

Annual Report 2016

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 FY2016	
2.	Laboratory of Climatology	10
	1) Staff	
	2) Overview of Research Activities	
	3) List of Research Activities in FY2016	
3.	Laboratory of Environmental Geography	20
	1) Staff	
	2) Overview of Research Activities	
	3) List of Research Activities in FY2016	
4.	Laboratory of Geographical Information Sciences	25
	1) Staff	
	2) Overview of Research Activities	
	3) List of Research Activities in FY2016	
5.	Laboratory of Urban and Human Geography	32
	1) Staff	
	2) Overview of Research Activities	
	3) List of Research Activities in FY2016	

1. Laboratory of Quaternary Geology and Geomorphology

1) Staff

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

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

Daisuke ISHIMURA Assistant Professor / D.Sc.
Tectonic geomorphology, Quaternary Geology

2) Overview of Research Activities

To prospect the futuristic view of environmental changes, our laboratory investigates the history and process of surface landform/geological development during the Quaternary period. The followings are some topics of our studies.

1. Reconstruction of geomorphological/geological phenomena during the Quaternary (the last 2–3 million years) with accuracies of 10^5 – 10^1 years
2. Study on volcanic products (tephra) and explosive eruption history in and around the Japanese Islands
3. Investigation on production–transport–depositional processes of sedimentary particles
4. Study on coastal–deep marine sediment for reconstruction of natural hazard history and influence of human activity to natural environment
5. Reconstruction of earthquake recurrence interval and fault activity from earthquake/fault induced landform and sediment
6. Investigation on marine/fluvial terraces for reconstruction of landform development and crustal movement during the last 10^5 years

3) List of Research Activities in FY2016

Peer-reviewed Articles

- Suzuki, T., Shirai, M. and Fukushima, T. 2016. Tephrochronology of the Kazusa Group in southern Kanto Plain, central Japan. *The Journal of the Geological Society of Japan* **122**: 343-356. (in Japanese with English abstract)
- Maruyama, S., Hattori, K., Hirata, T., Suzuki, T. and Danhara, T. 2016. Simultaneous determination

- of 58 major and trace elements in volcanic glass shards from the INTAV sample mount using femtosecond laser ablation-inductively coupled plasma-mass spectrometry. *Geochemical Journal* **50**: 403-422. doi:10.2343/geochemj.2.0436.
- McLean, D., Albert, P., Nakagawa, T., Staff, R., Suzuki, T., Suigetsu 2006 Project Members and Smith, V. 2016. Identification of the Changbaishan ‘Millennium’ (B-Tm) eruption deposit in the Lake Suigetsu (SG06) sedimentary archive, Japan: Synchronisation of hemispheric-wide palaeoclimate archives. *Quaternary Science Reviews* **150**: 301-307.
- Sezaki, S., Kosaka, H., Kagohara, K., Abe, K., Miwa, A., Ikebe, H., Okada, S. Yagi, H., Suzuki, T. and Imaizumi, T. 2016. Outcrop of the active structure at construction site of Tohoku- Chuo Expressway, Murayama City, Yamagata Prefecture, in North East Japan. *Journal of the Japan Society of Engineering Geology* **57**: 68-79. (in Japanese with English abstract)
- Shirai, M., Hayashizaki, R., Liu, H. and Sato, S. 2016. Transport–depositional processes of sand grains in the present Tenryu River to Enshu Coast watershed estimated from OSL intensity. *The Quaternary Research* **55**: 107-118. (in Japanese with English abstract)
- Shirai, M., Utsugawa, T., Omura, A., Hayashizaki, R., Kameo, K., Niwa, Y. and Shimizu, H. 2017. Influence of deposition in dam reservoir on the deep marine hemipelagic environment off Niigata, central Japan. *Environmental Earth Sciences* **76**: 107. doi 10.1007/s12665-017-6430-2.
- Ishimura, D., Miyauchi, T., Hayase, R., Ohara, K. and Yamaichi, T. 2016. Systematic age gap of radiocarbon dates between organic bulk sediment samples and fossil samples of animal and plant in Holocene core sediments and their causes. *Journal of Geography* **125**: 243-256. (in Japanese with English abstract)
- Kato, S., Tanigawa, K., Kawashima, M., Ishimura, D. and Okada, A. 2016. Late Holocene Activity of the Hijima Fault of the Yamasaki Fault Zone, Western Japan. *Humans and Nature* **27**: 13-26. (in Japanese with English abstract)
- Toda, S., Kaneda, H., Okada, S., Ishimura, D. and Mildon, Z.K. 2016. Slip-partitioned surface ruptures for the Mw 7.0 16 April 2016 Kumamoto, Japan, earthquake. *Earth, Planets and Space* **68**:188 DOI 10.1186/s40623-016-0560-8.
- Kariya, Y., Aoki, K. and Takaoka S. 2016. A middle Holocene wide-spread tephra, Towada-Chuseri, discovered from a subalpine soil on Mount Aizu-komagatake and the Gassan Volcano, northern Japan. *The Quaternary Research (Daiyonki Kenkyu)* **55**: 237-246. (in Japanese with English abstract)
- Tsuchiya, M., Mannen, K., Kobayashi, M. and Fukuoka, T. 2017. Two Type of Glass Shards within the Owakidani Tephra Group Deposits, Hakone Volcano: Constraints on Their Sources and Age. *Bulletin of the Volcanological Society of Japan*: **62**, 23-30. (in Japanese with English abstract)
- Nishizawa, F. and Suzuki, T., 2016. Correlation of the Middle Pleistocene pyroclastic flow deposits intercalated in the Futami gravel beds, west-central Kyushu, Japan. *The Quaternary Research* **55**:

211-222. (in Japanese with English abstract)

Utsugawa, T. and Shirai, M. 2016. A review of roundness, a fundamental shape parameter of detrital particles: history of analysis and analytic prospects. *Geographical Review of Japan Series A* 89: 329–346. (in Japanese with English abstract)

Other Articles

Suzuki, T. 2016. Frequency and characteristic of volcanic eruption viewed from the standpoint of Quaternary Sciences. *Trends in Sciences* 21: 47. (in Japanese)

Suzuki, T. 2016. Study and its starting point of Prof. Sohei Kaizuka; landform and tephra in the Kanto Plain. *The Map Center* 529: 18-21. (in Japanese)

Books/ Reports/ Book Reviews

Suzuki, T. 2017. D2-4 Development and distribution of volcanoes, D2-5 Classification of volcanoes, D2-6 Tephra and tephrochronology. In *Dictionary of Physical Geography*. Tokyo: Asakura Publishing Co., Ltd., pp.236-241. (in Japanese)

Suzuki, T. 2017. Kanto loam In *Dictionary of Landforms*. Tokyo: Asakura Publishing Co., Ltd., pp.173. (in Japanese)

Suzuki, T. 2016. Book review (Nanayama, F., Nakazato, H., Ooi, S. and Nakashima, R.: Geology of the Mobarra district). *Geographical Review of Japan Series B* 90: 53-54. (in Japanese)

Yamaoka, K. and Suzuki, T. 2017. *Understanding!, Working on! Disaster and Measure 3: Volcano*. Tokyo: Teikoku-Shoin Co., Ltd., 47p. (in Japanese)

Okada, A., Kato, S., Ishimura, D., Yamada, K., Suehiro, M., Yanagida, M. 2016. Evaluation of activity of the Iwakuma fault based on the subsurface stratigraphy and chronology at Hatabe basin, northern coast of Lake Biwa. *Journal of Geography* 125: N115. (in Japanese)

Miscellaneous Reports

Suzuki, T., Shirai, M. and Fukushima, T. 2016. Report of the 123rd JGS: 2016 Sakurajosui, TOKYO: Excursion J: Tephrochronology of the Kazusa Group in southern Kanto Plain, central Japan. *The Geological Society of Japan News* 19: 22. (in Japanese)

Suzuki, T. and Saito, Y. 2016. Report of International Union for Quaternary Research, XIX Congress, July 26 to August 2, 2015, Nagoya Congress Center, Nagoya, Japan. *The Quaternary Research* 55: 119-151. (in Japanese)

Hirouchi, D., Sawa, H., Ishimura, D., Okada, S., Kagohara, K., Goto, H., Sugito, N., Suzuki, Y. and Matsuta, N. 2017. Active Fault Map in Urban Area, Shiroumadake and Omachi, partial revision. Geographical Survey Institute, D1-No.765. (in Japanese)

Tsutsumi, H., Ishimura, D., Kagohara, K., Kumahara, Y., Chida, N., Nakata, T. 2016. Active Fault

Map in Urban Area, Kikukawa Fault Zone and its vicinity, Ube. Geographical Survey Institute, D1-No.745. (in Japanese)

Kagohara, K., Ishimura, D., Sugito, N., Chida, N., Tsutsumi, H., Nakata, T. 2016. Active Fault Map in Urban Area, Kikukawa Fault Zone and its vicinity, Shimonoseki-Hokubu. Geographical Survey Institute, D1-No.745. (in Japanese)

Presentations

Suzuki, T., Yamaoka, K., Senda, Y. and Unome, S. 2016. Landform change detected from the airborne laser survey before and after the 2014 Eruption of Ontake Volcano, central Japan. *Abstracts of Japan Geoscience Union Meeting 2016: SVC47-27*, May, Chiba. (in Japanese with English abstract)

Suzuki, T., Aoki, T., Maruyama, T. and Saitou, M. 2016. Reexamination of the eruptive age of Late Pleistocene widespread DKP tephra by using MD01-2421 core collected off the Kashima-Pacific coast, Japan. *Abstracts of Japan Geoscience Union Meeting 2016: HQR15-05*, May, Chiba. (in Japanese with English abstract)

Suzuki, T. 2016. Earthquakes occurred below Tokyo and Tama regions and active fault. Asahi Culture Center Tachikawa, June, Tachikawa. (in Japanese)

Suzuki, T. 2016. Earthquakes occurred below capital area and possibility of Fuji eruption: learning from recent studies. Asahi Culture Center Yokohama, July, Yokohama. (in Japanese)

Suzuki, T. 2016. Characteristics of natural disasters in the Japanese Islands located in a humid and tectonically active area, education in physical geography and disaster prevention using hazard maps. 16th Geography Workshop of the Kokushikan University "Consideration of Disaster Prevention in Geography", July, Tokyo. (in Japanese)

Suzuki, T. 2016. Frequency and characteristic of volcanic eruption on million to hundred -year scale and their impacts. Mass Meeting for Promotion of Disaster Prevention, August, Tokyo. (in Japanese)

Suzuki, T., Shirai, M. and Fukushima, T. 2016. Excursion J: Excursion for 123rd Geological Society of Japan "Tephrochronology of the Kazusa Group in southern Kanto Plain, central Japan", September, Tokorozawa, Hino and Inagi, Yokohama. (in Japanese)

Suzuki, T. 2016. Recent studies on stratigraphy and chronology of the Kazusa Group beneath the Musashino Upland, south Kanto Plain, Central Japan. *Abstracts 2016 the 123 Annual Meeting of the Geological Society of Japan 35*, September, Tokyo. (in Japanese)

Suzuki, T. 2016. Tephra studies: Recent progress and future perspectives. *Japan Association for Quaternary Research, Programme and Abstracts 46: 20*, September, Chiba. (in Japanese)

Suzuki, T. 2016. Learning disasters in the Hachioji City: relation between Geology of Tama and volcano. Hachioji Eco Hiroba, December, Hachioji. (in Japanese)

- Suzuki, T. 2017. Natural disasters in the Tama district and preparation for them. Lectures for Attractions of Tama, February, Hachioji. (in Japanese)
- Chigira, M. and Suzuki, T. 2016. Hazard mapping of earthquake-induced landslides of pyroclastic fall deposits. *Abstracts of Japan Geoscience Union Meeting 2016*: HDS05-01, May, Chiba. (in Japanese with English abstract)
- Chigira, M. and Suzuki, T. 2016. Prediction of earthquake-induced landslides of pyroclastic fall deposits. 12th International Symposium on Landslides, June, Naples.
- Chigira, M., Suzuki, T., Wang, G. and Tobita, T. 2016. Landslide horizons of the landslides of pyroclastic fall deposits induced by the 1949 Imaichi earthquake. August, Kochi. (in Japanese)
- Chigira, M., Furuki, H., Kasama, T. and Suzuki, T. 2016. Shinseiko-landslide induced by the great Kanto Earthquake had a sliding surface in the Tokyo Pumice, which is widely distributed in Kanagawa and Tokyo areas. *Abstracts of Japan Geoscience Union Meeting 2016*: HDS17-04, May, Chiba. (in Japanese with English abstract)
- Ishihara, T., Suzuki, T., Hongo, M. and Uchida, Y. 2016. Tephra and fossil pollen stratigraphy of all-cores drilled in the eastern margin of the Aizu basin, Northeast Japan. *Abstracts of Japan Geoscience Union Meeting 2016*: HQR15-P05, May, Chiba. (in Japanese with English abstract)
- Wang, G., Chigira, M. and Suzuki, T. 2016. Post shear behavior of pyroclastic fall deposits and landsliding phenomena during the 1949 Imaichi earthquake. *Abstracts of Japan Geoscience Union Meeting 2016*: HDS05-02, May, Chiba. (in Japanese with English abstract)
- Shirai, M. 2016. Journey of sand grains from river to deep marine estimated from bleaching percentage (BLP) of feldspar grains. *Abstracts of Japan Geoscience Union 2016 Meeting*: SST53-06, May, Chiba. (in Japanese with English abstract)
- Shirai, M. 2016. Mountain, river and slopes: geologic and geomorphologic processes around the Hamura City. *The 2nd special lecture associated with compilation of the History of the Hamura City*. November, Hamura. (in Japanese)
- Shirai, M., Utsugawa, T., Omura, A., Hayashizaki, R., Kato, Y. and Ashi J. 2017. Decrease in MAR of hemipelagic sediment core obtained from off Enshu coast during the mid-20th century. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2017*: 19-20, March, Matsumoto. (in Japanese)
- Ishimura, D., Toda, S., Mukoyama, S. and Homma, S. 2016. Surface rupture and coseismic deformation associated with the 2014 Nagano-ken-hokubu earthquake revealed from differential LiDAR analysis. *Abstracts of Japan Geoscience Union Meeting 2016*: SSS31-17, May, Chiba. (in Japanese with English abstract)
- Ishimura, D. and Toda, S. 2016. Distribution of liquefactions and sand volcanoes in Aso Caldera, associated with the 2016 Kumamoto earthquake. *Abstracts of Japan Geoscience Union Meeting 2016*: MIS34-P88, May, Chiba. (in Japanese with English abstract)

- Ishimura, D. 2016. High-precision age estimation of tsunami deposits in Koyadori, Yamada Town, northeast Japan. *Abstracts of Japan Geoscience Union Meeting 2016*: MIS11-01, May, Chiba. (in Japanese with English abstract)
- Ishimura, D. and Miyauchi, T. 2016. Tsunami deposits and preservation potential of them in Onuma, Minami-Sanriku Town, northeast Japan. *Abstracts of Japan Geoscience Union Meeting 2016*: MIS11-P07, May, Chiba. (in Japanese with English abstract)
- Ishimura, D., Toda, S., Mukoyama, S., Homma, S. and Yamaguchi, K. 2017. Detailed locations of surface ruptures and coseismic deformation revealed from differential LiDAR analysis - An example of the 2014 Nagano-ken-hokubu earthquake -. *Proceedings of the General Meeting of the Association of Japanese Geographers 91*: 435, March, Tsukuba. (in Japanese)
- Niwa, Y., Toda, S., Ishimura, D., Mori, Y. and Omata, M. 2016. Vertical slip rate estimated from young lacustrine sediment core samples across the Kamishiro fault, Itoigawa-Shizuoka Tectonic Line, central Japan. *Abstracts of Japan Geoscience Union Meeting 2016*: SSS31-15, May, Chiba. (in Japanese with English abstract)
- Toda, S., Ishimura, D., Okumura, K., Niwa, Y., Mori, Y., Omata, M. and Yamasaki, M. 2016. Trench excavation survey across the 2014 rupture zone along Kamishiro fault, Itoigawa-Shizuoka Tectonic Line. *Abstracts of Japan Geoscience Union Meeting 2016*: SSS31-16, May, Chiba. (in Japanese with English abstract)
- Kumahara, K., Goto, H., Nakata, T., Ishiguro, S., Ishimura, D., Ishiyama, T., Okada, S., Kagohara, K., Kashihara, S., Kaneda, H., Sugito, N., Suzuki, Y., Takenami, D., Tanaka, K., Tanaka, T., Tsutsumi, H., Toda, S., Hirouchi, D., Matsuta, N., Mita, T., Moriki, H., Yoshida, H. and Watanabe, M. 2016. Distribution of surface rupture associated the 2016 Kumamoto earthquake and its significance. *Abstracts of Japan Geoscience Union Meeting 2016*: MIS34-05, May, Chiba. (in Japanese with English abstract)
- Goto, H., Kumahara, K., Nakata, T., Ishiguro, S., Ishimura, D., Ishiyama, T., Okada, S., Kagohara, K., Kashihara, S., Kaneda, H., Sugito, N., Suzuki, Y., Takenami, D., Tanaka, K., Tanaka, T., Tsutsumi, H., Toda, S., Hirouchi, D., Matsuta, N., Mita, T., Moriki, H., Yoshida, H. and Watanabe, M. 2016. Surface Fault Ruptures of the 2016 Kumamoto Earthquake. *Abstracts of Japan Geoscience Union Meeting 2016*: MIS34-P44, May, Chiba. (in Japanese with English abstract)
- Toda, S., Kaneda, H., Okada, S. and Ishimura, D. 2016. Slip-partitioned surface ruptures for the Mw 7.0 2016 Kumamoto, Japan, earthquake. *Abstracts of Japan Geoscience Union Meeting 2016*: MIS34-P48, May, Chiba. (in Japanese with English abstract)
- Miyazaki, M and Ishimura D. 2016. Crustal movements on the northern Sanriku coast based on the last interglacial marine terraces. Programme and abstracts JSAF 2016 Fall Meeting: 28-29, October, Tokyo. (in Japanese)
- Kato, S., Okada, A. and Ishimura, D. 2016. Late Pleistocene activity of the concealed active fault in

- the Hatabe basin north of Lake Biwa, Central Japan. Programme and abstracts JSAF 2016 Fall Meeting: 68, October, Tokyo. (in Japanese)
- Hirouchi, D., Matsuta, N., Yasue, K., Takeshita, Y., Doke, R., Sato, Y., Ishimura, D., Ishiyama, T., Sugito, N., Shiono, T., Taniguchi, K., Sawa, H., Watanabe, M., Suzuki, Y. and Research Group for Kamishiro Fault 2017. Faulting event of the Northern part of Kamishiro fault, ISTL active fault zone, central Japan. Proceedings of the General Meeting of the Association of Japanese Geographers 91: P021, March, Tsukuba. (in Japanese)
- Toda, S., Kaneda, H., Okada, S., Ishimura, D. and Mildon, Z.K. 2016. Slip-partitioned surface ruptures for the Mw 7.0 2016 Kumamoto, Japan, earthquake. *Abstracts of AGU 2016 Fall Meeting*: S52C-04, December, San Francisco, USA.
- Goto, H., Kumahara, Y., Tsutsumi, H., Toda, S., Ishimura, D., Okada, S., Nakata, T., Kagohara, K., Kaneda, H., Suzuki, Y., Watanabe, M., Tsumura, S., Matsuta, N., Ishiyama, T., Sugito, N., Hirouchi, D., Ishiguro, S., Yoshida, H., Tanaka, K., Takenami, D., Kashihara, S., Tanaka, T. and Moriki, H. 2016. Distribution of surface rupture associated the 2016 Kumamoto earthquake and its significance. *Abstracts of AGU 2016 Fall Meeting*: T14A-01, December, San Francisco, USA.
- Tamura, I. 2016. When did the Tateyama mountain range rise? - Natural history of Toyama by the tephrochronology - . *Relay Meeting of the Tateyama Kurobe Geo Park*. June, Toyama. (in Japanese)
- Tamura, I., Hoshi, H. and Matsuo, T. 2016. The accuracy and possibility of Miocene tephra correlation. *Abstracts of the 123rd Annual Meeting of the Geological Society of Japan* : 216, September, Tokyo. (in Japanese)
- Tamura, I., Mizuno, K., Ito, D., Mori, Y. and Usami, T. 2016. Tephrochronology of the Tokai Group in Hokuse area, Mie Prefecture. *Programme and Abstracts of Japan Association for Quaternary Research* **46** : 62, September, Chiba. (in Japanese)
- Tokuyasu, K., Tamura, I., Komatsu, T. and Yasue, K. 2016. Quartz OSL ages and marker tephra of fluvial terrace sediments along the middle part of the Kiso River. *Abstracts of Japan Geoscience Union Meeting 2016* : STT53 - P04 , May, Chiba. (in Japanese with English abstract)
- Tokuyasu, K., Yasue, K., Komatsu, T., Tamura, I. and Horiuchi, Y. 2016. Geosphere Stability Project (3) Provenance analysis techniques. *Abstracts of Japan Geoscience Union Meeting 2016* : HCG025-P03, May, Chiba. (in Japanese with English abstract)
- Suguyama, K., Takagi, H., Tamura, I., Kitazawa, N. and Kawamoto, K. 2016. Post Paleogene brittle deformations along the Median tectonic Line, Chubu district. *Abstracts of Japan Geoscience Union Meeting 2016* : SGL37-P12, May, Chiba. (in Japanese with English abstract)
- Aoki K. 2017. Japanese volcanic eruptions as shown by the northwestern Pacific seabed sediment. *MFRI International Symposium 2016 -Deciphering volcanic eruption history from lake sediment-*, *Abstracts*: 6, January, Fujiyoshida. (in Japanese)

- Aoki K. and Suzuki T. 2016 Identification of Nantaisan Shichihon-sakura/Imaichi tephra (Nt-S/I) in the sediment core MD01-2421 collected off the Kashima coast, Japan. Abstract of Japan Geoscience Union Meeting: HQR15-04, May, Chiba. (in Japanese with English abstract)
- Aoki., K. 2016. Tephrostratigraphy of middle to late Quaternary pelagic sediment off the Kuril islands. *Programme and abstracts, 2016 Meeting of Japan Association for Quaternary Research* **46**: 42, September, Chiba. (in Japanese)
- Oikawa, T., Takarada, S., Tomiya, A., Geshi, N., Hoshizumi, H., Kawanabe, Y., Furukawa, R., Ishizuka, Y., Tsuchiya, S. and Kobayashi, M. 2016. Sequence of Japanese Plinian and sub-Plinian eruptions. *Programme and Abstracts, the Volcanological Society of Japan, 2016 Fall Meeting*: 152, October, Fujiyoshida. (in Japanese)
- Kobayashi, M., Maejima, Y. and Tokita, K. 2017. Applicability evaluation of the drone-mounted thermal infrared camera to geothermal monitoring at Sumikawa site, Akita Prefecture. *Japan Geoscience Union Meeting 2016*: SVC47-P03, May, Chiba. (in Japanese with English abstract)
- Kawai, T. 2016. Re-examination of geomorphic chronology of Middle Pleistocene based on tephrostratigraphy around the drainage of the Natori River, Miyagi Prefecture, Northeast Japan. *Programme and Abstracts of the General Meeting of Japan Association for Quaternary Research* **46**: 74, September, Chiba. (in Japanese)
- Hayashizaki, R. and Shirai, M. 2016. Potential and problems of K-feldspar optically stimulated luminescence dating of tsunami deposits. *Abstracts of Japan Geoscience Union Meeting 2016*: STT53-05, May, Chiba. (in Japanese with English abstract)
- Shibayama, A. and Nishizawa, F. 2016. Examination of earthquake disaster prevention education method in school education - Example of teaching practice at the Third Senior High School of Nihon University -. *Proceedings of the 18th Conference Japan Society for Disaster Information Studies*: 188-189, October, Tokyo. (in Japanese)
- Utsugawa, T. and Shirai, M. 2016. Fluvial breaking and abrasion mechanisms acting upon gravel-sand grains utilizing the difference of grain lithology. *Abstracts of Japan Geoscience Union Meeting 2016*: HGM14-P07, May, Chiba. (in Japanese with English abstract)
- Utsugawa, T. and Shirai, M. 2017. Characteristics of rock type-grain size-shape of clastic sediments during producing-transport processes in the watershed of Watarase River. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2017*: 11-12, March, Matsumoto. (in Japanese)
- Utsugawa, T. Several topics of roundness. *Talk and Talk in Sedimentology: Reviews of grain size and shape. Meeting of the Sedimentological Society of Japan 2017*. March, Matsumoto. (in Japanese)
- Yamada, M., Kawai, T., Saito, H., Kasahara, A., Nishizawa, F. and Suzuki, T. 2016. Stratigraphical study on the Middle Pleistocene pyroclastic flow deposits, northern Tochigi and southern Fukushima Prefectures and the eruptive history of Takahara volcano. *Abstracts of Japan*

- Geoscience Union Meeting 2015*: SVC48-P07, May Chiba. (in Japanese with English abstract)
- Nanri, S. and Suzuki, T. 2016. Two eruptive events occurred around 40 ka at the Akagi volcano in North Kanto, NE Japan: Eruptions of the Akagi-Kanuma and Akagi-Shimizu Lithic Tephra. *Abstracts of Japan Geoscience Union Meeting 2016*: SVC48-10, May, Chiba. (in Japanese with English abstract)
- Matsuyama, H., Izumi, T., Sakai, K. and Nanri, S. 2016. Estimation of snow depth distribution by using UAV-SfM method as evaluated by in situ snow probe measurements — A case study around Mt. Makihata, Niigata Prefecture —. *Proceedings of the General Meeting of the Association of Japanese Geographers 2016 Fall Meeting 90*: 85, September, Sendai (in Japanese).
- Matsuyama, H., Izumi, T., Sakai, K. and Nanri, S. 2016. Estimation of snow depth distribution by using UAV-SfM method as evaluated by in situ snow probe measurements — A case study around Mt. Makihata, Niigata Prefecture —. *Research Abstracts on Spatial Information Science, CSIS DAYS 2016*: 9, November, Kashiwa (in Japanese).
- Kato, Y. and Shirai, M. 2016. Depositional system of the early Pleistocene Inagi Formation, Kazusa Group in the northwest Tama Hills, central Japan. *Abstracts of Japan Geoscience Union 2016 Meeting*: HQR15-P10, May, Chiba. (in Japanese with English abstract)
- Yamada, M., Kawai, T., Saito, S., Kasahara, A., Nishizawa, F. and Suzuki, T. Stratigraphical study on the Middle Pleistocene pyroclastic flow deposits, northern Tochigi and southern Fukushima Prefectures and the eruptive history of Takahara volcano. *Abstracts of Japan Geoscience Union Meeting 2016*: SVC48-07, May, Chiba. (in Japanese with English abstract)
- Okumura, N. 2017. Shape characteristics of river bed gravels suitable to juggling performance. *The 65th Meeting of Graduation Thesis of Geography 2017*, March, Koganei. (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

Fumiaki FUJIBE Project Professor / D.Sc.

Urban Climatology, Environmental Climatology

Jun-Ichi HAMADA Project Associate Professor / PhD (D.Sc.)

Tropical Climatology, Meteorological Observation

Hiroshi TAKAHASHI Assistant Professor / PhD (D.Sc.)

Climate System Study, Cloud-Precipitation Climatology, Regional Climate Modeling

Tomoshige INOUE Project Assistant Professor / PhD (D.Sc.)

Monsoon Climatology, Climate Change, Global Warming

Masato NOZU Project Researcher / PhD (D.Sc.)

Tropical climatology, Satellite Meteorology

Yoshihito SETO Project Researcher / PhD (D.Sc.)

Urban Climatology, Local Climatology, Statistical Analysis

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 FY2016

Peer-reviewed Articles

- Matsumoto, J., Wang, B., Wu, G.-X., Li, J., Wu, P.-M., Hattori, M., Mori, S., Yamanaka, M.D., Ogino, S.Y., Hamada, J.-I., Syamusdin, F., Koike, T., Tamagawa, K., Ikoma, E., Kinutani, H., Kamahori, H., Kamiguchi, K. and Harada, Y. 2017. An overview of the Asian Monsoon Years 2007–2012 (AMY) and multi-scale interactions in the extreme rainfall events over the Indonesian Maritime Continent. In C.P. Chang et al. eds. *The Global Monsoon System: Research and Forecast, (3rd ed.)*, 365-385, doi: 10.1142/9789813200913_0029.
- Chen, T.-C., Tsay, J.-D., Matsumoto, J. and Alpert, J. 2017. Forecast advisory for the cold-season heavy rainfall/flood event developed from multiple interactions of the cold surge vortex with cold surge flows in the South China Sea. *Weather and Forecasting*, doi: <http://dx.doi.org/10.1175/WAF-D-16-0148.1>
- Chen, T.-C., Tsay, J.-D., Matsumoto, J. and Alpert, J. 2017. Impact of the summer monsoon westerlies on the South China Sea tropical cyclone genesis in May. *Weather and Forecasting*, doi: <http://dx.doi.org/10.1175/WAF-D-16-0189.1>
- Hattori, M., Yamazaki, A., Ogino, S.Y., Wu P.-M. and Matsumoto, J. 2017. Impact of the radiosonde observations of cold surge over the Philippine Sea on the tropical region and the Southern Hemisphere in December 2012. *SOLA* **13**: 19–24, doi:10.2151/sola.2017- 004.
- Kiguchi, M., Matsumoto, J., Oki, T. and Kanae, S. 2016. Pre-monsoon rain and its relationship with monsoon onset over the Indochina Peninsula. *Frontiers in Earth Science* **4**: 42, doi: 10.3389/feart.2016.00042.
- Nguyen-Xuan, T., Ngo-Duc, T., Kamimera, H., Trinh-Tuan, L., Matsumoto, J., Inoue T. and Phan-Van, T. 2016. The Vietnam Gridded Precipitation (VnGP) Dataset: construction and validation. *SOLA* **12**: 291-296, doi:10.2151/sola.2016-057.

- Suzuki, H., Nakakita, E. and Takahashi, H. 2017. Accuracy of radar-rain gauge analyzed precipitation: Analysis in Kanto, Koshin-etsu, and Tohoku regions. *Annual Journal of Hydraulic Engineering* **73**(4): I_13-I_18. (in Japanese with English abstract)
- Takahashi, H.G. 2016. Seasonal and diurnal variations in rainfall characteristics over the tropical Asian monsoon region using TRMM-PR data. *SOLA* **12A**: 22–27, doi:10.2151/sola.12A-005.
- Ono, M. and Takahashi, H.G. 2016. Seasonal transition of precipitation characteristics associated with land surface conditions in and around Bangladesh. *Journal of Geophysical Research - Atmosphere* **121**: 11, 190–11, 200, doi:10.1002/2016JD025218.
- Sugimoto, S. and Takahashi, H.G. 2016. Effect of spatial resolution and cumulus parameterization on simulated precipitation over South Asia. *SOLA* **12A**: 7–12, doi:10.2151/sola.12A-002.
- Sugimoto, S. and Takahashi, H.G. 2017. Seasonal differences in precipitation sensitivity to soil moisture in Bangladesh and surrounding regions. *Journal of Climate* **30**: 921–938, doi:10.1175/JCLI-D-15-0800.1.
- Adachi, S.A., Kimura, F., Takahashi, H.G., Hara, M., Ma, X. and Tomita, H. 2016. Impact of high-resolution sea surface temperature and urban data on estimations of surface air temperature in a regional climate. *Journal of Geophysical Research - Atmosphere* **121**: 10, 486–10, 504, doi:10.1002/2016JD024961.
- Fujibe, F. 2016: Annual variation of extreme precipitation intensity in Japan: Assessment of the validity of Clausius-Clapeyron scaling in seasonal change. *SOLA* **12**: 106-110.
- Fujibe, F. 2016. Long-term variations in cold mortality and winter temperature in Japan. *Tenki* **63**: 469-476. (in Japanese with English abstract)
- Shido, F., Seino, N., Yamamoto, A., Fujibe, F. and Aoyagi, T. 2016. An observational study on the influence of wind ventilation changes on surface air temperature induced by nearby plants and artificial structures. *Proceedings of 24th National Symposium on Wind Engineering*: 91-96. (in Japanese with English abstract)
- Ngo-Duc, T., Tangang, F.T., Santisirisomboon, J., Cruz, F., Trinh-Tuan, L., Nguyen-Xuan, T., Phan-Van, T., Juneng, L., Narisma, G., Singhruck, P. and Gunawan, D. 2016. Performance evaluation of RegCM4 in simulating extreme rainfall and temperature indices over the CORDEX-Southeast Asia region. *International Journal of Climatology* **37**: 1634-1647, doi: 10.1002/joc.4803

Other Articles

- Matsumoto, J. 2017. Climatic divisions in Japan. In Koike, K., Yamashita, S., Iwata, S., Urushibara, K., Koizumi, T., Tase, N., Matsukura, K., Matsumoto, J. and Yamakawa, S. eds. *Encyclopedia of Physical Geography*, Asakura-shoten: 138-139. (in Japanese)
- Matsumoto, J., Oki, T., Yamanaka M. D., Hayashi, T. and Asanuma, J. 2016. 10 years of MAHASRI:

Accomplishments and the international science conference wrap-up. *GEWEX NEWS* **26**(4): 10-15.

- Hosoda, H. and Matsumoto, J. 2017. Environment of continents. In Koike, K., Yamashita, S., Iwata, S., Urushibara, K., Koizumi, T., Tase, N., Matsukura, K., Matsumoto, J. and Yamakawa, S. eds. *Encyclopedia of Physical Geography*, Asakura-shoten: 434-435. (in Japanese)
- Takahashi, H. 2017. Multififormity of urban surface and spatial scale of urban climate phenomena. *Chiri* **62**(2): 32-39. (in Japanese)
- Takahashi, H. 2017. Monsoon circulation and wet/dry seasons, In Koike, K., Yamashita, S., Iwata, S., Urushibara, K., Koizumi, T., Tase, N., Matsukura, K., Matsumoto, J. and Yamakawa, S. eds.: *Encyclopedia of Physical Geography*. Asakura-shoten: 66-67. (in Japanese)
- Takahashi, H. 2017. Systems of front, Baiu front and autumnal rain front. In Koike, K., Yamashita, S., Iwata, S., Urushibara, K., Koizumi, T., Tase, N., Matsukura, K., Matsumoto, J. and Yamakawa, S. eds.: *Encyclopedia of Physical Geography*. Asakura-shoten: 80-83. (in Japanese)
- Takahashi, H. 2017. Changes in climatic environment by urbanization. In Koike, K., Yamashita, S., Iwata, S., Urushibara, K., Koizumi, T., Tase, N., Matsukura, K., Matsumoto, J. and Yamakawa, S. eds.: *Encyclopedia of Physical Geography*. Asakura-shoten: 100-103. (in Japanese)
- Fujibe, F. 2017. Problems of data homogeneity in urban warming evaluation. *Chiri* **62**(2): 40-47. (in Japanese)
- Dado, J.M. and Takahashi, H.G. 2016. Effect of spatial resolution on simulated rainfall over western Philippines. *Geographical Reports of Tokyo Metropolitan University* **52**: 1-9.

Books

- Matsumoto, J., Tsuboki, K., Kubo, S., Umitsu, M. and Sekine, M. 2017. *Understand! Tackle! Disaster and Its Prevention 4 Heavy Rainfall, Typhoon*. Teikoku-shoin, 54p. (in Japanese)
- Koike, K., Yamashita, S., Iwata, S., Urushibara, K., Koizumi, T., Tase, N., Matsukura, K., Matsumoto, J. and Yamakawa, S. (eds.) *Encyclopedia of Physical Geography*, Asakura-Shoten: 465p. (in Japanese)

Reports

- Takahashi, H. and Suzuki, H. (eds.) 2017. Researches on the spatial structures of heavy rainfall and strong winds in Shonai Plain. 2016 *Joint Research Report of Tokyo Metropolitan University and Research & Development Center of JR East Group*, 48p. (in Japanese)

Book Reviews

None

Miscellaneous Reports

Kumamoto, M., Hamagami, T., Iijima, S., Otsuka, M. and Fujibe, F. 2017. Long-term temperature variation at the Karuizawa Observatory and the change of surrounding environments. *Tenki* **64**: 181-184. (in Japanese)

Presentations

Matsumoto, J. 2016. Overview of MAHASRI and some problems on the onset of summer monsoon in Nepal. *NAST-DHM-TMU Joint Workshop on "Contemporary Issues on Hydro-meteorological Researches and Services in Nepal"*, Nepal Academy of Science and Technology, August, Kathmandu, Nepal.

Matsumoto, J. 2016. Monsoon climate. *Abstracts of the Meteorological Society of Japan 2016 Autumn Meeting* **110**: 301, October, Nagoya. (in Japanese)

Matsumoto, J. 2017. Onset of summer monsoon in Bangladesh and Nepal. *International Workshop for Climate Variability and Related Studies over North East Indian Subcontinent*. February, Nagoya.

Matsumoto, J., Zaiki, M., Mikami, T. and Kobayashi, S. 2017. Investigation of climate change in Asia through climate data rescue. *Proceedings of the General Meeting of the Association of Japanese Geographers 2017 Spring Meeting* **91**: 54, March, Tsukuba. (in Japanese)

Matsumoto, J., Kubota, H., Kobayashi, S., Yamamoto, H., Endo, N., Hirano, J., Akasaka, I., Zaiki, M., Hamada, J.I., Inoue, T., Hayashi, T. and Terao, T. 2016. Data rescue activities in Japan. *ACRE CHINA Workshop: Recovery, Digitization and Analysis of Pre-mid-20th Century Climate Observational Data in East Asia*. August, Beijing, China.

Matsumoto, J., Kubota, H., Endo, N., Akasaka, I., Hirano, J., Mikami, T., Zaiki, M., Nishina, J., Hamada, J.-I., Inoue, T., Hayashi, T. and Terao, T. 2017. Japanese rainfall data rescue activities in monsoon Asia. *The ACRE-China WorkshopII*, March, Hong Kong, China.

Matsumoto, J., Hamada, J.-I., Inoue, T., Kobayashi, S., Yamamoto, H., Mikami, T., Zaiki, M., Kubota, H., Endo, N., Hirano, J., Tsumura, K., Nyomura, Y., Nishina, J., Ishii, M. and Akasaka, I. 2016. Data rescue activities in Japan. *The 9th ACRE Workshop and Historical Weather and Climate Data Forum*, June, Maynooth, Ireland. (Poster)

Akasaka, I., Zaiki, M., Kubota, H. and Matsumoto, J. 2017. Characteristics of seasonal march of rainfall in Manila for the late 19th century – the early 20th century. *Proceedings of the General Meeting of the Association of Japanese Geographers 2017 Spring Meeting* **91**: 298, March, Tsukuba. (in Japanese) (Poster)

Fukushima, A., Hayashi, T., Terao, T., Murata, F., Kiguchi, M., Yamane, Y., Tanoue M. and Matsumoto, J. 2017. Rainfall characteristics of Assam, India – Comparison of the rain-gauge observation data and the gridded data (IMD4) -. *Proceedings of the General Meeting of the*

- Association of Japanese Geographers 2017 Spring Meeting* **91**:301, March, Tsukuba. (in Japanese) (Poster)
- Hattori, M., Yamazaki, A., Ogino, S.Y., Wu, P.-M. and Matsumoto, J. 2017. The impact of the radiosonde observations of cold surge over the Philippine Sea in December 2012. *RIKEN International Symposium on Data Assimilation*, March, Kobe.
- Kamahori, H., Fujibe, F. and Matsumoto, J. 2017. Data rescue of precipitation observations in Meiji and Taisho periods in Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers 2017 Spring Meeting* **91**: 304, March, Tsukuba. (in Japanese) (Poster)
- Kubota, H., Matsumoto J., Zaiki, M., Ishii, M., Kumazawa, R., Fudeyasu, H., Mikami, T., Hamada, J.-I., Inoue, T., Kobayashi, S., Yamamoto, H. and Akasaka, I. 2016 Japan Climate Data Project (JCDP) - Data rescue of tropical cyclone landfall in Japan. *The 9th ACRE workshop and Historical Weather and Climate Data Forum*, June, Maynooth, Ireland.
- Kubota, H., Matsumoto J., Zaiki, M., Ishii, M., Kumazawa, R., Fudeyasu, H. and Akasaka, I. 2016 Japan Climate Data Project (JCDP) -Data rescue of weather station and tropical cyclone track data along the coast of East and Southeast. *ACRE CHINA Workshop: Recovery, Digitization and Analysis of Pre-mid-20th Century Climate Observational Data in East Asia*. August, Beijing, China.
- Kubota, H., Matsumoto, J., Mikami T., Zaiki, M., Tsukahara, T., Akasaka, I., Endo, N., Hamada, J.-I., Inoue T., Allan, R. and Williamson, F. 2017. Data rescue in East and Southeast Asia. *Proceedings of the General Meeting of the Association of Japanese Geographers 2017 Spring Meeting* **91**: 55, March, Tsukuba. (in Japanese)
- Murata, F., Terao, T., Fujinami, H., Hayashi, T., Asada, H. and Matsumoto, J., 2016. Observational study over north eastern part of the Indian subcontinent. *Workshop on Global Precipitation Systems*, October, Yokohama.
- Murata, F., Terao, T., Fujinami, H., Hayashi, T., Asada, H. and Matsumoto, J., 2017. Long-term data analysis of rainfall at Cherrapunji, India. *Proceedings of the General Meeting of the Association of Japanese Geographers 2017 Spring Meeting* **91**: 300, March, Tsukuba. (in Japanese) (Poster)
- Murata, F., Terao, T., Hayashi, T., Asada, H., Matsumoto, J. and Syiemlieh, H.J. 2016. Characteristics of active periods at Cherrapunji, India. *Abstracts of the Meteorological Society of Japan 2016 Spring Meeting* **109**: 256, May, Shibuya. (in Japanese)
- Ogino, S.Y., Yamanaka, M.D., Mori, S. and Matsumoto, J. 2016. Climatology of coastal precipitation in the tropics. *Abstracts of the Meteorological Society of Japan 2016 Spring Meeting* **109**: 323, May, Shibuya. (in Japanese)
- Ogino, S.Y., Yamanaka, M.D., Mori, S. and Matsumoto, J. 2016. How much is the precipitation amount over the tropical coastal region? *Tropical Meteorology Workshop*, September, Kyoto.

- Ogino, S.Y., Fujiwara, M., Shiotani, M., Hasebe, F., Nodzu, M.I., Matsumoto, J., Hoang, G.H., Witte, J.C. and Thompson, A. M. 2016. Studies on ozone variations revealed by the ozonesonde observations in Hanoi. *Vietnam Quadrennial Ozone Symposium*, September, Edinburgh, United Kingdom.
- Terao, T., Murata, F., Yamane, Y., Kiguchi, M., Fukushima, A., Tanoue M., Hayashi, T. and Matsumoto, J. 2017. Analysis of climatic change in rainfall characteristics over the northeastern Indian subcontinent using daily rainfall dataset compiled by British India. *Proceedings of the General Meeting of the Association of Japanese Geographers 2017 Spring Meeting* **91**:56, March, Tsukuba. (in Japanese)
- Yamanaka, M. D., Ogino, S.-Y., Wu, P.-M., Hamada, J.-I., Mori, S., Matsumoto, J. and Syamsudin, F. 2016. Indonesian coastlines controlling global climate. *Proceedings of the International Seminar on Sustainable Utilization of Coastal Resources in Tropical Zone* (Invited), October, Bengkulu, Indonesia
- Yamashita, K., Kubono, Y., Takahashi, Y., Hamada, J.-I., Matsumoto, J. and Watanabe, S. 2016. Study on early detection of thunderstorm based on electromagnetic measurement in ELF-VLF band. *Abstract of the Institute of Systems, Controls and Information Engineers*, May, Kyoto. (in Japanese) (in Japanese)
- Yokoyama, T., Sugimoto, S., Matsumoto, J. 2016. Precipitation systems generated over the Tibetan Plateau and synoptic scale circulation field accompanied by its eastward propagation. *International Workshop on Land Surface Multi-spheres Processes of Tibetan Plateau*, August, Xining, China.
- Takahashi, H. 2016. Heat island and land/sea-breezes of Tokyo metropolitan area. *Lecture for Risuu Academy at Tokyo Metropolitan Institute Fuji Senior High School ·Junior High School*. August, Hachioji. (in Japanese)
- Takahashi, H. 2016. Let's investigate urban and regional climate/weather using meteorological observation data. *Saturday Lecture for Risuu Academy at Tokyo Metropolitan Institute Fuji Senior High School ·Junior High School*. September, Nakano. (in Japanese)
- Takahashi, H. 2016. What urban climatological phenomena do we try to understand from field observations in the Tokyo metropolitan area? *Proceedings of the General Meeting of the Association of Japanese Geographers 2016 Autumn Meeting* **90**: 16, October, Sendai. (in Japanese)
- Takahashi, H., Shimizu, S., Yamato, H., Seto, Y., Yokoyama, H. and Mikami, T. 2016. Nocturnal temperature distribution under fine and weak wind conditions based on spatially high density observation data in the Tokyo metropolitan area: Features in winter (Invited paper). *Japan Geoscience Union Meeting 2016: A-AS13-06*, May, Chiba. (in Japanese with English abstract)
- Suzuki, H., Nakakita, E. and Takahashi, H. 2017. Accuracy of radar-raingauge analyzed

- precipitation: Analysis in Kanto, Koshin-etsu, and Tohoku regions. *The 61st Annual Meeting of Hydraulic Engineering* (CD-ROM), March, Fukuoka. (in Japanese with English abstract)
- Fujibe, F. 2016. Long-term change of lightning mortality and its relation to annual thunder days in Japan. *Abstracts of the Meteorological Society of Japan 2016 Spring Meeting* **109**: 114, May, Shibuya. (in Japanese)
- Fujibe, F. 2016. Problems of data homogeneity in urban warming evaluation. *Proceedings of the General Meeting of the Association of Japanese Geographers* **90**: 20, October, Sendai. (in Japanese)
- Fujibe, F., Matsumoto, J. and Kamahori, H. 2017. On the digitization of the JMA precipitation data. *Proceedings of the General Meeting of the Association of Japanese Geographers 2017 Spring Meeting* **91**: 57, March, Tsukuba. (in Japanese)
- Fujibe, F., Matsumoto, J. and Suzuki, H. 2016. Relationship between heat mortality and temperature distribution in the Tokyo ward area: Analysis for the 2013 summer. *Abstracts of the Meteorological Society of Japan 2016 Autumn Meeting* **110**: 278, October, Nagoya. (in Japanese)
- Shido, F., Seino, N., Aoyagi, T., Yamamoto, A. and Fujibe, F. 2016. Relationship between temperature distribution and wind speed in the Otemachi observation field in Tokyo. *Abstracts of the Meteorological Society of Japan 2016 Spring Meeting* **109**: 190, May, Shibuya (in Japanese)
- Shido, F., Yamamoto, A., Aoyagi, T., Seino, N. and Fujibe, F. 2016. An observational study of the influence of nearby plants and artificial structures on the surface air temperature. *WMO Technical Conference on Meteorological and Environmental Instruments and Methods of Observation*, P1(33), September, Madrid, Spain.
- Hamada, J.-I., Lestari, S., Syamsudin, F., Hassan, S., Matsumoto, J. and Yamanaka, M.D. 2016. Trends and interannual variations of rainfall over the Indonesian maritime continent. *Abstract of the Japan Geosciences Union meeting 2016*: ACG07-P01, May, Chiba. (Poster)
- Hamada, J.-I., Matsumoto, J., Haryoko, U., Syamsudin, F. and Yamanaka, M.D. 2017. Long-term monsoon rainfall variations in Jakarta (Batavia) during the past 150 years. *Proceedings of the General Meeting of the Association of Japanese Geographers 2017 Spring Meeting* **91**: 297, March, Tsukuba. (in Japanese) (Poster)
- Mori, S., Wu, P., Yamanaka, M. D., Hamada, J.-I., Arbain, A. A., Lestari, S., Sulistyowati, R. and Syamsudin, F. 2016. Lightning climatology over Jakarta, Indonesia, based on long-term surface operational, satellite, and campaign observations. *Abstract of the European Geosciences Union General Assembly 2016*: NH1.2/AS1.6/SSS2.25, April, Vienna, Austria.
- Takahashi, H.G. and Sugimoto, S. 2017. Impact of soil moisture over the tropical Asian monsoon region on rainfall characteristics around the summer monsoon onset. *Proceedings of the General Meeting of the Association of Japanese Geographers 2017 Spring Meeting* **91**: 190, March, Tsukuba. (in Japanese)

- Takahashi, H.G., Adachi, S. and Sato, T. 2016. Impact of sea surface temperature over the Kuroshio on interannual variation of regional climate over the Pacific Coast of Japan in summer. *Proceedings of the General Meeting of the Association of Japanese Geographers* **90**: 173, October, Sendai. (in Japanese) (Poster)
- Takahashi, H.G., Adachi, S. and Sato, T. 2016. Impact of sea surface temperature over the Kuroshio on interannual variation of regional climate over the Pacific Coast of Japan in summer: Regional H₂O Greenhouse Gas Effect. *Abstracts of the Meteorological Society of Japan 2016 Autumn Meeting* **110**: 372, October, Nagoya. (in Japanese) (Poster)
- Inoue T. and Matsumoto, J. 2016. Seasonal marches and their long-term variations of precipitation in India. *Abstracts of the Meteorological Society of Japan 2016 Autumn Meeting* **110**: 255, October, Nagoya. (in Japanese) (Poster)
- Inoue T. and Matsumoto, J. 2017. A regional division based on seasonal marches of precipitation and long-term variations of precipitation in India. *Proceedings of the General Meeting of the Association of Japanese Geographers 2017 Spring Meeting* **91**: 299, March, Tsukuba. (in Japanese) (Poster)
- Ueda, H., Kamae Y., Inoue T. and Ushigami N. 2016. Response of the Asian summer and winter monsoon to the recent La Niña-like SST with and without Indian Ocean warming. *The 2016 American Geophysical Union (AGU) Fall Meeting*: A21N-07, December, San Francisco, U.S.A.
- Nodzu, M.I., Ogino, S.Y. and Matsumoto, J. 2016. Thermal budget analysis on generation of dual inversion layers in winter over the northwestern coastal region of the South China Sea. *Abstracts of the Meteorological Society of Japan 2016 Autumn Meeting* **110**: 452, October, Nagoya.
- Seto, Y., Takahashi, H., Sakaida, K., Sawada, Y., Mikami, T. and Yokoyama, H. 2016. Frequency distribution of raindrop size observed by an optical disdrometer during heavy rainfall in Tokyo. *Abstracts of Japan Geoscience Union Meeting 2016*: AAS13-P11, May, Chiba. (in Japanese with English abstract) (Poster)
- Oka, A., Takahashi, H., Nakajima, K. and Suzuki, H. 2017. The summertime heavy rainfall characteristics around Tokyo metropolitan area using spatially high density observation data. *Proceedings of the General Meeting of the Association of Japanese Geographers 2017 Spring Meeting* **91**: 313, March, Tsukuba. (in Japanese) (Poster)
- Dado, J.M. and Takahashi, H.G. 2016. Potential impact of sea surface temperature on rainfall over the western Philippines. *American Geophysical Union (AGU) Fall Meeting*, A13F-0351, December, San Francisco, U.S.A. (Poster)
- Nakajima, K., Takahashi, H. and Yokoyama, H. 2016. Characteristics of nocturnal vertical potential temperature in clear and weak wind days using temperature data at Tokyo Tower. *Abstracts of the Meteorological Society of Japan 2016 Spring Meeting* **109**: 100, May, Shibuya. (in Japanese) (Poster)

- Nakajima, K., Takahashi, H. and Yokoyama, H. 2016. Characteristics of nocturnal vertical potential temperature in clear and weak wind days over the Tokyo urban area. *Proceedings of the General Meeting of the Association of Japanese Geographers 2016 Autumn Meeting* **90**: 131, October, Sendai. (in Japanese)
- Trinh-Tuan, L., Matsumoto, J. and Ngo Duc, T. 2016. Evaluation on satellite precipitation products CMORPH, GSMaP, PERSIANN and TRMM over the Central of Vietnam. *The 8th IPWG and 5th IWSSM Joint Workshop Abstracts*, October, Bologna, Italy.
- Trinh Tuan, L., Matsumoto, J. and Ngo Duc, T. 2016. Trends in rainfall characteristics over Vietnam. *Workshop on Global Precipitation System 2016: Diversity and Future Outlook of Weather and Climate Models*, November, Yokohama. (Poster)
- Abiko, S., Takahashi, H.G. and Matsumoto, J. 2016. The relationship between snow depth in Japan and atmospheric environment, and its interannual variations. *Abstracts of the Meteorological Society of Japan 2016 Autumn Meeting* **110**: 258, October, Nagoya. (in Japanese) (Poster)
- Takasugi, K., Takahashi, H., Fujiwara, C. and Suzuki, H. 2017. Spatial structure of local strong wind Kiyokawa-dashi in Shonai Plain, Yamagata Prefecture, Japan. *Abstracts, The 66th Japanese Study Group for Climate Impact and Application*: 10-11, March, Chiyoda. (in Japanese)
- Tsutsumi, M., Takahashi, H., Yamato, H., Yokoyama, H. and Mikami, T. 2016. Nocturnal Temperature distribution under fine and weak wind conditions based on spatially high density observation data in the Tokyo Metropolitan Area: Features in summer. *Abstract of the Japan Geosciences Union Meeting 2016*: May, Chiba. (in Japanese with English abstract) (Poster)
- Tsutsumi, M., Takahashi, H., Yamato, H., Yokoyama, H. and Mikami, T. 2016. Summertime nocturnal temperature distribution based on spatially high density observation data in the Tokyo Metropolitan Area. *Proceedings of the General Meeting of the Association of Japanese Geographers 2016 Autumn Meeting* **90**: 171, September, Sendai. (in Japanese) (Poster)
- Hoshi, R. 2017. The relationship between the Arctic Oscillation in winter season and the succeeding summer climate. *The 65th Japan National Graduation Thesis Meeting in Geography*, March, Koganei. (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.
Soil Ecology, Environmental Chemistry, Material Dynamics in Ecosystems

2) Overview of Research Activities

This research unit focuses on the relations between human and natural environment. For understanding processes enacted upon environment in local and regional scales, we try to integrate subdivisions of both physical and human geography together with interdisciplinary aspects of environmental sciences, such as botanical science, forest ecology, zoology, soil science, landscape design, political ecology, folklore, anthropology and so on. Research methods are in primary based on fieldworks, including weather observation, land survey, soil and vegetation surveys, and interview survey and in participative on laboratory analyses on soil-water analyses and interpretations of aerial photo and satellite imagery as well.

1. Development of survey methods 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. Environmental dynamics study of watershed area of SWIP dam in central Luzon, Philippines
5. Influence of anthropic pressure in a river basin on downstream water environment
6. Evaluation of forest fire impact on soil, vegetation and landform in terrestrial ecosystems
7. Study for carbon and nitrogen dynamics in urban ecosystems
8. Soil carbon sequestration from the point of view of soil parent materials

3) List of Research Activities in FY2016

Peer-reviewed Articles

- Souri, B. and Watanabe, M. 2017. Comparative evaluation of age and weathering condition among Sirvan river terraces in western Iran. *Geosciences Journal* 21:33-46.
- Enkhzaya, S. Ohe, K., Shiomori, K., Bolormaa, O., Ochirkhuyag B. and Watanabe, M. 2016. Assessment of heavy metals in mining tailing around Boroo and Zuunkharaa gold mining areas of Mongolia. *J. of Environmental Science and Technology*, DOI: 3923/jest.2016.379.389.
- Nonoyama (Sasaki), Y., Sakagami, N., Narisawa, K., Ohta, H. and Watanabe, M. 2016. Fungal

community analysis by isolation and clone library in sclerotia from forest soil in Mt. Ontake, Gifu Prefecture, Japan. *Soil and Microbes* 70: 56–59. (in Japanese with English abstract)

Other Articles

Hardenbicker, U., Watanabe, M., Kotowich, R. 2016. Exploring the use of weathering Indexes in alluvial fan chronology. *Geographical Report of Tokyo Metropolitan University*, **51**, 109–118.

Books

Miyajima, S., Murata, T., Kawahigashi, M., and Watanabe, M. 2016. Observation of soils respiration in the Institute for Nature Study. Report of Institute for Nature Study 47:61-70. (in Japanese with English Abstract).

Miyajima, S., Matsudaira, H., and Watanabe, M. 2017. Effect of soil profile structure on seasonal changes of soil temperature in urban forests. *Geographical Report of Tokyo Metropolitan University* 52:11-22.

Watanabe, M. and Miyajima, S. 2017. Heat transfer in urban soils. In *Soils within Cities. Global approaches to their sustainable management – composition, properties, and functions of soils of the urban environment*. Eds. Levin, M.J., Kim, J.K., Morel, J.L., Burghardt, W., Charzynski, P. and Shaw, R.K.; IUSS Working Group SUITMA, Schweitzerbart Science Publishers, Stuttgart, pp53-62.

Murata, T. Kawai, N. and Watanabe, M. 2017. Constructed soils on river bank. In M. Watanabe and M. Kawahigashi Ed., *Anthropic soils in Asia. Kenkyukan project (2015-2017)*, Sato Print Co. Ltd., pp20-33.

Kawahigashi, M. 2017. Specific properties of soils underneath pavement construction. In *Soils within Cities. Global approaches to their sustainable management – composition, properties, and functions of soils of the urban environment*. Eds. Levin, M.J., Kim, J.K., Morel, J.L., Burghardt, W., Charzynski, P. and Shaw, R.K.; IUSS Working Group SUITMA, Schweitzerbart Science Publishers, Stuttgart, pp78-83.

Kawahigashi, M. 2017. Constructed soils of ski slopes. In M. Watanabe and M. Kawahigashi Ed., *Anthropic soils in Asia. Kenkyukan project (2015-2017)*, Sato Print Co. Ltd., pp14-16.

Kawahigashi, M., Ishii, K. and Shinagawa, S. 2017. Soils in the reclaimed land after drainage in Isahaya Bay. In M. Watanabe and M. Kawahigashi Ed., *Anthropic soils in Asia. Kenkyukan project (2015-2017)*, Sato Print Co. Ltd., pp69-72.

Kawahigashi, M. 2017. Conversion of land uses of cultivated land in Japan. In M. Watanabe and M. Kawahigashi Ed., *Anthropic soils in Asia. Kenkyukan project (2015-2017)*, Sato Print Co. Ltd., pp112-115.

Kida, K. 2017. Soils sealed by technic hard materials. In M. Watanabe and M. Kawahigashi Ed.,

- Anthropic soils in Asia. Kenkyukan project (2015-2017), Sato Print Co. Ltd., pp1-13.
- Morishita, M. and Yamada, K. 2017. Constructed soils on river bank. In M. Watanabe and M. Kawahigashi Ed., Anthropic soils in Asia. Kenkyukan project (2015-2017), Sato Print Co. Ltd., pp17-19.
- Matsudaira, H. 2017. Constructed soils in the man-made island. In M. Watanabe and M. Kawahigashi Ed., Anthropic soils in Asia. Kenkyukan project (2015-2017), Sato Print Co. Ltd., pp61-68.

Reports

None

Book Reviews

None

Compiled Books

- Watanabe, M. and Kawahigashi, M. Ed. 2017. Anthropic soils in Asia. Kenkyukan Project (2015-2017), Sato Print Co. Ltd., 120pp.

Miscellaneous Reports

None

Presentations

- Watanabe, M., Kelly, C. and Hardenbicker, U. 2016. Characteristics of calcite of select sediment samples from Qu'Appelle Valley Saskatchewan. The 40th annual conference of the Prairie Division of the Canadian Association of Geographers (CAG), September 26-28, Melfort, Canada.
- Kamei, H., Watanabe, M. and Abbas, AB. 2016. Estimation of the underground structure by Time Domain Electro-Magnetic Survey (TDEM) around El Zayyan Temple, Kharga Oasis, Egypt. JSSSCP 33rd Conference, 2016 June, Nara, Japan. (in Japanese)
- Kawahigashi, M. 2016. Function of soils in Siberian taiga ecosystems. TMU-TSU Joint Symposium 2016, May 16, Hachioji, Japan.
- Kawahigashi, M. and Morishtia, M. 2016. Peat decomposition evaluated by detailed analysis using microscopic FT-IR, 18th International Conference of International Humic Substances Society, September 11-16, Kanazawa, Japan.
- Kawahigashi, M. 2016. Studies on specificity of urban soils. Abstracts of Japanese Society of Soil Science and Plant Nutrition, 62: 89, September, Saga (in Japanese).
- Kawahigashi, M. 2016. Changes in soil properties induced by artifacts beneath constructions.

- Korean Society of Soil Science and Fertilizer 2016, October 20-21, Muju, Korea.
- Kawahigashi, M. 2017. Soils on urbanization. "Geopark and Soils" in Symposium of Japan Association for Quaternary Research, January 28, Tsukuba, (in Japanese).
- Kawahigashi, M. 2017. Discussion of carbon cycles in a forest ecosystem from a view point of water dynamics in soil. Workshop of the Japanese society of ecology. March, Tokyo. (in Japanese)
- Sakagami, N. and Watanabe, M. 2016. Aluminum accumulation and carbon decomposition in sclerotia of *Cenococcum geophilum* in low pH forest soils. Goldschmidt, June 26 – July 1, Yokohama, Japan.
- Inose, Y., Guo, Y., Takashima, Y., Sakagami, N. and Narisawa, K. 2016. The distribution of the beech ectomycorrhizal fungi at a different vegetation in Komado moor. JCOM 2016, December, Chiba, Japan. (in Japanese)
- Kida, K. and Kawahigashi, M. 2016. Estimation of CO₂ absorption potential on asphalt pavement. Proceedings of the general meeting of the Association of Japanese Geographers 2016 Autumn Meeting, 90:93, September, Miyagi (in Japanese)
- Kida, K. and Kawahigashi, M. 2017. Classification on anthropized soils according to new soil classification system of Japanese Society of Pedology. Proceedings of Japanese Society of Pedology on 2017, p36, March, Wakayama (in Japanese)
- Kida, K. and Kawahigashi, M. 2017. Spatial estimation of land function alteration by road construction. Proceedings of the general meeting of the Association of Japanese Geographers 2016 Spring Meeting, 91:200, March, Ibaraki (in Japanese)
- Orgilbold, M. 2017. Elemental dynamics in the Selenga River Delta, Russia. International Workshop on Climate and Land in Eurasia. February 14, Hachioji.
- Morishita, M. 2016. Evaluation of peat vulnerability using spectroscopic studies. TMU-TSU Joint Symposium 2016, May 16, Hachioji, Japan.
- Morishita, M. and Kawahigashi, M. 2017. The estimation of carbon stock in buried peat based on the types of soils and landforms. Proceedings of the General Meeting of the Association of Japanese Geographers, 91: 118, March, Tsukuba (in Japanese).
- Morishita, M. and Kawahigashi, M. 2017. Paleoenvironment of wetlands locating on alluvial lowlands reconstructed by buried peat distribution and landform classification: application of GIS and the database of physico-chemical properties of agricultural soils. Abstracts of Japanese Society of Pedology 57, March, Wakayama. (in Japanese)
- Morishita, M. and Kawahigashi, M. 2017. The evaluation of heterogeneous process of peat decomposition using Fourier Transform Infrared micro-spectroscopy. Abstracts of 63rd Annual Meeting of the Geochemical Society of Japan: 120, September, Osaka. (in Japanese)
- Morishita, M. and Kawahigashi, M. 2016. Heterogeneity in peat decomposition evaluated by Fourier Transform infrared micro-spectroscopy, 15th International Peat congress, August 15-19, Kuching,

Malaysia.

- Matsudaira, H. and Kawahigashi, M. 2016. Changes in properties of planting basements with passed time after artificial plantation in “Uminomori-Park”. Abstract of the Japanese Society of Revegetation Technology 47: 5, September, Kyoto. (in Japanese)
- Yamada, K. and Watanabe, M. 2017. The characteristic of vertical physicochemical property and the distribution of microphytobenthos in coastal and estuarine tidalflat in south-east Ariake Bay. Proceedings of the General Meeting of the Association of Japanese Geographers 2016 Spring Meeting 91, pp.119, 2017 March, Tsukuba, Japan (in Japanese)
- Battulga, B. 2017. Chemical characteristics of water in the trans-boundary Selenga River system. International Workshop on Climate and Land in Eurasia. February 14, Hachioji.

4. Laboratory of Geographical Information Sciences

1) Staff

Hiroshi MATSUYAMA Professor / Ph D (D.Sc.)
Hydrometeorology, Geographical Information Sciences

Takeki IZUMI Assistant Professor / Ph D (D.Eng.)
Urban Climatology, Geographical Information Sciences, Numerical Meteorological Modelling

Daichi NAKAYAMA Assistant Professor / Ph D (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 FY2016

Peer-reviewed Articles

- Saito, H., Uchiyama, S., Obanawa, H. and Hayakawa, Y. S. 2016. Sediment yields triggered by heavy rainfall in July 2012 at Aso volcano: Application of high-definition topography data using unmanned aerial vehicles and Structure-from-Motion Multi-View Stereo photogrammetry. *Geographical Review of Japan* **89**: 347-359 (in Japanese with English abstract).
- Saito, H., Murakami, W., Daimaru, H. and Oguchi, T. 2017. Effect of forest clear-cutting on landslide occurrences: Analysis of rainfall thresholds at Mt. Ichifusa, Japan. *Geomorphology* **276**: 1-7. DOI:10.1016/j.geomorph.2016.09.024.
- Hayakawa, Y. S., Obanawa, H., Saito, H. and Uchiyama, S. 2016. Geomorphological applications of Structure-from-Motion Multi-View Stereo photogrammetry: A review. *Transactions, Japanese Geomorphological Union* **37**: 321-343 (in Japanese with English abstract).
- Hasegawa, K., Sakai, K., Izumi, T. and Matsuyama, H. 2016. Present status and future prospects of using Bi-directional Reflectance Distribution Functions in forests based on observational data and numerical simulation. *Journal of the Remote Sensing Society of Japan* **36**: 225-235 (in Japanese with English abstract).
- Sakai, K., Yamamoto, R., Hasegawa, K., Izumi, T. and Matsuyama, H. 2016. Generation of DSMs of forest crown generated by vertical images and by vertical + oblique stereo pair images taken by small-sized UAV. *Journal of the Remote Sensing Society of Japan* **36**: 388-397 (in Japanese with English abstract).
- Ishikawa, K. and Nakayama, D. 2017. Development of an address geocoding system in Tokyo in the Meiji Era. *Geographical Review of Japan* **90**: 125-136 (in Japanese with English abstract).

Other Articles

- Matsuyama, H. 2016. Actual climate variability, Climate variability and natural disasters. In *Enciclopédia do Brasil Contemporâneo*, ed. Câmara de Comércio e Indústria Japonesa do Brasil, 158-160. Tokyo: Shinkyouron Publishing Inc. (in Japanese).
- Matsuyama, H. 2017. B4.6: Comparison of the climates of both hemispheres, B9.3: Climate index and climate classification, Information materials at the end of the book 4. In *Encyclopedia of Physical Geography*, ed. K. Koike, S. Yamashita, S. Iwata, K. Urushibara-Yoshino, T. Koizumi, N. Tase, K. Matsukura, J. Matsumoto and S. Yamakawa, Tokyo: Asakura Publishing Co. Ltd., 74-75, 134-137, 446 (in Japanese).
- Aoyama, M. 2017. Relationship between floodwater depth and flood hazard map in Joso City, Ibaraki Prefecture, caused by the Kanto-Tohoku torrential rain in September 2015. *Annual Reports of the Faculty of Education, Gunma University, Cultural Science Series* **90**: 79-87 (in Japanese).
- Saito, H. and Matsuyama, H. 2016. Landslide occurrences, recurrence interval of heavy rainfall, and

two rainfall types for major disasters in 2013-2014. *Quarterly Journal of Economics, Kanto Gakuin University (KEIZAIKEI)* **266**: 15-28 (in Japanese).

Hasegawa, K. 2016. Possibility of disaster education and rehabilitation assistance in cooperation with devastated municipality by the 2011 off the Pacific Coast of Tohoku Earthquake—Notes of five years' supports for devastated municipality by Komazawa University Senior High School—. *Bulletin of Komazawa University Senior High School* **32**: 21-37 (in Japanese).

Books

Matsuyama, H. ed. 2017. *Visits to Sacred Places of the Cartography*. Tokyo: Ninomiya-Shoten (in Japanese).

Yamamoto, S., Ishii, H., Tetsuka, A., Kikuchi, T., Akimoto, H., Ida, H., Niibori, T., Hayashi, A. and Matsuyama, H. 2017. *Textbook “Basic Chiri A”*. Tokyo: Ninomiya-shoten (in Japanese).

Yamamoto, S., Ishii, H., Tetsuka, A., Ikeda, A., Uchiyama, Y., Oda, H., Kashiwagi, Y., Kikuchi, T., Kikuchi, M., Kureha, M., Nakanishi, R., Matsuyama, H., Miyahara, H. and Yamakawa, S. 2017. *Textbook “Precise Chiri B (Latest Version)”*. Tokyo: Ninomiya-shoten (in Japanese).

Akimoto, H., Hayashi, A. and co-authors (including Matsuyama, H.) 2017. *Guidebook for the Usage of Textbook “Basic Chiri A”*. Tokyo: Ninomiya-shoten (in Japanese).

Ishii, H., Tetsuka, A. and co-authors (including Matsuyama, H.) 2017. *Guidebook for the Usage of Textbook “Precise Chiri B (Latest Version)”*. Tokyo: Ninomiya-shoten (in Japanese).

Reports

Matsuyama, H. 2016. Comments on “An observational study on flood disasters in the Sendai River basin in relation to the compatibility of flood control and water attraction (Master thesis of M. Tomiyoshi)”. *Open Forum of the Open University of Japan* No.12: 167 (in Japanese).

Matsuyama, H. 2016. An observational study of BRDF at forests using small-sized UAV in relation to the seasonal variation of their phenology. *Annual Report 2015 of Center for Environmental Remote Sensing, Chiba University* **21**: 52-53 (in Japanese and English).

Izumi, T. 2016. A study of quantitative vegetation monitoring using infrared camera mounted on UAV. *Annual Report 2015 of Center for Environmental Remote Sensing, Chiba University* **21**: 54-55 (in Japanese and English).

Saito, H. 2016. Detection of topographic changes and re-vegetation in landslides using UAV (Unmanned Aerial Vehicle) and SfM (Structure from Motion) method. *Annual Report 2015 of Center for Environmental Remote Sensing, Chiba University* **21**: 50-51 (in Japanese and English).

Saito, H. and Matsuyama, H. 2016. Application of rainfall-related landslide monitoring systems for disaster prevention information based on long-term analysis. *Research Reports of the Japan Geographic Data Center* **2**: 23-38 (in Japanese).

Saito, H., Obanawa, H., Sumantyo, J. T. S., Uchiyama, S. and Hayakawa, Y. S. 2016. Application of high definition data for analysis of topographic and vegetation changes using UAVs and SfM photogrammetry—A case study of shallow landslides around Mt. Aso—. *Proceedings of 18th CEReS Environmental Remote Sensing Symposium, 23th CEReS International Symposium, and 3rd Small Satellite Symposium*: 24.

Sakai, K., Yamamoto, R., Hasegawa, K., Izumi, T. and Matsuyama, H. 2016. Observational study of BRDF at forests using small-sized UAV. *Proceedings of 18th CEReS Environmental Remote Sensing Symposium, 23th CEReS International Symposium, and 3rd Small Satellite Symposium*: 214-217.

Book Reviews

Matsuyama, H. 2016. Book Review: Encyclopedia of Brazil. *The Book Review Press* No. 3263: the fourth-page news (in Japanese).

Matsuyama, H. 2016. Book Review (Fryirs, K. A. and Brierley, G. J. 2012. *Geomorphic Analysis of River Systems — An Approach to Reading the Landscape —*. Oxford: Wiley-Blackwell). *Geographical Review of Japan* **69**: 362-364 (in Japanese).

Matsuyama, H. 2016. Book Review (Câmara de Comércio e Indústria Japonesa do Brasil ed: Enciclopédia do Brasil Contemporâneo). *Chiri* **61**(12):117 (in Japanese).

Miscellaneous Reports

Matsuyama, H. 2016. What is the frontier of the research topics we are now facing? *Science Mentor News, the Japan Science Society* **2**: 67-68 (in Japanese).

Matsuyama, H. 2016. How to find previous studies related to the research topics we are now facing? *Science Mentor News, the Japan Science Society* **2**: 74-75 (in Japanese).

Matsuyama, H. 2017. How to find research articles using Internet? *Science Mentor News, the Japan Science Society* **3**: 5-7 (in Japanese).

Matsuyama, H. 2017. The practice of “What is the frontier of the research topics we are now facing?” *Science Mentor News, the Japan Science Society* **3**: 14-17 (in Japanese).

Matsuyama, H. 2017. When is the total railway in Japan longest after World War II? *Annual Report of Old Boys/Girls of Wandervogel Club in Tokyo University in 2017*: 40-41 (in Japanese).

Nakaegawa, T., Hayashi, T., Tanakamaru, H., Tokunaga, T., Matsuyama, H., Yamanaka, T., Yokoo, Y., Lu, M. and Ishida, S. 2016. Current status of Hydrological Research Letters in 2016. *Journal of the Japan Society of Hydrology and Water Resources* **29**: 386-391 (in Japanese).

Aoyama, M. 2016. Investigation of the liquefaction from a viewpoint of land history considering the time resolution. *GIS NEXT* No.56: 64-67 (in Japanese).

Yamamoto, R. 2016. An observational study on evaluation of street trees using mobile mapping

system (IP-S2 Lite, TOPCON CORPORATION). *GIS NEXT* No.57: 74 (in Japanese).

Presentations

Matsuyama, H. 2016. Cubic Earth—If the Earth were cube—. *Den-en Chofu Gakuen Junior & Senior High School*, October, Den-en Chofu (in Japanese).

Matsuyama, H. 2016. Rivers, spring waters and soils in Hachioji City in relation to their uniqueness. *Seminar on “Reading New History of Hachioji City” by City History Compilation Sector in FY2016*, November, Hachioji (in Japanese).

Matsuyama, H. 2016. Ecosystem indices in city. *Workshop on Urban Diversity*, November, Hachioji (in Japanese).

Matsuyama, H. 2016. Cubic Earth—If the Earth were cube—. *Seminar on Math and Science Subjects of Tokyo Private School Association*, November, Ichigaya (in Japanese).

Matsuyama, H. 2017. Is it possible to acquire water resources of northern part of Chichijima Island based on the precipitation fallen there? *Lecture at Ogasawara Visitor Center*, March, Ogasawara (in Japanese).

Matsuyama, H. and Kezer, K. 2016. Different roles of temperature and precipitation on the shrinkage of the Glacier No.1 of the Urumqi River, Tianshan Mountains, China for recent 30 years. *TMU-TSU Joint Symposium 2016*, May, Hachioji.

Matsuyama, H., Izumi, T., Sakai, K. and Nanri, S. 2016. Estimation of snow depth distribution by using UAV-SfM method as evaluated by *in situ* snow probe measurements—A case study around Mt. Makihata, Niigata Prefecture—. *Proceedings of the General Meeting of the Association of Japanese Geographers 2016 Fall Meeting 90*: 85, September, Sendai (in Japanese).

Matsuyama, H., Izumi, T., Sakai, K. and Nanri, S. 2016. Estimation of snow depth distribution by using UAV-SfM method as evaluated by *in situ* snow probe measurements—A case study around Mt. Makihata, Niigata Prefecture—. *Research Abstracts on Spatial Information Science, CSIS DAYS 2016*: 9, November, Kashiwa (in Japanese).

Nemoto, Y. and Hatakeyama, H. 2016. Development of a disaster lore sharing system using GIS. *25th Conference of GIS Association of Japan (CD-ROM)*: D-5-4, October, Tokyo (in Japanese).

Nemoto, Y. and Hatakeyama, H. 2016. Making map and developing system for sharing disaster lore. *18th Conference of Japan Society for Disaster Information Studies*: 34-35, October, Tokyo (in Japanese).

Aoyama, M. 2016. Reassessment of land condition of liquefied sites caused by the 2011 Tohoku Earthquake and liquefaction potential. *Abstracts of Japan Geoscience Union Meeting 2016*: HSC16-02, May, Makuhari (in Japanese with English abstract).

Aoyama, M. 2016. Distribution of floodwater depth and damages of road structures in Joso City, Ibaraki Prefecture, caused by the Kanto-Tohoku torrential rain in September 2015. *Abstracts of*

- Japan Geoscience Union Meeting 2016*: HSC16-02, May, Makuhari (in Japanese with English abstract).
- Aoyama, M. 2016. Distribution and land conditions of the liquefied sites caused by the 2016 Kumamoto Earthquake. *Abstracts of Japan Geoscience Union Meeting 2016*: MIS34-P86, May, Makuhari (in Japanese with English abstract).
- Aoyama, M. 2016. Inventory of the liquefaction damages in inland area caused by the 2011 off the Pacific coast of Tohoku Earthquake. *Geoscience Club of Tokyo Geographical Society 299th Meeting*, December, Tokyo (in Japanese).
- Aoyama, M. and Une, H. 2016. Distribution and land conditions of the liquefied sites caused by the 2016 Kumamoto Earthquake. *Three Months' Symposium on 2016 Kumamoto Earthquake*, July, Tokyo (in Japanese).
- Aoyama, M. and Une, H. 2016. Distribution and land conditions of liquefied sites caused by the 2016 Kumamoto Earthquake. *Proceedings of the General Meeting of the Association of Japanese Geographers 2016 Fall Meeting 90*: 122, September, Sendai (in Japanese).
- Koyama, T. and Aoyama, M. 2017. Distribution and land conditions of liquefied sites caused by the 2016 Kumamoto Earthquake—From the viewpoint of geography. *Proceedings of the General Meeting of the Association of Japanese Geographers 2017 Spring Meeting 91*: 3, March, Tsukuba (in Japanese).
- Saito, H., Uchiyama, S., Obanawa, H. and Hayakawa, Y. S. 2016. High-definition topography applied to landslide hazard assessment around Aso volcano. *Japan Geoscience Union Meeting 2016*: HTT08-04, May, Makuhari.
- Saito, H., Iijima, Y., Ulrich, M. and Fedorov, A. N. 2016. Distribution of thermokarst lakes and their area-frequency relations in Eastern Siberia. *Proceedings of XI. International Conference on Permafrost*: A03, June, Potsdam, Germany.
- Saito, H., Uchiyama, S., Obanawa, H. and Hayakawa, Y. S. 2016. Landslides triggered by heavy rainfalls and earthquakes at Aso volcano using UAVs and SfM-MVS photogrammetry. *Proceedings of the General Meeting of the Association of Japanese Geographers 2016 Fall Meeting 90*: 121, September, Sendai (in Japanese).
- Saito, H., Uchiyama, S., Obanawa, H. and Hayakawa, Y. S. 2016. High-definition measurement of landslides triggered by the 2016 Kumamoto Earthquake. *Research Abstracts on Spatial Information Science, CSIS DAYS 2016*: 11, November, Kashiwa (in Japanese).
- Saito, H., Uchiyama, S., Obanawa, H. and Hayakawa, Y. S. 2017. Sediment yield from landslides using multi-temporal and high-definition topography data. *Proceedings of the 8th GIS-Landslide Meetings and the 4th High-Definition Topography Symposium*: No. 7, February, Kashiwa (in Japanese).
- Iijima, Y., Saito, H., Basharin, N. and Fedorov A. N. 2016. Distribution of thermokarst in Churapcha,

- Sakha Republic. *The 2nd Meetings of the Association of Siberian Studies*: No.3, November, Chiba (in Japanese).
- Iijima, Y., Nemoto, M. and Saito, H., 2017. Growth diagnosis of wine grapes using UAVs and ground observations. *Proceedings of the Society of Agricultural Meteorology of Japan 2017 Meeting*: J-51, March, Towada (in Japanese).
- Sakai, K., Hasegawa, K., Izumi, T. and Matsuyama, H. 2016. Generation of DSM of forest crown generated by vertical + oblique stereo pair images taken by small-sized UAV. *Abstracts of Japan Geoscience Union Meeting 2016 (CD-ROM)*: HTT22-03, May, Makuhari (in Japanese with English abstract).
- Watanabe, T., Izumi, T. and Matsuyama, H. 2016. The effects of year-to-year climate variability on ozone absorption by the forest. *Abstracts of the Meteorological Society of Japan 2016 Spring Meeting 109*: 298, May, Tokyo (in Japanese).
- Yamamoto, R., Izumi, T. and Matsuyama, H. 2016. An observational study on the relationship between image resolution and level of discrimination of vegetation using small-sized UAV. *25th Conference of GIS Association of Japan (CD-ROM)*: P-17, October, Tokyo (in Japanese).
- Yamamoto, R., Izumi, T. and Matsuyama, H. 2016. A study on measurement of street trees using mobile mapping system to acquire 360-degree image. *25th Conference of GIS Association of Japan (CD-ROM)*: P-76, October, Tokyo.
- Ishikawa, K. and Nakayama, D. 2016. Development and application of a geocoding system in Tokyo in 1907. *The 11th Japan-Korea-China Joint Conference on Geography*: 168, September, Sapporo.
- Ishikawa, K. and Nakayama, D. 2016. Visualization of traffic census in Tokyo in the Taisho Era. *25th Conference of GIS Association of Japan (CD-ROM)*: D-53, October, Tokyo (in Japanese).
- Ishikawa, K. and Nakayama, D. 2016. Application of the Modern Tokyo Geocoding System—A case of using classified telephone directory published in 1922—. *IPSJ SIG Computers and the Humanities Symposium 2016*, December, Tachikawa (in Japanese).
- Ishikawa, K., Natsume, M. and Nakayama, D. 2016. A study of changing boundary in Edo-Tokyo using the falconry fields boundary data. *25th Conference of GIS Association of Japan (CD-ROM)*: P-60, October, Tokyo (in Japanese).
- Saito, Y., Sakai, K., Hasegawa, K., Izumi, T. and Matsuyama, H. 2017. Generation of DSMs of forest crown using stereo pair images taken by small-sized UAV. *19th CERE S Symposium on Environmental Remote Sensing*, February, Chiba (in Japanese).

5. Laboratory of Urban and Human Geography

1) Staff

Yoshiki WAKABAYASHI Professor / PhD (D.Sc.)

Urban Geography, Behavioral Geography, Geographical Information Sciences

Akihiro TAKINAMI Associate Professor / PhD (D.Lit.)

Regional Studies, Representation Studies

Naoto YABE Associate Professor / PhD (D.Sc.)

Quantitative Geography, Urban Geography

Hiroyuki TSUBOMOTO Assistant Professor / PhD (D.Sc.)

Urban Geography, Office Study

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 FY2016

Peer-reviewed Articles

- Yui, Y., Wakabayashi, Y. and Kukimoto, M. 2016. Daycare centers for school children in Ishigaki City, Okinawa. *Annals of Japan Society for Urbanology* **49**: 99-107. (in Japanese)
- Tanaka, M. 2016. Evaluating the creation method of barrier-free improvement areas in Tokyo. *Japanese Journal of Human Geography* **68**: 195-210. (in Japanese with English abstract)

Other Articles

- Wakabayashi, Y. 2017. Licensed childcare facilities. Miyazawa, J. ed.: mapping health, medical care and welfare in Japan. 80-83. Tokyo: Akashi Shoten. (in Japanese)
- Wakabayashi, Y. and Kukimoto, M. 2017. Variation of childcare facilities. Miyazawa, J. ed.: mapping health, medical care and welfare in Japan. 84-87. Tokyo: Akashi Shoten. (in Japanese)
- Hara, T., Aoyama, K., Kurata, Y. and Yabe, N. 2016. Service Design in Tourism: Encouraging a cooperative relationship between professional design and non-professional design. In *Global Perspectives of Service Science: Japan*, ed. Stephen K. Kwan, J. Spohrer and Y. Sawatani, 119-135. New York: Springer.
- Yabe, N. 2016. An analysis for tourist flow patterns of inbound tourists to Japan. *Notes on Theoretical Geography* **18**: 39-48. (in Japanese)
- Yabe, N. 2017. Development of 3D models from old aerial photos at Johnson Town in Iruma city, Saitama prefecture. *The International Journal of Tourism Science* **10**: 93-97. (in Japanese)
- Kuriyama, E. 2017. Preliminary analysis of multi-scale spatial cognition and its longitudinal changes in sketch maps of high school students. *Geographical Reports of Tokyo Metropolitan University* **52**: 33-44.
- Morita, T., Arikawa, M., Ota, M., Ito, K., SI, Ruochen, Nakano, T., Wakabayashi, Y., Tanaka, M., Fujita, H., LU, Min and Kukimoto, M. 2016. Report on 27th International Cartographic Conference and 16th General Assembly in Rio de Janeiro, Brazil. *Map* **54**: 9-24. (in Japanese)
- Tanaka, M. 2017. Supporting for the travel behavior of visually impaired people through the map-making activity by a volunteer group. In *Theory and applications of participatory GIS*, eds. Y. Wakabayashi, O. Imai, T. Seto and Y. Nishimura, 133-137. Tokyo: Kokon-Shoin. (in Japanese)
- Tanaka, M. 2017. Dissemination of verbal maps for visually impaired people by a non-profit organization in Tokyo. *Geographical Reports of Tokyo Metropolitan University* **52**: 23-32.

Books

- Wakabayashi, Y., Imai, O., Seto, T. and Nishimura, Y. eds. 2017. Theory and applications of

participatory GIS. Tokyo: Kokon Shoin. (in Japanese)

Reports

None

Book Reviews

Tsubomoto, H. 2016. Book Review (Sato, H. 2016. *Change in suburbs of Tokyo metropolitan area and office location (Tokyo Daitoshiken Kougai no Henka to Ofisu Richi)*, kokon-shoin). *Japanese Journal of Human Geography* **68**: 234-235. (in Japanese)

Miscellaneous Reports

Wakabayashi, Y. 2016. Activities by the Japan Cartographers Association for the International Map Year. *Map: Journal of the Japan Cartographers Association* **54**(1): 1. (in Japanese)

Wakabayashi, Y. 2016. The aim and the meaning of the International Map Year. *Chizu-chushin* **531**: 6-7. (in Japanese)

Takinami, A. 2017. Regional continuities and discontinuities: the case of the borderland between France and Geneva. *Geography* **62**(2), 68-75. (in Japanese)

Presentations

Wakabayashi, Y. 2016. Recent trend of cartography in the United Kingdom. *Papers and Proceedings of the Annual Conference of the Japan Cartographers Association*, 8-9, Okayama, August 2015. (in Japanese)

Wakabayashi, Y. 2016. Spatial dependency of factors affecting the evaluation of subjective well-being. *IGU 2016 Beijing August*, Beijing.

Koizumi, R. and Wakabayashi, Y. 2016. Spatial patterns of population change in the 23 Special Wards of Tokyo after the period of the bubble economy. *IGU 2016 Beijing, August*, Beijing.

Jung, Y. and Wakabayashi, Y. 2017. Recognition of vacant house problems and measures against it in Tokyo metropolitan area. *Proceedings of the General Meeting of the Association of Japanese Geographers 2016 Autumn Meeting* 91: 144, March, Tsukuba. (in Japanese)

Sugano, F., Saito, A. and Tsubomoto, H. 2016. Study on intelligent productivity of workplace by "SOF model". 17th meeting of Japan Society of office studies. September. Sendai. (in Japanese)

Saito, A., Tsubomoto, H and Sugano, F. 2017. Study of 50 items of work place model "SOF" supporting intellectual productivity. *Facility management Forum*. February, Edogawa. (in Japanese)

Araori, T. 2016. Visualization of infectious disease epidemic situation by disease maps. -Map usage and issues of Influenza regional surveillance in Japan - *Papers and Proceedings of the Annual*

- Conference of the Japan Cartographers Association* 36-37, August, Okayama. (in Japanese)
- Araori,T. 2016. Diffusion route estimation of infectious diseases in local scale using network analysis. *25th Conference of GIS Association of Japan (CD-ROM)* P-9, October, Shinagawa. (in Japanese)
- Araori,T. 2016. Issues and prospects of research on infectious disease control and health crisis management in geography. *The General Meeting of the Geographical Association of Nihon University 2016 Autumn Meeting*, November, Setagaya. (in Japanese)
- Araori,T. 2016. Utilization of maps and issues of health crisis management in epidemiological surveillance. *The General Meeting of the Health Geography Group of the Association of Japanese Geographers 2017 Spring Meeting*, March, Tsukuba. (in Japanese)
- Tanaka, M. 2016. Possibilities and limitations of the map to provide geospatial information for visually impaired people. *Papers and proceedings of the annual conference of the Japan Cartographic Association 2016*. 38-39. August, Okayama. (in Japanese)
- Tanaka, M. 2016. Diffusion of verbal maps for people with visual impairments by volunteer group in Japan. *The 33rd International Geographical Congress*, August, Beijing, China.
- Tanaka, M. 2017. Creation of the geospatial database of tactile paving using participatory GIS in Kita ward, Tokyo. *Proceedings of the general meeting of the Association of Japanese Geographers 2016 spring meeting*. **91**: 343. March, Tsukuba. (in Japanese)
- Tanaka, M. 2017. Review of critical cartography in Anglophone Scholars. *GRECO meeting 2017*. March, Chiyoda. (in Japanese)