

Annual Report 2010

Geography

**Department of Geography
Graduate School and Faculty of Urban Environmental Sciences
Tokyo Metropolitan University**

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1. Laboratory of Quaternary Geology and Geomorphology

1) Staff

Haruo YAMAZAKI Professor / D.Sc.
Geomorphology, Quaternary Science, Seismotectonics

Takehiko SUZUKI Professor / D.Sc.
Geomorphology, Quaternary Science, Volcanology

Masaaki SHIRAI Associate Professor / PhD (D.Sc.)
Sedimentology, Quaternary Geology, Marine Geology

2) Overview of Research Activities

We focus on various earth scientific phenomena and processes on the solid earth surface in order to prospect the futuristic view of environmental changes through the understanding the history and process of surface geology/landform development during the Quaternary period. The followings are some examples of our studies.

- 1) Plate tectonics: The Quaternary tectonics including the historical process of seismic and volcanic activity are our special interest along the plate collision zone.
- 2) Tephra study: Tephra means a generic term on the volcanic ejecta excluding lava-flow and related explosive deposits. We are trying to identify the source volcano, age of the eruption and the distribution of widespread tephra that have covered the Japanese Islands through the Pliocene, Pleistocene and Holocene.
- 3) Paleo-environment and natural hazards: On the basis of geomorphological and sedimentological studies, paleo-environmental change and natural hazards history are reconstructed.
- 4) Chronological studies: We are improving chronological efficiency of tephro-stratigraphy, radio-isotope activity, historical records, and so on through studies on these objectives.
- 5) Modeling: For understanding correlation between intra-surface processes (volcanism, faulting etc.) and land formation, studies on computer simulation are carried out.

3) List of Research Activities in FY2010

Peer-reviewed Articles

- Kakiuchi, Y., Tsutsumi, H., Takemura, K., Suzuki, T. and Murata, M. 2010. Uplift of fluvial terraces by activity of the Kamidera fault in the northern part of the Biwako-seigan fault zone. *The Quaternary Research* **49**: 219-231. (in Japanese with English abstract)
- Tamura, I., Takagi H. and Yamazaki, H. 2010. The Tanzawa-garnet pumice: Widely distributed 2.5 Ma tephra in the southern Kanto area, Japan. *The Journal of the Geological Society of Japan* **116**: 360-373. (in Japanese with English abstract)
- Oikawa, T., Furukawa, R., Geshi, N., Shoda, K., Tamura, I., Oishi, M. and Hoshizumi, H. 2010. Distribution and amount of ash fall from Asama Volcano on February 2nd, 2009 by questionnaire survey. *Bulletin of the Geological Survey of Japan* **61**: 233-243. (in Japanese with English abstract)
- Ueki, T. and Endo, K. 2010. Aims of special issue “Environmental change and tectonics around the base of newly defined Quaternary”. *The Quaternary Research* **49**: 271-274. (in Japanese)
- Ueki, T. and Kondo R. 2010. K-Ar age and paleomagnetic direction of a lava in the Minatomachi Formation, Rishiri Island, off north Hokkaido, Japan. *The Journal of the Geological Society of Japan* **116**: 437-440. (in Japanese with English abstract)
- Ueki, T. and Kondo R. 2010. K-Ar ages of Middle and Late Pleistocene lavas from the Rishiri Volcano, off northern Hokkaido, Japan. *The Journal of the Geological Society of Japan* **116**: 686-689. (in Japanese with English abstract)
- Murata, M. and Suzuki, T. 2011. Re-examination of the stratigraphy of Shirakawa pyroclastic flow deposits using correlation of an early Pleistocene tephra in the Obama Formation of the Inubo Group, Choshi area, central Japan. *The Quaternary Research* **50**: 49-60. (in Japanese with English abstract)
- Collaborative Reserch Group for Geology of the Western Hills of the Kanto Plain (Kutsuma, F., Kubota, I., Kurakawa, H., Kobayashi, K., Kobayashi, T., Komai, K., Shoda, K., Sekine, E., Taura, I., Takegoshi, S., Toyooka, A., Nakagawa, S., Nirei, T., Hashiya, I., Hirakoso, S. and Muto, H.) 2010. Facies and paleoenvironment of the lower part of the Bushi Formation from Kaji Hill, on the western Kanto Plain. *Earth Science (Chikyu Kagaku)* **64**: 159-174. (in Japanese with English abstract)

Other Articles

- Ishiyama, T., Kato, N., Sato, H., Suzuki, T., Toda, S. and Imaizumi, T. 2010. Tectonic geomorphology and shallow subsurface structure of the Kakuda-Yahiko fault, central Japan. *Monthly Chikyu* **32**: 411-416. (in Japanese)
- Tamura, I. 2011. The report of the Science Partnership Project: "Understanding of the volcano — Learnt from the Fuji volcano in Japan". *Tokyo Metropolitan Hino High School Research Bulletin* **43**: 22-26. (in Japanese)
- Tamura, I. 2011. Production of "The guide book of the earth science in the Hino area" by the earth science club of Hino High School supported from SCAAP/JST. *Tokyo Metropolitan Hino High School Research Bulletin* **43**: 27-29. (in Japanese)
- Tamura, I., Yamazaki, H. and Nakamura, Y. 2010. The wide-spread tephra in the Hokuriku Group and the Quaternary tectonics of the Toyama Basin, Japan, Excursion Guidebook. The 117th Annual Meeting of the Geological Society of Japan, 2010 Toyama. *The Journal of the Geological Society of Japan* **116** (Supplement): 1-20. (in Japanese)
- Takagi H., Tamura, I. and Yamazaki, H. 2010. 2.5 Ma garnet-bearing tephra found in Kanto Plain. *The Journal of the Geological Society of Japan* **116** (Pictorial): IX-X. (in Japanese)
- Ueki, T. 2010. Plant fossil bearing Upper Pleistocene in north Nagano Prefecture, central Japan. In *Subalpine and alpine paleoenvironmental change —Recent progress and perspective—*, ed. S. Okitsu and M. Yasuda, 12-21. Tokyo: Research Group for Subalpine and Alpine Floral and Paleoenvironmental Change in Japan, Association of Japanese Geographers. (in Japanese)
- Ueki, T. 2011. General report of the science partnership project in Mito First High School with special reference to geomagnetism and paleomagnetism. *Chishitsu News* No.678: 6-8. (in Japanese)
- Momohara, A, Morita, M. Kondo, R. and Ueki, T. 2011. Last Glacial plant fossil assemblage from sediment under Nozuka Lava Flow in the Rishiri Island, off north Hokkaido, Japan. *Rishiri Studies* **30**: 83-88. (in Japanese with English abstract)
- Murata, M. and Suzuki, T. 2011. Estimation of volcanic activity deduced from early Pleistocene tephra in the Obama Formation, Inubo Group, central Japan. *Geographical Reports of Tokyo Metropolitan University* **46**: 1-11.
- Sawada, Y., Funakoshi, Y., Matsumoto, H., Demura, S., Koga, T., Matsuda, T., Endo, K. and Okazawa, Y. 2010. Education program of the "Earth studies" in Shikaoi Elementary School and an experiment of air circulation in talus slopes using a pet bottle. *Geographical Studies* **85**: 51-56. (in Japanese)

Books

None

Reports

Yamazaki, H., Tamura, I. and Oishi, M. 2011. *Upgrade studies on the analysis of volcanic materials for the safety of nuclear power facilities*. Report of the 2009-2010 Funded Research of Japan Nuclear Energy Safety Organization (JNES). Hachioji: Tokyo Metropolitan University. (in Japanese)

Book Reviews

Suzuki, T. 2010. Book review of Manuals of reading topographical maps for engineers by Matsuda, I. *The Quaternary Research* **49**: 331-332. (in Japanese)

Suzuki, T. 2010. Book review of Geomorphology of the Japanese Islands by Ota, Y., Koike, K., Chinzei, K., Nogami, M., Machida, H. and Matsuda, T. *The Quaternary Research* **49**: 332. (in Japanese)

Miscellaneous Reports

Suzuki, T. 2010. Reports on workshop of INTAV-J (Japanese Branch of International Focus Group on Tephrochronology and Volcanology): Workshop of Tephra Studies in Japan for Active Tephra 2010 in Kyushu. *QR Newsletter* **17**(3): 13. (in Japanese)

Suzuki, T. 2011. Two landforms where Denenchofu and Tama-denentoshi stand: Denenchofu Upland and Tama Hills. *The Map Center* No.462: 12-15. (in Japanese)

Aoki, K., Suzuki, T., Nagaoka, S., Imura, R., Moriwaki, H. and Fukuoka, T. 2010. International Field Conference and Workshop on Tephrochronology, Volcanism and Human Activity: "Active Tephra in Kyushu, 2010, Kirishima City, Kyushu, Japan. *Journal of Geography (Chigaku Zasshi)* **119**: 934-937. (in Japanese)

Oishi, M. 2010. Volcanic topography around the Yatsugatake Volcano. *The Map Center* No.454: 16-19. (in Japanese)

Oishi, M., Kuri, M. and Tsunematsu, K. 2011. Study of volcano using accessible materials: Kitchen volcanic experiment. *RikaTan (Rika no Tanken) February 2011*: 58-62. (in Japanese)

Kasahara, A. 2011. Participation report of "New Year School 9: NYS9". *Geological Society of Japan*

News **14**(3): 25-27. (in Japanese)

Presentations

Yamazaki, H. 2010. Natural environment and hazard for Kanagawa Prefecture. Lecture of the Super Science High-school project at Seisho High-school, Kanagawa Prefecture, July, Odawara. (in Japanese)

Yamazaki, H. 2010. Natural hazards for Tokyo. Lecture at the Tokyo disaster prevention exhibition, August, Shinjuku. (in Japanese)

Yamazaki, H. 2010. Present states and prospects on active fault study in Japan. The workshop on the research and assessment of active fault, Nuclear Waste Management Organization of Japan (NUMO), September, Mita. (keynote, in Japanese)

Suzuki, T. 2010. Tephrochronological study on the Quaternary crustal movement in Kanto Tectonic Basin, central Japan. International Field Conference and Workshop on Tephrochronology, Volcanism and Human Activity, Active Tephra in Kyushu, 2010, Abstracts: 85, May, Kagoshima.

Suzuki, T. 2010. Trace the nature of Okutama Mountains: History of the mountains and its change. Asahi Culture Center Tachikawa, June, Tachikawa. (in Japanese)

Suzuki, T. 2010. Disaster in Tokyo: Eruption of Mt. Fuji and earthquake under Tokyo. Kogakuin University and Asahi Culture Center, June, Shinjuku. (in Japanese)

Suzuki, T. 2010. Geological observation and field excursion on nature in Tama area. Eco Forum: Field Lecture for Environment, June, Hachioji. (in Japanese)

Suzuki, T. 2010. Observation of Kd-38, Byobugaura, Chiba Prefecture. Mita Senior High School SPP (Science Partner Project): Trace of widespread volcanic ash –super volcano in central Japan –, August, Choshi. (in Japanese)

Suzuki, T. 2010. Study on reconstruction of eruptive history and paleogeography by tephra correlation in Chubu to Tohoku regions, Japan. Japan Association for Quaternary Research 2010, Lecture of Academic Award of 2010, August, Koganei. (in Japanese)

Suzuki, T. 2010. Lecture of geomorphological and geological study for citizen. Japan Association for Quaternary Research, Programme and Abstracts **40**: 153. August, Koganei. (in Japanese)

Suzuki, T. 2010. Microscopic observation and measurement of refractive index of tephra. Honjo Senior High School SPP (Science Partner Project): Knowing dynamic earth: Akagi and Haruna volcanoes. November, Hachioji. (in Japanese)

Suzuki, T. 2010. Underground tephra of the Kazusa Group below Tokyo city and development

- history of Kanto Plain, central Japan. Proceedings of the "Kanto Branch, Geological Society of Japan" and "Japan Association for Quaternary Research" Joint Symposium Subsurface Structure and Evolution of the Kanto Basin, November, Setagaya. (in Japanese)
- Suzuki, T. 2010. Tokyo parks as resources for sustainable urban environment: Spaces for understandings of ideal urban geoenvironment. Proceedings of the International Symposium on Sustainable Urban Environment 2010 (ISSUE2010): 51-52, TMU Symposium Series No.5, December, Hachioji.
- Suzuki, T. 2011. Introduction of the symposium: Tephra study in Japan. Research Meeting in Kashiwa Campus Preparation and Design of Tephra Database in and around Japan, January, Kashiwa. (in Japanese)
- Suzuki, T. 2011. Introduction of the symposium: Aiming for tephra database. Research Meeting in Kashiwa Campus Preparation and Design of Tephra Database in and around Japan, January, Kashiwa. (in Japanese)
- Suzuki, T. 2011. Geological observation: Landform and geology around Naganuma Park. Training Lecture for Leader of Hachioji City Environmental Learning, February, Hachioji. (in Japanese)
- Suzuki, T. 2011. Map Reading: How to read topographical map, and fundamental of landform and geology. Lecture for Green Volunteer Leader by Bureau of Environment, Tokyo Metropolitan Government, February, Shinjuku. (in Japanese)
- Suzuki, T., Geshi, N., Ueki, T. and Shirai, M. 2010. Field excursion: Akagi, Haruna and Mito. Honjo Senior High School SPP (Science Partner Project): Knowing dynamic earth: Akagi and Haruna volcanoes, August, from Honjo to Mito. (in Japanese)
- Suzuki, T., Koarai, M. and Nakayama, D. 2010. Construction of Japanese tephra database using GIS. International Field Conference and Workshop on Tephrochronology, Volcanism and Human Activity, Active Tephra in Kyushu, 2010, Abstracts: 84, May, Kagoshima.
- Suzuki, T., Noguchi, T., Kanazawa, N., Hosoya, T., Endo, K., Osato, S. and Tanaka, M. 2010. Lower Pleistocene Eb-Fukuda and Ho-Kd39 tephras under the Tokyo International Airport at Haneda, central Japan. Abstracts of Japan Geoscience Union Meeting 2010: HQR010-P16 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Suzuki, T., Ueki, T., Aoki, H., Aono, M. and Students for 2007 SPP (Earth science) in Mito 1st Senior High School 2010. Recognition of Hakone-TAu11 tephra and sea level change from MIS 6 to 5 around Mito city, Northeast Kanto, central Japan. Abstracts of Japan Geoscience Union Meeting 2010: HQR010-P15 (CD-ROM), May, Makuhari. (in Japanese with English abstract)

- Asagoe, M., Toyoda, S., Suzuki, T., Utida, A., Falgueres, C., Voinche, P. and Tissoux, H. 2010. ESR dating of quartz with Multiple Aliquot Regenerative Additive Dose method. Abstracts of Japan Geoscience Union Meeting 2010: SGL045-P05 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Hirouchi, D., Ishiyama, T., Suzuki, T., Imaizumi, T., Abe, K. and Kamataki, T. 2010. Late Pleistocene uplift rate across the western margin fault zone of the Takada-heiya based on borehole drillings. Abstracts of Japan Geoscience Union Meeting 2010: SCG088-P10 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Koarai, M., Suzuki, T. and Nakayama, D. 2010. Volcanic hazard estimation using tephra GIS and geo-spatial information. Abstracts of Japan Geoscience Union Meeting 2010: HSC015-P04 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Moriwaki, H., Suzuki, T., Murata, M., Ikehara, M., Machida, H., Oba, T. and Lowe, D. J. 2010. Sakurajima-Satsuma (Sz-S) and Noike-Yumugi (N-Ym) tephra: Key tephrochronological marker beds. International Field Conference and Workshop on Tephrochronology, Volcanism and Human Activity, Active Tephra in Kyushu, 2010, Abstracts: 63, May, Kagoshima.
- Shirai, M. 2010. Report of excursion of the Sakuma Dam deposits: Aims of the session "Dam sediments". Abstracts of Japan Geoscience Union Meeting 2010: HSC019-01 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Shirai, M. 2010. Geology of the Kanto Plain and volcanoes. Lecture of Honjo Senior High School SPP (Science Partner Project): Knowing dynamic earth, June, Honjo. (in Japanese)
- Shirai, M. 2010. Evaluation of transport process of sand grain using OSL technique. Abstracts for the 5th Symposium of Dating and Culture of Japan: 19-24, September, Shirakawa. (in Japanese)
- Abe, T., Shirai, M. and Muragishi, J. 2010. Traces of tsunamis/storms in coastal lowland, the Pacific coast of Atsumi Peninsula, central Japan. Abstracts of Japan Geoscience Union Meeting 2010: MIS002-P02 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Oishi, M. 2010. Topography and geology of the Yatsugatake Volcano and its volcanic history. Excursion and Symposium about Landslide Dam by Sector Collapse of the Yatsugatake Volcano in the Heian Era, July, Saku. (in Japanese)
- Oishi, M. 2010. Study of volcanology: An example of Fuji Volcano, the most typical volcano in Japan. Lectures of the Science Partnership Project of the Hino High-school, September and October, Hino. (in Japanese)
- Oishi, M. 2011. Identification of volcanic products using refractive indices of plagioclase

- phenocrysts: Products of Haruna and Asama volcanoes. Research Meeting in Kashiwa Campus Preparation and Design of Tephra Database in and around Japan, January, Kashiwa. (in Japanese)
- Oishi, M., Machida, T. and Takeda, T. 2010. Preliminary report of Holocene activities in Yatsugatake Volcano, central Japan, inferred from small-scale deposits. Japan Association for Quaternary Research, Programme and Abstracts **40**: 22-23, August, Koganei. (in Japanese)
- Tamura, I. 2010. Significance of the volcanic ashes at Byobugaura, Choshi area. Meeting of the Choshi Geopark Project, November, Choshi. (in Japanese)
- Tamura, I. 2010. Production of “The guide book of the earth science in the Hino area” by the earth science club of Hino High School. Symposium of SCAAP/JST, December, Tokyo. (in Japanese)
- Tamura, I. and Yamazaki, H. 2010. Tephrochronological study on Plio-Pleistocene boundary in the South Kanto area. Abstracts of Japan Geoscience Union Meeting 2010: IMS011-11 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Tamura, I., Yamazaki, H. and Mizuno, K. 2010. The huge pyroclastic flow deposits in the Takayama Basin at the Hida area and widespread tephra: The Ohbora AFD and Ohgaya VA. Abstracts of Geological Society of Japan 2010 Meeting: 78, September, Toyama. (in Japanese)
- Ueki, T. 2010. Outline of methods in study of natural history. Japan Association for Quaternary Research, Programme and Abstracts **40**: 112-115, August, Koganei. (in Japanese)
- Ueki, T. 2010. Plant fossil bearing Upper Pleistocene in north Nagano Prefecture, central Japan. Public Symposium on Subalpine and Alpine Floral and Paleoenvironmental Change in Japan, December, Matsumoto. (in Japanese)
- Ueki, T. and Public Relations Committee of the Japan Society of Earth Science Education 2010. School delivery service of peel specimen of sediments. Japan Association for Quaternary Research, Programme and Abstracts **40**: 145, August, Koganei. (in Japanese)
- Ueki, T., Furukawa, R., Aono, M., Kondo, R., Miyairi, Y. and Matsuzaki, H. 2010. ¹⁴C age of the Kyowa Gravel and sub-surface geology beneath the Sakura River lowland, Ibaraki Prefecture, central Japan. Japan Association for Quaternary Research, Programme and Abstracts **40**: 48-49, August, Koganei. (in Japanese)
- Ueki, T., Momohara, A. and Saito, T. 2010. Newly found the Reunion Subchronozone from the Plio-Pleistocene Uonuma Group in the Chuetsu area of Niigata Prefecture. Abstracts of Japan Geoscience Union Meeting 2010: SEM032-11 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Ueki, T., Momohara, A. and Saito, T. 2010. Newly found the Reunion Subchronozone from the

- Plio-Pleistocene Uonuma Group in the Chuetsu area of Niigata Prefecture. Abstracts of Japan Geoscience Union Meeting 2010: HQR010-14 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Aoki, H., Ueki, T., Toshimitsu, S., Saito, M., Yanagisawa, K., Tanaka, A., Makino, Y., Ito, T., Suzuki, T., Kondo, R. and Aono, M. 2010. SPP in Mito First High School of Ibaraki Prefecture, the theme of "Fossil chocolates" and "Drilling". Abstracts of Japan Geoscience Union Meeting 2010: GSU011-01 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Muragishi, J. 2010. The social influence following the 1707 Hiei earthquake in the Atsumi Peninsula, central Japan. Abstracts of Japan Geoscience Union Meeting 2010: SSS017-02 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Murata, M. and Suzuki, T. 2010. Re-examination on stratigraphy of Shirakawa Pyroclastic Flow Deposit Group using correlation of Pleistocene tephra. Abstracts of Japan Geoscience Union Meeting 2010: HQR010-P17 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Murata, M., Suzuki, T., Kawashima, S. and Kawai, M. 2010. Lower Pleistocene Miyata tephra from boring core at Wadabori Park of Suginami Ward and geological structure in the southeast part of Musashino upland, central Japan. Japan Association for Quaternary Research, Programme and Abstracts **40**: 54-55, August, Koganei. (in Japanese)
- Hayashizaki, R. and Shirai, M. 2010. Coastal transportation process of sands estimated from bleaching percentage of feldspar using OSL intensity in Niigata Prefecture, Japan. Abstracts of Japan Geoscience Union Meeting 2010: HQR010-P13 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Hayashizaki, R. and Shirai, M. 2010. Coastal transportation process of sands estimated from bleaching percentage of feldspar using OSL intensity in Niigata Prefecture, Japan. Proceedings of the General Meeting of the Association of Japanese Geographers 2010 Fall Meeting **78**: 157, October, Nagoya. (in Japanese)
- Hayashizaki, R., Shirai, M., Liu, H. and Sato, S. 2010. Coastal transportation process of sands estimated from bleaching percentage of feldspar using OSL intensity in Niigata Prefecture, Japan. Japan Association for Quaternary Research, Programme and Abstracts **40**: 8-9, August, Koganei. (in Japanese)
- Aoki, T., Suzuki, T., Murata, M., Kawashima, S. and Kawai, M. 2010. Early Pleistocene tephrochronological study on the underground geology at the Inokashira Park in Mitaka City, Tokyo. Abstracts of Japan Geoscience Union Meeting 2010: HQR010-13 (CD-ROM), May,

- Makuhari. (in Japanese with English abstract)
- Kasahara, A. 2010. Down cutting period and depositional period shown by fluvial terraces and buried valleys in the upper reaches of the river, central Japan. 7th Seminar of ICS-GEO, June, Tokyo. (in Japanese)
- Kasahara, A. 2010. Geomorphic development of low-relief surfaces in the Abukuma Mountains and the Koriyama Basin estimated by ignimbrite deposits, conception of the master thesis. 12th Seminar of ICS-GEO, December, Tokyo. (in Japanese)
- Kasahara, A. and Suzuki, T. 2010. Two independent buried valleys recognized along the Sagami River, tributary of the upper reach of the Sagami River in the mountainous area, central Japan. Japan Association for Quaternary Research, Programme and Abstracts **40**: 46-47, August, Koganei. (in Japanese)
- Kasahara, A., Suzuki, T. and Aoki, K. 2010. Two independent buried valleys and correlatives of Tozurahara Formation recognized along the Sawai River, central Japan. Proceedings of the General Meeting of the Association of Japanese Geographers 2010 Fall Meeting **78**: 515. October, Nagoya. (in Japanese)
- Matsuda, T. 2010. Geomorphic change of Mizunashi River valley according to the eruption during 1990-1995 in Mt. Unzen Fugen-dake, Kyushu, Japan. Proceedings of the General Meeting of the Association of Japanese Geographers Fall Meeting **78**: 512, October, Nagoya. (in Japanese)
- Endo, K., Matsuda, T., Nakao, T., Suzuki, T., Okazawa, Y. and Wakayama, H. 2010. Activity purpose and current state of "ICS-GEO". Japan Association for Quaternary Research, Programme and Abstracts **40**: 156, August, Koganei. (in Japanese)
- Imamura, A. 2011. Change in depositional environment of the early Pleistocene Inagi Formation at Tama Hills, central Japan. The 59th Meeting of Geographical Graduation Thesis 2011, March, Koganei. (in Japanese)
- Taura, I., Igarashi, S., Ueda, T., Matsuda, R., Imamura, A., Kawai, T. and Shimizu, K. 2010. Facies of Numasawako pyroclastic flow deposits in Nishikata, Aizu area. Abstracts and Excursion Guide: The 64th Annual Meeting of the Association for the Geological Collaboration in Japan: 63, August, Fukushima. (in Japanese)

2. Laboratory of Climatology

1) Staff

Jun MATSUMOTO Professor / D. Sc
Monsoon Climatology, Environmental Climatology

Hideo TAKAHASHI Professor / D.Sc.
Urban Climatology, Climatic Change, Rainfall Climatology

Hiroshi TAKAHASHI Assistant Professor / PhD (D.Sc.)
Asian Monsoon, Cloud-Precipitation Climatology, Regional Climate Modelling

2) Overview of Research Activities

Our laboratory investigates climate system on the earth in various temporal-spatial scales. In particular, we focus on climate changes due both to natural and anthropogenic causes, for example, processes of heat island and heavy rainfall events over and around urban regions, and influences of land-use changes and deforestation on regional climates. We also investigate diurnal, intra-seasonal, and inter-annual variabilities and long-term changes of climate, in particular, rainfall activities in the Asian monsoon region, and influences of global warming on regional climates (future projection).

We apply three major methods, observation (monitoring), data-analysis of various global and regional datasets, and numerical modeling for investigating above-mentioned topics.

- 1) Climate changes and climate variability over Japan and around the world
- 2) Variability and seasonal changes of regional climate over Asian monsoon region
- 3) Observational study on formation processes of urban heat island, detailed structure of urban boundary layer, and elucidation of urban effects on short duration intense rainfall
- 4) Impacts of land-surface conditions and changes on cloud and precipitation activities, in particular, in the tropics
- 5) Reconstruction of past climate during the historical period in Japan and in East Asia

3) List of Research Activities in FY2010

Peer-reviewed Articles

- Fudeyasu, H., Ichiyanagi, K., Yoshimura, K., Mori, S., Sakurai, N., Hamada, J.-I., Yamanaka, M.D., Matsumoto, J. and Syamsudin, F. 2011. Effects of large-scale moisture transport and mesoscale processes on precipitation isotope ratios observed at Sumatera, Indonesia. *Journal of the Meteorological Society of Japan* **89A**:49-59.
- Fujinami, H., Hatsuzuka, D., Yasunari, T., Hayashi, T., Terao, T., Murata, F., Kiguchi, M., Yamane, Y., Matsumoto, J., Islam, M. N. and Habib, A. 2010. Characteristic intraseasonal variability of rainfall and its effect on interannual variability over Bangladesh during boreal summer. *International Journal of Climatology* **30**, DOI:10.1002/joc.2146.
- Hattori, M., Mori, S. and Matsumoto, J. 2011. The cross-equatorial northerly surge over the Maritime Continent and its relationship to precipitation patterns. *Journal of the Meteorological Society of Japan* **89A**: 27-47.
- Htway, O. and Matsumoto, J. 2010. Climatological onset dates of summer monsoon over Myanmar. *International Journal of Climatology* **30**: 382-393, DOI:10.1002/joc. 2076.
- Mori, S., Hamada J.-I., Sakurai, N., Fudeyasu, H., Kawashima, M., Hashiguchi, H., Syamsudin, F., Arbain, A. A., Sulistyowati, R., Matsumoto, J. and Yamanaka, M. D. 2011. Convective systems developed along the coastline of Sumatera Island, Indonesia, observed with an X-band Doppler radar during the HARIMAU2006 campaign. *Journal of the Meteorological Society of Japan* **89A**: 61-81.
- Wu, P.-M., Fukutomi, Y. and Matsumoto, J. 2011. An observational study of the extremely heavy rain event in northern Vietnam during 30 October – 1 November 2008. *Journal of the Meteorological Society of Japan* **89A**:331-344.
- Yamashima, R., Takata, K., Matsumoto, J. and Yasunari, T. 2011. Numerical study of the impacts of land use/cover changes between 1700 and 1850 on the seasonal hydroclimate in monsoon Asia. *Journal of the Meteorological Society of Japan* **89A**:291-298.
- Suzuki, H., Nakakita, E. and Takahashi, H. 2011. A study on the installation interval of rain gauge for railroad. *Annual Journal of Hydraulic Engineering* **55** (CD-ROM): Presentation Number 46. (in Japanese with English abstract)
- Takahashi, H. G., Fujinami, H., Yasunari, T. and Matsumoto, J. 2010. Diurnal rainfall pattern observed by TRMM-PR around the Indochina Peninsula. *Journal of Geophysical Research* **115D**, doi:10.1029/2009JD012155.
- Takahashi, H. G., Yoshikane, T., Hara, M., Takata, K. and Yasunari, T. 2010. High-resolution

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Miscellaneous Reports

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Matsumoto, J. 2010. AMY observations, re-analysis and modeling. The 7th AMY Workshop, July, Hyderabad, India.

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Matsumoto, J. 2010. Climate and food in monsoon Asia. The Second Research Meeting on

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- Kamimera, H., Ngo-Duc, T., Masuda, K., Le, V. X., Nguyen, T. T. T. and Matsumoto, J. 2010. Building and evaluating a radar-raingauge combined gridded data set of rainfall over central Vietnam. The Fifth APHW Conference on Hydrological Regime and Water Resources Management in the Context of Climate Change (HWCC 2010), November, Hanoi, Vietnam.
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- Ogino, S.-Y. Matsumoto, J., Wu, P.-M., Endo, N., Kubota, H., Kamimera, H., Hattori, M., Espinueva, S. R., Nilo, P. D., Tran, Q. C., Ngo-Duc, T., Nguyen, T. T. T. and Tran, V. S. 2010. Heavy rainfall in the central Vietnam due to cold surges and westward propagating waves: An observation plan in 2010. Asia Oceania Geosciences Society 7th Annual Meeting: AS18-A003 (CD-ROM), July, Hyderabad, India.
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- Wu, P.-M., Fukutomi, Y. and Matsumoto, J. 2010. The impact of tropical disturbances and the Asian winter monsoon on precipitation over central Vietnam. The 3rd International Symposium on the Indian Ocean and South China Sea, November, Guangzhou, China.
- Wu, P.-M., Mori, S., Hamada J.-I., Hattori, M., Endo, N., Katsumata, M., Syamsudin, F., Hashiguchi, H., Ogino, S.-Y., Matsumoto J. and Yamanaka, M. D. 2010. Observational research of extremely heavy rain and the diurnal cycle of convection in the Maritime Continent of Indonesia. The 1st AMY Data Workshop, June, Tokyo.
- Wu, P.-M., Yamanaka, M. D., Matsumoto, J., Syamsudin, F., Mori, S., Manik, T., Hamada, J.-I., Katsumata, M., Endo, N., Hattori, M., Sulistyowati, R. and Arbain, A.A. 2010. The role of local circulations and upper tropospheric disturbances in the heavy rain over western Java Island during the 2010 rainy season. Asia Oceania Geosciences Society 7th Annual Meeting: AS18-A014 (CD-ROM), July, Hyderabad, India.
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- system. Special Lecture at Open Symposium of Tokyo Metropolitan Research Institute for Environmental Protection, January, Tokyo. (in Japanese)
- Takahashi, H., Yamato, H., Shimizu, S., Okubo, S., Takahashi, K. and Suzuki, H. 2010. Short duration intense rainfall occurred in Tokyo wards area on August 5, 2008: (2) Cold outflow and temperature distribution. Proceedings of the General Meeting of the Association of Japanese Geographers 2010 Fall Meeting **78**: 126, October, Nagoya. (in Japanese)
- Takahashi, H., Yamato, H., Konno, S., Idenaga, T., Seto, Y. and Shimizu, S. 2011. Vertical structure of sea breeze at the leeward side of central Tokyo observed by a Doppler sodar on fine summer days. Proceedings of the General Meeting of the Association of Japanese Geographers 2011 Spring Meeting **79**: 184, March, Tokyo. (in Japanese)
- Suzuki, H., Nakakita, E. and Takahashi, H. 2010. A study concerning installation interval of rain gauges. 65th Annual Meeting of Japan Society of Civil Engineers: II-267 (CD-ROM), September, Sapporo. (in Japanese)
- Suzuki, H., Nakakita, E. and Takahashi, H. 2011. A study on the installation interval of rain gauges for railroad. 55th Annual Meeting of Hydraulic Engineering. #46 (CD-ROM), March, Tokyo. (in Japanese with English abstract)
- Takahashi, H. G., Fukutomi, Y. and Matsumoto, J. 2011. The impact of long-lasting northerly surges of the East Asian winter monsoon on tropical cyclogenesis and its seasonal march. JSPS International Forum Climatic Changes in Monsoon Asia (CCMA), January, Bangkok, Thailand.
- Mikami, T., Zaiki, M. and Hirano, J. 2011. Climatic changes in Japan since the 18th century. Environment and Society in the Japanese islands: From prehistory to the present, March, Honolulu, USA.
- Hirano, J. and Matsumoto, J. 2010. Long-term variations in seasonal march of precipitation in China. Abstracts of the Meteorological Society of Japan 2010 Fall Meeting **98**: 475, October, Kyoto. (in Japanese)
- Zaiki, M. 2010. Document-based reconstruction of paleoclimate in Japan. PAGES Regional Workshop 2010, June, Nagoya.
- Zaiki, M. 2010. Global atmosphere and ocean circulation. Kita-ku Environment College, July, Tokyo. (in Japanese)
- Zaiki, M. 2010. Data rescue of 19th century instrumental meteorological records in Japan. JMA Forum of Climate Prediction Division, October, Tokyo. (in Japanese)
- Zaiki, M., Akasaka, I. and Mikami, T. 2010. Data rescue of 19th century instrumental meteorological

- records in Southeast and East Asia. Proceedings of the General Meeting of the Association of Japanese Geographers 2010 Fall Meeting **78**: 141, October, Nagoya. (in Japanese)
- Grossman, M. and Zaiki, M. 2010. Typhoons affecting Japan from 1860 to 1879. The Association of American Geographers 2010 Annual Meeting, April, Washington, D. C., USA.
- Fukushima, A., Takahashi, H. and Matsumoto, J. 2011. Regional characteristics and inter-annual variations of precipitation in Nepal. The 6th Natural Environment and Human Activity in South Asia, Natural Disaster and Human Activity in Assam, Meghalaya and Bangladesh of the Northeastern Indian Subcontinent, February, Kyoto, Japan. (in Japanese).
- Takahashi, K. and Takahashi, H. 2010. Relationship between wind system and urban heat island phenomenon in Tokyo ward area in summer (Part 4) — Relationship between nocturnal atmospheric pressure distribution corrected by assuming hydrostatic equilibrium and wind system —. Abstracts of the Meteorological Society of Japan 2010 Spring Meeting **97**: 154, May, Tokyo. (in Japanese)
- Konno, S. and Takahashi, H. 2010. Characteristics of the wintertime nocturnal temperature inversion over hill districts, western Kanto Plain. Abstracts of the Meteorological Society of Japan 2010 Fall Meeting **98**: 346, October, Kyoto. (in Japanese)
- Seto, Y. and Takahashi, H. 2010. Diurnal variation of local wind systems in summer sea-breeze days over the Kanto plain considered from the divergence field. Abstracts of the Meteorological Society of Japan 2010 Fall Meeting **98**: 345, October, Kyoto. (in Japanese)
- Shimizu, S. and Takahashi, H. 2010. Seasonal variation in cool island effect of two urban green spaces. Proceedings of the International Symposium on Sustainable Urban Environment 2010 (ISSUE2010): 49-50, TMU Symposium Series No.5, December, Hachioji.

3. Laboratory of Environmental Geography

1) Staff

Makiko WATANABE Professor/ PhD
Soil Science

Shuichi OYAMA Associate Professor / PhD (D. Human and Environment)
(until 30th September)
Area Studies (Africa, South America), Biogeography, Ecological Anthropology

2) Overview of Research Activities

Our laboratory focuses on the relations between human and natural environment. For understanding processes enacted upon environment in local and regional scales and their dynamics, we try to integrate subdivisions of both physical and human geography together with interdisciplinary aspects of environmental sciences, such as botanical science, forest ecology, zoology, soil science, landscape design, political ecology, folklore, anthropology and so on. Research methods are in primary based on fieldworks, including topography, soil, vegetation and interview surveys in participative on laboratory analyses of soil-water analyses and interpretations of aerial photo and satellite imagery as well. Overseas field studies are carried out in Asia, Africa, Europe and South America. We are engaged in long-term fieldwork on (1) environmental changes and human responses in Africa, (2) cultural ecology of slash-and-burn cultivators in Africa, (3) domestication process of livestock and crops, and (4) vegetation and climatic landscape in north and South America and Siberia.

Recent research subjects are as follows;

- 1) Characterization of sclerotium grains as soil organic component in subalpine forests in Japan and Central Europe
- 2) Dynamics of water environment surrounding ancient temples in Kharga Oasis, Western Desert, Egypt
- 3) Land recovery scenario in the upper Mt. Pinatubo, Philippines
- 4) Evaluation of urban soils on basis of soil genesis
- 5) Geoecological research on landscape, vegetation and soil

- 6) Interrelation between environmental change and human response in savanna area of Africa
- 7) Cultural geography of slash-and-burn cultivators and development of cultivation system in miombo woodland zone of Africa
- 8) Applied ecological study to combat desertification in Sahel zone, Africa.
- 9) Domestication of Camelidae animals and *Solanum* crops in Andes, South America

3) List of Research Activities in FY2010

Peer-reviewed Articles

- Oyama, S. 2011. Are self-sufficient agrarian villages in Africa really poor? *E-journal GEO* **5**: 87-124. (in Japanese with English abstract)
- Oyama, S., Kondo, F. Awaji, K. and Kawanishi, Y. 2010. Arid cultivation and ecological knowledge of the cultivators for desertification in southern Niger. *Noukou-no-Gijutsu-to-Bunka (Technology and Culture of Agriculture)* **27**: 66-85. (in Japanese)

Other Articles

- Oyama, S. The progress of market economy and land degradation problem in Sahel region of West Africa. *Ningen-Kankyo-Ronshu (The Housei Journal of Humanity and Environment)* **10**(2): 13-34. (in Japanese)
- Oyama, S. 2011. New Land Act and distress condition of Bemba shifting cultivators. In *African area study and rural development in agricultural villages*, ed. M. Kakeya and J. Itani, 246-280. Kyoto: Kyoto University Press. (in Japanese)
- Sakagami, N. 2011. Distributional optimum of sclerotia, resting bodies of *Cenococcum geophilum* in forest soils. *Geographical Reports of Tokyo Metropolitan University* **46**: 63-72.
- Shikata, K. 2010. The processes of creating diversity of non-cocoa tree species in cocoa agroforests of southeastern Cameroon. *Ökumene Research* **1**: 67-90. (in Japanese)
- Suzuki, N. 2010. Social relation of the tenants, nursing staff and regional community in the old-age home of “Group Home”, Japan. *Ökumene Research* **1**: 91-106. (in Japanese)
- Hara, M. 2010. Difference of distribution between the exotic and the indigenous plant in Rishiri Island, Japan. *Ökumene Research* **1**: 55-66. (in Japanese)

Books

None

Reports

None

Book Reviews

None

Miscellaneous Reports

Oyama, S. 2010. The 1142nd “What can we see on the roof of the world?” The travel of the Andean mountains. Sekai-Fushigi-Hakken (Discovering the world). 21:00-22:00, May 1st, providing the quiz materials and photos for the TV program of Tokyo Broadcasting System Inc. (in Japanese)

Oyama, S. 2010. Preface for the initial number issue of *Ökumene Research*. *Ökumene Research* 1: 1-2. (in Japanese)

Oyama, S. 2010. Andean Mountain ! Scarce Animal Vicuña (*Vicugna vicugna*). DVD-book of animal documentary “Darwin-ga-kita!” (NHK Japan Broadcasting Corporation) 2-9. Tokyo: Asahi Simbun Publication Inc. (in Japanese)

Oyama, S. 2011. NHK-BS Special: Save African Moms, Reports of Ms. Ai Tominaga from Zambia, Africa. Cooperation for translating into Japanese from Cibemba, local language of Zambia. December 25th. NHK (Japan Broadcasting Corporation) Channel BS-1. (in Japanese)

Presentations

Watanabe, M. 2010. Where is black and round sclerotia? —Feel the wonder of forest—. Special Events for Tokyo Science & Technology Week 2010, Cooperation by Experience-based Exhibition, April, Tokyo. (in Japanese)

Watanabe, M. 2010. Where is “sclerotia”? Special Class for Science at Yamawaki Junior High & High School, August, Tokyo. (in Japanese)

Watanabe, M. and Kamei, H. 2010. Water environmental map around El Zayaan Temple, Egypt. The 1300 Anniversary of Nara Capital Relocation, Winter Exhibitions “Heijokyo and Cultural Heritage —Measure, Recognize and Inform—”, Nara National Research Institute for Cultural Properties, Nov.2010—Jan. 2011, Nara. (in Japanese)

- Watanabe, M. and Sakagami, N. 2011. Status of sclerotia of *Cenococcum geophilum* as structured SOC from studies in Harz mts., central Germany. Workshop on Co-evolution of Soil and Organic Substances, March, Landau, Germany.
- Watanabe, M., Kato, S. and Sakagami, N. 2010. Distribution and status of sclerotia as microbial oriented SOC along transitional soil sequence in Mt. Chokai, northern Japan. Abstracts of the International Symposium on Organic Matter Stabilization and Ecosystem Functions: 96, September, Presqu'île de Giens, France.
- Watanabe, M., Ohno, M., Sakagami, N. and Murata, T. 2011. Soil carbon storage in Shinjuku Gyoen Park estimated by land use history and soil compactness profiles. Proceedings of the General Meeting of the Association of Japanese Geographers 2011 Spring Meeting **79**: 190, March, Tokyo. (in Japanese)
- Oyntsetseg, B., Inoue, Y. and Watanabe, M. 2010. Trace element distribution in soils and plants around Erdenet mining area, Mongolia. Proceedings of 4th International Conference GREEN CHEMISTRY & ADVANCED TECHNOLOGY: 50-54, October, Ulaanbaatar, Mongolia.
- Nonoyama, Y., Narisawa, K., Ohta, H. and Watanabe, M. 2010. Efficiency of DSE fungal sclerotia as microbial cell carrier in forest soils. Abstracts of the International Symposium on Organic Matter Stabilization and Ecosystem Functions: 99, September, Presqu'île de Giens, France.
- Sugiura, Y., Watanabe, M., Sakagami, N., Nonoyama, Y. and Murayama, S. 2010. Properties of neutral sugars in sclerotial grain from comparison between soil horizons and grain size. Annual Meeting for Japanese Society of Soil Science and Plant Nutrition, September, Sapporo. (in Japanese)
- Wakamatsu, S., Watanabe, M. and Itoi, T. 2010. Distribution and molecular biological analysis of sclerotium grains. Annual Meeting for Japanese Society of Soil Science and Plant Nutrition, September, Sapporo. (in Japanese)
- Wakamatsu, S., Watanabe, M., Murano, H. and Itoi, T. 2011. Distribution and molecular biological analysis of black sclerotium grains. Research Presentation of MEXT Program for Formation of a Strategic Research Infrastructure, Meijo University "Construction of Environmental Sounded Circulation of Substances by Agriomix" , March, Nagoya. (in Japanese)
- Oyama, S. 2010. Introduction of market-based land system in communal land and distress condition of agrarian villages in Zambia. Workshop of African Agriculture in Kyoto University, April, Kyoto. (in Japanese)
- Oyama, S. 2010. Ecological knowledge and daily practices of Hausa cultivators for combating

- desertification in Sahel, West Africa. 12th Congress of International Society of Ethnobiology, May, Tofino, Canada.
- Oyama, S. 2010. Africa: Not far, not endlessly vast. Comment for Session 3: Economic growth and environmental changes. Japan Association for African Studies Symposium “Reflecting on 50 Years of African Independence: Past, Present, and Future”. December, Tokyo.
- Oyama, S. 2010. Trail toward the solution of desertification problems and improving the relationship between the cultivators and pastoral people in West Africa. 175th Seminar of African Area Studies, December, Kyoto. (in Japanese)
- Oyama, S. and Kirikoshi, H. 2011. Examining the effects and safeties of urban trash input for combating desertification in Sahel, West Africa: The local trials against desertification for REDD. The International Workshop on “Incentive of Local Community for REDD and Semi-domestication of Non-timber Forest Products”, March, Kyoto.
- Sakagami, N. 2010. Physicochemical characteristics of sclerotia of *Cenococcum* species found from soils of three cool-alpine mountain areas. Abstracts of the International Symposium on Organic Matter Stabilization and Ecosystem Functions: 113, September, Presqu’île de Giens, France.
- Sakagami, N., Watanabe, M. and Nonoyama, Y. 2010. A report of the program on nature observation and scientific education using sclerotia of *Cenococcum* species from forest soils. Proceedings of the General Meeting of the Association of Japanese Geographers 2010 Autumn Meeting **78**: 170, October, Nagoya. (in Japanese)
- Sakagami, N., Yamazaki, K., Sato, Y., Ohta, H., Watanabe, M. and Ishikawa, T. 2011. Distribution of inorganic components of fine sediment of Tone river estuary and their microbial diversity. Proceedings of the General Meeting of the Association of Japanese Geographers 2011 Spring Meeting **79**: 224, March, Tokyo. (in Japanese)
- Shikata, K. 2010. Diversity of tree species in cocoa agroforests of Southeastern Cameroon. The 47th annual meeting of Japan Association for African Studies, May, Nara. (in Japanese)
- Uoi, N., Watanabe, M. and Murata, T. 2011. Usefulness of vertical distribution of soil hardness as a criterion of urban soil classification. Proceedings of the General Meeting of the Association of Japanese Geographers 2011 Spring Meeting **79**:189, March, Tokyo. (in Japanese)
- Morisima, W., Ichisawa, H., Uoi, N. and Watanabe, M. 2011. Effect of soil structure difference on soil temperature —A study on urban park soils—. Proceedings of the General Meeting of the Association of Japanese Geographers 2011 Spring Meeting **79**: 287, March, Tokyo. (in Japanese)
- Kato, S., Sakagami, N. and Watanabe, M. 2011. The relationship between forest location and soil

properties in western slope of Mt. Chokai, northern Japan. Proceedings of the General Meeting of the Association of Japanese Geographers 2011 Spring Meeting **79**: 278, March, Tokyo. (in Japanese)

Suzuki, C. 2011. Examination on vegetation study by GIS of the herbarium specimens information. The 31st Seminar of Master's Thesis Related to Japanese Society of Ecology in Kanto Region. February, Tsukuba. (in Japanese)

Yamazaki, K., Sakagami, N., Watanabe, M. and Ishikawa, T. 2010. Temporal and spatial distributions of organic components in the sediment of Tone river estuary. Program of the Annual Meeting of the Society of Environmental Science, Japan 2010: 97, September, Tokyo. (in Japanese)

4. Laboratory of Geographical Information Sciences

1) Staff

Hiroshi MATSUYAMA Associate Professor / PhD (D.Sc.)

Hydrometeorology, Geographical Information Sciences

Takeki IZUMI Assistant Professor / PhD (D.Eng.)

Urban Climatology, Geographical Information Sciences, Numerical Meteorological Modelling

Daichi NAKAYAMA Assistant Professor / PhD (D.Sc.)

Geographical Information Sciences, Remote Sensing, Computational Geomorphology

2) Overview of Research Activities

This laboratory is going to study the natural environment as a whole which is composed of geomorphology, climate, hydrology, vegetation, and so on. Concretely, deductive approach and inductive approach are combined for conducting studies. The former approach is going to explain results from causes by physical laws such as mass balance, energy balance, equation of motion, and so on. The latter approach is going to explain facts demonstratively based on field surveys and *in situ* observations. Therefore, collection of quantitative data, digital mapping, statistical analyses, numerical modeling, and GIS (Geographical Information Systems) are main methods used in this laboratory.

The main study themes in this laboratory are listed as follows.

- 1) Energy and water cycle in the atmosphere and hydrosphere
- 2) Capturing snow distribution and snow water resources, along with snowmelt-runoff based on remote sensing techniques and field surveys
- 3) Quantitative evaluation of spectral reflectance characteristics of coniferous forests and their leaf area indices
- 4) Water environment around Mt. Aso and Tokyo metropolis
- 5) Numerical simulation of urban climate and local wind
- 6) Capturing surface conditions of cities using GIS
- 7) Monitoring and modeling natural environment and natural hazards

3) List of Research Activities in FY2010

Peer-reviewed Articles

Hoque, R., Nakayama, D., Matsuyama, H. and Matsumoto, J. 2010. Monitoring the 2004 flood in the Meghna River Basin in Bangladesh using ground data, Radarsat imagery and GIS. *Advances in Geosciences, Hydrological Science* **17**: 217-236.

Hoque, R., Nakayama, D., Matsuyama, H. and Matsumoto, J. 2010. Flood monitoring, mapping and assessing capabilities using RADARSAT remote sensing, GIS and ground data for Bangladesh. *Natural Hazards*, doi:10.1007/s11069-010-9638-y.

Aoyama, M. 2011. Mountain permafrost distribution in the Yari-Hotaka mountains, northern Japanese Alps: Air and ground temperature monitoring using miniature temperature data loggers. *Geographical Review of Japan* **84**: 44-60. (in Japanese with English abstract)

Inamura, T., Izumi, T. and Matsuyama, H. 2011. Diagnostic study of effects of a large city on heavy rainfall as revealed by ensemble simulation — A case study of central Tokyo, Japan —. *Journal of Applied Meteorology and Climatology* **49**: 713-728, doi:10.1175/2010JAMC2553.1.

Other Articles

None

Books

None

Reports

Matsuyama, H. 2010. No.280. Estimation of groundwater circulation based on springwater temperature and concentration of silica along with the change of springwater and its surroundings — A case study of Hino city, Tokyo metropolis —. *Tamagawa* No.126: 10. (in Japanese)

Hasegawa, K., Omi, H., Izumi, T. and Matsuyama, H. 2011. Detection of forest structure from high spatial resolution remote sensing data for assessing distribution of Leaf Area Index. *Proceedings of the 12th CERE S Symposium on Environmental Remote Sensing*: 18-20. (in Japanese)

Book Reviews

- Matsuyama, H. 2010. Book review (Kato, M., ed: Remote Sensing of Forests, Second Edition). *Chiri* **55**(10): 116. (in Japanese)
- Matsuyama, H. 2010. Book review (Wilks, S. D.: Statistical Methods in the Atmospheric Sciences, 2nd Edition). *Tenki* **57**: 907. (in Japanese)
- Saito, H. 2010. Book review (Sugiura Y. ed.: Series Human Geography 3: Geospatial Analysis). *Geographical Review of Japan* **83B**: 73-74.

Miscellaneous Reports

- Matsuyama, H. 2010. Sacred place of cartography (Textbook version: Momosegawa fan). *Map Journal* No.166: 9-11. (in Japanese)
- Matsuyama, H. 2010. A propose of early sleeping and early getting up. *OGI Technical Reports* **18**: i-ii. (invited, in Japanese)
- Matsuyama, H. 2011. Sacred place of cartography (A version of rectangular plane coordinates). *Map Journal* No.168: 14-16. (in Japanese)
- Aoyama, M. 2010. Natural history of mountains deduced from the landscape of Akaishi-dake and Arakawa-mountains, Southern Japanese Alps. *The Map Center* No.454: 12-15. (in Japanese)
- Saito, H. 2010. Sacred place of cartography (Textbook version: Byoubugaura coast). *Map Journal* No.165: 7-9. (in Japanese)
- Kawahara, K. 2010. Sacred place of cartography (A version of Japanese vertical datum, opening to the public). *Map Journal* No.167: 7-9. (in Japanese)

Presentations

- Matsuyama, H. 2010. Water problems around Lake Balkhash in Central Asia. Program and Abstracts of Spring Meeting 2010, Japanese Society of Regional and Agricultural Development: 7-10, June, Fujisawa. (invited, in Japanese)
- Matsuyama, H. 2010. Present status of the Earth as revealed by the hydrological cycle. Kita-tama High School, July, Tachikawa. (in Japanese)
- Matsuyama, H. 2010. GIS Day in Tokyo 2005—2010: History of collaboration among industry, academic, and public society for six years. Poster Salon, 2010 Meeting of Japan Association for Quaternary Research, August, Koganei. (in Japanese)
- Matsuyama, H. 2010. Field survey of the springs in Hino City. Second Seminar of Groundwater

- Conservation Project, September, Hino. (invited, in Japanese)
- Matsuyama, H. 2011. Have you ever seen Tamagawa-Jousui? Class 4-2, Roka Elementary School, Setagaya ward (Outreach activity), January, Tokyo. (in Japanese)
- Matsuyama, H. and Nishimine, Y. 2011. A study on maps appearing in textbooks and atlases used in high schools —In relation to “Sacred place of cartography” —. Proceedings of the General Meeting of the Association of Japanese Geographers 2011 Spring Meeting **79**: 169, March, Tokyo. (in Japanese)
- Izumi, T. 2011. Numerical simulation studies of climate change by urbanization using mesoscale meteorological model. International Workshop on Urban Space and Urban Climate, March, Wuhan, China.
- Koarai, M., Suzuki, T. and Nakayama, D. 2010. Volcanic hazard estimation using tephra GIS and geo-spatial information. Abstracts of Japan Geoscience Union Meeting 2010: HSC015-P04 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Suzuki, T., Koarai, M. and Nakayama, D. 2010. Construction of Japanese tephra database using GIS. International Field Conference and Workshop on Tephrochronology, Volcanism and Human Activity, Active Tephra in Kyushu, 2010, Abstracts: 84, May, Kagoshima.
- Aoyama, M. 2011. Observation of ground temperature and soil displacement on the lobate landforms in the summit area of Mt. Minamidake, northern Japanese Alps. Proceedings of the General Meeting of the Association of Japanese Geographers 2011 Spring Meeting **79**: 297, March, Tokyo. (in Japanese)
- Kezer, K. 2010. Water resources and climate change of the central part of Tianshan Mountains. Second Study Meeting of Ili Project, November, Kyoto. (in Japanese)
- Hasegawa, K., Omi, H., Izumi, T. and Matsuyama, H. 2010. Retrieving forest structure parameters based on image texture analysis using satellite data. Database of the General Meeting of the Japanese Forest Society **121**: 406, April, Tsukuba. (in Japanese)
- Hasegawa, K., Izumi, T. and Matsuyama, H. 2011. Estimation of the spatial distribution of Leaf Area Index using the new vegetation index named NHVI. The 13th CEReS Symposium on Environmental Remote Sensing, February, Chiba. (in Japanese)
- Saito, H. 2010. Relationship between shallow landslide initiations and rainfall patterns in Japan. Research meeting of DPRI-KU: Prediction and mitigation of long-term sediment discharge from mountainous basins based on the processes description of sediment production and transport — Influence of inbasin sediment storage fluctuation —, October, Takayama. (in Japanese)

- Saito, H., Nakayama, D. and Matsuyama, H. 2010. Two rainfall types for shallow landslide initiation in Japan as revealed by Soil Water Index. Abstract of Japan Geoscience Union Meeting 2010: HDS021-02 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Saito, H., Nakayama, D., Izumi, T. and Matsuyama, H. 2010. Development of quasi-real time shallow landslide monitoring system based on the two types of rainfall conditions. Proceedings of the General Meeting of the Association of Japanese Geographers 2010 Fall Meeting **78**: 151, October, Nagoya. (in Japanese)
- Saito, H., Fukumoto, R., Nakayama, D., Izumi, T. and Matsuyama, H. 2010. Development of real-time shallow landslide monitoring (SWING system) based on the two types of rainfall patterns. Research Abstracts on Spatial Information Science, CSIS DAYS 2010: 10, November, Kashiwa. (in Japanese)
- Saito, H., Nakayama, D., Izumi, T. and Matsuyama, H. 2010. Development of quasi-real time shallow landslide monitoring system based on the two types of rainfall conditions. General Meeting of the Japanese Geomorphological Union 2010 Fall Meeting, November, Kumagaya. (in Japanese)
- Nakamura, K., Sugiura, S., Fukumoto, R., Saito, H., Tsuchiya, K. and Nakayama, Y. 2010. Challenges and possibility of Open Café System —Application study for the landscape planning—. FOSS4G 2010, September, Barcelona.
- Nakamura, K., Fukumoto, R., Sugiura, S., Nakayama, K., Saito, H., Furuhashi, T., Shiki, M., Saito, K. and Nakayama, Y. 2010. Application of FOSS4G in Joushinetsu kogen national park —Use and management of national park of Japan with Open Café System—. 19th Annual Meeting of GIS Association of Japan, October, Kyoto. (in Japanese)
- Nakamura, K., Fukumoto, R., Saito, H. and Nakayama, Y. 2010. Open Café System: Development and application of FOSS4G package for natural environment. Research Abstracts on Spatial Information Science, CSIS DAYS 2010: 59, November, Kashiwa. (in Japanese)
- Nakayama, Y., Fukumoto, R., Saito, H. and Nakamura, K. 2010. An introduction of Open Cafe System: Development and application of FOSS4G package in natural environment studies. 19th Annual Meeting of GIS Association of Japan, October, Kyoto. (in Japanese)
- Sugiura, S., Nakamura, K., Saito, H., Fukumoto, R. and Nakayama, Y. 2010. Shortcut route selection and the map display —Possibility of path search using pgRouting—. Research Abstracts on Spatial Information Science, CSIS DAYS 2010: 61, November, Kashiwa. (in Japanese)
- Inamura, T., Izumi, T. and Matsuyama, H. 2010. A mechanism of blowing local wind

- “Masubori-Kaze” — Paying attention to the geomorphology of Mt. Aso —. Abstracts of Meteorological Society of Japan 2010 Spring Meeting **97**: 85, May, Tokyo. (in Japanese)
- Inamura, T., Izumi, T. and Matsuyama, H. 2010. Diagnostic study of effects of large cities on heavy rainfall around Tokyo based on multi-model ensemble simulation. Abstracts of Meteorological Society of Japan 2010 Spring Meeting **97**: 312, May, Tokyo. (in Japanese)
- Inamura, T., Izumi, T. and Matsuyama, H. 2010. Diagnostic study of effects of large city on heavy rainfall in central Tokyo, based on ensemble simulation. International Workshop on Urban Climate Projection for Better Adaptation Plan, June, Tsukuba.
- Inamura, T., Izumi, T. and Matsuyama, H. 2010. Diagnostic study of effects of large city on heavy rainfall in central Tokyo, based on ensemble simulation. First International Workshop on Nonhydrostatic Numerical Models, September, Kyoto.
- Iwasaki, K., Matsubayashi, K., Maeno, K., Inamura, T., Izumi, T. and Matsuyama, H. 2010. Can “guerrilla rainfall” be defined meteorologically? Abstracts of Meteorological Society of Japan 2010 Fall Meeting **98**: 452, October, Kyoto. (in Japanese)
- Urita, S., Saito, H., Nakayama, D., Izumi, T. and Matsuyama, H. 2010. Diagnostic study on the spatial distribution of potential landslide disaster occurrence as revealed by Soil Water Index. Abstracts of Meteorological Society of Japan 2010 Spring Meeting **97**: 319, May, Tokyo. (in Japanese)
- Urita, S., Saito, H., Nakayama, D., Izumi, T. and Matsuyama, H. 2010. Diagnostic study on the spatial distribution of potential landslide disaster occurrence and “heavy rainfall blank area” as revealed by Soil Water Index. Proceedings of 2010 Annual Conference, Japan Society of Hydrology and Water Resources: 230-231, September, Tokyo. (in Japanese)
- Watanabe, T., Inamura, T., Izumi, T. and Matsuyama, H. 2010. Numerical study on the effects of rooftop greening on moderating air temperature in Tokyo metropolitan area. Abstracts of Meteorological Society of Japan 2010 Spring Meeting **97**: 283, May, Tokyo. (in Japanese)
- Watanabe, T., Izumi, T. and Matsuyama, H. 2010. Numerical study on effects of rooftop greening on moderating air temperature in Tokyo metropolitan area. International Workshop on Urban Climate Projection for Better Adaptation Plan, June, Tsukuba.
- Kataokai, Y., Inamura, T., Watanabe, T., Izumi, T. and Matsuyama, H. 2010. Numerical study on the effects of critical level generated by wind shear on blowing local wind “Masubori-Kaze” . Abstracts of Meteorological Society of Japan 2010 Spring Meeting **97**: 349, May, Tokyo. (in Japanese)

- Miyano, H., Izumi, T., Nakayama, D. and Matsuyama, H. 2011. An observational study of the long-term water temperature in springwaters in Tokyo — In relation to land-use change —. Proceedings of the General Meeting of the Association of Japanese Geographers 2011 Spring Meeting **79**: 225, March, Tokyo. (in Japanese)
- Nishimine, Y. and Matsuyama, H. 2010. Spatial analysis of the stores of the drug store “COSMOS Pharmaceutical Corporation” . Research Abstracts on Spatial Information Science, CSIS DAYS 2010: 27, November, Kashiwa. (in Japanese)

5 Laboratory of Urban and Human Geography

1) Staff

Yoshio SUGIURA Professor / PhD (D.Sc.)
Human Geography

Yoshiki WAKABAYASHI Professor / PhD (D.Sc.)
Urban Geography, Behavioral Geography, Geographical Information Sciences

Akihiro TAKINAMI Associate Professor / PhD (D.Lit.)
Cultural Geography, Tourism Study, Francophone Studies

Yuko TAKEDA Assistant Professor / PhD (D.Lit.)
GIS, Urban Geography

Hiroyuki TSUBOMOTO Assistant Professor / PhD (D.Sc.)
Urban Geography, Office Study

Michiko HARAYAMA Assistant Professor
Bibliometrics

(Concurrent staff)

Toshio KIKUCHI Professor / D.Sc.
Agricultural and Rural Geography, Regional Geography of Oceania, Nature Based Tourism

2) Overview of Research Activities

This research unit specializes in human geography, with special emphasis on the city and its environs. Our research interests center on the structural explanation of the relationship between human activities and geographic environment by employing approaches of social sciences and humanities. Methodologically, the emphasis lies largely on positivistic (viz., quantitative or mathematical); fieldwork is also encouraged. The research interests cover quantitative,

socioeconomic, urban and behavioral geography. The main themes of our current research are as follows:

1. Mathematical modeling of human geographic phenomena
2. Regional analysis of human geographic phenomena
 - 1) Relationship between human activities and geographic environment
 - 2) Land use change in the city and its suburbs
 - 3) Spatial organization of the society
 - 4) Transformation of human activities brought about by environmental change
3. Geographical studies of urban systems
 - 1) Spatial structures of intra-urban system
 - 2) System of cities
4. Geographical thought
 - 1) History of modern geography
 - 2) Bibliometric research of geographical studies

3) List of Research Activities in FY2010

Peer-reviewed Articles

- Arai, T., Fukuishi, Y. and Harayama, M. 2011. The political ecology of groundwater in Hakushu Town, Yamanashi Prefecture. *E-journal GEO* **5**: 125-137. (in Japanese with English abstract)
- Liang, H. S. 2010. Recent trends and regional differences in land use change in Inner Mongolia, China. *Geographical Sciences* **65**: 127-141. (in Japanese)
- Arima, T. 2010. Zoo of Tokyo: The visitors' space use characteristics. *Geographical Review of Japan* **83**: 353-374. (in Japanese with English abstract)
- Koizumi, R. 2010. Spatial patterns of occupational structure and their changes in Tokyo metropolitan area. *Quarterly Journal of Geography* **62**: 61-70. (in Japanese with English abstract?)

Other Articles

- Takinami, A. 2011. Colors used for the tourist image and tourism strategy of Sète in Southern France. *The International Journal of Tourism Science* **4**:101-113. (in Japanese)
- Wada, E. and Ranaweera, E. 2011. Distribution of business categories and the characteristics of

two main streets in Georgetown, Washington D.C. *The International Journal of Tourism Science* **4**: 69-81. (in Japanese)

Wada, E. and Ranaweera, E. 2011. Distribution of business categories and the characteristics of two main streets in Georgetown, Washington D.C. *Geographical Reports of Tokyo Metropolitan University* **46**:73-87.

Books

None

Reports

None

Book Reviews

None

Miscellaneous Reports

None

Presentations

Wakabayashi, Y. and Ishikawa, T. 2010. Geographic information science and spatial thinking. 19th Annual Meeting of GIS Association of Japan, October, Kyoto. (in Japanese)

Wakabayashi, Y. and Koizumi, R. 2010. Geovisualization of demographic data of Tokyo metropolitan area using tools for the exploratory spatial data analysis. Abstracts of Japan Geoscience Union Meeting 2010: MTT035-P07 (CD-ROM), May, Makuhari. (in Japanese with English abstract)

Wakabayashi, Y., Kukimoto, M., Yui, Y. and Kubo, T. 2010. The use of child-care services at the after-school care for school children in Urasoe City, Okinawa. Proceedings of the General Meeting of the Association of Japanese Geographers 2010 Fall Meeting **78**: 79, October, Nagoya. (in Japanese)

Wakabayashi, Y. , Kukimoto, M. and Yui, Y. 2010. The role of the unauthorized daycare center in the childcare system of Okinawa and its basis of existence. Proceedings of the 2010 Annual Meeting of the Human Geographical Society of Japan 2010 Meeting: 138-139, November, Nara. (in

Japanese)

- Kubo, T., Yui, Y., Wakabayashi, Y. and Kukimoto, M. 2010. Employment, childcare, and housing problems of single-parent families in Okinawa. Proceedings of the General Meeting of the Association of Japanese Geographers 2010 Fall Meeting **78**: 76, October, Nagoya. (in Japanese)
- Kukimoto, M. and Wakabayashi, Y. 2010. Political process of after-school care for children in Urasoe City, Okinawa. Proceedings of the General Meeting of the Association of Japanese Geographers 2010 Fall Meeting **78**: 78, October, Nagoya. (in Japanese)
- Kukimoto, M., Wakabayashi, Y. and Yui, Y. 2010. The impact of institutional changes by the central government on childcare culture in Okinawa. The 5th Japan-Korea-China Joint Conference on Geography, November, Sendai.
- Yui, Y., Kubo, T., Kukimoto, M. and Wakabayashi, Y. 2010. Regional evolution of after-school care for children in Okinawa: A case study of Naha and Urasoe. Proceedings of the General Meeting of the Association of Japanese Geographers 2010 Fall Meeting **78**: 77, October, Nagoya. (in Japanese)
- Liang, H. S. 2011. Regional development and small town construction in Naiman Banner, Inner Mongolia, China. Proceedings of the General Meeting of the Association of Japanese Geographers 2011 Spring Meeting **79**: 265. Tokyo. (in Japanese)
- Koizumi, R. 2010. Changing spatial structures of the Tokyo metropolitan area after the Bubble Economy. The 5th Japan-Korea-China Joint Conference on Geography, November, Sendai.
- Koizumi, R. 2010. The changing spatial structure and its causations of the Tokyo metropolitan area after the Bubble Economy. Research Abstracts on Spatial Information Science CSIS Days 2010: 29, November, Kashiwa. (in Japanese)
- Koizumi, R. 2010. The changing spatial patterns of occupational structures in Tokyo metropolitan area. Proceedings of the 2010 Annual Meeting of the Human Geographical Society of Japan 2010 Meeting: 128-129, November, Nara. (in Japanese)
- Koizumi, R. 2011. Availability and capability of grid-square statistics as areal units. The 10th ordinary meeting of Japan Association on Geographical Space, March, Tokyo. (in Japanese)
- Koizumi, R. 2011. The changing spatial patterns of household structure in Tokyo metropolitan area after the late 1990s. The General Meeting of the Association of Japanese Geographers 2011 Spring Meeting **79**: 71, March, Tokyo. (in Japanese)
- Wada, E. 2010. The transition of Otaku's space: From limited space into public space. The 5th Japan-Korea-China Joint Conference on Geography, November, Sendai.