food-borne diseases such as opisthorchiasis (liver fluke infection) in Lao and Thailand; 3) water-borne diseases such as cholera and other diarrhoeal diseases; and 4) other diseases in tropical Asia (schistosomiasis, HIV/AIDS, etc.). Population increase, urbanization, deforestation, spread of wet rice cultivation, economic development, changes in life style or so-called modernization, and population migration are the factors changing the ecological relationships among human beings, pathogens, and vectors. The project also investigates the relation between climate changes (temperature, rainfall, etc.) and some infectious diseases (water-borne diseases such as cholera). The study aims at offering new disease-ecological insights for evaluating the relation of infectious diseases with local and global environmental changes. The overview of the project concept is shown in Figure 1. This research field has been recognized as "ecohealth."

### Research Method:

1) Long-term observation of a local population in Lahanam area, Songkhone district, Savannakhet province, Lao PDR by establishing Demographic Surveillance System (DSS). Since 2005 we are following about 4500 residents. In Bangladesh, we use data from the Matlab DSS and others.

2) Collection and analyses of community-based information on environmental changes and health including infectious diseases.

3) Collection and analyses of national-based information on environmental changes and health including infectious diseases (analyses should be the district level and/or provincial level).

4) Discussion on global ecohealth concept.

### Project Organisation

The project team can be divided into two groups; the field study group and the integration group. Field group can be further divided into two major groups (Lao and Bangladesh) and small groups.

1) Lao team: with National Institute of Public Health and other institutions Savannakhet (DSS, MCH, liver fluke, malaria) National level population health and policies Other small specific studies

2) Bangladesh team: with ICDDR,B, IEDCR, NIPSOM and others Climate and health: Matlab, Dhaka, other area, national level Filariasis, malaria, leishmaniasis  
National level infectious disease data base

3) Small field teams: Vietnam, Myanmar, Indonesia (malaria), Sri Lanka (diarrhoea and others), China (HIV/AIDS, schistosomiasis), The Philippines (schistosomiasis)  
Integration group (plus inter-regional groups)

4) Integration team: Establishment of ecohealth view

5) Study of regional environmental change and infectious diseases endemiology

6) Historical study group

7) Demographic study group

8) Agro-forestry group

### ■ Problems for implementation or points need to change plan

#### RESPONSE TO THE COMMENTS

1) In the former plan, some studies of infectious diseases in Oceania were planned. This is because Papua New Guinea and Papua Barat of Indonesia are the most severely malaria infested area in Asia and the Pacific, and because Pacific islands are also filaria infested area. But, because of many kinds of limitation and suggestion from the external review committee, the project decided to concentrate to the study in tropical Asia alone. However, when some interesting and feasible theme is found, the project may expand to Oceania for the comparison with tropical Asia.

2) For responding the comment to make clear the difference from the ordinary medical research project such as conducted by the World Health Organization, we explicitly mentioned that this study is an "ecohealth" study, seeking the long-term population health and ecological sustainability. This project should not be recognized as a medical project. The project deal with population health, but, it does not necessarily limit the project only in the medical science.

3) For making stress of the above-mentioned point, the project invited researchers of medical history, agro-forestry, forestry, and climatology.

#### FUTURE ACTIVITIES

1) Organizing meetings and stimulate discussions internally and externally.

2) Establishing recording and disseminating system of the project activities, and developing methodologies of studying relationship between changes of environment, people's living and population health.

3) By the end of December 2008, the project is planning to do the following activities

- Proposal writing for Lao and Bangladesh.
- Ethical clearance from RIHN
- Submission of 5yr research proposal for NIOPH, Lao PDR
- MOU with NIOPH and Savannakhet Provincial Health Department.
- Ethical clearance from MOH of Lao PDR.
- Submission of 5yr research proposal for ICDDR, B of Bangladesh.

4) Research plan in each individual study section

Lao 1: Re-establishing the Lahanam DSS

- renewal census
- training of staff
- introduction of the paperless DSS system
- Introduction of bio-metric identification (maybe in 2009?)
- Establishment of the vital record
- Strengthening the Asia DSS network (with Vietnam and Thai)

## Lao 2: Malaria study in Sepone district

- Feasibility study of introduction of DSS
- Study of urine examination for malaria epidemiology
- Collection of malaria data in the area.

## Bangladesh 1: Collaboration with ICDDR,B

- Establishment of collaboration
- Establishment of the project office in ICDDR,B Dhaka.
- Data collection and analyses in Dhaka (Matlab data, Dhaka data)

## Bangladesh 2: Collaboration with IEDCR, NIPSOM, and Cambridge University

- Establishment of National database for infectious diseases
- Analyses of the data on malaria, filaria and other diseases.
- Study the relation among vegetation, climate and diseases.

## Vietnam:

- Publishing malaria data of ethnic minority
- Collection of information on border malaria between Vietnam and

## China :

- Collection of information of HIV/AIDS and human migration
- Collection of information of schistosomiasis in southern part of China

**Books****【Authored/Co-authored】**

- Matsuzono M, Moji K, Sirakawa C Feb,2008 Anthropology and International Health Coporation (人類学と国際保健医療協力) . Akashi shoten, Tokyo, 212pp. (in Japanese)

**【Translations / Joint Translations】**

- Yamamoto T, Moji K 2007 *Modern Infectious Disease Epidemiology* (2nd edition). Showado, Kyoto, Translation of Giesecke J . Arnold , London,
- Moji K, Kaneda E, Matsuyama A, Komazawa D Mar,2008 Rising Life Expectancy: A Global History (健康転換と寿命延長の世界誌) . Meiwa shuppan, Tokyo, 236pp. Translation of James C. Riley Rising Life Expectancy: A Global History. Cambridge University Press , Cambridge, 241pp.

**Papers****【Original Articles】**

- Guoxi Cai, Kazuhiko Moji, Xiaonan Wu and Konglai Zhang Jun,2007 Knowledge, attitudes, beliefs, and practices of Chinese migrants in Nairobi, Kenya and Dar es Salaam, Tanzania toward HIV/AIDS.. *Tropical Medicine and Health* 35(1) :11-18. (reviewed).
- Cai G, Moji K, Honda S, Wu X, Zhang K. Aug,2007 Inequality and unwillingness to care for people living with HIV/AIDS: a survey of medical professionals in Southeast China.. *AIDS Patient Care STDS* 21(8) :593-601. (reviewed).
- Yahata Y, Imai H, Fukuda Y, Zhang Y, Satoh T, Nakao H, Moji K, Amano K Sep,2007 BCG immunization age in urban and rural areas of Akita Prefecture, Japan. *J Physiol Anthropol* 26(5) :547-551. (reviewed).
- Nakamura S, Hongo R, Moji K, Oku T Sep,2007 Suppressive effect of partially hydrolyzed guar gum on transitory diarrhea induced by ingestion of maltitol and lactitol in healthy humans. *Eur J Clin Nutr* 61(9) :1086-1093. (reviewed).Epub 2007 Jan 24..
- Hashizume M, Armstrong B, Hajat S, Wagatsuma Y, Faruque AS, Hayashi T, Sack DA. Oct,2007 Association

between climate variability and hospital visits for non-cholera diarrhoea in Bangladesh: effects and vulnerable groups.. *Int J Epidemiol* 36((5)) :1030-1037. (reviewed). Epub 2007 Jul 30. .

- Hashizume M, Armstrong B, Wagatsuma Y, Faruque AS, Hayashi T, Sack DA. Nov, 2007 Rotavirus infections and climate variability in Dhaka, Bangladesh: a time-series analysis.. *Epidemiol Infect* :1-9. (reviewed).
- Hashizume M, Armstrong B, Hajat S, Wagatsuma Y, Faruque AS, Hayashi T, Sack DA. Jan, 2008 The effect of rainfall on the incidence of cholera in Bangladesh.. *Epidemiology* 19(1) :103-110. (reviewed).

## Research Presentations

### 【Oral Presentation】

- Kagawa M, Tahara Y, Byrne NM, Moji K, Tsunawake N Hills AP Impact of gender and maturation on anthropometric characteristics and relationship with percentage body fat estimated from underwater weighing in Japanese. The 39th Conference of the Asia-Pacific Academic Consortium for Public Health (APACPH), Nov 21, 2007–Nov 25, 2007, Saitama, Japan.
- Moji K et al. Tropical medicine and area studies in Asia and Pacific: Integration towards the better population health of the region.. Symposium of The 21st Pacific Scientific Congress , June 2007, Okinawa, Japan. Symposium of The 21st Pacific Scientific Congress (Okinawa, Japan).
- Moji K, Kaneda E, Boupha B Establishing a Demographic Surveillance System in Lao PDR as a Tool Bridging Tropical Medicine and Area Study. The 21st Pacific Scientific Congress, June 2007, Okinawa, Japan. in "Tropical medicine and area studies in Asia and Pacific: Integration towards the better population health of the region2.
- Moji K et al. Lao health development study in Savannakhet 2003-2007 and beyond: Making a new type long-term collaborative scheme in the field of public health sciences. Lao PDR. National Health Research Forum, September 2007, Vientiane, Lao PDR.
- Moji K, Kounnavong S, et al. Lao health development study in Savannakhet 2003-2007 and beyond: Introduction of Lahanam DSS.. The 9th Annual Workshop of the Health System Research Project and the Field Laboratory of Bavi, December 2007, Hanoi, Vietnam. (in Japanese)
- Moji K Global Environment and Health. Annual meeting of the Nagasaki Society of Study of Health Science, December 2007, Nagasaki, Japan.

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**Stage: PR**

**Project No.: 3-4**

**Project Name: Human Life, Aging, and Disease in High-Altitude Environments: Physio-medical, Ecological and Cultural Adaptation in the Three Great "Highland Civilizations"**

**Project Leader: OKUMIYA, Kiyohito**

**Research Axis: Diversity**

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### ■ Research Objectives and Topics

#### Research Objectives:

Human life in highlands and its association with nature and socio-economic environment will be clarified through the comparative study of the three major highland zones: the Andes, the Himalaya and Tibet, and the Ethiopian Highlands. With the new perspective of "Highland Civilizations", human-environmental relationship will be verified by studying the human life, aging, and disease in local life and the effects of globalization on highlands.

#### Background:

The four great ancient civilizations of the world arose on the banks of great rivers and are thus called the "Great River Civilizations". The viewpoint of "Highland Civilizations" was realized by comparison of the three major highlands and they have been sustainable with common characteristics and local inherence. The objective of the project is to understand the relationship between people and the highland environment. This will be accomplished by verification of the extent and limitations of local knowledge regarding adaptation to high-altitude environments. Furthermore, we intend to find new viewpoints in the study of global environmental issues.

#### Significance for "Global Environmental Issues" :

Urbanization and environmental destruction are progressing universally with socio-economic globalization. The deterioration of village communities, caused by the outflow of villagers to urban areas, is occurring rapidly. The large-scale destruction of forests and grasslands are also progressing. Those rapid changes have never been experienced traditionally. Lifestyle-related diseases, such as diabetes and hypertension, are also increasing quickly with the elongation of mortality and changes in lifestyle, and are regarded as diseases related to modern civilization. Highlands are fragile, and are possibly the area most susceptible to the effects of globalization. Therefore, an examination of their current state is urgently needed. High altitude peoples have exploited the harsh and fragile environments as best as possible; highland areas should be recognized as an appropriate model for the sustainability of civilizations. Sustainable relationships between people and the environment have been maintained by the unique local knowledge of how to adapt livelihoods to the ecosystem. However, high-altitude environments may be vulnerable to the rapid changes caused by socio-economic globalization. We are discussing a hypothesis that "glocalism" must be shown clearly as the coexistence of localism with globalism. We will present the "futurability" of "Highland Civilizations" by verification of this hypothesis.

### ■ Progress of Project

- 1) Field-Medicine Team: The pre-research of life-style related diseases and ageing in high altitude people were started in Qinghai Tibetan in China and the Andes in Peru and the concrete plannings were discussed with the counterparts.
- 2) Mountain-Anthropology and "Highland Civilizations" team: The pre-research of Highland Civilizations were started in the Andes in Peru, Ethiopian highland and Tibet.
- 3) Agro- Environment Team: The pre-research of the adaptation of livelihood in the south of the

Himalaya, such as Tawan in Arunachal Pradesh and Bhutan.

4) Forest Environment Team: The pre-research of the forest environment in the upstream of the Mekong in the north of Laos, Myanmar and Yunnan in China.

5) Highland-Lowland Interaction Team: The pre-research of the highland-lowland Interaction was started around the Tibetan Plateau, such as Ladak in India.

6) High altitude environment team: Accumulation of the database of precipitation was started in the Himalaya and Tibetan Plateau.

### ○Co-Researchers

- ◎ Kiyohito Okumiya ( Research Institute for Humanity and Nature, Associate Professor, Supervision )
- Kozo Matsubayashi ( Center for Southeast Asian Studies, Kyoto University, Professor, Supervision, Health and Disease in Highlands, Aging and Culture )
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- Kuniaki Otsuka ( Department of Cardiology, Tokyo Women's University, Professor, Arteriosclerosis and Hypoxia )
- Taizo Wada ( Center for Southeast Asian Studies, Kyoto University, Researcher, Mental Health )
- Ryota Sakamoto ( Department of Public Health, Kyoto University, Student, Public Health )
- Michiko Fujisawa ( Primate Research Institute, Kyoto University, Assistant Professor, Evolutionary Medicine )
- Norio Yamamoto ( National Museum of Ethnology, Emeritus Professor, Supervision, Agricultural Culture, Highland Civilization )
- Tetsuya Inamura ( Department of Literature, Aichi Provincial University, Professor, Livestock Farming and Environmental Exploitation )
- Akio Hongo ( Department of Animal Science, Obihiro University of Agriculture and Veterinary Medicine, Professor, Domestication of Livestock )
- Masayoshi Shigeta ( Center for African Area Studies, Kyoto University, Associate Professor, Plant Use, Agricultural Culture )
- Shuichi Ohyama ( Department of Geography, Tokyo Metropolitan University, Associate Professor, Change of Livelihood along with Environmental Change )
- Yuji Tohkura ( Cooperative Research Center, Obihiro University of Agriculture and Veterinary Medicine, Coordinator, Grassland Use )
- Yoshi Kawamoto ( Primate Research Institute, Kyoto University, Associate Professor, Evolutionary Adaptation at High-altitude Environment )
- Kiyooki Saito ( Research Institute for Humanity and Nature, Professor, Nature View, Tibetan Civilization )
- Tshul khrims skal bzang ( Department of Buddhist Studies, Otani University, Professor, Buddhism and Tibetan Civilization )
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- Koichi Usami ( Department of Agriculture, Yamaguchi University, Professor, Agricultural Livelihood and Rural Market )
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- Shinji Miyamoto ( Biwako Museum, Researcher, Paleo-Environment )
- Yasuyuki Kosaka ( Center for Southeast Asian Studies, Kyoto University, Researcher, Ethnological Plant Use )
- Luo Er-hu ( Graduate School of Shanghai University, Professor, Paleo-Livelihoods )
- Toshihiro Tsukihara ( Faculty of Education and Regional Studies, Fukui University, Associate Professor, Highland-Lowland Interaction, Pastoralism in Extreme Highland )
- Masahiro Hirata ( Department of Agro-Environment Science, Obihiro University of Agriculture and

- Naoko Ikeda (Veterinary Medicine, Associate Professor, Milk Processing Techniques )  
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 Prevention, Researcher, Transhumance Grazing Systems )
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 and Environmental Exploitation )
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- Akiyo Yatagai ( Research Institute for Humanity and Nature, Assistant Professor, Change of  
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- Naoyuki Kobayashi ( Kobayashi Photo Studio, Photographer, Photographing )
- Takayuki Shiraiwa ( Research Institute for Humanity and Nature, Associate Professor, Evaluation of  
 High-Altitude Environment, Snow Ice )

## ■ Research Plan

The regions that support sizable and permanent human populations above the altitude of 2000–2,500 m are the Andes, the highlands of Ethiopia and the area of the Tibetan plateau (The three great tropical highlands). The adaptable livelihood and the human aspects of life; birth, aging, disease and death in association with the diversity of nature and culture will be studied in the Himalaya and the Andes, compared with the northern Ethiopia and the Alps. Moreover the influences of the globalisation on the changes of the livelihood and the human aspects of life will be studied. We will describe here item for item as follows.

### **Human Life, Aging, and Disease in highland people:**

Diseases specific at high altitudes, those that are closely associated with hypoxic environment, are one of the environmental issues that affect the human body. They have escaped from infections, such as malaria, however, lifestyle-related are increasing quickly with the elongation of mortality and changes in lifestyle, and are regarded as diseases related to modern civilization. The actual features of the disease and human aging phenomena among highland peoples will be clarified with special reference to high-altitude ecology and its socio-economic backgrounds.

### **Environmental exploitation and livelihood in “Highland Civilizations” :**

There are common features of environmental exploitation such as agriculture and animal husbandry in the livelihood of the three major highland zones. Those common features are probably what enabled inhabitants of the highlands to establish the highly cultural “Highland Civilizations”. Sustainable ways to exploit environments will be clarified and they can be applied towards the solution of global environmental issues. The theme how the “Sub-Systems” have supported the “Highland Civilization” will be discussed in the viewpoint of agro-ecosystem, transition of environmental exploitation and “highland-lowland interaction” .

### **Nature and ecology in “Highland Civilizations” :**

The relationship and its change between human activities in livelihoods and land & forest use will be disclosed. Environmental issues in fragile upper mountain forest and the area along the timberline will be also discussed. High altitude environments, especially the association of climate and its change with

the development of “Highland Civilizations” will be clarified.

Culture in highlands: “Highland Civilizations” will be understood through the perspective of “Study of Nature”. Human ageing and diseases will be discussed also in association with high spiritual religion and traditional medicine.

### ■ Problems for implementation or points need to change plan

The pursuit of the three paradigms should be progressed with the comparison of the three Highland Civilizations.

- 1) The interrelationship between high altitude environment and people in the viewpoint of Human Life, Aging, and Disease will be disclosed studying the local wisdom and the effects of globalization.
- 2) The verification of the new hypothesis of the “Highland Civilization” should be progressed concretely.
- 3) “Why have people inhabited in highlands ?” should be disclosed and discussed with the insights in the field surveys.

## Books

### 【Authored/Co-authored】

- Kawai A, Saitou M. 2007 Non-profit organization management. The Society for the Promotion of the University of the Air, 189pp. (in Japanese)
- Takagi Y, Kawai A. 2007 Development Economics: Theory and Reality. The Society for the Promotion of the University of the Air, 230pp. (in Japanese)

## Papers

### 【Original Articles】

- Fujisawa M, Ishine M, Okumiya K, Otsuka K, Matsubayashi K. 2007 Trends in diabetes. *Lancet* 369 :1257-1257. (reviewed).
- Fujisawa M, Ishine M, Okumiya K, Nishinaga M, Doi Y, Ozawa T, Matsubayashi K. 2007 Effects of long-term exercise class on prevention of falls in community-dwelling elderly: Kahoku longitudinal aging study . *Gerontol Geriatr Intern* 7 :357-362. (reviewed).
- Yatagai A. 2007 Interannual Variation of Summertime Precipitation over the Qilian Mountains in Northwest China. *Bulletin of Glaciological Research* 24 :1-11. (reviewed).
- Yatagai A, Yamazaki N, Kurino T. 2007 The products and validation of GAME reanalysis and JRA-25 Part 1: Surface Fluxes. *Hydrological Processes* 21 :2061-2073. (reviewed).
- Suzuki R, Takeda S, Hla Maung Thein 2007 Chronosequence changes in soil properties of teak (*Tectona grandis*) plantations in the Bago Mountains, Myanmar . *Journal of Tropical Forest Science* 19(4) :207-217. (reviewed).
- Suzuki R, Takeda S, Hla Maung Thein 2007 Analysis of land use history and fallow vegetation recovery: A case study of shifting cultivation by the Karen in the Bago Mountains, Myanmar. *Southeast Asian Studies* 45(3) :343-358. (reviewed).
- Nishimura Y, Norboo T, Murakami S, Hotta N, Chogyal T, Kubo Y, Otsuka K. 2007 Chronoecological health watch of neuro-cardio-pulmonary function in elderly community at high-altitude (3524 m) town. *Autonomic Neuroscience: Basic & Clinical* 135 :48. (reviewed).
- Miyamoto S. 2007 Vegetational changes since the last glacial from the pollen influx in Hokuriku District, central Japan. *Geographical Review of Japan* 80(5) :330-331. (reviewed).
- Kobayashi C, Kato M. 2007 Effects of leaf quality and microhabitat on the survival of a leaf-rolling weevil (Attelabidae). *Ecological Research* 22 :150-155. (reviewed).
- Kato M, Ohsuga K. 2007 A new tellinoidean bivalve in seagrass beds in the Ryukyu Archipelago. *Venus* 65 :291-297. (reviewed).



- Goto R, Kato M. 2007 Obligate commensalism of *Curvemysella paula* (Bivalvia, Galeommatidae) with hermit crabs. *Marine Biology* 151 :1615-1622. (reviewed).
- Okamoto T, Kawakita A, Kato M. 2007 Interspecific variation of floral scent composition in *Glochidion* and its association with host-specific pollinating seed parasite (*Epiccephala*). *Journal of Chemical Ecology* 33 :1065-1081. (reviewed).
- Nakazawa T, Ishida N, Kato M, Yamamura M. 2007 Larger body size with higher predation rate. *Ecology of Freshwater Fish* 16 :362-372. (reviewed).
- Kameda Y, Kawakita A, Kato M. 2007 Cryptic genetic divergence and associated morphological differentiation in the arboreal land snail *Satsuma* (*Luchuhadra*) *largillierti* (Camaenidae) endemic to the Ryukyu Archipelago, Japan. *Molecular Phylogenetics and Evolution* 45 :519-533. (reviewed).
- Kobayashi C, Fukasawa Y, Hirose D, Kato M. 2007 Contribution of symbiotic mycangial fungi to larval nutrition of a leaf-rolling weevil. *Evolutionary Ecology* 22 :150-155. (reviewed).
- Okumiya K, Fujisawa M, Ishine M, Wada T, Sakamoto R, Hirata Y, Del Saz EG, Griapon Y, Togodly A, Sanggenafa N, Rantetampang AL, Kokubo Y, Kuzuhara S, Matsubayashi K. 2007 Fieldwork survey of neurodegenerative diseases in West New-Guinea in 2001-02 and 2006-07 . *Rinsho Shinkeigaku* 47(11) :977-978. (reviewed).
- Okumiya K, Ishine M, Wada T, Pongvongsa T, Bouphe B, Matsubayashi K. 2007 The close association between low economic status and glucose intolerance in elderly subjects in a rural area in Laos. *J Am Geriatr Soc.* 55 :2101-2102. (reviewed).
- Kawai A. 2007 Issues for local governance and participatory rural development through decentralization in Kingdom of Bhutan. *Journal of the Open University of Japan* 25 :9-66. (in Japanese) (reviewed).

#### **【Review Articles】**

- Yatagai A. 2007 Water circulation analysis: Database and its use. *Weather* 54 :11-14. (in Japanese) (reviewed).
- Oyama S. 2007 Natural History Series Wildlife Conservation of Vicuña and Rural Development in Andean mountains. *Monthly Magazine for National Museum of Ethnology* 30(6) :20-21. (in Japanese) (reviewed).
- Oyama S, Kondo F, Yamamoto N. 2007 Where is the origin of potato in the Andean mountains?: focusing on the wild potato of *Solanum acaule*. *Japanese Journal of Tropical Agriculture* 51(Extra issue 1) :103-104. (in Japanese) (reviewed).
- Inamura T. 2007 Pastoralists in the 21th Century: Pastoralism and hunting in the central Andes that changes the established theories . *Monthly Geography* 52(3) :32-40. (reviewed).
- Kobayashi N. May,2007 The Mingyong Glacier of the Meili Snow Mountains in China. *Japanese Alpine News* 8. (reviewed).
- Kobayashi N. May,2007 A glacier in Meili Mountains retreated. *National Geographic, Japan* (May 2007). (in Japanese)
- Kobayashi N. Dec,2007 The ancient road of tea and horse in Yunnan . *Coyote* (December 2007). (in Japanese)
- Kobayashi N. Feb,2008 17 years in Meili Snow Mountains: A journey to the base camp. *Yama to Keikoku* (February 2008). (in Japanese)

#### **Research Presentations**

##### **【Oral Presentation】**

- Oyama S, Kondo F, Yamamoto N. Where is the original place of potato (*Solanum* sp.) in Andean Mountains ?. 101th meeting of Japanese Society of Tropical Agriculture, Apr 01,2007, Tokyo Agricultural University, Tokyo. (in Japanese)

- Kobayashi N. Meili Snow Mountains: Life and wisdom. Unnan Konwakai, Apr 21, 2007, . (in Japanese)
- Miyamoto S, Ando K. Land development in central and eastern Himalaya. Association of Historical Geography, Japan, May 2007, Kokugakuin University, Tokyo. (in Japanese)
- Miyamoto S. Chronology and Sedimentary Environment of the Fluvial Sediments along the Kuiseb River in Namib Desert, Namibia. African Study Association of Japan, May 2007, Blick Hall, Nagasaki. (in Japanese)
- Yatagai A. Asian Precipitation: Highly-Resolved Observational Data Integration Towards Evaluation of the Water Resources. 21st Pacific Science Congress, Jun 16, 2007, Okinawa.
- Yatagai A. The isotopic composition of water vapor and the concurrent meteorological conditions around the northeast part of the Tibetan Plateau. IUGG, Jul 12, 2007, Perugia, Italy.
- Okumiya K. The close association between economic status and glucose intolerance in the community-dwelling elderly in Asian countries. Forum of health and development in Lao PDR. Forum of Health and Development in Lao PDR, Sep 24, 2007-Sep 24, 2007, Vientiane, Lao PDR.
- Suzuki R, Takeda S, Hla Maung Thein. Analysis of land use history and fallow vegetation recovery -A case study of shifting cultivation by Karen people in the Bago Mountains, Myanmar. Society for Tropical Agriculture Congress, October 2007, Miyazaki University. (in Japanese)
- Oyama S. Co-evolution of Camelidae animals and potato in Andean mountains. 1st Academic Meeting of Nature and Society Research group, The General Meeting of the Association of Japanese Geographers in 2007 Autumn, Oct 07, 2007, Kumamoto University. (in Japanese)
- Okumiya K. The close association between economic status and glucose intolerance in the community-dwelling elderly in Asian countries. Congress of Geriatrics and Gerontology in Asia & Oceania, Oct 22, 2007, Beijing, China.
- Miyamoto S, Ando K. The formation process of the homestead (bari-bhiti) along the Jamuna-river alluvial lowland, Central Bangladesh. Association of Human Geography, Japan, November 2007, Kwansai-gakuin University, Nishinomiya. (in Japanese)
- Kobayashi N. The ancient road of tea and horse in Yunnan. Unnan Konwakai, Dec 01, 2007, . (in Japanese)
- Yatagai A. Asian Precipitation - Highly Resolved Observational Data Integration Towards Evaluation of the Water Resources. Program for the Evaluation of High Resolution Precipitation Products, Dec 04, 2007, Geneva, Switzerland.
- Yamamoto N. Ecological view of the Highland Civilization. The Japan Society for the Comparative Study of Civilizations, Feb 02, 2008, National Museum of Ethnology, Osaka. (in Japanese)
- Suzuki R, Takeda S, Hla Maung Thein. Long term change in land cover of Karen village under traditional shifting cultivation: A case study in the Bago Mountains, Myanmar. The Japanese forest society, March 2008, Tokyo University of Agriculture and Technology. (in Japanese)

#### **【Poster Presentation】**

- Okumiya K. The association between economic status and Diabetes in the community-dwelling elderly in Asia. The health forum of Khon Khaen University, Oct 17, 2007, Khon Khaen, Thailand.
- Kovit K, Okumiya K. Comparison of Prevalence of Diabetes between Rural and Urban Area in Thailand and Follow-up of People with Diabetes. The health forum of Khon Khaen University, Oct 17, 2007, Khon Khaen, Thailand.

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**Stage: PR**

**Project No.: 3-5**

**Project Name: Collapse and Restoration of Ecosystem Networks with Human Activity**

**Abbreviated Title: Ecosystem Networks**

**Project Leader: YAMAMURA, Norio**

**Research Axis: Diversity**

**URL: <http://www.chikyu.ac.jp/yamamura-pro/>**

**Key Words: Biodiversity, Complex adaptive system, Ecosystem networks, Minimization of uncertainty, Simulation, Social networks**

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## ■ Research Objectives and Topics

### Research Objectives

The project aims to clarify the mechanisms resulting in the collapse and deterioration of ecosystems, and then pave the way to restore and maintain healthier ecosystems with high biodiversity and ecological functions while minimizing instability and uncertainty in the long term over a wide area. In addition, it will provide new approaches in environmental science by extracting the characteristics of the interactions between human societies and the environment and their changes. For the purpose we consider that network sciences provide useful tools.

### Background

Most ecosystems on the planet have been seriously degraded by human activities and are now in a critical situation. This problem, which has led to the loss of biodiversity and ecosystem function, is widely accepted as one of the most serious global environmental problems. Nevertheless, most research on the problem has focused only on the direct consequences such as the destruction and pollution of natural habitats or the reduction in animal populations due to hunting or fishing. The collapse and deterioration (destabilization and decrease in sustainability) of ecosystems by human activities via interactions within the ecosystem network, including indirect and cascade effects, have rarely been considered. In addition, few studies take a social science perspective, although environmental problems are one of the consequences of the interactions between nature and human societies. The effects of social structures (e.g., changes in and globalization of economic, political, cultural, and social networks mediated by direct interactions and distribution and information systems) on ecosystems, and the effects of the resultant collapse and deterioration of ecosystems on human societies have rarely been investigated in depth. This may be partly because such studies require the consideration of extraordinarily complex interactions, and because it is difficult for scientists from different disciplines to conduct such research in close collaboration.

The recent boom in theoretical studies on complex networks (complex system sciences, complex adaptive systems) and the remarkable progress in computer performance have dramatically increased our capacity to deal with complex systems such as ecosystems and social interactions. Complex system sciences are now a practical, important tool in various fields of sociology, economics, and ecology. This project takes advantage of the interdisciplinary nature of network sciences to consider environmental problems, especially the problem of ecosystem deterioration, by linking sociology, economics, and ecology.

### How the project will contribute to solving environmental problems

Recently, theoretical studies on complex network systems (complex system science, complex adaptive systems) have progressed remarkably. The progress can be applied in different fields, especially sociology, economics, and ecology. Our project focuses on environmental problems, particularly the

problem of ecosystem deterioration, taking advantage of the interdisciplinary nature of network theories (e.g., cluster, small world, scale free), and will increase our scientific understanding of global environmental problems.

Therefore, the goals of the project are not only to investigate and solve individual environmental problems, but also to demonstrate new approaches in the environmental sciences globally by generalizing the results obtained in Mongolia and Sarawak from the perspective of network theory. Therefore, the goal of the project agrees perfectly with the mission of RIHN to build academic “knowledge” to further contribute to resolving problems and to drive the global environmental sciences. It is best that the project be conducted at RIHN.

### ■ Progress of Project

This year, we devised improved options for future models and integrated the results from the Mongolia and Sarawak sites.

We discussed the structure of the network model that we will construct during the full research period. We listed available and measurable variables relevant to our subject matter in the two field research sites (Sarawak and Mongolia) and classified them according to their inter-relationships and the potential mechanisms linking them. The model is hierarchically structured, with three spatial scales: i) 100–300 km (large scale), ii) 10–50 km (medium scale), and iii) 50 m to 1 km (small scale). The spatial resolution at each scale is the distance range of the one-step lower scale. The spatial scale of human migration and settlement processes has increased at the nationwide (large) scale owing to the expansion of the transportation and economic networks, whereas these processes for other organisms in nature are mostly limited to a more narrow (medium) scale by climatic, geographical, and biological constraints. The ecological interactions within a landscape do not incorporate spatial structure, which would enable their inclusion in small-scale models.

In addition, we further summarized the common and distinguishing features and problems associated with ecosystem sustainability in the two target areas. We decided to use land-cover changes and food-web structure/interactions as ecosystem indicators common to both areas for modeling and observation. The vegetation and biodiversity of the ecosystems in both Mongolia and Sarawak have suffered severe damage from drastic changes in the social and economic structures, but the direct causes and the effect pathways are area-specific.

Initially, we will develop sub-models at the medium scale (corresponding to the county or sub-district level) for several sample regions in Sarawak and Mongolia, each of which consists of multiple land-cover types (e.g., forest, steppe, plantation). We will then connect the sub-models to large-scale models in order to incorporate the rapid and extensive changes due to human activities (e.g., transportation, information) and global climate change.

The greatest improvement from previous models is the development of area-specific, medium-scale models that mechanistically bridge the large and small scales, which are usually directly connected (as in the “unit value method”). With our three-layered model (main model), we will be able to explicitly incorporate different types of network effects and to evaluate the importance of the ecosystem network structure.

We will collect quantitative and qualitative data at different spatial scales in the field by combining large-scale surveys and intensive investigations at a small number of sites. The large-scale surveys will involve interviews and simple ecological assessments at several locations. The surveys may elucidate the large-scale correlations between changes in ecological networks and the structures of social and ecological networks. The intensive surveys aim to clarify the mechanisms of patterns revealed by the large-scale surveys. During this past year, we determined which variables were available and measurable for the

large-scale survey, investigated methods of data collection, and began surveys in some target-area locations. In addition, we selected the sites for the intensive investigations and established a schedule for the study.

## ○Co-Researchers

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### Modelling Work Group

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- Wada, Eitaro ( Frontier Research Center for Global Change (JAMSTEC), Program Director, Matter Dynamics Analysis )

#### ■ Research Plan

#### ■ Problems for implementation or points need to change plan

#### Outcomes up to 2007

#### Outcomes of the project as a whole

We have expanded upon proposals for the integration of the results from field research and modeling in Mongolia and Sarawak. We decided to incorporate a hierarchical structure into the models. To obtain the data necessary for model construction, we will conduct field research by combining

large-scale and intensive surveys. The large-scale surveys will involve interviews and simple ecological assessments at several locations and may elucidate large-scale correlations between changes in ecological networks and the structures of social and ecological networks. The intensive surveys aim to clarify the mechanisms of patterns revealed by the large-scale surveys. In fiscal year 2007, we determined the variables and methods for the large-scale surveys. In addition, we identified the sites for intensive investigations and established the study schedule.

## Results of each work group

### Modeling work group

#### 1). Design of model structure: The problem and spatio-temporal scales

The main goal of our group is to generate novel predictions and perspectives for sustainable ecosystems by using quantitative models. Based on discussions with the Mongolia and Sarawak work groups, we identified basic variables, mechanisms, and functions to be incorporated in our model and possible validation methods for our study. We classified this information into categories at three spatial scales: i) 100-300 km (large scale), ii) 10-50 km (medium scale), and iii) 50 m-1 km (small scale). The spatial resolution at each scale is the distance range of the one-step lower scale. The spatial scale of human migration and settlement processes has increased at the nationwide (large) scale owing to the expansion of the transportation and economic networks, whereas these processes for other organisms in nature are mostly limited to a more narrow (medium) scale by climatic, geographical, and biological constraints. The ecological interactions within a landscape do not incorporate spatial structure, which would enable their inclusion in small-scale models. Regardless of the spatial scale, we use a discrete numerical model with a time-step of 1 year and duration of 100 years, because this temporal resolution is used in most statistical and observational databases and would thus facilitate the validation and coupling of sub-models.

In addition, we further summarized the common and distinguishing features and problems associated with ecosystem sustainability in the two target areas. We also decided to use land-cover changes and food-web structure/interactions as the ecosystem indicators common to both areas for modeling and observation. These particular indices were chosen because they represent the potential and actual resources, respectively, utilized by the organisms living in the target areas. Furthermore, these variables are globally general and measurable with great accuracy using techniques such as remote-sensing for land-cover changes and stable isotope analyses for food-web structure. The vegetation and biodiversity of the ecosystems in both Mongolia and Sarawak have suffered severe damage from drastic changes in the social and economic structures, but the direct causes and the effect pathways are area-specific.

#### 2). Development of prototype models

We have developed three sub-models for several sample regions in Sarawak and Mongolia: 1) A small-scale model for Sarawak: an optimum theory model of sustainable exploitation of the nests of swiftlets. The patterns of space usage and reproduction in swiftlets affect the optimum strategies of resource utilization (conservation or exploitation), as does resource management by humans. This model is applicable to the problems of overgrazing and land ownership in Mongolian grasslands; 2) A large-scale model for Mongolia: a spatial economic model for the distribution of human populations at a large scale. The migration and settlement of people in urban and rural areas are determined by the balance of expected income among the regions, which is density dependent and affected by external subsidization; and 3) A medium-scale model for Mongolia: a spatially explicit vegetation transition model of the forest-steppe-desert ecotone at the slope scale (resolution, 100 m). Regional-specific hydrological and ecological interactions (logging or livestock grazing) alter the vegetation transition patterns (continuous or discontinuous).

3). Selection of common methods of observation and member recruitment to the group As described above, we identified two measurement methods for the ecosystem, both of which are applicable to the trans-scale models and both target areas: remote-sensing (RS) and stable isotope (SI) analysis techniques. We

invited three RS and three SI specialists to join our group (see member list below) and began to plan the validation approach for the models.

#### Mongolia work group

##### 1). Historical changes and present status of vegetation and ecosystems in Mongolia

Mongolian vegetation shifts geographically from forest to desert via forest-steppe, steppe, and desert-steppe, along a north-south moisture gradient. In the forest-steppe zone, the forest resides primarily on the northern and eastern slopes, which differ in soil moisture conditions. The forest and steppe are distributed discontinuously because of the effects of nomadic livestock grazing. In the steppe and desert-steppe zones, patchy shrub vegetation constitutes the climax vegetation community, with several dominant shrub species. We determined that the widespread degradation of Caragana (Leguminosae) patches was caused by overgrazing of livestock. Caragana is particularly nutritious for livestock. Other land uses such as farmland and mining affect nomadic land use. Farmland that was developed under the socialist economy and was subsequently widely abandoned after democratization in 1992 cannot be used as pasture. Recently exploited mines have negative effects on the nomadic lifestyle because of the drying of water resources in pastures and environmental disturbances.

##### 2). Movement, density, and distribution of nomadic populations

The Mongolian population continues to increase, but most growth is limited to Ulan Bator, the capital. Under the market economy resulting from democratization, immigrants from rural areas have flocked to Ulan Bator, the only large city in Mongolia, to find jobs for a cash income. In contrast, in the countryside, the seasonal and yearly migration of nomads is generally decreasing. After land privatization in the city in 2003 discouraged the migration of nomads, a registration system was established to document the places of residence of herders. The high density and reduced migration of nomads has led to changes in nomadic land use and overgrazing by livestock.

##### 3). Identification of core research sites and key factors

In Mongolia, climatic conditions and moisture levels as well as connectivity to the market economy and social conditions vary with distance from Ulan Bator. Therefore, we established core research sites in the three different vegetation communities (forest-steppe, steppe, and desert-steppe) along a north-south transect from Ulan Bator. We will compare land use among and within the different vegetation types in relation to moisture levels and the distance from local cities, respectively.

##### 4). Collapse and restoration of the ecosystem network

Based on the market economy and land privatization, we clarified that pastures have been degraded due to the collapse of the ecosystem network. One main cause of pasture degradation may be overgrazing by livestock owing to the centralization of nomads in the city, logging roads, and/or large rivers. Additional causes may include the reduction of nomad migration. Using this information, we will explore potential methods of restoring the ecosystem network.

#### Sarawak work group

##### 1). Changes in land cover and ecosystems in Sarawak

Land-cover changes in Sarawak have two main causes. First, deforestation for timber and conversion to oil palm plantations, which are both conducted by domestic and international private companies but are also controlled by the state government. Second, local small-scale changes in traditional agricultural practices, such as shifts in cultivation. These two causes are related; for example, recent decreases in agricultural activities by local populations promote the conversion to plantations. Thus, we need to investigate the causes of land-cover changes while considering these relationships, which may be effectively elucidated by the large-scale surveys. This past year, we drafted a practical plan for the survey.

##### 2). Identification of study areas and key factors

In terms of land cover, Sarawak can be classified into two regions. The lowland area contains several large cities connected by logging roads, and oil palm plantations are spreading at an alarming rate in this area. In contrast, Acacia plantations are currently being developed in the interior region. Thus,



we established a core research site in each of these two areas. The core site in the lowland area is a mosaic of primary and secondary forests and agricultural lands, including oil plantations, in and around Lambir Hills National Park. In the interior region, the core research site is located in an area of the upper Baram

River and consists of old-growth state forests and secondary forests used by indigenous people for traditional agriculture.

### 3). Restoration of ecological networks

We have discussed strategies at different scales to restore the ecological networks examined in this project. Several of the methods involve changes in the global market distribution, including certification systems for timber and plantation products. At the state level, bio-prospecting may contribute to the

sustainable use of forests and may change the value of forests both in the market and for local residents. Small-scale approaches may include community-based management of ecological products as well as the institution of land inheritance systems and land ownership in local communities.

## Problems and possible solutions

Similar to other areas of the world, Mongolia and Sarawak suffer from various environmental problems. In this project, we can thoroughly investigate only a limited number of these problems. In subsequent work on the project, we will select several topics that consider which effects of ecological networks are most significant for intensive investigation. In particular, we will focus on changes in human migration and population density attributable to changes in social systems and community structures, as well as institutions related to land use and land ownership, as important factors driving changes in land use and vegetation, and thus changes in ecosystem networks.

## Research objectives for 2008

### Modeling Work Group

#### 1). Extension of the ongoing models

i) Couple the human migration model (large-scale) and the three vegetation-transition models (medium-scale) in Mongolia and conduct a test run.

ii) Prepare the data for applying the vegetation-transition model to Sarawak.

iii) Conduct spatial analyses of the effect of methods of possession and utilization on ecosystem sustainability.

iv) Begin the food-web analysis of each type of land cover in Sarawak and Mongolia. We will employ a post-doctoral research associate to conduct and manage the numerical experiment on the mainframe computer.

#### 2). Land-cover analysis using remote-sensing data

To estimate potential vegetation, we will analyze high-resolution satellite image data and physical-environmental data for areas in which the influences of human activity are negligible.

#### 3). Preparation for sampling for stable isotope analyses

We will devise a plan for collecting SI samples to be used in the evaluation of food-web structures and their trophic relationships. In addition, we will investigate the possibility of obtaining previous samples with sufficient background information.

#### 4). Preparation for assimilating data and information from the Sarawak and Mongolia work groups into the models

Thus far, our model has incorporated only the ecological networks among the biological and physical environments, and not the social or economic networks. To include these networks in our model, we will collaborate with the Sarawak and Mongolia work groups to determine how to best incorporate new

information on socio-economic networks (e.g., variables, functions, initial values or boundary conditions, and parameters) as well as problems that we may encounter during field surveys (interviews and observations) in both regions.

#### Mongolia Work Group

##### 1). Large-scale survey

We will investigate the conditions of nomadic life from both rural and urban perspectives. We will examine factors such as migration, business administration, commodity price and distribution, land privatization, global economy, cooperative work, and land cover. In addition to obtaining statistical data from government agencies, we will prepare and conduct a preliminary, uniform questionnaire for nomadic families in certain study areas. We will compare the vegetation communities and nomadic land use in relation to livestock density, migration patterns, distribution of wells, and grazing pressure in each zone of the forest-steppe, steppe, and desert-steppe.

##### 2). Selective monitoring of natural environments

In prior studies, environmental monitoring was limited to the forest and steppe zones. We will focus on environmental monitoring for soil moisture in different vegetation types in each zone of forest-steppe, steppe, and desert-steppe, for comparisons between the forest and steppe and between shrub and shrub-degraded vegetation.

##### 3). Investigation of farmland and mines

Most farmland was developed on a large scale during the era of socialism and is now abandoned; however, new farmland is currently being developed by private companies. Through the investment of foreign capital, mining has recently become the largest industry in Mongolia, and mines are being developed widely. Through field surveys and literature, we began investigations of the effects of both industries on nomadic land use.

#### Sarawak Work Group

##### 1). Large-scale survey

In 2008 and 2009, we will clarify the relationships between the use of ecological resources by indigenous people and ecological networks, using large-scale surveys involving interviews by social scientists and rapid ecological assessments by ecologists at 50-100 villages. Variables to be examined in the survey include geographic location (distance and accessibility from large cities); cultural, historical, and social backgrounds (ethnic group, time period of residence, education); relationships with external organizations (e.g., government and NGOs); status of the distribution of goods and information; kinships with other villages; status of surrounding forests; biodiversity; and food-web structure. In 2008, we will conduct the survey in 30 locations, contingent on the results of pilot surveys at two sites.

##### 2). Intensive surveys

More thorough examination may be necessary to interpret patterns revealed by the large-scale surveys. We plan to conduct additional, intensive surveys at the core sites. These surveys aim to evaluate the conditions of ecosystems, and to that end, we will establish research plots and monitor the numbers and diversity of organisms and their functions, for example, pollination, seed dispersal, and food-web structure, within the ecosystem. In parallel, we will investigate in detail the use of natural resources by indigenous people, the institution of the ownership of land and natural resources, and changes thereof.

## **Books**

### **【Chapters/Sections】**

- Munns, W. R. Jr., Gervais, J., Hoffman, A. A., Hommen, U., Nacci, D. E., Nakamaru, M., Sibly, R., and Topping, C. J. Sep, 2007 Chapter 9: Modeling approaches to population-level ecological risk assessment. Lawrence W. Barnhouse, Wayne R. Munns, Jr., Mary T. Sorensen (ed.) SETAC Press, Pensacola, FL .

- Munns, W. R. Jr., Gervais, J., Hoffman, A. A., Hommen, U., Nacci, D. E., Nakamaru, M., Sibly, R., and Topping, C. J. Sep, 2007 Chapter 9: Modeling approaches to population-level ecological risk assessment. Lawrence W. Barnhouse, Wayne R. Munns, Jr., Mary T. Sorensen (ed.) Population-Level Ecological Risk Assessment. SETAC Press, Pensacola, FL .

## **Papers**

### **【Original Articles】**

- Nakagawa, M., Hyodo, F., Nakashizuka, T. Apr, 2007 Effect of forest use on trophic levels of small mammals: An analysis using stable isotopes. *Canadian Journal of Zoology* 85(4) :472-478. (reviewed).
- Yamamura, N., N. Fujita, M. Hayashi, Y. Nakamura, and A. Yamauchi Jun, 2007 Optimal phenology of annual plants under grazing pressure . *Journal of Theoretical Biology* 246(3) :530-537. (reviewed).
- Kondoh, M. Jul, 2007 Anti-predator defence and the complexity-stability relationship of food webs. *Proceedings of the Royal Society B: Biological Sciences* 274(1618) :1617-1624. (reviewed).

## **Research Presentations**

### **【Oral Presentation】**

- ICHIKAWA T. Diversification of Ethnic Chinese Identities in Transnational Social Space: Comparative Studies of Malaysian Chinese and Papua New Guinean Chinese. International Convention of Asia Scholars 5, August 2007, Kuala Lumpur Convention Centre, Malaysia.

### **【Invited Lecture / Honorary Lecture / Panelist】**

- Nakamaru, M. Evolution and the Mind: Can Darwin's theory of evolution help us to understand the mind?. Kobe College International Symposium, Apr 21, 2007, Kobe College, Nishinomiya.

**Stage: FS**

**Project No.: 2-7**

**Project Name: Relationships between Human Activities and Atmospheric Changes, Possibilities of Harmonious Society for Environmental Issues in the East Asia**

**Project Leader: ZHENG, Yuejun**

**Research Axis: Diversity**

### ■ Research Objectives and Topics

The main purpose of this project is to investigate the solution for reducing the emission of human-induced substances which affect the atmosphere and water resources in East Asia, with the following four objectives.

- 1) We predict the possible level of environmental criteria (PLEC) in each research area by investigating the relationships between the emission of human-induced substances (CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>x</sub> etc.) and the human activity including the industrial activity, the daily life, and the land use, based on carrying out the field surveys and developing statistical models.
- 2) We clarify the structure of social perception of environmental issue (SPEI) which summarizes the attitudes of the main social actors (citizen, firms and governments) towards the influence and control of human-induced substances accompanying various human activities by conducting the fieldworks in China and Japan.
- 3) We synthetically evaluate the social capacity for environment management (SCEM) which expresses the capability of each of the main social actors who deal with environmental problems as well as their interactions between those actors in each research area distributed in the two countries, by collecting substantive data and developing some evaluation indices.
- 4) We attempt to construct the possible frameworks of harmonious society in an area or between areas, which is beyond political and economic boundaries, by taking the cultural factors such as social values and lifestyle etc. into account, and create a road map for the realization of harmonious society, eventually, by synthesizing all the information obtained from the fieldworks and data analyses of the above steps.

### ■ Progress of Project

Research activities have been advanced with an emphasis on the reinforcement of project organization, and information collection in each area in the basis of examining the objectives and the research methods of this project by the cooperation with the joint research members. All members have deepened an understanding that the knowledge integration is indispensable for developing the framework of harmonious society, and carried out the theoretical examination, field survey, statistical analysis, and mapping each research area by GIS.

Three sections of industry, home, and land use have been determined to be the main emission sources of substances related to the human activity. This project puts the emphasis on the construction of frameworks and the realization method of harmonious society, so the research areas were limited in China and Japan which are the typical East Asian countries, respectively.

The members from several fields were newly added to the correspondent groups while clarifying the missions of each group clearly. The exchange with the partnership organizations in China is also progressing steadily, the preparations for signing the MOU were started at an early stage, and the thoroughgoing situation is ready towards the FR phrase.

### ○Co-Researchers

- ◎ Zheng Yuejun ( RIHN, Associate Professor, Research representative, construction of harmonious framework )
- Amano Masahiro ( Waseda University, Professor, Development of the index system for evaluating EMC of social actors )

- Kojima Hiroshi ( Waseda University, Professor, Sociological examination of harmonious framework )
- Tsuyuki Satoshi ( University of Tokyo, Associate Professor, Development of land use change model )
- Hayasaka Tadahiro ( RIHN, Professor, Elucidation of the mechanism of emission and sink of human-induced substance )
- Murakami Masakatsu ( Doshisha University, Professor, Survey design and its conduction of each actor's EMC )
- Yamaoka Kazue ( National Institute of Public Health, Section Head, EC survey and data analysis )
- Yoshino Ryozo ( The Institute of Statistical Mathematics, Professor, Development of index and indicator for evaluating environmental perception )

### ■ Research Plan

This projects aims at developing the possible frameworks of harmonious society for making human-induced substances reduce based on the fieldworks and data analyses in the research areas distributed over China and Japan.

The field survey data in the research areas are added to the human-induced substance emission inventory, existing statistical data and satellite data, and then the PLEC, the environmental impacts and economic effects derived from an introduction of new technology are predicted through revealing the relationships between human activities and the emission of human-induced substances metrically. Subsequently, the features of three areas with rich diversities are explored by clarifying each social actor's recognition, value, and behavior intention concerning the substance emission based on the field surveys. Moreover, a comparative analysis of the SCEM in three areas is conducted by developing indices and scales for evaluating each social actor's environment management capability (EMC). Furthermore, this project is searching the optimal state of harmonious society centring on its function based on the relevance of environment and culture, and also exploring a road map for realizing the harmonious society as well.

All research activities are promoted based on unifying the knowledge and sharing the results among the research groups through the close cooperation between the research members at home and abroad.

### ■ Problems for implementation or points need to change plan

It is necessary to develop a method to select the sample firms for the fieldworks, although the main emission sources of the human-induced substances were already narrowed down to the power plant and the manufacturing industry such as steel, chemistry, pottery, paper pulp etc.. Moreover, the extraction method of households for investigating the amount of energy consumption and use efficiency in the home section has to be determined in each of two Chinese research areas with a mosaic distribution of rural and urban areas.

### Books

#### 【Authored/Co-authored】

- Zheng Y., M. Kin, M. Murakami 2007 An Introduction to Data Science. Bensey Shuppan, Tokyo, 1-229 (in Japanese)
- Zheng Y 2007 Comparative Survey on Environmental Consciousness in the East Asia -A Sampling Survey in Tokyo and Beijing, 2005” , The RIHN Research Report No.2. , 1-329
- Zheng Y. 2007 Comparative Survey on Environmental Consciousness in the East Asia-A Sampling Survey in Taipei and Seoul, 2006” , The RIHN Research Report No.3. , 1-292

### Editing

#### 【Editing / Co-editing】

- Yoshino R. (ed.) 2007 Cross-national Survey of East Asian Values -Data Science. Bensey Shuppan, Tokyo, 1-339 (in Chinese)

### Papers

#### 【Original Articles】

- Zheng Y. 2007 Relevance Analysis between Environmental Consciousness and Environmental Behavior in East Asia. *Proceeding of 35th Behaviormetric Society of Japan* :243.
- Zheng Y. 2007 Cross-cultural Comparison on Environmental Consciousness for Realization of Harmonious Society in East Asia. *Proceeding of Society for Environmental Economics and Policy Studies 2007* :134-135.
- Kojima H. 2007 Determinants of Attitudes toward Environment in Four Capitals in East Asia: Analysis Drawing on the Comparative Survey on Environmental Consciousness in East Asia. *Proceeding of Society for Environmental Economics and Policy Studies 2007* :136-137.
- Zheng Y. 2007 Developing An Area Sample Based on Street Maps for Social Survey without Frames —A case study of consciousness survey conducted in Tokyo—. *Proceedings of the Institute of Statistical Mathematics* 552(2) :311-326.
- Tsuyuki S. and Y. Zheng 2007 The Analysis of land cover changes around Hangzhou city in Zhejiang province by Landsat Data. *Proceeding of The Japanese Forest Society* Vol.118 :410.

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**Stage: FS**

**Project No.: 2-9**

**Project Name: Sustainable Food Production Concept Based on Evaluation of Traditional Agricultural Practices**

**Project Leader: SATO, Tadashi**

**Research Axis: Resources**

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**■ Research Objectives and Topics**

**■ Progress of Project**

**○ Co-Researchers**

**■ Research Plan**

**■ Problems for implementation or points need to change plan**

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**Stage: FS**

**Project No.: 2-10**

**Project Name: Migration, Sojourn, and Possibilities in Cities**

**Project Leader: MURAMATSU, Shin**

**Research Axis: Circulation**

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### ■ Research Objectives and Topics

Currently, more than half the human activities on earth occur in cities. The urban concentration of people, commodities, capital, and information has been accelerating. This phenomenon is not only a result of global-scale mobility but also of migration from rural and suburban areas to the urban centers. People, commodities, capital, and information, once concentrated in a city, are amplified, consuming and wasting global resources --- water, wood, farmland, and air --- and as a result, rubbish, discarded lumber, carbon dioxide, and waste water are discharged.

Many of our environmental problems on the earth are caused by such urban consumption and discharge, which in turn should adversely affect the environment of the city itself. However, urban activities consist of so many different elements, and these various phenomena, while being bound by historical and civilization related factors, travel across urban and national borders, making it difficult for us to grasp them, let alone control them. This study is an attempt to grasp and analyze such phenomena of urban migration and sojourn, namely phenomena of urban circulation, which have been too complicated for any investigation so far, by means of various academic approaches. Furthermore, it attempts to investigate future possibilities for our cities by focusing on their diversity as a barometer.

### ■ Progress of Project

#### 1. Discussion of Hypotheses and Methods

We have been meeting about twice a month in which we to 1) discussed working hypotheses regarding cities, civilization, and their relationships; 2) introduced the concept “urban circularity and diversity” in order to integrate analyses originating in different academic fields, and discussed its applicability; 3) discussed how to conduct macro analysis of the cities, based on an urban historical population study’s methodology, to cross the time span of 5,000 years; and 4) reviewed existing studies and confirmed our understanding of current situations regarding Jakarta, Copenhagen, and Tokyo, the three target cities we chose to focus on.

#### 2. Research Team Organization and Selection of Local Research Collaborators

Based on the discussion described above, we have set up research teams and, for each of them, asked appropriate researchers to collaborate. We have also established cooperative systems both in Jakarta and Copenhagen.

#### 3. Preliminary Research at the Research Sites

In order to find out the possibility for field research and to discuss urban analysis methods on site, we conducted preliminary research in Jakarta in August 2007, and will do so in Copenhagen in February 2008, which is also meant to establish the collaboration systems with the local researchers. For Jakarta, we have created a Jakarta Heritage Map by surveying its changes and the current states of historical buildings that constitute its urban environmental cultural resources.

#### 4. Workshops

Based on the results of the discussion and preliminary researches, we held a workshop at the Research Institute for Humanity and Nature in November 15, 2007, where we discussed future research plan and methods. This also allowed us to hold discussion with the researchers of the Institute, which has been reflected in our research



## ○Co-Researchers

- ◎ Muramatsu, Shin ( Institute of Industrial Science, the University of Tokyo )
- Fukami, Naoko ( Institute of Oriental Culture, the University of Tokyo )
- Kato, Hironori ( Institute for Research in Kyoto University )
- Kimura, Takeshi ( Graduate School of Humanities and Social Science, University of Tsukuba )
- Kinoshita, Tetsuya ( RIHN )
- Widodo, Johanness ( School of Design and Environment, National University of Singapore )
- Yamasaki, Sekino ( Dentsu Communication Institute )
- Yamashita, Yuko ( Graduate School of Commerce and Management, Hitotsubashi University )
- Yasuoka, Yoshifumi ( Institute of Industrial Science, the University of Tokyo )

## ■ Research Plan

### 1) Multidimensional Time-Space Observation and Investigation of Urban Problems Through Fieldwork vis-à-vis the Four Target Problems

In Jakarta, Copenhagen, and Tokyo, we will make multidimensional time-space observations of urban problems that occur in relation to the following target issues: (1) urbanization and suburbanization; (2) consumption of natural resources; (3) mobility of urban waste; and (4) human activities and cultural conflicts.

### 2) Observation and Analysis of the Fundamental Elements That Controls the Materialization of Problems

In Jakarta, Copenhagen, and Tokyo, we will observe and analyze (1) value systems and (2) institutions—both of which controls the four above-mentioned urban problems—vis-à-vis different time axes.

(1) A value system unique to each city can be thought to consist of cycles of various information and people who have different values, which also influence each other. In the three selected cities, we will 1) survey via questionnaire values of people who have different personal and social attributes and live in different areas and classify them according to their value systems using the multiple variables analysis method; and 2) through the diary survey, we will analyze the inhabitants of each city regarding the characteristics of their activities and sense of values toward time.

(2) Institutions include both those that are in a statutory form (such as educational institutions and laws) and those that are not (such as religion and custom.) Together, they constitute a broad network and secure the safety as a risk-reducing apparatus, and thus they are important in our investigation of the four urban problems explained above. Thus, we will 1) study statistical data and documentary records, conduct survey via interview, and analyze urban space; 2) investigate the relationship between people's intra/inter-national movement and institutions and follow its changing process. Also, particularly in Jakarta and Copenhagen, we will conduct an investigation regarding religion; 3) We will carry out a comprehensive survey of religious institutions and facilities, collect data and documents, and investigate peoples' awareness and thinking about religions; and 4) analyze the space of religious facilities, sacred religious texts, and peoples' awareness of environment.

### 3) Investigation of the Problem Occurrence Mechanism and Comparison with Other Cities

With the results of the research and investigations outlined above, we will study and examine the problem occurrence mechanism for each of the three selected cities. We will also compare these cities by analyzing how this mechanism is related to the diversity of elements behind each urban problem as well as to the circulation of energy, things, people, information, and capital.

### 4) Analysis of Urban Changes According to the Whole Earth Urban Historical Research Project

We will first select approximately 150 cities from all the cities that have been established on the Earth based on macro studies of urban population change (Hayashi 2007; Chandler 1987). Then, we will create the Whole Earth Urban Historical Research Project database by gathering as much as data as possible regarding urban population, city limits, population density, etc. over the past 5,000 years, which will allow us to analyze the changes these cities have experienced.

### 5) Integrated Understanding of City and Investigation of the "City System"

By harmonizing the results of the investigation and analysis described above, we will illuminate

interactive relationships involving social overhead capital (infrastructure, nature, institutions) and human activities as well as a human sense of values (consumption behavior, value systems, awareness of environment), energy flowing in and out of cities, things, people, information, and capital. Thus, we will theorize the city system in order to reach an integrated understanding of the cities themselves.

#### 6) Investigation of the Link Between Cities and the Earth's Environmental Problems

Based on the result of our research, observation, and analysis as explained above, we will investigate how circulation within the city system and the diversity of its entirety and constituting elements are related to urban problems defined as the malfunctioning of the city system, which will enable us to analyze its relationship with the Earth's environmental problems.

#### 7) Creation and Education of Urban Wisdom Database

We will accumulate the examples of human failures and wisdom that have been unearthed by various studies as well as by comprehensive surveys of cultural resources—including the buildings that have historically constituted our urban environment—and thus create a new database of urban environmental cultural resources to be called Urban Wisdom Database. We will also create heritage maps and develop the ways to utilize these new tools with which we will be engaged in educational activities.

#### 8) Scenario Analysis Leading Toward "Humankind's Future Possibilities" as Our Proposal to the Society at Large

Based on the result of the efforts described in 5 above, we will make a scenario analysis describing how the problems caused by urban human activities affect the Earth's environment. We will assume the viewpoint of "urban circularity and diversity," which will enable us to make social and academic proposals regarding humankind's future possibilities.

#### 9) Investigation and Accumulation of Urban Control Methods: Policy Agenda

For not only the three selected cities but also the target cities of the Whole Earth Urban Historical Research Project, we will investigate the nature and effect of the urban control methods that have been developed so far, and accumulate their results, which will help us to make social and academic proposals as well as to educate the public. These methods will include those attempts to decrease the burden on the environment and mitigate social problems (such as the "compact city" )

### ■ Problems for implementation or points need to change plan

We have chosen Southeast Asia as the focus of our study --- particularly Jakarta and its urban circulatory sphere --- as this is the area where the struggling forces of globalization converge and whose urban environments are being heavily degraded. We are also going to study Scandinavia --- particularly Copenhagen and its circulatory sphere --- in order to make a comparison with Southeast Asia. We will deal with the urban circulatory mechanism vis- vis people, commodities, capital, and information during the period from the end of the eighteenth century, when a great change was caused by the British Empire's making inroads into the region, to the present. We will study our subjects over the long-term (across a span of about 100 years), mid-term (across a span of about 30 years), short-term (across a span of about 10 years), and very short-term (within a span of one year). Our studies will be conducted cross-disciplinarily, involving various academic fields such as economic history, urban history, transportation engineering, religious studies, and the history of ideas. Thus, we will observe and compare the two target cities and clarify their dynamic structures.

We will also examine which elements are responsible for the degradation of the earth's environment. Based on our results, and by introducing the concept of urban diversity, we would like to construct a model for sustainable urban regeneration that will improve urban as well as global environmental problems and lead to future-oriented and practical urban policies. Finally, we will choose approximately 150 cities that humankind created on the earth and study their histories of rise and fall. This investigation, together with the study of our two target urban circulatory spheres, will allow us to build an inventory of urban wisdom and failures, which in turn will nurture future possibilities for our cities.

### Books

**【Authored/Co-authored】**

- Takeshi Kimura Mar, 2008 Religions, Science and Sustainability. Union Press

**Papers****【Original Articles】**

- KATO, H. 2007 Variation of value of travel time savings over travel time in urban commuting: Theoretical and empirical analysis. . *Transportation and Traffic Theory 2007* :179-196. (reviewed).
- KATO, H. and FUJIU, M. Dec, 2007 How does the value of travel time saving vary over the individual's income? . *the 12th International Conference of Hong Kong Society for Transportation Studies* . (reviewed).
- FUKAMI, N., OKAMURA, T., Robert, C., and Andres, F., Dec, 2007 Digital Resource Semantic Management of Islamic Historical Buildings Case study on Isfahan Islamic Architecture Digital Collection.. *the International Journal of Architectural Computing* 5 :356-373.

**Research Presentations****【Oral Presentation】**

- KATO, H. and SATO, J. Urban freight transport analysis in developing countries: Case study in Medan, Indonesia.. he 2nd International Conference on Transportation and Logistics, Jun 04, 2007-Jun 06, 2007, Shenzhen, P. R. China..

**【Poster Presentation】**

- HAYASHI, R. Long term population dynamics in Africa: A perspective from the urban structure. Union for African Population Studies Fifth African Population Conference, Dec 10, 2007-Dec 14, 2007, Arusha, Tanzania.

**Stage: FS**

**Project No.: 2-11**

**Project Name: Environmental Problems and Human Security for Children as Our Future:Asia-Pacific Children and the Environment (ACE) Project**

**Project Leader: YAMAUCHI,Taro**

**Research Axis: Ecohistory**

### ■ Research Objectives and Topics

“Children” are one of the most weak and delicate victims from the influence caused by “global environment problems” and also can be future wrongdoers who will damage on their surrounding environments. Although it is seem to be essential and very important for concentrating into “children” in field works in order to consider about human survival in near future, this kind of researches or discussions have not sufficiently conducted in the past studies for global environment problems .

Based on this simple but essential critics, this project focus on the security of “foods” and “health” with their natural and cultural “environments” as mainly concentrating into “children” in Asia and Pacific Islands, and will make clear what are the exact problems related or corresponded with recent global environment problems among the people in targeted areas, and also provide scientific facts and evidences to them with sufficient data.

Furthermore, this project will also challenge to establish the methods and new systems how to return academic profits to the studied societies and how to support their movements or activities against their surrounding environment problems. In academic level, the project will also try to contribute for growing up young scientists or researchers who can struggle with the indigenous and global environment problems in near future.

### ■ Progress of Project

At Western Java in Indonesia, we have 7 years research experience, and Watanabe and Sekiyam, the core members of the project have been collecting and analyzing biological and chemical data to investigate the pollution and foods in research area. Sekiyama also has conducted the intensive household survey and subsistence survey as collaborating with the local university. In this year, Yamauchi (project leader) and Watanabe visited there to discuss the detail of our research topics and goals with Indonesian counterparts.

Regarding Southern Sulawesi and Kalimantan in Indonesia, Ono (project member) and Tsuji (collaborator) visited some potential villages for the project and conducted general surveys. They also investigated the potential counterparts as the local universities and NGO groups.

In Solomon Islands, Yamauchi has conducted continual field works since 1995 and collected intensive bio-medial data on children and adults together with socio-economic data in some locations. At Western Province, Yamauchi and Nakazawa (core member) has conducted physical examination and food consumption surveys, together with collecting brood and urinalysis samples. They also have taken research on decision making process by the communities against recent developments by foreign capitals.

### ○ Co-Researchers

- ◎ TARO YAMAUCHI ( Hokkaido University, Associate Professor, Solomon Group )
- CHIHO WATANABE ( University of Tokyo, Professor, Leader of Indonesia Group, Environmental chemicals )
- MINATO NAKAZAWA ( Gunma University, Associate Professor, Solomon Group )
- GEN YAMAKOSHI ( Kyoto University, Associate Professor, Solomon Group )
- TOMOAKI YOSHITOMI ( Tokyo Gakugei University, Associate Professor, Indonesia Group )
- MAKIKO SEKIYAMA, ( University of Tokyo, Indonesia Group )
- RINTARO ONO ( RIHN, Research Associate, Indonesia Group )
- TAKASHI TSUJI ( National Museum of Ethnology, Visiting Researcher, Indonesia Group )

ABUDOLLA OEKAN	( Institute of Ecology, Padjajaran University, Director, Indonesia Group )
GUNAWAN BUDHI	( Institute of Ecology, Padjajaran University, Senior Researcher, Indonesia Group )
MEXITALLIA MARIA	( Deponegoro University, Pediatrician (MD), Indonesia Group )
BAKOTE' E BERNARD	( Solomon Islands Medical Training and Research Institute, Director, Solomon Group )

### ■ Research Plan

As the most remarkable alteration, principle of this project was distinguished from "human security doctrine" applied in former proposal. Consequently, the title of this project was modified. Several common parts are found between final goal of "human security doctrine" discussed in many fields ever and awareness of the issues or purpose in this project. Therefore, the term "human security" was inserted into project title under the period of Incubation Study.

However, through discussions among the project members about "human security doctrine" in Feasibility Study period, it found inappropriate to use the term "human security" which involves very wide-ranging and equivocal problems because it may be a possibility of misunderstanding the course of this project. The reason is that the word "human security" invented around a core of the United Nations or developed nations impresses top-down way of thinking by the economic or social powers, and such ideas should be understood to be denying the immanent ability or possibility of generative changes in the targeted society implicitly (Shigemitsu 2001).

Against the image of word "human security", this project aims to understand precisely the state of mutual relationships among "foods", "health" and "environment" of local people, especially children in targeted areas, at the same time, to take a bottom-up support for new campaigns or countermeasures organized by local people, and also to back up the nurturing of talented local young researchers or people on the base of returning outputs of this project. That is persistently a participatory research that affirms the possibility of immanent generative changes or ability of adaptation in the targeted society. It determined to delete the word "human security" from project title in response to the discussions above.

And one of purposes of this project stressed in former proposal is to understand comprehensively the negative influences of environment to children from "biological", "socio-economic" and "cultural and spiritual" aspects with paying attention to environmentally risky chemical materials (e.g. environmental hormones). However, to investigate the risks "environment" affect the "foods" or "health" of children, it confirmed not only focusing on contamination levels of chemical materials or food intakes, but also the necessity to collect detailed data about the state of aquatic resource utilizations, especially fish as "foods" that could accumulate the chemical materials, on the basis of subsequent discussions among the core members, in workshop and results of research (Yamauchi 2007), extension of the research areas to cover. That is why this project added the following objects anew: (1) utilizations of aquatic resources as "foods" especially among children, (2) comprehensive understanding of mutual relationships between uses and influences of aquatic resources (including subsistence and economic activities) by the locals including children.

Following the mentioned above, the research areas narrowed down to Asia and Pacific islands due to their historically important positions on aquatic resource utilizations as "foods". Concretely, coastal areas of South Sulawesi in Indonesia and Solomon Islands in Oceania newly added to the Citarum basin of West Java in Indonesia pointed out in former proposal. This selection is not only a result of consideration about diversity of insular environments but also to investigate both the aquatic resource utilizations in fresh water at the interior areas such as the Citarum basin in West Java, and the state of general aquatic resource uses mainly for foods including brine and brackish water resources in the coastal areas comparatively. In the same manner, coastal, corral areas of Solomon Islands are targeted to compare the brine aquatic resource utilizations with the similar environments between Asia and Pacific Islands.

### ■ Problems for implementation or points need to change plan

1. Discussion about general ideas

Core members developed the arguments in discussing “human security” doctrine titled in project title during IS period with reviewing preliminary studies. As it turned out, it concluded the word “human security” is unsuitable for the design of this project and project title was altered. Through the presentations and discussions on joint workshop by 4 projects of RIHN noted below, it confirmed that new title is suitable for the project purpose.

## 2. Joint workshop by 4 projects of RIHN

Cosponsored workshop with Moji’s project was held at RIHN on October 27–28, 2007. It was actually a joint workshop by 4 projects with Akimichi’s FR project and Okumiya’s PR project besides the both projects. Consistently good discussion was exchanged about resources, foods and “human security” above mentioned, and also about directions of each projects or possibility of the collaboration. 5 members from this project made 6 presentations totally on the opportunity.

## 3. Overseas Field Research

6 overseas field research (totally 8 times) for this project were conducted during 2 years in IS and FS period as follows:

- ① Indonesia (Java, Sulawesi and Kalimantan)
  - ” Research about the cognition of environment and condition of children’s health in urban areas of Central Java” (conducted by Yamauchi and Mexitalia)
  - ” Research about the environmental pollutions and exposures to children in rural districts of West Java” (conducted by Watanabe, Yamauchi and Gunawan)
  - ” Research about the conditions of aquatic culture and brackish water resource uses at farming and fishing villages in corral areas of South Sulawesi” (conducted by Ono, Akino and Diaz)
  - ” Research about the aquatic resource utilizations at farming and fishing villages in coastal areas of South and East Kalimantan” (conducted by Ono, Tsuji and Diaz)
- ② Solomon Islands (Guadalcanal and New Georgia)
  - ” Research about the health of local people and their qualities of life” (conducted by Yamauchi, Nakazawa and Bakote’ e)
  - ” Research about the changes of life styles under ethnic conflict and social capitals” (conducted by Nakazawa and bakote’ e)

## Books

### 【Chapters/Sections】

- Yamauchi T 2007 Modernization, nutritional adaptability, and health in Papua New Guinean Highlanders and Solomon Islanders. R. Ohtsuka R, S. J. Ulijaszek (ed.) Health Change in the Asia-Pacific Region. Cambridge University Press, Cambridge, pp.101-126.

## Papers

### 【Original Articles】

- Yamauchi T , Midorikawa T, Hagihara J, Sasaki K 2007 Quality of life, nutritional status, physical activity, and their interrelationships of elderly living on an underpopulated island in Japan. *Geriatrics and Gerontology International* 7 :26-33. (reviewed).
- Lee JS, Kawakubo K, Kondo K, Akabayashi A, Kataoka Y, Asami Y, Mori K, Umezaki M, Yamauchi T, Takagi H, Shimomitsu T, Inoue S, Sunagawa H 2007 Neighbourhood environment and leisure-time physical activity in residents of the Tokyo Metropolitan area. *Movement & Health* 2007. pp.1-6. (reviewed).
- Ohashi J, Naka I, Kimura R, Natsuhara K, Yamauchi T , Furusawa T, Nakazawa M, Ataka Y, Patarapotikul J, Nuchnoi P, Tokunaga K, Ishida T, Inaoka T, Matsumura Y, Ohtsuka R 2007 FTO polymorphisms in oceanic populations. *Journal of Human Genetics* 52 :1031-1035. (reviewed).
- Sekiyama M, Tanaka M, Watanabe C 2007 Pesticide Usage and Its Association with Health Symptoms among Farmers in Rural Villages in West Java. *Indonesia Environ. Sci.* 14 :23-34. (reviewed).
- Zhou H, Watanabe C, Ohtsuka R 2007 Impacts of dietary intake and helminth infection on diversity in growth among schoolchildren in rural south China: a four-year longitudinal study. *Am J Hum Biol.* 19 :96-106. (reviewed).
- Kondo K, Lee JS, Kawakubo K, Mori K, Kataoka Y, Asami Y, Akabayashi A, Umezaki M, Yamauchi T, Takagi H, Shimomitsu T, Inoue S, Sunagawa H 2007 Relationship between physical activity and neighborhood

environment in two different rural areas in Japan. *Movement & Health* 2007. pp.1-6. (reviewed).

- Yamauchi T 2007 Modernization, nutritional adaptability, and health in Papua New Guinean Highlanders and Solomon Islanders. R. Ohtsuka R, S. J. Ulijaszek (ed.) *Health Change in the Asia-Pacific Region*. Cambridge University Press, Cambridge, pp.101-126. (reviewed).
- Yamauchi T , Kim SN, Lu Z, Ichimaru N, Maekawa R, Natsuhara K, Ohtsuka R, Zhou H, Yokoyama S, Yu W, He M, Kim SH, Ishii M 2007 Age and gender differences in the physical activity patterns of urban school children in Korea and China. *Journal of Physiological Anthropology* 26 :101-107. (reviewed).

## Research Presentations

### 【Oral Presentation】

- Yamauchi T, Ishimori D, Nakazawa M, Kawabe T, Ohtsuka R Socioeconomic influence and genetic factor on growth and nutritional status of adolescents in the Solomon Islands. The 11th International Congress of Auxology, Sep 09, 2007-Sep 12, 2007, Tokyo, Japan.
- Yamauchi T Longitudinal Monitoring Survey on the Growth and Nutritional Status of Children in Zambia. The 4th Resilience Project Otaru Workshop, Mar 08, 2008, Otaru, Japan.

### 【Poster Presentation】

- Yamauchi T, Onishi H, Phonpadith X, Monely V Gender differences in daily time allocation and physical activity of rice farmers in Lao PDR. . National Health Research Forum., Sep 24, 2007-Sep 25, 2007, Vientiane, Lao PDR..
- Yamauchi T, Kim SN, Lu, Weing CC, Ichimaru N, Natsuhara K, Zhou H, Yokoyama S, Kim SH, He M, Jaw SP, Ishii M Gender and age differences in the daily physical activity of urban school children from four Asian countries. . 2008 Annual International Health and Physical Fitness Conference, Mar 01, 2008-Mar 02, 2008, Taichung, Taiwan.

**Stage: FS**

**Project No.: 3-6**

**Project Name: A Study of Human Subsistence Ecosystems among Arab Societies: To Combat Livelihood Degradation**

**Project Leader: NAWATA, Hiroshi**

**Research Axis: Resources**

**URL: <http://www.chikyu.ac.jp/arab-subsistence/main/Welcome.html>**

### ■ Research Objectives and Topics

This research project aims to promote basic studies to clarify human life support mechanisms and self-sufficient modes of production among Arab people who have survived more than a thousand years under a peculiar natural environment of drylands. Based on these research results, we intend to propose a scientific framework to strengthen their subsistence productivity and combat livelihood degradation in local communities of Arab people to prepare for the post-oil era.

Japan and oil-rich countries of the Middle East have put excessive pressure on the Earth in terms of energy, water and food. As they have put first priority on economic prosperity for their own benefits, they have exploited irreplaceable resources such as fossil fuel and fossil water. Such attitudes have also pushed local ecosystems into an abnormal state by planting alien species, and furthered social differences among the people of the Middle East. As we are facing a turning point in oil-based modern civilization, our inter-dependency through trading fossil fuel must change drastically to a new inter-dependency to build a futable society. In this regard, we need to promote basic studies to identify human life support mechanisms and self-sufficient modes of production to achieve consilience in the area of global environmental problems.

We focus on human subsistence ecosystems, which are human life support mechanisms and self-sufficient modes of production (hunting, gathering, fishing, herding, farming, and forestry) with low energy resource consumption. We also take another look at advanced technology and economic development, and reexamine the conceptual framework of comprehensive measures to combat desertification. Based on these research results, we intend to propose a scientific framework to strengthen subsistence productivity and to rehabilitate the daily life of general population among Arab societies for the post-oil era.

A study of human subsistence ecosystems among Arab societies will be advanced and implemented as three separate issues, such as 1) comprehensive measures to control alien invasive species by providing methods to cope with specific global environmental issues, 2) an assessment of environmental effects by development programs in coastal zones of the arid tropics to prevent new outbreaks of environmental problems, and 3) supporting peoples' decision making by sharing research results, as one of the most expected outcomes of building important social networks for future human survival.

Field surveys will be conducted in semi-arid lands between the River Nile and the Red Sea in Sudan as the main survey area, and in other areas of three countries (Egypt, Saudi Arabia and Algeria), as sub-survey areas, to not only examine differences in the sustainability of subsistence economy, particularly under site-specific conditions, but also to respond and prepare for unexpected incidents such as the change and disturbance of political situations, social order or peace.

### ■ Progress of Project

(1) A project leader, H. Nawata (Research Institute for Humanity and Nature, cultural anthropology) reexamined the research targets in detail and developed the research plan through 1) oral presentation "Towards an integrated plan to control an exotic species *Prosopis*" in an international workshop, 2) participation and registration as an international expert for International Traditional Knowledge Networks, supported by UNCCD, UNESCO and Regione Toscana, Italy, 3) visiting ICARDA, Syria and discussing with its members the outcomes of recent projects for production systems among Arab societies.

(2) We started the first meeting of the feasibility study in July 2007 by getting to know participants



from different fields and backgrounds as scientists, practitioners and project managers. After introducing ourselves and sharing field experiences, twenty-two participants polished up the research objectives and methods to achieve project goals overnight discussion.

(3) At the second meeting of FS, we focused on the specific theme “Mangroves in arid lands: Seeking ways to clarify social ecosystems and to strengthen subsistence productivities”. First, natural scientists, social scientists and members of NGOs presented their research and activity outcomes, and then tried to connect the scientific results and practical observations to build a platform to consolidate their knowledge. We succeeded in making a framework to target concrete topics from different but connected perspectives as below.

(4) As for research organization and research permission from Sudan, a first-priority country for field survey, the project leader H. Nawata and the core member Y. Sugimoto discussed with three Sudanese core members, A. G. Babiker, Abdelbagi M. A., Abdelhadi A.W., who visited Japan in September and November 2007. The Deputy Director of the Agricultural Research Cooperation, Sudan, gave us a definite promise to cooperate and support the field researches of this project.

### ○ Co-Researchers

- ◎ Hiroshi NAWATA ( Research Institute for Humanity and Nature, Associate Professor, Project Leader )
- Iwao KOBORI ( United Nation University, Senior Programme Adviser, Algeria )
- Mutsuo KAWATOKO ( Director, Research Institute for Islamic Archaeology, Egypt )
- Yukihiro SUGIMOTO ( Kobe University, Professor, Sudan )
- Chiharu MIYAMOTO ( Action for Mangrove, Trustee, Saudi Arabia )

### ■ Research Plan

(1) Work group to submit comprehensive measures to control an alien invasive species, mesquites (*Prosopis* spp.)

Two co-chairs of JSPS’ s AA Science Platform Program ” Water management and parasitic weed control for sustainable food production in Sudan” (2005-2007), Y. Sugimoto (Kobe University) and A. G. Babiker (Sudan University of Science and Technology) will tackle issues not only as specialists in weed control and biochemistry, but also as experienced facilitators to integrate wisdom from different disciplines. T. Sakata (Senshu Ishinomaki University, nutrient physiology) and Abdullah Abu Sin (Gezira University, agro-economics) will also have important roles to make a bridge between scientific and local knowledge.

(2) Work group for an assessment of environmental affects by development programs in coastal zones of the arid tropics

K. Yoshikawa (Okayama University, plant eco-physiology) and C. Miyamoto (Action Plan for Mangrove Plantation, planting practices) who have made a strong commitment to the JICA and National Commission for Wildlife Conservation “Marine Wildlife of the Northern Saudi Arabian Coast of the Red Sea” (1997-2000) and JICA and Oman “Rehabilitation, conservation and management plan for mangrove in Oman” , lead a group comparing these research results with other areas with the support of H. Buhe (Rakuno Gakuen University, Remote Sensing and GIS).

(3) Work group for sharing research results to support local decision making

Abdelbagi M. A. (Agricultural Research Cooperation, Sudan, plant physiology) and Abdelhadi A.W. (Agricultural Research Cooperation, Sudan, water management) who are skilled in Arabic, English and Japanese, and have Ph. D from Tottori and Kobe Universities respectively, will take a leading role in the field of biodiversity conservation and participatory development and share the research results with local people. International consultants, P. Laureano (Traditional Knowledge World Bank, UNESCO consultant) and Y. Onuma (International seed bank, agricultural development in the Middle East and North Africa, JICA consultant) will apply their experience and methods to academic fields.

(4) Work group to examine differences in the sustainability of subsistence economy in each local ecosystem

I. Kobori (United Nations University, traditional water management) and A. Benkhalifa (Algeria University of Science and Technology, fungology) who have done field research in the Sahara Oasis for more than half a century, and M. Kawatoko (Research Institute for Islamic Archaeology), who has

excavated Islamic cities and organized multi-disciplinary research teams, will contribute to comparative studies of local ecosystems in the Middle East.

### ■ Problems for implementation or points need to change plan

#### (1) Project title change

We changed the project title “A Study of Human Subsistence Ecosystems among Arab Societies: To Combat Livelihood Degradation” in the incubation and feasibility studies, to “A Study of Human Subsistence Ecosystems among Arab Societies: To Combat Livelihood Degradation for the Post-oil Era” for pre-research and full research. In Japanese, we apply the word *nariwai* (activities for living) for subsistence, because we realized that the technical term *subsistence* is often difficult for Japanese general population to understand what it means (We refer to college students’ reaction in classes). The reason why we add ‘for the Post-oil Era’ as a subtitle is to specify promoting basic studies to build a futable society (We refer to members’ discussion in the first and second meetings of feasibility studies).

#### (2) Setting up the main survey area

One country, Sudan, was set up as the main survey area out of four prospective countries (Algeria, Egypt, Sudan, Saudi Arabia), and three countries were set up as sub-survey areas, to respond and prepare for unexpected incidents such as the change and disturbance of political situations, social order or peace.

## Books

### 【Chapters/Sections】

- Kobori, I., Abdrrahmane Benkhalifa, Hamadi Ahmed El-Hadj 2007 Desertification and Sustainable Development in the Algerian Sahara: Field Surveys in Tidikelt . King, C., H. Bigas and Z. Adeel (ed.) Desertification and the International Policy Imperative. United Nations University, Tokyo, pp.177-181.
- Nawata, H. 2007 Local people and natural reserve in Asir mountains. Nakamura, S. (ed.) Sixty-five chapters to know Saudi Arabia. Akashi shoten, Tokyo, pp.102-105. (in Japanese)
- Nawata, H. 2007 Human and wild animals in juniper forest. Nakamura, S. (ed.) Sixty-five chapters to know Saudi Arabia. Akashi shoten, Tokyo, pp.106-110. (in Japanese)
- Nawata, H. 2007 Agriculture in Asir mountains. Nakamura, S. (ed.) Sixty-five chapters to know Saudi Arabia. Akashi shoten, Tokyo, pp.111-115. (in Japanese)
- Nawata, H. 2007 Juniper barks for male circumcision. Nakamura, S. (ed.) Sixty-five chapters to know Saudi Arabia. Akashi shoten, Tokyo, pp.120-125. (in Japanese)
- Nawata, H. 2007 Cultural festival Jinadriya. Nakamura, S. (ed.) Sixty-five chapters to know Saudi Arabia. , pp.149-152. (in Japanese)
- Nawata, H. 2007 Honey-collecting from juniper forest. Nakamura, S. (ed.) Sixty-five chapters to know Saudi Arabia. Akashi shoten, Tokyo, pp.116-119. (in Japanese)
- Nawata, H. 2007 Camel race jockeys from Sudan. Sixty-five chapters to know Saudi Arabia. Akashi shoten, Tokyo, pp.153-157. (in Japanese)
- Nawata, H. 2007 Reading “al-Bawasir” . Nakamura, S. (ed.) Sixty-five chapters to know Saudi Arabia. Akashi shoten, Tokyo, pp.158-159. (in Japanese)
- Nawata H. 2007 . Watching” Tash ma Tash” . Sixty-five chapters to know Saudi Arabia. Akashi shoten, Tokyo, pp.188-190. (in Japanese)
- Nawata, H. 2007 Understanding of the hunger and civil war in Sudan. Ikeya, K., Sato, R., Takeuchi, S. (ed.) Africa I. Asakura shoten, Tokyo, pp.333-349. (in Japanese)
- Nawata, H. 2007 Japanese who was the nearest to the photography “A Vulture and a Child” . Ikeya, K., Sato, R., Takeuchi, S. (ed.) Africa I. Asakura Shoten, Tokyo, pp.350. (in Japanese)

## Papers

### 【Original Articles】

- Babiker, A.G.T., E. A. Ahmed, D.A.Dawoud, N.K. Abdella. 2007 *Orobanche* species in Sudan: History, Distribution and Management. . *Sudan Journal of Agricultural Research* 10 :107-114.
- Hiraoka, Y, Y. Sugimoto. 2007 Interactions between the parasitic weed *Striga hermonthica* and its host *Sorghum bicolor* at a molecular level.. *Sudan Journal of Agricultural Research* 10 :127-132.

## Research Presentations

### 【Oral Presentation】

- Nawata, H. Research plans and ideas on human subsistence ecosystems and complex networks among Arab societies. RIHN danwa-kai, 2007, Kyoto. (in Japanese)
- Nawata, H. Social, cultural, religious responses of local people to south-north fluctuation of ITCZ, Africa: A case study of an adaptive mechanism of the Beja. Special Symposium at Japanese Society of Arid Land Studies Annual Meeting, May 19, 2007-May 20, 2007, RIHN. (in Japanese)
- Nawata, H. Japanese who was the nearest to the photography "A Vulture and a Child" . Annual meeting of Japanese societies for cultural anthropology, Jun 02, 2007-Jun 03, 2007, Nagoya University. (in Japanese)
- T. Kume RIHN unique characteristics and research projects in practice. First meeting of the FS, Jul 21, 2007-Jul 23, 2007, Kurayoshi Japan. (in Japanese)
- Nawata, H. What I head for in the project "A Study of Human Subsistence Ecosystems among Arab Societies" . First meeting of the FS, Jul 21, 2007-Jul 23, 2007, Kurayoshi Tottori. (in Japanese)
- H. Nawata Coastal zones of the arid tropics as a social ecosystem: Interrelation among camel, mangrove, coral reef and huma. Second meeting of FS, Nov 03, 2007-Nov 04, 2007, RIHN. (in Japanese)
- R. Nakamura Human life in marine ecosystem at Kilwa Island, Swahili coast: focusing on mangrove forest and its utilization. R. Nakamura, Nov 03, 2007-Nov 04, 2007, RIHN Kyoto Japan. (in Japanese)
- C. Miyamoto, S. Suda Mangroves in Arabian peninsula: obtained knowledge from reforestation practices. Second meeting of FS, Nov 03, 2007-Nov 04, 2007, RIHN Kyoto Japan. (in Japanese)
- K. Yoshikawa, F. Yamamoto Eco-physiological survey of mangrove forests in the Sultanate of Oman. Second meeting of FS, Nov 03, 2007-Nov 04, 2007, RIHN Kyoto Japan. (in Japanese)
- T. Miyagi Mangrove ecosystem and its resource values in arid/semi-arid areas.. Second meeting of FS, Nov 03, 2007-Nov 04, 2007, RIHN Kyoto Japan. (in Japanese)

### 【Poster Presentation】

- Sugimoto, U. Progress in understanding the mode of action of germination stimulants.. 7th international Parasitic Weed Symposium, 2007, Nante, France.
- Sugimito, H. In vitro production of strigolactones by plant root cultures.. 9th World Congress on Parasitic Plants, June 2007, Charlottesville, USA.

### 【Invited Lecture / Honoronary Lecture / Panelist】

- Nawata, H. Understanding the hunger, civil war and desertification in Africa from the photography "A Vulture and a Child" . Tottori Prefectural School for the hearing-impaired, Oct 22, 2007, Tottori Japan. (in Japanese)

**Stage: FS**

**Project No.: 3-7**

**Project Name: The Effects of Economic Activities on the Ecosystem in the Caspian Sea and Cooperative Environmental Protection System**

**Project Leader: KITAZAWA, Daisuke**

**Research Axis: Ecosophy**

### ■ Research Objectives and Topics

[Background]

The most serious problems in the Caspian Sea are change in water level and oil pollution. In both problems, water utilization and energy development in certain country have effects on the ecosystem services for the other countries. An environmental protection system should be enforced with cooperation between the circum-Caspian countries, whose nationalities, social systems, and economic conditions are quite different from each other.

[Objectives]

In the project, the future Caspian environment will be demonstrated by analyzing the relationship between the history of economic activities and the unique environment. Then an environmental protection system will be proposed, taking into account the differences in the nationalities, social systems, and economic conditions among the surrounding countries.

The present study contributes to solve the global environmental problems in a view that the global environmental changes have different effects on local area, and that the countries which have environmental loading are different from those which are affected by the environmental changes.

### ■ Progress of Project

In the feasibility study, we interviewed government and companies on the policy of water use and energy development. In order to examine the current situations of environmental monitoring and environmental protection policy, we contacted the Caspian Environmental Programme and universities, and discussed the possibility of collaborative study.

Then we started the development of hydrostatic-ecosystem coupled model to interpolate the field monitoring data in time and space. Further, we started to construct the database which synthesizes the histories of human life, industrial activities, and environmental parameters in and around the Caspian Sea.

### ○ Co-Researchers

- ◎ Daisuke Kitazawa (Tokyo University, Associate Professor, )
- Michio Kumagai (Lake Biwa Environmental Research Institute, Manager, Prediction of water level change and analysis of water current )
- Shinsuke Tanabe (Ehime University, Professor, toxic analysis )
- Shigeru Tabeta (Tokyo University, Associate Professor, , numerical ecosystem model )
- Ryoichi Yamanaka (Tokushima University, Lecturer, prediction of water level change and analysis of topography change )
- Parvin Farshchi (Islamic Azad University, Lecturer, monitoring of water level and current along the Iranian coast )
- Miho Fujimura (Saga University, Lecturer, , human life, interview )
- Darijav Khadbataar (Mongolian Television, data analysis, translator )
- Yoko Hirose (Tokyo University of Foreign Studies, Associate Professor, policy, interview )

### ■ Research Plan

In the feasibility study, we interview the Caspian Environmental Programme and universities and discuss the possibility of collaborative study.

Then we start the development of hydrostatic-ecosystem coupled model to interpolate the field monitoring

data in time and space. Further, we start to construct the database which synthesizes the histories of human life, industrial activities, and environmental parameters in and around the Caspian Sea.

#### ■ Problems for implementation or points need to change plan

It was revealed from the interviews to government and companies related to the energy development that Azerbaijan and Kazakhstan vigorously develop the production of oil and gas in the Caspian Sea, and that Turkmenistan will take part in the gas production supported technically by foreign companies. However, the energy production depends on discovery of new oil and gas resources, transportation ability of the produced oil and gas, and determination of border lines among the surrounding countries. The future study is to predict the production of oil and gas, and to interview water utilization around the Caspian Sea.

The interviews to Caspian Environmental Programme and the surrounding universities show that they are interested in the effects of oil pollution on aquatic lives such as sturgeons and seals, and in the effects of water level rising on residence and agriculture. Many organizations have started environmental monitoring. However, northern Caspian Sea has relatively a plenty of environmental data, while southern Caspian Sea, especially along Turkmenistan and Iranian coasts, has little environmental data. In the future study, the environmental data should be collected in the same frequency in time and space, and in the same accuracy, in a comprehensive monitoring system. In order to interpolate the environmental data in time and space, it is indispensable to construct the hydrostatic-ecosystem coupled model. As a first step, we reproduced the surface current system caused by wind stress. Then the numerical model including the ecosystem submodel should be improved by comparing the results of numerical simulation with the existing and collected environmental data.

Synthesizing the above outcome in the database, the future Caspian environment and human life will be demonstrated by analyzing the relationship between the history of economic activities, environmental policy, Caspian environment, and human life.

### Research Presentations

#### 【Oral Presentation】

- Daisuke Kitazawa Environmental problems and numerical simulation in the Caspian Sea. East Asia model committee in the Japan Society of Naval Architects and Ocean Engineers, 2007, . (in Japanese)

**Stage: FS**

**Project Name: Global Warming and the Human-Nature dimension in Siberia – The social adaptation to the changes of the terrestrial ecosystem with an emphasis on the water environment**

**Project Leader: INOUE, Gen**

**Research Axis: Circulation**

### ■ Research Objectives and Topics

Siberia is one of the areas where global warming will be most evident (fig. 1). In fact, perceivable changes in the ecosystem and cryosphere have already been reported in recent years (fig. 2). In addition, the pressure due to the exploitation of energy resources on humans and nature is expected to increase in the near future (fig. 3). This research seeks to elucidate three aspects from both the natural and the human social science perspectives. These three points are (1) the characteristics of the water and carbon cycles, including the driving forces of their annual variation and predictions into the near future, (2) the capability of multi-ethnic population to adapt to the changes who have the historically unique social systems, and (3) the feedback of water and carbon cycle changes and the people's activities to the climate.

### ■ Progress of Project

Each of the main members have 10-20 years experiences of field study in Siberia (IGBP Northern Eurasia Study) and maintain intense and friendly relationships with the research organizations and researchers in Russia. They have made contact with their counterparts during 2007 to discuss this project. They are also experienced scientists in the field of satellite data analysis (chief scientists of GOSAT or ASTER) (G1), water-energy-carbon cycle studies (GAME-Siberia and CREST project) (G2) and human ecology studies of minorities in Siberia (G3).

During the IS/FS period, several meetings, including one workshop with all members participated, were held. Some members visited Russia to discuss the cooperation and get information and data, in addition to preparing for research in each area of this project.

The activities of each groups are as follows:

#### 1) Siberia bird's-eye group

- AIST Meeting (19th October): arguments about the problem scope of this project and distribution were carried out based on the studies of carbon circulation using the ASTER and MODIS satellite data, expected CO<sub>2</sub> based on GOSAT satellite, and CH<sub>4</sub> concentration distribution data. 'Forward' the carbon dioxide distribution is calculated by the combination of the carbon balance model including methane with the atmospheric transport model based on the ASTER and MODIS satellite data. Based on the comparison with estimated results from the GOSAT satellite, the important aspects of the research were agreed upon. (Inoue, Sasai)

- GOSAT meeting (16th November): It has not been possible to calculate the carbon level in Siberia at high-level resolution from GOSAT data.

It was concluded that it would be better to concentrate on methane because of its high generation in Siberia. Since forest fires and natural gas leaks are specific features in Siberia, cooperation with the forest study research group, such as IARC at Hokkaido University, is necessary.

- Exchange of views about the natural changes in Siberia being the result of global warming was conducted by mail with the Russian geophysical research center, Chita University, Mr. Alexandrov. However, because most of the correspondence was conducted in Russian, it was necessary to have meetings in order to obtain the reports in English.

#### 2) Water cycles and ecosystem interaction process study group

- First meeting (20th October 2007): in conclusion: past restoration sub G: understanding of the responses to the ecosystem following the restoration of the environmental situation in the past (100 year schedule); process sub G: grasp the actual broad ecology and water situation phenomenon in Siberia;

model sub G: the main problem of the estimation and change restoration of the water and carbon cycles in the past 100 year using a hydrological cycle model in which landsurface and distributed runoff models were coupled was agreed upon.

- Second meeting (18th November 2007): conducted discussion related to the mutual cooperation of 3 sub G in the water cycle and ecosystem mutual interaction processes G. In addition, discussions related to the cooperation with the human ecology group were conducted, and the necessity for ongoing cooperation with human ecology G on the three issues of urbanization, ground water prediction (over humidity and dryness) and the estimate of the flood changes (flood and accident effectiveness) was confirmed.

- Visit to the Institute for Biological Problems of Cryolithozone (IBPC) (June and October 2007): agreement on the construction of new observation points (Ust-Maya) in the southern part of the Lena River Basin, in addition to the Yakutsk area. IBPC is responsible for the observation and analysis of mainly carbon circulation.

- Visit to the Permafrost Institute (PI) (June and October 2007): acquisition of the basic information about the interaction of the permafrost, the soil water and the groundwater. Acquisition of information about the real situation of the water resources in Yakutsk city.

- Visit to IBPC (July 2007) to arrange the extraction of samples and its export.

### 3) Human ecology group

- First Meeting (8th October 2007): The main task of the first and third subgroup were discussed. Upon the analysis of the influence of global warming on the society that focus not on the urban or agricultural districts but on the local communities it was confirmed that the whole system could be made secure from main fields of production, infrastructure and international perspective. Especially, in the case of infrastructure, it displayed the estimation of the local adaptive technology, which is used as the main means of traffic on the river during the winter. .

- Second Meeting (17th October 2007): The main task of the second subgroup was discussed. The role and responsibility of behaviour analysis of reindeer used by satellite telemetry system and ethnographical research was confirmed.

- Visit to Institute of Human Research, Sakha Republic Academy of Science (April and November 2007). It was confirmed that it would be necessary to obtain the research support system, including research permission for the anthropological and sociological investigation, for estimating the impact of global warming. In particular, in the November visit, an agreement was made to conduct the social impact evaluation of the railroad construction and the resource development together with the local researchers. Furthermore, views were exchanged with the infrastructure engineers from the Sakha Republic government body and the water department introduced by this research institute. After the future directions of the field survey research were argued, two cooperating researchers participated in the G3 group to take charge mainly of the collection of local material and historical analysis.

- In addition, a promise has been made to mediate the exchange of results obtained by the related researchers between the agricultural centre and the biology research centre of Sakha Republic and the Yakutsk University in March 2008

## ○Co-Researchers

- ◎ Inoue, Gen ( Nagoya Univ., Professor, Management of Project )
- Yamaguchi, Yasushi ( Nagoya Univ., Professor, Analysis of the changes in the land cover using satellite data )
- Sasai, Takahiro ( National Institute of Advanced Industrial Science and Technology, Research Scientist, Analysis of carbon exchanges using the terrestrial biosphere model )
- Maksyutov, Shamil ( National Institute for Environment Studies, Chief Researcher, Carbon budget estimation from GOSAT and other observation data )
- Yasunari Tetsuzo ( Nagoya Univ., Professor, Climatic data analysis )
- Alexandrov, Georigi ( National Institute for Environment Studies, NIES Fellow, Impact of global warming )
- Kanzawa Hiroshi ( Nagoya Univ., Professor, Scenario of global warming in Siberia )
- Kobayashi Nakako ( Nagoya Univ., PD, Data analysis of GOSAT )

- Ohta Takeshi ( Nagoya Univ., Professor, Analysis of water energy and carbon cycles in forests, water balance analysis in a basin scale )
- Hiyama Tetsuya ( Nagoya Univ., Associate Professor, Analyses of sub-surface water and basin-scale water budget )
- Kotani Ayumi ( Nagoya Univ., Associate Professor, Analysis of atmospheric boundary layer and forest responses to environmental changes )
- Sugimoto Atsuko ( Hokkaido Univ., Professor, Reconstruction of past changes in environment and vegetation activity )
- Kodama Yuji ( Hokkaido Univ., Assistant Professor, Analysis of snow accumulation processes, )
- Yamazaki Takeshi ( Tohoku Univ., Assistant Professor, Analysis of land surface processes using a land surface model )
- Yonenobu Hitoshi ( Naruto Univ. of Education, Assistant Professor, Reconstruction of past tree grow rate and past climate )
- Hatta Shigemi ( Tomakomai National College of Technology, Associate Professor, Runoff analyses for continental-scale river basin )
- Maximov Trofim C. ( Insitute for Biological Problems of Cryolithozone, SD, RAS, Head researcher, Analysis of photosynthesis in boreal forests )
- Kononov Alexander V. ( Insitute for Biological Problems of Cryolithozone, SD, RAS, Researcher, Analysis of photosynthesis in boreal forests )
- Maximov Ayal ( Insitute for Biological Problems of Cryolithozone, SD, RAS, Researcher, Analysis of photosynthesis in boreal forests )
- Takakura, Hiroki ( Tohoku University, Center for Northeast Asian Studies, Associate professor, Related analysis of freezing water environmental use and an occupation in the rural society of the Lena middle region; Relational analysis of an occupation pattern and environmental change in East Siberia )
- Okumura, Makoto ( Tohoku University, Center for Northeast Asian Studies, Professor, Survey and analysis of the history and technology of transportation in East Siberia )
- Yoshida, Atsushi ( Chiba University, Associate professor, Analysis in Relationship between Subsistence System Patterns and Environmental Changes in West Siberia )
- Nakata, Atsushi ( Hokkaido Museum of Northern Peoples, Curator, Analysis in Relationship between Subsistence System Patterns and Environmental Changes in Southern Siberia )
- Ikeda Tohru ( Hokkaido University, Professor, Animal resource use and environmental analysis in Eastern Siberia )
- Tatsuzawa, Shiro ( Hokkaido UNational Museum of Ethnology, Researcher, Ecological study of wild/domestic reindeer in Eastern Siberia )
- Ehara, Sayuri ( Graduate School of Letters, Hokkaido University, Ph. D Candidate, Environmental recognition of Sakha people in Eastern Siberia )
- Ignat'eva, Vanda, B. ( Humanitarian Research Institute, Sakha Republic Science Academy, Professor, Sociological survey and relational analysis of society and development in Sakha Republic. )
- Sardana, Boyakova ( Humanitarian Research Institute, Sakha Republic Science Academy, Professor, History of Infrastructure and Transportation System in East Siberia )
- Fujiwara, Junko ( National Museum of Ethnology, Visiting researcher, Environmental movement and Russian' s environment recognition of Sakha republic and whole Russian Federation )
- Nagayama, Yukari ( Research Institute for Languages and Cultures of Asia and Africa, Tokyo, Post-doctoral researcher, Environmental recognition of native people in Eastern Siberia )

### ■ Research Plan

The research plans of three groups are as follows:

(1) Siberia bird' s-eye group (G1)

G1-a Carbon and water cycle sub-group

<Methods>



Analysis of the changes in the land cover of Siberia using satellite observation data (ASTER, MODIS)

Analysis of carbon, water and energy exchanges over Siberia using the terrestrial biosphere model (BEAMS; Sasai et al., 2005, 2007)

<Research Plan>

- Analysis of time variation of the land cover by medium-resolution satellite data (MODIS and NOAA/AVHRR) and by high-resolution satellite data (Landsat and ASTER) in particular of the area where the changes are most obvious.
- Calculation in carbon exchanges in Siberia using the terrestrial biosphere model (BEAMS)
- Validation in land cover types and carbon fluxes estimated from satellite data by using ground observation data (G2) such as land surface fluxes, eco-physiological data, and information on the land coverage provided by the field survey
- Analysis of seasonal and annual variations in carbon fluxes over Siberia. Comparison the carbon flux estimations with GOSAT products and the field survey results of G2.

<Originality and expected achievements>

- Extracted functions and changes of the forest in Siberia from the inspected results of carbon level model and the changes in the land coverage
- Provided spatial variations in carbon fluxes to G2 and G3 as the input to the climate change model

G1-b Greenhouse gas sub-group

<Methods>

Analysis of the spatial and temporal variability of carbon budget in Siberia from the greenhouse gases observation technology satellite (GOSAT) data: Evaluation of the north/south and the east/west gradients. Emission rate from point sources such as the forest fires and natural gas leaks.

<Research Plan>

- Development of advanced land ecosystem carbon dioxide budget model (together with G1-a) , and database maintenance of the methane emission rate
- Development of high resolution Inverse Model
- Fire detection → GOSAT specific point mode observation → calculations of the emission rate of CO<sub>2</sub>/CH<sub>4</sub>. The validation experiments. The predictions of frequency of fires from the GCM results → feedback to the carbon cycle model.

<Originality and expected achievements>

- The first reliable carbon dioxide and methane budget estimation from the satellite observation data.
- Quantitative estimation and future predictions of the greenhouse gas emission rate including those from the forest fires and the natural gas leaks.

G1-c Siberia general information sub-group

<Methods>

Study, examination, maintenance and analysis of individual records and data, such as the global warming in Siberia and the development projects in Siberia by the Russian government.

<Research Plan>

Category classification according to the impact caused by the climate change. Pressure of the development to the region.

<Originality and expected achievements>

- The input data for G3 and others
  - Measure of the signs of the global warming at Siberia
- (2) Water cycle and ecosystem interaction process study group (G2)

Objective of G2

- To understand relation between the past climate change and the vegetation response
- To investigate consistency of that relation with the current vegetation response
- To elucidate the state of water budget, from a canopy scale to continental river basin through sub-catchment scale
- To reconstruct the past and present status of water cycle and ecosystem and to predict the future variability

## G2-a: Reconstruction of the past environment

## &lt; Methods&gt;

This subgroup carries out analysis of stable carbon isotope and tree growth at the forest area of Yakutsk and its surrounding region.

## &lt;Research plan&gt;

The environmental variability, such as tree growth, water use efficiency and soil water content in the past 100-200 years, is reproduced with the knowledge of physiological response of trees. The past climate from the formation of the present vegetation also can be reconstructed.

## &lt;Originality and expected results&gt;

These studies provide 1) past status of the soil moisture environment corresponding to water cycles, vegetation response, and human activity and 2) relationship between the variability of vegetation growth and the physiological response.

## G2-b: Elucidation of current status of water cycle process

## &lt;Methods&gt;

This subgroup carries out field observations and satellite and field data analyses to reveal individual processes of the water (/energy/carbon) cycle, such as land-atmosphere interaction, snow process, groundwater variability, and catchment-scale water budget.

## &lt;Research plan&gt;

- Comparative observation at different precipitation conditions to reveal the connection of forest-permafrost formation system, and to verify the "potential" responses concept. (Corporation with IBPC, RAS)
- Snow survey to understand the ablation process and to evaluate the snow cover distribution.
- ABL survey to evaluate effect of the seasonal variability of surface condition including urban-rural contrast.
- Analyses of GRACE data to reveal the variability of groundwater storage over the east and west Siberia
- Analyses of catchment-scale water budget with intensive focus on ground water and spatial variability (corporation with RAS, PI)

## &lt;Originality and expected results&gt;

These studies provide 1) elucidation of forest-permafrost formation system, 2) spatial characteristics of W/E/C cycling system, 3) evaluation of urbanization effects, 4) characteristics of under-permafrost groundwater and runoff system, and 5) improvement of evaluation of catchment-scale water budget and, especially, contribution of the ground water.

## G2-c: Modelling for prediction of the future environment

## &lt;Methods&gt;

This subgroup carries out improving land surface model and runoff model.

## &lt;Research plan&gt;

- Advancement of land surface model by improving algorithms of soil water and frozen soil process and by including photosynthesis process
- Improvement of hydrological cycle model, which is coupled with the land surface model, by considering runoff process of longer time scale and icing process

## &lt;Originality and expected results&gt;

These studies provide prediction of 1) variability in soil water and frozen soil and its relation to human activity such as grazing, and 2) variability of river discharge, which contributes to evaluation of the flood effectiveness to human activity and the frequency of disastrous event.

## (3) Human ecology group (G3)

## G3-a Socio-cultural response to the freezing aqueous environment

## &lt;Research Method&gt;

This subgroup adopts the field research methods of anthropology and civil engineering with related historical literature work, focusing on the urban and rural communities in the basin of the middle of Lena River.

## &lt;Research Plan&gt;

- Provision of drinking water, firewood and haymaking and hunting and animal husbandry, and the related indigenous knowledge
- Local history of the regular spring flood and the social measures
- Traffic, the history of social infrastructure and actual condition from the survey (long term environmental data + infrastructure plan according to G1, correspondence to the design)

<Originality and expected achievements>

The characteristics of Sakha urban and rural communities make use of seasonal division according to the freezing and fusion process in the use of the frozen aqueous environment built during the historical experience of the traditional and socialistic Russia and the mechanisms of traffic infrastructure, food production and life-style. These points are clarified from the point of view of anthropology and civil engineering. By combining the natural observational data, the way of infrastructure and social culture harmonized with the seasonal changes will be clarified

G3-b Subsistence activity pattern and conversion

<Research Method>

This subgroup adopts the field research methods of anthropology and conservation ecology, in the latter, the behaviour of the wild and domestic animals using the satellite telemetry system. The group compares the various environmental variations, such as mountain taiga, forest tundra, tundra, taiga and coastal area, with human ecological adaptation of hunting gathering and animal husbandry.

<Research Plan>

- Technology and indigenous knowledge of the subsistence activities such as hunting, stockbreeding, fishery and sea animal hunting
- Analysis of the composition percentage of the production and work structure in the past 100 years based on the aural and recorded documents.
- Environmental estimation of the points installed by trap for fur-bearers.
- Local administrative policies on the wildlife management
- Correlation analysis of the result of the action survey, obtaining the reindeer group size distribution (wild life and domestic), vegetation and land use survey from the in situ research area and the bird's eye group G1.

<Originality and expected achievements>

These studies provide 1) reasons of change of subsistence activity in a given local population and 2) range of ecological adaptation. In addition, the information on the behaviour pattern of wild reindeer is quite original and contributes to the local wild life management and the biological studies on the wild reindeer.

G3-c Environment perception, practice and policy

<Research Method>

This subgroup adopts the field research methods of anthropology and sociology combing with the related historical study and environmental policies. The group covers the issue on the human perception and reaction against the global warming both in the local Siberian communities and Russian national levels, referring to the related international communities.

<Research Plan>

- Collection and analysis of the ethnographic data of the social norms and indigenous knowledge of the nature and environmental changes
- Social impact assessment of environment change with developing projects
- Analysis of environment discourse in mass media, movements, and policy
- Relation between local indigenous movement and environmental movement
- Relation of environment policies among local administration, Russian Federation and International governments and NGOs.

<Originality and expected achievements>

This study identifies the cultural concept of "disaster" or "abnormal" of the environment change, focusing on the indigenous knowledge, social norm, movements, and policies. Although the science defines and provide the influence of climate change, the local population may percept it differently. This

subgroup can fill up this gap. In addition it provides the way that the local perception and reaction against the global warming are constructed in the complex contemporary social structure.

■ **Problems for implementation or points need to change plan**

1. The problem of data collection and telemeter expense: Although it is possible to use a satellite telemeter system to obtain near real-time information, service is very expensive. GPS telemeter systems are cheaper in comparison but since the information is collected after a fixed period of time, it is impossible to locate actual positions until the information has been acquired. Therefore, data collection via the satellite telemetry system is preferred. However, there is also a possibility for a compromise, whereby case by case, GPS telemetry is loaded on nomadic reindeer, whereas the satellite telemetry is used on one out of two nomadic reindeers.

2. Acquisition of capture and research permission: It is necessary to meet governmental approvals for specific series of work that can be obtained from the government. This is mainly achieved through cooperation with local researchers. It is necessary, however, to emphasize the contribution to the actual research area (offering for example information about the estimated change of vegetation and ecology, and wild reindeer).

## Incubation Studies

Study of regional diversity of water quality: toward watermanagement based on circulation

NAKANO, Takanori (Professor, RIHN)

The major subject of watershed management has been changed from the water mass problems to the water quality ones. Global viewpoint becomes indispensable for the management of aquatic environment even in a local area because of the enlargement of human impacts on the atmosphere and the globalization in the society. Water contains materials derived from the watershed and foreign countries. Our IS study aims to develop a method to diagnose the natural and artificial effects on the water quality, propose an environmental index to show the globalization signature in water, and arrange methods for the local water management which is adaptable for the global environmental change. For this purpose, we have developed the traceability method by integrating various geochemical and isotopic analysis methods. We have successfully applied this method to the surface water and groundwater in Saijo city of Ehime prefecture, and started monitoring to sustain the water quality and support the water management by local governance dependent on its social and natural characteristics.

History of Mesopotamia in the context of environmental fluctuations: —based on evidence from agricultural activities—

WATANABE, Chikako E. (Associate Professor, Osaka Gakuin Junior College)

This study focuses on the interaction between the change of regime and environmental fluctuations in ancient Mesopotamia. Through the study of agricultural productivity, it has been suggested that the increase of salinity in the soil played a role for the decline of economy during the Ur III Dynasty, which caused the regime to collapse towards the end of the third millennium BC. Archaeological studies in the early Neolithic sites indicate the association between agricultural activities and religious practice. In order to reconstruct the ancient environment, the re-examination of the existing archaeological data is considered. The possibility of applying the clay used for cuneiform tablets for its potential environmental data has been sought.

## Research Promotion Center (Center for Coordination, Promotion and Communication)

The Research Promotion Center (RPC), in accordance with the principles of the Institute, has been engaged in building the basis for finding a new research perspective beyond the scope of the existing disciplinary framework. The Institute organizes its activities in the framework of the National Institutes for the Humanities, whose Medium-term Action Program stipulates that “Research Institute for Humanity and Nature will make necessary arrangements to consolidate the Research Promotion Center for activities including information collection and processing, science communication, and relevant basic research, in relation to the global environment studies”.

The Committee for the Operation of the Research Promotion Center was created in fiscal year 2005, and RPC Research Projects initiated in fiscal year 2006. Two RPC Research Projects from 2006 continue in fiscal year 2007. The details are as follows.

### ●Construction of methodology to archive and reuse the methods and results of interdisciplinary studies (project leader: Tatsuki Sekino)

This project aims to systematically archive the methods and results of interdisciplinary studies on environmental issues and to construct a methodology for reusing them to facilitate research ideas and research planning for future generations. In order to provide a basis for implementing the methodology, the project examines various problems associated with interdisciplinary study approach and considers the applicable scope and validity of the methodology.

### ●Research and studies to promote RIHN’s science communication activities (project leader: Kiyooki Saito)

This project investigates how the implications of RIHN’s academic studies and the outcomes of its research activities should be disseminated not only to researchers inside and outside Japan but also to the general public in order to facilitate their understanding. The project will propose concrete communication programs and strategies after reviewing available tools and methods of dissemination.

The Research Promotion Center (RPC) is also engaged in specific activities to promote RIHN’s research and “global environmental studies”. These activities include “planning of science communication”, “provision of information”, and “provision of tools”.

In the “planning of science communication”, we develop science communication programs to disseminate the outcomes of RIHN’s research activities and their implications to the general public. We have involved in the planning, implementation and publication of various programs such as RIHN Forums, RIHN Public Seminars, the RIHN Series, RIHN Library and Humanity and Nature Newsletter.

To support the “provision of information”, we provided necessary information via such means as databases to research project teams and other organizations inside and outside RIHN. We also collected a broad range of information.

For the “provision of tools”, we provided instruments for observation and analysis, and enhanced their sophisticated use. We were also in charge of the administration of laboratory facilities.

From 1 October 2007, the Research Promotion Center was reorganized as the Center for Coordination, Promotion and Communication (CCPC). CCPC functions to support RIHN’s research projects, integrate and disseminate their results, and determine strategies for creating new research. To perform these important functions, CCPC has three divisions, “the division of coordination”, “the division of promotion” and “the division of communication”. Each division has a full-time head and a number of task forces (TFs), while the Division of Communication also includes editorial offices. The work of task forces is carried out by CCPC staff in three divisions with the Research Department and the Administration office.

On 1 October 2007 the Research Promotion Center was reorganized as the Center for Coordination, Promotion and Communication, though its function remained unchanged in fiscal year 2007. The transition period for the initial-ization of the CCPC was 1 October 2007 to 31 March 2008.

## Outreach Programs and Events

### 1. International Symposium

#### RIHN 2<sup>nd</sup> International Symposium

In order to diffuse the findings of the three FR projects concluding in March 2008, the RIHN 2<sup>nd</sup> International Symposium 'Asian Green Belt: Its Past, Present and the Future' was held on the 30<sup>th</sup> and 31<sup>st</sup> of October 2007 at Mielparque-Kyoto. The details of the symposium are as follows.

#### Opening Address

TACHIMOTO, Narifumi, Director-General of RIHN

#### Introduction to the symposium

YUMOTO, Takakazu, Chairperson of the organizing committee, RIHN

#### Keynote Speech

- The Asian Green Belt and the origins and migrations of agricultural populations  
BELLWOOD, Peter (School of Archaeology and Anthropology, The Australian National University, Australia)
- A role of Asian monsoon in Asian Green Belt  
YASUNARI, Tetsuzo (Hydrospheric Atmospheric Research Center, Nagoya University, Japan)

#### Session 1. Biodiversity Changes and Land Use

- Forest plant species diversity of Far East related to human impacts  
STUTEK, Miroslav (Institute of Botany, Academy of Sciences of the Czech Republic, The Czech Republic)
- Vegetational changes caused by human land use in Mongolia  
FUJITA, Noboru (Center for Ecological Research, Kyoto University, Japan)
- Biodiversity of insects in different human-impacted forests in Japan  
MAKINO, Shun'ichi (National Research Institute of Forestry and Forest Products, Japan)
- Biodiversity modified by human land use in tropical rain forests of Malaysia  
ABDUL Rahman Kassim & NUR Supardi (Forest Research Institute of Malaysia)

#### Session 2. Bio-resources and Indigenous Knowledge

- Hunting knowledge in boreal forests in Far East  
SASAKI, Shiro (MINPAKU, Japan)
- Characteristics of communities in forest uses in Korea  
YOU, Yen-Chang (Department of Forest Sciences, Seoul National University, Korea)
- Forest policy and local practice in Thailand  
YOS, Santasombat (Social Science Institute, Chieng-Mai University, Thailand)
- Forest resource uses and indigenous knowledge of natives in Borneo  
ICHIKAWA, Masahiro (RIHN, Japan)

#### Session 3. Eco-politics and Conservation of the Asian Green Belt

- Eco-politics and nature conservation of Mongolia  
BATJARGAL, Zamba (The World Meteorological Organization, Mongolia)
- Effects on reforestation in the temperate climate region  
FUKUSHIMA, Yoshihiro (RIHN, Japan)
- Ecological management of water circumstances in China  
LIU, Changming (Institute of Geographical Science and Natural Resource Management, China)

## 2. RIHN Forum

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“What are global environmental problems?” “What are integrated global environmental studies?” “What will be the outcomes of such studies?” “What is the future of global environmental problems?” “Will it be possible to solve such problems?”

The RIHN Forum is intended to help us to address such fundamental questions and to animate discussion of up-to-date environmental topics. In the Forum’s sixth year, lively discussions centered on the impact of present-day food production/consumption on the global environment, and the question of future food production/consumption. The details discussed are below.

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### The 6<sup>th</sup> RIHN Forum

Date: 7 July, 2007

Theme: “Food as a Global Environmental Problem”

Venue: Kyoto International Conference Hall

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## 3. Public Seminar

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In order to present RIHN research activity in a manner that accessible to the general public, since November 2004, RIHN has offered public lectures. Seven seminars were held in 2007 at the RIHN lecture hall and the Heartpia Kyoto.

RIHN staff offer accessible explanations of global environmental problems, and the Public Seminars have stimulated engrossing discussions of contemporary environmental concerns.

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The 18th Public Seminar	20 April, 2007 The Silk Road – Historical Interactions between Human and Nature KUBOTA, Jumpei (Associate Professor, RIHN)
The 19th Public Seminar	25 May, 2007 Farmers in Developing Countries who Live under Variable Environment UMETSU, Chieko (Associate Professor, RIHN)
The 20th Public Seminar	21 September, 2007 Can Sacred Forests in the Japanese Shrines be Considered as Relics of Primeval Evergreen forests? OGURA, Jun’ichi (Professor, Kyoto Seika University) and YUMOTO, Takakazu (Professor, RIHN)
The 21st Public Seminar	12 October, 2007 A World Heritage Site in Kyoto – Message from Kamigamo Shrine Grove MURAMATSU, Akio (Priest, Kamigamo Shrine) and AKIMICHI, Tomoya (Deputy Director-General, RIHN)
The 22nd Public Seminar	9 November, 2007 Satoyama – “Domestic Forest” in the Tropics and Temperate: Is Natural Forest alone Valuable for Living Things? ABE Ken-ichi (Associate Professor, Kyoto University) and ICHIKAWA, Masahiro (Associate Professor, RIHN)
The 23rd Public Seminar	15 February, 2008 Roles of the Citizens and Responsibility of the Researchers for Global and Regional Environment ISHIDA, Norio (Professor, Kyoto Gakuen University) and WATANABE, Tsugihiko (Professor, RIHN)



The 24th Public Seminar    14 March, 2008  
 The History of the Yellow River and Northern China Plain  
 KINOSHITA, Tetsuya (Professor, RIHN) and FUKUSHIMA, Yoshihiro (Professor, RIHN)

#### 4. RIHN Area Seminar

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The RIHN Area Seminars offer an opportunity for RIHN research staff to gather with regional intellectuals and local citizens to consider problems related to the environment and culture of each area of Japan. The first seminar was held in 2005. In fiscal year 2007 the third seminar was held as follows.

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##### The 3<sup>rd</sup> RIHN Area Seminar

“Flora and Sea in the Izu Peninsula: Let’s consider global environmental issues in Ito City”

Date: 15 September, 2007

Venue: Ito-shi Kankou Kaikan (Ito City, Shizuoka)

#### 5. RIHN Annual Open Meeting

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Each December, RIHN research and office staff and outside research collaborators gather to review the year’s progress. All project leaders present their research findings and accomplishments and receive questions from the floor. Attracting over 500 attendees in its three-day duration, the annual meeting generates dialogue between RIHN researchers and improves general awareness of RIHN’s progress and evolution within the larger fields of environmental research.

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Date: 12-14 December, 2007

Venue: Co-op inn Kyoto

#### 6. RIHN Seminars

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RIHN Seminars are invited talks by esteemed Japanese or foreign researchers. The seminars provide opportunities for RIHN scientists to learn of the latest topics and research directions in a variety of fields; they also often are a first step toward future research collaborations between RIHN researchers and those of other institutions. Seminars are held several times a year.

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The 27th            23 May, 2007  
 EVANS, Tom P. (Associate Professor, Department of Geography and Co-Director of Center for the Study of Institutions, Population and Environmental Change, Indiana University)  
 Jacqui Bauer (Assistant Director, Workshop in Political Theory and Policy Analysis, Indiana University)  
 Social and Biophysical Dynamics of Reforesting Systems: Tensions between Macro-scale Theories and Local-scale Findings

The 28th            6 June, 2007  
 LESTEL, Dominique (Philosopher; Visiting Professor, Research Institute for Languages and Cultures of Asia and Africa, Tokyo University of Foreign Studies; Associate Professor, Ecole Normale Supérieure de Paris; Associate Professor, Museum National d’Histoire Naturelle)  
 The “hybrid human/animal communities paradigm” and the future of wild fauna in developing countries.

- The 29th 25 June, 2007  
SUMI, Akimasa (Professor, Executive Director, Transdisciplinary Initiative for Global Sustainability, Integrated Research System for Sustainability Science, University of Tokyo)  
On the objectives of Integrated Research System for Sustainable Science.
- The 30th 26 July, 2007  
EAMUS, Derek (Professor of Environmental Science, Associate Dean of Research, University of Technology, Sydney)  
The Ecohydrology of Australian, from continental to site-specific observations.
- The 31st 24 March, 2008  
OHUMURA, Atsumu (Professor, Swiss Federal Institute of Technology, Switzerland)  
25 Years' Experience of Research and Education at Faculty of Environment, Swiss Federal Institute of Technology (ETH) - How does an inter-disciplinary work?

### 7. Lunchtime Meetings (Danwakai)

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Lunchtime meetings allow all RIHN research staff, including visiting professors, part-time researchers, foreign researchers and so on, to freely present their individual research to their colleagues in an informal and supportive forum. As these meetings promote creative thinking and constructive debates, they are held on a biweekly basis.

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#### May 2007–March 2008

- No.107 15 May, 2007  
ONISHI, Takeo (Project Senior Researcher)  
“It is only simulation, but it is simulation”
- No.108 29 May, 2007  
HANDOH, Itsuki C. (Project Researcher)  
“Circulation/Cycle” rules the global environmental issues”
- No.109 12 June, 2007  
SAITO, Haruo (Project Researcher)  
“Have you ever “devoured” wild plants and mushrooms? : A view to a rationality of the forest resource use”
- No.110 26 June, 2007  
MATSUKAWA, Taichi (Project Researcher)  
“A capability Approach to the “Futurability””
- No.111 3 July, 2007  
MIYAZAKI, Hidetoshi (Project Researcher)  
“The Sahel interweaves a variety of subsistences and well-beings”
- No.112 17 July, 2007  
CHENG, Zhi (Project Senior Researchers)  
“A hydrological observation history revealed from the Daicing period”
- No.113 7 September, 2007  
NAWATA, Hiroshi (Arid Land Research Center, Tottori University)  
“Characteristics of Human Subsistence Ecosystems and Complex Networks among Arab Societies”
- No.114 18 September, 2007  
UMEZAWA, Yu (Project Senior Researchers)  
“What is nitrogen cycle?-RIHN potential study on nitrogen cycle- ”

- No.115 20 September, 2007  
SATO, Tadashi (Graduate School of Life Sciences, Tohoku University)  
“Sustainable Food Production Concept Based on Evaluation of Traditional Agricultural Practices”
- No.116 26 September, 2007  
KITAZAWA, Daisuke (Institute of Industrial Science, University of Tokyo)  
“Environmental problems in the Caspian Sea and cooperative environmental protection”
- No.117 2 October, 2007  
YAMANAKA, Hiroki (Project Researcher)  
“Waterfront environment from the view of fish: insensible water level fluctuation and its effects on the ecology of fish in Lake Biwa”
- No.118 16 October, 2007  
JAGO-ON, Karen Ann Bianet (Project Research Associate)  
“Urban development and subsurface environmental changes in Asian cities: Review of issues and responses”
- No.119 21 November, 2007  
KURATA, Takashi (Research Fellow)  
“Japanese Folk Crafts Movement-MINGEI: In Search of Another Life-‘Style’”
- No.120 15 January, 2008  
KAWAMOTO, Haruko (Project Researcher)  
“How can we forecast winter thunder by measuring rainfall?”
- No.121 29 January, 2008  
LEKPRICHAKUL, Thamana (Project Senior Researcher)  
“Resilience and Efficiency: Can They Co-Exist?: A Case of Cost Efficiency Analysis of 89 Public Provincial Hospitals in Thailand”
- No.121 13 February, 2008  
TAKASHIMA, Hisahiro (Project Senior Researcher)  
“Ozone and water observation at Christmas Island in the equatorial central Pacific”
- No.122 27 February, 2008  
KODAMA, Kanako (Research Fellow, RIHN Initiative for Chinese Environmental Issues)  
“Changes of natural environment of the last fifty years in the Ejina Oasis of the Heihe river Basin –from vision of Mongolian pastoralists–”
- No. 123 4 March, 2008  
HOSOYA, Leo Aoi (Project Researcher)  
“Ethnoarchaeology of Food Storage- Bali rice granaries and Papua New Guinean yam houses”
- No. 124 26 March, 2008  
ONISHI, Masayuki (Project Senior Researcher )  
“Showing linguistic diversity on maps -a case study of the northern Okinawan (Yambaru) dialects of Ryukyuan”

## 8. Publications

### 8-1. RIHN Series

These are books introducing RIHN’s research results to the general public. Four volumes were published in fiscal 2007, as follows:

*Kōga Danryū* (The Drying-up of the Yellow River: Water and Environmental Problems Surrounding China’s Gigantic

River) Edited by FUKUSHIMA, Yoshihiro. Showado, January 2008 (in Japanese)

*Shokutaku kara Chikyū Kankyō ga Mieru* (The Global Environment Can Be Seen from the Dining Table) Edited by YUMOTO, Takakazu. Showado, March 2008 (in Japanese)

*Chikyū no Shohōsen* (A Prescription for Earth: Closing in on the Source of Environmental Problems) Compiled by RIHN. Showado, March 2008 (in Japanese)

*Chikyū Ondanka to Nōgyō* (Global Warming and Agriculture) Edited by WATANABE, Tsugihiko. Showado, May 2008 (in Japanese)

## 8-2. RIHN News: Humanity & Nature Newsletter

This periodical communicates RIHN identity and latest news to the general public and to specific research communities. The newsletter is published in an A4 format with all-color, easy-to read content. Issues 7-12 were published in 2007.

## 9. Press Conference

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RIHN periodically holds official press conferences in order to release information on its academic activities, research projects, symposia, publications and latest environmental findings. As a public institution with a public mandate, such activities provide an important link between RIHN and the citizenry. Two press conferences were held in the last fiscal year, on 9 May 2007 and 11 March 2008.

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## Institutional and External Joint Research

### An Integrative Study on Water and People in Humid Asia

Leader: AKIMICHI, Tomoya (RIHN)

Under the general theme of “Inter disciplinary Research on Exchange between Japan and Eurasia” of the National Institutes for the Humanities (NIHU), this research aims to explore human’s interactions with water in humid Asia where humans have experienced both benefits and disasters caused by water over a long period of time. Particularly, we examine history, culture, local knowledge and practices, and cosmology borne in the interactions between humans and water, and challenge to synthesize a theory on water and people in Asia in the human history.

Major research members include staffs of the Research Institute for Humanity and Nature (RIHN), National Museum of Ethnology (NME), National Museum of Japanese History (NMJH), International Research Center for Japanese Studies (IRCJS), and National Institute of Japanese Literature (NIJL), all belonging to the NIHU, and those from National, Public and Private Universities in Japan.

#### 1. Joint Research Meeting

The first meeting

Date: 2007.5.26

Venue: NIJL, Shinagawa, Tokyo

1. “Ontology of water – Verification of ontology in Wakan classical study” AIDA, Mitsuru (NIJL)
2. “Traceability analysis of good-tasting water and human environment” NAKANO, Takanori (RIHN)
3. “Paddies as eco-commons – Whose are the paddies and fin? (Interim report)” YASUMURO Satoru (NMJH)
4. “Ethnography in a valley of multiethnic society –environment utilization from the perspective of subsistence and market, and the emergence of market mechanism” NISHITANI, Masaru (NMJH)
5. “Utilization of wells in big cities in East Asia ” TANIGUCHI, Tomomasa (Rissho University)
6. Research report in Fiscal 2006 by TAGUCHI, Rie (Tokai University) and IDA, Taro (NIJL)
7. Discussion on launching editorial committee for collected papers

The second meeting

Date: 2007.7.21

Venue: RIHN

1. Research report in Fiscal 2006
2. “Change of daily life water source and groundwater use in Tokyo” TANIGUCHI, Tomomasa (Rissho University)
3. “Water and people in the middle Ganga basin – from a perspective of life of Raute and Raji” IKEYA, Kazunobu (NME)
4. “To analyze ‘Water’ by means of ontology” AIDA, Mitsuru (NIJL)
5. “Research trend of flood myths in Southeast Asia inland” NISHIMOTO, Futoshi (RIHN)
6. “Spring water and *Crassostrea nippona* collecting in Chokaizan” AKIMICHI, Tomoya (RIHN)
7. “The trend concerning ‘sacred water’ in Akha, north Thailand” SHIMIZU, Ikuro (Daido Institute of Technology)

The third meeting

Date: 2007.10.13-14

Venue: Saijo General Welfare Center (Saijo, Ehime)

1. “Water quality and geological condition in Iyosaijo” NAKANO, Takanori (RIHN)
2. “Problem of groundwater in urban areas –water leakage” ENDO, Takahiro (RIHN)
3. “Introduction of spatiotemporal analysis tools – T2Map and others” SEKINO, Tatsuki (RIHN)

4. “People, water, and history in Saijo” SASAKI, Takatsugu (Deputy Head, Life Environment Division, Sanjo city)
5. “Water resource capture and groundwater” TANIGUCHI, Makoto (RIHN)
6. “How do people live in the area where there is excess amount of water: Sumatra peaty marsh” ABE, Ken-ichi (CIAS)

## 2. Symposia

### 1. “Spring water and livelihood”

Date: 2008.3.19

Venue: RIHN

1. “Spring water and *Crassostrea nippona* collecting in Yuza town” AKIMICHI, Tomoya (RIHN)
2. “Common resources in Chokaizan area” ENDO, Takahiro (RIHN)
3. “Undersea groundwater discharge and oysters on the coast below Chokaizan” (TANIGUCHI, Makoto)
4. “Spring water, stone, and living things” NAKANO, Takanori (RIHN)
5. “Spring water and community” SUGAWARA, Yoshiko (Yuza town)
6. “Water in Otsuchi – Tales of times now past” SASAKI, Ken (Otsuchi educational board, Otsuchi town library)

### 2. Pre-symposium “Water and civilization”

Date: 2008. 3.26

Venue: RIHN

1. Self-introduction and explanation of the pre-symposium by AKIMICHI, Tomoya (RIHN)
2. “Civilization and water in Thailand – Implication of canal, groundwater, and human” TANIGUCHI, Makoto (RIHN)
3. “Water and Indus civilization” OSADA, Toshiki (RIHN)
4. “Water and ancient Egyptian civilization” TAKAMIYA, Izumi (Kinki University)
5. “Water and Maya-Aztec Civilization” YASUGI, Yoshiho (NME)
6. Panel discussion

## 3. Publications

### [Research Journal]

- 2007.9 Water and People. Vol. 3. Special Issue: Water and Subsistence –The Versatile Subsistence Use of the Paddy Field,  
Ed. by YASUMURO, Satoru (NMJH), Showado.  
Authors: YASUMURO, Satoru, Y. SATO, M. NISHITANI, T. AKIMICHI, M. UMEZAKI, N. OBA, T. IDA, K. YAMAGUCHI, S. SANO, I. SHIMIZU.
- 2008.3 Water and People. Vol. 4. Special Issue: Water and Global Environment –Quantity and Quality of Water,  
Ed. by NAKANO, Takanori (RIHN), Showado.  
Authors: NAKANO, Takanori, M. Taniguchi, N. Takeuchi, M. Tsujimura, F. Masuda, M. Kurosawa, Y. Yamada, O. Shinmi, H. Onishi, T. Endo, T. Watanabe,

## Individual Achievements

A	AKIMICHI, Tomoya	Deputy Director-General, Professor
B	BAUSCH, Ilona Renate	Visiting Research Fellow
	BELUSHKIN, Mikhail Yur`evich	Visiting Research Fellow
	BORRE, Caloline	Project Researcher
C	CAI, Guoxi	Project Researcher
	CHEN, Jianyao	Visiting Research Fellow
	Chengzhi (Kicengge)	Senior Project Researcher
F	FLINT, Lawrence Stuart	Visiting Research Fellow
	FUKUSHIMA, Yoshihiro	Professor
H	HATADA, Aya	Senior Project Researcher
	HAYASAKA, Tadahiro	Professor
	HAYASHI, Naoki	Project Researcher
	HONJO, Mie	Project Researcher
	HOSONO, Takahiro	Visiting Researcher
	HUANG, Shaopeng	Visiting Research Fellow
	HYODO, Fujio	Project Researcher
I	ICHIKAWA, Masahiro	Associate Professor
	IGETA, Akitake	Visiting Researcher
K	KATO, Yuzo	Assistant Professor
	KATSUYAMA, Masanori	Senior Project Researcher
	KAWABATA, Zen`ichiro	Professor
	KAWAMOTO, Haruko	Project Researcher
	KIMOTO, Yukitoshi	Senior Project Researcher
	KIMURA, Emi	Project Research Associate
	KINOSHITA, Tetsuya	Professor
	KOBAYASHI, Yutaka	Project Researcher
	KUBOTA, Jumpei	Associate Professor
L	LEKPRICHAKUL, Thamana	Senior Project Researcher
	LINDSTRÖM, Kati	Project Researcher
M	MALLAH, Qasid Hussain	Visiting Research Fellow
	MINAMOTO, Toshifumi	Senior Project Researcher
	MISHINA, Natalya	Visiting Research Fellow
	MIYAZAKI, Hidetoshi	Project Researcher
	MIYOSHI, Takao	Visiting Researcher
	MOJI, Kazuhiko	Professor
	MORI, Wakaha	Senior Project Researcher
N	NAITO, Daisuke	Project Researcher
	NAKANO, Takanori	Professor
	NAKAWO, Masayoshi	Professor
	NARAMA, Chiyuki	Project Researcher
	NAWATA, Hiroshi	Associate Professor
O	OKUMIYA, Kiyohito	Associate Professor
	ONISHI, Akio	Senior Project Researcher
	ONISHI, Hideyuki	Senior Project Researcher
	ONISHI, Masayuki	Senior Project Researcher
	ONISHI, Takeo	Senior Project Researcher
	OSADA, Toshiki	Professor
S	SAEKI, Tazu	Assistant Professor
	SAITO, Haruo	Project Researcher
	SASAKI, Naoko	Project Researcher

	SATAKE, Shinsuke	Visiting Researcher
	SATO, Yo-Ichiro	Professor
	SATO, Yoshinobu	Senior Project Researcher
	SEKINO, Tatsuki	Associate Professor
	SEO, Akihiro	Project Researcher
	SHAMOV V. Vladimir	Visiting Research Fellow
	SHIRAIWA, Takayuki	Associate Professor
	SIRINGAN, Fernando Pascual	Visiting Research Fellow
	SUZUKI, Arata	Project Researcher
T	TA, Wanquan	Visiting Researcher
	TACHIMOTO, Narifumi	Director-General
	TAKAHASHI, Atsuhiko	Senior Project Researcher
	TAKASHIMA, Hisahiro	Senior Project Researcher
	TAKASO, Tokushiro	Professor
	TANAKA, Takuya	Visiting Researcher
	TANIGUCHI, Makoto	Associate Professor
	TANNO, Ken-Ichi	Senior Project Researcher
	TERAMURA, Hirofumi	Project Researcher
	TERASHIMA, Motoki	Research Fellow
	TSUJINO, Riyou	Project Researcher
U	UCHII, Kimiko	Project Researcher
	UCHIYAMA, Junzo	Associate Professor
	UESUGI, Akinori	Project Researcher
	UMETSU, Chieko	Associate Professor
	UMEZAWA, Yu	Senior Project Researcher
W	WANG, Zongming	Visiting Research Fellow
	WATANABE, Mitsuko	Project Researcher
	WATANABE, Tsugihiko	Professor
Y	YACHI, Shigeo	Associate Professor
	YAMAMURA, Norio	Professor
	YAMANAKA, Hiroki	Project Researcher
	YAMASHITA, Satoshi	Senior Project Researcher
	YATAGAI, Akiyo	Assistant Professor
	YUMOTO, Takakazu	Professor
Z	ZHENG, Hongxing	Visiting Research Fellow
	ZHENG, Yuejun	Associate Professor

※Job titles listed above are as of March 31st, 2008.

(For those who retired in the middle of fiscal 2007, the job titles of that time are listed.)



## AKIMICHI, Tomoya

Deputy Director-General, Professor

**Born in 1946.**

### [Academic Career]

Department of Anthropology, Faculty of Science, The University of Tokyo, D. Course (1977)

Department of Anthropology, Faculty of Science, The University of Tokyo, M. Course (1974)

Department of Zoology, Faculty of Science, Kyoto University (1968)

### [Professional Career]

Professor, Research Institute for Humanity and Nature (2002)

Head of Department, Department of Cultural Research, National Museum of Ethnology (1999)

Adjunct Professor, School of Advanced Sciences, The Graduate University of Advanced Studies (1998)

Professor, Department of Cultural Research, National Museum of Ethnology (1995)

Professor, 1st Research Department, National Museum of Ethnology (1992)

Adjunct Associate Professor, Faculty of Cultural Research, The Graduate University of Advanced Studies (1988)

Associate Professor, 1st Research Department, National Museum of Ethnology (1987)

Assistant Professor, 2nd Research Department, National Museum of Ethnology (1977)

### [Higher Degrees]

D.Sc. (The University of Tokyo, 1986), M.Sc. (The University of Tokyo, 1974)

### [Fields of Specialization]

Ecological Anthropology, Ethno-Biology

### [Academic Society Memberships]

The Society of the Bio-Sophia Studies, The Society of Human and Animal Relations, The Society of the Environmental Sociology, The Society of Ecological Anthropology, The Japanese Society of Coral Reef Studies, The Society of Tropical Ecology

### [Awards]

Daido-Seimei Chiiki-Kenkyu Shorei-Sho in 1998 (Award for Promotion of Area Studies by Daido Life Insurance Company in 1998)

## —Achievements—

### [Editing]

#### [Editing / Co-editing]

- Akimichi Tomoya and Ichikawa Masahiro (ed.) Mar, 2008 *Witnessing Forest in Southeast Asia: A Report from Asian Tropical and Monsoon Forests (Tonan ajia no mori ni naniga okotteiruka)*. Jinbun shoin, Fushimiku, Kyoto, 282pp.
- Akimichi Tomoya and Kurokura Hisashi (ed.) Mar, 2008 *Fish and People: Living with the Great Mekong River (Hito to uo no shizenshi, hahanaru mekon kawa ni ikiru)*. sekaishisoshia, sakyoku, Kyoto, 277pp.
- Akimichi Tomoya (ed.) Mar, 2008 *Resources and Commons (Shigen to komonzu)*. Anthropology of the Commons (shigen jinruigaku), 8. Kobundo, Chiyodaku, Kyoto, 344pp.

#### [Senior/Supervisory Editorships]

- Akimichi Tomoya and others (32 authors) Akimichi Tomoya (supervisor) Mar, 2008 *The Eco-history of the*

*Livelihood (Nariwai no seitaishi)*. The Eco-history of Tropical Monsoon Asia: Linking the region with the Earth (Ronshu Monsun ajia no seitiashi, chiiki to chikyu wo tsunagu), 1. Kobundo, Chiyodaku, Tokyo, 228pp.

- Ikeguchi Akiko and others(25 authors) Akimichi Tomoya (supervisor) Mar,2008 *The Eco-history of the Region(chiiki no seitaishi)*. The Eco-history of Tropical Monsoon Asia: Linking the region with the Earth (Ronshu Monsun ajia no seitiashi, chiiki to chikyu wo tsunagu), 2. Kobundo, Chiyodaku, Tokyo, 272pp.
- Ajisaka Tetsuro and others(33 authors) Akimichi Tomoya (supervisor) Mar,2008 *The Eco-history of Livelihood and Human Body(Kurashi to karada no seitaishi)*. The Eco-history of Tropical Monsoon Asia: Linking the region with the Earth (Ronshu Monsun ajia no seitiashi, chiiki to chikyu wo tsunagu), 3. Kobundo, Chiyodaku, Tokyo, 248pp. (in Japanese)

## [Papers]

### [Original Articles]

- Akimichi Tomoya Dec,2007 Introduction: Resources, Subsistence Complex and the Commons(Jyo, shigen, nariwaihukugo, komonzu). Akimichi Tomoya (ed.) Resources and the Commons(shigen to ningen). Anthropology of the Commons , 8. Kobundo, Chiyodaku, Tokyo, pp.13-36. (in Japanese)
- Akimichi Tomoya Dec,2007 Reservoirs and Usefruct in Asian Monsoon Region: Concession and Commodification of Communal Resources(ajia monsun chiiki no ike to sono riyoken, kyoyu shigen no rikenka to shohinka no imi wo saguru). Akimichi Tomoya (ed.) Resources and the Commons(shigen to komonzu). Anthropology of the Commons, 8. Kobundo, Chiyodaku, Tokyo, pp.245-278. (in Japanese)
- Akimichi Tomoya Jan,2008 Resources: Human Resource Use Linking Human Body, Food and Earth (shigen no chikyu kankyo gaku, karada, shoku, chikyu no renkan). Tachimoto Narifumi (ed.) Global Humanics of the Environment (chikyu kankyo gaku). RIHN Working Paper, No.1. Research Institute for Humanity and Nature, Kita-ku, Kyoto, pp.33-42. (in Japanese)
- Akimichi Tomoya Jan,2008 Resources: Human Resource Use Linking Human Body, Food and Earth. Tachimoto Narifumi (ed.) Global Humanics of the Environment. Working Paper, No.1. The Research Institute for Humanity and Nature, Kitaku, Kyoto, pp.31-42.
- Akimichi Tomoya Jan,2008 The Eco-History of Cormorant Fishing A case Study in Lake Erhai, Dali, Yunnan Province, China.. Akimichi Tomoya and Kurokura Hisashi (ed.) Fish and People: Living with the Great Mekong River(Hito to uo no shizenshi, hahanaru mekon kawa ni ikiru). Sekaishissha, Sakyoku, Kyoto, pp.51-68. (in Japanese)
- Akimichi Tomoya Jan,2008 The Present Status of Food From Human Historical View. Yumoto Takakazu (ed.) A Glimpse of the Global Environmental Issue from the Meal Table: Sustainability of Food and Agriculture(Shokutaku kara chikyu kankyo ga mieru). Chikyuken soshu. Showado, Sakyoku, Kyoto, pp.81-118. (in Japanese)
- Akimichi Tomoya Jan,2008 Freshwater resource Management and Development: A Case of Mekong Giant Catfish . Akimichi Tomoya and Kurokura Hisashi (ed.) . Fish and People: Living with the Great Mekong River(Hito to uo no shizenshi, hahanaru mekon kawa ni ikiru) . Sekaishissha, Sakyoku, Kyoto, pp.237-249. (in Japanese)
- Akimichi Tomoya Mar,2008 Cultural Manifestation of the Bird-man in Asia and Oceania. Akishinomiya Fumihito and Nishino Yoshiaki (ed.) Summa Ornithologica(Chogaku taizen). The University Museum, The University of Tokyo, Bunkyoku, Tokyo, pp.112-144. (in Japanese)
- Ikeya Kazunobu, Kawano Kazuaki, Akimichi Tomoya Mar,2008 Diverse Hunting Technology and Changing Hunting Culture. Kono Yasuyuki (ed.) The Eco-history of Tropical Monsoon Asia: Linking the region with the Earth (Monsun Ajia no seitaishi, chiki to chikyu wo tsunagu) 1 Eco-history of the Livelihood (Nariwai no seitaishi). Kobundo, Chiyodaku, Tokyo, pp.125-144. (in Japanese)
- Takai Yasuhiro, Masuno Takashi, Nakai Shinsuke, Akimichi Tomoya Mar,2008 Use of Domesticated

Animals(Kachiku riyo no seitaishi). Kono Yasuyuki (ed.) The Eco-history of Tropical Monsoon Asia: Linking the region with the Earth (Monsun Ajia no seitaishi, chiki to chikyuu wo tsunagu) 1 The Eco-history of the Livelihood (Nariwai no Seitaishi). Kobundo, Chiyodaku, Tokyo, pp.145-162. (in Japanese)

- Akimichi Tomoya, Ikeguchi Akiko, Goto Akira, Hashimura Osamu Mar,2008 Fisheries and Seasonal Fluctuation in the Mekong River Basin (Mekon kawa shusuiiki no gyoro to kisetu hendo) . Kono Yasuyuki (ed.) The Eco-history of Tropical Monsoon Asia: Linking the region with the Earth(Monsun ajia no seitaishi, chiiki to chikyuu wo tsunagu) 1 The Eco-history of the Livelihood(Nariwai no seitaishi). Kobundo, Chiyodaku, Tokyo, pp.162-182. (in Japanese)
- Akimichi Tomoya Mar,2008 The Eco-history of Fisheries Resource Management in the Mekong River Basin (Mekon kawa shuuiiki ni okeru suisan shigen kanri no seitaishi). Akimichi Tomoya (ed.) The Eco-history of Tropical Monsoon Asia: Linking the Region with the Earth(Monsun ajia no seitaishi, chiiki to chikyuu wo tsunagu) 3 The Eco-history of Livelihood and Human Body(kurashi to karada no seitaishi). Kobundo, Chiyodaku, Tokyo, pp.209-228. (in Japanese)
- Nakamura Tetsu, Ajisaka Tetsuro, Fujita Yuko, Midorikawa Yutaka, Habe Shigehisa, Akimichi Tomoya, Takenaka Chisato, Tomokawa Sachi Mar,2008 Water, Food and Human Body(Mizu, shoku, karada). Akimichi Tomoya (ed.) The Eco-history of Tropical Monsoon Asia: Linking the region with the Earth(Roshuu Monsun ajia no seitaishi, chiiki to chikyuu wo tsunagu) 3 The Eco-history of Livelihood and Human Body(Kurashi to karada no seitaishi). Kobundo, Chiyodaku, Tokyo, pp.65-84. (in Japanese)
- Ajisaka Tetsuro, Kosaka Yasuyuki, Wakana Isamu, Akimichi Tomoya Mar,2008 A Diverse Use of Watery Plants in the Mekong River Basin(Mekon kawa ryuiki no mizube no shokubutsu(suisorui) riyo no tayousei). Kono Yasuyuki (ed.) The Eco-history of Tropical Monsoon Asia: Linking the region with the Earth (Monsun ajia no seitaishi, chiiki to chikyuu wo tsunagu) 1 The Eco-history of the Livelihood (Nariwai no seitaishi). Kobundo, Chiyodaku, Tokyo, pp.183-202. (in Japanese)

*[Review Articles]*

- Akimichi Tomoya 2007 Anthropology of the Ocean and Japanese Rethinking Gods (Umi to nihonjin no jinruigaku). Forest and Human's Transactions(kamigami to mori to hito no itonami wo kangaeru). Yoyoginomori 80 Forum, pp.15-25. (in Japanese)
- Akimichi Tomoya 2007 Traditional Navigation in Micronesia(mikuroneshia no dentoteki kokai jyutu. National Museum of Ethnology (ed.) Oceania: Dispersal of Human uin to the Ocean World(oseania, umi to jinrui daiido). Showado, Sakyoku, Kyoto, pp.20-24. (in Japanese)
- Akimichi Tomoya Mar,2008 Introduction Fish and People in the Mekong River Basin. Akimichi Tomoya and Kurokura Hisashi (ed.) Fish and People: Living with the Great Mekong River(Hito to uo no shizenshi, hahanaru mekon kawa ni ikiru). Sekaishissha, Sakyoku, Kyoto, pp.1-8. (in Japanese)
- Akimichi Tomoya and Ichikawa Masahiro Mar,2008 Witnessing Forest in Southeast Asia: A Report from Asian Tropical and Monsoon Forests (tonan ajia no mori ni naniga okotteiruka). Akimichi Tomoya and Ichikawa Masahiro (ed.) Witnessing Forest in Southeast Asia: A Report from Asian Tropical and Monsoon Forests. Jinbun Shoin, Fushimi-ku, Kyoto, pp.7-20. (in Japanese)
- Akimichi Tomoya Mar,2008 Introduction: Persistence and Change(Jyoron, jizoku to henka). Akimichi Tomoya (ed.) The Eco-history of Tropical Monsoon Asia: Linking the region with the Earth(Ronshuu Monsun ajia no seitaishi, chiiki to chikyuu wo tsunagu) 3 The Eco-history of Livelihood and Human Body(Kurashi to karada no seitaishi). Kobundo, Chiyodaku, Tokyo, pp.1-8. (in Japanese)

**BAUSCH, Ilona Renate**

**Born in 1969.****[Academic Career]**

Department of East Asian Studies, Durham University, UK, Ph.D Course (2005)

Faculty of Humanities (Languages and Cultures of Japan), Leiden University (1994)

**[Professional Career]**

Lecturer, Faculty of Archaeology, Leiden University (2007)

Visiting Research Fellow, RIHN (2006)

Lecturer, the Department of Japanese and Korean Studies, Leiden University (2004)

**[Higher Degrees]**

Ph.D (Archaeology) (Durham University, 2005)

**[Fields of Specialization]**

Archaeology

**—Achievements—****[Research Presentations]***[Oral Presentation]*

- BAUSCH, Ilona The Tale of Sea of Jadeite. “Landscape and Living Beings II – Sea and the Sentient Beings” the 5th yearly Congress of Society of Biosophia Studies, Jun 22, 2007, Fujisawa, Kanagawa, Japan. (in Japanese)

**BELUSHKIN, Mikhail Yur'evich**

Visiting Research Fellow

**Born in 1978.****[Academic Career]**

Faculty of Radio physics, Maritime State University named after G.I. Nevelskoy. PhD Course (2004)

Electro Mecanic Faculty, Maritime State University named after G.I. Nevelskoy (2001)

**[Professional Career]**

Department chair, Institute of Automatic and Information Technologies, Maritime State University named after G.I. Nevelskoy (2006)

Associate Professor, Institute of Automatic and Information Technologies, Maritime State University named after G.I. Nevelskoy (2005)

**[Higher Degrees]**

PhD (modeling and registration of electromagnetic fields), (Maritime State University named after G.I. Nevelskoy, 2004)

**[Fields of Specialization]**

GIS Engineering

GPS Engineering

**—Achievements—**

**[Papers]***[Original Articles]*

- Belushkin, M. Yu., R. I. Grechanyuk, V. V. Klovov, N. V. Silin Jun, 2007 Analysis electromagnetic radiation of a power autotransformer. Proceedings of VII International Symposium on Electromagnetic Compatibility and electromagnetic ecology. Sankt-Peterburg State Electrotechnical University, Sankt-Peterburg, Russia, pp.114-117.

**BORRE, Caroline**

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Project Researcher

**Born in 1976.****[Academic Career]**

Department of Language and Society, Osaka University of Foreign Studies, PhD Course in Japanology (2006)  
 Department of Language and Society, Osaka University of Foreign Studies, MA Course in Japanology (2003)  
 Faculty of Arts (Japanology), the Catholic University of Leuven, Belgium (1999)

**[Professional Career]**

Project Research Assistant, Research Institute for Humanity and Nature (2006)

**[Higher Degrees]**

Ph.D, Japanology (Osaka University of Foreign Studies, 2006)

**[Fields of Specialization]**

Folklore

**[Academic Society Memberships]**

Kyoto Society of Folklore  
 The Japan Society of Folk-literature and Traditions (JSFT)

**—Achievements—****[Research Presentations]***[Oral Presentation]*

- BORRE, Caroline The Lost Masters of the Waters. “Landscape and Living Beings II – Sea and the Sentient Beings”, the 5th yearly Congress of Society of Biosophia Studies, Jun 22, 2007, Fujisawa, Kanagawa, Japan. (in Japanese)

**CAI, Guoxi**

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Project Researcher

**Born in 19701121.****[Academic Career]**

Graduate School of Biomedical Sciences, Nagasaki University, PH.D. course (2007)  
 Fujian Medical University, Bachelor of Medical Sciences (1993)

**[Professional Career]**

Project researcher, Research Institute for Humanity and Nature(2008)

Research fellow, Nagasaki University Institute of Tropical Medicine(2007)

Doctor-in-charge, Center for Disease Control and Prevention, Ningde city, China(2002)

Medical doctor, Center for Disease Control and Prevention, Ningde city, China(2000)

**[Higher Degrees]**

PH. D. (Nagasaki University, 2007)

**[Fields of Specialization]**

Public health

International health

**[Academic Society Memberships]**

Japanese Society of Tropical Medicine

Chinese Academy of Science and Engineering in Japan

**—Achievements—****[Papers]***[Original Articles]*

- Cai G, Moji K, Honda S, Wu X, Zhang K. 2007 Inequality and unwillingness to care for people living with HIV/AIDS: A survey of medical professionals in southeast China. *AIDS Patient Care and STDs*. 2007 Aug;21((8)) :593-601. (reviewed).
- Guoxi Cai, Kazuhiko Moji, Xiaonan Wu, and Konglai Zhang 2007 Knowledge, attitudes, beliefs, and practices of Chinese migrants in Nairobi, Kenya and Dar es Salaam, Tanzania toward HIV/AIDS. *Tropical Medicine and Health*, Vol. 35 (2007), (No.1,) :11-18. (reviewed).
- Cai G, Chen H. 2007 Epidemic of Infectious diseases after Indian Ocean Tsunami. *Strait Journal of Preventive Medicine*. 2007 Vol. 13((1)) :60-61. (in Chinese) (reviewed).

**CHEN, Jianyao**

Visiting Research Fellow

**Born in 1966.****[Academic Career]**

Department of Earth Science, Chiba University, PhD in Regional Environmental Science (2003)

Department of Hydrology, Institute of Geography, Chinese Academy of Sciences (CAS), PhD in Hydrology and Water Resource (1999)

International Institute for Aerospace and Earth Science (ITC), the Netherlands, M.Sc. in Remote Sensing and GIS (1995)

Department of Hydrology, Institute of Geography, Chinese Academy of Sciences (CAS), M.Sc. in Hydrology and Water Resource (1990)

Department of Geography, Nanjing University, B.Sc. (1987)

**[Professional Career]**

Prof., School of Geographical Science and Planning, Sun Yat-sen University (2004)

Invited research fellow, Research Institute for Humanity and Nature (2004.9–12; 2006.6–9)

Research Fellow, in Research Institute for Humanity and Nature (RIHN) (2003)

Associate Professor, Department of Hydrology, Institute of Geography, CAS (1997)

Assistant Professor, Department of Hydrology, Institute of Geography, CAS (1990)

### **[Higher Degrees]**

Ph.D. (Chiba University 2003, CAS 1999)

M.Sc. (ITC 1995, CAS 1990)

### **[Fields of Specialization]**

Hydrology

Physical Geography

Isotopic Hydrology

Groundwater

RS

GIS

### **[Academic Society Memberships]**

Chinese Geographical Union

IAHS

## **—Achievements—**

### **[Papers]**

#### *[Original Articles]*

- Chen JY, Taniguchi M, Liu GQ, Miyaoka K, Onodera S, Tokunaga T, Fukushima Y 2007 Nitrate pollution of groundwater in the Yellow River delta, China. *Hydrogeology Journal. Online first*. (reviewed).
- Lu YT, Tang CY, Chen JY, Sakura Y, 2007 Impact of septic tank on local groundwater quality and water supply in the Pearl River Delta, China: case study. *Hydrological Processes. Online first*. (reviewed).
- Saito M, Onodera S, Miyaoka K, Chen JY, Taniguchi M, Liu GQ, Fukushima Y 2007. *Water Quality and Sediment Behaviour of the Future*. (reviewed). Nitrate contamination in groundwater of the Yellow River Delta and its effect on the marine environment. In *Water Quality and Sediment Behaviour of the Future: Predictions for the 21st Century* (Proceedings of Symposium HS2005 at IUGG2007, Perugia, July 2007, Webb BW & De Boer D (eds). IAHS Publ. 314, 271–277.
- Chen JY, Fukushima Y, Taniguchi M 2007. (reviewed). Groundwater and its association with sustainability in the North China Plain. In *Changes in Water Resources Systems: Methodology to Maintain Water Security and Ensure Integrated Management*, van de Giesen N, Xia J, Rosbjerg D, Fukushima Y (eds). IAHS 315: 258–265.
- Taniguchi M, Chen JY, Fukushima Y, 2007. The hydrological impact zone in the lower reaches of the Yellow River: a new concept for water resources issues. In *Changes in Water Resources Systems: Methodology to Maintain Water Security and Ensure Integrated Management*, van de Giesen N, Xia J, Rosbjerg D, Fukushima Y (eds). IAHS 315: 199–205.
- Chen JY, Fukushima Y, Taniguchi M 2007. Groundwater and its association with sustainability of agriculture in the lower reach of the Yellow River and North China Plain. IAHS Red Book (in press).

### **[Research Presentations]**

#### *[Oral Presentation]*

- Chen JY Groundwater and its association with sustainability in the North China Plain. IUGG Conference., July 2007, Italy Perugia.

- Chen JY Water use in the lower reach of the Yellow River and its association with water shortage in the North China Plain. GWSP session, the 3rd Yellow River Forum, October 2007, Dongying, China.

## Chengzhi (Kicengge)

Senior Project Researcher

**Born in 1968.**

### [Academic Career]

Department of Oriental History, Graduat school of Letters, Kyoto University, D. Course (2003)

Department of Oriental History, Graduat school of Letters, Kyoto University, M. Course (2000)

Department of Chinese language literature, Ili Normal University, China(1990)

### [Professional Career]

Docent, Kyoto University, (1997~1998)

Docent, Kyoto Women's University, (2000~2004)

Foreigner co investigator, Kyoto University(2004~2004)

JSPS Research Fellow, Research Institute for Humanity and Nature(2005)

### [Higher Degrees]

Litt. D. (Kyoto University, 2004)

Litt. M. (Kyoto University, 2000)

### [Fields of Specialization]

Oriental History, History of Qing Empire, Manchu Philology

### [Academic Society Memberships]

Tōyōshi Kenkyūkai(The Society of Oriental), Shigaku Kenkyūkai(The Society of Historical Research),

Manzokushi kenkyūkai(The Japanese Association for Manchu and Qing studies)

## —Achievements—

### [Books]

*[Authored/Co-authored]*

- CHENGZHI (Kicengge) 2007 A Map of Amur vallley in Manchu Language. Daichi no shōzō. Kyoto university press, 193-222 (in Japanese)
- CHENGZHI (Kicengge) Dec, 2007 Textual Research on the Manchu language manuscript of Great Liao shi: Centering on dailiyoo i koolii ninguci;singdzung. Historical and Philological Studies of China's Western Regions, No.1. Science Press, Beijing, 305-345 (in Chinese)

## FLINT, Lawrence Stuart

Visiting Research Fellow

**Born in 1953.**

### [Academic Career]

University of Birmingham, D.corse (2004)



University of Birmingham, M. corse (2000)

Geography and African Studies, University of Birmingham (1998)

### **[Professional Career]**

Research Coordinator and Programme Manager – Vulnerability and Adaptation – ENDA Tiers Monde, Programme Energie, Environment, Developpement, Dakar, Senegal (2006)

contract (bought-in) lecturer, University of Birmingham, variety of courses in African Studies (2005)

Guest Lecturer, University of Copenhagen – Centre of African Studies (2005)

contract (bought-in) lecturer and Module Leader, University of Coventry (2002)

### **[Higher Degrees]**

PhD (University of Birmingham, 2004)

MPhil (University of Birmingham, 2000)

### **[Awards]**

Bradbury Prize for best PhD in School of Historical Studies, University of Birmingham (2005)

Constance Nadel Medal for research excellence and best MPhil in the School of Historical Studies, University of Birmingham (2001)

Distinction for highest graded First Class Joint Honours degree in School of Humanities, University of Birmingham (1998)

## **—Achievements—**

### **[Papers]**

#### *[Original Articles]*

- Flint, Lawrence 2007 Cultural nationalism and state development in postcolonial Africa: flexible identities in Western Zambia 1964–present. *Journal of Modern African Studies* 45(4).

## **FUKUSHIMA, Yoshihiro**

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Professor

**Born in 1942.**

### **[Academic Career]**

Department of Forestry, Faculty of Agriculture, Kyoto University, Bachelor Course (1966)

### **[Professional Career]**

Professor, Research Institute for Humanity and Nature, Inter-University Research Institute Corporation, National Institutes for the Humanities (2004)

Professor, Research Institute for Humanity and Nature, Inter-University Research Institute, Ministry of Culture, Sports, Sciences and Technology (2001)

Professor, Institute for Hydrospheric-Atmospheric Sciences, Nagoya University (1994)

Associate Professor, Kyoto University (1989)

Instructor, Kyoto University (1966)

### **[Higher Degrees]**

D. Agr.

### **[Fields of Specialization]**

Mountain Hydrology  
 Forest Hydrology  
 Macro-scale Hydrology

### [Academic Society Memberships]

Japan Society of Hydrology and Water Resources

### [Awards]

BIWAKO PRIZE FOR ECOLOGY (1992)

## —Achievements—

### [Books]

*[Authored/Co-authored]*

- FUKUSHIMA, Y. 2007 Drying-up of the Yellow River - water and its environmental problems in Chinese large river.. Series book of RIHN. Showa-do Press, kyoto, JAPAN, 187pp. (in Japanese)

### [Editing]

*[Editing / Co-editing]*

- FUKUSHIMA, Y. (ed.) 2007 Changes in water resources systems: Methodologies to maintain water security and ensure integrated management. IAHS Publication, 315. , 327pp.
- FUKUSHIMA, Y. and M. TANIGUCHI (ed.) Jan, 2008 Water and environmental problems -analyzing drying-up of the Yellow River.. Gakuho-sha Press, 272pp. (in Japanese)

### [Papers]

*[Original Articles]*

- Taniguchi, M., J. Chen and Y. Fukushima 2007 The hydrological impact zone in the lower reaches of the Yellow River: a new concept for water resources issues. *IAHS Publication* 315 :199-205. (reviewed).
- Sato, Yoshinobu, X. Ma, M. Matsuoka and Y. Fukushima 2007 Analysis of long-term water balance in the source area of the Yellow River basin. *Hydrological Processes* .DOI: 10.1002/hyp.6730..
- Sato, Yoshinobu, X. Ma, M. Matsuoka and Y. Fukushima 2007 Impacts of human activity on long-term water balance in the middle-reaches of the Yellow River basin. *IAHS Publication* 315 :85-88. (reviewed).
- Saito, M., S. Onodera, K. Miyaoka, J. Chen, M. Taniguchi, G. Liu and Y. Fukushima 2007 Nitrate contamination in groundwater of the Yellow River Delta and its effect on the marine environment. *IAHS Publication* 314 :271-277. (reviewed).
- Onishi, A., H. Imura, J. Han, F. Shi and Y. Fukushima 2007 Socio-economic activities and the balance between water resource supply and demand in the Yellow River basin, China. *IAHS Publication* 315 :320-327. (reviewed).
- Chen, J., M. Taniguchi, G. Liu, K. Miyaoka, S. Onodera, T. Tokunaga and Y. Fukushima 2007 Nitrate pollution of groundwater in the Yellow River delta. *Hydrological Journal, Springer-Verlag* . (reviewed).DOI 10.1007/s10040-007-007-0196-7..
- Kobayashi, N., T. Hiyama, Y. Fukushima, M. L. Lopez, T. Hirano and Y. Fujinuma, 2007 Nighttime transpiration observed over a larch forest in Hokkaido, Japan. . *Water Resources Research*, 43 :1-15. (reviewed).
- Higuchi, A., T. Hiyama, Y. Fukuta, R. Suzuki, Y. Fukushima 2007 The behavior of a surface temperature/vegetation index (TVX) matrix derived from 10-day composite AVHRR images over monsoon Asia. . *Hydrological Processes* 21 (9) :1148-1156. (reviewed).
- Matsuoka, M., T. Hayasaka, Y. Fukushima and Y. Honda 2007 Land cover in East Asia classified using Terra MODIS and DMSP OLS products.. *International Journal of Remote Sensing* 28 :221-248.

(reviewed).Nos. 1-2.

- Chen , J., M. Taniguchi and Y. Fukushima 2007 Groundwater and its association with sustainability of agriculture in the North China Plain. *IAHS Publication* 315 :258-265. (reviewed).
- Xie, Pingping, A. Yatagai, M. Chen, T. Hayasaka, Y. Fukushima, C. Liu and S. Yang 2007 A gauge-based analysis of daily precipitation over East Asia. *Journal of Hydrometeorology* 8 :607-626. (reviewed).American Meteorological Society.

## HATADA, Aya

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Senior Project Researcher

**Born in 1975.**

### **[Academic Career]**

Department of Botany, Graduate School of Science, Kyoto University, D. Course (2003)  
 Department of Zoology, Graduate School of Science, Kyoto University, M. Course (2000)  
 Faculty of Science, Kyoto University (1998)

### **[Professional Career]**

Senior Researcher, Research Institute for Humanity and Nature (2006)  
 Research Fellow, Echigo-Matsunoyama Museum of Natural Science (2003)  
 Research Fellow, JSPS (2002)

### **[Higher Degrees]**

D.Sc. (Kyoto University, 2003)  
 M.Sc. (Kyoto University, 2000)

### **[Fields of Specialization]**

Environmental Education  
 Tropical Ecology  
 Population Ecology

### **[Academic Society Memberships]**

The Ecological Society of Japan  
 The Japanese Society of Applied Entomology and Zoology  
 The Entomological Society of Japan  
 The Japanese Society of Environmental Entomology and Zoology  
 The Japanese Society of Environmental Education

## **—Achievements—**

### **[Papers]**

#### *[Original Articles]*

- Hatada A and Matsumoto K, 2007 Survivorship and growth in the larvae of *Luehdorfia japonica* feeding on old leaves of *Asarum megacalyx*. *Entomological Science* 10 :307-314. (reviewed).
- Hatada A 2007 Environmental conservation activities by curators and citizens. *Japanese Journal of Ecology* 57 :443-447. (in Japanese)
- Hatada A, Suzuki M and Mitsuhashi H Mar,2008 Museum and Ecology:conclusion. *Japanese Journal of Ecology* 58 :57-61. (in Japanese)

**[Research Presentations]***[Oral Presentation]*

- Hatada A and Matsumoto K Population ecology of *Luehdorfia japonica* in Tokamachi-Matunoyama, Niigata. 67th Annual Meeting of Entomological Society of Japan, Sep 16, 2007, Kobe University, Kobe.
- Hatada A and Matsumoto K Can larvae of *Luehdorfia japonica* fed on old leaves grow well?-final-. 67th Annual Meeting of Entomological Society of Japan, Sep 17, 2007, Kobe University, Kobe.

*[Poster Presentation]*

- Hatada A, Ichikawa M and Nakashizuka T 2007 Production of teaching materials about biodiversity—the methodology of spreading the results of research . 17th Annual Meeting of The Japan Society of Tropical Ecology, Jun 16, 2007, Kochi University, Kochi..
- Hatada A, Ichikawa M and Nakashizuka T Making of teaching materials of the class in university, Biodiversity in the future. 55th Annual Meeting of Ecological Society of Japan, Mar 17, 2008, Fukuoka convention center, Fukuoka.
- Hatada A and Matsumoto K Effects of vegetation coverage on oviposition by *Luehdorfia japonica*. 119th Annual Meeting of Japanese Forest Society, Mar 28, 2008, Tokyo University of Agriculture and Technology, Fuchu.

**HAYASAKA, Tadahiro**

Professor

**Born in 1959.****[Academic Career]**

Tohoku University, B. Sc. (1982)  
 Tohoku University, M. Sc. (1984)  
 Tohoku University, Dr. Sc. (1988)

**[Professional Career]**

Post Doctoral Fellow, JSPS (1988)  
 Assistant Professor, Tohoku University (1990)  
 Associate Professor, Tohoku University (1994)  
 Professor, Tohoku University (1999)  
 Professor, National Institute of Polar Research (1999)  
 Professor, Research Institute for Humanity and Nature (2001)

**[Higher Degrees]**

Dr. Sc (Tohoku University, 1988)  
 M. Sc (Tohoku University, 1984)

**[Fields of Specialization]**

Atmospheric Physics

**[Academic Society Memberships]**

Meteorological Society of Japan  
 Japan Association of Aerosol Science and Technology

**—Achievements—**

**[Papers]***[Original Articles]*

- Matsuoka, M., T. Hayasaka, Y. Fukushima, and Y. Honda 2007 Land Cover in East Asia Classified using Terra MODIS and DMSO OLS Products.. *International Journal of Remote Sensing* 28 :221-248. (reviewed).doi:10.1080/01431160600675911..
- Ohara, T., H. Akimoto, J. Kurokawa, N. Horii, K. Yamaji, X. Yan, and T. Hayasaka 2007 An Asian emission inventory of anthropogenic emission sources for the period 1980-2020.. *Atmospheric Chemistry and Physics*. 7 :4419-4444. (reviewed).
- Xie, P., A. Yatagai, M. Chen, T. Hayasaka, Y. Fukushima, C. Liu, and S. Yang 2007 A Gauge-Based Analysis of Daily Precipitation over East Asia. . *J. Hydrometeor.* 8 :607-626. (reviewed).
- Zhang, X., T. Nakazawa, M. Ishizawa, S. Aoki, S. Nakaoka, S. Sugawara, S. Maksyutov, T. Saeki and T. Hayasaka 2007 Temporal variations of atmospheric carbon dioxide in the southernmost part of Japan.. *Tellus B* 59 :654-663. (reviewed).doi:10.1111/j.1600-0889.2007.00288.x..
- Hayasaka, T., S. Satake, A. Shimizu, N. Sugimoto, I. Matsui, K. Aoki and Y. Muraji 2007 The vertical distribution and optical properties of aerosols observed over Japan during ABC-EAREX2005. *J. Geophys. Res.* 112. (reviewed).D22S35, doi:10.1029/2006JD008086..
- Sawa, Y., H. Tanimoto, S. Yonemura, H. Matsueda, A. Wada, S. Taguchi, T. Hayasaka, H. Tsuruta, Y. Tohjima, H. Mukai, N. Kikuchi, S. Katagiri, and K. Tsuboi, 2007 Widespread pollution events of carbon monoxide observed over the western North Pacific during the EAREX 2005 campaign.. *J. Geophys. Res.* 112. (reviewed).D22S26, doi:10.1029/2006JD008055..

**[Research Presentations]***[Oral Presentation]*

- Hayasaka, T Potential radiative forcings to the surface shortwave radiation. IUGG General Assembly, Jul 05,2007, Perugia, Italy.
- Hayasaka, T Changes in aerosols and shortwave irradiance over China. AOGS, Jul 31,2007, Bangkok, Thailand.

**HAYASHI, Naoki**

---

Project Researcher

Born in 1972.

**—Achievements—****[Papers]***[Review Articles]*

- Naoki HAYASHI, Hideki MAEKAWA, Susumu SAITO, Tomohiro ICHINOSE Feb, 2008 Hilly and Mountainous Areas under a Declining Population. *LRJ* 71(4) :357-360. (in Japanese)

**HONJO, Mie**

---

Project Researcher

**[Academic Career]**

Department of Zoology, Division of Biological Science, Graduate School of Science, Kyoto University, D. Course (2006)

Department of Zoology, Division of Biological Science, Graduate School of Science, Kyoto University, M. Course (2001)

Department Ecosystem Studies, School of Environmental Science, The University of Shiga Prefecture (1999)

**[Professional Career]**

Research Fellow, Research Institute for Humanity and Nature (2006)

**[Higher Degrees]**

D.Sc. (Kyoto University, 2006)

M.Sc. (Kyoto University, 2001)

**[Fields of Specialization]**

Aquatic Microbial Ecology

Viral Ecology

Limnology

**[Academic Society Memberships]**

The Japanese Society of Limnology

**—Achievements—****[Research Presentations]***[Oral Presentation]*

- Tanaka, N., Itayama, T., Minamoto, T., Honjo, N., Kawabata, Z. Development of a rapid concentration method of virus-like particles and detection of KHV in environmental water. 41th Annual Conference of Japan Society on Water Environment, Mar 19, 2008–Mar 21, 2008, Nagoya. (in Japanese)

**HOSONO, Takahiro**

Visiting Researcher

**[Higher Degrees]**

D. Sc

M. Sc

**[Fields of Specialization]**

Geology

Environmental Geochemistry

**[Academic Society Memberships]**

The Society of Resource Geology

International Association of Hydrological Sciences

American Geophysical Union

**[Awards]**

Resource Geology Research Award

**—Achievements—****[Research Presentations]***[Poster Presentation]*

- T. Hosono Human impacts on groundwater flow and quality of the Seoul City, deduced by multiple isotopes ( $\delta D$ , T,  $\delta 18O$ ,  $\delta 34S$ , and  $87Sr/86Sr$ ). IUGG, July 2007, Perugia, Italy.

*[Invited Lecture / Honororary Lecture / Panelist]*

- Takahiro Hosono, Application of the multiple isotopes ( $\delta D$ , T,  $\delta 15N$ ,  $\delta 18O$ ,  $\delta 34S$ , and  $87Sr/86Sr$ ) for evaluation of the human impacts on groundwater flow and contamination in the Seoul City, South Korea. JPGU Meeting 2007, May 2007, Chiba, Japam.

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**HUANG, Shaopeng**

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Visiting Research Fellow

**Born in 1958.****[Higher Degrees]**

D.Sc. (The Chinese Academy of Sciences 1990)

M.Sc. (University of Science and Technology of China 1986)

**[Fields of Specialization]**

Geophysics, Climate change

**[Academic Society Memberships]**

American Geophysical Union

**—Achievements—****[Research Presentations]***[Oral Presentation]*

- Huang, S., Detecting human impacts on surface and subsurface thermal environment in several metropolitan areas in Asia. IUGG General Assembly, July 2007, Perugia, Italy.
- Huang, S., Transient effect of the last glaciation on the continental heat flow. IUGG General Assembly, July 2007, Perugia, Italy.
- Huang, S. The Status and outlook of land warming as part of global warming. Impacts of Global Climate Change on Urban Subsurface Environment, December 2007, .

*[Invited Lecture / Honororary Lecture / Panelist]*

- Huang, S. Deriving climate change information from subsurface temperatures of Earth and surface temperatures of the Moon. JGS, May 2007, Tsukuba, Japan.
- Huang, S. Earth's radiation signal recorded in the Moon's surface temperature data from the Apollo 15 Heat Flow Experiment. RIHN, June 2007, Kyoto, Japan.

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**HYODO, Fujio**

---

Project Researcher

**Born in 1974.****[Academic Career]**

Graduate School of Science, Kyoto University, D. Course (2002)

Graduate School of Science, Kyoto University, M. Course (1999)

Faculty of Agriculture, Kyoto University (1997)

**[Professional Career]**

Technical Assistant, Research Institute for Humanity and Nature (2002)

JSPS Postdoctoral Research Fellow, Research Institute for Humanity and Nature (2003–2005)

Project Researcher, Research Institute for Humanity and Nature (2006–2007)

**[Higher Degrees]**

D. Sc. (Kyoto University, 2002)

M. Sc. (Kyoto University, 1999)

**[Fields of Specialization]**

Animal Ecology

Soil Ecology

**[Academic Society Memberships]**

The Ecological Society of Japan

The Japanese Society of Soil Zoology

**—Achievements—****[Books]***[Chapters/Sections]*

- Kohmatsu, Y., Tayasu, I., and Hyodo, F. 2007 The commons from the view of water and fish. Akimichi, T. (ed.) Resource Anthropology. Volume 8. Resource Anthropology, 8. Kobundo, Tokyo, pp.39–62. (in Japanese)

**[Papers]***[Original Articles]*

- Yamada, A., Inoue, T., Hyodo, F., Tayasu, I. and Abe, T. 2007 Effects of mound occupation by the meat ant *Iridomyrmex sanguineus* on the termite *Amitermes laurensis* in an Australian woodland. *Sociobiology* 50 :1–19. (reviewed).
- Nakagawa, M., Hyodo, F. and Nakashizuka, T. 2007 Effect of forest use on trophic levels of small mammals: an analysis using stable isotopes. *Canadian Journal of Zoology* 85 :472–478. (reviewed).
- Hishi, T., Hyodo, F., Saito, S. and Takeda, T. 2007 The feeding habits of collembola along decomposition gradients using stable carbon and nitrogen isotope analyses. *Soil Biology and Biochemistry* 39 :1820–1823. (reviewed).
- Brandl, R., Hyodo, F., von Korff Schmising, M., Maekawa, K., Miura, T., Takematsu, Y., Matsumoto, T., Abe, T., Bagine, R. and Kaib, M. 2007 Divergence times in the termite genus *Macrotermes* (Isoptera: Termitidae). *Molecular Phylogenetics and Evolution* 45 :239–250. (reviewed).

**ICHIKAWA, Masahiro**



Associate Professor

**Born in 1962.****[Academic Career]**

Graduate School of Human and Environmental Studies, Kyoto University, D. Course (2002)

Graduate School of Human and Environmental Studies, Kyoto University, M. Course (1997)

Environmental Studies for Open Space, Faculty of Horticulture, Chiba University (1984)

**[Professional Career]**

Associate Professor, Research Institute for Humanity and Nature (2003)

Environmental Department, Pacific Consultants Co. Ltd. (1989)

Japan Overseas Cooperation Volunteers in Dominican Rep. (1987)

Development and Planning Department, Pacific Consultants Co. Ltd. (1984)

**[Higher Degrees]**

D. Human and Environmental Studies (Kyoto University, 2002)

M. Human and Environmental Studies (Kyoto University, 1997)

**[Fields of Specialization]**

Area Studies in Insular Southeast Asia

**[Academic Society Memberships]**

The Japan Society of Tropical Ecology

Japanese Society for Tropical Agriculture

**[Awards]**

Kira Price in the Japan Society of Tropical Ecology (2004)

Oze Price from Oze Preservation Foundation (2005)

**—Achievements—****[Books]***[Chapters/Sections]*

- Ichikawa, M. 2007 Degradation and loss of forest land and land-use changes in Sarawak, East Malaysia: a study of native land use by the Iban. Nakashizuka (ed.) Sustainability and diversity of forest ecosystems. An interdisciplinary approach. Springer, Tokyo, pp.47-57.

**[Papers]***[Original Articles]*

- Ichikawa, M. 2007 Degradation and loss of forest land and land-use changes in Sarawak, East Malaysia: a study of native land use by the Iban. *Ecological Research* 22 :403-413. (reviewed).

**[Research Presentations]***[Oral Presentation]*

- Ichikawa, M. . , Aug 11,2007, Kyoto International Community House: Kyoto.Commentator for "International symposium: Forest stewardship and community empowerment: Local commons in a global context" .
- Ichikawa, M., Kato Y., Samejima H., and Koizumi M Indigenous knowledge and techniques in forest resource uses in Borneo. The 2nd RIHN International Symposium, "Asian Green Belt: Its Past, present and the future" , Aug 31,2007, Kyoto.
- Ichikawa, M. Lands for indigenous people, lands for state: Sarawak case. Symposium of Japan Malaysia

Research Society, Mar 21, 2008, RIHN, Kyoto.

- Ichikawa, M. Role of Tropical Satoyama for sustainable forest use. The 119 Congress of Japan Forest Society, Mar 28, 2008, Tokyo Agriculture and Industrial University, Fuchu..

*[Poster Presentation]*

- Ichikawa, M. Governance and sustainable use of Tropical Satoyama. Japan Society of Tropical Ecology, Jun 16, 2007, Kochi University, Kochi.
- Hatada, A., Ichikawa, M. and Nakashizuka, T. Development of teaching materials for biodiversity education. Japan Society of Tropical Ecology, Jun 16, 2007, Kochi University, Kochi.

## IGETA, Akitake

---

Visiting Researcher

**Born in 1974.**

**[Academic Career]**

Graduate School of Agriculture, Kagawa University, M. Course (2001)

Faculty of Agriculture, Kagawa University (1999)

**[Professional Career]**

Project researcher, Research Institute for Humanity and Nature (2003)

**[Higher Degrees]**

M.Sc. (Kagawa University, 2001)

**[Fields of Specialization]**

Limnology

Marine Chemistry

**—Achievements—**

**[Papers]**

*[Original Articles]*

- T. Hosono, T. Nakano, A. Igeta, I. Tayasu, T. Tanaka, and S. Yachi 2007 Impact of fertilizer on a small watershed of Lake Biwa: use of sulfur and strontium isotopes in environmental diagnosis. *Science of the Total Environment* 384 :342-354. (reviewed).

## KATO, Yuzo

---

Assistant Professor

**Born in 1971.**

**[Academic Career]**

Graduate School of Law, Kyoto University, Doctor's program(2000)

Graduate School of Law, Kyoto University, Master's program(1996)

Faculty of Law, Kyoto University(1994)

**[Professional Career]**

Assistant Professor, Research Institute for Humanity and Nature(2001)  
 Junior Research Fellow, Institute for Research in Humanities, Kyoto University(2001)  
 Research Associate, Graduate School of Law, Kyoto University(2000)  
 JSPS Research Fellow(DC2) (1997)

**[Higher Degrees]**

LL. M. (Kyoto University, 1996)

**[Fields of Specialization]**

Legal History

**[Academic Society Memberships]**

Japan Legal History Association

**—Achievements—**

**[Editing]**

*[Editing / Co-editing]*

- Kato Yuzo, Onishi Hideyuki, Sasaki Shiro (ed.) Mar,2008 History of Social Interactions among the Inland Sea in East Asia. Jimbun Shoin, Fushimi-ku, Kyoto, 300pp. (in Japanese)

**[Papers]**

*[Original Articles]*

- Kato Yuzo Dec,2007 A Carte Book of the Mongol Empire. *Jimsha Project News Letter* (3) :5. (in Japanese)

**KATSUYAMA, Masanori**

---

Senior Project Researcher

**Born in 1975.**

**[Academic Career]**

Division of Environmental Science and Technology, Graduate School of Agriculture, Kyoto University, D. Course (2002)

Division of Environmental Science and Technology, Graduate School of Agriculture, Kyoto University, M. Course (1999)

Faculty of Agriculture, Kyoto University (1997)

**[Professional Career]**

Senior Researcher, Research Institute for Humanity and Nature (2006)

Technician, Research Institute for Humanity and Nature (2005)

Postdoctoral Fellow, Japan Society for the Promotion of Science, (2002)

Research Fellow, Japan Society for the Promotion of Science, (2000)

**[Higher Degrees]**

Ph. D. (Agr.) (Kyoto University, 2002)

M, Agr. (Kyoto University, 1999)

B, Agr. (Kyoto University, 1997)

**[Fields of Specialization]**

Forest Hydrology

**[Academic Society Memberships]**

The Japanese Forest Society, Japan Society of Hydrology and Water Resource, Japanese Association of Hydrological Sciences, International Association of Hydrological Sciences, American Geophysical Union

**—Achievements—****[Research Presentations]***[Poster Presentation]*

- Katsuyama, M., Fukushima, K., Tokuchi, N., Ohte, N. and Tani, M. Role of bedrock on rainfall-runoff processes in forest watersheds. Annual Meeting of the Japanese Forest Society, April 2007, Kyusyu University, Fukuoka.. (in Japanese)
- Osaka, K., Ohte, N., Koba, K., Katsuyama, M., Yoshimizu, C., Tayasu, I., Nagata, T., Wankel, S. and Kendall, C. Annual Meeting of the Japanese Forest Society, April 2007, Kyusyu University, Fukuoka.. (in Japanese)
- Suzuki, Y., Ohte, N., Katsuyama, M., Tanida, K., and Sanjo, H. Mercury dynamics in forest watershed. Annual Meeting of the Japanese Forest Society, April 2007, Kyusyu University, Fukuoka.. (in Japanese)
- Osaka, K., Ohte, N., Koba, K., Katsuyama, M., Yoshimizu, C., Tayasu, I., and Nagata, T. . Annual Meeting of Japanese Society of Soil Science and Plant Nutrition, August 2007, Tokyo University of Agriculture. . (in Japanese)
- Suzuki, Y., Ohte, N., Tanida, K., Sanjo, H., Katsuyama, M. and Itoh, M. Mercury dynamics in forest watershed. Annual Meeting of Ecological Society of Japan, March 2008, Fukuoka City, Fukuoka.. (in Japanese)
- Suzuki, N., Koba, K., Itoh, M., Osaka, K., Ohte, N., Tobari, Y., Katsumama, M., Yamada, K., Toyoda, S., Nagata, T., and Yoshida, N. . Annual Meeting of Ecological Society of Japan, March 2008, Fukuoka City, Fukuoka.. (in Japanese)
- Takahashi, Y., Ohte, N., Itoh, M., Arai, H., Matsuo, N., Katsuyama, M. and Nishimoto, S. . Annual Meeting of Ecological Society of Japan, March 2008, Fukuoka City, Fukuoka.. (in Japanese)
- Nishimoto, S., Katsuyama, M., Itoh, M., Takahashi, Y. and Tani, M. Estimations of bedrock infiltrations in forest catchments with granite material. Annual Meeting of the Japanese Forest Society, March 2008, Tokyo University of Agriculture and Technology, Fuchu City, Tokyo.. (in Japanese)

**KAWABATA, Zen'ichiro**

Professor

**Born in 1946.****[Academic Career]**

Department of Biology, Graduate School of Science, Tohoku University, unfinished D Degree (1975)

Department of Biology, Graduate School of Science, Tohoku University, M. Course (1973)

Department of Biology, Faculty of Science, Tohoku University (1971)

**[Professional Career]**

Professor, Research Institute for Humanity and Nature(2005)

Professor(Concurrent), Center for Marine Environmental Studies, Ehime University(1999)

Professor, Center for Ecological Research, Kyoto University (1998)

Professor, Department of Environmental Conservation, Ehime University(1996)  
 Associate Professor, Department of Environmental Conservation, Ehime University(1983)  
 Lecturer, Department of Environmental Conservation, Ehime University(1981)  
 Assistant Professor, Faculty of Science, Biological Institute, Tohoku University (1977)  
 Technician, Faculty of Science, Biological Institute, Tohoku University (1975)

### **[Higher Degrees]**

Dr. Sc. (Tohoku University, 1977)  
 Ms. Sc. (Tohoku University, 1973)

### **[Fields of Specialization]**

Microbial Ecology, Aquatic Ecosystem Ecology

### **[Academic Society Memberships]**

The Ecological Society of Japan  
 The Japanese Society of Microbial Ecology  
 The Japanese Society of Limnology  
 Japanese Society of Water Treatment Biology  
 Japanese Society for Environmental Biotechnology  
 The Plankton Society of Japan  
 The Oceanographic Society of Japan  
 The Japanese Society of Fisheries Sciences  
 Japan Society on Water Environment  
 Society of Environmental Science, Japan  
 The Society of Eco-Engineering  
 The Society for Studies on Entropy  
 International Association for Theoretical and Applied Limnology.  
 The Nature Conservation Society of Japan

### **[Awards]**

Ehime Publication and Culture Prize, 2000(with coauthors) (2000)

## **—Achievements—**

### **[Papers]**

#### *[Original Articles]*

- Uchii, K., Okuda, N., Yonekura, R., Karube, Z., Matsui, K. and Kawabata, Z. 2007 Trophic polymorphism in bluegill sunfish (*Lepomis macrochirus*) introduced into Lake Biwa: Evidence from stable isotope analysis. . *Limnology* 8 :59-63. (reviewed).
- Sekino, T., Genkai-Kato, M., Kawabata, Z., Yoshida Y., Kagami, M., Gurung, T. B., Urabe, J., Higashi, M. and Nakanishi, M. 2007 Role of phytoplankton size distribution in food web structure: a comparison between Lakes Baikal and Biwa. *Limnology* 8 :227-232. (reviewed).
- Miki, T., Ueki, M., Kawabata, Z. and Yamamura, N. 2007 Long-term dynamics of catabolic plasmids introduced to a microbial community in a polluted environment: mathematical model. . *FEMS Microbiology Ecology* 62 :211-221. (reviewed).
- Honjo, M., Matsui, K., Ishii, N., Nakanishi, M. and Kawabata, Z. 2007 Viral abundance and its related factors in hypolimnion of a stratified lake. . *Archiv fuer Hydrobiologie* 168(1) :105-112. (reviewed).

## KAWAMOTO, Haruko

---

Project Researcher

**Born in 1974.**

### [Academic Career]

"Hokkaido University (1997)

Hokkaido University, M. Course (1999)"

### [Professional Career]

"Japan Radio Co., Ltd. (1999)

Research Institute for Humanity and Nature(2007)"

### [Higher Degrees]

M. Eng

### [Fields of Specialization]

Radar Meteorology, Low Temperature Physics

### [Academic Society Memberships]

Meteorological Society of Japan, Society of Atmospheric Electricity of Japan

## —Achievements—

### [Research Presentations]

#### [Oral Presentation]

- "Akiyo Yatagai, Akio Kitoh, Kenji Kamiguchi, Osamu Arakawa , Asian Precipitation -- Highly Resolved Observational Data Integration Towards Evaluation of the Water Resources (APHRODITE' s Water Resources). PHERPP, Dec 03, 2007-Dec 05, 2007, Geneva.
- Akiyo Yatagai, Haruko Kawamoto, Pingping Xie Products and validation of GAME re-analyses and JRA-25: Precipitation. The 3rd World Climate Research Programme, Jan 28, 2008-Feb 01, 2008, Tokyo.

#### [Poster Presentation]

- Haruko Kawamoto, Akiyo Yatagai Quality check of a gauge-based daily precipitation dataset: Using maximum rain rates given in the standard product 2A25 of TRMM/PR. Weather Radar and Hydrology 2008, Mar 10, 2008-Mar 12, 2008, Grenoble, France.

## KIMIOTO, Yukitoshi

---

Senior Project Researcher

**Born in 1973.**

### [Academic Career]

Department of Botany, Graduate School of Science, Kyoto University, D. Course (2004)

Division of Human and Environmental Studies, Graduate School of Human and Environmental Studies, Kyoto University, M. Course (2001)

### [Professional Career]

Research Fellow, Research Institute for Humanity and Nature (2004)

Senior Researcher, Reserch Institute for Humanity and Nature (2006)

**[Higher Degrees]**

Ph. D. (Science, Kyoto Univ. 2004)

M. of Human and environment (Kyoto Univ. 2001)

**[Fields of Specialization]**

Plant systematics

Plant morphology

Plant anatomy

**[Academic Society Memberships]**

Japan Society of Plant Systematics

Botanica Society of Japan

Botanical Society of America

**—Achievements—****[Research Presentations]***[Poster Presentation]*

- Kimoto Y., M. Nakagawa and T. Takaso Comparative anatomy of anther, ovule, and seed development of Staphyleaceae. The 71th Annual Meeting of the Botanical Society of Japan, Sep 07, 2007–Sep 09, 2007, Tokyo Univ. of Science, Noda. (in Japanese)

**KIMURA, Emi**

Project Research Associate

**[Academic Career]**

japanese literature, Faculty of Arts & Letters, Kyoritsu Women's University (1989)

Art Culture, Kyoto University of Art and Design, M. Course (2002)

Art Kyoto University of Art and Design, D. Course (2006)

**[Professional Career]**

Part-time Teacher, Correspondence, Kyoto University of Art and Design (2003)

Part-time Teacher, Department of Art, Kyoto University of Art and Design (2006)

Fellow Researcher, Research Center for Historical Heritage, Kyoto University of Art and Design (2006)

Fellow Researcher, International Research Center for Comparative Art Studies, Kyoto University of Art and Design (2007)

Project Research Associate, Research Institute for Humanity and Nature (2007)

**[Higher Degrees]**

Ph.D. (Kyoto University of Arts and Design, 2006)

**[Fields of Specialization]**

The History of The Japanese Culture

The History of The Tea Culture

**[Academic Society Memberships]**

CHANOYU-BUNKA-GAKKAI

## —Achievements—

**[Research Presentations]***[Oral Presentation]*

- KIMURA, Emi The Culture of Tea in Tang Period. Comparative Art Studies Seminar, May 23, 2007, . (in Japanese)

**KINOSHITA, Tetsuya**

Professor

**Born in 1950.****[Academic Career]**

Department of Philosophy, Graduate School of Literature, Kyoto University, D. Course (1979)

Department of Philosophy, Graduate School of Literature, Kyoto University, M. Course (1976)

Faculty of Literature, Kyoto University (1974)

**[Professional Career]**

Professor, Research Institute for Humanity and Nature (2003)

Professor, Faculty of Literature, Okayama University (2001)

Assistant Professor, Faculty of Literature, Okayama University (1984)

Instructor, Faculty of Literature, Okayama University (1981)

Research Assistant, Faculty of Literature, Kyoto University (1979)

**[Higher Degrees]**

M.Sc. (Kyoto University, 1976)

**[Fields of Specialization]**

Chinese philosophical history

**[Academic Society Memberships]**

The Sinological Society of Japan

the Institute of Eastern Culture

the Society of Oriental Researches

the Society for the Study of Chinese Societies and Cultures

## —Achievements—

**[Books]***[Chapters/Sections]*

- Kinoshita, T. 2007 Chapter 6, “The history of the Yellow River and the North China Plain, and cognitive backgrounds to flood control work to the Yellow River”. Fukushima Y. and M. Taniguchi (ed.) Water use in the arid regions and large scale environmental issues –on the basis of the drying-up of the Yellow River-. Gakuhosya. (in Japanese)

**[Papers]***[Original Articles]*

- Kinoshita, T. 2007 . .On a structure of Zhuxi’ s understanding about ‘ ge-we ’ –A study around



Zhuxi' s interpretations of Shi- jing 's phrase ' you-wu-you-ze ' .

## KOBAYASHI, Yutaka

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Project Researcher

**Born in 1976.**

### [Academic Career]

Faculty of Science, Kyoto University, B. Course (1998)

Graduate School of Science, Kyoto University, M. Course (2000)

Graduate School of Science, Kyoto University, D. Course (2003)

### [Professional Career]

Research Fellowship for Young Scientists(JSPS) DC1 (2000-2003)

Research Fellowship for Young Scientists(JSPS) PD (2004-2007)

Researcher, Research Institute for Humanity and Nature (2007)

Postdoctoral Researcher, University of Florida (2007- )

### [Higher Degrees]

D.Sc. (Kyoto University, 2004)

M.Sc. (Kyoto University, 2000)

### [Fields of Specialization]

Mathematical Ecology

### [Academic Society Memberships]

Ecological Society of Japan

Japanese Society for Mathematical Biology

## —Achievements—

### [Papers]

#### [Original Articles]

- Kobayashi, Y., Yamamura, N. 2007 How to compute the effective size of spatiotemporally structured populations using separation of time scales . *Theoretical population biology* 71 :174-181. (reviewed).
- Kobayashi, Y., Yamamura, N. 2007 Evolution of signal emission by uninfested plants to help nearby infested relatives . *Evolutionary Ecology* 21 :281-294. (reviewed).
- Telschow, A., Flor, M., Kobayashi, Y., Hammerstein, P., Werren, J. H. 2007 Wolbachia-induced unidirectional cytoplasmic incompatibility and speciation: mainland-island model . *PLoS ONE* 2(8). (reviewed). e701. doi: 10.1371/journal.pone.0000701.

## KUBOTA, Jumpei

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Associate Professor

**Born in 1957.**

### [Academic Career]

Department of Forestry, Faculty of Agriculture, Kyoto University, D. Course (1987)

Department of Forestry, Faculty of Agriculture, Kyoto University, M. Course (1983)

Department of Forestry, Faculty of Agriculture, Kyoto University (1981)

### [Professional Career]

Associate Professor, Research Institute for Humanity and Nature (2002)

Associate Professor, Faculty of Agriculture, Tokyo University of Agriculture and Technology (1997)

Assistant Professor, Faculty of Agriculture, Tokyo University of Agriculture and Technology (1989)

Assistant Professor, University Forest, Kyoto University (1987)

### [Higher Degrees]

D. Agr. (Kyoto University, 1987)

M. Agr. (Kyoto University, 1983)

### [Fields of Specialization]

Hydrology

Forest Hydrology

Erosion Control Engineering

### [Academic Society Memberships]

The Japanese Forestry Society

The Japan Society of Hydrology and Water Resources

The Japan Society of Erosion Control Engineering

## —Achievements—

### [Papers]

#### [Original Articles]

- Genxu Wang , Jingqi Liu, Jumpei Kubota, and Ling Chen 2007 Effects of land-use changes on hydrological processes in the middle basin of the Heihe River, northwest China.. *Hydrological Processes* 21(10) :1370-1382. (reviewed).
- Kazuyoshi Suzuki, Jumpei Kubota, Hironori Yabuki, Tetsuo Ohata1 and Valery Vuglinsky 2007 Moss beneath a leafless larch canopy: influence on water and energy balances in the southern mountainous taiga of eastern Siberia.. *Hydrological Processes* 21(15) :1982-1991. (reviewed).

### [Research Presentations]

#### [Oral Presentation]

- KUBOTA, Jumpei Water shortage in arid to semi arid regions as a environmental issue - A case study in the Heihe River of North West China. Japan-China International Symposium on Natural Geography and Ethnology, Oct 28,2007, Bejing, China. (in Japanese)
- KUBOTA, Jumpei Agriclultural Development and Water Resouces Shortage in the Heihe River, North-West China. 2nd Insternational Symposium on Chinese Environmental Issues, Nov 09,2007, Nanjing, China. (in Japanese)

**LEKUPRICHAKUL, Thamana**

Senior Project Researcher

Born in 1959.

**[Academic Career]**

Department of Economics, University of Hawaii, USA (2001)

Faculty of Economics, Thammasat University, Thailand (1987)

**[Professional Career]**

Senior Researcher, Research Institute for Humanity and Nature (2006–Present)

Post-doctoral fellow, Social Science Research Institute, University of Hawaii (2006)

Research Assistant, Energy Technology Department, Asian Institute of Technology, Thailand (1988)

**[Higher Degrees]**

Ph. D. (University of Hawaii, 2001)

B. A., Honors (Thammasat University, Thailand, 1987)

**[Fields of Specialization]**

Health

Demographic

Labor Economics

Econometrics

**[Academic Society Memberships]**

Member of American Economic Association

Member of Thai Economic Association

**—Achievements—****[Research Presentations]***[Oral Presentation]*

- LEKUPRICHAKUL, Thamana Drought Impact of the 2004/2005 Agricultural Season on Crop Production. 2nd Resilience Project Workshop, May 12, 2007, Hamamatsu.
- LEKUPRICHAKUL, Thamana Drought impact of the 2004/2005 Agricultural Season on Crop Productions. The First Lusaka Workshop Vulnerability and Resilience of Social–Ecological Systems, Sep 03, 2007, Lusaka, Zambia.
- LEKUPRICHAKUL, Thamana Incorporating and Testing Stochastic Demand in an Assessment of Hospital Cost Efficiency Using Deterministic Data Envelopment Analysis. Global Academy of Business and Economic Research (GABER) International Conference, Dec 27, 2007–Dec 29, 2007, Bangkok, Thailand.

**LINDSTRÖM, Kati**

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Project Researcher

**Born in 1977.**

**[Academic Career]**

Kyoto University, Research Institute for Human and Environmental Studies, PhD course (2007, Japanese Government Scholarship)

Kyoto University, Faculty of Letters, Research Student (2004, Japanese Government Scholarship)

Sankt-Petersburg State University (Russia), Faculty of Eastern Studies, Department Japanese Studies, Research Student (2002, Russian Government Scholarship)

Tartu University (Estonia), Faculty of Social Sciences, Department of Semiotics and Culturology, BA course (2001)

### **[Professional Career]**

Researcher, University of Tartu, Institute for Philosophy and Semiotics (2007)

Project Research Assistant, Research Institute for Humanity and Nature (2006)

Technical assistant, Research Institute for Humanity and Nature (2006)

Teaching Assistant, Kyoto University, Research Institute for Human and Environmental Studies (2004)

### **[Higher Degrees]**

MA, Semiotics and culturology (University of Tartu, 2003)

### **[Fields of Specialization]**

Human Geography

Cultural Semiotics

Cultural Anthropology

Literature

### **[Academic Society Memberships]**

Estonian Semiotic Society

Society for Biosophia Studies

### **[Awards]**

Estonian National Student Research Award, runner-up in BA category, Humanities (2002)

Estonian National Literature Award, runner-up in the category of translation (foreign language to Estonian) (2007)

## **—Achievements—**

### **[Books]**

#### *[Translations / Joint Translations]*

- LINDSTROM, Kati Jan, 2008 Kafka merekaldal. Varrak, Tallinn, Estonia, 588pp. (Other) Translation of MURAKAMI, Haruki Umibe no Kafka. Shincho-sha, Shinjuku-ku, Tokyo, 808pp. (in Japanese)

### **[Research Presentations]**

#### *[Oral Presentation]*

- LINDSTROM, Kati Sea gives and takes away: Sea as the Living Space for Sentient Beings. “Landscape and Living Beings II – Sea and the Sentient Beings”, the 5th Yearly Congress of the Society of Biosophia Studies, Jun 22, 2007, Fujisawa, Kanagawa, Japan. (in Japanese)

## **MALLAH, Qasid Hussain**

Visiting Research Fellow

Born in 1964.

## **—Achievements—**

### **[Editing]**

#### *[Senior/Supervisory Editorships]*

- Research Journal “Ancient Sindh” 8th Qasid H. Mallah (superviseor) 2007 . . ,

### [Papers]

#### [Original Articles]

- Qasid H, Mallah Jan, 2008 “Archaeological Investigation in the Lower Hakra Basin of Sindh Pakistan” .
- Qasid H, Mallah Jan, 2008 “An Archaeological Assessment of Taung Valley of Sindh-Kohistan Pakistan” .

### [Research Presentations]

#### [Oral Presentation]

- Qasid H, Mallah The Indus Civilization Site of Sindh Region. Indus Project General Meeting, June 2007, Research Institute for Humanity and Nature, Kyoto, Japan.

#### [Invited Lecture / Honororary Lecture / Panelist]

- Qasid H, Mallah Archaeological Study in Pakistan 2000–2007. Meiji University Staff Meeting Vol299, July 2007, Meji University.
- Qasid H, Mallah Archaeological Survey in and around the Rohri Hills –the Place origin of Flint-. Meiji University, July 2007, Meiji University.

## MINAMOTO, Toshifumi

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Senior Project Researcher

**Born in 1973.**

### [Academic Career]

Division of Biological Science, Graduate School of Science, Kyoto University, D. Course (2003)

Division of Biological Science, Graduate School of Science, Kyoto University, M. Course (1999)

Faculty of Science, Kyoto University (1997)

### [Professional Career]

Senior Researcher, Research Institute for Humanity and Nature (2007)

Postdoctoral Researcher, Institute for Biological Resources and Functions, National Institute of Advanced Industrial Science and Technology (2005)

COE Research Fellow, Center for Ecological Research, Kyoto University (2003)

### [Higher Degrees]

D. Sc (Kyoto University, 2003)

M. Sc (Kyoto University, 1999)

### [Fields of Specialization]

Ecology

Animal Physiology

Chronobiology

### [Academic Society Memberships]

The Zoological Society of Japan

Japanese Society for Chronobiology

Ecological Society of Japan

**—Achievements—****[Books]***[Chapters/Sections]*

- Minamoto T., Shimizu I. Aug, 2007 Fish Diversity and opsin gene (Gyorui no Tayousei to Opushin Idenshi). The Kyoto University Museum and Center for Ecological Research, Kyoto University (ed.) What is the biodiversity? a jigsaw puzzle of life (Seibutsu no Tayousei tte Nandarou? Seimei no Jiguso Pazuru). Gakujutsu-Sensyo, 027. Kyoto University Press, Kyoto City, Kyoto, pp.140-164. (in Japanese)

**MISHINA, Natalya**

Visiting Research Fellow

**Born in 1979.****[Academic Career]**

Pacific Institute of Geography, Far Eastern Branch, Russian Academy of Sciences, Ph. D (Cand.Sc.) Degree (2005)

Department of Asia-Pacific Region's Geography, School of Geography, Institute of Environmental Sciences, Far Eastern National University (Vladivostok), Specialist (5 year) Degree (2001)

**[Professional Career]**

Invited Research Fellow, Research Institute for Humanity and Nature, Kyoto (April - October 2006, April-July 2007)

Researcher, Center of Information and Cartography, Pacific Institute of Geography FEB RAS (2004 - present)

Research assistant, Center of Landscape and Ecological Studies, Pacific Institute of Geography FEB RAS (2001-2004)

**[Higher Degrees]**

Ph. D (Geography) (Pacific Institute of Geography, Far Eastern Branch, Russian Academy of Sciences 2005)

**[Fields of Specialization]**

Geography of Asian-Pacific Countries, Landscape Ecology

**[Awards]**

FEB RAS Prize in the name of Academician I.P. Druzhinin for Scientific Geographical/Geoecological Publication of Young Scientists (2007) to «Land-use and Land-cover Changes in the Amur River Basin (South of the Russian Far East and North-East China)» (Ganzei S.S., Mishina N.V., 2005)

**—Achievements—****[Papers]***[Original Articles]*

- Mishina N.V. 2007 The influence of international trade on the land use structure: the case study of the Amur River basin. *Abstracts of the Second Global Conf. on Economic Geography* :104-104.
- Mishina N.V. 2007 Main features and tendencies of land use changes of Manchurian (Northeastern China) border regions in 1930-2000. *Abstracts of the IGU/LUCC Central Europe Conference "Man in the*

*landscape across frontiers: landscape and land use change in Central European border regions” :46-47.*

- Mishina N.V. 2007 Forest resources development of the russian-chinese border regions in the 20th century: factors and tendencies. *Abstracts of the XIIIth Conference of geographers of Siberia and Far East* :78-79. (in Russian)
- Ganzai S.S., Ermoshin V.V., Mishina N.V., Shiraiwa T. Apr,2007 Present-day land use in the Amur River basin. *Geography and Natural Resources* (No. 2) :17-25. (in Russian) (reviewed).
- Mishina N.V Dec,2007 “Landscape structure of the Russian and Chinese near-boundary territories: particularities of anthropogenic transformation”. S.I. Kozhenkova (ed.) . *Geographical and Geocological Investigations in the Far East* , 3. Dalnauka, Vladivostok, Russia, pp.97-106. (in Russian) (reviewed).

### **[Research Presentations]**

#### *[Oral Presentation]*

- Mishina N.V. External influence on land-use changes in the Amur River basin. Second Global Conference on Economic Geography, Jun 25,2007, Beijing Convention Center, Beijing.
- Mishina N.V. Main features and tendencies of land use changes of Manchurian (Northeastern China) border regions in 1930-2000. IGU/LUCC Central Europe Conference “Man in the landscape across frontiers: landscape and land use change in Central European border regions, Aug 29,2007, Ljubljana, Slovenia.
- Mishina N.V. Forest resources development of the Russian-Chinese border regions in the XX century: factors and tendencies. The XIIIth Conference of geographers of Siberia and Far East, Nov 27,2007, Institute of Geography SB RAS, Irkutsk, Russia. (in Russian)

## **MIYAZAKI, Hidetoshi**

Project Researcher

**Born in 1975.**

### **[Academic Career]**

Department of Soil Science, Graduate School of Agriculture, Kyoto University, D.Course(2007)

Division of Environmental Dynamics, Environmental Science Graduate School, The University of Shiga Prefecture, M.Course(2001)

Department of Biological Resources Management, School of Environmental Science, The University of Shiga Prefecture(1999)

### **[Professional Career]**

Researcher, Research Institute for Humanity and Nature(2007)

JSPS Research Fellow(2003)

### **[Higher Degrees]**

M.Environmental Science. (The University of Shiga Prefecture, 2001)

### **[Fields of Specialization]**

Soil Science

### **[Academic Society Memberships]**

Japanese Society of Soil Science and Plant Nutrition

Japanese Society of Regional and Agricultural Development

The Japanese Agricultural Systems Society

—Achievements—

**[Research Presentations]**

*[Oral Presentation]*

- S. Seto, H. Miyazaki, U. Tanaka NGO-assisted actions and local resident participation to combat desertification in the Sahel Region: A case of a rural village in northeastern Burkina Faso. Japanese Society of Regional and Agricultural Development, Apr 21, 2007, Tokyo. (in Japanese)

**MIYOSHI, Takao**

Visiting Researcher

**Born in 1969.**

**[Academic Career]**

Department of Chemistry, Graduate School of Science, The University of Tokyo, Doctor's Course (2001)

Department of Chemistry, Graduate School of Science, The University of Tokyo, Master's Course (1994)

Department of Chemistry, Faculty of Science, The University of Tokyo (1992)

**[Professional Career]**

Project Senior Researcher, Research Institute for Humanity and Nature (2006)

Researcher (Part-time), National Institute for Environmental Studies (2005)

Post Doctoral Fellow, National Institute for Environmental Studies (2002)

**[Higher Degrees]**

D.Sc. (The University of Tokyo, 2001)

M.Sc. (The University of Tokyo, 1994)

**[Fields of Specialization]**

Atmospheric Chemistry

**[Academic Society Memberships]**

The Chemical Society of Japan

Japan Society for Atmospheric Environment

The Japan Society of Atmospheric Chemistry

—Achievements—

**[Papers]**

*[Original Articles]*

- Q. Zhang, J. L. Jimenez, M. R. Canagaratna, J. D. Allan, H. Coe, I. Ulbrich, M. R. Alfarra, A. Takami, A. M. Middlebrook, Y. L. Sun, K. Dzepina, E. Dunlea, K. Docherty, P. F. DeCarlo, D. Salcedo, T. Onasch, J. T. Jayne, T. Miyoshi, A. Shimono, S. Hatakeyama, N. Takegawa, Y. Kondo, J. Schneider, F. Drewnick, S. Borrmann, S. Weimer, K. Demerjian, P. Williams, K. Bower, R. Bahreini, L. Cottrell, R. J. Griffin, J. Rautiainen, J. Y. Sun, Y. M. Zhang, and D. R. Worsnop 2007 Ubiquity and Dominance of Oxygenated Species in Organic Aerosols in Anthropogenically-Influenced Northern Hemisphere Midlatitudes. *Geophys. Res. Lett.* 34. (reviewed).L13801, doi:10.1029/2007GL029979.
- A. Takami, T. Miyoshi, A. Shimono, N. Kaneyasu, S. Kato, Y. Kajii, and S. Hatakeyama, 2007 Transport



of Anthropogenic Aerosols from Asia and Subsequent Chemical Transformation. *J. Geophys. Res* 112. (reviewed). D22S31, doi:10.1029/2006JD008120.

## MOJI, Kazuhiko

Professor

### Born in 1953.

#### [Academic Career]

Department of Human Ecology, Graduate School of Medicine, The University of Tokyo, D. Course (1983)

Department of Human Ecology, Graduate School of Medicine, The University of Tokyo, M. Course (1980)

Faculty of Medicine, The University of Tokyo (1976)

#### [Professional Career]

Professor, Research Institute for Humanity and Nature (2007)

Visiting Professor, Research Institute for Humanity and Nature (2006)

Head, Research Center of Tropical Infectious Diseases, Nagasaki University Institute of Tropical Medicine (2006)

Professor, Research Center of Tropical Infectious Diseases, Nagasaki University Institute of Tropical Medicine (2002)

Professor, School of Health Sciences, Nagasaki University School of Medicine (2001)

Professor, School of Allied Medical Sciences, Nagasaki University (1999)

Associate Professor, Department of Public Health, Nagasaki University School of Medicine (1987)

Instructor, Department of Human Ecology, School of Health Science, Faculty of Medicine, University of Tokyo (1983)

#### [Higher Degrees]

D. (The University of Tokyo, 1983)

M. (The University of Tokyo, 1980)

#### [Fields of Specialization]

Human Ecology, Population Health in the Tropics

#### [Academic Society Memberships]

The Japanese Society of Tropical Medicine, The Japanese Society of Health and Human Ecology

### —Achievements—

#### [Papers]

##### [Original Articles]

- Guoxi Cai, Kazuhiko Moji, Xiaonan Wu and Konglai Zhang Jun, 2007 Knowledge, attitudes, beliefs, and practices of Chinese migrants in Nairobi, Kenya and Dar es Salaam, Tanzania toward HIV/AIDS. *Tropical Medicine and Health* 35(1) :11-18. (reviewed).
- Cai G, Moji K, Honda S, Wu X, Zhang K. Aug, 2007 Inequality and unwillingness to care for people living with HIV/AIDS: a survey of medical professionals in Southeast China. *AIDS Patient Care STDS*. 21(8) :593-601. (reviewed).
- Yahata Y, Imai H, Fukuda Y, Zhang Y, Satoh T, Nakao H, Moji K, Amano K. Sep, 2007 BCG immunization age in urban and rural areas of Akita Prefecture, Japan. *J Physiol Anthropol*. 26(5) :547-551. (reviewed).

- Nakamura S, Hongo R, Moji K, Oku T. Sep, 2007 Suppressive effect of partially hydrolyzed guar gum on transitory diarrhea induced by ingestion of maltitol and lactitol in healthy humans. *Eur J Clin Nutr.* 61(9) :1086-1093. (reviewed). Epub 2007 Jan 24..

## MORI, Wakaha

Senior Project Researcher

### [Academic Career]

Department Linguistics, Graduate School of Letters, Kyoto University, D. Course (2002)  
 Department Linguistics, Graduate School, Kyoto University, M. Course (1996)  
 Department Linguistics, Faculty of Letters, Kyoto University (1993)

### [Professional Career]

Senior Researcher, Research Institute for Humanity and Nature (2006-)  
 Lecturer (part-time), Kyoto University (2004-2005, 2008-)  
 Researcher (part-time), Center for Eurasian Cultural Studies (2005-2006)  
 Lecturer (part-time), Doshisya Women's College (2004-)  
 Research Fellow of the Japan Society for the Promotion of Science (DC 1) (1996)

### [Higher Degrees]

D.L (Kyoto University, 2005)  
 M.L (Kyoto University, 1996)

### [Fields of Specialization]

Sumerian  
 Linguistics  
 Cuneiform Studies

### [Academic Society Memberships]

The Linguistic Society of Japan  
 The Society for Near Eastern Studies in Japan

## —Achievements—

### [Papers]

#### [Original Articles]

- MORI, W. 2007 Plural bases meaning "to go" in Sumerian. *The Report of "Formation of Tribal Communities in the Bishri Mountains, Middle Euphrates" 2006 (Grant-in-Aid for Scientific Research on Priority Area (2005-2009))* :68-84. (in Japanese)

### [Research Presentations]

#### [Oral Presentation]

- MORI, W. Vowel Change under the Influence of the Preceding Consonants in Sumerian. The 50th Japanese Sumerological meeting, May 26, 2007-May 27, 2007, Waseda University. (in Japanese)
- MORI, W. Notes on the plural bases in Sumerian. 53e Rencontre Assyriologique Internationale, International Congress of Assyriology and Near Eastern Archaeology, Jul 23, 2007-Jul 28, 2007, Russian State University for Humanities, Ermitage Museum.
- MORI, W. and Y, Yasugi Let's write our names in the cuneiform scripts. Possibility of Making Use of

Museum in International Education: Through a Teacher Training Workshop, Aug 06, 2007–Aug 07, 2007, The National Museum of Ethnology. (in Japanese)

- MORI, W. Sumerian language from Babylonian's eyes. Cultural Contact in the ancient Syria and Mesopotamia: Peoples, Cultures and Languages , Jan 26, 2008–Jan 27, 2008, Kyoto University. (in Japanese)

## NAITO, Daisuke

---

Project Researcher

**Born in 1978.**

### **[Academic Career]**

Graduate School of Asian and African Area Studies, Kyoto University, M. Course (2005)  
Faculty of Agriculture, Kyoto University (2003)

### **[Professional Career]**

Research Fellow (2007)

### **[Higher Degrees]**

Master of Science (Kyoto University, 2005)

### **[Fields of Specialization]**

Southeast Asian Area Studies

### **[Academic Society Memberships]**

Japanese Forest Society  
The Japan Society of Tropical Ecology

## **—Achievements—**

### **[Papers]**

#### *[Original Articles]*

- Naito, D. 2007 The Local Community's Involvement with forestry, Kinabatangan, Sabah, Malaysia. *The proceedings of the 118th Annual meeting of the Japanese Forest Society*. (in Japanese) Japanese Forest Society.

### **[Research Presentations]**

#### *[Oral Presentation]*

- Naito, D. The Local Community's Involvement with forestry, Kinabatangan, Sabah, Malaysia. The 118th Annual meeting of the Japanese Forest Society, April 2007, Kyushu University.
- Naito, D. The Present Situation and Issue of Forest Certification in Tropical Countries, Tropical Forest Management in 21st century. 55th annual meeting of the Ecological Society of Japan, March 2008, Fukuoka.
- Naito, D. Native Land and State Land in Sabah, Malaysia. The regular meeting of Kansai branch of Japan Association for Malaysian Studies, March 2008, RIHN, Kyoto.
- Naito, D. Implementation of Forest Certification in Sabah, Malaysia. The 119th Annual meeting of the Japanese Forest Society, March 2008, Tokyo University of Agriculture and Technology.

## NAKANO, Takanori

---

Professor

**Born in 1950.**

### —Achievements—

#### [Books]

##### [Chapters/Sections]

- Nakano, T. Mar, 2008 . Nakano, T (ed.) Study of bottled water. Water and Earth Environment, 4. Shouwa-do, Sakyo-ku, Kyoto, pp.16-19. (in Japanese)

#### [Editing]

##### [Senior/Supervisory Editorships]

- Nakano, T (ed.) (supervisor) Mar, 2008 Water and Earth Environment. Hito to mizu, 4. Shouwado, Sakyo-ku, Kyoto, 32pp. (in Japanese)

## NAKAWO, Masayoshi

---

Professor

**Born in 1945.**

#### [Academic Career]

Department of Geophysics, Faculty of Science, Hokkaido University, D. Sc. (1977)

Department of Geophysics, Faculty of Science, Hokkaido University, M. Sc. (1974)

Department of Physics, Faculty of Science, Kyoto University (1969)

#### [Professional Career]

Adjunct Professor, Nanjing University (2003)

Professor, Research Institute for Humanity and Nature (2001)

Associate Professor, Research Institute for Humanity and Nature (2001)

Adjunct Professor, Hunan Normal University (1996)

Associate Professor, Institute for Hydrospheric-Atmospheric Sciences, Nagoya University (1993)

Head of Department, Second Department, Nagaoka Institute of Snow and Ice Studies, National Institute for Disaster Prevention and Earth Sciences (1987)

Associate Professor, Department of Applied Physics, Faculty of Engineering, Hokkaido University (1987)

Assistant Professor, Department of Applied Physics, Faculty of Engineering, Hokkaido University (1981)

Research Associate, Division of Building Research, National Research Council of Canada (1977)

Research Associate, Institute of Low Temperature Science, Hokkaido University (1970)

#### [Higher Degrees]

D.Sc. (Hokkaido University, 1977)

M.Sc. (Hokkaido University, 1974)

#### [Fields of Specialization]

Glacio-climatology

Snow Hydrology

**[Academic Society Memberships]**

Japanese Society of Snow and Ice

Japan Society of Hydrology and Water Resources

Meteorological Society of Japan, International Glaciological Society International Association of Hydrological Sciences

American Geophysical Union

International Water History Association

**—Achievements—****[Books]***[Chapters/Sections]*

- Nakawo, M. 2007 Global environmental problems due to the lack of water in the Heihe River Basin, western China. RIHN 1st International Symposium Proceedings—Water and Better Life in the Future—, Research Institute for Humanity and Nature. , pp.75-79.

**[Papers]***[Original Articles]*

- Akiyama, T., A. Sakai, Y. Yamazaki, G. Wang, K. Fujita, M. Nakawo, J. Kubota and Y. Konagaya. 2007 Surface water-groundwater interaction in the Heihe River basin, Northwestern China. *Global Change in Mountain Regions* 24 :87-94.
- ZHOU ShiQiao, NAKAWO Masayoshi, SAKAI Akiko, MATSUDA Yoshihiro, DUAN KeQin & PU JianChen 2007 Water isotope variations in the snow pack and summer precipitation at July 1 Glacier, Qilian Mountains in precipitation at July 1 Glacier, Qilian Mountains in northwest China. *Chinese Science Bulletin* 52(21) :2963-2972.

**NARAMA, Chiyuki**

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Project Researcher

**Born in 1972.**

**[Academic Career]**

Department of Geography, Tokyo Metropolitan University, D.Course(2002)

**[Professional Career]**

JSPS fellow PD (2004-2007)

Project researcher, RIHN(2007)

**[Higher Degrees]**

D.Sc(Tokyo Metropolitan University, 2002)

**[Fields of Specialization]**

Physical geography

**[Academic Society Memberships]**

The Association of Japanese Geography

The Japanese Society of Snow and Ice

Tokyo Geographical Society

International Glaciological Society (IGS)  
Japan Society for Natural Disaster Science

### [Awards]

Nakaya Ukichiro Science Award (2007)

### —Achievements—

#### [Research Presentations]

##### [Poster Presentation]

- Narama, C., Kääb, A., Kajiura, T., Abdrakhmatov, K. Spatial variability of recent glacier area and volume changes in central Asia using Corona, Landsat, ASTER and ALOS optical satellite data. EGU, April 2007, Vienna, Austria.
- Narama, C., Kondo, R., Tsukamoto, S., Kajiura, T., Murataly, D., Abdrakhmatov, K. Timing of glacier expansion during the last Glacial in the northern and central Tien Shan, Kyrgyz Republic by OSL dating. EGU, April 2007, Vienna, Austria.
- Narama, C. Kääb, A., Abdrakhmatov, K. Recent glacier volume change in the Chon-Kyzylsuu river basin, Teskey Ala-Too range, Tien Shan mountains, using airphotos, topographic maps, and ALOS PRISM satellite stereo data. Symposium of International Glaciological Society, March 2008, Skeikampen, Norway.
- Narama, C. Kääb, A., Abdrakhmatov, K. Recent contribution of glacial meltwater in the Chon-Kyzylsuu river basin of Teskey Ala-Too range, Tien Shan mountains. Symposium of International Glaciological Society, March 2008, Skeikampen, Norway.

## NAWATA, Hiroshi

Associate Professor

**Born in 1968.**

### [Academic Career]

Human and Environmental Studies (Cultural Anthropology), Kyoto University, D. Course (2003)  
Human and Environmental Studies (Cultural Anthropology), Kyoto University, M. A. Course (1997)  
African and Asian Studies (Folklore), University of Khartoum, Sudan, Diploma Course (1994)  
Letters, Arts and Sciences (Asian History), Waseda University, B. A. Course (1992)

### [Professional Career]

Associate Professor, Research Department, Research Institute for Humanity and Nature (2008–present)  
Associate Professor, Socioeconomics Division, Arid Land Research Center, Tottori University (2007)  
Assistant Professor, Division of Comprehensive Measures to Combat Desertification, Arid Land Research Center, Tottori University (2004–2007)  
Part-time Lecturer, Faculty of Foreign Studies, Osaka University of Foreign Studies (2004–2005)  
Part-time Lecturer, College of Economics, College of Business Administration, and College of Letters, Ritsumeikan University (2004–2005)  
Part-time Lecturer, School of Humanities and Social Sciences, Osaka Prefecture University (2004–2005)  
Part-time Lecturer, School of Policy Studies, Kwansei Gakuin University (2003–2004)  
Teaching Assistant, Graduate School of Human and Environmental Studies, Kyoto University (1998–1999)  
Research Fellow, Japan Society for the Promotion of Science (1997–2000)

**[Higher Degrees]**

Ph. D. (Kyoto University, 2003)  
 M. A. (Kyoto University, 1997)  
 Diploma (University of Khartoum, Sudan, 1994)  
 B. A. (Waseda University, 1992)

**[Fields of Specialization]**

Cultural Anthropology

**[Academic Society Memberships]**

The Japanese Association for Arid Land Studies  
 Japanese Coral Reef Society, Japanese Society of Cultural Anthropology  
 Japan Association for African Studies  
 Japan Association for Middle East Studies  
 Japan Association for Nilo-Ethiopian Studies

**[Awards]**

Encouragement Award of the Japanese Association for Arid Land Studies(2003)

**—Achievements—****[Books]***[Chapters/Sections]*

- Hiroshi NAWATA Apr, 2007 How to see the hunger and civil war in Sudan: At the moment of the photograph "A Vulture and a Child" taken . Ikeya K・Sato R・Takeuchi S (ed.) Africa II. World Geography Series, 11. Asakura Syoten, Tokyo, pp.333-349. (in Japanese)
- Hiroshi NAWATA Jun, 2007 *The Joint Study Project on the Conservation of Juniper Woodlands in Saudi Arabia, Final Report*. Social Importance of the Junipers In Japan International Cooperation Agency (JICA) and National Commission for Wildlife Conservation & Development. JICA, Tokyo, pp.263-286. (in Japanese)
- Hiroshi NAWATA Jul, 2007 *A relation between local people and natural reserve in Asir Mountain: Thinking juniper conservation from social importance*. Nakamura S (ed.) Sixty-five chapters to know Saudi Arabia. Akashi shoten, Tokyo, pp.102-105. (in Japanese)
- Hiroshi NAWATA Jul, 2007 *Trapping a leopard: A relation between wild animals and local people in juniper forest*. Nakamura S (ed.) Sixty-five chapters to know Saudi Arabia. Akashi Shoten, Tokyo, pp.106-110. (in Japanese)
- Hiroshi NAWATA Jul, 2007 *Agriculture in Asir Mountain: A subsistence in juniper forest*. Nakamura S (ed.) Sixty-five chapters to know Saudi Arabia. Akashi Shoten, Tokyo, pp.111-115. (in Japanese)
- Hiroshi NAWATA Jul, 2007 *A taste of honey as a gift from juniper forest*. Nakamura S (ed.) Sixty-five chapters to know Saudi Arabia. Akashi Shoten, Tokyo, pp.116-119. (in Japanese)
- Hiroshi NAWATA Jul, 2007 *Becoming a man by reciting a poem: A juniper bark used for a treatment of male circumcision*. Nakamura S (ed.) Sixty-five chapters to know Saudi Arabia. Akashi Shoten, Tokyo, pp.120-125. (in Japanese)
- HIroshi NAWATA Jul, 2007 *A variety of cultural and social heritage of the Kingdom*. Nakamura S (ed.) Sixty-five chapters to know Saudi Arabia. Akashi Shoten, Tokyo, pp.149-152. (in Japanese)
- Hiroshi NAWATA Jul, 2007 Camel race jockeys: A network of Sudanese workers. Nakamura S. (ed.) Sixty-five chapters to know Saudi Arabia. Akashi Shoten, Tokyo, pp.153-157. (in Japanese)

**[Research Presentations]***[Oral Presentation]*

- Hiroshi NAWATA *Towards an integrated plan of an exotic species Prosopis control: A general field survey in Central and Eastern Sudan in 2006.* In JSPS/JST International Symposium on Toward Advanced Use of African Resources in Plant Science, Program. JSPS/JST, Nov 30, 2007, RIKEN, Yokohama.
- Hiroshi NAWATA *Food Habit in the Coastal Zones of the Arid Tropics: A Case of the Beja in Eastern Sudan.* The 11th International Coral Reef Symposium, 2008, Florida, U.S.A. (in Japanese)

**OKUMIYA, Kiyohito**

Associate Professor

**Born in 1961.****[Academic Career]**

Kochi Medical School (Kochi) (1986)

**[Professional Career]**

Associate professor, Research Institute for Humanity and Nature (2004)

Visiting clinical and research fellow, Division of Geriatrics, Department of Medicine, University of British Columbia, Canada (2002–2003)

Assistant professor (Lecturer), Department of Medicine and Geriatrics, Kochi Medical School (1999)

Assistant professor, Department of Medicine and Geriatrics, Kochi Medical School (1992)

Research resident, Department of Anatomy, Shiga University of Medical Science (1992)

Medical Staff, Department of Neurology in Sumitomo Hospital (1990)

Resident, Department of Circulatory Medicine, Tokyo Metropolitan Geriatric Hospital (1988)

Resident in Department of Medicine and Geriatrics, Kochi Medical School Hospital (1986)

**[Higher Degrees]**

Ph.D. (Kochi Medical School, 1996)

M.D. (Kochi Medical School, 1986), Japanese Medical License Registration (No. 299199)

**[Fields of Specialization]**

Field Medicine

Geriatrics and Gerontology

Neurology

Internal Medicine

**[Academic Society Memberships]**

Japanese Society of Neurology

Japanese Society of Geriatrics

Japanese Society of Internal Medicine

Japanese Society of Hypertension

**[Awards]**

Awards of Novartis foundation for Gerontological Research, Japan Geriatrics Society.

**—Achievements—**



**[Papers]***[Original Articles]*

- Fujisawa M, Ishine M, Okumiya K, Otsuka K, Matsubayashi K. 2007 Trends in diabetes. *Lancet* 369 :1257-1257. (reviewed).
- Okumiya K, et al 2007 Diabetes mellitus in the elderly in Laos and comparison with the peoples in some regions on the Mekong Basin and Japan. *Himalayan Study Monographs* 8 :39-48. (in Japanese) (reviewed).
- Okumiya K 2007 The 82 years-old marathone runner- universality and diversity of human ageing-. *Ecosophia* 19 :43-51. (in Japanese)
- Okumiya K, Ishine M 2007 Health in highlanders and globalization. *Nihon Tozanigakkai Zasshi* 27. (in Japanese)
- Fujisawa M, Ishine M, Okumiya K, Nishinaga M, Doi Y, Ozawa T, Matsubayashi K 2007 Effects of long-term exercise class on prevention of falls in community-dwelling elderly: Kahoku Longitudinal Aging Study. *Geriatrics & Gerontology International* 7(4) :357-362. (reviewed).
- Okumiya K Jan, 2008 "Rojinryoku" in Japanese. *Kagaku* 78 :81-83. (in Japanese)

**[Research Presentations]***[Oral Presentation]*

- Okumiya K Health in highlanders and globalization. The 27th annual scientific meeting of Japanese society of mountain medicine, Jun 02, 2007, Zaocho, Miyagi. (in Japanese)
- Okumiya K Prevalence of diabetes in the community-dwelling elderly . The 49th annual meeting of the Japan geriatrics society , Jun 22, 2007, Sapporo, Hokkaido. (in Japanese)
- Okumiya K Prevalence of diabetes in the community-dwelling elderly in Kochi. The 49th annual meeting of the Japan geriatrics society, Jun 22, 2007, Sapporo, Hokkaido. (in Japanese)
- Okumiya K Medical and geriatric aspects of highlanders. Engaging the challenge, Symposium of United Nation University, Jun 27, 2007, Shibuya-ku, Tokyo. (in Japanese)
- Okumiya K The close association between economic status and glucose intolerance in the community-dwelling elderly in Asian countries. Forum of health and development in Lao PDR, Sep 24, 2007, Vientiane, Laos.

*[Poster Presentation]*

- Okumiya K The association between economic status and diabetes in the community-dwelling elderly in Asia. The health forum of Kohn Kean University, Oct 17, 2007, Kohn Kaen, Thailand.
- Okumiya K The close association between economic status and glucose intolerance in the community-dwelling elderly in Asian countries. Congress of geriatrics and gerontology in Asia, Oct 22, 2007, Beijing, China.

*[Invited Lecture / Honorary Lecture / Panelist]*

- Okumiya K Fieldwork survey of neurodegenerative diseases in West New-Guinea in 2001-02 and 2006-07. Annual Meeting of the Japanese Society of Neurology, 2007, Nagoya, Japan. (in Japanese)

**ONISHI, Akio**

Senior Project Researcher

**Born in 1974.****[Academic Career]**

Graduate School of Environmental Studies, Nagoya University, D. Course (2006)

Graduate School of Environmental Studies, Nagoya University, M. Course (2003)  
 School of the Environment and Natural Resources, University of Wales, Bangor, M. Course (2000)  
 Scholl of Agriculture, Kinki University (1997)

### [Professional Career]

Senior Project Researcher, RIHN(2006)

### [Higher Degrees]

D.Sc. (Nagoya University, 2006)  
 M.Sc. (Nagoya University, 2003)  
 M.Sc. (University of Wales, Bangor, 2000)

### [Fields of Specialization]

Environmental System Engineering

### [Academic Society Memberships]

Japan Society of Civil Engineers  
 Center of Environmental Information Science  
 The Japan Society of Hydrology and Water Resources  
 The Japanese Association for Arid Land Studies  
 Research Institute of Environmental Management

## —Achievements—

### [Papers]

#### [Original Articles]

- A. Onishi, M. Morisugi, F. Shi, J. Han, H. Shirakawa and H. Imura 2007 Evaluating the efficiency of regional agricultural water use in Yellow River basin, by using DEA method. *Papers on Environmental Information Science* 21 :543-548. (in Japanese) (reviewed).
- F. Shi, H. Imura, O. Higashi, X. Cao and A. Onishi 2007 The reallocation of water right policy and regional development in China. *Environmental Systems Research* 35 :199-207. (in Japanese) (reviewed).
- J. Han, H. Imura, A. Onishi and H. Shirakawa 2007 Population Migration, Urbanization and Their Implication for Urban Housing Demand in China. *Journal of Environmental Information Science* 35-5 :37-46. (reviewed).
- A. Onishi, H. Imura, J. Han, F. Shi and Y. Fukushima 2007 Socio-economic activities and the balance between water resource supply and demand in the Yellow River basin, China. *IAHS Publication* 315 :320-327. (reviewed).
- A. Onishi, M. Morisugi, F. Shi, H. Imura, T. Watanabe and Y. Fukushima 2007 Application of economic analysis method in efficiency of agricultural water use of Yellow River basin. *proceedings of the 2007 meeting of the Japanese association for arid land studies* :87-88. (in Japanese) kyoto.
- A. Onishi, Y. Sato, X. Cao, M. Matsuoka, M. Morisugi, T. Watanabe and Y. Fukushima 2007 Agricultural water use in the Yellow River basin, China -Evaluation by index of agricultural WUE (Water Use Efficiency) -. *proceedings of 2007 Annual Conference, Japan Society of Hydrology and Water Resources* :222-223. (in Japanese) Nagoya.

**ONISHI, Hideyuki**

Senior Project Rersearcher

**Born in 1969.****[Academic Career]**

Hokkaido University, Dr.Course (2001) , Hokkaido University, M.A. (1995) , Meiji University. (1993)

**[Professional Career]**

JSPS Research Fellow PD (2002)

Technical Assistant, Research Institute for Humanity and Nature (2005)

Researcher, Research Institute for Humanity and Nature (2006) Senior Researcher, Research Institute for Humanity and Nature (2007)

**[Higher Degrees]**

Ph.D. (The Graduate University for Advanced Studies, National Museum of Ethnology, 2005)

**[Fields of Specialization]**

Anthropology, Archaeology

**[Academic Society Memberships]**

Japanese Society of Cultural Anthropology, Japanese Archaeological Association, Society of Ecological Anthropology, Japanese Society for Oceanic Studies

**—Achievements—****[Books]***[Chapters/Sections]*

- ONISHI, Hideyuki Jul,2007 A Study on the Pottery Manufacturing Technology in Highlanders' society, Northern Luzon. GOTO, Akira (ed.) Ethnoarchaeology of Pottery. Doseisha, Tokyo, pp.27-41. (in Japanese)
- ONISHI, Hideyuki Mar,2008 Logic of Fishery Resource Management on Ing River, Northern Thailand.. AKIMICHI, Tomoya; KUROKURA, Hisashi (ed.) Eco-ethnography of Human and Fish. Sekaishissha, Kyoto, pp.220-236. (in Japanese)

**[Editing]***[Editing / Co-editing]*

- KATO, Yuzo; ONISHI, Hideyuki and SASAKI, Shiro (ed.) Mar,2008 History of Social Interactions among the Inland Sea in East Asia. Jimbunshoin, Kyoto, 300pp. (in Japanese)

**[Research Presentations]***[Oral Presentation]*

- ONISHI, Hideyuki Subsistence Activities for Bio-resource Usings in the Agricultural Society.. 1st Preliminary Conference for 2008 Symposium, Japanese Archaeological Society., Oct 28,2007, . (in Japanese)

**ONISHI, Masayuki**


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Senior Project Researcher

**[Academic Career]**

Completed PhD Course, Department of Linguistics, Faculty of Arts, The Australian National University (1994)

Completed Graduate Diploma Course (TESOL), Faculty of Education, The University of Canberra (1989)

Completed Diploma Course (Bengali Language and Literature), Department of Bengali, Jadavpur University (1979)

Completed BA Course (English Language and Literature), Faculty of Arts, Tokyo University (1975)

### **[Professional Career]**

Senior Research Fellow, Indus Project, RIHN (2007)

Visiting Fellow, Department of Linguistics, Max-Planck Institute (Evolutionary Anthropology) (2005)

Visiting Fellow, Department of Linguistics, RSPAS, The Australian National University (2003)

Professor, Faculty of International Studies, Meio University (1998)

Associate Professor, Faculty of International Studies, Meio University (1997)

Research Assistant, RCLT, The Australian National University (1995)

### **[Higher Degrees]**

PhD (The Australian National University, 1995)

Graduate Diploma (The University of Canberra, 1989)

### **[Fields of Specialization]**

Linguistic Typology

Descriptive Linguistics

### **[Academic Society Memberships]**

Australian Linguistic Society

The Linguistic Society of Papua New Guinea

Okinawa Center of Language Study

## **—Achievements—**

### **[Research Presentations]**

#### *[Oral Presentation]*

- Masayuki Onishi Overview of the description of 'word' in the languages of South Asia. Indus Project Language Study Group meeting 1, May 26, 2007, RIHN, Kyoto, Japan. (in Japanese)
- Masayuki Onishi Parts of speech from the perspective of linguistic typology (on the commentaries on Evans and Osada 2006). Indus Project Language Study Group Meeting 2, Jul 30, 2007, RIHN, Kyoto, Japan. (in Japanese)
- Masayuki Onishi On the first draft of a Bengali grammar. Indus Project Language Study Group Meeting 3, Sep 29, 2007, RIHN, Kyoto, Japan. (in Japanese)

#### *[Invited Lecture / Honorary Lecture / Panelist]*

- Masayuki Onishi Towards a comprehensive description of Ryukyuan. Keynote speech, Workshops on Ryukyuan 1, Apr 14, 2007, The University of Ryukyus, Naha-shi, Okinawa-ken, Japan. (in Japanese)
- Masayuki Onishi The history and current situation of Bengali publications. Visiting seminar, Asian Information Department, National Diet Library, Mar 30, 2008, Seika-cho, Kyoto, Japan. (in Japanese)

## **ONISHI, Takeo**

Senior Project Researcher

Born in 1972.

**[Academic Career]**

Division of Environmental Science and Technology, Graduate School of Agriculture, Kyoto University, M. Course (1998)

Division of Environmental Science and Technology, Graduate School of Agriculture, Kyoto University, D. Course (2004)

**[Professional Career]**

Research Fellow of Core Research for Evolutional Science and Technology (CREST) Project, Public Works Research Institute (2006)

Senior Researcher, Research Institute for Humanity and Nature (2009)

**[Higher Degrees]**

D. Agr. (Kyoto University, 2004)

M. Agr. (Kyoto University, 1998)

**[Fields of Specialization]**

Hydrology

**[Academic Society Memberships]**

Japanese Society of Irrigation Drainage, and Rural Engineering

Japanese Society of Civil Engineering

Japanese Association of Groundwater Hydrology

Japan Geoscience Union

Society for Studies on Entropy

Americal Geophysical Union

International Association of Hydrological Science

**—Achievements—****[Papers]***[Original Articles]*

- Seiya Nagao, Shizuka Ito, Motoki Terashima, Muneoki Yoh, Baixing Yan, Bai Zhang, Takeo Onishi Nov, 2007 Fluorescent Properties of Dissolved Humic Substances in the Sanjiang Plain river waters. *Journal of Water and Environmet* 30(11) :629-635. (in Japanese) (reviewed).
- Xiaotao Cheng, Du Xiaohe, Junichi Yoshitani, Wang Yicheng, Takeo Onishi Nov, 2007 The Case Study of Flood Damage Compensation Scheme in China -The Case of Huai River Basin. *Kasen* (11) :54-63. (in Japanese)

**[Research Presentations]***[Poster Presentation]*

- Takeo Onishi Construction of hydrological model which incorporates dissolved iron production mechanism. Annual Meeting of Japan Geophysical Union, May 16, 2007-May 21, 2007, Makuhari, Chiba, Japan. (in Japanese)

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**OSADA, Toshiki**

Professor

Born in 1954.

**—Achievements—****[Editing]***[Editing / Co-editing]*

- Toshiki Osada (ed.) 2007 Occasional Paper 2: Linguistics, Archaeology and the Human Past. Research Institute for Humanity and Nature, Kyoto, Kita-ku, 187pp.

**[Papers]***[Original Articles]*

- Toshiki Osada 2007 Reciprocals in Mundari. Vladimir Nedjalkov (ed.) Reciprocal constructions. John Benjamin, Amsterdam/Philadelphia, pp.1575–1590. (reviewed).
- Kharakwal, J.S., Y.S. Rawat, Toshiki Osada 2007 Kanmer: A Harappan site in Kachchh, Gujarat, India.. Toshiki Osada (ed.) Occasional Paper 2: Linguistics, Archaeology and the Human Past.. Research Institute for Humanity and Nature, Kyoto, Kita-ku, pp.21–46.

**SAEKI, Tazu**

Assistant Professor

**[Academic Career]**

Department of Geophysics, Faculty of Science, Tohoku University, D. Course (1998)

Department of Geophysics, Faculty of Science, Tohoku University, M. Sc. (1995)

Division of Natural Science, The College of Liberal Arts, International Christian University (1993)

**[Professional Career]**

Assistant Professor, Research Institute for Humanity and Nature (2002)

Assistant Professor, Information Synergy Center, Tohoku University (2001)

Assistant Professor, Computer Center, Tohoku University (1998)

**[Higher Degrees]**

M. Sc.

**[Fields of Specialization]**

Atmospheric Physics

**[Academic Society Memberships]**

Meteorological Society of Japan, American Geophysical Union (AGU)

**—Achievements—****[Papers]***[Original Articles]*

- Zhang, X., T. Nakazawa, M. Ishizawa, S. Aoki, S. Nakaoka, S. Sugawara, S. Maksyutov, T. Saeki, and T. Hayasaka 2007 Temporal Variations of Atmospheric Carbon Dioxide in the Southernmost Part of Japan. *Tellus* 59B :654–663. (reviewed).

**[Research Presentations]***[Oral Presentation]*

- Tazu SAEKI A comparison between model calculations and observations of atmospheric methane. Meeting for

satellite observations of tropospheric constituents, Feb 23, 2008, Nara. (in Japanese)

## SAITO, Haruo

---

Project Researcher

### Born in 1978.

#### [Academic Career]

Department of Forest Science, Graduate School of Agriculture, Kyoto University, D. Course (2006)

Department of Forest Science, Graduate School of Agriculture, Kyoto University, M. Course (2002)

Faculty of Agriculture, Kyoto University (2000)

#### [Professional Career]

Research Fellow, Research Institute for Humanity and Nature (2006)

#### [Higher Degrees]

D.Ph. (Kyoto University, 2006)

M.Ph. (Kyoto University, 2002)

#### [Fields of Specialization]

Forestry

Ethno-mycology

Commons theory

#### [Academic Society Memberships]

The Japanese Forest Society

The Japanese Forest Economic Society

The Society of Biosphere Studies

The Society of Commons

### —Achievements—

#### [Books]

##### [Chapters/Sections]

- SAITO, Haruo and G. Mitsumata 2007 Mentality of Commons: Occurring and change of the bidding institution for harvesting Matsutake in Kyoto. AKIMICHI, Tomoya (ed.) Resources and the Commons. Anthropology of the Commons, 8. Kobundo, Chiyodaku, Tokyo, pp.163-186. (in Japanese)

#### [Editing]

##### [Editing / Co-editing]

- Haruo SAITO, Akiko Ikeguchi and Kenich Nonaka (ed.) 2007 *The biodiversity of vegetables in Vientiane*. National Agriculture and Forestry Research Institute (NAFRI) & Research Institute for Humanity and Nature (RIHN), Kyoto, 45pp.

#### [Papers]

##### [Original Articles]

- Saito H. and G. Mitsumata 2007 Bidding Customs and Habitat Improvement for Matsutake (*Tricholoma matsutake*) in Japan. *Economic Botany*.
- Akiko IKEGUCHI, Haruo SAITO, Yoshinao ADACHI, Senduang Sivilay, Ken-ichi NONAKA, Yuichiro NISHIMURA

2007 Food Plants and Animals in a Marketplace in Suburban Vientiane, Laos. *Nature, Human and Environment (The Lao Agriculture and Forestry Journal)* Special Issue :47,57.

### [Research Presentations]

#### [Oral Presentation]

- SAITO, Haruo and Y. Kosaka Richness of flat plain forests; Diversity of plant and mushroom resources in Vientiane plain. Autumn Meeting of the Association of Japanese Geographers 2007, Oct 06,2007, Kumamoto University. (in Japanese)
- ASAI, Mika, R. Izumi, H. Saito and U. Yamashita Resent status of ZAISANKU(property ward) as local commons; from the complete survey held at 2007. Annual Conference of the Society for Environmental Economics and Policy Studies, Oct 07,2007, Shiga University. (in Japanese)
- SAITO, Haruo, U. Yamashita, R. Izumi and M. Asai ZAISANKU(property ward) as an institutional body of communal forest management; Resent status of existence and influence of. Autumn Meeting of the Forest Economic Society 2007, Nov 24,2007, Shimane University. (in Japanese)

## SASAKI, Naoko

Project Researcher

Born in 1974.

### —Achievements—

#### [Papers]

##### [Original Articles]

- Kawano, T., Takahara, H., Nomura, T., Shibata, H., Uemura, S., Sasaki, N. and Yoshioka, T. 2007 Holocene phytolith record at *Picea glehnii* stands on the Dorokawa Mire in northern Hokkaido, Japan. *The Quaternary Research (Daiyonki-Kenkyu)* 46(5) :413-426. (reviewed).

### [Research Presentations]

#### [Poster Presentation]

- Sasaki, N., Takahara, H. and Kishimoto, G. Fire and human impacts on vegetation changes during the Holocene in the northern part of Kyoto. XVII International Union for Quaternary Research Congress, Aug 01,2007, Cairns, Australia.
- Sasaki, N., Takahara, H., Manabe, T. Fire history since the late glacial in Kyoto Basin and Tamba Mountains, Japan. 22nd Annual Meeting of Japanese Association of Historical Botany, Nov 18,2007, Osaka, Osaka Prefecture. (in Japanese)

## SATAKE, Shinsuke

Visiting Researcher

Born in 1976.

### [Academic Career]

Department of Earth System Science and Technology, Interdisciplinary Graduate School of Engineering Sciences, Kyushu University, D. Course (2005)



Department of Earth System Science and Technology, Interdisciplinary Graduate School of Engineering Sciences, Kyushu University, M. Course (2002)

### **[Professional Career]**

Postdoctoral Research Fellow, Japan Society for Promotion of Science (2005)

### **[Higher Degrees]**

D.Sc. (Kyushu University, 2005)

M.Sc. (Kyushu University, 2002)

### **[Fields of Specialization]**

Meteorology

Atmospheric physics

### **[Academic Society Memberships]**

Meteorological Society of Japan

## **—Achievements—**

### **[Papers]**

#### *[Original Articles]*

- Hayasaka, T., S. Satake, A. Shimizu, N. Sugimoto, I. Matsui, K. Aoki, and Y. Muraji, 2007 Vertical distribution and optical properties of aerosols observed over Japan during the Atmospheric Brown Clouds-East Asia Regional Experiment 2005, . *J. Geophys. Res* 112.D22S35, doi:10.1029/2006JD008086.

### **[Research Presentations]**

#### *[Poster Presentation]*

- Satake, S. Numerical study for the vertical distributions and optical properties of Asian dust and anthropogenic aerosols over Japan. XXIVth General Assembly of the International Union of Geodesy and Geophysics (IUGG), Rocca Palina-CERP, Jul 04,2007, Perugia, Italy.

## **SATO, Yo-Ichiro**

Professor

Born in 1952.

## **—Achievements—**

### **[Books]**

#### *[Authored/Co-authored]*

- Sasaki Koumei, Sato Yo-Ichiro, Hotta Mituru, Yasuda yoshinori 2007 Shinyoujyurin bunka toha nanika,higashiajia no mori ga umidashita bunmei 2007 daisaaaaanbu touron Shinyoujyurin bunka to inasaku bunka o megutte. Tyuuoukoushinsyo, 1921. Tyuuoukouronsya, 200-309 (in Japanese)
- Sato Yo-Ichiro 2007 Kusunoki to setonaikai . Setonaikaijiten. nannansya, 46-47 (in Japanese)
- Sato Yo-Ichiro Jun,2007 Inasakun no kigen. Kagaku, Vol.77,No.6. Iwanami syoten, 618-620 (in Japanese)

### **[Editing]**

#### *[Editing / Co-editing]*

- Sato Yo-Ichiro (ed.) 2007 Nougyou ga kankyou o hakaisuru toki-yuurashia noukoushi to kankyou. ,

**[Papers]***[Original Articles]*

- Yosuke Kuroda, Yo-Ichiro Sato, Chay Bounphanousay, Yasuyuki Kono, Koji Tanaka 2007 Genetic structure of three *Oryza* AA genome species (*O. rufipogon*, *O. nivara* and *O. sativa*) as assessed by SSR analysis on the Vientiane Plain of Laos. . *Conserv Genet* (8) :149-158.
- Shin-ichi Kawakami, Kaworu Ebana, Tomotaro Nishikawa, Yo-ichiro Sato, Duncan A. Vaughan, and Koh-ichi Kadowaki 2007 Genetic variation in the chloroplast genome suggests multiple domestication of cultivated Asian rice (*Oryza sativa* L.).. *Genome* (50) :180-187.
- Hiroaki Tabuchi, Yo-Ichiro Sato, and Ikuo Ashikawa 2007 Mosaic Structure of Japanese Rice Genome Composed Mainly of Two Distinct Genotypes. *Breeding Science* 57(3) :213-221. (in Japanese)
- Sato Yo-Ichiro 2007 Chikyuuukankyou to yakihata . *Tohokugaku* (11) :50-55. (in Japanese)

**SATO, Yoshinobu**

Senior Project Researcher

**Born in 1973.****[Academic Career]**

Graduate School of Bioresource and Bioenvironmental Sciences, Kyushu University, D. Course (2003)  
 Graduate School of Bioresource and Bioenvironmental Sciences, Kyushu University, M. Course (2000)  
 Faculty of Agriculture, Kyushu University (1998)

**[Professional Career]**

Research Fellow, Research Institute for Humanity and Nature (2004)  
 Research Fellow, Institute of Tropical Agriculture, Kyushu University (2003)  
 Research Fellow, Japan Society for Promotion of Science (2000)

**[Higher Degrees]**

D. Agr. (Kyushu University, 2003)  
 M. Agr. (Kyushu University, 2000)

**[Fields of Specialization]**

Forest Hydrology

**[Academic Society Memberships]**

The Japan Society of Forestry  
 The Japan Society of Hydrology and Water Resources

**—Achievements—****[Papers]***[Original Articles]*

- Sato Y., X. Ma, M. Matsuoka and Y. Fukushima 2007 Impacts of human activity on long-term water balance in the middle-reaches of the Yellow River basin. Changes in Water Resources Systems: Methodologies to Maintain Water Security and Ensure Integrated Management. *IAHS Publication* 315 :85-91. (reviewed).
- Sato Y., X. Ma, J. Xu, M. Matsuoka, H. Zheng, C. Liu and Y. Fukushima 2007 Analysis of long-term water balance in the source area of the Yellow River basin. *Hydrological Processes* . (reviewed). (Published online 24 July 2007).

- Sato Y., X. Ma and Y. Fukushima 2007 Application of a reservoir operation model to the upper reaches of the Yellow River basin. *YRIS (Yellow River Studies) News Letter* 7 :9-12. (in Chinese)
- Sato Y., X. Ma, M. Matsuoka, X. Xu and Y. Fukushima 2007 Analysis of long-term water balance in the middle reaches of the Yellow River basin. *roceedings of the 3rd International Yellow River Forum (IYRF)* 1 :358-365.
- Sato Y., A. Onishi, Y. Fukushima, X. Ma, J. Xu, M. Matsuoka, H. Zheng and J. Chen 2007 Mechanisms of the water shortage of the Yellow River basin. *YRIS (Yellow River Studies) News Letter* 8 :3-5.

### [Research Presentations]

#### [Oral Presentation]

- Sato Y., Ma XY, Matsuoka M, Fukushima Y Impacts of human activity on long term water balance of the Yellow River basin. Changes in water resources systems: Methodologies to maintain water security and ensure integrated management.. IUGG2007, Jul 09, 2007, Perugia, Italy.
- Sato, Y., X. Ma, M. Matsuoka, Y. Fukushima Impact of the vegetation change in the Loess Plateau on long-term water balance in the middle reach of the Yellow River basin.. 2007Annual Conference of Japan Society of Hydrology and Water Resources, Japan , Jul 29, 2007, Nagoya University, Nagoya, Aichi Prefecture.

## SEKINO, Tatsuki

Associate Professor

**Born in 1969.**

### [Academic Career]

Department of Zoology, Faculty of Science, Kyoto University, D. Course (1998)

Department of Biology, Faculty of Science, Shinshu University, M. Sc. (1993)

Department of Biology, Faculty of Science, Shinshu University (1991)

### [Professional Career]

Associate Professor, Research Promotion Center, Research Institute for Humanity and Nature (2002)

Researcher, Research Division, International Lake Environmental Committee Foundation (2001)

COE Scientist, Center for Ecological Research, Kyoto University (1999)

### [Higher Degrees]

D. Sc. (University of Kyoto, 1998)

M. Sc. (University of Shishu, 1993)

### [Fields of Specialization]

Information Science

Limnology

Ecology

### [Academic Society Memberships]

Information Processing Society of Japan

Japanese Society of Limnology

Ecological Society of Japan

—Achievements—

**[Papers]***[Original Articles]*

- Sekino T., M. Genkai-Kato, Z. Kawabata, N. Melnik, N. Logacheva, O. Belykh, L. Obolkina, N. Bondarenko, T. Khodzher, L. Gorbunova, A. Tanichev, T. Yoshida, M. Kagami, T. Gurung, J. Urabe, M. Higashi and M. Nakanish 2007 Role of phytoplankton size distribution in lake ecosystems revealed by a comparison of the whole plankton community structure between Lakes Baikal and Biwa. *Limnology* 8 :227-232. DOI:10.1007/s10201-007-0218-0. (reviewed).
- Sekino, T. and Kubo, M. 2007 An analysis tool specialized for temporal information. *IPSJ Symposium Series* 2007(15) :183-188. (in Japanese) (reviewed).

**[Research Presentations]***[Oral Presentation]*

- Sekino, T. Temporal Based Information System. PNC and ECAI 2007 Annual Conference, Oct 18, 2007-Oct 20, 2007, University of California, Berkeley, USA.
- Sekino, T. and Kubo, M. An analysis tool specialized for temporal information. JINMONKON 2007, IPSJ Symposium, December 2007, Kyoto, Japan. (in Japanese)

*[Poster Presentation]*

- Sekino T., M. Nakamura, T. Ballatore, V. Muhandiki Knowledge-Base System for Lake Basin Management. 12th World Lake Conference, Dec 28, 2007-Nov 02, 2007, Jaipur India.

**SEO, Akihiro**

Project Researcher

**Born in 1972.****[Academic Career]**

Department of Botany, Graduate School of Science, Kyoto University (2002)

Department of Biology, Graduate School of Science, Kagoshima University (1998)

Faculty of Science, Kagoshima University (1996)

**[Professional Career]**

Research Fellow, Research Institute for Humanity and Nature (2006)

Postdoctoral Scientist, Kyoto University (2002)

**[Higher Degrees]**

D.Sc (Kyoto University, 2002)

M.Sc (Kagoshima University, 1998)

**[Fields of Specialization]**

Plant Taxonomy

Biogeography

**[Academic Society Memberships]**

The Botanical Society of Japan

The Japanese Society for Plant Systematics

The Society for the Study of Species

**—Achievements—****[Papers]***[Original Articles]*

- Riyou Tsujino, Kiyoshi Matsui, Atsushi Ushimaru, Akihiro Seo, Daiju Kawase, Hisami Uchihashi, Kenji Suzuki, Junko Takahashi, Takakazu Yumoto, Yasuhiro Takemon 2007 Invasion of the Mizorogaike Wetland by sika deer, and their effects on vegetation. *Japanese Journal of Conservation Ecology* 12 :20-27. (in Japanese) (reviewed).

**[Research Presentations]***[Oral Presentation]*

- Akihiro Seo, Wataru Shinohara, Noriaki Murakami, Takakazu Yumoto Geographical pattern of EST-SSR variation of *Machilus thunbergii* in Japan. The 71th Annual meeting of the Botanical Society of Japan, September 2007, Tokyo University of Science (Noda). (in Japanese)

**SHAMOV V. Vladimir**

Visiting Research Fellow

**Born in 1962.****[Academic Career]**

Dept. of the Terrestrial Hydrology, Geophysical Faculty, Far East State University, Vladivostok(1984)

**[Professional Career]**

Invited Research Fellow, Research Institute for Humanity and Nature, Kyoto. (2008.1.15-4.15)

Senior researcher at the Laboratory for Hydrology and Hydrogeology, Institute for Water and Ecology Problems, Far Eastern Branch of RAS, Khabarovsk. (2007)

Scientific Activity Coordinator (Scientific Secretary in Institute), Institute for Water and Ecology Problems, Far Eastern Branch of RAS, Khabarovsk. (2004)

Senior Researcher at the Laboratory for Mathematical Modelling of Natural Processes, Institute for Water and Ecology Problems, Far Eastern Branch of RAS, Khabarovsk. (1995)

Researcher at the Laboratory for Mathematical Modelling of Natural Processes, Institute for Water and Ecology Problems, Far Eastern Branch of RAS, Khabarovsk. (1992)

Junior Researcher at the Laboratory for Mathematical Modelling of Natural Processes, Institute for Water and Ecology Problems, Far Eastern Branch of RAS, Khabarovsk. (1987)

Junior Researcher at the Laboratory for Hydrology, Institute for Water and Ecology Problems, Far Eastern Branch of RAS, Khabarovsk. (1984)

**[Higher Degrees]**

Ph.D, Terrestrial Hydrology and Water Resources(Institute for Geography Siberian Branch Russ. Academy of Sciences, Irkutsk, 1994)

M, Sc., Terrestrial Hydrology, (Far East State University, Vladivostok, 1984)

**[Fields of Specialization]**

terrestrial hydrology

**[Academic Society Memberships]**

a corresponding member of Russian Academy of Natural Sciences

**—Achievements—****[Books]***[Chapters/Sections]*

- Kott F.S., Shamov V.V. & Zozoulina V.E. Dec,2007 Trace metals in deposits of the Lower Amur lakes (behavior and forms). Ibid. Dal'nauka Publ., Vladivostok, pp.100-111. (in Russian)
- Shamov V.V. & Kim V.I. Dec,2007 To the evaluation of the water-regulation role of the Amur valley lakes in different water conditions. Biogeochemical and hydroecological characteristics of terrestrial and aquatic ecosystems.. Dal'nauka Publ., Vladivostok, pp.139-143. (in Russian)

**[Papers]***[Original Articles]*

- Levshina S.I., Shamov V.V. & Kim V.I. May,2007 Organic matter in the water of lakes near the Lower Amur floodplain. *Water Resources*. 34(5) :563-570. (reviewed).

**[Research Presentations]***[Oral Presentation]*

- Shamov V.V. A concept of organizing the experimental research for extremal hydrometeorological and geodynamic processes in the South Far East.. XIII meeting of geographers of Siberia and Far East., Nov 30,2007, Irkutsk.. (in Russian)

*[Poster Presentation]*

- Shamov V.V. & B.I. Gartsman. About modernization of standard hydrological monitoring network. XIII meeting of geographers of Siberia and Far East., Nov 30,2007, Irkutsk. (in Russian)

**SHIRAIWA, Takayuki**

Associate Professor

**Born in 1964.****[Academic Career]**

Division of Environmental Structure, Graduate School of Environmental Sciences, Hokkaido University, D. Course (1990)

Division of Environmental Structure, Graduate School of Environmental Sciences, Hokkaido University, M. Course (1989)

Department of Geography, Faculty of Education, Waseda University (1987)

**[Professional Career]**

Associate Professor, Research Institute for Humanity and Nature (2005)

Associate Professor, Institute of Low Temperature Science, Hokkaido University (2004)

Assistant Professor, Institute of Low Temperature Science, Hokkaido University (1990)

**[Higher Degrees]**

D. in Environmental Sci. (Hokkaido University, 1993)

M. in Environmental Sci. (Hokkaido University, 1989)

**[Fields of Specialization]**

Glaciology, Physical Geography, Sougou-Chikyu-Kankyogaku

**[Academic Society Memberships]**

The Japanese Society of Snow and Ice, The Association of Japanese Geographers, Japan Association for Quaternary Research, Japanese Geomorphological Union, International Glaciological Society

**—Achievements—****[Papers]***[Original Articles]*

- Yasunari T.J., T. Shiraiwa, S. Kanamori, Y. Fujii, M. Igarashi, K. Yamazaki, C.S. Benson and T. Hondoh 2007 Intra-annual variations in atmospheric dust and tritium in the North Pacific region detected from an ice core from Mount Wrangell, Alaska. *Journal of Geophysical Research* 112( D10208 ). (reviewed).
- Kohshima, S., N. Takeuchi, J. Uetake, T. Shiraiwa, R. Uemura, N. Yoshida, S. Matoba and M. A. Godoi 2007 Estimation of net accumulation rate at a Patagonian glacier by ice core analyses using snow algae. *Global and Planetary Change* 59 :236-244. (reviewed).
- Zwinger, T., R. Greve, O. Gagliardini, T. Shiraiwa, and M. Lyly 2007 A full stokes-flow thermo-mechanical model for firn and ice applied to the Gorshkov crater glacier, Kamchatka. *Annals of Glaciology* 45 :29-37. (reviewed).
- Matoba, S., S.V. Ushakov, K. Shimbori, H. Sasaki., T. Yamasaki, A.A. Ovsyannikov, A.G. Manevich, T.M. Zhidelleva,, S. Kutuzov, Y.D. Muravyev and T. Shiraiwa 2007 The glaciological expedition to Mount Ichinsky, Kamchatka, Russia. *Bulletin of Glaciological Research* 24 :79-85. (reviewed).
- Solomina, O., G. Wiles, T. Shiraiwa and R. D'Arrigo 2007 Multiproxy records of climate variability for Kamchatka for the past 450 years. *Climate of the Past* 3 :119-128. (reviewed).
- Muravyev, Y.D., A.A. Ovsyannikov and T. Shiraiwa 2007 Activity of the Northern Volcano Group According to Drilling Data in the Ushkovsky Crater Glacier, Kamchatka. *Journal of Volcanology and Seismology* 1 :47-57. (reviewed).

**[Research Presentations]***[Oral Presentation]*

- Shiraiwa, T. Amur-Okhotsk Project: How we protect the "Giant Fish-Breeding Forest" ?. Second Far Eastern International Economic Forum, Sep 19, 2007, Khabarovsk, Russia.

**SIRINGAN, Fernando Pascual**


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Visiting Research Fellow

**Born in 1962.**

**—Achievements—****[Papers]***[Original Articles]*

- Lagmay, A.M.F., Siringan, F.P., Rodolfo, K.S., Uy, H., Remotigue, C., Zamora, P., Lopus, M., Rodolfo, R., and Ong, J. 2007 Geology of the Maraunot notch, Pinatubo Crater, Philippines. *Bulletin of Volcanology* 69(7) :797-809.
- Mateo, Z.R.P., and Siringan, F.P. 2007 Tectonic control of high-frequency Holocene delta switching and fluvial migration in Lingayen Gulf bayhead, northwestern Philippines. *Journal of Coastal Research*

23(7) :182-194.

- Fernando, A.G., Peleo-Alampay, A.M., Francisco, E.M., Crisologo, E.J., Collado, M.E., & Siringan, F.P. 2007 Calcareous nannofossils from Opol Formation, Bukidnon Province (Northern Mindanao) Philippines. *Journal of the Geological Society of the Philippines* 63(1&2) :39-50.

## SUZUKI, Arata

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Project Researcher

**Born in 1974.**

### [Professional Career]

Research Fellow, Research Institute for Humanity and Nature(2007)

Research Fellow, University of Tokyo (2006)

Research Fellow, Osaka University (2006)

Research Fellow, JSPS (2003)

### [Higher Degrees]

D.Agr (Kyoto University)

M.Agr (Kyoto University)

### —Achievements—

#### [Research Presentations]

##### [Poster Presentation]

- Suzuki, A.A., Saitoh, T., Sone, K., Taneda, H., Yamagishi, H., Terashima, I. Leaf structure and function in relation to branching order. . Phenotypic plasticity in response to environmental changes: Scaling from the molecular to ecosystem levels, Oct 20,2007-Oct 23,2007, Nikko, Tochigi, Japan.

## TA, Wanquan

---

Visiting Researcher

**Born in 1969.**

### [Professional Career]

Assistant Research Fellow, Lanzhou Institute of Desert Research, Chinese Academy of Sciences. (1998-2001)

Associate Research Professor, Cold and Arid Regions Environmental and Engineering Research Institute, Chinese Academy of Sciences. (2001-2003)

Research Professor, Cold and Arid Regions Environmental and Engineering Research Institute, Chinese Academy of Sciences. (2003-)

Doctoral Advisor, Professor, Cold and Arid Regions Environmental and Engineering Research Institute, Chinese Academy of Sciences. (2007-)

### —Achievements—

#### [Papers]



*[Original Articles]*

- Wanquan Ta, Zhibao Dong 2007 Simulation on sand grain/bed collision mechanism. *Cascade collision and ejection (1)* 89 :348-357.
- Wanquan Ta 2007 Study of the energy abrasion rates of five soil types subject to oblique impacts. *Geoderma 2007* 140 :97-105.
- Wanquan Ta 2007 Scratching technique for the study and analysis of soil surface abrasion mechanism. *Geomorphology 2007* 92 :1-11.
- Wanquan Ta, Honglang Xiao, Zhibao Dong 2007 . .Long-term morphodynamic changes of a desert reach of the Yellow River following upstream large reservoir' s operation. 2008, 97:249-259.

**TACHIMOTO, Narifumi**

Director-General

**Born in 1940.****[Professional Career]**

Director-General, Research Institute for Humanity and Nature(2007-)

Dean, Graduate School of Global Humanics, Chubu University(2003)

Dean, Graduate School of International Studies and College of International Studies, Chubu University(2001)

Professor, College of International Studies, Chubu University(2001)

Director, Center for Southeast Asian Studies, Kyoto University(1998)

Professor, Center for Southeast Asian Studies, Kyoto University(1980)

Cultural Attaché, Embassy of Japan, Jakarta(1977)

**[Higher Degrees]**

Ph. D., Anthropology(University of Chicago, 1974)

M. A., Sociology(Kyoto University, 1967)

**[Fields of Specialization]**

Humanics

Anthropology

Sociology

SEA Area Studies

**[Awards]**

The Purple Ribbon Medal(2003)

**—Achievements—****[Research Presentations]***[Invited Lecture / Honororary Lecture / Panelist]*

- TACHIMOTO Narifumi Futurability of Humanosphere Toward Global Humanics of the Environment. The First Kyoto University-LIPI Southeast Asian Forum: Sustainable Humanosphere in Indonesia, Nov 26,2007-Nov 27,2007, Gedung Widayagraha Lt. 1, LIPI, JAKARTA.
- TACHIMOTO Narifumi What is the philosophy and aims of RIHN to tackle with global and local environmental problem?. International Symposium and Workshop on Current Problems in Groundwater

Management and Related Water Resources Issues., Dec 03, 2007–Dec 04, 2007, Ramada Bintang Hotel Kuta.

## TAKAHASHI, Atsuhiko

Senior Project Researcher

**Born in 1971.**

### [Academic Career]

Department of Earth and Planetary Science, Graduate School of Science, Nagoya University, D. Course (2003)

Department of Earth and Planetary Science, Graduate School of Science, Nagoya University, M. Course (1999)

Faculty of Science, Tohoku University (1997)

### [Professional Career]

Project Senior Researcher, Research Institute for Humanity and Nature (2006)

Research Fellow, Research Institute for Humanity and Nature (2003)

### [Higher Degrees]

D.Sc. (Nagoya University, 2004)

M.Sc. (Nagoya University, 1999)

### [Fields of Specialization]

Boundary Layer Meteorology

### [Academic Society Memberships]

Meteorological Society of Japan

The Japan Society of Hydrology and Water Resources

## —Achievements—

### [Research Presentations]

#### [Oral Presentation]

- Takahashi, A. Kaki no koudo-kougen ni-okeru sekiun-tairyū to taiki-suijouki-ryou no nichu-henka. Japan Society of Hydrology and Water Resources, Jul 25, 2007, Nagoya. (in Japanese)
- Takahashi, A. Vertical mixing of water vapor between the atmospheric boundary layer and free atmosphere over Changwu, the Loess Plateau of China. International Workshop on Semi-Arid Land Surface-Atmosphere Interaction, Aug 09, 2007, Lanzhou, China .

#### [Poster Presentation]

- Takahashi, A. Kaki no koudo-kougen-nanbu de kansoku sareta taiki-kyoukai-sou to jiyū-taiki-kan no suiyouki-koukan-ryou no nichu-nichu-henka,. Meteorological Society of Japan, May 15, 2007, Tokyo. (in Japanese)

## TAKASHIMA, Hisahiro

Senior Project Researcher

**Born in 1978.****[Academic Career]**

B.S., Science, Ibaraki University, Ibaraki, JAPAN

M.S., Doctorate course, Graduate School of Environmental Earth Science, Hokkaido University, Sapporo, Hokkaido, JAPAN

Ph.D., Graduate School of Science, Kyoto University (Science)

**[Higher Degrees]**

Ph.D., Graduate School of Science, Kyoto University (Science)

**[Academic Society Memberships]**

American Geophysical Union, Meteorological Society of Japan, The Japan Society of Atmospheric Chemistry

**—Achievements—****[Books]***[Authored/Co-authored]*

- Takashima, H. 2007 An observational study of ozone variation in the tropical tropopause layer. Doctor's thesis of Kyoto University.

**[Papers]***[Original Articles]*

- Takashima, H., and M. Shiotani 2007 Ozone variation in the tropical tropopause layer as seen from ozonesonde data. *J. Geophys. Res.* 112. (reviewed).D11123, doi:10.1029/2006JD008322.
- Hasebe, F., M. Fujiwara, N. Nishi, M. Shiotani, H. Voemel, S. Oltmans, H. Takashima, S. Saraspriya, N. Komala, and Y. Inai 2007 In situ observations of dehydrated air parcels advected horizontally in the Tropical Tropopause Layer of the western Pacific. *Atmospheric Chemistry and Physics* 7 :803-813. (reviewed).

**[Research Presentations]***[Poster Presentation]*

- Takashima, H., M. Shiotani Ozone variation in the tropical tropopause layer as seen from ozonesonde data. The 2007 AGU Fall Meeting, Oct 10, 2007–Oct 14, 2007, San Francisco, CA, USA.

**TAKASO, Tokushiro**

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Professor

**Born in 1954.****[Academic Career]**

Graduate School of Science, Tokyo Metropolitan University

**[Professional Career]**

Professor, Tropical Biosphere Research Center, University of the Ryukyus

**[Higher Degrees]**

Ph. D.

**[Fields of Specialization]**

Plant morphology

### [Academic Society Memberships]

Botanical Society of Japan

### —Achievements—

#### [Research Presentations]

##### [Poster Presentation]

- Kimoto Y., M. Nakagawa and T. Takaso Comparative anatomy of anther, ovule, and seed development of Staphyleaceae. The 71th Annual Meeting of the Botanical Society of Japan, Sep 07, 2007–Sep 09, 2007, Tokyo Univ. of Science, Noda city. (in Japanese)
- M. Nakagawa, Y. Kimoto and T. Takaso . The 55th Annual Meeting of Ecological Society of Japan, Mar 14, 2008–Mar 17, 2008, Fukuoka Convention Center, Fukuoka. (in Japanese)

## TANAKA, Takuya

Visiting Researcher

Born in 1966.

#### [Academic Career]

Division of Environmental Science & Technology, Faculty of Agriculture, Kyoto University, D. Course (1999)

Department of Forestry, Faculty of Agriculture, Kyoto University, M. Ag (1995)

Department of Forestry, Faculty of Agriculture, Kyoto University (1992)

#### [Professional Career]

Researcher, Research Institute for Humanity and Nature (2006)

Technician, Research Institute for Humanity and Nature (2004)

Research Fellow, Research Institute for Humanity and Nature (2001)

School-affairs assistance member, Center for Ecological Research, Kyoto University (1999)

#### [Higher Degrees]

M. Ag. (Kyoto University, 1995)

#### [Fields of Specialization]

Environmental Science

#### [Academic Society Memberships]

Society of Environmental Science

Center for Environmental Information Science

Association of Rural Planning

### —Achievements—

#### [Papers]

##### [Original Articles]

- T. Hosono, T. Nakano, A. Igeta, I. Tayasu, s, and S. Yachi, 2007 Impact of fertilizer on a small watershed of Lake Biwa: use of sulfur and strontium isotopes in environmental diagnosis. *Science of*

*the Total Environment* 384 :342-354. (reviewed).

## TANIGUCHI, Makoto

---

Associate Professor

### Born in 1959.

#### [Academic Career]

University of Tsukuba, Japan Ph.D. Hydrology (1987)

University of Tsukuba, Japan M.S. Hydrology (1984)

University of Tsukuba, Japan B.S. Geosciences (1982)

#### [Professional Career]

Research Institute for Humanity and Nature, Associate Professor (2003 - 2007)

Department of Earth Sciences, Nara University of Education, Professor (2000 - 2003)

Department of Earth Sciences, Nara University of Education, Associate Professor (1993 - 2000)

Department of Earth Sciences, Nara University of Education, Research Associate (1988 - 1990)

Division of Water Resources, CSIRO, Australia, Visiting Scientist (1987 - 1988)

#### [Higher Degrees]

D.Sc (The University of Tsukuba, 1987)

M.Sc. (The University of Tsukuba, 1984)

#### [Fields of Specialization]

Environmental dynamic analysis

Hydrology/Weather/Oceanic physics

#### [Academic Society Memberships]

American Geophysical Union

International Association of Hydrological Sciences

International Association of Hydrogeology

Japanese Association of Groundwater Hydrology

Japanese Association of Hydrological Science

Japan Society of Engineering Geology

The Japan Society of Hydrology and Water Resources

The Association of Japanese Geographers

The Japanese Society of Limnology

#### [Awards]

Award of 7th Japanese Association of Limnology (Yoshimura Prize, 2005)

Research award from the Association of Japanese Geographers (1987)

### —Achievements—

#### [Papers]

##### [Original Articles]

- Taniguchi, M., T. Ishitobi and S. Kasahara 2007 Infrared measurements to evaluate groundwater discharge in the coastal zone. *IAHS Pub* 316 :22-26. (reviewed).

- Taniguchi, M., J. Chen and Y. Fukushima 2007 The hydrological impact zone in the lower reaches of the Yellow River : a new concept for water resources issues. *IAHS Publ* 315 :199–205. (reviewed).
- Taniguchi, M., T. Ishitobi, W. C. Burnett and J. Shimada 2007 Comprehensive evaluation of the groundwater-seawater interface and submarine groundwater discharge. *IAHS Publ* 312 :86–92. (reviewed).
- Taniguchi, M. Uemura, T., Jago-on, K. 2007 Combined effects of urbanization and global warming on subsurface temperature in four Asian cities. *Vadose Zone Jour* 6(3) :591–596. (reviewed).
- Taniguchi, M., T. Ishitobi, W. C. Burnett, and G. Wattayakorn 2007 Evaluating ground water - sea water interactions via resistivity and seepage meters. *Ground Water* 45(6) :729–735. (reviewed).
- Chen, J., Y. Fukushima and M. Taniguchi 2007 Groundwater and its association with sustainability of agriculture in the North China Plain. *IAHS Publ* 315 :258–265. (reviewed).
- Ishitobi, T., M. Taniguchi, Y. Umezawa, S. Kasahara, S. Onodera, M. Hayashi, K. Miyaoka and M. Hayashi 2007 Investigation of submarine groundwater discharge using several methods in the inter-tidal zone. *IAHS Publ* 312 :60–67. (reviewed).
- Yu Umezawa, T. Ishitobi, S. Rungsupa, S. Onodera, T. Yamanaka, C. Yosimizu, I. Tayasu, T. Nagata, G. Wattayakorn, M. Taniguchi 2007 Evaluation of fresh groundwater contributions to the nutrient dynamics at shallow subtidal areas adjacent to metro-Bangkok. *IAHS Publ* 312 :169 –179. (reviewed).
- Shimada, J., D. Inoue, S. Satoh, N. Takamoto, T. Sueda, Y. Hase, S. Iwagami, M. Tsujimura, T. Ishitobi and M. Taniguchi 2007 Basin-wide groundwater flow study in a volcanic low permeability bedrock aquifer with coastal submarine groundwater discharge. *IAHS Publ.* 312 :75–85. (reviewed).
- Burnett, W.C., G. Wattayakorn, M. Taniguchi, H. Dulaiova, P. Sojisuporn, S. Rungsupa, and T. Ishitob 2007 Groundwater-derived nutrient inputs to the Upper Gulf of Thailand. *Continental Shelf Research* 27 :176 –190. (reviewed).
- Chen, J., M. Taniguchi, G. Liu, K. Miyaoka, S. Onodera, T. Tokunaga, and Y. Fukushima 2007 Nitrate pollution of groundwater in the Yellow River delta, China. *Hydrogeol Jour* . (reviewed).10.1007/s10040-007-0196-7.

### [Research Presentations]

#### [Oral Presentation]

- Makoto Taniguchi Comprehensive evaluations of groundwater/seawater interface. IUGG2007, July 2007, Perugia, Italy.
- Makoto Taniguchi Infrared measurements to evaluate groundwater discharge in the coastal zone. IUGG2007, July 2007, Perugia, Italy.
- Makoto Taniguchi Degradation of Groundwater in Asian Cities. AOGS2007, August 2007, Bangkok, Thai.
- Makoto Taniguchi Human and climate impacts on subsurface environments in Asia. Bali International Symposium and Workshop, December 2007, Bali, Indonesia .
- Makoto Taniguchi Human impacts on urban subsurface environment. Bali International Symposium and Workshop, December 2007, Bali, Indonesia.
- Makoto Taniguchi Effects of submarine groundwater discharge on seashell ecosystem in the coastal zone. Ocean Science 2008, March 2008, Orland, America .

## TANNO, Ken-Ichi

Senior Project Researcher

Born in 1971.

**—Achievements—****[Research Presentations]***[Oral Presentation]*

- Ken-Ichi Tanno Identifying domestication from charred *Triticum* spikelets from early farming sites in the Near East. 14th Symposium of the International Work Group for Palaeoethnobotany, Jun 17, 2007–Jun 23, 2007, Krakow, Poland.

**TERAMURA, Hirofumi**

---

Project Researcher

Born in 1977.

**[Academic Career]**

Department of Archaeology, Faculty of Letters, Okayama University (2000)

Graduate School of Humanities and Social Sciences (Master's Course), Okayama University (2002)

Graduate School of Humanities and Social Sciences (Doctor's Course), Okayama University (2005)

**[Professional Career]**

Instructor, Faculty of Culture and Information Science, Doshisha University (2005)

Project Researcher, Research Institute for Humanity and Nature (2007)

**[Higher Degrees]**

D. Lit (Okayama University, 2005)

M. Lit (Okayama University, 2002)

**[Fields of Specialization]**

Archaeology

**[Academic Society Memberships]**

Society of Archaeological Studies

Japan Society for Archaeological Information

GIS Association of Japan

**—Achievements—****[Research Presentations]***[Poster Presentation]*

- Hirofumi TERAMURA, Takao UNO, J.S. KHARAKWAL, Y. S. RAWAT, Toshiki OSADA and Akinori UESUGI. Photogrammetric Survey at Kanmer, Kachchh, Gujarat.. ICSAA (19th International Conference on South Asian Archaeology), Jul 02, 2007–Jul 06, 2007, The University of Bologna, Ravenna, Italy..

**TERASHIMA, Motoki**

---

Research Fellow

**Born in 1975.**

**[Academic Career]**

Graduate School of Environmental Earth Science, Hokkaido University, D.Course (2004)

Graduate School of Environmental Earth Science, Hokkaido University, M.Course (2000)

Faculty of Science, Toyama University (1998)

**[Professional Career]**

Research Fellow, Research Institute for Humanity and Nature (2005)

Research Fellow, Japan Society for the Promotion of Science (2003)

**[Higher Degrees]**

D. Environ. Earth Sci. (Hokkaido University, 2004)

M. Environ. Earth Sci. (Hokkaido University, 2000)

**[Fields of Specialization]**

Environmental Chemistry, Analytical Chemistry

**[Academic Society Memberships]**

The Chemical Society of Japan, Division of Colloid and Surface Chemistry, The Japan Society for Analytical Chemistry, Japan Society on Water Environment, Japanese Humic Substances Society, International Humic Substances Society

**—Achievements—**

**[Papers]**

*[Original Articles]*

- Terashima M., S. Tanaka and M. Fukushima Sep,2007 Coagulation characteristics of humic acid modified with glucosamine or taurine. *Chemosphere* 69 :240-246. (reviewed).

**TSUJINO, Riyou**

Project Researcher

**Born in 1976.**

**[Higher Degrees]**

D.Sc (Kyoto University, 2006)

**[Fields of Specialization]**

Forest Ecology

Plant-Animal Interaction Ecology

**[Academic Society Memberships]**

Ecological Society of Japan

Mammalogical Society of Japan

Mycological Society of Japan

**—Achievements—**

**[Papers]**



*[Original Articles]*

- Tsujino R, Yumoto T 2007 Spatial distribution patterns of trees at different life stages in a warm temperate forest. *Journal of Plant Research* 120 :687–695. (reviewed).
- Tsukaya H, Tsujino R, Ikeuchi M, Isshiki Y, Kono M, Takeuchi T, Araki T 2007 Morphological variation in leaf shape in *Ainsliaea apiculata* with special reference to the endemic characters of populations on Yakushima Island, Japan. *Journal of Plant Research* 120 :351–358. (reviewed).
- Hanya G, Kiyono M, Takafumi H, Tsujino R, Agetsuma N 2007 Mature leaf selection of Japanese macaques: effects of availability and chemical content. *Journal of Zoology* 273 :140–147. (reviewed).
- Aiba S, Hanya G, Tsujino R, Takyu M, Seino T, Kimura K, Kitayama K 2007 Comparative study of additive basal area of conifers in forest ecosystems along elevational gradients. *Ecological Research* 22 :439–450. (reviewed).

**UCHII, Kimiko**

Project Researcher

**Born in 1978.****[Academic Career]**

Ph.D., Center for Ecological Research, Kyoto University (2007)

M.Sc., Center for Ecological Research, Kyoto University (2004)

B.Sc., Faculty of Science, Kyoto University (2002)

**[Professional Career]**

Postdoctoral Researcher, Research Institute for Humanity and Nature (2007)

Research Assistant, Center for Ecological Research, Kyoto University (2006)

Research Assistant, Center for Ecological Research, Kyoto University (2005)

Research Assistant, Center for Ecological Research, Kyoto University (2004)

**[Higher Degrees]**

D.Sc. (Kyoto University, 2007)

M.Sc. (Kyoto University, 2004)

**[Fields of Specialization]**

Ecology

Microbial Ecology

**[Academic Society Memberships]**

Ecological Society of Japan

Japanese Society of Microbial Ecology

**[Awards]**

The 8th Ecological Research Award (2008)

**—Achievements—****[Papers]***[Original Articles]*

- Ryuji Yonekura, Koichi Kawamura, Kimiko Uchii 2007 A peculiar relationship between genetic diversity and adaptability in invasive exotic species: bluegill sunfish as a model species. *Ecological Research*

22(6) :911-919. (reviewed). The 8th Ecological Research Award.

- Takeshi Miki, Kazuaki Matsui, Taichi Yokokawa, Takaaki Nishida, Yuki Kobayashi, Kimiko Uchii 2007 Microbial pool and biodiversity. *Japanese Journal of Ecology* 57(3) :424-431. (in Japanese) (reviewed).
- Kimiko Uchii 2007 Does gut microbiota help animal adaptations to new environments?. *Japanese Journal of Ecology* 57(3) :407-411. (in Japanese) (reviewed).
- Kimiko Uchii, Noboru Okuda, Ryuji Yonekura, Zin'ichi Karube, Kazuaki Matsui, Zen'ichiro Kawabata 2007 Trophic polymorphism in bluegill sunfish (*Lepomis macrochirus*) introduced into Lake Biwa: evidence from stable isotope analysis. *Limnology* 8(1) :59-63. (reviewed).

### [Research Presentations]

#### [Oral Presentation]

- Kimiko Uchii, Zen'ichiro Kawabata Invasion of an exotic viral pathogen into freshwater ecosystems. 55th Annual Meeting of Japanese Society of Japan, Mar 14, 2008-Mar 17, 2008, Fukuoka. (in Japanese)
- Ryuji Yonekura, Koichi Kawamura, Kimiko Uchii Paradox between genetic diversity and phenotypic adaptability in invasive exotic species: bluegill sunfish as a model species. International Symposium on the Origin and Evolution of Natural Diversity, Oct 01, 2007-Oct 05, 2007, Sapporo, Japan.

## UCHIYAMA, Junzo

Associate Professor

**Born in 1967.**

### [Academic Career]

Graduate School of Human and Environmental Studies, University of Kyoto, D. Course (1997)

Department of Archaeology, University of Durham, M.A. Course (1996)

Graduate School of Human and Environmental Studies, University of Kyoto, M. Course (1993)

Department of Archaeology, Faculty of Literature, University of Tokyo, B.A. Course (1991)

### [Professional Career]

Associate Professor, Research Institute for Human and Nature (2003)

Associate Professor, Faculty of Humanities, Toyama University (2001)

Lecturer, Faculty of Humanities, Toyama University (1998)

### [Higher Degrees]

Ph. D. (The Graduate University for Advanced Studies, 2002)

M. A. (University of Durham, 1996)

M. A. (University of Kyoto, 1993)

### [Fields of Specialization]

Prehistoric Anthropology

Zooarchaeology

### [Academic Society Memberships]

The Society of Bio-Sophia Studies (executive director)

International Council for Archaeozoology

—Achievements—

**[Books]***[Chapters/Sections]*

- UCHIYAMA, Junzo Mar, 2008 Faunal Remains from T96 at the site of Irie-Naiko. Excavation Report for the site of Irie-Naiko 2. Shiga Prefecture Cultural Properties Protection Association, Ohtsu, Shiga, Japan, pp.148-162. (in Japanese)

**[Research Presentations]***[Oral Presentation]*

- UCHIYAMA, Junzo When People First Set out to the Sea: From the Perspective of Jomon Cultures in Kanto Area. Landscape and Living Beings II - Sea and the Sentient Beings. The 5th yearly Congress of Society of Biosophia Studies, Jun 22, 2007, Fujisawa, Kanagawa, Japan. (in Japanese)
- UCHIYAMA, Junzo Why did shell-middens disappear?: Considerations on the drastic decrease of shell-middens in the Jomon Period. 73rd Annual Meeting of the Society for American Archaeology, March 2008-March 2008, Vancouver, Canada.

*[Invited Lecture / Honorary Lecture / Panelist]*

- UCHIYAMA, Junzo Creating neighbours or creating periphery? The long-term perspectives on the landscape history of the East Asian Inland Seas. The East Asian Mediterranean: Maritime Crossroads of Culture, Commerce, and Human Migration, Nov 02, 2007, Munich University, Munich, Germany.

**UESUGI, Akinori**

Project Researcher

Born in 1971.

**—Achievements—****[Research Presentations]***[Oral Presentation]*

- Akinori UESUGI Ceramic Style and Social Change with focus on evidence from Gumla. 19th International Conference on South Asian Archaeology, Jul 02, 2007-Jul 06, 2007, Bologna University, Ravenna, Italy.

**UMETSU, Chieko**

Associate Professor

**[Academic Career]**

Ph.D. (Agricultural and Resource Economics, University of Hawaii at Manoa, Honolulu Hawaii USA 1995),  
M.A. (International Relations, International University of Japan, Niigata, Japan, 1989)

**[Professional Career]**

Science & Math Teacher(0 level), Kiriani High School, Meru, Kenya, Japan Overseas Cooperation Volunteers, JICA. (1979)

Training Co-ordinator, Tohoku Branch Office, Japan International Cooperation Agency (JICA) (1982)

Visiting Fellow, Program on Environment, East-West Center, Honolulu, Hawaii. U.S.A. (1995)

Assistant Professor, The Graduate School of Science and Technology, Kobe University, Japan (1997)

Visiting Scholar, Environmental Studies, Research Program, East-West Center, Honolulu, Hawaii, U.S.A. (2001)

Associate Professor, Research Institute for Humanity and Nature, Inter-University Research Institute Corporation, National Institutes for the Humanities, Kyoto, Japan(2002)

### **[Higher Degrees]**

Ph. D. (University of Hawaii, 1995)

M.A. (International University of Japan, 1989)

### **[Fields of Specialization]**

Environmental and Resource Economics

Development Economics

Agricultural and Rural Development

Applied Microeconomics

### **[Academic Society Memberships]**

International Association of Agricultural Economists,

American Agricultural Economics Association (AAEA),

International Society for Ecological Economics (ISEE),

Agricultural Economics Society of Japan (AESJ), 1998–2009.

Society for Environmental Economics and Policy Studies (SEEPS),

Japan Society for International Development (JASID),

Japanese Society of Irrigation, Drainage and Rural Engineering (JSIDRE)

### **[Awards]**

IAAE-JB Research Award(2001)

Best Article Award from the Agricultural Economics Society of Japan (2003)

## **—Achievements—**

### **[Papers]**

#### *[Original Articles]*

- Ujjayant Chakravorty, Donna Fisher, Chieko Umetsu. 2007 “Environmental Effects of Intensification of Agriculture: The Livestock Production and Regulation,” with , volume 8, no.4, 315–336, 2007. *Environmental Economics and Policy Studies* 8(4) :315–336. (reviewed).
- Chieko Umetsu, K. Palanisami, Ziya Coşkun, Sevgi Donma, Takanori Nagano, Yoichi Fujihara, Kenji Tanaka. 2007 “Climate Change and Alternative Cropping Patterns in Lower Seyhan Irrigation Project: A Simulation Analysis” . *Journal of Rural Economics: Special Issue 2007* :567–574. (reviewed).

### **[Research Presentations]**

#### *[Oral Presentation]*

- Chieko Umetsu “Climate Change and Alternative Cropping Patterns in Lower Seyhan Irrigation Project: A Simulation Analysis with MRI-GCM and CCSR-GCM” . International Conference on Policy Modeling -EcoMod2007-, Jun 01,2007–Jun 02,2007, Brussels, Belgium.presented at the June 1–2, 2007,.
- Chieko Umetsu “Climate Change and Alternative Cropping Patterns in Lower Seyhan Irrigation Project: A Simulation Analysis” . 7th Biennial International Conference of the European Society for Ecological Economics (ESEE2007), “Integrating Natural and Social Sciences for Sustainability” , Jun 05,2007–Jun 08,2007, UFZ-Centre for Environmental Research in Leipzig, Germany. (in Japanese)
- Chieko Umetsu “Research Organization for Trans-disciplinary Research: The Experiences from RIHN Watershed Projects”. International Conference on Sustainability Science for Watershed Landscapes, Nov

13, 2007–Nov 14, 2007, East–West Center, Imin Conference Center, Honolulu, Hawaii, U.S.A..

## UMEZAWA, Yu

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Senior Project Researcher

**Born in 1974.**

### [Higher Degrees]

D.Sc(The University of Tokyo, 2004)

M.Sc. (The University of Tokyo, 2000)

### [Fields of Specialization]

Biogeochemistry, Marine Biology

### [Academic Society Memberships]

The Oceanographic Society of Japan

Japanese Coral Reef Society

American Society of Limnology and Oceanography

International Society for Reef Studies

### —Achievements—

#### [Papers]

##### [Original Articles]

- Umezawa Y., T. Miyajima, Y. Tanaka, T. Hayashibara and I. Koike 2007 Variation of internal d15N and d13C distribution and their bulk values in a brown macroalgae. *Journal of Phycology* (43) :437–448.. (reviewed).
- Miyajima T, Hata T, Y. Umezawa, Kayanne H, I. Koike 2007 Distribution and partitioning of nitrogen and phosphorus in a fringing reef lagoon of Ishigaki Island, northwestern Pacific. *Marine Ecology Progress Series* ( 312 ) :169–179. (reviewed).
- Umezawa Y., T. Ishitobi, S. Rungsupa, S. Onodera, T. Yamanaka, C. Yoshimizu, I. Tayasu, T. Nagata and M. Taniguchi Y 2007 Fresh groundwater contributions to the nutrient dynamics at shallow subtidal areas adjacent to a mega city, Bangkok. *IAHS publication* (341 ) :45–57.
- Ishitobi T., Taniguchi M., Umezawa Y., Kasahara S., Onodera S., Hayashi M., Miyaoka K., Hayashi M., & Miyake K 2007 Investigation of submarine groundwater discharge using several methods in the inter-tidal zone. *IAHS publication* 312 :60–67. (reviewed).

## WANG, Zongming

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Visiting Research Fellow

**Born in 1976.**

### [Academic Career]

Northeast Institute of Geography and Agricultural Ecology, Chinese Academy of Sciences, D. Course (2002–2005)

Institute of Soil and Water Conservation, Chinese Academy of Sciences, M. Course (1999–2002)  
 Department of Life Sciences, Inner Mongolia University (1995–1999)

### [Professional Career]

Invited Research Fellow, Research Institute for Humanity and Nature, Kyoto (September – December 2007)  
 Associate Professor, Northeast Institute of Geography and Agricultural Ecology, Chinese Academy of Sciences (2006)  
 Assistant Professor, Northeast Institute of Geography and Agricultural Ecology, Chinese Academy of Sciences (2003)

### [Higher Degrees]

D.Sc (Graduate School, Chinese Academy of Sciences, 2005)  
 M.Sc. (Graduate School, Chinese Academy of Sciences, 2002)

### [Fields of Specialization]

Remote sensing and GIS, Ecological modeling, Environmental changes

### [Academic Society Memberships]

Council member of Remote Sensing Society of Jilin Province, China (2006–2009)  
 Council member of Geography Society of Jilin Province, China (2007–2010)  
 Member of Friend of Nature, China (one of non-government organization for environmental protection)

### [Awards]

Chinese Academy of Sciences Dean Scholarship (2004)

## —Achievements—

### [Papers]

#### [Original Articles]

- Li Xiaoyan, Wang Zongming, Song Kaishan, Zhang Bai, Liu Dianwei and Guo Zhixing 2007 Assessment for salinized wasteland expansion and land use change using GIS and remote sensing in the west part of Northeast China. *Environmental Monitoring and Assessment* 131(10.1007/s10661-006-9487-z) :421-437. (reviewed).
- Wang Zongming, Zhang Bai, Song Kaishan, Liu Dianwei, Li Jianping, Huang Jian and Zhang Huilin Apr, 2007 Analysis of related factors for soil nutrients in croplands of typical agricultural county, Northeast Plain, China. *Journal of Water and Soil Conservation* 21(1009-2242 (2007) 02-0073-05) :73-77. (in Chinese) (reviewed).
- Wang Zongming, Chen Ming, Song Kaishan, Liu Dianwei, Zhang Bai and Li Fang Feb, 2008 Spatial and temporal analysis of wetland and cropland landscape gradient in process of conversion from wetland into cropland (CWC) in Bielahong Basin of Sanjiang Plain. *Journal of Water and Soil Conservation* 22(1009-2242 (2008) 01-0194-05) :194-198. (in Chinese) (reviewed).
- Wang Zongming, Zhang Bai, Song Kaishan and Liu Dianwei Feb, 2008 Extracting land use information based on topographical map and knowledge rules. *Geo-information Science* 10(SUN:DQXX.0.2008-01-013) :67-73. (in Chinese) (reviewed).
- Wang Zongming, Zhang, Bai, Song Kaishan and Liu Dianwei Mar, 2008 Landscape dynamics and its driving factors in Da'an County, Northeast China, since 1950s. *Chinese Geographical Sciences* 18(10.1007/s11769-008-0137-y) :137-145. (reviewed).

## WATANABE, Mitsuko

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Project Researcher

### Born in 1977.

#### [Academic Career]

School of Integrated Sciences, Graduate School of Humanities and Sciences, Nara Women's University, D. Course (2005)

Department of International Studies for History, Sociology and Geography, Graduate School of Humanities and Sciences, Nara Women's University, M. Course (2002)

Faculty of Letter, Nara Women's University (2000)

#### [Professional Career]

Project Researcher, Research Institute for Humanity and Nature (2006)

Technical Assistant, Research Institute for Humanity and Nature (2005)

Postdoctoral Research Fellow, Graduate School of Humanities and Sciences, Nara Women's University (2005)

Research Assistant, Nara Women's University, 21st century COE Program (2004)

Research Assistant, Graduate School of Humanities and Sciences, Nara Women's University (2002)

#### [Higher Degrees]

D.Sc. (Nara Women's University, 2005)

M.Litt. (Nara Women's University, 2002)

#### [Fields of Specialization]

Physical geography

#### [Academic Society Memberships]

Association of Japanese Geographers

Japan Association for Quaternary Research

Japanese Association for Arid Land Studies

Japanese Geomorphological Union

Seismological Society of Japan

### —Achievements—

#### [Papers]

##### [Original Articles]

- M. Watanabe 2007 The Terrestrial conditions of Oasis and Active Structure in Silk Road Region. *Project Report on an Oasis-region* 6(1) :5-9. (in Japanese)

#### [Research Presentations]

##### [Poster Presentation]

- M. Watanabe Land Cover Change in the Middle Reaches of Heihe River Basin, since 1980's. 2007 Annual meeting of Japanese Association for Arid Land, May 19, 2007-May 20, 2007, RIHN, Kyoto City-. (in Japanese)
- M. Watanabe Tectonic Landform and Development of the Fluvial Terrace along the Tailan River Flowing on the Southern Piedmont of the Tianshan Mountains.. The 2007 JAQUA meeting, Aug 31, 2007-Aug 31, 2007, Kobe Univ. Kobe City. (in Japanese)

## WATANABE, Tsugihiro

Professor

### Born in 1953.

#### [Academic Career]

Department of Agricultural Engineering, Graduate School of Agriculture, Kyoto University, D. Course (1983)

Department of Agricultural Engineering, Graduate School of Agriculture, Kyoto University, M. Course (1979)

Department of Agricultural Engineering, Faculty of Agriculture, Kyoto University (1977)

#### [Professional Career]

Professor, Research Institute for Humanity and Nature (2003)

Associate Professor, Research Institute for Humanity and Nature (2001)

Associate Professor, Arid Land Research Center, Tottori University (2001)

Associate Professor, College of Agriculture and Bioscience, Osaka Prefecture University (1995)

Associate Professor, Faculty of Agriculture, Kyoto University (1989)

Research Assistant, Faculty of Agriculture, Kyoto University (1984)

Research Fellow, Japan Society for Promotion of Science (1983)

#### [Higher Degrees]

D.Agr. (Kyoto University, 1989)

M.Sc. (Kyoto University, 1979)

#### [Fields of Specialization]

Irrigation and Drainage Engineering

#### [Academic Society Memberships]

Japanese Society of Irrigation

Drainage and Reclamation Engineering

Japan Society of Hydrology and Water Re-sources

Japanese Association for Water Resources and Environment

Japan Society of Civil Engineers

The Japanese Society for Arid Land Studies

International Commission on Irrigation and Drainage

International Water Re-sources Association

The Association of Rural Planning

### —Achievements—

#### [Papers]

##### [Original Articles]

- Akio Onishi · Masafumi Morisugi · Feng Shi · Hidefumi Imura · Tsugihiro Watanabe · Yoshihiro Fukushima Mar, 2008 Rilyuiki no nougiyouousuikouritusei ni kansuru kenkiyuu. *Journal of Arid Land Studies* 18(2) :45-55. (in Japanese)
- YOICHI FUJIHARA · SLOBODAN P. SIMONOVIC · FATIH TOPALOGLU · KENJI TANAKA · TSUGIHIRO WATANABE Mar, 2008 An inverse-modeling approach to assess the impacts of climate change in the Seyhan River basin Turkey. *Hydrological Sciences* 53(6) :1121-1136.



**[Review Articles]**

- Tsugihiko WATANABE Oct, 2007 Management of Paddy Field Conditions for Migratory Birds Linking Together with Environment Conservation. *Proceedings of 12th World Lake Conference* .
- Tsugihiko WATANABE Dec, 2007 Chilyu onndanka·Kikou hendou. *Suido no Chi* 175(12) :48.
- Tsugihiko WATANABE Dec, 2007 International Commission on Irrigation and Drainage. *Nihon ICID Kyoukai kaihō* 16. (in Japanese) The first page.
- Yuki Obase, Shin Hirose, Tsugihiko Watanabe Jan, 2008 Sanninn yoreba suido no chi Dai 1 kai [suido] to sono chi. *Tochikairiyo* 260 :28-33. (in Japanese)
- Tsugihiko WATANABE Mar, 2008 The field Report 「Shiroiumi」 heno nagare wo saguru. *Water and People* (4) :30-31. (in Japanese)

**[Research Presentations]****[Oral Presentation]**

- Tsugihiko watanabe SCIENTIFIC COLLOABORATION FOR SUSTAINABLE DEVELOPMNT. SECOND ANNUAL YOK-SUNY COLLABORATION SYMPOSIUM, May 23, 2007-May 25, 2007, Turkey.
- Tsugihiko Watanabe Management of Paddy Field Conditions for Migratory Birds Linking Together with Lake Environment Conservation. 12th World Lake Conference, Oct 28, 2007-Nov 02, 2007, New Delhi, India.

**[Invited Lecture / Honorary Lecture / Panelist]**

- Tsugihiko Watanabe Message from the INWEPF to the First Asia-Pacific Water Summit. First Asia-Pacific Water Summit, Dec 03, 2007-Dec 04, 2007, Ohita Beppu.

**YACHI, Shigeo**

Associate Professor

**Born in 1962.****[Academic Career]**

Department of Biophysics, Faculty of Science, Kyoto University, D. Sc (1995)  
 Department of Biophysics, Faculty of Science, Kyoto University, M. Sc. (1988)  
 Faculty of Science, Kyoto University, B. Sc. (1985)

**[Professional Career]**

Associate Professor, Research Institute for Humanity and Nature (2001- )  
 Associate Professor, Center for Ecological Research, Kyoto University (2001)  
 Research Associate, Kyoto University (1999-2001)  
 Postdoctoral Fellow, Laboratoire d' Ecologie, Ecole Normale Supérieure and Université Pierre et Marie Curie, CNRS-URA 258, Paris, France(1997-1999)  
 Lecturer (part time), Doshisha University, Kyoto, Japan (1993-1997)  
 Lecturer (part time), Osaka Institute of Technology, Osaka, Japan (1992-1997)

**[Higher Degrees]**

D. Sc. (Kyoto University, 1995)  
 M. Sc. (Kyoto University, 1988)

**[Fields of Specialization]**

Theoretical Ecology

**[Academic Society Memberships]**

The Ecological Society of Japan  
 the Japanese Society for Mathematical Biology  
 Society of Evolutionary Studies, Japan

### [Awards]

Miyaji Award, the Ecological Society of Japan, (1999)

### —Achievements—

#### [Papers]

##### [Original Articles]

- Hosono T., Nakano T., Igeta A., Tayasu I., Tanaka T., Yachi S. 2007 Impact of fertilizer on a small watershed of Lake Biwa: use of sulfur and strontium isotopes in environmental diagnosis. *Science of the Total Environment* 384 :342-354. (reviewed).

#### [Research Presentations]

##### [Oral Presentation]

- Shigeo YACHI Trade-off between resistance and resilience in the flood management policy in Japan. 55th Annual Meeting of the Ecological Society of Jsapan, Mar 14, 2008–Mar 17, 2008, Hukuoka. (in Japanese)

## YAMAMURA, Norio

Professor

### Born in 1947.

#### [Academic Career]

Faculty of Science, Kyoto University, B. Course (Graduated, 1969)  
 Graduate School of Science, Kyoto University, M. Course (Graduated, 1971)  
 Graduate School of Science, Kyoto University, D. Course (Accomplished credits for doctoral program, 1975)

#### [Professional Career]

Associate Professor, Saga Medical School, Faculty of Medicine, Saga University (1978)  
 Professor, Saga Medical School, Faculty of Medicine, Saga University (1995)  
 Professor, Center for Ecological Research, Kyoto University (1996)  
 Professor, Research Institute for Humanity and Nature (2007)

#### [Higher Degrees]

D.Sc (Kyoto University, 1977)  
 M.Sc. (Kyoto University, 1971)

#### [Fields of Specialization]

Mathematical Ecology  
 Evolutionary biology

#### [Academic Society Memberships]

Ecological Society of Japan  
 The Society of Population Ecology  
 Society of Evolutionary Studies Japan  
 Japanese Society for Mathematical Biology

International Union for the Study of Social Insects  
Japan Ethological Society

### [Awards]

Ecological Society of Japan Award (2007)

### —Achievements—

#### [Papers]

##### [Original Articles]

- Miki, T., M. Ueki, Z. Kawabata, and N. Yamamura 2007 Long-term dynamics of catabolic plasmids introduced to a microbial community in a polluted environment mathematical model. *FEMS Microbiology Ecology* 62 :211-221. (reviewed).
- Nakazawa, T., N. Ishida, M. Kato, and N. Yamamura 2007 Larger body size with higher predation rate. *Ecology of Freshwater Fish* 16 :362-372. (reviewed).
- Yamamura, N. 2007 Conditions under which plants help herbivores and benefit from predators through apparent competition. *Ecology* 88 :1593-1599. (reviewed).
- Nakazawa, T. and N. Yamamura 2007 Breeding migration and population stability. *Population Ecology* 49 :101-113. (reviewed).
- Kobayashi, Y. and N. Yamamura 2007 How to compute the effective size of spatiotemporally structured populations using separation of time scales. *Theoretical Population Biology* 71 :174-181. (reviewed).
- Yamamura, N., N. Fujita, M. Hayashi, Y. Nakamura, and A. Yamauchi 2007 Optimal phenology of annual plants under grazing pressure. *Journal of Theoretical Biology* 246 :530-537. (reviewed).
- Kobayashi, Y. and N. Yamamura 2007 Evolution of signal emission by uninfested plants to help nearby infested relatives. *Evolutionary Ecology* 21 :281-294. (reviewed).

## YAMANAKA, Hiroki

---

Project Researcher

**Born in 1979.**

### [Academic Career]

Center for Ecological Research, Kyoto University, Ph.D. Course (-2007)

Center for Ecological Research, Kyoto University, M. Course (-2004)

Faculty of Bioresources, Mie University, B. Course (-2002)

### [Professional Career]

Postdoctoral Researcher, Research Institute for Humanity and Nature(2007-)

Research Assistant, Center for Ecological Research, Kyoto University (2004, 2005, 2006)

### [Higher Degrees]

Ph.D. (Center for Ecological Research, Kyoto university, 2007)

M.Sc. (Center for Ecological Research, Kyoto university, 2004)

### [Fields of Specialization]

Ecology

Fisheries Science

**[Academic Society Memberships]**

Ecological Society of Japan

The Ichthyological Society of Japan

**—Achievements—****[Papers]***[Original Articles]*

- Hiroki Yamanaka, Yukihiro Kohmatsu, Masahide Yuma Aug, 2007 Difference in the hypoxia tolerance of the round crucian carp and largemouth bass: implications for physiological refugia in the macrophyte zone. *Ichthyological Research* 54(3) :308-312. (reviewed).

**YAMASHITA, Satoshi**

Senior Project Researcher

**Born in 1977.**

**[Academic Career]**

Graduate School of Bioagriculture, Nagoya University, D. course (2004)

Graduate School of Bioagriculture, Nagoya University, M. course (2001)

Faculty of Agriculture, Nagoya University (1999)

**[Professional Career]**

Research Fellow, RIHN (2005)

JSPS Research Fellow PD (2004)

JSPS Research Fellow DC2 (2003)

**[Higher Degrees]**

D. Agr. (Nagoya University, 2004)

M. Agr. (Nagoya University, 2001)

**[Fields of Specialization]**

Forest protection

Community Ecology

**[Academic Society Memberships]**

Japanese Forest Society

Ecological Society of Japan

Mycological Society of Japan

Entomological Society of Japan

The Japanese Society of Soil Zoology

**—Achievements—****[Papers]***[Original Articles]*

- Satoshi Yamashita, Tsutomu Hattori, Kuniyasu Momose, Michiko Nakagawa, Masahiro Aiba and Tohru Nakashizuka 2007 Effects of forest use on aphyllporaceous fungal community structure in Sarawak,

Malaysia. *Biotropica* . (reviewed).

### [Research Presentations]

#### [Oral Presentation]

- Satoshi Yamashita. Mushroom utilization and spore dispersal by mycophagous insect community.. Annual meeting of the Mycological Society of Japan, May 2007, Tukuba.
- Satoshi Yamashita, Tsutomu Hattori & Tohru Nakashizuka Community structure of bracket fungi (Polypores) and shelf fungi in Southeast Asia. Annual Meeting of Association for Tropical Biology and Conservation, July 2007, Morelia, Mexico .
- Satoshi Yamashita Community ecology of mycophagous insects. Annual Meeting of the Society of the Evolutionary Studies, September 2007, kyoto.
- Satoshi Yamashita, Tsutomu Hattori & Tohru Nakashizuka Community structure of bracket fungi and shelf fungi in Southeast Asia. Asian Mycology Congress, December 2007, Penang, Malaysia.

#### [Poster Presentation]

- Satoshi Yamashita & Masahiro Ichikawa Mushroom utilization by Iban, Eastern Sarawak, Malaysia. Annual Meeting of the Japanese Forest Society, April 2007, Fukuoka.
- Satoshi Yamashita, Tsutomu Hattori & Tohru Nakashizuka Community structure of Aphyllophoraceous fungi in Southeast Asia. Annual meeting of the Mycological Society of Japan, May 2007, Tukuba.

## YATAGAI, Akiyo

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Assistant Professor

**Born in 1968.**

### [Academic Career]

Department of Geoscience, University of Tsukuba, D. Course (1996)

Department of Geoscience, University of Tsukuba, M. Course (1992)

Department of Natural Sciences, 1st cluster of colleges, University of Tsukuba (1990)

### [Professional Career]

Assistant Professor, Research Institute for Humanity and Nature (RIHN) (2002) – present

Lecturer (temporary), Meiji University (2003) – present

COE Research Fellow, Disaster Prevention Research Institute, Kyoto University (2001)

Research Fellow, National Space Development Agency of Japan/Earth Observation Research Center (NASDA/EORC) (1995)

### [Higher Degrees]

Ph. D (Science) (University of Tsukuba, 1996)

M. Sc. (University of Tsukuba, 1992)

### [Fields of Specialization]

Atmospheric science

Climatology

Hydrology

Satellite Remote Sensing

Geography

### [Academic Society Memberships]

Meteorological Society of Japan  
 The Japan Society of Hydrology and Water Resources  
 The Association of Geographers  
 The American Meteorological Society  
 American Geophysical Union

## —Achievements—

### [Papers]

#### [Original Articles]

- Xie, P., A. Yatagai, M. Chen, T. Hayasaka, Y. Fukushima, C. Liu and Y. Song 2007 A Gauge-Based Analysis of Daily Precipitation over East Asia.. *J. Hydrometeor* 8 :607-627. (reviewed).
- Yatagai, A. 2007 Interannual Variation of Summertime Precipitation over the Qilian Mountains in Northwest China. *Bulletin of Glaciological Research* 24 :1-11. (reviewed).
- Yatagai, A. 2007 Development of a daily grid precipitation data in the East Mediterranean and its application for the ICCAP studies. *The final report of ICCAP* :33-38.
- Yatagai, A., N. Yamazaki and T. Kurino 2007 The products and validation of GAME reanalysis and JRA-25 Part 1: Surface Fluxes. *Hydrological Processes* 21 :2061-2073. (reviewed).
- Geethalakshmi, V., K. Palanisamy, A. Yatagai and C. Umetsu 2007 Impact of ENSO and the Indian Ocean dipole on the Northeast monsoon rainfall of Tamil Nadu state in India.. *Project report of Vulnerability and Resilience of Social-Ecological Systems* :83-96.

#### [Review Articles]

- Akiyo YATAGAI 2007 Analysis of hydrological cycle-Developments and utilization of gridded data sets-. *Tenki* 54 :11-14. (in Japanese) (reviewed).

### [Research Presentations]

#### [Oral Presentation]

- Akiyo YATAGAI Asian Precipitation -- Highly-Resolved Observational Data Integration Towards Evaluation of the Water Resources (APHRODITE's Water Resources). 21st Pacific Science Congress, Jun 16, 2007, Okinawa.
- Akiyo YATAGAI Development of a daily grid precipitation dataset over the East Mediterranean: extreme events in the analysis dataset. IUGG(International Union of Geodesy and Geophysics) , Jul 09, 2007, Perugia, Italy.
- Akiyo YATAGAI The isotopic composition of water vapor and the concurrent meteorological conditions around the northeast part of the Tibetan Plateau. IUGG(International Union of Geodesy and Geophysics) , Jul 12, 2007, Perugia, Italy.
- Akiyo YATAGAI Asian Precipitation - Highly Resolved Observational Data Integration Towards Evaluation of the Water Resources (APHRODITE's Water Resources). PEHRPP (Program for the Evaluation of High Resolution Precipitation Products) , Dec 04, 2007, Geneva (WMO), Switzerland..

## YUMOTO, Takakazu

Professor

Born in 1959.

### [Academic Career]

Faculty of Science, Kyoto University (1982),

Department of Botany, Graduate School of Science, Kyoto University, M. Course (1984),

Department of Botany, Graduate School of Science, Kyoto University, D. Course (1987)

### **[Professional Career]**

Research Fellow, Japan Society for the Promotion of Science (1987),

Assistant Professor, College for Liberal Arts, Kobe University (1989),

Lecturer, College for Liberal Arts, Kobe University (1992),

Lecturer, Faculty of Science, Kobe University (1992),

Associate Professor, Center for Ecological Research, Kyoto University (1994),

Professor, Research Institute for Humanity and Nature (2003)

### **[Higher Degrees]**

D. Sc (Kyoto University, 1987)

M.Sc (Kyoto University, 1984)

### **[Fields of Specialization]**

Ecology

### **[Academic Society Memberships]**

The Ecological Society of Japan,

The Botanical Society of Japan,

The Japan Society of Tropical Ecology,

Japan Society for African Studies,

The Society for the Study of Plant Species,

Japanese Association of Historical Botany,

Wildlife Conservation Society

## **—Achievements—**

### **[Papers]**

#### *[Original Articles]*

- Suzuki, S., Kitamura, S., Kon, M., Poonswad, P., Chuailua, P., Plongmai, K., Yumoto, T., Noma, N. Maruhashi, T., & Wohandee, P. 2007 Fruit visitation patterns of small mammals on the forest floor in a tropical seasonal forest in Thailand. *Tropics* 16 :17-29. (reviewed).
- Kawase, D., Yumoto, T., Hayashi K., Sato K. 2007 Molecular phylogenetic analysis of the infraspecific taxa of *Erigeron thunbergii* A. Gray distributed in ultramafic rock sites. *Plant Species Biology* 22 :107-115. (reviewed).
- Kitamura, S., Yumoto, T., Poonswad, P. & Wohandee, P. 2007 Frugivory and seed dispersal by Asian elephants, *Elephas maximus*, in a moist evergreen forest of Thailand. *Journal of Tropical Ecology* 23 :373-376. (reviewed).
- Sato, H., Yumoto, T. & Murakami, N. 2007 Cryptic species and host specificity in the ectomycorrhizal genus *Strobilomyces* (Strobilomycetaceae). *American Journal of Botany* 94 :1630-1641. (reviewed).
- Tsujino, R. & Yumoto, T. 2007 Spatial distribution patterns of trees at different life stages in a warm temperate forest. *Journal of Plant Research* 120 :687-695. (reviewed).

Visiting Research Fellow

**Born in 1973.****[Academic Career]**

Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences, Ph. D. Course (1998)

Department of Geography, East China Normal University, M. (1995)

Department of Geography, Fujian Normal University (1991)

**[Professional Career]**

Invited Research Fellow, Research Institute for Humanity and Nature (2005)

Associate Professor, Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences (2003)

Post-doctor, Institute of Environmental Sciences, Beijing Normal University (2001)

Assistant Researcher, Department of Geography, Hong Kong Chinese University (2001)

**[Higher Degrees]**

Ph. D. (Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences, 2001)

M. Sc. (East China Normal University, 1998)

**[Fields of Specialization]**

Hydrology, Water Resources Management

**[Academic Society Memberships]**

The Geographical Society of China

**—Achievements—****[Papers]***[Original Articles]*

- Zheng, H., Zhang, L., Liu, C., Fukushima, Y. 2007 Changes of streamflow in the headwater catchments of the Yellow River Basin since 1950s. *Hydrological Processes* :886-893. (reviewed).
- Chen, L., Zheng, H., Chen, Y., Liu, C. 2007 Baseflow Separation in the source area of Yellow River. *Journal of Hydrologic Engineering* . (reviewed). (in press) .
- Ye, Q., Zhu, L., Zheng, H. 2007 Glacier and lake variations in the Yamzhog Yumco Basin, southern Tibetan Plateau, from 1980 to 2000 using remote sensing and GIS technologies. *Journal of Glaciology* . (reviewed). (in press).
- Sato, Y., Ma, Y., Xu, J., Matsuoka, M., Zheng, H., Liu, C., and Fukushima, Y. 2007 Analysis of long term water balance in the source area of the Yellow River Basin. *Hydrological Processes* . (reviewed). (in press).
- Liu, C., Wang, Z., Zheng, H. 2007 HIMS and its modeling application. *Science in China* . (accepted).
- Zheng, H., Zhang, L., Liu, C., Sato, Y., Fukushima, Y. 2007 Sensitivity of streamflow to climate change in the headwaters of the Yellow River. *Water Resources Research* . (reviewed). (submitted).

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**ZHENG, Yuejun**



**Born in 1962.****[Academic Career]**

D. Sc. (The University of Tokyo, 1995)

**[Professional Career]**

Associate Professor, Research Institute for Humanity and Nature (2003)

Assistant Professor, The Institute of Statistical Mathematics (1995)

**[Higher Degrees]**

Ph. D

**[Fields of Specialization]**

Environmental Statistics

Environmental Economics

Social Survey Research

**[Academic Society Memberships]**

The Behaviormetric Society of Japan

Japan Statistical Society

Society for Environmental Economics and Policy Studies

Japanese Society of Forest Planning

International Institute of Sociology.

**—Achievements—****[Books]***[Authored/Co-authored]*

- Zheng Yuejun, Jim Mingzhe and Murakami M. 2007 Introduction to Data Science. Bensey Press, Tokyo, 1-229 (in Japanese)

*[Chapters/Sections]*

- Zheng Yuejun 2007 Transition of the Traditional values. Yoshino R. (ed.) Cross-national Comparison on East Asian Values: Data Science. Bensey Press, Tokyo, pp.89-107. (in Japanese)
- Zheng Yuejun, Yoshino R., and Murakami M. 2007 Attitudes towards Nature and Environment: Factor Analysis on the Formation of Environmental Consciousness. Yoshino R. (ed.) Cross-national Comparison on East Asian Values: Data Science. Bensey Press, Tokyo, pp.199-217. (in Japanese)

**[Papers]***[Original Articles]*

- Zheng Yuejun 2007 Analysis on Association between Environmental Consciousness and Pro-environmental Behavior. *The 35 Conference of The Behaviormetric Society of Japan* :243-244. (in Japanese)
- Zheng Yuejun 2007 Cross-national Comparison on the Norm Consciousness: Focusing on Attitudes towards Law in East Asia. *The 35 Conference of The Behaviormetric Society of Japan* :293-294. (in Japanese)
- Zheng Yuejun 2007 Discussing the Possibility of Environmental Harmony in East Asia Based on Cross-national Comparison. *2007 SEEPS Conference* :134-135. (in Japanese)
- Zheng Yuejun 2007 Developing A Area Sample Based on Street Maps for Social Survey without Frames: An Case Study of Consciousness Survey Conducted in Tokyo. *Proceedings of the Institute of Statistical Mathematics* 55 :311-326. (in Japanese) (reviewed).
- Horoiwa Akira, Yoshino Ryoza and Zheng Yuejun 2007 On the Data stability of Public Opinion Data of

Chinese Value Survey with Respect to Sampling method. *Proceedings of the Institute of Statistical Mathematics* 55 :285-310. (in Japanese) (reviewed).

- Tsuyuki Satoshi and Zheng Yuejun 2007 Analysis on Land Cover Change of Based on the Landsat Data in Zhejiang Province, China. *The 118th Conference of Japanese Society of Forest Science* 118 :410. (in Japanese)
- Zheng Y. 2007 Relationships between Human Activities and Atmospheric Environment in the East Asia. *Proc. Of Sino-German Workshop on Study of Eurasian Forest as a Pool of Carbon Dioxide* :19-20.



**Appendix 1** Number and Affiliation of Project Members

Project Number	Title of the project	Total	RIHN	University / College			Inter-University Research Institute	Public Institution	Private Institution	Post doctoral/ Graduate Student	Others	Overseas institution
				National	Public	Private						
1-2PR	Recent Rapid Change of Water Circulation in the Yellow River and Its Effects on Environment	59	8	24	0	0	0	2	0	9	0	16
1-3PR	Vulnerability and Resilience of Social-Ecological Systems	31	6	9	0	1	0	2	0	4	2	7
2-2PR	Sustainability and Biodiversity Assessment on Forest Utilization Options	147	4	30	1	11	0	28	0	60	6	7
2-3PR	Human Activities in Northeastern Asia and Their Impact on the Biological Productivity in North Pacific Ocean	100	7	39	1	4	1	1	0	17	3	27
2-4PR	Human Impacts on Urban Subsurface Environments	77	6	28	2	7	0	6	0	15	1	12
2-5PR	Agriculture and Environment Interactions in Eurasia: Past, Present and Future — The Ten-thousand-year History	85	11	25	4	9	6	6	3	1	10	10
2-7FS	Relationships between Human Activities and Atmospheric Changes, Possibilities of Harmonious Society for Environmental Issues in the East Asia	12	3	2	0	4	1	2	0	0	0	0
2-8PR	Environmental Changes and Infectious Diseases in Tropical Asia	25	1	6	0	1	0	0	0	2	2	13
2-9FS	Sustainable Food Production Concept Based on Evaluation of Traditional Agricultural Practices	22	2	12	2	0	0	1	0	0	3	2
2-10FS	Migration, Sojourn, and Possibilities in Cities	10	1	6	0	0	0	1	1	0	0	1
2-11FS	Environmental Problems and Human Security for Children as Our Future: Asia-Pacific Children and the Environment (ACE) Project	8	1	5	0	0	0	0	0	0	0	2
3-2PR	Interactions between Natural Environment and Human Social Systems in Subtropical Islands	43	8	18	3	4	0	1	2	5	0	2
3-3PR	Environmental Change and the Indus Civilization	50	9	26	1	4	1	0	0	0	0	9
3-4PR	Human Life, Aging, and Disease in High-Altitude Environments: Physio-medical, Ecological and Cultural Adaptation in the Three Great “Highland Civilizations”	34	4	18	2	3	1	1	0	1	2	2
3-5PR	Collapse and Restoration of Ecosystem Networks with Human Activity	52	7	20	0	6	3	5	2	9	0	0
3-6FS	A Study of Human Subsistence Ecosystems among Arab Societies: To Combat Livelihood Degradation	45	3	8	1	11	0	1	3	4	6	8

Project Number	Title of the project	Total	RIHN	University / College			Inter-University Research Institute	Public Institution	Private Institution	Post doctoral/ Graduate Student	Others	Overseas institution
				National	Public	Private						
3-7FS	The Effects of Economic Activities on the Ecosystem in the Caspian Sea and Cooperative Environmental Protection System	9	0	4	0	0	0	0	0	0	1	4
4-2FR	A Trans-Disciplinary Study on the Regional Eco-History in Tropical Monsoon Asia: 1945-2005	121	9	43	2	24	6	4	0	21	5	7
4-4FR	Neolithisation and Modemisation: Landscape History on East Asian Inland Seas	52	7	11	3	9	5	0	0	1	7	9
4-5FR	Historical Interactions between the Multi-cultural Societies and the Natural Environment in a Semi-arid Region in Central Eurasia	83	8	27	4	15	5	1	2	20	1	0
5-2FR	Interaction between Environmental Quality of the Watershed and Environmental Consciousness: With Reference to Environmental Changes Caused by the Use of Land and Water Resource	35	8	15	1	3	0	0	2	0	6	0
5-3FR	A New Cultural and Historical Exploration into Human-Nature Relationships in the Japanese Archipelago	129	6	34	11	27	3	7	1	22	18	0
5-4FR	Effects of Environmental Change on the Interactions between Pathogens and Humans	34	10	11	0	2	0	2	0	4	2	3
FS	Global Warming and the Human-Nature dimension in Siberia — The social adaptation to the changes of the terrestrial ecosystem with an emphasis on the water environment	30	1	20	0	0	0	4	1	2	2	0
	Total	1293	130	441	38	145	32	75	17	197	77	141

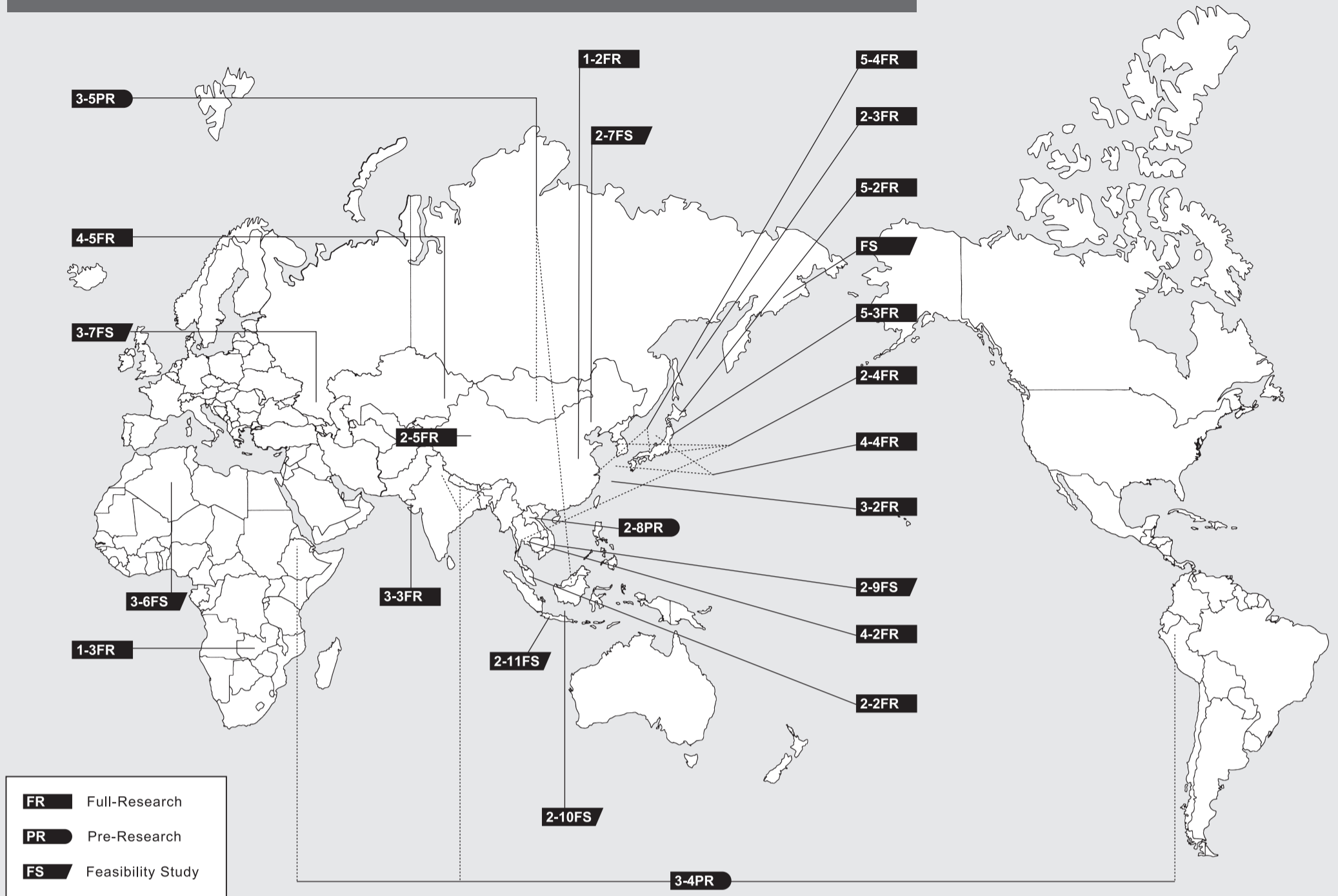
**Appendix 2 Research Fields of Project Members**

Project Number	Title of the Project	The number of projects members				Research background of project members
		Natural Science	Humanities and Social Science	Multidisciplinary	Total	
1-2FR	Recent Rapid Change of Water Circulation in the Yellow River and Its Effects on Environment	31	5	23	59	(Natural Sciences) Meteorology, Hydrology, Marine science, Local planning, Soil and water conservation, Cryosphere hydrology, Hydrogeography, Marine physics, Marine biology, Hydrogeology, Climatology, Marine biogeochemical cycle, Analysis on satellite information, Geology, Hydrometeorology, Forest hydrology, Environmental geology, Water circulation theory (Humanities and Social Sciences) Water resources, Global economy, Agro-economy, Chinese history, Chinese philosophy (Multidisciplinary) Environmental conservation, Hydraulics, Local planning, Geography, Water resources, Marine environmental study, Agricultural ecology, Agricultural hydrology, Environmental sociology, Ecohydrology
1-3FR	Vulnerability and Resilience of Social-Ecological Systems	14	12	5	31	(Natural Sciences) Crop science, Agricultural meteorology, Soil science, Agronomy, Soil science, Botany, Forest ecology, Remote sensing, Atmospheric physics, Meteorology, Mathematical ecology (Humanities and Social Sciences) Agricultural economics, Sociology, Economics, Development economics, Development study, Human geography, Cultural anthropology, African area studies, Resource & environmental economics (Multidisciplinary) Mathematics, Environmental geography, Human ecology, Geographical information, Environmental & health economics
2-2FR	Sustainability and Biodiversity Assessment on Forest Utilization Options	115	26	6	147	(Natural Sciences) Forestmanagement, Forestbiology, Animalecology, Forest ecology, Mathematical ecology, Plant ecology, Insect ecology, Insect pathology, Insect taxonomy, Plant physiology, Plant taxonomy, Plant systematics, Fungal ecology, Forest entomology, Forest hydrology (Humanities and Social Sciences) Environmental sociology, Anthropology, Forest management, Agricultureconomics, Silvicultural economics, Areal studies (area study) (Multidisciplinary) Forestpolitics, Silvicultural economis, Environmental information science, Landscape
2-3FR	Human Activities in Northeastern Asia and Their Impact on the Biological Productivity in North Pacific Ocean	72	12	16	100	(Natural Sciences) Paleoenvironmental reconstruction, Physical oceanology, Chemical oceanology, Biogeochemical oceanology, Meteorology, Marine technology, Marine biology, Environmental chemistry, Plant Ecology, Forest hydrology, Forest ecology, Silviculture, Hydrology, Numerical modelling, Snow and Ice chemistry, Glacial hydrology, Glacial biology, Glacial physics, Atmospheric chemistry, Geochemistry, Environmental Sciences, Geoenvironmental analytical chemistry, Geology, Pedology, Soil ecology, Soil geochemistry, Glacial climatology, Plankton science, Analytical chemistry, Surface colloidal science, Volcanology, Seismology, Paleo oceanology, Organic geochemistry, Paleo ecology, Forest science, Water resource engineering (Humanities and Social Sciences) Economic geography, Human geography, Economics, Politics, Agriculture, Archeology, International law (Multidisciplinary) GIS modelling, Geography, Marine mammal resources, Ecological management, Remote sensing
2-4FR	Human Impacts on Urban Subsurface Environments	35	24	18	77	(Natural Sciences) Geochemistry, Geology, Groundwater analysis, Hydrology, Isotope hydrology, Environmental analysis, Volcanology, Engineering geodegy, Gravity satellite analysis, Oceanography, Seismology, Earth system science, Meteorology, Physical hydrology, Geothermics (Humanities and Social Sciences) Anaysis of subsurface environment, Environment policy, Analysis of water resources, Demography, Social development study, Socio-economic analysis, Urban geography analysis, Geography, Environment conservation study, City planning, Environmental economics, Environmental engineerign, Material flow analysis, Analysis of urban environment, GIS, Historical geography, Cultural geography, Urban study, Politics (Multidisciplinary) Analysis of subsurface environment, Groudwater analysis, Analysis of subsurface temperature, Analysis of urban climate, Regional environment study, Dwelling space study, Hydrogeomorphology, Environment conservation study, Analysis of trace metals, Geography, Analysis of earth environment, Biogeochemistry
2-5FR	Agriculture and Environment Interactions in Eurasia: Past, Present and Future — The Ten-thousand-year History	41	34	10	85	(Natural Sciences) Bleeding, Genetics, Genetic resources, Genetic evolution, Genetic ecology, Applied zoological genetics, Palynology, Archaeobotany, Environmental archaeology, Tame plant origins, Plant breeding, Crop science, Weed ecology, Plant genetics resources, Botany, Plant cytogenetics, Cell biology, Plant ecology, Plant molecular genetics, Anthrology, Glacial biology, Geochemistry, Isotonic biological earth science, Agronomy, Molecular genetics, Ethnobotany (Humanities and Social Sciences) Archaeology, Linguistics, Chinese ancient history, Loulan history, Human geography, Japanese archaeology, Geography, Assyriology, Art history, Pre-Modern farming village history, Oriental history, Folklore, Regional planning, Business management for the middle mountains area, Cultural anthropology, Natural science, Archaeobotany, Ethnology (Multidisciplinary) Jomon archaeology, Hunter-gatherer archaeology, Historical ecology, Archaeology, Archaeobotany, Ethnology, Geography, Environmental archaeology, Ethnobotany, Mountainous-area Anthropology, Anthropology, Botany
2-7FS	Relationships between Human Activities and Atmospheric Changes, Possibilities of Harmonious Society for Environmental Issues in the East Asia	1	2	9	12	(Natural Sciences) Atmospheric physics (Humanities and Social Sciences) Applied ethics, Demography (Multidisciplinary) Medical statistics, Environmental policy, Forest environment, Environmental economics, Quantitative philology, Mathematical statistics, Ecological anthropology, Environmental statistics
2-8PR	Environmental Changes and Infectious Diseases in Tropical Asia	19	1	5	25	(Natural Sciences) Biological anthropology, Malariology, Public health, Microbiology, Environmental epidemiology, International health, Environmental microbiology, Parasitology, Tropical environmental health, Infectious disease epidemiology, Forest ecology, Infectious disease epidemiology, Climate change and diseases, Insect ecology, Tropical medicine, Epidemiology, Demography, Medical entomology (Humanities and Social Sciences) Medical sociology (Multidisciplinary) Health planning, Health policy, Behavioral epidemiology, International nursing, Biology, History of science, Human ecology, Tropical public health
2-9FS	Sustainable Food Production Concept Based on Evaluation of Traditional Agricultural Practices	15	4	3	22	(Natural Sciences) Plant genetics, Natural measurement science, Tropical ecology, Plant nutritional science, Ecological genetics, Genetic ecology, Plant physiology, Microbial ecology, Ecology (Humanities and Social Sciences) Religious sociology, Economics, Archaeology, Sociology (Multidisciplinary) Agronomy, Pedology, Anthropology
2-10FS	Migration, Sojourn, and Possibilities in Cities	2	5	3	10	(Natural Sciences) Remote sensing, Transportation planning (Humanities and Social Sciences) Marketing and distribution, Asian socioeconomic history, Study of religion, Sociology, Chinese intellectual history (Multidisciplinary) Chinese city theory, Architectural history, Urban history, Urban history in the east
2-11FS	Environmental Problems and Human Security for Children as Our Future: Asia-Pacific Children and the Environment(ACE) Project	3	0	5	8	(Natural Sciences) Human ecology, Ecological anthropology, Nutritional ecology, Human auxology (Humanities and Social Sciences) (Multidisciplinary) Asia-Oceania regional studies, Nutritional adaptation, Human security, Children's participation, Global environmental studies
3-2FR	Interactions between Natural Environment and Human Social Systems in Subtropical Islands	29	8	6	43	(Natural Sciences) Hydrology, Ecology, Chemistry, Botany, Ethology, Taxonomy, Morphology, Entomology, Oceanography, Phisiology (Humanities and Social Sciences) Economics, History, Ethnology, Sociology (Multidisciplinary) Environmental study, Agriculture, Forestry, Tourism, Ceramics, Textile
3-3FR	Environmental Change and the Indus Civilization	20	23	7	50	(Natural Sciences) Archaeology, Agriculture, Earthphysics, Earth science, Geology, Genetics, Glacial biology, Civil engineering, Climatolog, Seismology, Hydology, Geochronology, Physical geography, Geomorphology, Resource geography, Ecology (Humanities and Social Sciences) Archaeology, Indology, Linguistics, Cultural anthropology, History of west Asia, Economics (Multidisciplinary) DNA archaeology, Archaeo-zoology, Archaeo-botany, Ethnology, Archaeology, Plant genetics and evolution
3-4PR	Human Life, Aging, and Disease in High-Altitude Environments: Physio-medical, Ecological and Cultural Adaptation in the Three Great “Highland Civilizations”	14	9	11	34	(Natural Sciences) Cultural anthropology, Physical geography, Animal husbandry, Field medicine, Geriatrics, Geriatrics, Epidemiology, Forest resource management, Grassland science, Cardiology, Chrono-medicine, Study of nature, Meteorology, Climatology, Glaciology (Humanities and Social Sciences) Anthropology, Pastoral ecology, Agroecology, Ethnobotany, Ecology, Physical geography, Forest ecology, Human geography, Area studies, Ecology of water resource (Multidisciplinary) Archaeology, Primatology, Ethnobotany, Resource economics, Agrology, Agricultural management, Grassland science, Agricultural economics, Environmental history, Mountain anthropology
3-5PR	Collapse and Restoration of Ecosystem Networks with Human Activity	31	19	2	52	(Natural Sciences) Biogeochemistry, Stable isotope ecology, Environmental ecology, Entomogy, Insect ecology, Veterinary zoology, Forest ecology, Biological interaction, Grassland ecology, Interaction ecology, Soil science, Remote sensing, Theoretical ecology, Forestry (Humanities and Social Sciences) Agricultural economy, Ethonobotany, Anthropology, Insect ecology, Environmental sociology, Theoretical sociology, Geology, Economy, Politics, Physical environmental science, Environmental economy, Area study, Area development study, Sociology (Multidisciplinary) Area environmental science

Project Number	Title of the Project	The number of projects members				Research background of project members
		Natural Science	Humanities and Social Science	Multidisciplinary	Total	
3-6FS	A Study of Human Subsistence Ecosystems among Arab Societies: To Combat Livelihood Degradation	18	16	11	45	(Natural Sciences) Fungology, Bio-chemistry, Plant ecophysiology, Hydrology, Tree physiology, Urban planning, Forest ecology, Soil hydrology, Afforestation, Natural geography, Tree environmental physiology, Nutrient physiology, Information engineering, Forestry hydrology, Irrigation and drainage (Humanities and Social Sciences) History, Agro-economics, Development sociology, Cultural anthropology, Religious anthropology, Sociology, Developmental study, Archaeology (Multidisciplinary) Social anthropology, Architectonics, Architectural history, Environmental topography, Remote sensing, Afforestation, Geography, Animal science, Rural development, Cultural anthropology
3-7FS	The Effects of Economic Activities on the Ecosystem in the Caspian Sea and Cooperative Environmental Protection System	6	0	3	9	(Natural Sciences) Environmental chemistry, Marine ecosystem engineering, Marine environmental engineering, Geophysics (Humanities and Social Sciences) (Multidisciplinary) Environmental program
4-2FR	A Trans-Disciplinary Study on the Regional Eco-History in Tropical Monsoon Asia: 1945-2005	37	33	51	121	(Natural Sciences) Genetics, Nutritional ecology, Environmental science, Physical anthropology, Plant nutrition, Forest ecology, Ecology, Phycology, Fish ecology, Conservation of biological diversity, Tropical medicine, Tropical pedology, Tropical agronomy, Agriculture, Mother & child health, Ethno-science of soil, Geriatrics, Surgery, Public health (Humanities and Social Sciences) Modern life science, Archaeology, Museum anthropology, Sociology, Population study, Anthropology, Oriental history, Rural sociology, Cultural anthropology, Ethnology, Folk-lore, Folk-artifact, History, Historical anthropology, Historical geography (Multidisciplinary) Medicine, Medical anthropology, Nutritional epidemiology, Nutritional science, School health, Environmental sociology, Conservation ecology, Health education, Architectural anthropology, Plant domestication, Informatics, Plant genetics, Forest science, Forest policy & forest sociology, Forest ecology, Use of forest resources, Human ecology, Tropical public health, Resource use in the tropics, Agricultural ecology, Natural resource management, Public health, Crops conservation, Ethno-technology, Ethno-botany, Forestry, Ecological anthropology, Rural geography
4-4FR	Neolithisation and Modernisation: Landscape History on East Asian Inland Seas	7	40	5	52	(Natural Sciences) Geography, Palaeo-ethnobotany, Social engineering, Ichthyology, Palaeo-microbiology, Agricultural engineering, Landscape engineering (Humanities and Social Sciences) Landscape archaeology, Landscape history, Trade history, Archaeology, Socio-linguistics, Computer engineering, Food Science, Political science, Historical science, Prehistoric anthropology, Chinese archaeology, Chinese folklore, Medieval history, Korean archaeology, Ethology, Euro-Japan archaeology, Japanese archaeology, Japanese history, Cultural anthropology, Ethnology, Ethnology, Historical geography (Multidisciplinary) Linguistic information, Information culture, Prehistoric anthropology, Ecological anthropology, Archaeobotany
4-5FR	Historical Interactions between the Multi-cultural Societies and the Natural Environment in a Semi-arid Region in Central Eurasia	37	41	5	83	(Natural Sciences) Ice core analysis, Hydrology, Sedimentology, Remote sensing, Glacier biology, Glaciology, Climate change, Groundwater hydrology, Pedology, Dendrochronology, Forest ecology, Grassland ecology, Soil science, Architectural planning, Irrigation agriculture, Irrigation system, Synthesis of natural proxies and historical documents, Isotope hydrology, Water circulation (Humanities and Social Sciences) Politics, Ethnology, Pastoral nomadism, Chinese history, Archaeology, International relations on water resources, Oriental studies, Central Eurasian history, Social anthropology, Persian documents, Manchurian documents (Multidisciplinary) Agricultural Economy, Cultural anthropology, Environmental archaeology, Geography, Area studies
5-2FR	Interaction between Environmental Quality of the Watershed and Environmental Consciousness: With Reference to Environmental Changes Caused by the Use of Land and Water Resource	21	9	5	35	(Natural Sciences) Environmental sciences, Environmental engineering, Plant ecology, Forest hydrology, Forest ecology, Forest soil science, Ecology, Biogeochemistry, Geochemistry, Hydrology, Limnology (Humanities and Social Sciences) Social psychology, Environmental sociology, Environmental economics, Economics, Rural planning, Sociology (Multidisciplinary) Area Environmentology, Environmentology, Informatics, Social statistics
5-3FR	A New Cultural and Historical Exploration into Human-Nature Relationships in the Japanese Archipelago	67	55	7	129	(Natural Sciences) Stable isotope ecology, Volcano geology, Tephro-chronology, Environmental design, Archeology, Paleo-ecology, Paleo-biology, Ecology, Natural history, Physical anthropology, Natural geography, Population genetics, Vegetation history, Plant genetic resources, Botany, Plant phylogeny, Plant ecology, Plant taxonomy, Forest ecology, Anthropology, Ecological anthropology, Genetics, Animal phylogeny, Animal ecology, Chronology, Reproductive ecology, Paleo-environmental science, Molecular ecology, Molecular phylogeny, Theoretical ecology, Primatology, Primate ecology (Humanities and Social Sciences) Environmental economics, Environmental history, Paleo-lithic archeology, Linguistic ethnology, Archeology, Cultural geography, Ecological anthropology, Geography, Philosophy, Japanese modern history, Japanese medieval history, Cultural anthropology, Folklore, Ethnology, Primatology, History, Historical economics (Multidisciplinary) Crop sciences, Conservation ecology, Ecological anthropology, Paleo-environmental sciences
5-4FR	Effects of Environmental Change on the Interactions between Pathogens and Humans	25	3	6	34	(Natural Sciences) Environmental conservation, Bioinformatics, Environmental resource geology, Isotope geoscience, Fish ecology, Plant breeding, Plant ecology, Aquatic ecology, Ecology, Animal ecology, Nanotechnology, Agricultural sciences, Molecular ecology, Molecular biology, Sciences, Toxicology, Mathematical ecology, Ecosystem ecology, Microbial ecology (Humanities and Social Sciences) Environmental economics, Economics, Food culture (Multidisciplinary) Sanitary, Ecology, Health science, Medical science
FS	Global Warming and the Human-Nature dimension in Siberia –The social adaptation to the changes of the terrestrial ecosystem with an emphasis on the water environment	20	7	3	30	(Natural Sciences) Remote measurement, Marine physics, Limnology, River engineering, Hydrology, Meteorology, Climatology, Plant ecology, Forest meteorology, Ecology, Ecological model, Ecohydrology, Atmospheric model, Earth science, Isotope hydrology, Ethology, Civil engineering, Dendrochronology, Conservation ecology, Water and energy cycle, Forestry (Humanities and Social Sciences) Cultural anthropology, Descriptive linguistics, Civil engineering, Social anthropology, Russian economy (Multidisciplinary) Atmospheric chemistry, Meteorology, Ecohydrology
	Total	680	388	225	1293	

As of March 31, 2008

## Field of the Research Project (Country which is called in commonly)



## Full-Research

- 1-2FR** Recent Rapid Change of Water Circulation in the Yellow River and Its Effects on Environment  
○The Yellow River drainage basin, China
- 1-3FR** Vulnerability and Resilience of Social-Ecological Systems  
○Zambia; Sub-Saharan Africa
- 2-2FR** Sustainability and Biodiversity Assessment on Forest Utilization Options  
○Sarawak and Sabah, Malaysia; Yaku Island, a Mountainous of Abukuma region, Japan
- 2-3FR** Human Activities in Northeastern Asia and Their Impact on the Biological Productivity in North Pacific Ocean  
○The Amur River basin, Russia, China; the Sea of Okhotsk; northern North Pacific Ocean
- 2-4FR** Human Impacts on Urban Subsurface Environments  
○Tokyo; Osaka; Seoul; Bangkok; Jakarta; Taipei; Manila
- 2-5FR** Agriculture and Environment Interactions in Eurasia: Past, Present and Future —The Ten-Thousand-Year History  
○Eurasian Continent and Oceania
- 3-2FR** Interactions between Natural Environment and Human Social Systems in Subtropical Islands  
○Iriomote Island, Okinawa, Japan
- 3-3FR** Environmental Change and the Indus Civilization  
○Northwestern India
- 4-2FR** A Trans-Disciplinary Study on the Regional Eco-History in Tropical Monsoon Asia: 1945-2005  
○Laos; China; Thailand
- 4-4FR** Neolithisation and Modernisation: Landscape History on East Asian Inland Seas  
○The Japan Sea rim; the East China Sea rim
- 4-5FR** Historical Interactions between the Multi-cultural Societies and the Natural Environment in a Semi-arid Region in Central Eurasia  
○The Ili River and its surroundings, Central Eurasia
- 5-2FR** Interaction between Environmental Quality of the Watershed and Environmental Consciousness: With Reference to Environmental Changes Caused by the Use of Land and Water Resource  
○Shumarinai drainage basin, Hokkaido, and Wakayama, Japan
- 5-3FR** A New Cultural and Historical Exploration into Human-Nature Relationships in the Japanese Archipelago  
○Japanese Archipelago
- 5-4FR** Effects of Environmental Change on the Interactions between Pathogens and Humans  
○Lake Biwa, Japan; Shanghai, China

## Pre-Research

- 2-8PR** Environmental Changes and Infectious Diseases in Tropical Asia  
○Savannakhet Province, Laos; Bangladesh
- 3-4PR** Human Life, Aging, and Disease in High-Altitude Environments: Physio-medical, Ecological and Cultural Adaptation in the Three Great "Highland Civilizations"  
○Tibet; India; Bhutan; Nepal; Myanmar; Ethiopia; Peru
- 3-5PR** Collapse and Restoration of Ecosystem Networks with Human Activity  
○Mongolia; Sarawak, Malaysia

## Feasibility Study

- FS** Global Warming and the Human-Nature dimension in Siberia –The social adaptation to the changes of the terrestrial ecosystem with an emphasis on the water environment  
○Lena River basin, East Siberia
- 2-7FS** Relationships between Human Activities and Atmospheric Changes, Possibilities of Harmonious Society for Environmental Issues in the East Asia  
○Liaoning Province, Zhejiang Province, China
- 2-9FS** Sustainable Food Production Concept Based on Evaluation of Traditional Agricultural Practices  
○Vietnam; Thailand; Laos; Cambodia; Indonesia
- 2-10FS** Migration, Sojourn, and Possibilities in Cities  
○Jakarta; Southeast Asia
- 2-11FS** Environmental Problems and Human Security for Children as Our Future: Asia-Pacific Children and the Environment (ACE) Project  
○West Java, South Sulawesi, South Kalimantan, Indonesia; Solomon Islands
- 3-6FS** A Study of Human Subsistence Ecosystems among Arab Societies: To Combat Livelihood Degradation  
○Algeria; Sudan; Egypt; Saudi Arabia
- 3-7FS** The Effects of Economic Activities on the Ecosystem in the Caspian Sea and Cooperative Environmental Protection System  
○Caspian Sea region