

Annual Report 2012

Geography

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

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1 Laboratory of Quaternary Geology and Geomorphology

1) Staff

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

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

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

2) Overview of Research Activities

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

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

3) List of Research Activities in FY2012

Peer-reviewed Articles

- Suzuki, T. 2012. Review and perspective of Quaternary teprochronology in north Kanto and south Tohoku regions, northeast Japan (The Paper for the 2010 Japan Association for Quaternary Research Academic Award). *The Quaternary Research* **51**: 65-78. (in Japanese with English abstract)
- Abe, T. and Shirai, M. 2013. Event deposits correlated with a historical tsunami in the Edo era, on the coastal lowland of the Atsumi Peninsula, central Japan. *The Quaternary Research* **52**: 33-42. (in Japanese with English abstract)
- Ueki, T., Nakao, K., Nishiyama, K., Morie, T., Takemura, K., Yonenobu, H., Yamada, K. and Hasegawa, S. 2012. Case report on a field excursion for the general public as an outreach activity by an academic society for Quaternary science. *Education of Earth Science* **65**: 63-80. (in Japanese)
- Ueki, T., Ito, T., Nakano, H., Obi, Y. and Makino M. 2012. A case report on the field excursion for school teachers including field practice and laboratory experiment to introduce a peel specimen of sediments and simplified flume experiment in school lessons. *The Journal of the Geological Society of Japan* **118**: 387-392. (in Japanese with English abstract)
- Ando, K. and Yamazaki, H. 2012. Evolving simulation of fault-related flexure using CIP method which makes consideration of dilatancy. *Journal of the Seismological Society of Japan* **65**: 135-149. (in Japanese with English abstract)

Other Articles

- Yamazaki, H., 2013, Active faults and surface breaks, we need a viewpoint of the correspondence of the engineering to overcome them. *Fuji-sankei Bussiness-i*. 2013/03/28, p.19.
- Oishi, M., Matsushima, N., Tanaka, A., and Nishiki, K. 2012. Recipe of kitchen volcanic experiment of flour volcanoes as a demonstrational tool, in the Geoscience Exhibition in Mito 2011. *GSI Chishitsu News* **1**: 115-119. (in Japanese)
- Sumita, T., Chou, I., Nakai, M., Furukawa, R., Ito, S., Takeuchi, K., Iwaya, T., Nanayama, F., Miyakawa, A., Takahashi, M., Takahashi, M., Ando, R., Mizugaki, K., Yanagisawa, N., Kaneko, N., Sato, T., Watanabe, M., Oikawa, T., Imanishi, K., Shibahara, A., Yoshikawa, H., Takehara, J., Ikeda, H., Takahashi, Y., Ishizuka, Y., Yamasaki, S., Hirota, A., Oishi, M., Nishiki, K., Takarada,

- S., Sato, D., Ozaki, M., Matsuura, H., Aoya, M., Uchino, T., Ueki, T., Saito, M., Morijiri, R., Nishioka, Y., Naito, K., Sakayori, Y., Nonogaki, Y. A., Sakai, K., Nagatsu, J., Nakagawa, M., Miyagi, I., Yamaguchi, T., Otsubo, M., Takeda, N., Kitajima, H., Kuwahara, Y., Satoh, T., Abe, S., Namegawa, Y., Ochi, T., Kase, Y., Saomoto, H., Hayashida, T., Yoshioka, M., Uchida, Y., Yasukawa, K., Sakaguchi, K., Furusawa, M., Nakayama, K., Owada, A., Fukuda, K., Hirabayashi, E., Fusejima, Y., and Yoshikawa, T. 2013 “Geo-Doctor 2012” designed by voluntary geoscientists in AIST open house. *GSJ Chishitsu News* **2**: 37-39. (in Japanese)
- Yamasaki, S., Oishi, M., Niahiki, K., Hirota, A., Furukawa, R., Takada, A., Ishizuka, Y., Takarada, S., and Oikawa, T. 2013. A report about our challenge corner as “See-through volcano; analog experiments of magma system” in AIST open house 2012. *GSJ Chishitsu News* **2**: 53-55. (in Japanese)
- Tamura, I. 2013. Production of “The guide book of the earth science by Tokyo metropolitan Hino high school” supported from SCAAP/JST. *Tokyo metropolitan Hino high school research bulletin* **45** : 26-33. (in Japanese)
- Kasahara, A., Suzuki, T., and Kawajiri, K. 2013. Two independent buried valleys and correlative of Tozurahara Formation in the area of lower stream of the Sawai River, Kanagawa Prefecture, Central Japan. *Bulletin of the Sagami City Museum* **21**: 93–100. (in Japanese)
- Utsugawa, T. and Shirai, M. 2013. A study of the formation process of the Noshiro coastal dune, Akita Prefecture, northeastern Japan. *Geographical Reports of Tokyo Metropolitan University* **48**: 1–11.

Books

- The earth science club of Tokyo metropolitan Hino high school and Tamura, I. 2013. The guide book of the earth science by Tokyo metropolitan Hino high school. *Japan Science and Technology Agency*, 60p. (in Japanese)

Reports

- Niihori, K. and Oishi, M. 2012. Volcanology of Shimashita site. *The report of excavation of Shimashita site, Miyake island, Tokyo Prefecture*, 24-28. (in Japanese)

Book Reviews

- Suzuki, T. 2012. Book review (Hans-Ulrich Schmincke: translated by Mari Sumita and Yuichi

Nishimura: Volcanism) . *The Quaternary Research* **51**: 313-314. (in Japanese)

Miscellaneous Reports

Suzuki, T. 2012. Reports of Research Committees: Japanese branch of International Focus Group on Tephrochronology and Volcanology. *QR newsletter* **19**: 11-12. (in Japanese)

Suzuki, T. 2013. Studies on volcanic ashes. *Seien* **766**: 19-21. (in Japanese)

Inoue, M., Nirei, T., Suzuki, T. and Tamura, T. 2012. *Guide book for the excursion of upper and middle reaches of Ara River*. Tokyo: Japan Association for Quaternary Research. (in Japanese)

Shirai, M. 2012. Sand grain transport process revealed by luminescence of feldspar grains around the Enshu Coast, central Japan. *Proceedings of the International Symposium on Sustainable Urban Environment 2012, TMU Symposium Series No.5 2012*: 45-46.

Oishi, M., Vinet, N., and Geshi, N. 2013. Evaluation of type and its time series of eruption from petrological description of volcanic ash particles. *Open-File Report of Geological Survey of Japan* **573**: 31. (in Japanese)

Presentations

Yamazaki, H. 2012. Tachikawa fault and earthquake. –Let’s study the reality of the Tachikawa fault–. Lecture at Hino city staff workshop, May, Hino. (in Japanese)

Yamazaki, H. 2012. Tachikawa fault and its seismic hazard prevention. Lecture at the General meeting of Akishima citizen-based town planning meeting-Nakagami, May, Akishima. (in Japanese)

Yamazaki, H. 2012. Musashino upland and the Tachikawa fault. Lecture of SPP (Science Partnership Program) at the Tokorozawa High-school, Saitama Prefecture. May–June, Tokorozawa. (in Japanese).

Yamazaki, H. 2012. Earthquake disaster and active faults in Tokyo. –Tachikawa fault and damage assumption–. Lecture at the general meeting of Tokyo-to Geological Survey Enterprises Association, May, Toshima. (in Japanese).

Yamazaki, H. 2012. Mechanism of earthquake, and on the Tachikawa fault. Lecture at the central public hall of Higashi-murayama, June, Higashi-murayama. (in Japanese)

Yamazaki, H. 2012. On the Tachikawa fault. Lecture at the Koganei-shi elderly collage of Koganei Nukui-Minami public hall, June, Koganei. (in Japanese)

Yamazaki, H. 2012. Seismic hazard caused by the Tachikawa fault. Lecture at the Kitatama-Seibu

- fire and disaster prevention society, June, Higashi-yamato. (in Japanese)
- Yamazaki, H. 2012. Natural environment and hazard for Kanagawa Prefecture. Lecture of the SSH (Super Science High-school) project at Seisho High-school, Kanagawa Prefecture, June, Odawara. (in Japanese)
- Yamazaki, H. 2012. Tachikawa fault and our preparation for seismic hazard. -The relief is provided by the correct knowledge and preparation for earthquake-. Lecture for the hazard prevention of Ohme city, July, Ohme. (in Japanese)
- Yamazaki, H. 2012. Is the Tachikawa fault dangerous? -The safety is provided by the correct knowledge and right fear for earthquake-. Lecture for the hazard prevention at Association of Akishima residents' association societies, July, Akishima. (in Japanese)
- Yamazaki, H. 2012. Landform and Geological features of Hino city and natural hazards. Lecture at the workshop of Nanao Special Support School, July, Hino. (in Japanese)
- Yamazaki, H. 2012. Hino City and the Tachikawa fault zone. -Let's know about the Tachikawa fault-. Hazard prevention lecture of Hino city. August, Hino. (in Japanese)
- Yamazaki, H. 2012. On the Tachikawa fault. -Thinking of the safety measures against the active fault-. Lecture at the Ecore, September, Tachikawa. (in Japanese)
- Yamazaki, H. 2012. Right understanding and fear for the earthquake, and appropriate preparation to the seismic hazard. Lecture at the Civil Forum of the Akishima citizen's college. September–October, Akishima. (in Japanese)
- Yamazaki, H. 2012. On the Tachikawa fault. Lecture at the lodging training for disaster prevention of Higashiyamato-Minami High-school, November, Higashi-yamato. (in Japanese)
- Yamazaki, H. 2012. Identification of the peak name of mountain by the distant view from the rooftop deck of school building, and understanding the landform of hills, upland and lowland. Hino High-school, Promotion program of scientific clubs for high-school students by JST, November, Hino. (in Japanese)
- Yamazaki, H. 2012. How about the Tachikawa fault. Civil lecture of the Koganei-shi Higashi branch public hall, November, Koganei. (in Japanese)
- Yamazaki, H. 2012. What are the fault and active fault. The urgent symposium of Japan Energy Conference. January, Meguro. (in Japanese)
- Yamazaki, H. 2012. Appropriate preparation for seismic hazard by the Tachikawa fault. Lecture for team-Kodaira at the Kodaira public hall, February, Kodaira. (in Japanese)
- Yamazaki, H. 2012. Preparation for seismic hazards. –Tachikawa fault and the inland earthquake

- beneath Tokyo Metropolis-. Lecture for the civic lecture at the Main public hall of Koganei, February, Koganei. (in Japanese)
- Yamazaki, H. 2012. Tachikawa fault and earthquake. Lecture at the technical class, Tokyo urban planning and development corporation, February, Fuchu. (in Japanese)
- Yamazaki, H. 2013. Preparing for the huge earthquake caused from the Tachikawa fault zone. Lecture on the hazard prevention at the Hino High-school, March, Hino. (in Japanese)
- Yamazaki, H. 2013. How do you prepare for a future big earthquake? -The Tachikawa fault and the making of community for the disaster prevention-. Civil lecture at the public hall of Kunitachi-shi, March, Kunitachi. (in Japanese)
- Suzuki, T. 2012. Tephrochronological study on Quaternary landform development in the inland area of Kanto, central Japan. *Programme and Abstracts, Japan Association for Quaternary Research* **42**: 90-91, August, Kumagaya. (in Japanese)
- Suzuki, T. 2012. Earthquakes occurred below Tokyo capital region and Tachikawa Active Fault: Frontier of active fault research in Tama area. Asahi Culture Center Tachikawa, September, Tachikawa. (in Japanese)
- Suzuki, T. 2012. Choshi Excursion: Continuous Quaternary marine sediments and tephras in the Choshi area, central Japan: Inubo Group exposing along the Byobuga-ura Coastal Cliff. The Geological Society of Japan, Kanto Branch, October, Choshi. (in Japanese)
- Suzuki, T. 2013. 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. January, Shinjuku. (in Japanese)
- Suzuki, T. 2013. Earthquakes occurred below the capital region and Ayasegawa Active Fault. Asahi Culture Center Rafre Saitama, March, Saitama. (in Japanese)
- Suzuki, T., Aoki, K., Kawai, T., Sakamoto, T., and Iijima, K. 2012. Middle Pleistocene tephrostratigraphy of C9001 core drilled by CHIKYU off Shimokita Peninsula and its application for inland area. *Abstracts of Japan Geoscience Union Meeting 2012*: HQR23-14 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Suzuki, T., Saito, H. and Imaizumi, T. 2013. Late Quaternary tephras and activity of the West Aizu Basin Fault Zone in the west part of the Aizu basin, Northeast Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers* **83**: 161, March, Kumagaya. (in Japanese)
- Aoki, K., Ikehara, K., Miura, H. and Suzuki, T. 2012. Study for the establishment of high resolution

- chronology of widespread tephra based on the correlation between the D/O cycle record of Greenland ice core and marine core sediment cores. *Programme and Abstracts, Japan Association for Quaternary Research* **42**: 88-89, August, Kumagaya. (in Japanese)
- Aoki, K., Suzuki, T., Kawai, T., Sakamoto, T. and Iijima, K. 2012. Mid-late Pleistocene tephrostratigraphy of C9001C and C9002A/B cores off Shimokita, Tohoku Japan. *Abstracts of Japan Geoscience Union Meeting 2012: MIS27-P23* (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Ishiyama, T., Sugito, N., Echigo, T., Sato, H. and Suzuki, T. 2012. Rare normal faulting earthquake induced by subduction megaquake: example from 2011 Tohoku-oki earthquake. EGU General Assembly 2012, April, Vienna.
- Hirouchi, D., Ishiyama, T., Suzuki, T., Imaizumi, T., Sato, Y., Maruyama, H., Hosoya, T. and Hashimoto, T. 2012. Late Pleistocene uplift rate across the eastern margin fault zone of the Takada-heiya based on borehole drillings. *Abstracts of Japan Geoscience Union Meeting 2012: SCG64-P07* (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Shirai, M. 2012. Sand grain transport process revealed by luminescence of feldspar grains around the Enshu Coast, central Japan. *Proceedings of the International Symposium on Sustainable Urban Environment 2012*, Abstracts:45-46, November, Hachioji.
- Shirai, M., Hayashizaki, R., Utsugawa, T., Mukaiyama, Y. and Muragishi J. 2012. Beach deposits inferred as being formed by the 2011 Tohoku Tsunami at the Sendai Coast. *Abstracts of Japan Geoscience Union Meeting 2012: MIS25-P01* (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Shirai, M., Ito, T. and Omura, A. 2012. Depositional rate of surface deposit during the last ca. 100 years at the Enshu Trough, central Japan. *Abstracts of Japan Geoscience Union Meeting 2012: HGC036-05* (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Shirai, M., Ito, T. and Omura, A. 2012. Changes in mass accumulation rate of surface deposits during the last ca. 100 years at the Kumano Trough, central Japan. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2012*: 46, June, Sapporo. (in Japanese)
- Omura, A., Ikehara, K., Ashi, J. and Shirai, M. 2012. Terrigenous organic carbon contents of submarine earthquake and flood induced sediments. *Abstracts of Japan Geoscience Union Meeting 2012: HGC036-P06* (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Omura, A., Ikehara, K., Ashi, J., Katayama, H. and Shirai, M. 2012. Characteristics of submarine earthquake and flood induced deposits by using stable organic carbon isotope measurements.

- Abstracts for Annual Meeting of the Sedimentological Society of Japan 2012*: 99, June, Sapporo. (in Japanese)
- Ueki, T., Nakao, K. and Nishiyama, K. 2012. Public outreach activities of the Japan Association for Quaternary Research in 2011: field excursion, lecture and concert. *Abstracts of Japan Geoscience Union Meeting 2012*: GZZ02-06 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Ueki, T. 2012. Earth and planetary science education in elementary, junior-high and high schools. *Japan Geoscience Union Meeting 2012*.
- Ueki, T., Funabiki, A., Takemura, T. and Saito H. 2012. Magnetostratigraphy of the sediment cores derived from the Setagaya and Fuchu areas of Tokyo Metropolitan, central Japan. *Abstracts of Japan Geoscience Union Meeting 2012*: HQR23-02 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Ueki, T., Naya, T. and Mizuno, K. 2012. Magnetostratigraphy of deep sediment cores in the central Kanto Plain, central Japan. *Programme and Abstracts, Japan Association for Quaternary Research 42*: 8-9, August, Kumagaya. (in Japanese)
- Ueki, T. 2012. Magnetostratigraphy of the Mitoyo Group, west Kagawa Prefecture, southwest Japan. *Abstracts for the 2012 Annual Meeting of the Geological Society of Japan*: 105, September, Osaka. (in Japanese)
- Oishi, M., Geshi, N., Shinohara, H., and Vinet, N. 2012. Consideration of the cause of the variation of eruption styles in the 2011 eruption series of Shinmoedake, Kirishima volcano, Japan, based on the observation of grain compositions of fine ash deposits. *Abstracts of Japan Geoscience Union Meeting 2012*: SVC050-P40 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Oishi, M., Geshi, N., Vinet, N., and Shinohara, H. 2012. Characteristics of the tephras from vulcanian eruptions and their emission processes. *Programme and Abstracts, Japan Association for Quaternary Research 42*: 66-67, August, Kumagaya. (in Japanese)
- Oishi, M., Nishiki, K., Geshi, N., and Furukawa, R. 2012. Characteristics of the distribution of tephras just after vulcanian eruptions: an example of the eruptions of Showa crater in Sakurajima volcano, Japan. *Programme and Abstracts, Japan Association for Quaternary Research 42*: 234-235, August, Kumagaya. (in Japanese)
- Oishi, M., Nishiki, K., Geshi, N., Furukawa, R., Ishizuka, Y., Oikawa, T., Hirota, A., Tanaka, A., and Miwa, T. 2012. Preliminary report of the attempt of real-time ash fall survey in Sakurajima

- Volcano, Japan. *Programme and Abstracts, the Volcanological Society of Japan 2012 fall meeting*: 26, October, Miyota. (in Japanese)
- Oishi, M., Vinet, N., Geshi, N., and Shinohara, H. 2012. Variation of the grain compositions in the ash from the 2011 eruption of Shinmoedake, Kirishima volcano, Japan: insights into the conduit processes. *Geophysical Research Abstracts, EGU General Assembly 2012* **14**: EGU2012-9563, April, Vienna.
- Vinet, N., Oishi, M., Geshi, N., Shinohara, H., and Tomiya, A. 2012. Dynamics and timescales of magma ascent in the shallow conduit of Shinmoedake volcano, Japan, deduced from ash texture. *Abstracts of Japan Geoscience Union Meeting 2012*: SVC050-P39 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Kobayashi, M. and Mizukami, K. 2012. Age of the somma and volcanic history of Osore-zan volcano, a result from detail analysis of Komenasawa dacite. *Programme and Abstracts, Japan Association for Quaternary Research* **42**: 14-15, August, Kumagaya. (in Japanese)
- Kondo, R., Tsukamoto, S., Kudo, T. Endo, K., Kobayashi, M. and Sakamoto, T. 2012. Chronology of tephra in Towada Volcano, using pIRIR dating of loess. *Programme and Abstracts, Japan Association for Quaternary Research* **42**: 250-251, August, Kumagaya. (in Japanese)
- Tsuchiya, M., Mannen, K., Kobayashi, M. and Fukuoka, T. 2012. Volcanic glass erupted from Fuji volcano in Jogan era was found in Hakone volcano. *Programme and Abstracts, Japan Association for Quaternary Research* **42**: 74, August, Kumagaya. (in Japanese)
- Tsuchiya, M., Mannen, K., Kobayashi, M. and Fukuoka, T. 2012. Phreatic explosion deposits Revise of the Owakidani, Hakone Volcano. *Programme and Abstracts, the Volcanological Society of Japan 2012 fall meeting*: 142, Miyota. (in Japanese)
- Tamura, I., Yamazaki, H., Okada, M. and Mizuno, K. 2012. An integrated stratigraphy around the Plio-Pleistocene boundary interval in the Chikura Group, southernmost part of the Boso Peninsula, central Japan, based on data from paleomagnetic, oxygen isotopic and areal tephra analyses data. *Programme and Abstracts, Japan Association for Quaternary Research* **42**: 140-141, August, Kumagaya. (in Japanese)
- Okada, M., Tokoro, K., Hatakeyama, A. and Tamura, I. 2012. An integrated stratigraphy and paleoceanographic reconstruction for the Plio-Pleistocene Chikura group, southernmost part to the Boso Peninsula, Japan. *Abstracts for the 2012 Annual Meeting of the Geological Society of Japan*: 78, September, Osaka. (in Japanese)
- Ando, K., and Yamazaki, H. 2012. Estimation of the bed rock fault angle of the earthquake fault

- which appeared in the 1999 Taiwan ChiChi earthquake. *Abstracts of Japan Geoscience Union Meeting 2012*: SSS35-03 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Ando, K., and Yamazaki, H. 2012. Elucidation of the fault angle of Isehara fault, and the faulting history using stratum distortion simulation. *Programme and Abstracts, Japan Association for Quaternary Research* **42**: 18-19, August, Kumagaya. (in Japanese)
- Hayashizaki, R. and Shirai, M. 2012. Backshore deposits inferred as being formed by the 2011 off the Pacific Coast of Tohoku Earthquake Tsunami at the Tsurishihama Beach, Shinchi Town, Fukushima Prefecture. *Abstracts of Japan Geoscience Union Meeting 2012*: MIS25-P02 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Hayashizaki, R. and Shirai, M. 2012. Tsunami deposits caused by the March 2011 Tohoku-oki Tsunami in the Soma region, Fukushima Prefecture, northeast Japan. *Proceedings of AGU Fall Meeting 2011*: NH43B-1640, December, San Francisco.
- Kasahara, A., Suzuki, T., Kawai, T. and Imaizumi, T. 2012. Stratigraphy of Middle to Lower Pleistocene tephras under Koriyama Basin, Northeast Japan. *Abstracts of Japan Geoscience Union Meeting 2012*: HQR23-15 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Kawai, T. and Suzuki, T. 2012. Motoisago Terrace Group formed in the Middle Pleistocene in the drainage of the Natori River, west part of Miyagi Prefecture, northeastern Japan. *Programme and Abstracts, Japan Association for Quaternary Research* **42**: 160-161, August, Kumagaya. (in Japanese)
- Kawai, T. and Suzuki, T. 2013. Geomorphic development in the drainage of the Natori River, central part of Miyagi Prefecture, Northeast Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers* **83**: 162, March, Kumagaya. (in Japanese)
- Saito, H. and Suzuki, T. 2012. Fushioigami Debris Avalanche Deposit and geomorphic development of the Nihonmatsu Hills in the foot of Adataro Volcano, Northeast Japan. *Programme and Abstracts, Japan Association for Quaternary Research* **42**: 16-17, August, Kumagaya. (in Japanese)
- Kurihara, M., Endo, K., Suzuki, S. and Uemura, K. 2011. Vegetation and paleoenvironment during the Last Glacial around the border of Musashino and Yodobashi Uplands, Tokyo. *Abstracts of Japan Geoscience Union Meeting 2012*: APE33-P22 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Kurihara, M., Uemura, K., Suzuki, S. and Endo, K. 2012. Vegetational change during the Last

Glacial Period around the Musashino Uplands, Tokyo. *Programme and Abstracts, Japan Association for Quaternary Research* **42**: 166-167, August, Kumagaya. (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

Ikumi AKASAKA Assistant Professor / PhD (D.Sc.)
Climatic Change, Tropical Climatology, Urban 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 FY2012

Peer-reviewed Articles

- Chen, T.C., Tsay, J.D., Yen, M.C. and Matsumoto, J. 2013. The winter rainfall of Malaysia, *J. Climate* **26**: 936-958, doi: 10.1175/JCLI-D-12-00174.1.
- Wu, P.M., Fukutomi, Y. and Matsumoto, J. 2012. The impact of intraseasonal oscillations in the tropical atmosphere on the formation of extreme Central Vietnam precipitation. *SOLA* **8**: 057-060, 10.2151/sola.2012-015.
- Uchiyama, S., Matsumoto, J., Takahashi, H.G. and Kanamori, H. 2012. Seasonal Variations of Lightning Activity and Rainfall over Tropical Africa Based on Tropical Rainfall Measuring Mission (TRMM) Satellite Observations. *Journal of Geography (Chigaku Zasshi)* **121**: 986-997. (in Japanese with English abstract)
- Suzuki, H., Nakakita, E., and Takahashi, H. 2013. A study on capture performance of heavy rainfall by rain gauges installed discretely. *Annual Journal of Hydraulic Engineering* **57**(CD-ROM). (in Japanese with English abstract)
- Takahashi, H.G. 2012. Orographic low-level clouds of Southeast Asia during the cold surges of the winter monsoon, *Atmos. Res.*, doi:10.1016/j.atmosres.2012.07.005
- Takahashi, H.G., Asada, K., Akasaka, I. and Matsumoto, J. 2012. Strong winds over remote regions from tropical cyclones in Japan. *Proceedings of the 21st National Symposium on Wind Engineering* **22**: 115-120. (in Japanese with English Abstract)
- Tachibana, Y., Takahashi, H.G. and Shimizu, S. 2012. An observational study on the mitigating effect of thermal environment by vegetation in the Hikarigaoka Nerima, Tokyo. *Journal of Heat Island Institute International* 12A002. (in Japanese with English Abstract)
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- Aiba, Y., Takahashi, H.G. and Matsumoto, J. 2013. Seasonal variations of convective activity over the Australian monsoon region. 15th CEReS Symposium on Environmental Remote Sensing, February, Chiba.
- Aiba, Y., Takahashi, H.G. and Matsumoto, J. 2012. Seasonal differences of cloud activity between the pre-monsoon and monsoon periods over the Australian monsoon region. The 4th TRMM and GPM International Science Conference, November, Tokyo.

3 Laboratory of Environmental Geography

1) Staff

Makiko WATANABE Professor/ PhD

Soil Geography, Environmental Dynamic Analysis, Geoarcheology

Masayuki KAWAHIGASHI Associate Professor / Dc. Agr.

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 FY2012

Peer-reviewed Articles

- Bolormaa, O., Kawasaki, K., Watanabe, M. and Ochirbat, B. 2012. Evaluation of heavy metal contamination around the small-scale mining area, Boroo, Mongolia, *ISRN Analytical Chemistry* **2012**: Article ID 153081, 9 pages, (2012) doi:10.5402/2012/153081.
- Souri, B. and Watanabe, M. 2013. Mercury concentration in some calcareous soils of western Iran with a focus on the contribution of soil weathering process. *Environmental Earth Science* doi.10.1007/s12665-012-2211-0.
- Kawahigashi, M. Do, N.M., Nguyen, B.V., and Sumida, H. 2012. Effective land and water management for controlling solutes from acid sulfate soils in Mekong Delta paddy fields. *Pedologist* **55**: 458-465.
- Sumida, H., Uchiyama, H., Ueda, S, Do, M.N., Nguyen, B.V., and Kawahigashi, M. 2012. Sulfur composition of acid sulfate soils distributed in the Mekong Delta, Vietnam. *Pedologist* **55**: 449-457.
- Nagano, H., Sugihara, S, Matsushima, M., Okitsu, S., Prikhodko, V., Manakhova, E., Zdanovich, G.B, Manakhov, D.V., Ivanov, I.V., Funakawa, S., Kawahigashi, M. and Inubushi, K. 2012. Microbial biomass and greenhouse gaseous dynamics of Eurasian steppe soils with different land-use histories located in Arkaim of south Urals, Russia. *Soil Science and Plant Nutrition* **58**: 238-244.
- Itoh, N., Sakagami, N., Torimura, M. and Watanabe, M. 2012. Perylene in Lake Biwa sediment originating from *Cenococcum geophilum* in its catchment area. *Geochimica et Cosmochimica Acta* **85**: 241-251. doi.10.1016/j.gca.2012.07.037.
- Sakagami, N., Sato, A., Kodaka, Y., Watanabe M. and Narisawa, K. 2012. A Trial astudy of Nature Observation Program Using Sclerotia from Forest Soils. *Environmental Education* **22**:67-72. (in Japanese with English abstract)
- Sakagami, Y. Guo, Y., Minoura, Y., Ohta, H., Sato, Y., Watanabe, M. and Ishikawa, T. 2013. Temporal and spatial properties of fine sediment of Tonegawa River Estuary at flushed and static periods and their bacterial community structures. *Journal of Society of Environmental Science* **26** :128-139. (in Japanese with English abstract)

Other Articles

- Tashiro, T. Watanabe, M. and Collado, M. B. 2012. A study on temporal variation of particle size in Paitan Lake sediments and vegetation history in the central plain of Luzon, the Philippines. *Chiri-Shisou* **53** (2) :1-8.(in Japanese with English abstract)
- Kadono, A. and Kawahigashi, M. 2012 Ogasawara Islands as the National World Heritage site. *Pedologist* **56**: 81-82. (in Japanese)
- Kurosawa, H., Sakagami, N. and Watanabe, M. 2013. A Study on metallic element composition of petals from Yoshino Cherry Tree and its regional characteristics in Tokyo. *Geographical Report of Tokyo Metropolitan University* **48**: 25-35.
- Uoi, N., Kawahigashi, M., Ohno, M., Murata, T. and Watanabe, M. 2013. Estimation of soil carbon storage in Shinjuku Gyoen National Garden based on land use history and soil compactness profiles. *Geographical Report of Tokyo Metropolitan University* **48**: 13-24.

Books

None

Reports

None

Book Reviews

None

Miscellaneous Reports

None

Presentations

- Sugimura, T., Watanabe, M. and Kamei, H. 2012. Validation of DEM generated from ALOS/PRISM around Kharga Oasis, Western Desert, Egypt. *Proceedings of 52nd Meeting of the Remote Sensing Society of Japan* :197-198, May, Tokyo.(in Japanese with English abstract)
- Watanabe, M. 2012. Where are symbiotic fungi? JST Science Partnership Program, August, Yamawaki Gakuen Junior High School, August, Tokyo. (in Japanese)
- Watanabe, M. 2012. Soil- Earth' s living skin-, How to handle soil in Geography Education. Committee of Geography Education, Science Council of Japan, September, Tokyo. (in Japanese)

- Bolormaa, O., Kawasaki, K. and Watanabe, M. 2012. Trace element analysis of environmental samples by PIXE. The International Symposium of Advanced Materials and Analytical Techniques ISAMAT 2012, November, Seoul, Korea.
- Bolormaa, O., Dorj, D., Erdenetuya, O. and Watanabe, M. 2012. Heavy metal distribution and chemical speciation in soils around small scale mining areas of Mongolia. *Abstract of the 18th Arsenic Symposium*: 22, November, Miyazaki.
- Sugimura, T., Watanabe, M. and Kamei, H. 2012. Connection of ALOS/PRISM Stereo Images Based on the System Information, *Proceedings of 53rd Meeting of the Remote Sensing Society of Japan*: 245-246, November, Hiroshima. (in Japanese with English abstract)
- Watanabe, M. 2013. Inventory and evaluation of Technosols - Attitude of world and Japan-. Committee of Earth-Humansphere, Science Council of Japan, February, Tokyo. (in Japanese)
- Watanabe, M., Osato, Y., Murakami, S. and Murata, T. 2013. Observation of soil borehole and soil color analysis using CCD camera imagery -A new soil survey methodology for urban soils-. *Proceedings of the General Meeting of the Association of Japanese Geographers 2013 Spring Meeting* **83**: 333, March, Kumagaya. (in Japanese)
- Kawahigashi, M. 2012. Influences of heating of organic matter in organic horizons on dynamics of bio-elements – in the case of Siberian permafrost terrain-. *Abstracts of the annual meeting of Japanese Pedology Society 2012*: 72, March, Hachioji. (in Japanese)
- Kawahigashi, M., Izumi, T. and Watanabe, M. 2012. Estimation of carbon stock in urban soils and finding the point of issue. *Abstracts of the annual meeting of Japanese Soil Science and Plant Nutrition* **58**: 215, September, Tottori. (in Japanese).
- Kawahigashi, M. and Watanabe, M. 2012. Color experiment of flowers and flowers. Special Events for Tokyo Science & Technology Week 2012, Cooperation by Experience-based Exhibition, April, Tokyo. (in Japanese)
- Sumida, H., Takizawa, M., and Kawahigashi, M. 2012. Determination of Al ion species in acid soils by HPLC using cation exchange column. *Abstracts of the annual meeting of Japanese Soil Science and Plant Nutrition, Abstract* **58**: 29, September, Tottori. (in Japanese)
- Kawahigashi, M., Kida, K., Uoi, N. and Watanabe, M. 2012. Carbon storage and material cycling in urban soils. *Proceedings of the International Symposium on Sustainable Urban Environment 2012, TMU Symposium Series No.5 2012*: 49-50.
- Kawahigashi, M. 2012. Do you know the profile of Mother Earth? Lecture for the Minami-tama junior high school 3rd grade students. Koudai Renkei Kougi, Tokyo Metropolitan University,

- October, Hachioji. (in Japanese)
- Sakagami, S., Nakata, Y., Bando, K., Tsutiya, K., Yajima, H. and Kawahigashi, M. 2012. Production of bone regeneration material using a humic acid/chitosan composite film. *Abstract of 28th annual meeting of Japanese Humic Substance Society*: 45-46, November, Hachioji. (in Japanese)
- Nakata, Y., Tanaka, Y., Sakagami, S., Osada, M., Kawahigashi, M., Takami, M., Tsuchiya, K. and Yajima, H. 2012. Physicochemical properties of fulvic acids extracted from bamboo compost material. *Abstract of 28th annual meeting of Japanese Humic Substance Society*: 55-56, November, Hachioji. (in Japanese)
- Kato, S. and Watanabe, M. 2012. Growth of *Fagus* in transition zones of forest and soil on the western slope of Mt. Chokai, northern Japan. *Geophysical Research Abstracts* **14**, EGU2012-3898, EGU General Assembly 2012, April, Vienna, Austria.
- Yamamoto, K., Komai, Y., Kato, S., Kawahigashi, M., Watanabe, M. and Murakami, T. 2013. Environmental factor regulating the distribution of apogamy species *Dryopteris erythrosora* and syngenetic species *Dryopteris caudipinna* in Izu Oshima island. *12th Annual meeting of Japanese Society for Plant Systematics*, March, Chiba. (in Japanese)
- Yoshida, S., Kato, S., Sakagami, N. and Watanabe, M. 2013. Relationship between the growth of *Fagus crenata* and soil properties based on phytolith content. *Proceedings of the General Meeting of the Association of Japanese Geographers 2013 Spring Meeting* **83**: 330, March, Kumagaya. (in Japanese)
- Sakagami, N. and Watanabe, M. 2012. Ectomycorrhizal sclerotia formation and status of organo-mineral complex aluminum in low pH *Fagus* forest, Goldschmit conference 2012, June, Montreal, Canada.
- Ito, N., Sakagami, N., Torimura, M. and Watanabe, M. 2012. Perylene in Lake Biwa sediments originating from *Cenococcum geophilum* in its catchment area. *21th Discussion Meeting of Japan Society for Environmental Chemistry*, July, Matsuyama. (in Japanese)
- Sakagami, N. and Watanabe, M. 2012. Spatial distribution of fungal sclerotia and correspondence with soil properties in surface soils beneath *Fagus* forest, Akita pref. *Proceedings of General Meeting of the Association of Japanese Geographers 2012 Autumn Meeting* **82**: 129, October, Kobe. (in Japanese)
- Itoh, N., Sakagami, N., Torimura, M. and Watanabe, M. 2012. Contribution of humic substances to fossil perylene in Lake Biwa sediment, *Abstract of 28th annual meeting of Japanese Humic Substances Society*: 17-18, November, Hachioji. (in Japanese)

- Sakagami, N., Windi, A.Z., Asagi, N., Komatsuzaki, M., Nishiwaki, J., M. Faiz S., Irfan, D.P. and Sato, T. 2013. Preliminary report on the characteristics of soil organic component under organic farming in the paddy fields around Bogor City and Jogjakarta City, Indonesia. *113th Meeting of Japanese Society for Tropical Agriculture, Research for Tropical Agriculture* **6** (ex1): 23-24, March, Ibaragi. (in Japanese)
- Eguchi, Y., Shinohara, M., Ani, W., Furutani, A., Sakagami, N. and Sato, T. 2013. Simple diagnosis using loop-mediated isothermal amplification (LAMP) of plant viral diseases and utilization of it onsite in Indonesia. *113th Meeting of Japanese Society for Tropical Agriculture, Research for Tropical Agriculture* **6** (ex1): 1-2, March, Ibaragi. (in Japanese)
- Myoga, S. 2012. Research on carbon absorption potential of non-vegetated land. *Proceedings of the General Meeting of the Association of Japanese Geographers 2013 Spring Meeting*, **83**: 334, March, Kumagaya.(in Japanese)
- Uoi, N. Murata, T. and Watanabe, M. 2012. Correspondence between vertical profile of soil compactness and intensity of land grading process in urban green parks, Tokyo Metropolis. Eurosoil, July, Bari, Italy.
- Amasya, A. F. and Watanabe, M. 2012. A Study on the Relationships between Soil Mesofauna and Sclerotia in Low pH Forest Soils of Japan. Eurosoil, July, Bari, Italy.
- Kimura, Y. 2013. Observation of phytolith detected from deers' and dung beetles' feces. *Proceedings of the General Meeting of the Association of Japanese Geographers 2013 Spring Meeting*, **83**: 332, March, Kumagaya. (in Japanese)
- Hanshuai, M., Sakagami, N. and Watanabe, M. 2013. A study on biological weathering of primary minerals and soil properties in low pH forest soils, Northern Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers 2013 Spring Meeting*, **83**: 329, March, Kumagaya.(in Japanese)

4 Laboratory of Geographical Information Sciences

1) Staff

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

Hydrometeorology, Geographical Information Sciences

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

Urban Climatology, Geographical Information Sciences, Numerical Meteorological Modelling

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

Geographical Information Sciences, Remote Sensing, Computational Geomorphology

2) Overview of Research Activities

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

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

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

3) List of Research Activities in FY2012

Peer-reviewed Articles

- Matsuyama, H. and Katasakai, H. 2012. A simple but quantitative method to objectively determine the degree of freedom, applicable to serially-correlated meteorological data. *Tenki* **59**: 1065-1067. (in Japanese)
- Aoyama, M. 2012. Air and shallow ground temperatures associated with the formation of gravelly lobes on a periglacial smooth slope at Mt. Minamidake, northern Japanese Alps. *Journal of Geography (Chigaku Zasshi)* **121**: 342-358. (in Japanese with English abstract)
- Saito, H. and Matsuyama, H. 2012. Catastrophic landslide disasters triggered by record-breaking rainfall in Japan: Their accurate detection with Normalized Soil Water Index in the Kii Peninsula for the year 2011. *SOLA* **8**: 81-84. doi:10.2151/sola.2012-021.
- Goto, K., Komatsu, G. and Saito, H. 2012. GIS analyses of Martian satellite imageries and topographic data. *The Journal of the Geological Society of Japan* **118**: 683-688. (in Japanese with English abstract)

Other Articles

- Matsuyama, H. 2012. Comments and responses on Zukemura et al., JRSSJ 31-1, pp. 55-62, 2011. *Journal of the Remote Sensing Society of Japan* **32**:97-100. (in Japanese)
- Matsuyama, H. 2012. I, Iwate prefecture, and Taroshi-taki. In *Gigantic Waterfall Taroshi-taki*, ed. H. Itagaki: 21Life Ltd., 114-121. (in Japanese)
- Une, H. and Aoyama, M. 2013. Liquefaction damage in inland area and the predictability of liquefaction hazard map. *E-journal GEO* **7**: 250-252. (in Japanese)

Books

- Yamamoto, S., Ishii, H., Tetsuka, A., Kikuchi, T., Akimoto, H., Ida, H., Niibori, T., Hayashi, A. and Matsuyama, H. 2013. *Textbook Chiri A (New Version)*. Tokyo: Ninomiya-shoten. (in Japanese)
- Yamamoto, S., Ishii, H., Tetsuka, A., Aoki, H., Uchiyama, Y., Oda, H., Kikuchi, T., Kikuchi, M., Kureha, M., Nakanishi, R., Matsuyama, H., Miyahara, H., Yajima, S. and Yamakawa, S. 2013. *Textbook Chiri B (New Version)*. Tokyo: Ninomiya-shoten. (in Japanese)

Akimoto, H. and coauthors (including Matsuyama, H.) 2013. *Guidebook for the Usage of Textbook Chiri A (New Version)*. Tokyo: Ninomiya-shoten. (in Japanese)

Ishii, H. and coauthors (including Matsuyama, H.) 2013. *Guidebook for the Usage of Textbook Chiri B (New Version)*. Tokyo: Ninomiya-shoten. (in Japanese)

Reports

Laboratory of Geographical Information Sciences, Department of Geography 2012. 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 2012, TMU Symposium Series No.5 2012*: 51-52.

Matsuyama, H. 2012. Relationship between seasonal change of BRDF parameters and forest structure on *larix leptolepis* forest at Yatsugatake. *Annual Report 2011 of Center for Environmental Remote Sensing, Chiba University* **17**: 60-61. (in Japanese and English)

Matsuyama, H., Izumi, T. and Hasegawa, K. 2012. Estimation of leaf area index of *Cryptomeria japonica* using various methods – A case study of Aso district, Kumamoto prefecture – . *Proceedings of the 14th CERE S Symposium on Remote Sensing for Environment*: 12-15. (in Japanese)

Hasegawa, K., Izumi, T. and Matsuyama, H. 2012. Estimation of the spatial distribution of leaf area index using a new vegetation index named NHVI (Normalized Hotspot-signature Vegetation Index). *Proceedings of the 13th CERE S Symposium on Remote Sensing for Environment*: 14-16. (in Japanese)

Doshida, S., Uchiyama, S., Ishizawa, T. and Saito, H. 2012. Research report of the landslide disaster triggered by heavy rainfall in the northern part of Kyushu in July 2012 (early report). <http://lswel.ess.bosai.go.jp/disaster/201207rain/201207rain.html>. (in Japanese)

Book Reviews

Matsuyama, H. 2012. Book review (Nogami, M.: Connection of Wei (volume Japan), Empress Himiko and Nihon-shoki). *Chiri* **57**(12): 110. (in Japanese)

Matsuyama, H. 2013. Book review (Itagaki, H.: Gigantic Waterfall “Taroshi-taki”). *Chiri* **58**(1): 119. (in Japanese)

Nakayama, D. 2012. Book review (Oikawa, H.: The Story of Jerusalem—History before the Old Testament to Palestine Peace). *Chiri* **57**(5): 116. (in Japanese)

- Nakayama, D. 2012. Book review (Kanisawa, S.: The History of Stones and Mankind). *Chiri* **57**(6): 117. (in Japanese)
- Nakayama, D. 2012. Book review (Suda, G.: Visiting Japan's Sacred Stone). *Chiri* **57**(7): 113. (in Japanese)
- Nakayama, D. 2012. Book review (Shinchosha ed.: The Special Guidebook of the Story of Roman People). *Chiri* **57**(8): 119. (in Japanese)
- Nakayama, D. 2012. Book review (Miyamoto, T. and Katsuki, Y. ed.: My Atlas of Japan, Vol. 10, Musashino and Oume). *Chiri* **57**(9): 115. (in Japanese)
- Nakayama, D. 2012. Book review (Takahashi, M.: The Story of Israel History). *Chiri* **57**(10): 120. (in Japanese)
- Nakayama, D. 2012. Book review (Kawamura, H.: Japanese Maps of the Edo Shogunate). *Chiri* **57**(11): 118. (in Japanese)
- Nakayama, D. 2012. Book review (Murata, M.: The Yodo River Flood Control in Early Modern Period). *Chiri* **57**(12): 107. (in Japanese)
- Nakayama, D. 2013. Book review (Shibusawa, T.: The Breast of Europe in the Complete Works of Tatsuhiko Shibusawa 12). *Chiri* **58**(1): 116. (in Japanese)
- Nakayama, D. 2013. Book review (Tanaka, M.: Parks and Their Original Terrain in Tokyo). *Chiri* **58**(2): 118. (in Japanese)
- Nakayama, D. 2013. Book review (Miyahashi, Y.: Natural Science in Folklore). *Chiri* **58**(3): 111. (in Japanese)

Miscellaneous Reports

- Laboratory of Geographical Information Sciences, Tokyo Metropolitan University 2012. Aso caldera increased 10% of heavy precipitation—Analysis of the July 2012 torrential rain in Aso caldera, Southwestern Japan. 16th August, 2012, Asahi Shimbun. (in Japanese)
- Matsuyama, H. 2012. What water tells us. Short Lecture, Tokyo Metropolitan University: 29. (in Japanese)
- Matsuyama, H. 2012. A visit to Kanda river underground regulating reservoir under the loop road 7. *Chiri Geppou* No.527. (in Japanese)
- Matsuyama, H. 2012. Library of Tokyo Metropolitan University helps those who cannot find everything. *LIBERU* **123**: 7. (in Japanese)
- Matsuyama, H. 2012. Jouetsu Shinkansen and Hokuriku Shinkansen in relation to Shinkansen Year

2012. *Annual Report of Old Boys/Girls of Wandervogel Club in Tokyo University in 2013*: 27-29.
(in Japanese)

Matsuyama, H. 2012. Sacred place of cartography (A version of Japan Standard Time Meridian).
Map Journal No.172: 31-33. (in Japanese)

Authors including Matsuyama, H. 2012. 70 % of meteorologists suggest CO₂ is the main cause of
hot summers in Japan. *Asahi Shimbun Weekly AERA* **25**(39): 28-32 (in Japanese).

Saito, H. 2012. Receiving GISA awards. *GISA News Letter* No. 84: 15. (in Japanese)

Nishimine, Y. 2012. Introduction of Laboratory of Geographical Information Sciences, Department
of Geography, Graduate School of Urban Environmental Sciences, Tokyo Metropolitan
University. *Map Center* No.479: 40-41. (in Japanese)

Mito, T. 2012. Relationship between location and power generation of wind farms. *GIS NEXT* **41**: 82.
(in Japanese)

Presentations

Matsuyama, H. 2012. A study on the evaluation of natural resources and biodiversity around cities
and surrounding areas. Kick-off Meeting on Collaborative Research between Tokyo Metropolitan
University (TMU) and Universiti Teknologi Malaysia (UTM), April, Johor Bahru, Malaysia.

Matsuyama, H. 2012. A diagnostic study on the interannual variations of spring waters, ground
waters, and land use in Tokyo along with their future projections. *Program of Annual Meeting of
Society of Environmental Science, Japan, 2012*: 124, September, Yokohama. (in Japanese)

Matsuyama, H. 2012. Talks on the strong local wind “Matsubori-kaze”. Special Lecture at
Ozu-Higashi Elementary School, December, Ozu, Kumamoto. (in Japanese)

Matsuyama, H. 2013. Significance of the measurement of “Taroshi-taki”. Memorial Lecture on the
Receipt of Iwate Nichinichi Bunka Prize by the Association of Measurement and Conservation of
Taroshi-taki, Oosegawa, March, Hanamaki. (invited, in Japanese)

Matsuyama, H., Inamura, T. and Izumi, T. 2013. How do local residents recognize strong local wind
“Matsubori-kaze” ? — An analysis based on the quantification theory type III— . *Proceedings of
the General Meeting of the Association of Japanese Geographers 2013 Spring Meeting* **83**: 82,
March, Kumagaya. (in Japanese)

Urita, S. and Matsuyama, H. 2012. Diagnostic study on the spatial distribution and appearance
frequency of recent heavy rainfall in Japan. *Abstracts of the Meteorological Society of Japan 2012
Spring Meeting* **101**: 229, May, Tsukuba. (in Japanese)

- Izumi, T. and Inamura, T. 2012. An effect of city's configuration on heavy rainfall in the city—An ensemble simulation concerning Tokyo—. *Abstracts of the Meteorological Society of Japan 2012 Spring Meeting* **101**: 280, May, Tsukuba. (in Japanese)
- Izumi, T. and Inamura, T. 2012. An effect of circumstance around meteorological station on the meteorological observations—A case study on the relocation of Tokyo (Otemachi) station. *Abstracts of the Meteorological Society of Japan 2012 Spring Meeting* **101**: 457, May, Tsukuba. (in Japanese)
- Izumi, T. and Inamura, T. 2012. Numerical simulation study of estimating urbanization effects on the climate in Wuhan, China. 6th Japanese-German Meeting on Urban Climatology, September, Hiroshima.
- Izumi, T., Inamura, T. and Usami, M. 2012. An observational study on the usage of newly-developed unmanned aerial vehicle in relation to the meteorological disasters—A case study of the damage by tornado at Hojo district, Tsukuba city—. *Abstracts of the Meteorological Society of Japan 2012 Fall Meeting* **102**: 48, October, Sapporo. (in Japanese)
- Izumi, T., Inamura, T., Yamato, H. and Fujii, H. 2012. An observational study on the usage of the three-dimensional data acquisition system (IP-S2 Lite) in relation to the meteorological disasters —A case study of the damage by tornado at Hojo district, Tsukuba city—. *Abstracts of the Meteorological Society of Japan 2012 Fall Meeting* **102**: 489, October, Sapporo. (in Japanese)
- Konno, S., Izumi, T. and Takahashi, H. 2012. Characteristic of a thermal belt on a mountain slope in the western region of Kanto plain, Central Japan. *Abstracts of the Meteorological Society of Japan 2012 Spring Meeting* **101**: 129, May, Tsukuba. (in Japanese)
- Aoyama, M. 2013. Geomorphic conditions and land history of the liquefied sites in the northern part of Miyagi prefecture caused by the 2011 off the Pacific coast of Tohoku Earthquake. *Proceedings of the General Meeting of the Association of Japanese Geographers 2013 Spring Meeting* **83**: 188, March, Kumagaya. (in Japanese)
- Aoyama, M. and Koyama, T. 2012. Consideration on the distribution of liquefied sites in relation to the micro-topography and land history. *Abstract of Japan Geoscience Union Meeting 2012: HSC24-P03 (CD-ROM)*, May, Makuhari. (in Japanese with English abstract)
- Aoyama, M. and Koyama, T. 2012. Liquefaction damages in inland area caused by the 2011 off the Pacific coast of Tohoku Earthquake. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Fall Meeting* **82**: 57, October, Kobe. (in Japanese)
- Koyama, T., Sawaguchi, S., Aoyama, M., Sugasawa, Y., Amaizawa, A., Takahashi, N. and

- Masuzawa, T. 2012. Periglacial environment around Mount Warusawa, Southern Japanese Alps. *Abstract of Japan Geoscience Union Meeting 2012*: AHW28-P05 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Une, H., Aoyama, M. and Hasegawa, T. 2012. Distribution of liquefaction damage in inland area and its evaluation in hazard map: A case study of Abiko City. *Abstract of Japan Geoscience Union Meeting 2012*: HSC24-04 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Saito, H. 2012. Relation between deforestation and rainfall intensity-duration thresholds for landslide occurrences: A case study of Mt. Ichifusa, Japan, *AGU Fall Meeting 2012*: NH13A-1571, December, California, USA.
- Saito, H. and Matsuyama, H. 2012. Validation of landslides caused by Typhoon No. 12, 2011 using Normalized Soil Water Index in the Kii Peninsula, Japan. *Abstract of Japan Geoscience Union Meeting 2012*: HDS25-02 (CD-ROM), May, Makuhari. (in Japanese with English abstract)
- Saito, H. and Matsuyama, H. 2012. Verification of landslide disasters triggered by Typhoon No.12, 2011 with the use of Normalized Soil Water Index—A case study of the southern part of Nara Prefecture, the Kii Peninsula—. *Abstracts of the Meteorological Society of Japan 2012 Spring Meeting 101*: 296, May, Tsukuba. (in Japanese)
- Saito, H., Murakami, W. and Daimaru H. 2012. Relationship between deforestation and rainfall thresholds for landslide initiations using long-term rainfall data: A case study in the Mt. Ichifusa. *Proceedings of the 4th GIS Landslide Workshop*: 9, July, Sendai. (in Japanese)
- Saito, H., Murakami, W., Daimaru, H. and Oguchi, T. 2012. Relation between deforestation and rainfall intensity—duration thresholds for landslide occurrences: A case study of Mt. Ichifusa, Japan, *AGU Fall Meeting 2012*: NH13A-1571, December, California, USA.
- Doshida, S., Uchiyama, S., Ishizawa, T., and Saito, H. 2012. Features and distribution of landslides in the northern Kyushu heavy rain disaster, July, 2012. *Proceedings of the General Meeting of the Japan Society of Engineering Geology*, SP1: 217-218, November. Niigata. (in Japanese)
- Fukuoka, H., Matsushi, Y., Furuya, G. and Saito, H. 2013. Fluidized landslides along Mt. Aso caldera cliff induced by the July 2012 extreme rainfall. *DPRI Annual Meeting 2013*: A24, February, Uji (in Japanese).
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- Oguchi, T., Hayakawa, S. Y., Saito, H., Kobayashi, A., Baker, R. V., Pelletier, J., McGuire, L., Komatsu G. and Goto, K. 2012. Laser scanning surveys to analyze morphological impacts of the 2011 Tohoku-Oki Tsunami, northeastern Japan. *Abstract of Japan Geoscience Union Meeting 2012: HTT07-01 (CD-ROM)*, May, Makuhari.
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- Inamura, T., Akahori, M., Izumi, T. and Matsuyama, H. 2012. Blowing mechanism of local wind “Matsubori-kaze” by paying attention to the upper wind direction and geomorphology of Aso somma. *Abstracts of the Meteorological Society of Japan 2012 Spring Meeting 101: 364*, May, Tsukuba. (in Japanese)
- Inamura, T., Izumi, T. and Matsuyama, H. 2012. Relationship between numbers of the occurrence of strong local wind “Matsubori-kaze” and tracking of cyclones. *Abstracts of the Meteorological Society of Japan 2012 Fall Meeting 102: 429*, October, Sapporo. (in Japanese)
- Watanabe, T., Izumi, T. and Matsuyama, H. 2012. Numerical study on air purification effects of plants using modified WRF/Chem. *Abstracts of the Meteorological Society of Japan 2012 Spring Meeting 101: 328*, May, Tsukuba. (in Japanese)
- Watanabe, T., Izumi, T. and Matsuyama, H. 2012. Numerical study on air purification effects of plants as revealed by modified WRF/Chem. 6th Japanese-German Meeting on Urban Climatology, September, Hiroshima.
- 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. *Abstracts of the Meteorological Society of Japan 2012 Spring Meeting 101: 156*, May, Tsukuba. (in Japanese)
- Nishimine, Y. 2012. Geographic information study on the distribution of place names based on natural conditions. 8th GIS Community Forum Map Gallery, May-June, Tokyo. (in Japanese)
- Yamamoto, R. 2013. Land cover classification of urban area using object-based image analysis—A

case study of Setagaya ward, Tokyo—. General Meeting for Graduation Theses of Geography, 2012, March, Koganei. (in Japanese)

Hiroi, T., Shimoyamada, T., Nishimine, Y. and Matsuyama, H. 2011. The difference of the spatial distribution of the stores of family restaurant “Joyfull Co. Ltd.” and fast food restaurant “McDonald’s Japan”. *Research Abstracts on Spatial Information Science, CSIS DAYS 2012*: 29, November, Kashiwa. (in Japanese)

Sakai, K., Hasegawa, K., Izumi, T. and Matsuyama, H. 2013. Configuration of BRDF observation system using newly-developed unmanned air vehicle (UAV). The 15th CEReS Symposium on Environmental Remote Sensing, February, Chiba. (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

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Cultural Geography, Tourism Study, Francophone Studies

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Urban Geography, Office Study

Michiko HARAYAMA Assistant Professor

Bibliometrics

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 FY2012

Peer-reviewed Articles

- Wakabayashi, Y., Kukimoto, M. and Yui, Y. 2012. The role of unlicensed childcare facilities in providing childcare services in Naha City, Okinawa. *Annals of the Association of Economic Geographers* **58**(2): 79-99. (in Japanese with English abstract)
- Wakabayashi, Y. and Koizumi, R. 2012. Application of geovisualization as a method for exploratory spatial data analysis: the case of demographic data for Tokyo Metropolitan Area. *Map (Chizu)* **50**(2): 3-10. (in Japanese with English abstract)
- Tanaka, M. 2013. Qualitative Aspects of Cognitive Distance in Urban Space in Relation to Daily Movement Behavior: A Case Study of University Students in Kanazawa. *Japanese Journal of Human Geography* **65**(1): 47-62. (in Japanese with English abstract)

Other Articles

- Wakabayashi, Y. 2013. Role of geographic knowledge and spatial abilities in map reading process: implications for geospatial thinking. *Geographical Reports of Tokyo Metropolitan University* **48**: 37-46.
- Yui, Y., Kamiya, H. and Wakabayashi, Y. 2012. Variations of female labor and living space: a geographical perspective. In *Female labor and living space*, ed. Y. Yui, 11-24. Tokyo: Akashi Shoten. (in Japanese)
- Yui, Y., Wakabayashi, Y., Nakazawa, T. and Kamiya, H. 2012. Residential choices of working women and urban space. In *Female labor and living space*, ed. Y. Yui, 73-98. Tokyo: Akashi Shoten. (in Japanese)
- Wakabayashi, Y. 2012. Recent trends and regional differences of childcare service provision in

Tokyo Metropolitan Area. In *Female labor and living space*, ed. Y. Yui, 119-136. Tokyo: Akashi Shoten. (in Japanese)

Kukimoto, M. 2012. Working women and childcare in hot-spring area in Japan. In *Female labor and Living Space*, ed. Y. Yui, 152-153. Tokyo: Akashi Shoten. (in Japanese)

Books

None

Reports

None

Book Reviews

None

Miscellaneous Reports

Imai, O. 2012. Human resource development program for advanced use of geospatial information. *People and national land policy 21 (Hito to Kokudo 21)* **38(2)**: 46-47. (in Japanese)

Presentations

Wakabayashi, Y. 2012. Reginald Golledge and behavioral geography. Nineteenth research meeting of the Man-Environment Research Association, May, Yokohama.

Wakabayashi, Y. and Koizumi, R. 2012. Detection and mapping of hot/cold spots of urban spatial change in Tokyo 23 wards. *Abstracts of Japan Geoscience Union Meeting 2012: MTT35-P03* (CD-ROM), May, Makuhari. (in Japanese with English abstract)

Wakabayashi, Y., Kukimoto, M. and Yui, Y. 2012. The role of unlicensed childcare facilities in providing childcare services in Naha City, Okinawa . Pre - Conference of the IGU - Commission on Gender and Geography, August, Hamburg.

Wakabayashi, Y. and Koizumi, R. 2012. Spatial patterns of population change in the 23 special wards of Tokyo after the period of the bubble economy. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Autumn Meeting* **82**: 171, October, Kobe. (in Japanese)

Wakabayashi, Y., Kukimoto, M. and Yui, Y. 2012. Mapping the supply-demand gap in childcare

- services in Naha City, Okinawa. *Papers and Proceedings of the Geographic Information Systems Association 21* (CD-ROM), October, Hiroshima.
- Wakabayashi, Y. and Koizumi, R. 2012. Spatial patterns of population change in the 23 special wards of Tokyo after the period of the bubble economy. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Autumn Meeting 82*: 171, October, Kobe. (in Japanese)
- Matsui, Y. and Wakabayashi, Y. 2012. Spatial thinking in answering geographic questions based on topographic maps. *Proceedings of the 2012 Annual Meeting of the Human Geographical Society of Japan*: 70-71, November, Kyoto. (in Japanese)
- Tsubomoto, H. 2012. Spatial change of business district of Hiroshima after the Bubble economy. *Proceedings of the 2012 Annual Meeting of the Human Geographical Society of Japan*: 128-129, November, Kyoto. (in Japanese)
- Tsubomoto, H. 2013. A trial of the end user model construction in explanation of urban inner structure. *Proceedings of the General Meeting of the Association of Japanese Geographers 2013 Spring Meeting 83*: 105, March, Kumagaya. (in Japanese)
- Imai, O. 2012. *Papers and Proceedings of the Geographic Information Systems Association 21* (CD-ROM), October, Hiroshima.
- Imai, O. 2013. Awareness of the issues to social role of geography. *Proceedings of the General Meeting of the Association of Japanese Geographers 83*: 18, March, Kumagaya. (in Japanese)
- Imai, O. 2013. Advancement of participatory GIS in Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers 83*: 43, March, Kumagaya. (in Japanese)
- Kukimoto, M. 2012. The use of communication tools for child-rearing information among mothers living in central Tokyo. 32nd International Geographical Congress, August, Cologne, Germany.
- Kukimoto, M. and Koizumi, R. 2012. Regional Disparities in the Provision of Childcare Services and the Consequent Problems Facing Working Mothers in Metropolitan Areas in Japan. Pre Conference of the IGU-Commission on Gender and Geography, August, Hamburg, German.
- Koizumi, R. and Kukimoto, M. 2012. Gentrification and gender relation reconsidered: the case of a redeveloped district of Tokyo. Pre Conference of the IGU-Commission on Gender and Geography, August, Hamburg, German.
- Koizumi, R. 2012. The changing spatial structure of the Tokyo metropolitan area in the post-growth society. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Autumn Meeting 82*: 17, October, Kobe. (in Japanese)

Koizumi, R. 2013. The social and spatial structures and its changes in the Tokyo metropolitan area after the bubble economy. The General Meeting of the urban social geography group of the Association of Japanese Geographers 2013 Spring Meeting, March, Kumagaya. (in Japanese)

Tanaka, M. 2012. Qualitative Aspects of Cognitive Distance in Urban Space in Relation to Daily Movement Behavior: A Case Study of University Students in Kanazawa. *Proceedings of the General Meeting of the Association of Japanese Geographers 2012 Fall Meeting* **82**: 73, October, Kobe. (in Japanese)

Tanaka, M. 2013. A collaborative effort to verbal guidance for visually impaired people as volunteered geographic information. *Proceedings of the General Meeting of the Association of Japanese Geographers 2013 Spring Meeting* **83**: 250, March, Kumagaya. (in Japanese)