

Annual Report 2011

Geography

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

Contents

1 Laboratory of Quaternary Geology and Geomorphology	1
1) Staff	
2) Overview of Research Activities	
3) List of Research Activities in FY2011	
2 Laboratory of Climatology	13
1) Staff	
2) Overview of Research Activities	
3) List of Research Activities in FY2011	
3 Laboratory of Environmental Geography	27
1) Staff	
2) Overview of Research Activities	
3) List of Research Activities in FY2011	
4 Laboratory of Geographical Information Sciences	33
1) Staff	
2) Overview of Research Activities	
3) List of Research Activities in FY2011	
5 Laboratory of Urban and Human Geography	44
1) Staff	
2) Overview of Research Activities	
3) List of Research Activities in FY2011	

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 tephros 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 FY2011

Peer-reviewed Articles

- Suzuki, T. 2011. Quaternary tephrostratigraphy in the Kinu River Lowland, Northeast Japan: Eruptive history of Quaternary volcanoes and landform development. *The Journal of the Geological Society of Japan* **117**: 121-133. (in Japanese with English abstract)
- Suzuki, T. and Murata, M. 2011. Stratigraphy and correlation of tephras in the Lower Pleistocene Kiwada Formation and its correlatives beds, Kanto, Central Japan. *The Journal of the Geological Society of Japan* **117**: 379-397. (in Japanese with English abstract)
- Suzuki, T., Obara, M., Aoki, T., Murata, M., Kawashima, S., Kawai, M., Nakayama, T. and Tokizane, K. 2011. Identification of Lower Pleistocene tephras under Tokyo and reconstruction of Quaternary crustal movements, Kanto Tectonic Basin, central Japan. *Quaternary International* **246**: 247-259.
- Moriwaki, H., Suzuki, T., Murata, M., Ikehara, M., Machida, H. and Lowe, D. J. 2011. Sakurajima-Satsuma (Sz-S) and Noike-Yumugi (N-Ym) tephras: New tephrochronological marker beds for the last deglaciation, southern Kyushu, Japan. *Quaternary International* **246**: 203-212.
- Asagoe, M., Toyoda, S., Voinchet, S., Falguères, C., Tissoux, H., Suzuki, T. and Banerjee, D. 2011. ESR dating of tephra with dose recovery test for impurity centers in quartz. *Quaternary International* **246**: 118-123.
- Omura, A., Ikehara, K., Sugai, T., Shirai, M. and Ashi, J. 2012. Determination of the origin and processes of deposition of deep-sea sediments from the composition of contained organic matter: An example from two forearc basins on the landward flank of the Nankai Trough, Japan. *Sedimentary Geology* **249-250**: 10-25.
- Oishi, M., Geshi, N. and Shitaoka, Y. 2011. Identification of volcanic products around the southern foot of Haruna Volcano, central Japan: An example of identifying volcanic products using refractive indices of plagioclase phenocrysts. *The Quaternary Research* **50**: 295-308. (in Japanese with English abstract)

Other Articles

- Machida, M., Yoshida, H., Yamazaki, H., Tamura, I. and Shimogama, K. 2011. Formation mechanism of brilliant globular clay minerals originating in volcanic glasses. *Seitschrift Fur Bimssteinstunde* **19**: 59-80. (in Japanese)

- Suzuki, T. 2011. Tephrochronology: Volcanology, palaeoenvironmental study, database. *Monthly Chikyu* **33**: 715-718. (in Japanese)
- Suzuki, T. 2012. Aiming for the tephra database in Japan. *Monthly Chikyu* **34**: 45-54. (in Japanese)
- Ikehara, K., Ashi, J., Machiyama, H. and Shirai, M. 2012. Submarine slope response to earthquake shaking within western Sagami Bay, Central Japan. In *Submarine mass movements and their consequences (Advances in Natural and Technological Hazards Research Volume 31)*, ed. Y. Yamada, K. Kawamura, K. Ikehara, Y. Ogawa, R. Urgeles, D. Mosher, J. Chaytor and M. Strasser, 539-548. Heidelberg: Springer.
- Ueki, T. 2011. Case reports of description and chronology of inactive landslides. *Landslides (Kansai Branch of the Japan Landslide Society)* **27**: 23-29. (in Japanese)
- Ueki, T. 2011. Introduction of special issue: Cooperation between academic societies and school teachers for earth science to preserve as a school subject in Japan. *The Quaternary Research* **50** (Supplement): s7-11. (in Japanese)
- Ueki, T. 2011. Educational structure of earth science, and present condition and problems of earth science education. *The Quaternary Research* **50** (Supplement): s13-20. (in Japanese with English abstract)
- Ueki, T. and Endo, K. 2011. Roles of Japan Association for Quaternary Research in earth science education. *The Quaternary Research* **50** (Supplement): s171-178. (in Japanese)
- Ueki, T. and Kondo, R. 2011. K-Ar ages of the Oshidomari lava from the Rishiri Volcano, off northern Hokkaido, Japan, suggesting the incipient volcanic activity stage. *The Journal of the Geological Society of Japan* **117**: 648-650. (in Japanese with English abstract)
- Ueki, T. and Takeshita, Y. 2011. Practice of making peel specimen of unconsolidated sediments for university students of teacher training course. *Education of Earth Science* **64**: 179-187. (in Japanese)
- Ito, T., Ueki, T., Nakano, H., Obi, Y. and Makino, Y. 2011. Observing, peeling and creating of sediments. *Excursion Guidebook 118th Annual Meeting of the Geological Society of Japan, The Journal of the Geological Society of Japan* **117** (Supplement): 153-166. (in Japanese with English abstract)
- Oishi, M. 2011 Identification of tephras distributed around Northern Kanto region using refractive indices of plagioclase phenocrysts. *Monthly Chikyu* **33**: 735-744. (in Japanese)
- Geshi, N. and Oishi, M. 2011. The ¹⁴C ages of the late Pleistocene—Holocene volcanic products

- erupted from the Haruna volcano. *Bulletin of the Geological Survey of Japan* **62**: 177-183. (in Japanese with English abstract)
- Ando, K. 2012. Simulation of fault flexure associated with the 1999 ChiChi, Taiwan Earthquake. *Geographical Reports of Tokyo Metropolitan University* **47**:11-25.
- Muragishi, J. 2012. Approaches from historical geography scholar. In *Toward a practical geography*, ed. S. Ito, T. Arima, N. Komaki, T. Hayashi and K. Suzuki, 88-99. Tokyo: Kokon-Shoin. (in Japanese)
- Hayashizaki, R. and Shirai, M. 2012. Report on the tsunami deposits caused by the 2011 off the Pacific coast of Tohoku Earthquake in the Soma region, Fukushima Prefecture, northeast Japan. *Geographical Reports of Tokyo Metropolitan University* **47**: 1-10.

Books

None

Reports

None

Book Reviews

None

Miscellaneous Reports

- Yamazaki, H. 2011. Is “the Tachikawa fault” safe? It is necessary to acquire scientific knowledge for the relief. 2011.11.09 Morning Edition of Tokyo Shinbun. (in Japanese)
- Suzuki, T. 2011. Report of H group excursion Quaternary tephrostratigraphy in the Kinu River Lowland, Northeast Japan: Eruptive history of Quaternary volcanoes and landform development. *The Geological Society of Japan News* **14**: 20. (in Japanese)
- Suzuki, T. 2011. Interpretive article for Tokyo no Shizenshi by Sohei Kaizuka, Kodan-sha Gakujutsu Bunko. Tokyo: Koudan-sha. (in Japanese)
- Suzuki, T., Moriwaki, H. and Lowe, D.J. 2011. Hiroshi Machida – Respected tephrochronologist, teacher, leader. *Quaternary International* **246**: 6-13.

Lowe, D.J., Davies, S.M., Moriwaki, H., Pearce, N.J.G. and Suzuki, T. 2011. Preface Enhancing tephrochronology and its application (INTREPID project): Hiroshi Machida commemorative volume. *Quaternary International* **246**: 1-5.

Moriwaki, H., Suzuki, T. and Lowe, D.J. 2011. In memoriam and dedication Shinji Nagaoka (1958–2011). *Quaternary International* **246**: 14-16.

Hayashizaki, R. and Bessho, T. 2011. A report on the “Sedimentology School on the Beach 2011” by the Sedimentological Society of Japan: Data analysis in sedimentary petrology (Waseda University; October 2011). *The Journal of the Sedimentological Society of Japan* **70**: 113-116. (in Japanese)

Presentations

Yamazaki, H. 2011. Does the Tachikawa fault reactivate? It knows the earthquake, it correctly fears it. Lecture for the disaster prevention of the urban development of Akishima-kita community, June, Akishima. (in Japanese)

Yamazaki, H. 2011. 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. 2011. Natural hazards for Tokyo. Lecture at the Tokyo Rinkai Disaster Prevention Park in Ariake, August, Ariake. (in Japanese)

Yamazaki, H. 2011. Does the Tachikawa fault reactivate? It knows the shallow earthquake of Tama region and it fears correctly. Lecture presentation for the Tama Condominiums Management Union. September, Tama. (in Japanese)

Yamazaki, H. 2011, Musashino Upland and the Tachikawa fault. Lecture presentation at the Hino high school, September, Hino. (in Japanese)

Yamazaki, H. 2011. Knowledge on the Tachikawa fault. Lecture meeting at the consumers' center of Tama city, September, Tama. (in Japanese)

Yamazaki, H. 2011. Is the Tachikawa fault really dangerous? Lecture of TAMA citizen's collage, October, Tama. (in Japanese)

Yamazaki, H. 2011. The Tachikawa fault and Musashino Upland. Lecture presentation at the seminar of Tama-west limb of the all Japan association for real estate, Tokyo, October, Hamura. (in Japanese)

Yamazaki, H. 2011. What is the Tachikawa fault? Lecture meeting for the Management Committee

- of the Tachikawa Kompirabashi Hall, October, Tachikawa. (in Japanese)
- Yamazaki, H. 2011. Activity trail of the Tachikawa fault and related earthquake. Lecture for the disaster prevention by the Musashi-murayama City, October, Musashi-murayama. (in Japanese)
- Yamazaki, H. 2011. The Tachikawa fault: Active fault in Tokyo. Lecture presentation of the Chuo University, October, Suido-bashi. (in Japanese)
- Yamazaki, H. 2011. Musashino Upland and the Tachikawa fault. Lecture meeting at the Nangai community center of the Higashi-yamato city, November, Higashi-yamato. (in Japanese)
- Yamazaki, H. 2011. Why does the earthquake occur? Lecture meeting at the Nangai community center of the Higashi-yamato city, November, Higashi-yamato. (in Japanese)
- Yamazaki, H. 2011. The Tachikawa fault and earthquake. Lecture presentation at the symposium of think-tank Tama and Tosho, November, Hachioji. (in Japanese)
- Yamazaki, H. 2011. Learning of the Tachikawa fault. Lecture presentation at the Musashi-Fuchu Chamber of Commerce and Industry, December, Fuchu. (in Japanese)
- Yamazaki, H. 2011. Musashino Upland and the Tachikawa fault. Lecture for the attached junior high school of the Musashi high school, December, Tama. (in Japanese)
- Yamazaki, H. 2011. On the Tachikawa fault. Lecture at the Tachikawa Chamber of Commerce and Industry, December, Tachikawa. (in Japanese)
- Yamazaki, H. 2012. The Tachikawa fault and earthquake: Why was the Tachikawa fault paid to attention since March 11, 2011. Lecture of the Tachikawa city government and Japanese Society for Active Fault Study, January, Tachikawa. (in Japanese)
- Yamazaki, H. 2012. On the Tachikawa fault zone and earthquake. Lecture at the Akishima City Council, January, Akishima. (in Japanese)
- Yamazaki, H. 2012. Let's know the Tachikawa fault. Lecture for the Kamikitadai community center of Higashi-yamato city, February, Higashi-yamato. (in Japanese)
- Yamazaki, H. 2012. Does the Tachikawa fault reactivate? Lecture at the Zennichi Seminar, All Japan association for real estate, Tokyo, February, Chiyoda. (in Japanese)
- Yamazaki, H. 2012. Does the Tachikawa fault reactivate? Lecture for the disaster prevention by the Higashi-yamato city, March, Higashi-yamato. (in Japanese)
- Yamazaki, H. 2012. What is the Tachikawa fault? Lecture meeting of the Takamatsu community center, March, Tachikawa. (in Japanese)
- Yamazaki, H. 2012. Lessening of anxiety of the Tachikawa fault and disaster prevention. Lecture meeting of the Tachikawa junior chamber, March, Tachikawa. (in Japanese)

- Suzuki, T. 2011. Development of landforms in Tokyo and Kanto: Earthquake, volcanoes and palaeoenvironment. Lecture at the Department of Geography and Environmental Studies, Kokushikan University, June, Setagaya. (in Japanese)
- Suzuki, T. 2011. Landforms, geology and the Quaternary tectonics along the Joban coast, northeast Japan. Urgent Symposium: Huge Earthquake Approaching from Quaternary Science, July, Bunkyo. (in Japanese)
- Suzuki, T. 2011. Earthquakes and volcanoes in the Japanese Islands: What the 2011 off the Pacific Coast of Tohoku Earthquake tells. Asahi Culture Center Tachikawa, July, Tachikawa. (in Japanese)
- Suzuki, T. 2011. Landform and earthquakes in Tokyo and Tama. Asahi Culture Center Tachikawa, August, Tachikawa. (in Japanese)
- Suzuki, T. 2011. Correlation of underground and ground surface Quaternary tephras in the southwest part of the Kanto Plain and its development history, Central Japan. *Abstracts for the 2011 Annual Meeting of the Geological Society of Japan (Section A)*: 12, September, Mito. (in Japanese)
- Suzuki, T. 2011. Landforms, geology and earthquakes in Tokyo: The Great East Japan Earthquake and next Great Kanto Earthquake. Lecture for the Alumni Association of Tokyo Metropolitan University, November, Hachioji. (in Japanese)
- Suzuki, T. 2011. Tephras in the Kazusa Group, Tama Hills. Tokyo Geotechnical Consultant Association Seminar, November, Tachikawa, Hachioji and Inagi. (in Japanese)
- Suzuki, T. 2012. Introduction of the landforms, geology and ground as the basement of life, culture and industry in the Tama. Seminar for Sending Message of Attractive Tama, January, Hino. (in Japanese)
- Suzuki, T. 2012. 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. 2012. Watching Musashino Upland and Tachikawa Active Fault on the map. Asahi Culture Center Tachikawa, March, Tachikawa. (in Japanese)
- Suzuki, T. 2012. Field excursion for Tachikawa Active Fault. Asahi Culture Center Tachikawa, March, Mizuho and Tachikawa. (in Japanese)
- Suzuki, T., Koarai, M., Kasahara, A. and Kawai, T. 2011. Comparison of the long-term crustal movement deduced from the Quaternary landforms with co-seismic crustal movement of the 2011 off the Pacific Coast of Tohoku Earthquake. *Abstracts of Japan Geoscience Union Meeting 2011*: MIS036-P113 (CD-ROM), May, Makuhari. (in Japanese with English abstract)

- Suzuki, T., Ueki, T., Aoki, H. and Aono, M. 2011. Recognition of Hakone-TAu11 tephra and sea-level change from MIS 6 to 5 around Mito, northeast Kanto, central Japan. XVIII INQUA-Congress: Quaternary Sciences – the View from the Mountains, July, Bern, Switzerland.
- Aoki, K., Suzuki, T., Sakamoto, T. and Iijima, K. 2012. Middle to Lower Pleistocene tephrostratigraphy of C9002 core off Shimokita, 2012. Palaeoceanography Symposium, January, Kashiwa. (in Japanese)
- Ishiyama, T., Togo, M., Imaizumi, T., Suzuki, T., Miyauchi, T., Sato, H., Hosoya, T. and Hashimoto, T. 2011. Late Holocene fault scarps and activity of the Kozu-Matsuda fault. *Abstracts of Japan Geoscience Union Meeting 2011: SSS032-06* (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Ishiyama, T., Hirouchi, D., Tsutsumi, H., Suzuki, T., Marushima, N., Echigo, T., Imaizumi, T., Sato, H. and Kato, N. 2011. Active tectonics of the southern Northeast Japan. *Abstracts of Japan Geoscience Union Meeting 2011: SCG062-11* (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Koarai, M., Nakano, T., Suzuki, T., Nakayama, D., Wachi, T. and Fujinawa, A. 2011. Tephra GIS using Cyber Japan Web System. *Abstracts of Japan Geoscience Union Meeting 2011: HSC024-09* (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Kuriyama, Y. and Suzuki, T. 2012. Tephra in drilling core at the west side of Aizu Basin and activity of West Aizu Basin Fault Zone. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting* **81**: 147, March, Hachioji. (in Japanese)
- Moriwaki, H., Suzuki, T., Ikehara, M., Machida, H., Oba, T. and Lowe, D. 2011. Sakurajima-Satsuma (Sz-S) and Noike-Yumugi (N-Ym) tephra: Key tephrochronological marker beds for the last deglaciation, southern Kyushu, Japan. XVIII INQUA-Congress: Quaternary Sciences – the View from the Mountains, July, Bern, Switzerland.
- Tsutsumi, H., Ishiyama, T., Suzuki, T., Hirouchi, D., Imaizumi, T., Kamataki, T. and Abe, K. 2011. Active faults along the southeastern margin of the Echigo Plain based on tectonic geomorphology and borehole data. *Abstracts of Japan Geoscience Union Meeting 2011: SCG062-10* (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Shirai, M. 2011. Ongoing sand grain transport along the Enshu Coast estimated from luminescence property. *Abstracts for the 2011 Annual Meeting of the Geological Society of Japan (Section B)*: 114, September, Mito. (in Japanese)
- Shirai, M. 2011. Mechanism of earthquake and Tsunami. Lecture of the Hamura citizens' college,

- December, Hamura. (in Japanese)
- Shirai, M. 2012. Tsunami ~Tsunami and Earthscience~. Lecture of the Open University, Tokyo Metropolitan University, February, Iidabashi. (in Japanese)
- Shirai, M., Ito, T., Niwa, Y., Omura, A. and Wakabayashi, T. 2011. Age estimation of a turbidite layer in surface deposit of the Enshu Trough, off-Tokai district. *Abstracts of Japan Geoscience Union Meeting 2011*: HGC036-05 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Omura, A., Shirai, M. and Ashi, J. 2011. Depositional processes of deep-sea sediments using organic matter analyses, examples from the Kumano Trough. *Abstracts of Japan Geoscience Union Meeting 2011*: HGC036-P02 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Omura, A., Shirai, M. and Ashi, J. 2011. Depositional processes of deep-sea sediments using organic matter analyses, examples from the Kumano Trough. New perspective of Great Earthquakes along Subduction Zones, September, Kashiwa. (in Japanese)
- Ueki, T. 2011. Multi-component magnetization of the Hosokawa-dani rhyolite around the Gauss-Matuyama chronozone boundary. *Abstracts of Japan Geoscience Union Meeting 2011*: SEM036-P11 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Ueki, T. 2011. Collaboration with school education and disaster prevention education to facilitate science literacy. Japan Association for Quaternary Research 2011, August, Tokushima. (in Japanese)
- Ueki, T. 2011. Plio-Pleistocene geomorphic history of the Kanto Plain, central Japan, based on magnetostratigraphy of sediments in the western margin hills of Kanto Plain. *Abstracts for the 2011 Annual Meeting of the Geological Society of Japan (Section B)*: 58, September, Mito. (in Japanese)
- Ueki, T. 2012. Future perspective on earth science education and disaster prevention education. The 10th new year school on earth system and evolution, January, Osaka. (in Japanese)
- Ueki, T., Endo, K., Momohara, A., Kubo, S., Makino, Y., Tonishi, S., Kawakami, S., Ogawa, Y., Fujibayashi, N. and Hatakeyama, M. 2011. Public symposium on earth science education to survive subject of earth science in high school. *Abstracts of Japan Geoscience Union Meeting 2011*: GSU021-03 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Ueki, T., Endo, K., Momohara, A., Kubo, S., Mizuno, K. and Mokudai, K. 2011. Education and outreach programs of the Japan Association for Quaternary Research. *Abstracts of Japan Geoscience Union Meeting 2011*: GSC022-09 (CD-ROM), May, Makuhari. (in Japanese with English abstract)

- Ueki, T., Nagata, H., Kojima, S., Numamoto, S. and Iijima, F. 2011. Timing and recurrence interval of landslides in the upper reach of Miya River, central Kii Peninsula, southwest Japan, deduced from chronology of the natural dam deposits. *Programme and Abstracts, Japan Association for Quaternary Research* **41**: 44-45, August, Tokushima. (in Japanese)
- Oishi, M. and Machida, T. 2011. Description of the deposit of small-scale eruption at about 14 to 15th century on the Yatsugatake Volcano, central Japan, and its significance. *Abstracts of Japan Geoscience Union Meeting 2011: SVC048-P04* (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Oishi, M., Geshi, N., Oikawa, T., Nishiki, K., Furukawa R., Nakano, S., Tomiya, A. and Shinohara, H. 2011. Time series analysis of the components in volcanic ashes of 2011 eruption of Shinmoedake, Kirishima Volcano. *Programme and Abstracts, Japan Association for Quaternary Research* **41**: 118-119, August, Tokushima. (in Japanese)
- Oishi, M., Geshi, N., Oikawa, T., Nishiki, K., Furukawa R., Nakano, S., Tomiya, A., Shinohara, H. and Vinet, N. 2011. Description of grain contents and their time series of fine ash deposits from the 2011 eruptions of Shinmoedake, Kirishima Volcano, Japan. *Programme and Abstracts, the Volcanological Society of Japan 2011 Fall Meeting*: 116, October, Asahikawa. (in Japanese)
- Oishi, M., Nishiki, K., Geshi, N. and Furukawa, R. 2011. Preliminary report of the real-time observation of ash falling in Sakurajima volcano, Kyusyu, Japan. 27th Tsukuba Volcano Seminar, December, Tsukuba. (in Japanese)
- Kawamura, K., Yamano, M., Shishikura, M., Kanematsu, T. and Oishi, M. 2011. Physical properties, geologic age and magnetic fabrics of sediments collected from off Miura-Boso region. *Abstracts of Japan Geoscience Union Meeting 2011: SSS033-06* (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Kobayashi, M., Mizukami, K. and Okajima, Y. 2011. New aspect of eruption history of the Osore-zan Volcano based on the ages of the Byobuyama-Asahinadake volcano group. *Programme and Abstracts, the Volcanological Society of Japan*: 71, October, Asahikawa. (in Japanese)
- Kudo, T., Kobayashi, M., Yamamoto T., Okajima Y. and Mizukami K. 2011. Temporal change and long-term prediction of eruptive activity at Towada volcano. *Programme and Abstracts, Japan Association for Quaternary Research* **41**: 82-83, August, Tokushima. (in Japanese)
- Toda, S., Ohba, T., Kobayashi, M. and Hayashi, S. 2011. Geology of the Ohata Formation in the Shimokita Peninsula. *Abstracts for the 2011 Annual Meeting of the Geological Society of Japan (Section C)*: 37, September, Mito. (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. *Abstracts of Japan Geoscience Union Meeting 2011*: GSU021-P01 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Tamura, I., Yamazaki, H., Kobayashi, M., Suto, K., Okajima, Y. and Mizukami, K. 2011. Development of widespread-tephras in the upper part of the Sunagomata Formation in the east Shimokita Peninsula, Aomori Prefecture. *Programme and Abstracts, Japan Association for Quaternary Research* **41**: 86-87, August, Tokushima. (in Japanese)
- Tamura, I., Yamazaki, H., Kobayashi, M., Suto, K., Okajima, Y. and Mizukami, K. 2011. The widespread correlation of glassy tephras in the Sunagomata Formation in the Shimokita Peninsula, Aomori Prefecture. *Abstracts for the 2011 Annual Meeting of the Geological Society of Japan (Section B)*: 95, September, Mito. (in Japanese)
- Ando, K. 2011. Influence of dilatancy of the stratum on a configuration of earthquake fault at the ground surface. *Proceedings and Abstracts of the International Symposium on Sustainable Urban Environment 2011*: 55, November, Hachioji.
- Ando, K. and Yamazaki, H. 2011. Estimate of fault angle about Isehara fault by computer simulation which use CIP method. *Abstracts of Japan Geoscience Union Meeting 2011*: SSS032-O3 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Ando, K. and Yamazaki, H. 2011. The simulation of the surface earthquake fault in consideration of dilatancy of the enveloping layer. *The Seismological Society of Japan 2011 Fall Meeting, Abstracts*: 126, October, Shizuoka. (in Japanese)
- Muragishi, J. 2011. Change of the living conditions occurred in the damaged area of the 1703 Genroku Kanto earthquake. The 28th Annual Meeting of the Society of Historical Earthquake Studies, September, Niigata. (in Japanese)
- Murata, M. and Suzuki, T. 2011. Estimation of volcanic activity deduced from early Pleistocene tephra in the Obama Formation, Inubo Group, central Japan. *Abstracts for the 2011 Annual Meeting of the Geological Society of Japan (Section B)*: 174, September, Mito. (in Japanese)
- Hayashizaki, R. and Shirai, M. 2011. Coastal transportation process of sands presumed from OSL intensity of alkali feldspar around the Shinano river mouth. *Abstracts of Japan Geoscience Union Meeting 2011*: MIS028-07 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Hayashizaki, R. and Shirai, M. 2012. Tsunami deposits caused by the 2011 off the Pacific coast of Tohoku Earthquake around the Matsukawa-Ura Bay, Fukushima Prefecture, northeast Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring*

- Meeting 81*: 224, March, Hachioji. (in Japanese)
- Aoki, T., Suzuki, T., Murata, M., Kawashima, S. and Kawai, M. 2011. Early Pleistocene tephrochronological study on the underground geology at the Inokashira Park in Mitaka City, Tokyo. *Abstracts for the 2011 Annual Meeting of the Geological Society of Japan (Section B)*: 173, September, Mito. (in Japanese)
- Kasahara, A., Suzuki, T. and Imaizumi, T. 2012. Koriyama Formation and volcanic products distributed under the Koriyama Basin, Northeast Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting 81*: 149, March, Hachioji. (in Japanese)
- Kawai, T. 2012. Recognition of the marine oxygen isotope stage 10 fluvial terrace in drainage of the Aga River, southern Aizu area, Fukushima Prefecture. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting 81*: 148, March, Hachioji. (in Japanese)
- Kawai, T. and Suzuki, T. 2011. Stratigraphic position, facies and eruptive process of Shiobara-Otawara Tephra distributed in Tochigi and Fukushima areas, central Japan. *Abstracts for the 2011 Annual Meeting of the Geological Society of Japan (Section B)*: 58, September, Mito. (in Japanese)
- Taura, I. 2012. Facies and paleoenvironment of the Sayama Formation at the Sayama Hills, western Kanto Plain. The 60th Meeting of Geographical Graduation Thesis 2012, March, Koganei. (in Japanese)
- Aoki, S., Fukushima, T. and Taura, I. 2011. Fossil *Mysticeti petrosal* from the Lower Pleistocene near Ohgami area, Akishima City, Tokyo. *Abstracts and Excursion Guide: The 65th Annual Meeting of the Association for the Geological Collaboration in Japan*: 95, August, Aomori. (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.)
Climate System Study, Cloud-Precipitation Climatology, Regional Climate Modeling

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 FY2011

Peer-reviewed Articles

- Matsumoto, J. and Asada, H. 2012. Rainfall, flood, and rice cultivation in Bangladesh. *Journal of Agroforestry and Environment* **5**: 41-46.
- Chen, T.C., Tsay, J.D., Yen, M.C. and Matsumoto, J. 2012. Interannual variation of the late fall rainfall in Central Vietnam. *Journal of Climate* **25**: 392-413, DOI: 10.1175/JCLI-D-11-00068.1.
- Sakurai, N., Mori, S., Kawashima, M., Fujiyoshi, Y., Hamada, J.-I., Shimizu, S., Fudeyasu, H., Tabata, Y., Harjupa, W., Hashiguchi, H., Yamanaka, M.D., Matsumoto, J. and Emrizal, Fadli Syamsudin 2011. Migration process and 3D wind field of precipitation systems associated with diurnal cycle in West Sumatera: Dual Dopplar radar analysis during HARIMAU2006 campaign. *Journal of the Meteorological Society of Japan* **89**: 341-361.
- Yokoi, S., Nakayama, Y., Agata, Y., Satomura, T., Kuraji, K. and Matsumoto, J. 2011. Relationship between observation interval and errors in radar rainfall estimation over the Indochina Peninsula. *Hydrological Processes* **26**: 834-842, DOI: 10.1002/hyp.8297.
- Zhou, T.J, Hsu, H.H. and Matsumoto, J. 2011. Summer monsoon in East Asia and the western North Pacific. In *The global monsoon system (2nd ed)*, ed C.P. Chang, Y.H. Ding, N.C. Lau, R.H. Johnson, B. Wang and T. Yasunari, 43-72. New Jersey: World Scientific. (referred)
- Takahashi, H., Nakamura, Y. and Suzuki, H. 2011. Frequency distribution of intense rainfall in the wards of Tokyo and its relationship with the spatial structure of building heights. *Journal of Geography (Chigaku Zasshi)* **120**: 359-381. (in Japanese with English abstract)
- Suzuki, H., Nakakita, E. and Takahashi, H. 2012. A study on determing method of rain gauge installation interval and train operation control criteria for railroad. *Annual Journal of Hydraulic Engineering* **56**(CD-ROM): Presentation Number 69. (in Japanese with English abstract)
- Takahashi, H.G. 2011. Long-term changes in rainfall and tropical cyclone activity over South and Southeast Asia. *Advances in Geosciences* **30**: 17-22.
- Asada, H. 2011. Monsoon rainfall and rice cultivation in the Brahmaputra valley: A village study in Assam, India. *Journal of Agroforestry and Environment* **5**: 31-36.
- Takahashi, K., Mikami, T. and Takahashi, H. 2011. Influence of the urban heat island phenomenon in Tokyo on local wind system at nighttime in summer. *Journal of Geography (Chigaku Zasshi)* **120**: 341-358.
- Fukushima, A. and Takahashi, H. 2012. Regional and seasonal variability of rainfall characteristics

- in Nepal. *Geographical Review of Japan* **85**: 127-137. (in Japanese with English abstract)
- Seto, Y. and Takahashi, H. 2011. Analysis of local wind circulation in summer over the Kanto Plain using the adjustment technique of observed wind with roughness parameter. *Geographical Review of Japan* **84**: 529-552. (in Japanese with English abstract)
- Yamato, H., Mikami, T. and Takahashi, H. 2011. Influence of sea breeze on the daytime urban heat island in summer in the Tokyo metropolitan area. *Journal of Geography (Chigaku Zasshi)* **120**: 325-340. (in Japanese with English abstract)

Other Articles

- Kikuchi, T., Iwata, S., Watanabe, M., Matsumoto, J. and Koide, H. 2011. An overview: Special issue on “Geoparks and regional development”. *Journal of Geography (Chigaku Zasshi)* **120**: 725-728.
- Mikami, T., Sakakibara, Y., Hamada, T., Matsumoto, J., Suzuki, R. and Kumaki, Y. 2011. An overview: Special issue on “Urban climate”. *Journal of Geography (Chigaku Zasshi)* **120**: 249-251.
- Mikami, T., Yamato, H. and Extended-METROS Research Group 2011. High-resolution temperature observations using Extended-METROS in the Tokyo metropolitan area and their urban climatological significance. *Journal of Geography (Chigaku Zasshi)* **120**: 317-324. (in Japanese with English abstract)
- Akasaka, I., Ando, H., Yokoyama, H., Okubo, S., Takahashi, K., Izumi, T. and Mikami, T. 2011. High-spatial density meteorological observation system in Tokyo. *Journal of Geography (Chigaku Zasshi)* **120**: 309-316. (in Japanese with English abstract)
- Fukushima, A. and Takahashi, H. 2012. Relation between the seasonal transition of circulations and premonsoon precipitation in the Himalayan foothills. *Geographical Reports of Tokyo Metropolitan University* **47**: 27-37.
- Konno, S. and Takahashi, H. 2012. Comparison of temperatures measured by a natural ventilation radiation shield with an aspirated ventilation radiation shield of the AMEDAS station. *Geographical Reports of Tokyo Metropolitan University* **47**: 39-49.
- Seto, Y. 2011. Analysis of wind systems over the Kanto Plain using the adjustment technique of observed wind with roughness parameter. *Japanese Study Group for Climate Impact and Application Newsletter* **29**: 12-14. (in Japanese)
- Seto, Y. 2012. Characteristics of local wind and divergence field during daytime in summer over the Kanto Plain. *Geographical Reports of Tokyo Metropolitan University* **47**: 59-67.

Shimizu, S. 2012. Mobile observations of temperature and wind at night in the vicinity of an urban green space. *Geographical Reports of Tokyo Metropolitan University* **47**: 51-58.

Shimizu, S., Sugawara, H., Narita, K., Mikami, T. and Hagiwara, S. 2012. Cold air-seeping phenomena in the Institute for Nature Study—Results of the 2011 summer observations—. *Miscellaneous Reports of the National Park for Nature Study* **43**: 19-27. (in Japanese)

Sugawara, H., Shimizu, S., Narita, K., Mikami, T. and Hagiwara, S. 2012. How much do greens in Institute for Nature Study cool surrounding town? *Miscellaneous Reports of the National Park for Nature Study* **43**: 11-17. (in Japanese)

Books

None

Reports

None

Book Reviews

None

Miscellaneous Reports

Zaiki, M. 2011. Looking back on extreme weather in 2010 and 2011. *Teikoku-Shoin Booklet for Geography and Map* vol. FY2011-1: 17-19. (in Japanese)

Zaiki, M. 2011. Weather charts at the opening time of Japan to foreign intercourse. *Chizu Joho* **31**(3): 20-23. (in Japanese)

Zaiki, M. 2011. Weather chart and meteorological table on the day of February 26 Incident of 1936 (Interpretation for front and back cover pages). *Chizu Joho* **31**(3): 51. (in Japanese)

Konno, S. and Takahashi, H. 2011. Meteorological observations in the hilly district on the west of Kanto plain. *Kanto no Nogyokisyo (Agricultural Meteorology in Kanto)* **37**: 6-9. (in Japanese)

Presentations

Matsumoto, J. 2011. MAHASRI project. YOTC International Science Symposium & 8th AMY International Workshop, May, Beijing, China.

- Matsumoto, J. 2012. MAHASRI, AMY and GRENE Projects. The 7th Environment and Human Activity in South Asia – Natural Disaster and Human Activity in the North-east Indian Subcontinent and Indochina, February, Kyoto.
- Matsumoto, J. 2012. Development of agro-climatological data-base in the developing countries in Asian monsoon region. The First International Workshop of Climatic Changes and Their Effects on Agriculture in Asian Monsoon Region, March, Bangkok, Thailand.
- Matsumoto, J. 2012. Geo-heritages characterized by Japanese climate. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting* **81**: 17, March, Hachioji. (in Japanese)
- Matsumoto, J. and Asada, H. 2011. Impact of rainfall and flood on rice cultivation in Bangladesh. *Abstracts of Japan Geoscience Union 2011 Meeting*: HSC024-02(CD-ROM), May, Makuhari. (Invited, in Japanese with English abstract)
- Matsumoto, J., Endo, N., Hamada, J.I., Kubota, H., Akasaka, I., Kamimera, H., Masuda, K., Yamanaka, M.D., Mori, S., Hayashi, T., Terao, T., Murata, F., Kiguchi, M., Yamane, Y., Zaiki, M. and Hirano, J. 2011. Long-term variations of rainfall and rainfall characteristics in Asian monsoon region. *Abstracts of Japan Geoscience Union 2011 Meeting*: AHW027-14(CD-ROM), May, Makuhari. (Invited, in Japanese with English abstract)
- Matsumoto, J., Endo, N., Hayashi, T., Terao, T., Murata, F., Kiguchi, M., Yamane, Y. and Habib, A. 2011. Long-term changes in precipitation extremes over Bangladesh. *International Union of Geodesy and Geophysics XXV General Assembly*: AS18-A003(CD-ROM), June, Melbourne, Australia.
- Matsumoto, J., Kubota, H., Akasaka, I., Endo, N., Hamada, J.I., Masuda, K., Zaiki, M., Yamanaka, M.D., Mori, S., Kamimera, H., Hayashi, T., Terao, T., Murata, F., Kiguchi, M., Yamane, Y. and Hirano, J. 2011. Long-term rainfall data and data rescue in Asian monsoon region. *Abstracts of Japan Geoscience Union 2011 Meeting*: ACG032-21(CD-ROM), May, Makuhari. (Invited, in Japanese with English abstract)
- Matsumoto, J., Ogino, S.-Y., Wu, P.-M., Endo, N., Kubota, H., Hattori, M., Kamimera, H., Akasaka, I., Masuda, K., Mori, S., Hamada, J.-I., Yoneyama, K., Shirooka R., Cayanan, E.O., Espinueva, S.R., Yumul, G.P.Jr., Servando, N.T., Tran, Q.C., Nguyen, T.T.T., Tran, V.S. and Nguyen, V.T. 2011. Vietnam Philippines Rainfall Experiment 2010 (VPREX2010). *Abstracts of the Meteorological Society of Japan 2011 Spring Meeting* **99**: 411, May, Tokyo. (in Japanese)
- Matsumoto, J., Ogino, S.-Y., Endo, N., Wu, P.-M., Kubota, H., Hattori, M., Kamimera, H., Masuda,

- K., Nguyen, V.T. and Cayanan, E.O. 2011. Northeast monsoon in Southeast Asia. *International Union of Geodesy and Geophysics XXV General Assembly: AS18-A003(CD-ROM)*, June, Melbourne, Australia.
- Matsumoto, J., Ogino, S.-Y., Wu, P.-M., Endo, N., Kubota, H., Hattori, M., Kamimera, H., Masuda, K., Mori, S., Hamada, J.-I., Yamanaka, M. D., Yoneyama, K., Shirooka R., Akasaka I., Cayanan, E.O., Espinueva, S.R., Yumul, G.P.Jr., Servando, N.T., Tran, Q.C. and Nguyen, V.T. 2011. Vietnam Philippines Rainfall Experiment 2010 (VPREX2010). *The Second International MAHASRI /HyARC Workshop on Asian Monsoon and Water Cycle: 1*, August, Nha Trang, Vietnam.
- Matsumoto, J., Ogino, S.Y., Wu, P., Endo, N., Kubota, H., Hattori, M., Kamimera, H., Masuda, K., Mori, S., Hamada, J.-I., Yamanaka, M.D., Yoneyama, I., Shirooka, R., Akasaka, I., Cayanan, S.O., Espinueva, S.R., Yumul, G.P.Jr., Servando, N.T., Tran, Q.C. and Nguyen, V.T. 2011. Asian Monsoon Years (2007-2012): Vietnam Philippines Rainfall Experiment 2010 (VPREX2010). *WCRP Open Science Conference: T169A*, October, Denver, USA.
- Matsumoto, J., Takahashi, H.G. and Fukutomi, Y. 2012: Northeast monsoon in Southeast Asia and the Indian Ocean. International Conference on Opportunities and Challenges in Monsoon Prediction in a Changing Climate (OCHAMP-2012), February, Pune, India.
- Matsumoto, J., Wang, B., Wu, G., Li, J., Koike, T., Kamahori, H. and AMY Project Leaders 2011. Progress and prospects of AMY. *YOTC International Science Symposium & 8th AMY Workshop: 87*, May, Beijing, China.
- Matsumoto, J., Wang, B., Wu, G., Li, J., Wu, P.-M., Ogino, S.-Y., Mori, S., Yamanaka, M.D., Koike, T., Tamagawa, K., Wang, D., Kamahori, H., Oki, T., Satomura, T., Higuchi, A., Kanae, S. and Takahashi, H.G. 2011. Current situation of AMY and MAHASRI. *The Second International MAHASRI/HyARC Workshop on Asian Monsoon and Water Cycle: 75*, August, Nha Trang, Vietnam.
- Endo, N., Kamimera, H., Masuda, K. and Matsumoto, J. 2011. Inter-annual variation of heavy rainfall events in central Vietnam and its relationship to El Nino/La Nina. *The Second International MAHASRI/HyARC Workshop on Asian Monsoon and Water Cycle: 33*, August, Nha Trang, Vietnam.
- Endo, N., Kamimera, H., Masuda, K. and Matsumoto, J. 2011. Inter-annual variation of autumn rainfall in central Vietnam. *Proceedings of the General Meeting of the Association of Japanese Geographers 2011 Fall Meeting 80: 47*, September, Oita. (in Japanese)
- Hattori, M., Matsumoto, J., Ogino, S.-Y., Wu, P.-M., Endo, N., Kubota, H., Kamimera, H., Masuda,

- K., Enomoto, T., Miyoshi, T. and Yamane, S. 2011. Impact of radiosonde observations in Vietnam and the Philippines on the analysis of disturbances in the South China Sea. *The Second International MAHASRI/HyARC Workshop on Asian Monsoon and Water Cycle*: 43, August, Nha Trang, Vietnam.
- Hattori, M., Matsumoto, J., Ogino, S.-Y., Wu, P.-M., Endo, N., Kubota, H., Kamimera, H., Masuda, K., Enomoto, T., Miyoshi, T. and Yamane, S. 2011. Impact of radiosonde observations data assimilation in VPRES using ALERA2. *Abstracts of the Meteorological Society of Japan 2011 Fall Meeting* **100**: 478, November, Nagoya. (in Japanese)
- Hirano, J. and Matsumoto, J. 2011. Interannual variation of winter sunshine duration in northern Vietnam. *Proceedings of the General Meeting of the Association of Japanese Geographers 2011 Fall Meeting* **80**: 48, September, Oita. (in Japanese)
- Ichiyanagi, K., Yoshimura, K. and Matsumoto, J. 2011. Stable isotopes in precipitation at Danang in central Vietnam observed from February 2006 to January 2009. *The Second International MAHASRI/HyARC Workshop on Asian Monsoon and Water Cycle*: 325, August, Nha Trang, Vietnam.
- Kubota, H., Chan, J.C.L., Matsumoto, J., Edwin, W. and Ginn, L. 2011. Changes of typhoon tracks in the western Pacific in the past 100 years. *Abstracts of the Meteorological Society of Japan 2011 Fall Meeting* **100**: 84, November, Nagoya. (in Japanese)
- Kubota, H., Matsumoto, J., Ogino, S.-Y., Wu, P.-M., Endo, N., Hattori, M., Masuda, K., Akasaka, I. and Cayan, E.O. 2011. Heavy rainfall in the winter monsoon in Philippines. *The Second International MAHASRI/HyARC Workshop on Asian Monsoon and Water Cycle*: 23, August, Nha Trang, Vietnam.
- Kubota, H., Wang, B., Matsumoto, J., Ginn, E. and Cayan, E.O. 2011. Asian Monsoon Years (2007-2012): Interdecadal rainfall variability associated with typhoon and monsoon over the western north Pacific. *WCRP Open Science Conference*: M219A, October, Denver, USA.
- Murata, F., Terao, T., Hayashi, T., Kiguchi, M., Yamane, Y. and Matsumoto, J. 2011. Asian Monsoon Year (2007-2012): Climate monitoring over Bangladesh and northeast India. *WCRP Open Science Conference*: T166A, October, Denver, USA.
- Ogino, S.-Y., Fujiwara, M., Shiotani, M., Hasebe, F. and Matsumoto, J. 2011. Intraseasonal to interannual variations of ozone over the northern subtropical region revealed by ozonesonde observations in Hanoi. *International Union of Geodesy and Geophysics XXV General Assembly*: AS18-A003(CD-ROM), June, Melbourne, Australia.

- Ogino, S.-Y., Fujiwara, M., Shiotani, M., Hasebe, F., Matsumoto, J., Ha, H.T., Hiep, H.G. and Nguyen, T.T.T. 2011. Tropospheric and stratospheric ozone variations over Hanoi revealed by ozonesonde observations. *The Second International MAHASRI/HyARC Workshop on Asian Monsoon and Water Cycle*: 85, August, Nha Trang, Vietnam.
- Ogino, S.-Y., Wu, P.-M., Endo, N., Kubota, H., Hattori, M., Kamimera, H., Matsumoto, J., Tran, Q.C. and Nguyen, V.T. 2011. Detailed horizontal structures of rainfall events during Vietnam Philippines Rainfall Experiment 2010 (VPREX2010). *The Second International MAHASRI/HyARC Workshop on Asian Monsoon and Water Cycle*: 9, August, Nha Trang, Vietnam.
- Satomura, T., Kamimera, H., Katsumata, M., Matsumoto, J., Mori, S., Ogino, S., Yokoi, S. and Mahavik, N. 2011. Numerical simulation and radar observation of landed tropical storms in tropics. 9th International SRNWP-Workshop on Nonhydrostatic Modelling, May, Bad Orb, Germany.
- Satomura, T., Kamimera, H., Katsumata, M., Matsumoto, J., Mori, S., Ogino, S.-Y. and Yokoi, S. 2011. Asian Monsoon Years (2007-2012): Typhoons' behavior over tropical land. *WCRP Open Science Conference*: T168B, October, Denver, USA.
- Wu, P.-M., Fukutomi, Y., Kamimera, H. and Matsumoto, J. 2011. Influence of tropical disturbances and the Asian winter monsoon on rainfall variability in Central Vietnam. *International Union of Geodesy and Geophysics XXV General Assembly*: AS18-A003(CD-ROM), June, Melbourne, Australia.
- Wu, P.-M., Fukutomi, Y. and Matsumoto, J. 2011. What are the impacts of intraseasonal oscillations on extreme central Vietnam precipitation events? *The Second International MAHASRI/HyARC Workshop on Asian Monsoon and Water Cycle*: 13, August, Nha Trang, Vietnam.
- Wu, P.-M., Fukutomi, Y. and Matsumoto, J. 2011. The impacts of intraseasonal oscillations on extreme central Vietnam precipitation events. *Abstracts of the Meteorological Society of Japan 2011 Fall Meeting* **100**: 132, November, Nagoya. (in Japanese)
- Xu, J., Masuda, K. and Matsumoto, J. 2011. Energy and water balance estimates over Southeast Asia based on operational surface meteorological data. *The Second International MAHASRI/HyARC Workshop on Asian Monsoon and Water Cycle*: 319, August, Nha Trang, Vietnam.
- Xu, J., Kuwagata, T. and Matsumoto, J. 2012. Heat and water balance estimation over Asia. The First International Workshop of Climatic Changes and Their Effects on Agriculture in Asian Monsoon Region, March, Bangkok, Thailand.
- Yamanaka, M.D., Mori, S., Suga, T., Wu, P.M., Hamada, J.-I., Endo, N., Tachibana, Y., Matsumoto, J.

- and Fadli Syamsudin 2011. Asian Monsoon Years (2007-2012). Elucidating significance of land-sea coexistence in Earth's climate. *WCRP Open Science Conference: M216A*, October, Denver, USA.
- Takahashi, H. 2011. Heat island and cool island in Tokyo. Meguro City College "Diagnosing, perceiving, and learning the wholesome environments and the unhealthy environments 3", May, Meguro. (in Japanese)
- Takahashi, H. 2011. Torrential rain in Tokyo. Meguro City College "Diagnosing, perceiving, and learning the wholesome environments and the unhealthy environments 4", May, Meguro. (in Japanese)
- Takahashi, H. 2011. Advances in geographical sciences: Toward a new horizon of urban and regional environmental research. *Proceedings of the International Symposium on Sustainable Urban Environment 2011 (ISSUE2011): 26-29*, TMU Symposium Series No.5, November, Hachioji.
- Takahashi, H. 2012. Short-duration intense rainfall in the wards of Tokyo and its relationship with the spatial distribution of buildings. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting 81*: 30, March, Hachioji. (in Japanese)
- Takahashi, H., Yamato, H., Shimizu, S., Okubo, S., Takahashi, K. and Suzuki, H. 2011. Behavior of cold outflow and gust front during a torrential rain occurred in central Tokyo on August 5, 2008. *Abstracts of Japan Geoscience Union Meeting 2011: U022-009(CD-ROM)*, May, Makuhari. (in Japanese with English abstract).
- Suzuki, H., Nakakita, E. and Takahashi, H. 2012. A study on determining method of rain gauge installation interval and train operation control criteria for railroad. *55th Annual Meeting of Hydraulic Engineering: #69 (CD-ROM)*, March, Matsuyama. (in Japanese with English abstract)
- Takahashi, H.G. 2011. Impact of cold surges on tropical cyclone activity over the Indian Ocean. Workshop on Tropical Meteorology, September, Kyoto. (in Japanese)
- Takahashi, H.G. 2012. Numerical study on a land-atmospheric interaction over the Asian monsoon regions — A plan in GRENE project —. The First International Workshop of Climatic Changes and Their Effects on Agriculture in Asian Monsoon Region, March, Bangkok, Thailand.
- Takahashi, H.G., Yoshikane, T., Hara, M., Ma, X. and Kimura, F. 2011. Preliminary study on impact of SST on snowfall on Japan Sea side, a regional model experiment. *JSSI & JSSE Joint Conference on Snow and Ice Research —2011/Nagaoka: 2-6*, September, Nagaoka. (in Japanese)
- Takahashi, H.G., Fukutomi, Y. and Matsumoto, J. 2011. Asian Monsoon Years (2007-2012): Impact of cold surges of the winter monsoon on tropical cyclone activity over the Asian monsoon region.

- WCRP Open Science Conference: M218B, October, Denver, USA.*
- Takahashi, H.G., Yoshikane, T., Hara, M. and Kimura, F. 2011. Impact of SST changes on snowfall over the Sea of Japan side, using a regional climate model. *WCRP Open Science Conference: M28B, October, Denver, USA.*
- Takahashi, H.G., Kim, H.-J., Tanaka, K., Takata, K., Saito, K. and Yasunari, T. 2011. Sensitivity study on the impacts of biogenic VOC on the Asian monsoon climate in dry and wet seasons using MIROC5. *Aerocom10, October, Fukuoka.*
- Akasaka, I., Morishima, W., Zaiki, M., Kubota, H., Masuda, K., Matsumoto, J. and Cayan, E.O. 2011. Long-term variability of rainfall characteristics in the Philippines since the 20th century. *International Union of Geodesy and Geophysics XXV General Assembly: #4859 July, Melbourne, Australia.*
- Akasaka, I., Matsumoto, J., Morishima, W., Kubota, H., Mikami, T. and Cayan, E.O. 2011. Asian Monsoon Year (2007-2012): Long-term changes in summer rainy season onset in the Philippines and its relation to the atmospheric circulation and SST patterns in the tropical Pacific. *WCRP Open Science Conference: T166B, October, Denver, USA.*
- Akasaka, I., Morishima, W., Villafuerte, M., Kubota, H., Matsumoto, J. and Cayan, E.O. 2012. Long-term variability of seasonal rainfall characteristics in the Philippines for the period 1910-2010. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting* **81**: 262, March, Hachioji. (in Japanese)
- Asada, H. 2012. Village and demography in the Brahmaputra valley in Assam: Distribution and dynamics from census data. *The 7th Workshop on Environment and Human Activity in South Asia: Natural Disaster and Human Activity in the Northeast Indian Subcontinent and Indochina, February, Uji.* (in Japanese)
- Asada, H. 2012. Rice-based cropping systems of the different ethnic groups across the Brahmaputra floodplain in Assam, India. *International Workshop on Sharing Experience of Coping with Environmental Problem and Sustainable Development, February, Yangon, Vietnam.*
- Asada, H. 2012. Rice-based cropping systems of the different ethnic groups across the Brahmaputra floodplain in Assam, India. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting* **81**: 287, March, Hachioji. (in Japanese)
- Asada, H. 2012. Current situation and some problems on area study in northeast India. *The 1st HINDAS workshop 2011, March, Hachioji.* (in Japanese)
- Takahashi, K. and Takahashi, H. 2011. Relationship between wind system and urban heat island

- phenomenon in Tokyo ward area in summer (Part 5)—Analysis of nocturnal wind system by atmospheric pressure distribution around Tokyo—. *Abstracts of the Meteorological Society of Japan 2011 Spring Meeting* **99**: 156, May, Tokyo. (in Japanese)
- Mikami, T., Yamato, H., Morishima, W. and Akasaka, I. 2012. Mitigation of urban heat islands in central Tokyo due to the savings of electric energy consumption. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting* **81**: 263, March, Hachioji. (in Japanese)
- Zaiki, M. 2012. Japanese historical documents for climate reconstruction. PAGES Regional Workshop 2012, January, Chang Mai, Thailand.
- Zaiki, M. 2012. Climatic data rescue in Asia and long-term monsoon variability. KNMI DiDaH project meeting, January, De Bilt, Netherlands.
- Grossman, M. and Zaiki, M. 2012. Typhoons in Japan from 1880 to 1889. The Association of American Geographers 2012 Annual Meeting, February, New York, USA.
- Murata, F., Terao, T., Kiguchi, M., Fukushima, A., Takahashi, K., Hayashi, T., Habib, A., Bhuiyan, M.S.H. and Choudhury, S.A. 2011. Daytime thermodynamic and airflow structures over northeast Bangladesh during the pre-monsoon season: A case study on 25 April 2010. *International Union of Geodesy and Geophysics XXV General Assembly: AS18-A003(CD-ROM)*, June, Melbourne, Australia.
- Hoque, R. 2012. The onset of summer monsoon over Bangladesh. The 7th Environment and Human Activity in South Asia — Natural Disaster and Human Activity in the North-east Indian Subcontinent and Indochina, February, Kyoto.
- Hoque, R., Matsumoto, J. and Takahashi, H. 2012. Relationship between heavy rainfall and atmospheric circulation over Bangladesh. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting* **81**: 268, March, Hachioji.
- Idenaga, T., Takahashi, H.G. and Matsumoto, J. 2011. Short-term variation of sea surface temperature over the Japan Sea and snowfall over Japan. *Proceedings of the 5th Korea-Japan-China Joint Conference on Meteorology*: 182, October, Busan, Korea.
- Konno, S. and Takahashi, H. 2011. Characteristics of wintertime nocturnal temperature inversion over hilly regions of the western Kanto plain, Japan. *Proceedings of the 5th Korea-Japan-China Joint Conference on Meteorology*: 267, October, Busan, Korea.
- Konno, S. and Takahashi, H. 2011. A thermal belt observed on the mountain slope on the west of Kanto plain. *Abstracts of the Meteorological Society of Japan 2011 Fall Meeting* **100**: 449,

- November, Nagoya. (in Japanese)
- Konno, S., Izumi, T. and Takahashi, H. 2011. A thermal belt on the mountain slope on the west of Kanto plain observed by Terra/ASTER thermal infrared image. *E-journal of Kanto Branch of the Society of Agricultural Meteorology of Japan* **8**: 3, December, Tsukuba. (in Japanese)
- Konno, S., Izumi, T. and Takahashi, H. 2012. Characteristic of a thermal belt on a mountain slope observed by a Terra/ASTER thermal infrared image in the western region of Kanto plain, Central Japan – Relationship among surface temperature, topographical relief, and vegetation – . *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting* **81**: 266, March, Hachioji. (in Japanese)
- Murai, K. and Takahashi, H. 2012. Characteristics of precipitation associated with cold front passage in central Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting* **81**: 264, March, Hachioji. (in Japanese)
- Nguyen, T.H.A. 2012. Contribution of tropical cyclones to rainfall in the Vietnam coastal region. The 7th Environment and Human Activity in South Asia—Natural Disaster and Human Activity in the North-east Indian Subcontinent and Indochina, February, Kyoto.
- Nguyen, T.H.A. and Matsumoto, J. 2011. The contribution of tropical cyclone rainfall in Vietnam and its relation to ENSO. The 3rd International Workshop on Climate Downscaling, October, Ibaraki.
- Nguyen, T.H.A., Matsumoto, J. and Endo, N. 2011. Characteristics of tropical cyclone rainfall in Vietnam. *The Second International MAHASRI/HyARC Workshop on Asian Monsoon and Water Cycle*: 201, August, Nha Trang, Vietnam.
- Nguyen, T.H.A., Matsumoto, J. and Endo, N. 2011. Climatological study on the tropical cyclone rainfall in Vietnam. The 6th Korea-China-Japan Joint Conference on Geography, November, Seoul, Korea.
- Nwe Ni Lwin Htun 2012. The influence of ENSO on the summer monsoon precipitation in Myanmar. The 7th Environment and Human Activity in South Asia—Natural Disaster and Human Activity in the North-east Indian Subcontinent and Indochina, February, Kyoto.
- Seto, Y. and Takahashi, H. 2011. Analysis of the local wind circulation and divergence field in summer over the Kanto Plain based on observed wind. *Proceedings of the 5th Korea-Japan-China Joint Conference on Meteorology*: 271, October, Busan, Korea.
- Seto, Y. and Takahashi, H. 2011. Diurnal variations of local wind circulation and divergence field on sea-breeze days in summer over the Kanto Plain. *Abstracts of the Meteorological Society of Japan*

- 2011 Fall Meeting **100**: 451, November, Nagoya. (in Japanese)
- Seto, Y., Yokoyama, H., Ando, H., Hiroi, K., Fujiwara, T. and Takahashi, H. 2011. Development of the high-density meteorological observation network for analysis of local extreme weather such as torrential rainfall in Tokyo. Research Meeting on Rader, November, Tsukuba. (in Japanese)
- Shimizu, S. and Takahashi, H. 2011. Seasonal variation in cool island effect of two urban green spaces. *Proceedings of the 5th Korea-Japan-China Joint Conference on Meteorology*: 268, October, Busan, Korea.
- Shimizu, S., Sugawara, H., Narita, K., Mikami, T., Hagiwara, S. and Takahashi, H. 2011. Cold air-seeping phenomena in an urban green space—Observation results in the Institute for Nature Study—. *Abstracts of the Meteorological Society of Japan 2011 Fall Meeting* **100**: 354, November, Nagoya. (in Japanese)
- Shimizu, S., Sugawara, H., Narita, K., Mikami, T., Hagiwara, S. and Takahashi, H. 2011. Observation results of the cold air seeping phenomena in the Institute for Nature Study. *E-journal of Kanto Branch of the Society of Agricultural Meteorology of Japan* **8**: 4, December, Tsukuba. (in Japanese)
- Shimizu, S., Sugawara, H., Narita, K., Mikami, T., Hagiwara, S. and Takahashi, H. 2012. Cold air seeping phenomena in the Institute for Nature Study. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting* **81**: 31, March, Hachioji. (in Japanese)
- Sugawara, H., Shimizu, S., Hagiwara, S., Narita, K. and Mikami, T. 2011. Heat balance analysis of thermal mitigation on urban greens. How much do plants cool city? *Abstracts of the 6th National Conference of Heat Island Institute International*: 158, July, Tsukuba. (in Japanese)
- Sugawara, H., Shimizu, S., Narita, K., Mikami, T. and Hagiwara, S. 2012. How much do greens in Institute for Nature Study cool surrounding town? *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting* **81**: 32, March, Hachioji. (in Japanese)
- Suzuki, R. and Takahashi, H.G. 2012. Interannual variations of precipitation over the Asian winter monsoon regions using TRMM-PR. The 14th CEReS Symposium on Environmental Remote Sensing, February, Chiba.
- Villafuerte, M.Q. 2012. Past and recent extreme rainfall events in the Philippines. The 7th Environment and Human Activity in South Asia—Natural Disaster and Human Activity in the North-east Indian Subcontinent and Indochina, February, Kyoto.
- Villafuerte, M. and Matsumoto, J. 2011. Strengths and limitations of presently used climate downscaling in the Philippines. The 3rd International Workshop on Climate Downscaling, October,

Ibaraki.

Villafuerte, M., Matsumoto, J., Cinco, T.A., Akasaka, I. and Kubota, H. 2012. Long-term extreme rainfall trends and current activities related to CORDEX-SEA in the Philippines. Mini International Meeting Related with the Downscaling Projects, March, Ibaraki.

Yamato, H. and Takahashi, H. 2011. Relationship between daytime urban heat island and sea breeze penetration in Tokyo metropolitan area. *Proceedings of the International Symposium on Sustainable Urban Environment 2011 (ISSUE2011)*: 53-54, TMU Symposium Series No.5, November, Hachioji.

Yamato, H., Mikami, T. and Takahashi, H. 2011. Relationship between inland high temperature and sea breeze front in the Tokyo metropolitan area in summer. *Abstracts of the Meteorological Society of Japan 2011 Fall Meeting* **100**: 355, November, Nagoya. (in Japanese)

Yamato, H., Mikami, T. and Takahashi, H. 2012. Actual condition of urban heat island in Tokyo metropolis in summer daytime and its formative factors. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting* **81**: 29, March, Hachioji. (in Japanese)

3. Laboratory of Environmental Geography

1) Staff

Makiko WATANABE

Professor / PhD

Soil Geography, Environmental Dynamic Analysis, Geoarcheology

Masayuki KAWAHIGASHI Associate Professor / Dc. Agr. (From 1st, October)

Soil Ecology, Environmental Chemistry, Material Dynamics in Ecosystems

2) Overview of Research Activities

This research unit studies processes enacted upon human and natural environment in local and regional scales, with interdisciplinary fields comprised of physical geography, environmental chemistry, forest ecology, soil science, anthropology and so on. Research methods are in primary based on fieldworks associated with laboratory analyses of soil, water, plant and other environmental samples collected, interview survey, aerial photo and satellite imagery interpretation as well. Evaluation of urban soils as environmental resources is one of our major research subject together with overseas field studies.

Recent research subjects are as follows;

- 1) Development of survey methodology for evaluation of soils in urban area
- 2) Characterization of sclerotium grains and their function in forest soil ecosystem
- 3) Geoarcheological study on ancient water environment of Kharga, Western Desert, Egypt
- 4) Land recovery scenario in the upper Mt. Pinatubo, Philippines
- 5) Environmental risk evaluation of heavy metals around urban and mining area of Mongolia
- 6) Vegetation and land recovery after forest fire in taiga of Siberia permafrost area
- 7) Influence of land reclamation in Amur River Basin on dynamics of bio-elements
- 8) Effective application of plant residues for acid soil rehabilitation to enhance agricultural productivity
- 9) Influence of land use and land cover change in sub-urban areas on water quality in soils and water resources
- 10) Soil carbon sequestration from the view point of soil parent materials

3) List of Research Activities in FY2011

Peer-reviewed Articles

- Watanabe, M., Takaoka, S., Morishima, W., Sakagami, N., Collado, M. and Oguchi, T. 2011. Vegetation succession and land recovery process based on soil properties in the upper Mt. Pinatubo, the Philippines. *Journal of Geography (Chigaku Zasshi)* **120**: 631-645. (in Japanese with English abstract)
- Souri, B. and Watanabe, M. 2011. Contribution of CaO/ZrO₂ and Parker indexes to evaluate leaching intensity of calcareous soils in western Iran. *Journal of Arid Land Studies* **21**: 81-88.
- Kawahigashi, M., Prokushkin, A.S. and Sumida, H. 2011. Effect of fire on solute release from organic horizons under larch forest in the Central Siberian permafrost terrain. *Geoderma* **166**: 171-180.
- Kawahigashi, M., Fujitake, N., Yajima, H. and Sumida, H. 2012. Particle sizes of standard humic substances calculated as radii of gyration, maximum diameter and hydrodynamic radii. *Humic Substance Research* **8**: 13-18.

Other Articles

- Murata, T., Tanaka, H., Kawai, N., Yano, M. and Watanabe, M. 2012. Fluctuations in soil temperatures at different depth in the Institute for Nature Study. *Report of Institute for Nature Study* **43**: 1-10. (in Japanese)
- Kawahigashi, M. 2011. Leaching of DOM influenced by its interactions with soil components. In *Dynamics and function of dissolved organic matter –Connecting soil to sea through river–*, ed. A. Watanabe, 63-89. Tokyo: Hakuyusha. (in Japanese)
- Kawahigashi, M. 2011. Degree of humification of peat soils as an indicator for the soil formation process. In *Topics in tropical peat land 2011. Summer school edition*, ed. B. Sumawinata, S. Darmawan, C.H. Wijaya, L. Syaufina, Y.A. Nion, S.H. Limin, Y. Hamada, Y. Hashidoko and R. Hatano, 26-27. Bogor: IFES-GCOE Indonesian Liaison Office.
- Kawahigashi, M. 2011. Dissolve organic matter in tropical peat soils. In *Topics in tropical peat land 2011. Summer school edition*, ed. B. Sumawinata, S. Darmawan, C.H. Wijaya, L. Syaufina, Y.A. Nion, S.H. Limin, Y. Hamada, Y. Hashidoko and R. Hatano, 30-31. Bogor: IFES-GCOE Indonesian Liaison Office.
- Kawahigashi, M., Nhut, D.M., Nguyen, B.V. and Sumida, H. 2011. Changes in drained water quality

in a paddy field on acid sulphate soils in the Mekong Delta, Vietnam. *Proceedings of the 10th International Conference of the East and Southeast Asia Federation of Soil Science Societies*: 225-226.

Nagao, S., Terashima, M., Seki, O., Kawahigashi, M., Kodama, H. 2012. Dynamics of dissolved iron in river and estuary. *Marine and Biology* **198**: 42-48. (in Japanese)

Sumida, H., Kawahigashi, M., Nhut, M.D., Shen, R. and Ve, B.N. 2011. Pedogeny, chemical properties and distribution of acid sulfate soils in the Mekong Delta in Vietnam. *Proceedings of the 10th International Conference of the East and Southeast Asia Federation of Soil Science Societies*: 193-194.

Uoi, N, Watanabe, M. and Murata T. 2012. Correspondence of vertical soil hardness and land use history in the Institute for Nature Study. *Report of Institute for Nature Study* **43**: 37-45. (in Japanese)

Ichisawa, H., Uoi, N., Watanabe, M. and Morishima, W. 2011. Effect of soil profile structure on soil temperature in summer—A study on urban park soil—. *Chiri-Shisou* **53**: 1-12. (in Japanese with English abstract)

Kurosawa, Y., Sakagami, N., Hagiwara, S. and Watanabe, M. 2012. Characteristics of metallic elements contained in petal of the Yoshino cherry tree (*Prunus*×*yedoensis*) growing in the Institute for Nature Study. *Report of Institute for Nature Study* **43**: 29-36. (in Japanese)

Books

None

Reports

Watanabe, M., Kogawa, K., Kamei, H. and Nakano, T. 2012. A tentative map on water environment. In *El-Zayyan Kharga Oasis 2007-2010*, ed. H. Kamei and T. Nakano, 3-10. Tokyo: Tokyo Institute of Technology.

Book Reviews

Watanabe, M. 2011. Book review (Japanese Association of Soil Science and Plant Nutrition ed. Connecting soil to sea through river). *Geographical Review of Japan* **84**: 389. (in Japanese)

Miscellaneous Reports

Kawahigashi, M., Tani, M. and Takeuchi, H. 2011. Look back on the symposium held in Obihiro. *Pedologist* **55**: 82-83. (in Japanese)

Presentations

Watanabe, M. 2011. Where is “sclerotia”? JST Science Partnership Program, August, Tokyo. (in Japanese)

Watanabe, M. 2011. Water environment map of Kharga Oasis, Western Desert, Egypt based on ALOS satellite imagery. Symposium of the Society of Instrument and Control Engineers, Technical Committee of Remote Sensing, October, Hachioji. (Invited, in Japanese)

Watanabe, M. 2012. Recovery from radioactive pollution of soils and subjects for land re-function. Science Forum “Pathways to reduce mega disaster and to construct a sustainable society— Learning from Eastern Japan Mega Disaster—”, Science Council of Japan, February, Tokyo. (in Japanese)

Watanabe, M., Kogawa, K., Kamei, H., Sugimura, T. and Nakano, T. 2011. Water environment map around El Zayyan Temple in Kharga Oasis, Western Desert, Egypt based on ALOS pan-sharpened imagery. Archaeological Prospection 2011, September, Izmir, Turkey.

Watanabe, M., Osato, Y., Uoi, N. and Kawahigashi, M. 2012. Development of soil observation in drilling holes. *Japanese Society of Pedology, Abstract: 52*, March, Hachioji. (in Japanese)

Bolormaa, O., Erdenechimega, N. and Watanabe, M. 2011. Chemical partitioning of trace and major elements in soils from mining area, Zaamar. International Conference of Minerals and Materials Mongolia 2011, September, Ulaanbaatar, Mongolia.

Suzuki, C. and Watanabe, M. 2011. Visualization of vegetation landscape of the past by geocoding the Herbarium Specimens information. *Abstracts of Japan Geoscience Union Meeting 2011: MTT033-P12 (CD-ROM)*, May, Makuhari. (in Japanese with English abstract)

Tashiro, T., Watanabe, M. and Morishima, W. 2011. Temporal variation of particle size in Paitan Lake Sediments, the Central Plain of Luzon, the Philippines. *Proceedings of the General Meeting of the Association of Japanese Geographers 2011 Autumn Meeting* **80**: 78, September, Oita. (in Japanese)

Kawahigashi, M. 2012. Equilibrium in the Siberian taiga ecosystem. Seminar in Northern Hemisphere Cryosphere Program, JAMSTEC, January, Yokosuka. (in Japanese)

Kawahigashi, M., Xu, R.K., Shen, R.F. and Sumida, H. 2011. Influence of heating and burning on solutes release from plant residues. *Japanese Society of Soil Science and Plant Nutrition*,

- Abstract: 25, August, Tsukuba. (in Japanese)*
- Kawahigashi, M., Nhut, D.M., Nguyen, B.V. and Sumida, H. 2011. Changes in drained water quality in a paddy field on acid sulphate soils in the Mekong Delta, Vietnam. The 10th International Conference of the East and Southeast Asia Federation of Soil Science Societies, October, Colombo, Sri Lanka.
- Kawahigashi, M., Prokushkin, A. and Sumida, H. 2011. Influence of heating temperature on mineralization of litter layer. *Japanese Humic Substances Society, Abstract: 19-20, November, Kanazawa. (in Japanese)*
- Kawahigashi, M., Prokushkin, A. and Sumida, H. 2012. Influence of heating on dynamics of biogenic elements—A case study in the permafrost region in Siberian Taiga—. *Japanese Society of Pedology, Abstract: 51, March, Hachioji. (in Japanese)*
- Sakagami, S., Inaba, A., Tanaka, Y., Nakata, Y., Kawahigashi, M., Tsuchiya, K. and Yajima, H. 2011. Effects of environmental factors on physico-chemical properties of humic substances. *Japanese Humic Substances Society, Abstract: 37-38, November, Kanazawa. (in Japanese)*
- Sumida, H., Matsuda, M., Fukahori, M., Kawahigashi, M., Nhut, D.M. and Ve, N.B. 2011. As speciation in agricultural fields in the north-west Mekong Delta, Vietnam. *Japanese Society of Soil Science and Plant Nutrition, Abstract: 23, August, Tsukuba. (in Japanese)*
- Sumida, H., Kawahigashi, M., Nhut, M.D., Shen, R. and Ve, B.N. 2011. Pedogeny, chemical properties and distribution of acid sulfate soils in the Mekong Delta in Vietnam. The 10th International Conference of the East and Southeast Asia Federation of Soil Science Societies, October, Colombo, Sri Lanka.
- Tanaka, Y., Sakagami, S., Kato, Y., Kawahigashi, M., Kuramoto, K., Tsuchiya, K. and Yajima, H. 2011. Research on remediation by photolysis of contaminants using the complex of humic substances and limonite. *Japanese Humic Substances Society, Abstract: 39-40, November, Kanazawa. (in Japanese)*
- Myoga, S. 2011. Case studies of Suwanose Island in consideration from disaster and recovery of land function. *Proceedings of the General Meeting of the Association of Japanese Geographers 2011 Autumn Meeting 80: 80, September, Oita. (in Japanese)*
- Kato, S. 2012. Characteristics of forest location in the transition zone focused on the growth of Fagus in western slope of Mt. Chokai, northern Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting 81: 79, March, Hachioji. (in Japanese)*

- Kato, S., Sakagami, N. and Watanabe, M. 2011. Characterization of transition zone of forest soil and vegetation in Mt. Chokai, northern Japan. Geophysical Research Abstracts Vol. 13, EGU General Assembly 2011-5503, April, Vienna, Austria.
- Uoi, N., Murata, T., Morishima, W. and Watanabe, M. 2011. Evaluation of soil resource of historical parks in Tokyo Metropolis. Geophysical Research Abstracts Vol. 13, EGU General Assembly 2011-2904-2, April, Vienna, Austria.
- Uoi, N., Watanabe, M. and Murata, T. 2012. An attempt of Technosols classification by focusing vertical physical properties—A case study in Kitanomaru Park, Tokyo—. *Japanese Society of Pedology, Abstract: 51*, March, Hachioji. (in Japanese)
- Amasya, A.F. 2011. Soil arthropod abundance and formation of sclerotium grains in Fagus forest, Akita, Japan. Geophysical Research Abstracts Vol. 13, EGU General Assembly 2011-5194, April, Vienna, Austria.
- Amasya, A.F., Khastini, R.O., Narisawa, K. and Watanabe, M. 2011. Characterization of fungal communities associated with mesofauna in low pH forest soils. Argonne Soil Metagenomics Workshop 2011, October, Chicago, USA.

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 FY2011

Peer-reviewed Articles

- Matsuyama, H. 2011. Do hot summers follow cold winters?—What does “Taroshi-taki”, located at Hanamaki City, Iwate Prefecture, represent?—. *Journal of Geography (Chigaku Zasshi)* **120**: 926-943. (in Japanese with English abstract)
- Matsuyama, H. and Miyano, H. 2011. Diagnostic study on warming mechanism of spring water temperature based on field observations and numerical simulation — A case study of Masugatanoike spring, Tokyo, Japan—. *Hydrological Research Letters* **5**: 78-82.
- Yamazaki, S., Nakayama, D. and Matsuyama, H. 2011. An observational study on the concentration/load of Nitrate-nitrogen in small rivers derived from fertilization—A case study of the Sayama tea field—. *Journal of Japan Society of Hydrology and Water Resources* **24**: 202-215. (in Japanese with English abstract)
- Saito, H., Nakayama, D., Izumi, T. and Matsuyama, H. 2011. Real-time monitoring of rainfalls associated with shallow landslides—Development and verification of SWING system based on two rainfall patterns—. *Theory and Application of GIS* **19**: 81-90. (in Japanese with English abstract)
- Saito, H., Nakayama, D. and Matsuyama, H. 2011. Preliminary study on mountain slope partitioning addressing the hierarchy of slope unit using DEMs with different spatial resolution. *Proceedings of Geomorphometry2011*: 143-146.
- Nakayama, Y., Nakamura, K., Saito, H. and Fukumoto, R. 2011. Open Café System: Development and application of FOSS4G package for natural environment. *Theory and Application of GIS* **19**: 17-23. (in Japanese with English abstract)
- Nemoto, Y., Nakayama, D. and Matsuyama, H. 2011. Reevaluation of *Shingen-tsutsumi* based on inundation flow simulations with special focus on flood control facilities along the Midai River. *Geographical Review of Japan* **84**: 553-571. (in Japanese with English abstract)
- Urita, S., Saito, H. and Matsuyama, H. 2011. Temporal and spatial discontinuity of Radar/Raingauge -Analyzed Precipitation that appeared in relation to the modification of its spatial resolution. *Hydrological Research Letters* **5**: 37-41.
- Urita, S., Saito, H., Nakayama, D., Izumi, T. and Matsuyama, H. 2011. The spatial distribution and regional characteristics of rainfall-induced potential landslide disaster occurrence in Japan as

revealed by Soil Water Index. *Journal of Geography (Chigaku Zasshi)* **120**: 615-630. (in Japanese with English abstract)

Watanabe, T., Izumi, T. and Matsuyama, H. 2011. Numerical study on effects of rooftop greening on moderating air temperature in Tokyo metropolitan area. *Journal of Japan Society of Civil Engineering G (Environmental Research)* **67**: 101-113. (in Japanese with English abstract)

Other Articles

Matsuyama, H. 2011. Water problems of Lake Balkhash basin in Central Asia. *Journal of Japanese Society of Regional and Agricultural Development* **20**(2): 1-8. (invited, in Japanese with English abstract)

Matsuyama, H. 2011. Do hot summers follow cold winters?—What does “Taroshi-taki”, located at Hanamaki City in Iwate Prefecture, represent?—(Color Page). *Journal of Geography (Chigaku Zasshi)* **120**(6): ix-x. (in Japanese)

Akasaka, I., Ando, H., Yokoyama, H., Okubo, S., Takahashi, K., Izumi, T. and Mikami, T. 2011. High-spatial density meteorological observation system in Tokyo. *Journal of Geography (Chigaku Zasshi)* **120**: 309-316. (in Japanese with English abstract)

Fukumoto, R., Izumi, T., Mori, S., Masuda, Y., Kishida, Y., Okauchi, T., Azuma, H., Nakatsubo, Y. and Nakayama, Y. 2011. Effectiveness of urban distributed field survey assisting system by FOSS4G for information sharing and organizing in reconstruction assistance—The case study of interview survey for water use condition in Minami-Sanriku-Town— . *Proceedings of Conference of GIS Association of Japan* **20**: B-2-2. (in Japanese with English abstract)

Mikami, T., Yamato, H. and Extended-METROS Research Group (including Izumi, T.) 2011. High-resolution temperature observation using Extended-METROS in the Tokyo metropolitan area and their urban climatological significance. *Journal of Geography (Chigaku Zasshi)* **120**: 317-324. (in Japanese with English abstract)

Saito, H., Chang, K.T. and Oguchi, T. 2011. Relationship among shallow landslide, geomorphology, and geology using a decision-tree model in the Shihmen Reservoir watershed, Taiwan, and in the Akaishi Mountains. *Proceedings of Conference of GIS Association of Japan* **20**: E-3-2. (in Japanese with English abstract)

Hoshida, Y., Saito, H., Nakayama, Y., Mori, S., Fukumoto, R. and Sugiura, S. 2011. Network analysis using co-occurrence frequency of prefectures in cyberspace. *Proceedings of Conference of GIS Association of Japan* **20**: C-1-3. (in Japanese with English abstract)

- Nakayama, K., Nakamura, K., Sugiura, S., Saito, H., Fukumoto, R. and Nakayama, Y. 2011. Multipurpose filed survey assisting system available from the Internet. *Proceedings of Conference of GIS Association of Japan* **20**: E-1-3. (in Japanese with English abstract)
- Inamura, T., Iwasaki, K., Saito, H., Nakayama, D., Izumi, T. and Matsuyama, H. 2011. Numerical simulation investigating how local wind "Matsubori-kaze" is affected by unique topography of Mt. Aso. *Japanese Study Group for Climate Impact and Application Newsletter* **29**: 28-30. (in Japanese)
- Hiramatsu, Y. 2012. Analysis of public transportation at Mito City in Ibaraki Prefecture using geographical information systems. *Annals of Smart Town Development Forum in Mito 2012*: 19-20. (in Japanese)

Books

None

Reports

- Laboratory of Geographical Information Sciences, Department of Geography 2011. Recent studies conducted in Laboratory of GIS (LaGIS) in relation to various resources in Tokyo metropolis. *Proceedings of the International Symposium on Sustainable Urban Environment 2011 (ISSUE2011), TMU Symposium Series No.5*: 57-58.
- Matsuyama, H. 2011. Estimation of the spatial distribution of leaf area index using a new vegetation index named NHVI (Normalized Hotspot-signature Vegetation Index). *Annual Report 2010 of Center for Environmental Remote Sensing, Chiba University* **16**: 60-61. (in Japanese and English)

Book Reviews

None

Miscellaneous Reports

- Matsuyama, H. 2011. What is necessary for regeneration of Japan? A proposal by the OBAYASHI Foundation: http://www.obayashifoundation.org//disaster_proposal/proposal07.html. (in Japanese)
- Matsuyama, H. 2011. My personal experience and enthusiasm on Tohoku Shinkansen. *Annual Report of Old Boys/Girls of Wandervogel Club in Tokyo University in 2012*: 27-29. (in Japanese)

- Matsuyama, H. and Nishimine, Y. 2011. Sacred place of cartography (A version of Textbook's matrix). *Map Journal* No.169: 36-39. (in Japanese)
- Izumi, T. 2012. Be a core to cool central Tokyo (Comment on the utilization of forests in Imperial Palace). *Tokyo Shimbun*, 5th, January 2012. (in Japanese)
- Nakayama, D. 2012. Introduction of new book reviewer: Three books to read in this spring. *Chiri* **57**(4): 122-123. (in Japanese)
- Aoyama, M. 2011. Hazardous nature of the liquefaction indicated by old maps. *Asahi Shimbun Weekend Version* (be), 30th, July 2011. (in Japanese)
- Saito, H. 2011. Report of training camp of Open Concierge. *Open-Cafe Sync* **1**: 8-9. (in Japanese)
- Saito, H. 2011. Background of determining the name of "Open-Cafe Sync". *Open-Cafe Sync* **1**: 20. (in Japanese)
- Saito, H. 2011. Sacred place of cartography (Akaishi Mountain's version). *Map Journal* No.169: 40-43. (in Japanese)
- Saito, H. 2011. Geographical information studies on the causes of shallow landslide initiation in Japan – Analysis of geomorphology, geology, and rainfall for the real-time assessment –. Doctoral Dissertations in Geography Accepted at Japanese Universities, Academic Year 2010. *Geographical Review of Japan* **84**: 399. (in Japanese)
- Saito, H. 2011. Aka-kuzure and V-shaped valleys along the Ohi River, Akaishi Mountains, Japan. *Transactions, Japanese Geomorphological Union* **32**(4): Cover photo and its explanation. (in Japanese)
- Saito, H., Nakayama, D., Izumi, T. and Matsuyama, H. 2011. P12. Real-time shallow landslide hazard monitoring and its evaluation based on two rainfall patterns. Abstract of Fall Meeting, Japanese Geomorphological Union in 2010. *Transactions, Japanese Geomorphological Union* **32**: 349. (in Japanese)
- Nakayama, Y., Nakamura, K., Sugiura, S., Saito, H. and Fukumoto, R. 2011. Open Cafe System: FOSS4G package for natural environment. *Open-Cafe Sync* **1**: 12-15. (in Japanese)

Presentations

- Matsuyama, H. 2011. Secrets of global warming from global-scale point of view. Meguro City Collage "Diagnosing, perceiving, and learning the wholesome environments and the unhealthy environments 2". April, Meguro. (in Japanese)
- Matsuyama, H. 2011. Relationship between temperature and precipitation in the large river basins of

- the world. Open University of Tokyo Metropolitan University “Present status of the Earth as revealed by the hydrological cycle—To study the various aspects of the hydrological cycle in the world—”. May, Iidabashi. (in Japanese)
- Matsuyama, H. 2011. Hydrological cycle of the humid tropics—A case study of the Amazon river basin in South America—. Open University of Tokyo Metropolitan University “Present status of the Earth as revealed by the hydrological cycle—To study the various aspects of the hydrological cycle in the world—”. June, Iidabashi. (in Japanese)
- Matsuyama, H. 2011. Hydrological cycle of the semi-arid regions—A case study of the Balkhash Lake in Central Asia—. Open University of Tokyo Metropolitan University “Present status of the Earth as revealed by the hydrological cycle—To study the various aspects of the hydrological cycle in the world—”. June, Iidabashi. (in Japanese)
- Matsuyama, H. 2011. Hydrological cycle of the cold regions—A case study of the Volga river basin in Siberia—. Open University of Tokyo Metropolitan University “Present status of the Earth as revealed by the hydrological cycle—To study the various aspects of the hydrological cycle in the world—”. June, Iidabashi. (in Japanese)
- Matsuyama, H. 2011. Hydrological cycle of the snowy mountainous regions—A case study of Mt. Makihata, Niigata Prefecture—. Open University of Tokyo Metropolitan University “Present status of the Earth as revealed by the hydrological cycle—To study the various aspects of the hydrological cycle in the world—”. June, Iidabashi. (in Japanese)
- Matsuyama, H. 2011. Talks on the working at Tokyo Metropolitan University and the strong local wind “Matsubori-kaze”. Special Lecture at Oozu-Higashi Elementary School, July, Oozu, Kumamoto. (in Japanese)
- Matsuyama, H., Izumi, T. and Hasegawa, K. 2012. Estimation of leaf area index of *Cryptomeria japonica* using various methods—A case study in the Aso District, Kumamoto Prefecture—. The 14th CEReS Symposium on Environmental Remote Sensing, February, Chiba. (in Japanese)
- Matsuyama, H., Nishimine, Y. and Nakayama, D. 2012. Geographic information study on the distribution of place names as revealed by natural conditions. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting* **81**: 275, March, Hachioji. (in Japanese)
- Izumi, T. and Inamura, T. 2011. Numerical simulation on the change of thermal environment in Wuhan, China accompanied with the urbanization with the use of satellite images taken in 1991 and 2005. *Abstracts of the Meteorological Society of Japan 2011 Fall Meeting* **100**: 454,

- November, Nagoya. (in Japanese)
- Izumi, T., Kumagai, S. and Matsuyama, H. 2012. The estimation of green coverage ratio using airborne remotely sensed data—A case study of Suginami ward—. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting* **81**: 249, March, Hachioji. (in Japanese)
- Fukumoto, R., Izumi, T., Mori, S., Masuda, Y., Kishida, Y., Okauchi, T., Azuma, H., Nakatsubo, Y. and Nakayama, Y. 2011. Effectiveness of urban distributed field survey assisting system by FOSS4G for information sharing and organizing in reconstruction assistance—The case study of interview survey for water use condition in Minami-Sanriku-Town—. 20th Annual Meeting of GIS Association of Japan, October, Kagoshima. (in Japanese)
- Konno, S., Izumi, T. and Takahashi, H. 2011. A thermal belt on the mountain slope on the west of Kanto plain observed by Terra/ASTER thermal infrared image. *E-journal of Kanto Branch of the Society of Agricultural Meteorology of Japan* **8**: 3, December, Tsukuba. (in Japanese)
- Konno, S., Izumi, T. and Takahashi, H. 2012. Characteristic of a thermal belt on a mountain slope observed by a Terra/ASTER thermal infrared image in the western region of Kanto plain, Central Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting* **81**: 249, March, Hachioji. (in Japanese)
- Koarai, M., Nakano, T., Suzuki, T., Nakayama, D., Wachi, T. and Fujinawa, A. 2011. Tephra GIS using Cyber Japan Web System. *Abstracts of Japan Geoscience Union Meeting 2011*: HSC024-09 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Aoyama, M. 2011. Observation of ground temperature and soil displacement on the lobate landforms in the summit area of Mt. Minamidake, northern Japanese Alps. Symposium of “Frontier of Cold Region Geomorphology”, May, Kawasaki. (in Japanese)
- Aoyama, M. 2012. Ground disaster in the Osaki Plain, northern part of Miyagi Prefecture caused by the 2011 off the Pacific coast Tohoku Earthquake. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting* **81**: 225, March, Hachioji. (in Japanese)
- Aoyama, M. and Koyama, T. 2011. Correlation of the distribution of liquefied sites in the Tone River lowland and land use change since the Meiji era. *Abstract of Japan Geoscience Union Meeting 2011*: MIS036-P160 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Aoyama, M. and Koyama, T. 2011. Land history of the liquefied sites in the Tone River lowland caused by the 2011 off the Pacific coast of Tohoku Earthquake. *Proceedings of the General*

- Meeting of the Association of Japanese Geographers 2011 Fall Meeting* **80**: 88, September, Oita. (in Japanese)
- Aoyama, M. and Koyama, T. 2011. Distribution map of the liquefaction damages in the Tone River lowland caused by the 2011 off the Pacific coast of Tohoku Earthquake. *Proceedings of the General Meeting of the Association of Japanese Geographers 2011 Fall Meeting* **80**: 166, September, Oita. (in Japanese)
- Koyama, T. and Aoyama, M. 2011. Relationship between liquefaction sites and land history in Itako city and Kamisu city, Ibaraki Prefecture. *Proceedings of the General Meeting of the Association of Japanese Geographers 2011 Fall Meeting* **80**: 167, September, Oita. (in Japanese)
- Koyama, T., Aoyama, M. and Masuzawa, T. 2011. Movement rates of solifluction lobes in Mt. Maru-yama, southern Japanese Alps. Symposium of “Frontier of Cold Region Geomorphology”, May, Kawasaki. (in Japanese)
- Une, H. and Aoyama, M. 2012. Liquefaction damage in inland area and the predictability of liquefaction hazard map. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting* **81**: 3, March, Hachioji. (in Japanese)
- Saito, H. and Matsuyama, H. 2011. Real-time monitoring of two rainfall types associated with landslides—A case study on the sediment-related disaster caused by typhoon No.12 in 2011 in the Kii Peninsula—. The 3rd GIS Landslide Workshop, November, Tsukuba. (in Japanese)
- Saito, H. and Matsuyama, H. 2012. Real-time monitoring of two rainfall types based on SWING system—A case study on the sediment-related disaster caused by typhoon No.12 in 2011 in the Kii Peninsula—. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting* **81**: 11, March, Hachioji. (in Japanese)
- Saito, H., Chang, K.T. and Oguchi, T. 2011. Relationship among shallow landslides, geomorphology, and geology in the Shihmen Reservoir Watershed in Taiwan using a decision-tree model. Abstract of Fall Meeting in 2011, Japanese Geomorphological Union, *Transactions, Japanese Geomorphological Union* **33**: 88-89 September, Kanazawa. (in Japanese)
- Saito, H., Chang, K.T. and Oguchi, T. 2011. Landslide susceptibility analysis using a decision-tree model in the Baichi watershed in Taiwan. *Proceedings of the General Meeting of the Association of Japanese Geographers 2011 Fall Meeting* **80**: 55, September, Oita. (in Japanese)
- Saito, H., Chang, K.T. and Oguchi, T. 2011. Relationship among shallow landslide, geomorphology, and geology using a decision-tree model in the Shihmen Reservoir watershed, Taiwan, and in the Akaishi Mountains. 20th Annual Meeting of GIS Association of Japan, October, Kagoshima. (in

Japanese)

- Saito, H., Chang, K.T. and Oguchi, T. 2011. Relationships among shallow landslides, geomorphology, and geology inferred from decision-tree models for mountains in Taiwan and Japan. *Research Abstracts on Spatial Information Science, CSIS DAYS 2011*: 10, November, Kashiwa. (in Japanese)
- Saito, H., Chang, K.T. and Oguchi, T. 2011. Relationships among shallow landslides, geomorphology, and geology inferred from decision-tree models for mountains in Taiwan and Japan. AGU Fall Meeting 2011, December, San Francisco, USA.
- Saito, H., Goto, K. and Komatsu, G. 2011. Application of Google Mars, Quantum GIS and ArcGIS for geomorphological research on Mars. *Abstract of Japan Geoscience Union Meeting 2011*: HTT033-05 (CD-ROM), May, Makuhari. (in Japanese)
- Saito, H., Nakayama, D. and Matsuyama, H. 2011. A preliminary study on mountain slope partition focusing on a hierarchy of slope unit using DEMs with different spatial resolution. *Proceedings of Geomorphometry2011*: 143-146, September, Redlands, USA.
- Brunetti, M.T., Komatsu, G., Mancinelli, P., Goto, K., Santangelo, M., Fiorucci, F., Cardinali, M., Saito, H. and Guzzetti, F. 2011. Detection, mapping, classification, and statistics of mass movements on Mars. *European Geosciences Union General Assembly 2011*: EGU2011-5750, April, Vienna, Austria.
- Brunetti, M.T., Cardinali, M., Fiorucci, F., Guzzetti, F., Santangelo, M., Mancinelli, P., Komatsu, G., Goto, K. and Saito, H. 2011. Mapping, classification, and statistics of mass movements in Valles Marineris, Mars. *Proceedings of AGU Fall Meeting 2011*: EP43A-0662, December, San Francisco, USA.
- Fiorucci, F., Brunetti, M.T., Santangelo, M., Cardinali, M., Mancinelli, P., Komatsu, G., Goto, K., Saito, H. and Guzzetti, F. 2011. Classification and statistics of landslides in the Valles Marineris, Mars. *Abstracts of 2011 PERC Planetary Geology Field Symposium*: 9, November, Fukuoka.
- Hoshida, Y., Saito, H., Nakayama, Y., Mori, S., Fukumoto, R. and Sugiura, S. 2011. Network analysis using co-occurrence frequency of prefectures in cyberspace. 20th Annual Meeting of GIS Association of Japan, October, Kagoshima. (in Japanese)
- Hoshida, Y., Saito, H., Nakamura, Y., Mori, T., Fukumoto, R. and Sugiura, S. 2011. Network analysis using co-occurrence frequency of prefectures in the Web. *Research Abstracts on Spatial Information Science, CSIS DAYS 2011*: 45, November, Kashiwa. (in Japanese)
- Nakamura, K., Fukumoto, R., Sugiura, S., Saito, H., Nakayama, K. and Nakayama, Y. 2011.

- Low-cost and user-friendly field survey assisting system powered by Open Café System. *Abstract of Japan Geoscience Union Meeting 2011*: HTT005-02 (CD-ROM), May, Makuhari.
- Nakayama, K., Nakamura, K., Sugiura, S., Saito, H., Fukumoto, R. and Nakayama, Y. 2011. Multipurpose filed survey assisting system available from the Internet. 20th Annual Meeting of GIS Association of Japan, October, Kagoshima. (in Japanese)
- Nakayama, Y., Nakayama, K., Saito, H., Sugiura, S. and Nakamura, K. 2011. Field survey assisting system based on Open Cafe System. *Research Abstracts on Spatial Information Science, CSIS DAYS 2011*: 43, November, Kashiwa. (in Japanese)
- Oguchi, T., Hayakawa, S.Y., Saito, H., Kobayashi, A., Baker, R.V., Pelletier, J., Komatsu, G. and Goto, K. 2012. Laser scanning surveys to analyze morphological impacts of the 2011 off the Pacific coast of Tohoku Earthquake Tsunami, Japan. Japan and New Zealand RAPIDS and Research Needs Workshop, February, Virginia, USA.
- Sugiura, S., Nakamura, K., Saito, H., Mori, S., Fukumoto, R., Nakayama, K. and Nakayama, Y. 2011. Development of the spot routing functions for multiple users onto field survey assisting system. *Forum on Information Technology 2011*: RM-003, September, Hakodate. (in Japanese)
- Inamura, T., Izumi, T. and Matsuyama, H. 2011. Characteristics of vertical structure of the atmosphere when local wind “Rausu-dashi” blows. *Abstracts of the Meteorological Society of Japan 2011 Spring Meeting 99*: 314, May, Tokyo. (in Japanese)
- Inamura, T., Izumi, T. and Matsuyama, H. 2011. The effects of a large city on heavy rainfall in Tokyo as revealed by ensemble simulation. 11th EMS Annual Meeting & 10th European Conference on Applications of Meteorology (ECAM), September, Berlin, Germany.
- Inamura, T., Izumi, T. and Matsuyama, H. 2011. Temporal and spatial distribution of local wind “Matsubori-kaze” based on long-term surface wind observations. *Abstracts of the Meteorological Society of Japan 2011 Fall Meeting 100*: 447, November, Nagoya. (in Japanese)
- Kawahara, K., Nakayama, D. and Matsuyama, H. 2012. Geomorphometric study on topographic naturalness — A case study of Tama Hills —. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting 81*: 167, March, Hachioji. (in Japanese)
- Nemoto, Y., Nakayama, D. and Matsuyama, H. 2012. Diagnostic study on the Artificial Flooding Tactics at Bicchutamats Castle by Hideyoshi based on inundation flow simulations. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting 81*: 217, March, Hachioji. (in Japanese)

- Urita, S., Saito, H. and Matsuyama, H. 2011. Interannual variability of Radar/Raingauge-Analyzed Precipitation in relation to the converting 5 km mesh data. *Abstracts of the Meteorological Society of Japan 2011 Spring Meeting 99*: 343, May, Tokyo. (in Japanese)
- Hiramatsu, Y., Nakayama, D. and Matsuyama, H. 2011. The study of spatial continuity of Radar/Raingauge-Analyzed Precipitation, analyzed by variogram. *Abstracts of the Meteorological Society of Japan 2011 Spring Meeting 99*: 305, May, Tokyo. (in Japanese)
- Katasakai, H., Watanabe, T., Inamura, T., Izumi, T. and Matsuyama, H. 2011. A numerical study on the warming mechanism of air temperature induced by local strong wind “Chinook”. *Abstracts of the Meteorological Society of Japan 2011 Spring Meeting 99*: 352, May, Tokyo. (in Japanese)
- Mito, T., Inamura, T., Izumi, T. and Matsuyama, H. 2012. Studies on the location and power generation of wind farms using the observational data of Taikoyama wind farms and Tomamae-Yuuhigaoka wind farms. 57th Symposium on Wind, March, Tokyo. (in Japanese)
- Mito, T., Inamura, T., Izumi, T. and Matsuyama, H. 2012. Studies on the location and power generation of wind farms using the observational data of Taikoyama wind farms and Tomamae-Yuuhigaoka wind farms. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting 81*: 183, March, Hachioji. (in Japanese)
- Shimoyamada, T., Nishimine, Y. and Matsuyama, H. 2011. The difference of the spatial distribution of the stores of drug store “COSMOS Pharmaceutical Corporation” and family restaurant “Joyfull Co. Ltd.”. *Research Abstracts on Spatial Information Science, CSIS DAYS 2011*: 28, 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

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 FY2011

Peer-reviewed Articles

- Kukimoto, M., Wakabayashi, Y. and Yui, Y. 2012, Production of local childcare culture in Okinawa and the impact of policy change. *Geographical Review of Japan Series B* **84**: 60-70.
- Kubo, T., Yui, Y., Kukimoto, M. and Wakabayashi, Y. 2012. Employment, childcare, and housing problems of single-parent families in Okinawa. *Geographical Space* **4**(2): 81- 95. (in Japanese with English abstract)
- Yamamoto, K. and Kukimoto, M. 2011. The consumption space of urban cultural industry in Tokyo metropolitan: Focusing on special relationship between theaters and performances. *Nihon Toshigakkai Nenpo* **44**: 99-107. (in Japanese)
- Koizumi, R., Nishiyama, H., Kubo, T., Kukimoto, M. and Kawaguchi, T. 2011. New dimensions of housing acquisition in the Tokyo bay area: Skyscraper condominium residents in Toyosu. *Geographical Review of Japan* **84**: 592-609. (in Japanese with English abstract)

Other Articles

- Sugiura, Y. 2011. The development of human geography and GIS. In *Human geography in the age of globalization*, ed. S. Kobayashi and H. Miyazawa, 231-248. Tokyo: Hosodaigaku Kyoikushinkokai. (in Japanese)
- Wakabayashi, Y. 2011. Mental maps and culture. In *Cultural geography of space*, ed. H. Nakamata,

44-68. Tokyo: Asakura Shoten. (in Japanese)

Wakabayashi, Y. and Ishikawa, T. 2011. Spatial thinking in geographic information science: A review of past studies and prospects for the future. *Procedia Social and Behavioral Sciences* **21**: 304–313.

Wakabayashi, Y., Itoh, S. and Nagami, Y. 2011. The use of geospatial information and spatial cognition of taxi drivers in Tokyo. *Procedia Social and Behavioral Sciences* **21**: 353–361.

Takinami, A. 2011. Travel narrative. In *Sociology of tourism*, ed. K. Yasumura, M. Horino, H. Endo and S. Teraoka, 146-147. Kyoto: Minerva-Shobo. (in Japanese)

Tsubomoto, H., Uozumi, A. and Wakabayashi, Y. 2012. Recent development of condominiums and demographic change in the Nihonbashi district of Chuo Ward, Tokyo. *Geographical Reports of Tokyo Metropolitan University* **47**: 69-78.

Kukimoto, M. 2011. Changing city and childcare. *Chiri* **56**(5): 38-47. (in Japanese)

Koizumi, R. 2011. Economic geographers' approaches. In *Toward a practical geography*, ed. S. Ito, T. Arima, N. Komaki, T. Hayashi and K. Suzuki, 15-25. Tokyo: Kokon-Shoin. (in Japanese)

Books

Sugiura, Y. ed. 2012. *Geography of regional environment*. Tokyo: Asakura-Shoten. (in Japanese)

OECD ed., translated into Japanese by Kamiya, H., Kuwatsuka, K., Yui, Y., Wakabayashi, Y. Kukimoto, M, and Nakazawa, T. 2012. *OECD regions at a glance 2011*. Tokyo: Akashi Shoten. (in Japanese)

Reports

None

Book Reviews

None

Miscellaneous Reports

None

Presentations

Kariya, Y., Yabe, N. and Sugiura, Y. 2012. The present state and future of E-journal GEO, a

- peer-reviewed electronic journal of the Association of Japanese Geographers. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Spring Meeting* **81**: 13. (in Japanese)
- Wakabayashi, Y. 2011. The role of geography and GIS in geospatial thinking. AAG Annual meeting, April, Seattle, USA.
- Wakabayashi, Y. 2011. The role of geographic knowledge and spatial abilities in map reading process: Implications for geospatial thinking. International Cartographic Conference 2011, July, Paris, France.
- Wakabayashi, Y. and Ishikawa, T. 2011. Spatial thinking in geographic information science: A review of past studies and prospects. STGIS 2011, September, Tokyo.
- Wakabayashi, Y., Koizumi, R., Uozumi, A. and Tsubomoto, H. 2011. Cartographic visualization of the recent development of condominiums and demographic change in downtown Tokyo: Mainly focused on Nihonbashi district. *Abstracts of Japan Geoscience Union Meeting 2011: MTT033-P16*(CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Wakabayashi, Y., Itoh, S. and Nagami, Y. 2011. The use of geospatial information and spatial cognition of taxi drivers in Tokyo. STGIS 2011, September, Tokyo.
- Wakabayashi, Y., Kukimoto, M. and Yui, Y. 2011. Regional characteristics of provision and use of child-care services in Urasoe City, Okinawa. *Proceedings of the General Meeting of the Association of Japanese Geographers 2011 Fall Meeting* **80**: 110, September, Oita. (in Japanese)
- Kubo, T., Yui, Y., Wakabayashi, Y. and Kukimoto, M. 2011. Single-parent families in Okinawa: A comprehensive analysis of their daily problems. ICAS&AAS, April, Honolulu, USA.
- Tsubomoto, H., Uozumi, A. and Wakabayashi, Y. 2011. Recent development of condominiums and demographic change in Nihonbashi district of Chuo Ward, Tokyo. *Proceedings of the General Meeting of the Association of Japanese Geographers 2011 Fall Meeting* **80**: 144, September, Oita. (in Japanese)
- Kukimoto, M. 2011. Who will mind the baby?: Working mothers as “childcare refugees” and institutional dysfunction in Japan, The 13th International Conference of EAJS (Panel: Life Course of Contemporary Japanese Women 1 and 2), August, Talinn, Estonia.
- Kukimoto, M., Yui, Y. and Wakabayashi, Y. 2011. Child-support program in the suburbs of Nagoya metropolitan area: The case of Kozoji New Town. *Proceedings of the General Meeting of the Association of Japanese Geographers 2011 Fall Meeting* **80**: 109, September, Oita. (in Japanese)
- Kukimoto, M., Koizumi, R., Nishiyama, H., Kubo, T. and Kawaguchi, T. 2011. Childcare strategies

of double-income families living in central Tokyo, IGU Urban Commission Meeting 2011, August, Canterbury, New Zealand.

Koizumi, R. 2011. The spatial patterns and its changes in the Tokyo metropolitan area after the Bubble Economy. *Japanese Journal of Human Geography* **63**: 296-297, March, Tokyo. (in Japanese)

Kubo, T., Koizumi, R., Nishiyama, H., Kukimoto, M. and Kawaguchi, T. 2012. Supply of super high-rise condominiums in central Tokyo and its impact on residential structure. Association of American Geographers Annual Meeting 2012, February, New York, USA.