

Annual Report 2017

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 FY2017	
2 Laboratory of Climatology	9
1) Staff	
2) Overview of Research Activities	
3) List of Research Activities in FY2017	
3 Laboratory of Environmental Geography	24
1) Staff	
2) Overview of Research Activities	
3) List of Research Activities in FY2017	
4 Laboratory of Geographical Information Sciences	30
1) Staff	
2) Overview of Research Activities	
3) List of Research Activities in FY2017	
5 Laboratory of Urban and Human Geography	39
1) Staff	
2) Overview of Research Activities	
3) List of Research Activities in FY2017	

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

Makoto KOBAYASHI Project Associate Professor / PhD (D.Sc.) (From October, 2017)
Volcanology, Volcanic Geology, Quaternary Geology

Kaori AOKI Project Researcher / PhD (From November, 2017)
Quaternary Science, Marine Tephrochronology, Chronology

Fumikatsu NISHIZAWA Project Researcher / PhD (D.Sc.)
Tephrochronology, Volcanic Geology

Takako UTSUGAWA Project Researcher / PhD (D.Sc.) (Until September, 2017)
Sedimentology, Transport and Depositional Processes

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 10⁵ years

3) List of Research Activities in FY2017

Peer-reviewed Articles

- Suzuki, T., Murata, M., Mizuno, K. and Ishihara, T. 2017. Sequence of Early Pleistocene Shirakawa ignimbrites and their identifications in distal areas in Northeast Japan. *Quaternary International* **456**: 195-209.
- Kasahara, A, Suzuki, T., Kawai, T. and Imaizumi, T. 2017. Pleistocene tephrostratigraphy and underground sediments under the Koriyama basin at the southern part of northeast Japan. *Journal of Geography (Chigaku Zasshi)* **126**: 665-684. (in Japanese with English abstract)
- Lane, C.S., Lowe, D.J., Blockley, S.P.E., Suzuki, T. and Smith, V.C. 2017. Advancing tephrochronology as a global dating tool: Applications in volcanology, archaeology, and palaeoclimatology. *Quaternary Geochronology* **40**: 1-7.
- McLean, D., Albert, P., Nakagawa, T., Suzuki, T., Staff, R., Yamada, K., Kitaba, I., Haraguchi, T., Kitagawa, J., SG14 Project Members and Smith, V. 2018. Integrating the Holocene tephrostratigraphy for East Asia using a high-resolution cryptotephra study from Lake Suigetsu (SG14 core), central Japan. *Quaternary Science Reviews* **183**: 36-58.
- Moriwaki, H., Nagasako, T., Nishizawa, F., Matsushima, Y., Suzuki, T. and Tanaka, G. 2017. Chronology and significance of marine deposits on Shinjima (Moeshima) Island, Kagoshima Bay, based on tephrochronology and ¹⁴C Ages. *Journal of Geography (Chigaku Zasshi)* **126**: 557-579. (in Japanese with English abstract)
- Ishimura, D. 2017. Re-examination of the age of historical and paleo-tsunami deposits at Koyadori

on the Sanriku Coast, Northeast Japan. *Geoscience Letters* **4**: 11. DOI: 10.1186/s40562-017-0077-4.

Ishimura, D. and Miyauchi, T., 2017. Holocene environmental changes and paleo-tsunami history in Onuma on the southern part of the Sanriku Coast, northeast Japan. *Marine Geology* **286**: 126-139.

Ishimura, D., Toda, S., Ichihara, T., Takahashi, N., Konno, A. and Sato, H. 2017. A study on surface ruptures around Miyaji, Aso City, Kumamoto Prefecture, associated with the 2016 Kumamoto earthquake sequence and upward slip tapering on pit excavation walls. *Active Fault Research* **47**: 9-16. (in Japanese with English abstract)

Ishimura, D., Yoshinaga, Y., Yamada, K., Haraguchi, T. and Toda, S. 2017. Newly identified Towada-Chuseri tephra from lacustrine deposits in Lake Aoki, Nagano Prefecture, central Japan. *The Quaternary Research (Daiyonki-Kenkyu)* **56**: 265-270. (in Japanese with English abstract)

Takahashi, N., Ishimura, D., Toda, S., Nakata, T. and Watanabe, M. 2017. Vertical slip rate on a normal fault co-ruptured with the Futagawa fault at the 2016 Kumamoto earthquake: a fault outcrop at Shimojin, Mashiki Town in Kumamoto Prefecture. *Active Fault Research* **46**: 27-32. (in Japanese with English abstract)

Other Articles

Chigira, M., Kasama, T., Suzuki, T. and Furuki, H. 2017. Geological structure of the Shinseiko landslide induced by the 1923 Kanto Earthquake and its significance. *Annual Report of Disaster Prevention Research Institute, Kyoto University* **60B**: 417-430. (in Japanese with English abstract)

Ishimura, D., 2017. Historical and paleo-tsunami deposits on the Sanriku Coast, northeast Japan. *Proceedings of the 8th International INQUA Meeting on Paleoseismology, Active Tectonics and Archeoseismology, Handbook and Programme*: 164-166.

Books

None

Reports

None

Book Reviews

None

Miscellaneous Reports

- Suzuki, T. 2017. Considering eruption and disaster by landform and eruptive products: terms on volcanoes. *Chiri* **62**(10): 48-53. (in Japanese)
- Suzuki, Y., Ishimura, D., Kumaki, Y., Kumahara, Y., Chida, N., Nakata, T. and Nakano, T. 2017. *Active Fault Map in Urban Area, Aso*. Geographical Survey Institute. (in Japanese)
- Goto, H., Ishimura, D., Okada, S., Tsutsumi, H. and Nakata, T. 2017. *Active Fault Map in Urban Area, Hikone-tobu*. Geographical Survey Institute, D1-No.759. (in Japanese)
- Tsutsumi, H., Ishimura, D., Goto, H., Nakata, T. and Yagi, K. 2017. *Active Fault Map in Urban Area, Gozaisyoyama*. Geographical Survey Institute, D1-No.759. (in Japanese)

Presentations

- Suzuki, T. 2017. Recent progress of tephrochronological study in Japan and database of Japanese tephra using GIS. The 3rd ASQUA Conference 2017, September, Jeju, Korea.
- Suzuki, T. 2017. Tephra studies: Recent progress and future perspectives. The 31st General meeting of shareholders of Paleo Labo Co.,Ltd., December, Toshima.
- Suzuki, T. 2018. Examination of landform development in inland basins of NE Japan arc using tephrochronology. *Proceedings of the General Meeting of the Association of Japanese Geographers* **93**: 92, March, Koganei. (in Japanese)
- Suzuki, T. and Chigira, M. 2018. Preparation of geomorphological and geological data for earthquake-induced landslides potential assessment in volcanic region. Disaster Prevention Research Institute, Kyoto University Annual Meeting 2017, February, Uji.
- Suzuki, T. and Murata, M. 2017. Tephrochronological study of the long-term explosive eruption history in the Northeast Japan Arc. IAVCEI 2017 Scientific Assembly: Submission 978, August. Portland, USA.
- Suzuki, T., Murata, M., Mizuno, K. and Ishihara, T. 2017. Re-examination of the sequence of the Early Pleistocene Shirakawa ignimbrites and their identifications in distal areas in Northeast Japan. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: SVC50-17, May, Chiba. (in Japanese with English abstract)
- Suzuki, T., Nishizawa, F., Ishimura, D. Ito, M., Maruyama, S., Danhara, T. and Hirata, T. 2017.

- Re-examination of identification and discrimination of Kozu-Tenjosan and Nijima-Mukaiyama tephra, Izu Islands, Japan. *Japan Association for Quaternary Research, Programme and Abstracts 47*: 49, August, Fukuoka. (in Japanese)
- Albert, P., Smith, V., Tomlinson, E., Suzuki, T., Yamada, M., Nakagawa, T. and Suigetsu 2006 Project Members 2017. Constraints on the tempo of volcanism at Daisen and Sambe volcanoes (SW Japan) from the Lake Suigetsu sedimentary archive. IAVCEI 2017 Scientific Assembly: Submission 870, August. Portland, USA.
- Endo, K., Hori, S., Ishiwata, S., Sugai, T., Suzuki, T., Uesugi, Y., Oosato, S., Suginaka, Y., Kondo, R., Sato, A. and Takemura, T. 2017. Revision of the the Middle-Late Pleistocene profiles in Tokyo Upland areas using boring data. *Japan Association for Quaternary Research, Programme and Abstracts 47*: 10, August, Fukuoka. (in Japanese)
- Ishihara, T., Suzuki, T., Hongo, M. and Uchida, Y. 2017. Study of shallow subsurface geology based on analysis of sedimentary cores drilled in the Aizu Basin, Northeast Japan. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: HQR05-P05, May, Chiba. (in Japanese with English abstract)
- McLean, D., Albert, P., Smith, V., Nakagawa, T., Suzuki, T., Yamada, K., Kitaba, I. and SG14 Project Members 2017. Resolving the tempo of Holocene volcanism in East Asia using the Lake Suigetsu record (central Japan). IAVCEI 2017 Scientific Assembly: Submission 1025, August. Portland, USA.
- Smith, V., Humphreys, M., Stock, M., Isaia, R., Suzuki, T., McLean, D. and Albert, P. 2017. An apatite for tephrochronology. IAVCEI 2017 Scientific Assembly: Submission 641, August. Portland, USA.
- Shirai, M., Utsugawa, T., Omura, A., Hayashizaki, R., Kato, Y., Saito, Y. and Ashi, J. 2017. Deep marine sedimentation off the “huge-dam free” Shimanto river mouth, SW Japan: comparison with other Japanese rivers. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: AHW32-P21, May, Chiba.
- Shirai, M., Endo, S. and Utsugawa, T. 2018. Supply and transport processes of plutonic gravels on the middle reaches of Tama River. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2018*: 56-57, March, Akita. (in Japanese)

- Ishimura, D. 2017. Tsunami deposit research on the Sanriku Coast, northeast Japan. *Japan Association for Quaternary Research, Programme and Abstracts* **47**: 20, August, Fukuoka. (in Japanese)
- Ishimura, D. 2017. Correlation with proximal and distal Towada-Chuseri tephra based on the refractive index and chemical composition of volcanic glass shards. *Japan Association for Quaternary Research, Programme and Abstracts* **47**: 133, August, Fukuoka. (in Japanese)
- Ishimura, D. 2017. Progress of historical and paleo-tsunami deposit research on the Sanriku Coast after the 2011 Tohoku tsunami. French-Japanese Week on Disaster Risk Reduction, French-Japanese workshop on the “Sedimentary signature of tsunamis”, October, Tokyo, Japan.
- Ishimura, D. 2017. Historical and paleo-tsunami deposits on the Sanriku Coast, northeast Japan. the 8th International INQUA Meeting on Paleoseismology, Active Tectonics and Archeoseismology, November, Blenheim, New Zealand.
- Ishimura, D. and Yamada, K. 2017. Thickness, gravel content, and gravel size distribution of historical and paleo-tsunami deposits in Koyadori on the Sanriku Coast, northeast Japan, *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: MIS09-P07, May, Chiba. (in Japanese with English abstract)
- Ishimura, D., Toda, S., Mukoyama, S., Homma, S., Yamaguchi, K. and Takahashi, N. 2017. Three-dimensional surface displacements and deduced detailed locations of surface ruptures associated with the 2014 Mw6.2 Nagano earthquake from differencing pre- and post-earthquake LiDAR data set. 2017 Research meeting of Disaster Prevention Research Institute, Kyoto University, July, Kyoto. (in Japanese)
- Claro, S.M., Ramos, T., Maxwell, K. and Ishimura, D. 2017. Analysis of overwash sediments along the coasts of Pagadian City, Southern Philippines: Potential tsunami deposits of the 1976 Moro Gulf earthquake? AOGS 14th Annual Meeting, OS22-A010, August, Singapore.
- Ramos, T., Claro, S.M., Maxwell, K. and Ishimura, D. 2017. Revisiting the 1976 Mw8.1 Moro Gulf earthquake and tsunami in Western Mindanao Island, Philippines. AOGS 14th Annual Meeting: SE21-A033, August, Singapore.
- Takagi, S., Kaneda, H., Ishimura, D. and Takahashi, D. 2017. Paleoseismology of the Kurozu fault, Nobi active fault system, central Japan: its role in multiple fault rupture. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: SSS12-P15, May, Chiba. (in Japanese with English abstract)

- Takahashi, N., Toda, S. and Ishimura, D. 2017. An outcrop showing recent cumulative slip on a normal fault co-ruptured with the Futagawa fault at the 2016 Kumamoto earthquake. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: SSS12-P03, May, Chiba. (in Japanese with English abstract)
- Toda, S. and Ishimura, D. 2017. Clues to evaluate short active fault learnt from the 2016 Kumamoto and Ibarakiken-hokubu, Japan, earthquakes. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: SSS07-05, May, Chiba. (in Japanese with English abstract)
- Toda, S. and Ishimura, D. 2017. Various types of class C faults being revealed by a strong combination of InSAR and conventional field survey. 2017 Research meeting of Disaster Prevention Research Institute, Kyoto University, July, Kyoto. (in Japanese)
- Toda, S. and Ishimura, D. 2017. Clues to evaluate class C active faults from triggered slips at the 2016 Kumamoto earthquake sequence. *Japan Association for Quaternary Research, Programme and Abstracts 47*: 126, August, Fukuoka. (in Japanese)
- Kobayashi, M. 2017. Central-Izu area. Geopark Guide Training Program of Izu Peninsula Geopark, November, Izu and Izu-no-kuni. (in Japanese).
- Kobayashi, M. 2017. Go around with Volcanologists!: Bus trip of Hakone Volcano. Geopark Supporter Training Program of Hakone Geopark, December, Hakone. (in Japanese)
- Aoki K. 2017. Dawson Tephra in the sedimentary core collected at the Patton Seamount, off the Alaska Peninsula. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: HQR05-06, May, Chiba. (in Japanese with English abstract)
- Nishizawa, F. and Suzuki, T. 2017. Correlations of the Takeyama-Ks10 and Hegawa-Ks5 tephtras, two Middle Pleistocene widespread tephtras derived from southern Kyushu, SW Japan. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: HQR05-05, May, Chiba. (in Japanese with English abstract)
- Nishizawa, F. and Suzuki, T. 2017. Comparison of major element composition of volcanic glass shards among Middle Pleistocene Hegawa-Kasamori 5 tephtra and similar tephtras distributed around the northern Kanto, central Japan. *Japan Association for Quaternary Research, Programme and Abstracts 47*: 90, August, Fukuoka. (in Japanese)
- Shibayama, A. and Nishizawa, F. 2017. Difference of awareness of disaster prevention in initial motion at occurrence of earthquake, comparison between indoor and outdoor environment—

- Example of practice at high school students — . *Proceedings of the 19th Conference Japan Society for Disaster Information Studies*: 214-215, October, Uji. (in Japanese)
- Utsugawa, T. and Shirai, M. 2017. Grain abrasion of gravel–sand in fluvial–coastal systems: the case study of Tenryu River to Enshu Coast, central Japan. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: HGM14-P07, May, Chiba. (in Japanese with English abstract)
- Utsugawa, T. and Shirai, M. 2018. An approach of “the model of roundness in saturation” based on the changes in roundness of fluvial and beach clastic sediments during transport process *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2018*: 58-59, March, Akita. (in Japanese)
- Utsugawa, T. and Suzuki, T. 2018. Volcanic hazard assessment for extremely huge and low frequent VEI 7 eruptions in Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers* **93**: 91, March, Koganei. (in Japanese)
- Tamura, I., Mizuno, K., Utsunomiya, M., Nakajima, T. and Yamazaki, H. 2017. Tephrochronology of the lowest Kazusa Group distributed in the Boso Peninsula, Chiba Prefecture, Japan. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: HQR05 - 04, May, Chiba. (in Japanese with English abstract)
- Mizuno, K., Tamura, I. and Utsunomiya, M. 2017. Consideration of the late Pliocene widespread tephra erupted from south Kyushu, with reference to the correlation between the Sendai pyroclastic flow deposits and the Habutaki I -MT2 tephra. *Abstracts of the 124th Annual Meeting of the Geological Society of Japan*: 215, September, Matsuyama. (in Japanese)
- Sugiyama, K., Takagi, H., Tamura, I., Mizuno, K., Kitazawa, N. and Kawamoto, K. 2017. Identification of active faults along the Median Tectonic Line, Ina area, Nagano Prefecture. *Abstracts of the 124th Annual Meeting of the Geological Society of Japan*: 254, September, Matsuyama. (in Japanese)

2. Laboratory of Climatology

1) Staff

Jun MATSUMOTO Professor / D.Sc

Monsoon Climatology, Environmental Climatology

Hideo TAKAHASHI Professor / D.Sc.

Urban Climatology, Climatic Change, Rainfall Climatology

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

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

Fumiaki FUJIBE Project Professor / D.Sc.

Urban Climatology, Environmental Climatology

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

Tropical Climatology, Meteorological Observation

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

Monsoon Climatology, Climate Change, Global Warming

Masato NODZU 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 FY2017

Peer-reviewed Articles

Matsumoto, J., Fujibe, F. and Takahashi, H. 2017. Urban climate in the Tokyo metropolitan area in Japan. *Journal of Environmental Sciences* **59**: 54–62. doi: 10.1016/j.jes.2017.04.012.

Akasaka, I., Kubota, H., Matsumoto, J., Cayan, E.O., Guzman, R.D. and Hilario, F.D. 2018: Seasonal march patterns of the summer rainy season in the Philippines and their long-term variability since the late 20th century. *Progress in Earth and Planetary Science* **5**: 20. doi: 10.1186/s40645-018-0178-5.

Chen, T.C., Tsay J.D. and Matsumoto, J. 2017. Interannual variation of the summer rainfall center in the South China Sea. *Journal of Climate* **30**: 7909–7931. doi: 10.1175/JCLI-D-16-0889.1.

Kubota, H., Shirooka, R., Matsumoto, J., Cayan, E.O. and Hilario, F.D. 2017. Tropical cyclone influence on long-term variability of Philippine summer monsoon onset. *Progress in Earth and Planetary Science* **4**: 27. doi: 10.1186/s40645-017-0138-5.

Murata, F., Terao, T., Fujinami, H., Hayashi, T., Asada, H., Matsumoto, J. and Syiemlieh, H. 2017. Dominant synoptic disturbance in the extreme rainfall at Cherrapunji, Northeast India, based on 104 years of rainfall Data (1902-2005). *Journal of Climate* **30**: 8237–8251. doi:

10.1175/JCLI-D-16-0435.1.

- Ogino, S.-Y., Wu, P.M., Hattori, M., Endo, N., Kubota, H., Inoue, T. and Matsumoto, J. 2017. Cold surge event observed by the radiosonde observation from the research vessel "Hakuho-maru" over the Philippine Sea in December 2012. *Progress in Earth and Planetary Science* **5**: 9. doi: 10.1186/s40645-017-0163-4.
- Ogino, S.Y., Yamanaka, M.D., Mori, S. and Matsumoto, J. 2017. Tropical coastal dehydrator in global atmospheric water circulation. *Geophysical Research Letters* **44**. doi: 10.1002/2017GL075760.
- Thorne, P.W., Allan R.J., Ashcroft, L., Brohan, P., Dunn, R.J.H., Menne, M.J., Pearce, P.R., Picas, J., Willett, K.M., Benoy, M., Bronnimann, S., Canziani, P.O., Coll, J., Crouthamel, R., Compo, G.P., Cuppett, D., Curley, M., Duffy, C., Gillespie, I., Guijarro, J., Jourdain, S., Kent, E.C., Kubota, H., Legg, T.P., Li, Q., Matsumoto, J., Murphy, C., Rayner, N.A., Rennie, J.J., Rustemeier, E., Slivinski, L.C., Slonosky, V., Squintu, A., Tinz, B., Valente, M.A., Walsh, S., Wang, X.L., Westcott, L., Wood, K., Woodruff, S.D. and Worley, J. 2017: Towards an integrated set of surface meteorological observations for climate science and applications. *Bulletin of the American Meteorological Society* **98** :2689–2702. doi:10.1175/BAMS-D-16-0165.1.
- Williamson, F., R. Allan, G. Ren, T.-C. Lee, W. Lui, H. Kubota, J. Matsumoto, J. Luterbacher, C. Wilkinson and K. Wood, 2017: Collating historic weather observations for the East Asian region: Challenges, solutions, and reanalyses. *Advances in Atmospheric Sciences*, **35**. doi:10.1007/s00376-017-7259-z.
- Yamanaka, M.D., Ogino, S.Y., Wu, P.M., Hamada, J.-I., Mori, S., Matsumoto, J. and Fadli Syamsudin 2017. Maritime continent coastlines controlling Earth's climate *Progress in Earth and Planetary Science* **5**:
- Yamashita, K., Kubono, Y., Hamada J.-I., Takahashi, Y., Matsumoto J. and Watanabe, S. 2017. Study on simplification of electromagnetic measurement in ELF-VLF band to monitor thunderstorm. *Transactions of the Institute of Systems, Control and Information Engineers* **30**: 420–426. (in Japanese with English abstract)
- Yamato, H., Mikami, T. and Takahashi, H. 2017. Impact of sea breeze penetration over urban areas on midsummer temperature distributions in the Tokyo Metropolitan area. *International Journal of Climatology* **37**: 5154–5169. doi: 10.1002/joc.5152.
- Suzuki, H., Nakakita, E. and Takahashi, H. 2017. A study on the utilization of radar rainfall for the

- train operation control. *Annual Journal of Hydraulic Engineering* **73**(3): 54–70. (in Japanese with English abstract)
- Takahashi, H. G. and Dado, J. M. B. 2018. Relationship between sea surface temperature and rainfall in the Philippines during the Asian summer monsoon. *Journal of the Meteorological Society of Japan* **96**: doi:10.2151/jmsj.2018-031.
- Fujibe, F. 2017. Long-term change of lightning mortality and its relation to annual thunder days in Japan. *Journal of Natural Disaster Science* **38**: 17–29.
- Fujibe, F. 2018. Climatological features of sub-hourly temperature variations in Japan. *Journal of the Meteorological Society of Japan* **96**: 147-160. doi:10.2151/jmsj.2018-021.
- Fujibe, F., Matsumoto, J. and Suzuki, H. 2017. Relationship between heat mortality and temperature distribution in the Tokyo ward area: Analysis for the 2013 summer. *Journal of Heat Island Institute International* **12**:1–8. (in Japanese with English abstract)
- Nodzu, M.I., Ogino, S.Y. and Matsumoto, J. 2018. Development and decay processes of dual inversion layers in winter over the northwest coast of the South China Sea. *Journal of Climate* **31**: 1245–1266. doi:10.1175/JCLI-D-16-0907.1.
- Ono, J., Tatebe, H., Komuro, Y., Nodzu, M.I. and Ishii, M. 2018. Mechanisms influencing seasonal to inter-annual prediction skill of sea ice extent in the Arctic Ocean in MIROC. *The Cryosphere* **12**: 675–683. doi:10.5194/tc-12-675-2018.
- Seto, Y., Yokoyama, H., Nakatani, T., Ando, H., Tsunematsu, N., Shoji, Y., Kusunoki, K., Nakayama, M., Saitoh, Y. and Takahashi, H. 2018. Relationships among rainfall distribution, surface wind, and precipitable water vapor during heavy rainfall in central Tokyo in summer. *Journal of the Meteorological Society of Japan* **96A**: 35–49. doi:10.2151/jmsj.2017-020.
- Dado, J.M.B. and Takahashi, H.G. 2017. Potential impact of sea surface temperature on rainfall over the western Philippines, *Progress in Earth and Planetary Science* **4**: 23. doi:10.1186/s40645-017-0137-6.
- Nakajima, K., Takahashi, H., Yokoyama, H. and Tsunematsu, N. 2018. Vertical structures of nocturnal potential temperature under clear and weak wind conditions in the central urban area of Tokyo, Japan: Statistical analysis using observation data at Tokyo Tower. *Geographical Review of Japan* **91A**: 24–42. (in Japanese with English abstract)

Other Articles

- Matsumoto, J . 2017. Landform—Mountain ranges, pleateaus and plains. In *Encyclopedia of Chinese Culture*, ed. Editorial Committee of the Encyclopedia of Chinese Culture, 82-83. Tokyo: Maruzen. (in Japanese)
- Matsumoto, J . 2017. Climate—Diversity generated by East Asian monsoon. In *Encyclopedia of Chinese Culture*, ed. Editorial Committee of the Encyclopedia of Chinese Culture, 84-85. Tokyo: Maruzen. (in Japanese)
- Matsumoto, J . 2017. Floods and droughts in the Asian monsoon region. In *Encyclopedia of the Climate Variations*, ed. Yamakawa, S., Tokiwa, K. and Watarai, Y., 10-13. Tokyo: Asakura-shoten. (in Japanese)
- Takahashi, H. 2017. Local heavy rain disasters: short duraiton and concentrated heavy rainfall. In *Encyclopedia of the Climate Variations*, ed. Yamakawa, S., Tokiwa, K. and Watarai, Y., 18-25. Tokyo: Asakura-shoten. (in Japanese)
- Fujibe, F. 2017. Long-term changes of heavy rainfalls in Japan. *Journal of the Heat Transfer Society of Japan* **56** (237): 24–29. (in Japanese)
- Inoue, T., Matsumoto, J., Fujibe, F. And Oikawa, Y. 2018. Chapter 2 Outline of climate in Japan. In *Japanese Climate Encyclopedia*, ed. Kusaka, H., Fujibe, F. (Chief Editors), Yoshino, M.M., Tabayashi, A. and Kimura, F., 5-19. Tokyo: Maruzen. (in Japanese)
- Nakajima, K. and Takahashi, H. 2018. Amount of wintertime nocturnal air heating over the Tokyo metropolitan area. *Geographical Reports of Tokyo Metropolitan University* **53**: 1–11.

Books

- Kusaka, H., Fujibe, F. (Chief Editors), Yoshino, M.M., Tabayashi, A. and Kimura, F. eds. 2018. *Japanese Climate Encyclopedia*. Tokyo: Maruzen. (in Japanese)

Reports

- Takahashi, H. and Suzuki, H. eds. 2018. *Researches on the spatial structures of heavy rainfall and strong winds*. 2017 Joint Research Report of Tokyo Metropolitan University and Research & Development Center of JR East Group. (in Japanese)

Book Reviews

None

Miscellaneous Reports

- Takahashi, H. 2017. Urban heat island viewed from three-dimensional structure of atmosphere over urban area. *Kagaku* **87**: 1083–1084. (in Japanese)
- Fujibe, F. 2017. Cooperation of wind engineering and meteorology. *Wind Engineers, JAWE* **42**: 223–224. (in Japanese)
- Fujibe, F. 2017. Past and future of heat island studies. *Heat Island Institute International Annual Issue* **12**: 3. (in Japanese)

Presentations

- Matsumoto, J. 2018. AMY-II. Post-MAHASRI Planning Workshop, January, Nagoya.
- Matsumoto, J. 2018. Validation and utilization of GPM data for hydrological forecasting in the Red River basin, Vietnam. PMM8 Joint PI Meeting, January, Chiyoda.
- Matsumoto, J. 2018. AMY-II observation project. The International Post-MAHASRI Planning Workshop, March, Chiyoda.
- Matsumoto, J. and Inoue, T. 2017. Long-term variability of the monsoon seasonal changes in India and Myanmar. The 12th Workshop on Environment and Human Activities in South Asia – Challenges to Global Issues in Asia through Collaboration with Locally Existing, December, Nara.
- Matsumoto, J., Villafuerte, M. and Kubota, H. 2017. Changes in extreme rainfall in the Philippines for the 100-year period (1911-2010). *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017: MIS05-09*, May, Chiba.
- Matsumoto, J., Villafuerte II, M.Q., Endo, N. and Nguyen-Thi H.A. 2017. Changes in extreme rainfall in Southeast Asia. International Workshop on the Asian Monsoon in a Warmer World, August, Chengjiang, China. (Keynote)
- Matsumoto, J., Takahashi, H.G., Dado, J.M.B., Nguyen-Le D. and Villafuerte, M.Q. 2017. Climate of the Philippines and the sea surface temperature effect on summer monsoon rainfall. *Abstracts, International Workshop on Climate Downscaling Studies*, 47, October, Tsukuba.
- Matsumoto, J., Inoue, T., Zaiki, M., Mikami, T., Hirano, J., Kubota, H., Kamahori, H., Terao, T. and Murata, F. 2017. Recent data rescue activities under ACRE-Japan. The 10th ACRE Workshop, December, Auckland, New Zealand. (Poster)
- Akasaka, I., Zaiki, M., Kubota, H. and Matsumoto, J. 2017. Characteristics on the seasonal march of

- rainfall at Manila for the late 19th century – the early 20th century. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: ACG44-P05, May, Chiba. (Poster)
- Akasaka, I., Zaiki, M., Kubota, H. and Matsumoto, J. 2017. Seasonal march of rainfall at Manila for the late 19th century – the early 20th century. *2017 Asia Oceania Geosciences Society 14th Annual Meeting*: AS11-38-A017, August, Singapore. (Poster)
- Akasaka, I., Zaiki, M. and Matsumoto, J. 2018. Diurnal cycle of wind direction at Manila for the late 19th century. *Proceedings of the General Meeting of the Association of Japanese Geographers* **93**: 242, March, Koganei. (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 on the analysis of the tropical cyclones. *European Geosciences Union (EGU) General Assembly 2017*: EGU2017-1752, April, Vienna, Austria. (Poster)
- Hattori, M., Yamazaki, T., Ogino, S.-Y., Wu, P.M. and Matsumoto, J. 2017. The impact of the radiosonde observations of cold surge over the Philippine Sea on the tropics and southern hemisphere. *Abstracts of the Meteorological Society of Japan 2017 Spring Meeting* **111**: 103, May, Shibuya. (in Japanese)
- Kamahori, H., Fujibe, F. and Matsumoto, J. 2018. Data rescue for precipitation observation in Tokai area. *Proceedings of the General Meeting of the Association of Japanese Geographers* **93**: 246, March, Koganei. (in Japanese) (Poster)
- Kubota, H., Matsumoto, J., Inoue, T., Zaiki, M., Mikami, T., Hirano, J., Yamamoto, H., Tsukahara, T. and Kamahori, H. 2017. ACRE-Japan. The 10th ACRE Workshop, December, Auckland, New Zealand.
- Kubota, H., Matsumoto, J., Zaiki, M., Mikami, T., Tsukahara, T., Kobayashi, S., Yamamoto, H., Hirano, J., Inoue, T., Akasaka, I., Kamahori, H., Fujibe, F., Hayashi, T., Terao, T., Murata, F., Fujinami, H. and Fukushima, A. 2018. Data rescue over Asian monsoon region through ACRE-Japan. The International Post-MAHASRI Planning Workshop, March, Chiyoda.
- Murata, F., Fujinami, H., Terao, T., Hayashi, T., Matsumoto, J. and Syiemlieh, H. 2017. Relationship between the central and northeastern part of India in the active-break monsoon cycle. *Abstracts of the Meteorological Society of Japan 2017 Fall Meeting* **112**: 317, October, Sapporo. (Poster)
- Murata, F., Terao, T., Fujinami, H., Hayashi, T., Asada, H., Matsumoto, J. and Syiemlieh, H. 2017. Dominant synoptic disturbance in the extreme rainfall at Cherrapunji, northeast India, based on

- 104 years of rainfall data (1902–2005). *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: ACG44-P02, May, Chiba. (Poster)
- Murata, F., Terao, T., Fujinami, H., Hayashi, T., Asada, H., Matsumoto, J. and Syiemlieh, H. 2017. Dominant synoptic disturbance in the extreme rainfall at Cherrapunji, North East India. *2017 Asia Oceania Geosciences Society 14th Annual Meeting*: AS11-38-A032, August, Singapore.
- Ogino, S.Y., Yamanaka, M.D., Mori, S. and Matsumoto, J. 2017. Role of tropical coastal dehydrator in global water cycle. The 347th Humanosphere Symposium, September, Uji.
- Takahashi, Y., Kubota, H., Sato, M., Matsumoto, J., Yamashita, K., Yoshida, K., Marciano, J.S., Perez, G.J. and Dalida Jr., L.U. 2017. Development of monitoring and information providing system of extreme weather in the Philippines by the lightning discharge observation and micro satellite. *Abstracts of the Meteorological Society of Japan 2017 Spring Meeting* **111**: 112, May, Shibuya. (in Japanese)
- Takahashi, Y., Sato, M., Kubota, H., Yamashita, K., Hamada, J.-I., Matsumoto, J., Marciano, J., Perez, G. J., and Castro, E. 2018. SATREPS Project, ULAT, for development of extreme weather monitoring and alert system in the Philippines. *Abstract of the Asia Oceania Geosciences Society –the European Geosciences Union Joint Conference for New Dimensions for Natural Hazards in Asia*: NH-A208, February, Tagaytay, Philippines.
- Yamashita, K., Ohya, H., Hamada, J.-I., Wakazuki, Y., Iwasaki, H., Takahashi, Y., and Matsumoto, J. 2017: Monitoring of charge and discharge in thunderstorm based on electrostatic measurement and radio observation in ELF-VLF bands. *Abstract of the SGEPPS Fall Meeting* **142** : R005-P35, October, Uji. (in Japanese) (Poster)
- Takahashi, H. 2017. Urban climate phenomena in Tokyo caught by spatially dense meteorological observation network. 2017 Special Lecture Meeting of Japanese Heat Island Society, May, Minato. (in Japanese)
- Takahashi, H. 2018. On the recent climate changes. 2017 Fiscal Year Committee Meeting of Osawa Area Residents' Association, January, Mitaka. (in Japanese)
- Mikami, T., Yamato, H., Morishima, W., Takahashi, H., Akasaka, I. and Nagata, R. 2017. Localized torrential rainfall in urban area and its relationship with the occurrence of heat islands and thermal lows: A case study in July 24, 2015. *Proceedings of the General Meeting of the Association of Japanese Geographers* **92**: 130, September, Tsu. (in Japanese)

- Suzuki, H., Nakakita, E. and Takahashi, H. 2017. On the accuracy of radar-rain gauge analyzed precipitation: Analysis in Kanto and Tohoku regions by using rain gauges installed by East Japan Railway Company. *Abstracts of the Meteorological Society of Japan 2017 Autumn Meeting* **112**: 368, November, Sapporo. (in Japanese)
- Suzuki, H., Nakakita, E. and Takahashi, H. 2018. A study on the utilization of radar rainfall for the train operation control. The 62nd Annual Meeting of Hydraulic Engineering (CD-ROM), March, Okayama. (in Japanese with English abstract)
- Takahashi, H.G. 2018. Potential predictability of the interannual variation of summer rainfall over the Asian monsoon region, ISEE (Institute for Space-Earth Environmental Research) Workshop: Approaches for Hydrospheric-Atmospheric Environmental Studies in Asia-Oceania, November, Nagoya. (in Japanese)
- Takahashi, H.G. 2018. A preliminary analysis of future changes in the tropical Asian monsoon rainfall by NICAM-AMIP experiment. A Workshop on Tropical Meteorology, March, Fukuoka. (in Japanese)
- Takahashi, H.G. 2018. An interannual variation of summer precipitation over Southeast Asia and its association with the tropical cyclone activity along the monsoon trough. The 3rd International Workshop on Climate Change and Precipitation in the East Asia, February, Chiyoda.
- Takahashi, H.G. 2018. Challenges for a systematic understanding of the precipitation process in Asian countries. The International Post-MAHASRI Planning Workshop, March, Chiyoda.
- Takahashi, H.G. and Dado, J.M.B. 2017. Relationship between sea surface temperature and rainfall in the Philippines during the Asian summer monsoon. *Abstracts of the Meteorological Society of Japan 2017 Autumn Meeting* **112**: 333, October, Sapporo. (in Japanese) (Poster)
- Fujibe, F. 2017. Climatological features of sub-hourly temperature variations in Japan. *Abstracts of the Meteorological Society of Japan 2017 Spring Meeting* **111**: 279, May, Shibuya. (in Japanese) (Poster)
- Fujibe, F. 2017. High temperature and strong winds at the Central Meteorological Observatory associated with fires due to the Great Kanto Earthquake and an air attack on Tokyo. *Abstracts of the Meteorological Society of Japan 2017 Autumn Meeting* **112**: 366, November, Sapporo. (in Japanese)

- Fujibe, F. 2017. Climatological features of long-term changes in heavy precipitation and lightning in Japan. *13th Open Seminar on the Mitigation of Lightning Damage*, November, Chiyoda. (in Japanese)
- Fujibe, F. 2018. Localized strong winds associated with extensive fires in central Tokyo: Cases of the Great Kanto Earthquake (1923) and an air attack in World War II (1945). *International Workshop on Wind-related Disasters and Mitigation*, March, Sendai. (Poster)
- Fujibe, F., Matsumoto, J. and Suzuki, H. 2017. Regional and seasonal features of heat stroke mortality in Japan. *Abstracts of the Meteorological Society of Japan 2017 Spring Meeting* **111**: 247, May, Shibuya. (in Japanese).
- Fujibe, F., Matsumoto, J. and Suzuki, H. 2017. Relationship between daily heat stroke mortality and temperature based on daily data. *Proceedings of the General Meeting of the Association of Japanese Geographers* **92**: 128, September, Tsu. (in Japanese).
- Fujibe, F., Matsumoto, J. and Suzuki, H. 2017. Regional and seasonal features of cold mortality in Japan. *Abstracts of the Meteorological Society of Japan 2017 Autumn Meeting* **112**: 573, November, Sapporo. (in Japanese).
- Shido, F., Yamamoto, A., Kawabata, Y., Seino, N., Aoyagi, T., Fujibe, F. and Tanaka, T.Y. 2017. Long-term comparison observation of surface air-temperature in central Tokyo. *Abstracts of the 12th Meeting of the Heat Island Institute International*: 44-45, July, Hachioji. (in Japanese) (Poster)
- Shido, F., Yamamoto, A., Kawabata, Y., Seino, N., Fujibe, F. and Aoyagi, T. 2017. Seasonal changes of temperature and surface layer stratification in central Tokyo. *Abstracts of the Meteorological Society of Japan 2017 Autumn Meeting* **112**: 310, October, Sapporo. (in Japanese) (Poster)
- Hamada, J.-I., Mori, S., Katsumata, M., Matsumoto, J., Syamsudin, F. and Yoneyama, K. 2017. Diurnal and intraseasonal lightning activities over the western maritime continent during the pre-YMC observations in 2015. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: AAS03-P03, May, Chiba. (Poster)
- Hamada, J.-I., Matsumoto, J., Mori, S., Katsumata, M., Syamsudin, F. and Yoneyama, K. 2017. An observational study on lightning activities over the coastal region of Sumatra, Indonesian maritime continent. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: MIS05-P06, May, Chiba. (Poster)
- Hamada, J.-I., Mori, S., Katsumata, M., Matsumoto, J., Syamsudin, F., and Yoneyama, K. 2017.

- Lightning Activities over the Coastal Region of Sumatra during the Pre-YMC Observations in 2015. *Abstract of the Asia Oceania Geosciences Society Annual Meeting 14*: AS14-A010, August, Singapore. (Poster)
- Hamada, J.-I., Mori, S., Katsumata, M., Matsumoto, J., Syamsudin, F. and Yoneyama, K. 2017. Diurnal variations of lightning activity over the western Maritime Continent during Pre-YMC observations in 2015. *Abstracts of the Meteorological Society of Japan 2017 Autumn Meeting 112*: 325, October, Sapporo. (in Japanese) (Poster)
- Katsumata, M., Mori, S., Hamada, J.-I., Hattori, M., Syamsudin, F. and Yamanaka, M.D. 2017. Diurnal cycle over Jakarta as revealed by thermodynamic budget analyses during HARIMAU2010 special sounding observations. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: AAS03-05, May, Chiba.
- Kubota, H., Takahashi, Y., Sato, M., Yamashita, K. and Hamada, J.-I. 2017. Development of extreme weather monitoring and information sharing system in Metro Manila. *Extended Abstract of UNESCO-JASTIP Joint Symposium on Intra-Regional Water Security and Disaster Management*, November, Manila, Philippines.
- Kubota, H., Takahashi, Y., Sato, M. and Hamada, J.-I. 2018. Heavy rainfall in Metro Manila, Philippines during the summer monsoon associated with tropical cyclone. *Abstract of the Asia Oceania Geosciences Society—the European Geosciences Union Joint Conference for Natural Hazards in Asia 2018*: NH-A103, February, Tagaytay, Philippines.
- Mori, S., Wu, P., Hamada, J.-I., Arbain, A. A., Lestari, S., Sulistyowati, R. and Syamsudin, F. 2017. Lightning characteristics over the greater Jakarta, Indonesia. – Short report of JALS2015 observation –. *Proceedings of the 11th Symposium on MU and Equatorial Atmosphere Radar 11*: 5-6, September, Uji. (in Japanese)
- Mori, S., Wu, P., Hamada, J.-I., Arbain, A. A., Lestari, S., Sulistyowati, R., and Syamsudin, F. 2017. Thunderstorm characteristics over the greater Jakarta, Indonesia. *Abstracts of the Meteorological Society of Japan 2017 Autumn Meeting 112*: 594, October, Sapporo. (in Japanese)
- Sato, M., Takahashi, Y., Yamashita, K., Kubota, H., Hamada, J.-I., Momota, R. and Joel, M. 2017. Construction of lightning observation network in Asian countries for the intensity development prediction of severe weather. *Abstract of the SGEPPS Fall Meeting 142* : R005-16 October, Uji. (in Japanese)
- Sato, M., Takahashi, Y., Yamashita, K., Kubota, H., Hamada, J.-I., Momota, E. and Marciano, J. M.,

2017. Development of lightning observation network in the Western Pacific region for the intensity prediction of severe weather. *Abstract of the American Geophysical Union 2017 Fall Meeting*: AE13A-2229, December, New Orleans, USA.
- Yamanaka, M. D., Ogino, S.-Y., Wu, P.-M., Hamada, J.-I., Yokoi, S., Seiki, A., Bellenger, H., Inoue, T., Mori, S., Geng, B., Moteki, Q., Katsumata, M., Yoneyama, K., Sulistyowati, R., Lestari, S., and Syamsudin, F. 2017. Disturbances of gravity-wave class observed near western coast of Maritime Continent during MJO landing and QBO modification. *Abstract of the Asia Oceania Geosciences Society Annual Meeting 14*: AS14-A007, August, Singapore.
- Yamanaka, M. D., Ogino, S.-Y., Wu, P., Hamada, J.-I., Yokoi, S., Seiki, A., Bellenger, H., Inoue, T., Mori, S., Geng, B., Moteki, Q., Katsumata, M., Yoneyama, K., Sulistyowati, R., Lestari, S. and Syamsudin, F. 2017. Tropo-stratospheric wave activity near western Maritime-Continent coast during MJO landing and QBO modification. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: AAS03-11, May, Chiba.
- Inoue, T. and Matsumoto, J. 2017. Regional seasonal marches of precipitation and their long-term variations in India for 1901-2013. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: ACG44-05, May, Chiba.
- Inoue, T., Matsumoto, J. and Kubota, H. 2017. Changes of precipitation in Myanmar for the period 1891-2011. *Abstracts of the Meteorological Society of Japan 2017 Autumn Meeting 112*: 323, October, Sapporo. (in Japanese) (Poster)
- Nodzu, M.I., Matsumoto, J., Trinh-Tuan, L. and Ngo-Duc, T. 2017. Estimate performance of Global Satellite Mapping of Precipitation and influence of wind on the performance. *Abstract of the Japan Geosciences Union and American Geophysical Union Joint Meeting 2017*: ACG46-P10, May, Chiba. (Poster)
- Nodzu, M.I., Matsumoto, J., Trinh-Tuan, L. and Ngo-Duc, T. 2018. GSMaP performance and its dependence on wind and topography for heavy-rain days over Northern Vietnam. The 7th Global Precipitation Measurement Asia Workshop on Satellite Precipitation Data Utilization, January, Jakarta, Indonesia.
- Nodzu, M.I., Matsumoto, J., Trinh-Tuan, L. and Ngo-Duc, T. 2017. Heavy rain reproducibility by GSMaP RNL V6 over northern Vietnam. Precipitation Measurement Missions (PMM) Domestic Science Meeting, November, Chiyoda. (in Japanese)
- Nodzu, M.I., Matsumoto, J., Trinh-Tuan, L. and Ngo-Duc, T. 2018. Validation of satellite-based

- precipitation over northern Vietnam: mainly for the reproducibility in summer heavy-rain days. Post-MAHASRI Planning Workshop, January, Nagoya. (in Japanese)
- Kanaya, Y., Miyazaki, K., Nodzu, M.I., Irie, H. and Takashima, H. 2017. Validation of tropospheric column concentration of NO₂ from satellites with the surface MAX-DOAS observation and their integrated analyses. *Abstract of the Japan Geosciences Union and American Geophysical Union Joint Meeting 2017*: AAS-11-07, May, Chiba. (in Japanese)
- Kanaya, Y., Nodzu, M.I., Miyazaki, K., Irie, H., Takashima, H., Gu, M., Chong, J., Kim, Y.-J., Lee, H., Li, A., Si, F., Xu, J., Xie, P., Liu, W., Dzhola, A., Postylyakov, O., Ivanov, V., Borovski, A. and Grechko, E. 2017. MAX-DOAS Network Observations in Asia and Russia (MADRAS) since 2007: Overview, OMI satellite data validation and update in 2017. The 8th international DOAS Workshop, September, Yokohama.
- Seto, Y., Yokoyama, H., Nakatani, T., Ando, H., Tsunematsu, N., Shoji, Y., Kusunoki, K., Nakayama, M., Saitoh, Y. and Takahashi, H. 2017. Relationships among rainfall distribution, surface wind, and precipitable water vapor derived from GNSS during localized heavy rainfall in Tokyo in summer. *Abstract of the Japan Geosciences Union and American Geophysical Union Joint Meeting 2017*: MTT38-P06, May, Chiba. (Poster)
- Kamizawa, N. and Takahashi, H.G. 2017. Future changes in the extremes of the seasonal precipitation of the Asian summer monsoon and its asymmetric nature. *Abstracts of the Meteorological Society of Japan 2017 Autumn Meeting 112*: 132, October, Sapporo. (in Japanese) (Poster)
- Kamizawa, N. and Takahashi, H.G. 2017. Long-term changes in the interannual variation of the Asian summer monsoon precipitation under global warming projected by CMIP5 models. *The Sixth WMO International Workshop on Monsoons and Abstract Book*: 251, November, Singapore. (Poster)
- Konduru, R. T., Gupta, A., Matsumoto, J. and Takahashi, H.G. 2017. On the recent warming in the sub-cloud layer entropy and vertically integrated moist static energy over South Asian Monsoon region. *American Geophysical Union 2017 Fall Meeting*: A13C-2076, December, New Orleans, USA. (Poster)
- Nakajima, K. and Takahashi, H. 2018. Wintertime nocturnal temperature distribution and wind variation in Tokyo. *The 68th Japanese Study Group for Climate Impact and Application*: 8-9, March, Shinagawa. (in Japanese)

- Nakajima, K., Takahashi, H., Yokoyama, H. and Tsunematsu, N. 2017. The characteristics of nocturnal urban boundary layer in Tokyo Metropolitan area: Seasonal and temporal change. *Research Group Meeting for Urban Climatic Environment at Annual Meeting of the Association of Japanese Geographers* **92**: v, September, Tsu. (in Japanese)
- Olaguera, L.M., Matsumoto, J., Kubota, H., Cayanan, E.O. and Hilario, F.D. 2017. A climatological monsoon break over Luzon Island during the early summer monsoon season of the Philippines. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: A-CG44-P03, May, Chiba. (Poster)
- Trinh-Tuan, L., Matsumoto, J. and Ngo-Duc, T. 2017. Quantile mapping bias correction for daily precipitation over Vietnam in a regional climate model. *American Geophysical Union 2017 Fall Meeting*: A23D-2386, December, New Orleans, USA. (Poster)
- Ngo-Duc, T., Nguyen, H., Trinh-Tuan, L., Phan-Van, T., Tangang, F., Juneng, L., Cruz, F., Narisma, G., Santisirisomboon, J., Singhruck, P., Gunawan, D. and Aldrian, E. 2017. Regional climate downscaling over Vietnam. Time of Emergence in Temperature and Precipitation Changes. International Workshop on Climate Downscaling Studies, October, Tsukuba.
- Abiko, S, and Takahashi, H.G. 2017. Long-term change of interannual variation of snowfall in Japan and its factors. *Abstracts of the Meteorological Society of Japan 2017 Autumn Meeting* **112**: 470, November, Sapporo. (in Japanese) (Poster)
- Emura, R. and Matsumoto, J. 2018. Seasonal transition of heavy rainfall and its regional distribution during the warm season in Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers* **93**: 248, March, Koganei. (in Japanese) (Poster)
- Hagiya, A. and Takahashi, H. 2017. Distribution pattern of housing damages by typhoon in Japan and its secular trend. *Proceedings of the General Meeting of the Association of Japanese Geographers* **92**: 166, September, Tsu. (in Japanese) (Poster)
- Hagiya, A. and Takahashi, H. 2017. Distribution pattern of housing damages by typhoon in Japan and its analysis. The 67th Japanese Study Group for Climate Impact and Application, November, Setagaya. (in Japanese)
- Hoshi, R. and Takahashi, H.G. 2017. A lag-relationship between the Arctic Oscillation in winter and the succeeding summer climate in the Northern Hemisphere. *Abstracts of the Meteorological Society of Japan 2017 Autumn Meeting* **112**: 137, October, Sapporo. (in Japanese) (Poster)
- Hoshi, R. and Takahashi, H.G. 2018. A lag-relationship between the Arctic Oscillation in winter and

the succeeding summer climate in the Northern Hemisphere. *Fifth International Symposium on Arctic Reserch*: G01-P03, January, Chiyoda. (Poster)

Yamazaki, T. and Takahashi, H.G. 2017. Influence of terrain on the formation of low temperature field during snowfall event in the Kanto region. *Abstracts of the Meteorological Society of Japan 2017 Autumn Meeting* **112**: 299, October, Sapporo. (in Japanese) (Poster)

3. Laboratory of Environmental Geography

1) Staff

Makiko WATANABE Professor / PhD
Soil Geography, Environmental Dynamic Analysis, Geoarcheology

Masayuki KAWAHIGASHI Associate Professor / Dr. Agr.
Soil Ecology, Environmental Chemistry, Material Dynamics in Ecosystems

Takako UTSUGAWA Project Researcher / PhD (D.Sc.) (From October, 2017)
Sedimentology, Transport and Depositional Processes

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 (Small Water Impounding Project) 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 FY2017

Peer-reviewed Articles

- Myoga, S., Hashimoto, K., Kamei H., and Watanabe, M. 2017. Properties of soils as agricultural infrastructure in Suwanose Island, Tokara Arc, Japan. *Geographical Review of Japan* **90**: 257-270. (in Japanese with English abstract).
- Sugiura, Y., Watanabe, M., Nonoyama, Y., Sakagami, N., Guo, Y. and Murayama S. 2017. Saccharides of ectomycorrhizal fungal sclerotia as sources of forest soil polysaccharides, *Soil Science and Plant Nutrition* **63**: 426-433.
- Kida, K. and Kawahigashi, M. 2018. The soil classification concept for soils influenced by artefacts; comparison between soil classification systems of Japan, Soil Taxonomy, and World Reference Base for Soil Resources. *Pedologist* **61**: 82-93. (in Japanese)
- Myangan, O., Kawahigashi, M., Bolormaa, O. and Fujitake, N. 2017. Impact of land uses on heavy metal distribution in the Selenga River system in Mongolia. *Environmental Earth Sciences* **76**: 1-15.
- Kida, M., Orgilbold, M., Bolormaa O., Khakhinov, V.V., Kawahigashi, M. and Fujitake, N. 2018. Dissolved organic matter distribution and its association with colloidal aluminum and iron in the Selenga River Basin from Ulaanbaatar to Lake Baikal. *Environmental Science and Pollution* **25**: 1-10.
- Morishita, M. and Kawahigashi, M. 2018. Heterogeneity of peat decomposition under rice cultivation on the Pacific coast, Japan. *Geoderma Regional* **12**: 56-64.
- Oyama, K., Sudiarta, P., Shiotsu, F., Sakagami, N., Komatsuzaki, M., Nitta, Y., Kurusu, Y. and Suprpta, D.N. 2017. Benefits and difficulties of organic and conventional rice farming systems in Bali, Indonesia. *Tropical Agriculture and Development* **61**: 70-76.

Other Articles

- Watanabe, M., Inoue, K., Kodaka, Y., Narisawa, K., Osato, Y. and Endo, T. 2017. Observation of soil animals in the Institute for Nature Study using CCD camera apparatus. *Miscellaneous Reports of the National Park for Nature Study* **48**:103-108. (in Japanese)
- Murata, T., Kawai, N. and Watanabe M. 2017. Vertical distributions of soil temperature in the Institute for Nature Study (2010-2016). *Miscellaneous Reports of the National Park for Nature*

Study **48**: 47-53. (in Japanese)

Kawahigashi, M. and Fujitake, N. 2018. Soil function sustaining the Earth. In *Introduction of Soil Science, Second Edition*, ed. Kimura, M. and Nanzyo, M., 229-238. Tokyo: Buneido-Shuppan. (in Japanese)

Myangan, O., Kawahigashi, M., Fujitake, N., Bolormaa O., Khakhinov, V.V. and Sumida, H. 2018. Occurrence of arsenic (As) in the riverbed sediments of the Selenga River system. *Geographical Reports of Tokyo Metropolitan University* **53**: 18-28.

Books

None

Reports

Kawahigashi, M. 2017. A report of other meetings: Overview of SUITMA9 (Moscow). *Japanese Journal of Soil Science and Plant Nutrition* **88**: 498. (in Japanese)

Book Reviews

None

Miscellaneous Reports

Watanabe, M. and Sugimura, T. 2017. Three mega water resource projects surrounding Kharga Oasis in the Western Desert, Egypt. *Journal of the Remote Sensing Society of Japan* **37**: 261-262. (in Japanese)

Inui, T., Kawahigashi, M., Miyaguchi, S., Suzuki, H., Urakoshi, T., Shinagawa, S., Shinoda, M. and Sakanakura, H. 2017. Test method for acidification potential of soils and rocks by using hydrogen peroxide solution (JGS 0271-2016). Japanese Geotechnical Society Standard. (in Japanese)

Myoga, S. 2017. The lost village, Story 1, Rokurigahara, Mt. Asama (Part1) *Chiri* **62**(9):4-7. (in Japanese)

Myoga, S. 2017. The lost village, Story 2, Rokurigahara, Mt. Asama (Part2) *Chiri* **62**(10):80-86. (in Japanese)

Myoga, S. 2017. The lost village, Story 3, Kakumihama (Part 1) *Chiri* **62**(11): 85-91. (in Japanese)

Myoga, S. 2017. The lost village, Story 4, Kakumihama (Part2) *Chiri* **62**(12): 66-73. (in Japanese)

Presentations

- Inose, Y., Guo, Y., Takashima, Y., Sakagami, N., Watanabe, M. and Narisawa, K. 2017. Isolation of effective fungi for revegetation from Fagus root at Komado moor. JCSEM 2017, August, Sendai. (in Japanese)
- Inose, Y., Guo, Y., Takashima, Y., Watanabe, M., Sakagami, N. and Narisawa, K. 2017. The research of symbiotic fungi associated with the growth of beech seedlings at Komado moor. JCOM 2017, December, Tsukuba. (in Japanese)
- Kawahigashi, M. 2017. Influences of artifacts on developmental processes of Technosols. 13th International conference of the East and Southeast Asia Federation of Soil Science Societies (ESAFS). December, Pattaya, Thailand.
- Kawahigashi, M. 2018. Urban soils. The 5th Joint Meeting of Soil Science and International Union of Soil Science (IUSS), The 23rd-term Science Council of Japan, Minato. (in Japanese)
- Kawahigashi, M., Kida, K. and Matsudaira, H. 2017. Land management and soil developmental processes under the green-infrastructure in Tokyo. SUITMA9 (Soils of Urban, Industrial, Traffic, Mining and Military Areas), S11, May, Moscow, Russia.
- Kawahigashi, M., Kida, K. and Matsudaira, H. 2018. Properties and functions of soils on artificial greenery areas. *Abstracts of the 129th Annual Meeting of the Japanese Forest Society*: 92, March, Kochi. (in Japanese)
- Utsugawa, T. and Shirai, M. 2018. An approach of “the model of roundness in saturation” based on the changes in roundness of fluvial and beach clastic sediments during transport process. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2018*: 58–59, March, Akita. (in Japanese)
- Utsugawa, T. and Suzuki, T. 2018. Volcanic hazard assessment for extremely huge and low frequent VEI 7 eruptions in Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers* **93**: 91, March, Koganei. (in Japanese)
- Shirai, M. Endo, S. and Utsugawa, T. 2018. Supply and transport processes of plutonic gravels on the middle reaches of Tama River. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2018*: 56–57, March, Akita. (in Japanese)
- Sakagami, N., Inose, Y., Guo, Y., Nishizawa, T., Narisawa, K. and Watanabe, M. 2017. Soil survey on vegetation recovery of the abandoned cropland around Komado Shitsugen Moor, Fukushima

- Prefecture. *Proceedings of the General Meeting of the Association of Japanese Geographers* **92**: 207, September, Tsu. (in Japanese)
- Sakagami, N., Saitou, A., Nishizawa, T., Narisawa, K. and Ito, T. 2017. A report on elemental composition of agricultural products affected by the Kanto-Tohoku heavy rainfall disaster in September 2015. *Proceedings of the General Meeting of the Association of Japanese Geographers* **92**: 208, September, Tsu. (in Japanese)
- Hirano, A., Guo, Y., Sakagami, N., Nishizawa, T., Kamijo, T. and Ohta, H. 2017. Metagenome analysis of soil horizons formed on the volcanic deposit in Miyake-Jima Island. JSSSPN 2017, September, Sendai. (in Japanese)
- Sakoda, M., Mizusawa, M., Guo, Y., Shiotsu, F., Sakagami, N., Masutomi, Y., Ohta, H., Fujiwara, T., Senoh, K. and Nishizawa, T. 2017. Effect of denitrification bacteria who promote rice growth to bacterial community of rhizosphere soil. JSSSPN 2017, September, Sendai. (in Japanese)
- Myoga S. 2017. Study on land function of Kakumihama. *Proceedings of the General Meeting of the Association of Japanese Geographers* **92**: 178, September, Tsu. (in Japanese)
- Kida, K. and Kawahigashi, M. 2018. Incompatibility in soil classification systems generated through processes for adoption of human impacts into soil classification systems. *Proceedings of Japanese Society of Pedology on 2018*: 69, March, Nagoya. (in Japanese)
- Morishita, M. and Kawahigashi, M. 2017. An evaluation of distribution trend of peat soils in agricultural fields using GIS. Annual Meeting of Japanese Society of Soil Science and Plant Nutrition. September, Sendai. (in Japanese)
- Morishita, M. and Kawahigashi, M. 2017. Muck soil distribution in the Japanese paddy field evaluated by GIS. 13th International conference of the East and Southeast Asia Federation of Soil Science Societies (ESAFFS). December, Pattaya, Thailand.
- Morishita, M. and Kawahigashi, M. 2018. An estimation of environmental factor of peat and muck soils in agricultural fields. *Proceedings of Japanese Society of Pedology on 2018*: 70, March, Nagoya. (in Japanese)
- Battulaga, B. 2017. Preliminary study of visible plastic distribution along the river shore in Northern Mongolia. JST/SSH The 4th Symposium for Women Researchers, Poster Presentation Session, November, Shinjuku.
- Kelly, C.L. 2017. Multi- Proxy study of the alluvial fan environment during the Holocene in the Qu'Appelle Valley, Saskatchewan. JST/SSH The 4th Symposium for Women Researchers, Poster

Presentation Session, November, Shinjuku.

- Kelly, C.L., Watanabe, M. and Hardenbicker, U. M. 2017. Multi-proxy study of alluvial fan development during the Holocene in the Qu'Appelle Valley, Saskatchewan. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: HGM03-03, May, Chiba.
- Matsudaira, M. and Kawahigashi, M. 2017. Changes in planting bases evaluated by biological activities in the greenery area on the artificial island in Tokyo Bay. *Proceedings of Japan Association for Landscape Ecology*: 123, September, Nagoya (in Japanese)
- Ibora, Y. and Kawahigashi, M. 2017. Study on the relationship between topography and distribution of Kuroboku soils using geographical information system. *Proceedings of the Japanese Society of Soil Science and Plant Nutrition, Kanto Regional Meeting*: 20, November, Fujisawa. (in Japanese)
- Ibora, Y. and Kawahigashi, M. 2018, Effects of degree of slope on the Kuroboku soil series. *Proceedings of Japanese Society of Pedology on 2018*: 71, March, Nagoya. (in Japanese)

4. Laboratory of Geographical Information Sciences

1) Staff

Hiroshi MATSUYAMA 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

Takanori WATANABE Project Researcher / PhD (D.Sc.)

Urban Climatology, Atmospheric Chemistry, Modelling of Air Quality

2) Overview of Research Activities

This laboratory is mainly 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
8. Quantitative evaluation of geographical phenomena in Tokyo in the modern era

3) List of Research Activities in FY2017

Peer-reviewed Articles

- Matsuyama, H. 2018. Severe drought after an absence of 37 years — Less precipitation on Chichi-jima in the Ogasawara (Bonin) Islands from 2016 to 2017. *Journal of Geography (Chigaku Zasshi)* **127**: 1-19. (in Japanese with English abstract)
- Mahmud, M. R., Hashim, M., Matsuyama, H., Numata, S. and Hosaka, T. 2018. Spatial downscaling of satellite precipitation data in humid tropics using a site-specific seasonal coefficient. *Water* **10**, 409; doi:10.3390/w10040409.
- Fujita, K., Inoue, H., Izumi, T., Yamaguchi, S., Sadakane, A., Sunako, S., Nishimura, K., Immerzeel, W. W., Shea, J. M., Kayastha, R. B., Sawagaki, T., Breashears, D. F., Yagi, H. and Sakai, A. 2017. Anomalous winter-snow-amplified earthquake-induced disaster of the 2015 Langtang avalanche in Nepal. *Natural Hazards and Earth System Sciences* **17**: 749-764.
- Saito, H., Uchiyama, S., Hayakawa Y. S. and Obanawa, H. 2018. Landslides triggered by an earthquake and heavy rainfalls at Aso volcano, Japan, detected by UAS and SfM-MVS photogrammetry. *Progress in Earth and Planetary Science* **5**: 15, DOI:10.1186/s40645-018-0169-6.
- Chen, C. W., Oguchi, T., Hayakawa, Y. S., Saito, H., Chen, H., Lin, G. W., Wei, L. W., Chao, Y. C. and Cheng, C. T. 2018. Sediment yield during typhoon events in relation to landslides, rainfall, and catchment areas in Taiwan. *Geomorphology* **303**: 540-548.
- Chen, C.-W., Saito, H. and Oguchi, T. 2017. Analyzing rainfall-induced mass movements in Taiwan using the soil water index. *Landslides* **14**: 1031-1041.
- Chen, C. W., Oguchi, T., Hayakawa, Y. S., Saito, H. and Chen, H. 2017. Relationship between landslide size and rainfall conditions in Taiwan. *Landslides* **14**: 1235-1240.
- Nakayama, Y., Nakamura, K., Saito, H. and Fukumoto, R. 2017. A web GIS framework for

- participatory sensing service: An open source-based implementation. *Geosciences* **7**: 22, DOI:10.3390/geosciences7020022.
- Mondini, A. C., Chang, K. T., Chiang, S. H., Schlogel, R., Notarnicola, C. and Saito, H. 2017. Automatic mapping of event landslides at basin scale in Taiwan using a Montecarlo approach and synthetic land cover fingerprints. *International Journal of Applied Earth Observation and Geoinformation* **63**: 112-121.
- Aoyama, M. and Koyama, T. 2017. Relationship between liquefied areas caused by the 2011 off the Pacific coast of Tohoku earthquake and time-series changes in the distribution of sand-gravel pits in Kamisu and Kashima cities. *Journal of Geography (Chigaku Zasshi)* **126**: 767-784. (in Japanese with English abstract)
- Hasegawa, K., Izumi, T., Matsuyama, H., Kajiwara, K. and Honda, Y. 2018. Seasonal change of bidirectional reflectance distribution function in mature Japanese larch forests and their phenology at the foot of Mt. Yatsugatake, central Japan. *Remote Sensing of Environment* **209**: 524-539.
- Yamamoto, R., Izumi, T. and Matsuyama, H. 2017. Comparison of pixel-based method and object-based method on land cover classification of urban area using high resolution digital aerial photograph. *Journal of the Remote Sensing Society of Japan* **37**: 236-247. (in Japanese with English abstract)

Other Articles

- Matsuyama, H. 2017. III-7 Effect on the water resources, In *Encyclopedia of the Climate Variations*, ed. Yamakawa, S., Tokiwa, K. and Watarai, Y., 128-131. Tokyo: Asakura-shoten, (in Japanese)
- Matsuyama, H. 2017. IX-3 Hydraulic power generation used for long time. In *Encyclopedia of the Climate Variations*, ed. Yamakawa, S., Tokiwa, K. and Watarai, Y., 396-399. Tokyo: Asakura-shoten, (in Japanese)
- Matsuyama, H. 2018. Climate of Kumamoto Prefecture. In *Japanese Climate Encyclopedia*, ed. Kusaka, H., Fujibe, F. (Chief Editors), Yoshino, M., Tabayashi, A. and Kimura, F., 404-412. Tokyo: Maruzen. (in Japanese)
- Matsuyama, H. 2018. Column 'Climate record in the world and Japan'. In *Japanese Climate Encyclopedia*, ed. Kusaka, H., Fujibe, F. (Chief Editors), Yoshino, M., Tabayashi, A. and Kimura, F., 452-453. Tokyo: Maruzen. (in Japanese)
- Miyazaki, S., Aoyama, M. and Sekido, A. 2018. Structurization of "Geographical Viewpoints" in

elementary social studies, the unit development using regional analysis of Itakura and Tsumagoi, Gunma. *Research in Educational Practice and Development, Gunma University* **35**: 1-16. (in Japanese)

Hasegawa, K. 2018. Creating a community-based environmental education program set in the school forest "Kizuna no mori" —10 year old history of Industry-academia-government collaboration project—. *Bulletin of Komazawa University Senior High School* **34**: 1-11. (in Japanese)

Books

Izumi, T. and Matsuyama, H. 2017. *Field Work in Physical Geography*. Tokyo: Kokon-Shoin. (in Japanese).

Reports

Matsuyama, H. 2017. Validation study of land surface reflectance from satellite at forest using BRDF simulation and observational data. *Annual Report 2016 of Center for Environmental Remote Sensing, Chiba University* **22**: 46. (in Japanese)

Matsuyama, H. and Izumi, T. 2018. Estimation of snow depth distribution by using UAV-SfM method as evaluated by *in situ* snow probe measurements at the foot of Mt. Makihata, Niigata Prefecture. *Reports of Scientific Research Grant, Japan Geographic Data Center* **3**: 111-132. (in Japanese)

Saito, H. 2017. Detection of topographic changes and re-vegetation in landslides using UAV (Unmanned Aerial Vehicle) and SfM-MVS (Structure from Motion and Multi View Stereo) photogrammetry. *Annual Report 2016 of Center for Environmental Remote Sensing, Chiba University* **22**: 64. (in Japanese)

Saito, H., Uchiyama, S., Obanawa, H., Hayakawa, Y. S. and Sri Sumantyo J. T. 2017. Application of high-definition topography data for the analysis of landslides in the Sensuikyo area at Aso volcano. *Proceedings of 19th CEReS Symposium on Environmental Remote Sensing*: 2-4. (in Japanese)

Ishikawa, K. and Nakayama, D. 2017. P.19. Estimation of Origin-Destination flow in old Tokyo city by using a historical traffic census. *Theory and Applications of GIS* **25**: 121. (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. *Proceedings of 19th CEReS Symposium on Environmental Remote Sensing*: 16. (in Japanese)

Book Reviews

- Matsuyama, H. 2017. Book Review (Dictionary of Wind and Cloud). *Tenki* **64**: 359 (in Japanese).
- Matsuyama, H. 2018. Book Review (Yoshida, H.: An Introductory Textbook of Physical Geography). *Geographical Review of Japan* **91**: 169-170. (in Japanese)

Miscellaneous Reports

- Matsuyama, H. 2017. The practice of “What is the frontier of the research topics we are now facing?” Part 2. *Science Mentor News, the Japan Science Society* **3**: 22-25. (in Japanese)
- Matsuyama, H. 2017. Cubic Earth—What if the Earth were cube—. *Science Education Journal* No.56: 41-43. (in Japanese)
- Matsuyama, H. 2017. Methods and cautions of internet search concerning scientific study. *Science Mentor News, the Japan Science Society* **3**: 30-31. (in Japanese)
- Matsuyama, H. 2017. Information and moral. 1. Copyright, and copy and paste. *Science Mentor News, the Japan Science Society* **3**: 38-39. (in Japanese)
- Matsuyama, H. 2017. Information and moral. 2. Manners of e-mail. *Science Mentor News, the Japan Science Society* **3**: 43. (in Japanese)
- Matsuyama, H. 2017. How to search previous studies. *Science Mentor News, the Japan Science Society* **3**: 49-50. (in Japanese)
- Matsuyama, H. 2017. We had a tea at Tokyo station. Preparatory Committee of Late Prof. M. Yoshino ed. “Memoirs of Prof. M. Yoshino” : 124. (in Japanese)
- Matsuyama, H. 2017. The beginning of research life. *Science Mentor News, the Japan Science Society* **3**: 53-54. (in Japanese)
- Matsuyama, H. 2017. How to teach basic of research. *Science Mentor News, the Japan Science Society* **3**: 59-60. (in Japanese)
- Matsuyama, H. 2018. How to teach basic of research (Part 2). *Science Mentor News, the Japan Science Society* **3**: 67-68. (in Japanese)
- Matsuyama, H. 2018. Water of the drainage of Tone-river occupying 80% of the water used in Tokyo. Iwatate T. and Yamauchi, K. eds. Summary Report of “Series of town and people in Edo/Tokyo, Open University of Tokyo Metropolitan University” in FY2005: 73-74. (in Japanese)
- Nakaegawa, T., Yamanaka, T., Yokoo, Y., Matsuyama, H., Tokunaga, T., Tanakamaru, H., Hayashi, T.,

Ishida, S., Lu, M., Katsuyama, M. and Sayama, T. 2018. Applaud of contribution to Hydrological Research Letters in 2016. *Journal of Japan Society of Hydrology and Water Resources* **31**: 122-124. (in Japanese)

Aoyama, M. 2017. Analysis of the liquefied area by using old topographic maps and rapid survey maps. *Chiri* **62**(8): 20-27 + Color page. (in Japanese)

Hasegawa, K. 2018. Proposal to learn geography in high school—Educating disaster prevention—. *Chiri* **63**(4): 104-109. (in Japanese)

Presentations

Matsuyama, H. 2017. Introduction of Department of Geography, Graduate School of Urban Environmental Sciences, Tokyo Metropolitan University. Short seminar at JpGU-AGU Joint Meeting 2017, May, Chiba. (in Japanese)

Matsuyama, H. 2017. Introduction of Department of Geography, Faculty of Urban Environmental Sciences, Tokyo Metropolitan University. Short seminar at JpGU-AGU Joint Meeting 2017, May, Chiba. (in Japanese)

Matsuyama, H. 2018. Severe drought after an absence of 37 years—Less precipitation in the Ogasawara (Bonin) Islands from 2016 to 2017. *Lecture at Ogasawara Environmental Planning Institute*, February, Haha-jima. (in Japanese)

Matsuyama, H. 2018. Severe drought after an absence of 37 years—Less precipitation on Chichi-jima in the Ogasawara (Bonin) Islands from 2016 to 2017. *Lecture at Ogasawara Visitor Center*, February, Chichi-jima. (in Japanese)

Matsuyama, H. 2018. Groundwater and springwaters at Hachioji-city and Tokyo Metropolis. Scientific Lecture, Labor Union of Tokyo Metropolitan University, March, Hachioji. (in Japanese)

Izumi, T., Nanri, S. and Matsuyama, H. 2017. Estimation of snow depth distribution by using UAV-SfM method as evaluated by *in situ* snow probe measurements at the foot of Mt. Makihata, Niigata Prefecture in 2017. *Proceedings of the General Meeting of the Association of Japanese Geographers* **92**: 107, September, Tsu. (in Japanese)

Nakayama, D. 2017. Mudflow simulation on 2000 Miyake island volcano eruption. *Kickoff Meeting of Volcano Disaster Research Center, Tokyo Metropolitan University*, June, Hachioji. (in Japanese)

Watanabe, T. and Izumi, T. 2017. Relation between power generation of wind power plant in mountainous area and prevailing wind direction. *Abstracts of the 2017 Fall Meeting of the*

- Meteorological Society of Japan* **112**: 115, October, Sapporo. (in Japanese)
- Watanabe, T., Izumi, T. and Matsuyama, H. 2017. Relation between the growth inhibition risk of forests and year-to-year climate variability. The 58th Annual Meeting of Japan Society for Atmospheric Environment, September, Nishinomiya. (in Japanese)
- Watanabe, T., Izumi, T. and Matsuyama, H. 2017. Estimation of ozone removal by deciduous forests. The 58th Annual Meeting of Japan Society for Atmospheric Environment, September, Nishinomiya. (in Japanese)
- Watanabe, T., Izumi, T. and Matsuyama, H. 2017. Relation between the growth inhibition risk of forests and year-to-year climate variability. *Abstracts of the 2017 Fall Meeting of the Meteorological Society of Japan* **112**: 365, October, Sapporo. (in Japanese)
- Kaneda Y., Watanabe, T., Matsuyama, H. and Miyaoka, K. 2017. A case study of “Heavy Rainfall in Northern Kyusyu Region in July 2012” by focusing on GPS precipitable water. *Abstracts of the 2017 Spring Meeting of the Meteorological Society of Japan* **111**: 337, May, Tokyo. (in Japanese)
- Saito, H., Nemoto, M. and Iijima, Y. 2017. Application of UAS for growth monitoring of wine grapes. *Research Abstracts on Spatial Information Science, CSIS DAYS 2017*: 9, November, Kashiwa. (in Japanese)
- Saito, H., Basharin, N., Iijima, Y. and Fedorov, A. N. 2017. Detection of thermokarst developments from UAVs and SfM-MVS photogrammetry. *Abstracts of the 2nd Asian Conference on Permafrost (ACOP2017)*: #02-05, July, Sapporo.
- Chen, C. W., Oguchi, T., Hayakawa, Y. S., Saito, H., Chen, H., Lin, G. W. and Wei, L. W. 2017. Sediment yields during typhoon events in Taiwan. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017: H-TT20*: May, Chiba.
- Haneda, Y., Oguchi, T., Hayakawa, Y. S. and Saito, H. 2017. Time series analysis of TLS-derived point clouds for shallow landslides in Aso region, Kumamoto, Japan. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017: H-TT19*, May, Chiba.
- Haneda, Y., Oguchi, T., Hayakawa, Y.S. and Saito, H. 2017. Time series analysis of landslides caused by the 2016 Kumamoto earthquake using terrestrial laser scanning. *Research Abstracts on Spatial Information Science, CSIS DAYS 2017*: 10, November, Kashiwa. (in Japanese)
- Iijima, Y., Saito, H., Fujioka, Y., Goto, M., Nakata, A. and Takakura, H. 2017. Landscape change induced due to permafrost degradation in eastern Siberia: For knowledge-action with local communities. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting*

- 2017: H-CG35, May, Chiba. (in Japanese)
- Iijima, Y., Park, H., Saito, H., Konstantinov, P. Y., Basharin, N. and Fedorov, A. N. 2017. High-centered polygon development during recent decade in Central Yakutia, Russia. *Abstracts of the 2nd Asian Conference on Permafrost (ACOP2017)*: #02-01, July, Sapporo.
- Iijima, Y., Saito, H. and Nemoto, M. 2017. Plant growth monitoring in vineyard based on proximal remote sensing. *Abstracts of the 63rd (2017 Autumn) Meeting of the Remote Sensing Society of Japan*: P40, November, Ebetsu. (in Japanese)
- Iijima Y., Saito, H., Basharin, N. and Fedorov, A.N. 2018. Thermokarst activating in the recent decades in central Yakutia, Russia. *Abstract of the Fifth International Symposium on Arctic Research*: S14-O02, January, Tokyo.
- Aoyama, M. 2017. Increased vulnerability of the flood and liquefaction caused by the landform and land-use change in the Kinu and Kokai River Basin. *Proceedings of the General Meeting of the Association of Japanese Geographers* **92**: 172, September, Tsu. (in Japanese)
- Aoyama, M. 2018. Land history of liquefied zone caused by the 2016 Kumamoto Earthquake inferred from the historical records. *Proceedings of the General Meeting of the Association of Japanese Geographers* **93**: 261, March, Koganei. (in Japanese)
- Ishikawa, K. and Nakayama, D. 2017. Improvement of a geocoding system in old Tokyo city by using reverse geocoding to an old address and Google Maps API. *Proceedings of the General Meeting of the Association of Japanese Geographers* **92**: 184, September, Tsu. (in Japanese)
- Ishikawa, K. and Nakayama, D. 2017. Estimation of Origin-Destination flow in old Tokyo city by using a historical traffic census. *26th Conference of GIS Association of Japan (CD-ROM)*: D21, October, Sendai. (in Japanese)
- Ishikawa, K. and Nakayama, D. 2017. Estimation of Origin-Destination flow in Tokyo in the late Taisho era. *Research Abstracts on Spatial Information Science, CSIS DAYS 2017*: 23, November, Kashiwa. (in Japanese)
- Ishikawa, K. and Nakayama, D. 2018. Estimation of origin-destination flows in Tokyo city in Taisho era by using historical documents of traffic census. *Proceedings of the General Meeting of the Association of Japanese Geographers* **93**: 332, March, Koganei. (in Japanese)
- Ishizaki, H. and Matsuyama, H. 2017. Diagnostic study on the distribution of the ratio of AMeDAS precipitation and Radar/Raingauge-Analyzed precipitation across Japan. *Abstracts of the 2017 Spring Meeting of the Meteorological Society of Japan* **111**: 335, May, Tokyo. (in Japanese)

- Yamakawa, D. and Izumi, T. 2017. A case study creating 3D-models of an outcrop at Nagao-pass in Hakone Geopark by using UAV (Unmanned Aerial Vehicle). *Proceedings of the General Meeting of the Association of Japanese Geographers* **92**: 108, September, Tsu. (in Japanese)
- Oikawa, K., Matsuyama, H. and Miyaoka, K. 2017. Comparison between precipitable waters of JRA-55 and GPS. *Abstracts of the 2017 Spring Meeting of the Meteorological Society of Japan* **111**: 336, May, Tokyo. (in Japanese)
- Saito, Y., Hasegawa, K., Izumi, T. and Matsuyama, H. 2018. An observational study on the method to make 3D forest model by using small-sized Unmanned Aerial Vehicle (UAV)—A case study of larch forests at the foot of Mt. Yatsugatake—. *20th CEReS Symposium on Environmental Remote Sensing*, February, Chiba. (in Japanese)
- Tachiki, S., Yamamoto, R. and Izumi, T. 2018. Comparison of land surface classification between pixel-based and object-based methods by using Landsat 7 satellite image—A case study of Aso-Kumamoto district—. *20th CEReS Symposium on Environmental Remote Sensing*, February, Chiba. (in Japanese)
- Tachiki, S., Yamamoto, R. and Izumi, T. 2018. Comparison of land surface classification between pixel-based and object-based methods by using Landsat 7 satellite image—A case study of Aso-Kumamoto district—. *Proceedings of the General Meeting of the Association of Japanese Geographers* **93**: 161, March, Koganei. (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 FY2017

Peer-reviewed Articles

- Yui, Y., Kubo, T., Kukimoto, M. and Wakabayashi, Y. 2017. Regional evolution of after-school care for children in Okinawa: A case study of Naha and Urasoe. *Urban Geography of Japan* **12**: 108-118. (in Japanese)
- Araiori, T. 2017. Utilization of disease maps and issues of health crisis management in influenza surveillance. *Map (Chizu)* **55**(2): 1-16. (in Japanese with English abstract)

Other Articles

- Wakabayashi, Y. and Betraieb, B. 2017. Public signs for preventing foreign tourists from getting lost. *Chizuchushin* **541**: 8-11. (in Japanese)
- Wakabayashi, Y. 2017. Longing for the success of ICC2019 in Tokyo: Is National Museum of Emerging Science become a holy place of cartography? *GIS NEXT* **62**: 80-81. (in Japanese)
- Takinami, A. 2017. The shape of a horse appears when the snow falls on the surface of a mountain cleared of trees by the logging industry at Toya village in Tanzawa. *Notes on Theoretical Geography* **19**: 1-27. (in Japanese)
- Takinami, A. 2018. Quantitative text analysis of discourses on “ambiance & atmosphere” : Paris and its suburb in French guidebooks. *Notes on Theoretical Geography* **20**: 27-54. (in Japanese)
- Yabe, N. 2018. Diffusion of GIS and human geography. In *Contemporary Human Geography*, ed. Sato, R. and Miyazawa, H. 41-57. Tokyo: Foundation for the Promotion of the Open University of Japan. (in Japanese)
- Yabe, N. 2018. Urban space of central parts of world city. In *Contemporary Human Geography*, ed. Sato, R. and Miyazawa, H., 170-185. Tokyo: Foundation for the Promotion of the Open University of Japan. (in Japanese)

- Yabe, N. 2018. Urban space and ethnicity, tourism. In *Contemporary Human Geography*, ed. Sato, R. and Miyazawa, H., 186-201. Tokyo: Foundation for the Promotion of the Open University of Japan. (in Japanese)
- Yabe, N. 2018. Urban space and ethnicity, tourism. In *Tourism Geography*, ed. Kikuchi, T., 18-27. Tokyo: Ninomiya-shoten. (in Japanese)
- Tsubomoto, H. 2018. Headquarter location restructuring of a life insurance company and a dream of garden city. *Notes on Theoretical Geography* **20**: 55-65. (in Japanese)

Books

- Wakabayashi, Y., 2018. *Evolution of the map: Geospatial information and future of human beings*. Sogensha. (in Japanese)

Reports

None

Book Reviews

- Yabe, N. 2017. Book Review (Arai, T. 2017. *New political geography in metropolitan suburbs (Daitoshiken Kougai no Atarasii Seiji Gyousei Chirigaku)*, Nihon Hyouronsya.). *Tama no Ayumi* No.168: 104-105. (in Japanese)

Miscellaneous Reports

- Yabe, N. 2017. A speculation of making historical maps of Takada, Niigata prefecture. *GIS NEXT* **60**: 71. (in Japanese)
- Tsubomoto, H. 2017. A survey of geographical studies in Japan: Urban. *Japanese Journal of Human Geography* **69**: 343-347. (in Japanese)

Presentations

- Wakabayashi, Y., Koizumi, R., Kukimoto, K. and Yui, Y. 2017. Visualization of the supply–demand gap in childcare services with GIS. 28th International Cartographic Conference, July, Washington D.C., USA.
- Wakabayashi, Y., Kukimoto, M. and Yui, Y. 2018. Changes in childcare service provision after the

- implementation of the comprehensive support system for children and child-rearing: The case of Naha City, Okinawa. *Proceedings of the General Meeting of the Association of Japanese Geographers* **93**: 328, March, Koganei. (in Japanese)
- Yabe, N. 2018. Geographically weighted bidimensional regression analysis for the historical map of Takada, Niigata prefecture. *Proceedings of the General Meeting of the Association of Japanese Geographers* **93**: 301, March, Koganei. (in Japanese)
- Yabe, N. 2018. Vector autocorrelation and geographically weighted bidimensional regression. GRECO meeting 2018. March, Hachioji. (in Japanese)
- Saito, A., Tsubomoto, H and Sugano, F. 2017. Validation of workplace model "SOF" supporting intellectual productivity. 18th Meeting of Japan Society of Office Studies. September, Setagaya. (in Japanese)
- Araiori, T. 2017. Spatial diffusion of emerging and re-emerging infectious disease: A case study of Influenza type A/H1N1pdm09 in Japan, 2009-2010. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: HTT25-P04, May, Chiba. (in Japanese with English abstract)
- Araiori, T. 2017. Spatial diffusion of emerging and re-emerging infectious disease: A case study of Influenza type A/H1N1pdm09 in Japan, 2009-2010. 17th International Medical Geography Symposium, July, Angers, France.
- Bettaieb, B. and Wakabayashi, Y. 2017. Spatial analysis of tourist attraction hot spots using the online geotagged photographs of the photo-sharing service of Flickr. *Abstracts of Japan Geoscience Union–American Geophysical Union Joint Meeting 2017*: HTT20-11, May, Chiba.
- Bettaieb, B. and Wakabayashi, Y. 2017. Hot-spot analysis of tourist attractions for foreign tourists in Tokyo by using geospatial information of the photo-sharing service on the web. *Papers and Proceedings of the Annual Conference of the Japan Cartographers Association*: 20-21, August, Yokohama. (in Japanese)
- Noma, T. 2018. Land use change of Edo Daimyo residence in central Tokyo. The 66th Meeting of Graduation Thesis of Geography 2018, March, Koganei. (in Japanese)