Annual Report 2024

Geography

Department of Geography

Graduate School and Faculty of Urban Environmental Sciences

Tokyo Metropolitan University

Contents

1. Laboratory of Quaternary Geology and Geomorphology

1) Staff

Professor : Takehiko SUZUKI
Geomorphology, Quaternary Science, Volcanology

Associate Professor : Masaaki SHIRAI
Sedimentology, Quaternary Geology, Marine Geology

Assistant Professor : Daisuke ISHIMURA
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 FY2024

Peer-reviewed Articles

Davies, S.M., Albert, P.G., Bourne, A.J., Owen, S., Svensson, A., Bolton, M.S.M., Cook, E., Jensen, BJ.L., Jones, G., Ponomareva, V.V. and Suzuki, T. 2024. Exploiting the Greenland volcanic ash

repository to date caldera-forming eruptions and widespread isochrons during the Holocene. *Quaternary Science Reviews* **334**: 108707. https://doi.org/10.1016/j.quascirev.2024.108707

Fukushima, Y., Ishimura, D., Takahashi, N., Iwasa, Y., Malatesta, L. C., Takahashi, T., Tang, C.-H., Yoshida, K. and Toda, S. 2024. Landscape changes caused by the 2024 Noto Peninsula earthquake in Japan. *Science Advances* **10**: eadp9193. https://doi.org/10.1126/sciadv.adp9193

Ishimura, D. and Hiramine, R. 2025. Dispersion, fragmentation, abrasion, and organism attachment of drift pumice from the 2021 Fukutoku-Oka-no-Ba eruption in Japan. *Progress in Earth and Planetary Science* **12**: 5. https://doi.org/10.1186/s40645-024-00678-z

Ishimura, D. and Hiramine, R. 2024. Roundness difference between drift and fall pumice clasts of Towada-Chuseri tephra: An examination for characterizing drift pumice. *The Quaternary Research* **63**: 207-212. (in Japanese)

Ishimura, D., Katoh, S., Okada, A. and Sato, H. 2024. Late Quaternary geomorphological development of the Mikata Five Lakes Lowland in central Japan based on the subsurface geology and fault structures of the Mikata Fault Zone. *Journal of Geography (Chigaku Zasshi)* **133**: 485-509. (in Japanese with English abstract)

Ohta, R., Watanabe, T. and Kariya, Y. 2025. Late Pleistocene tephras found in the vicinity of Mt. Kushigata, the Koma Mountains in central Japan. *The Quaternary Research* **64**: 1-12. (in Japanese) https://doi.org/10.4116/jaqua.64.2402

Vineberg, S.O., Albert, P.G., McLean, D., Suzuki, T., Staff, R.A., Yamada, K., Kitaba, I., Kitagawa, J., Manning, C.J., Buckland, H.M., Jones, G., Nishizawa, F., SG14 Project Members, Nakagawa, T. and Smith, V.C. 2024. A detailed record of large explosive eruptions from Japan between ~120 and 50 ka preserved at Lake Suigetsu. *Quaternary Science Reviews* **346**: 109021. https://doi.org/10.1016/j.quascirev.2024.109021

Other Articles

Kobayashi, M. 2025. Springs in the place of worship of Mt. Fuji; The rich ecosystem nourished by Wakutama. *Fujinology* **5**: 58. (in Japanese)

Kobayashi, M. 2025. The eruptions of Mt. Fuji that formed Wakutama pond: Investigation of the origin of Wakutama Pond's spring water, focusing on the fixed point monitoring. *Fujinology* **5**: 59-70. (in Japanese)

Utsugawa, T. and Shirai, M. 2024. Distribution and sedimentological characteristics of boulders on refreshed gravel bar by Typhoon 1919 in the middle of the Tama River, central Japan. *Bulletin of the Faculty of Letters, Hosei University* **89**: 25-40. (in Japanese with English abstract)

Watanabe, T. I. and Yoshida, K. T. 2025. Automated volcanic glass shard counting system for cryptotephra analysis using open-source hardware and software. *Geographical Reports of Tokyo Metropolitan University* **60**: 121-128.

Books

None

Reports

Kobayashi, M. 2025. Topographic and geological features of Suyama Ascending Route and Gotemba Ascending Route. *The Research Report of Pilgrimage Routes around Mt. Fuji – Suyama Ascending Route and Gotemba Ascending Route:* 21-33. (partial-writing in Japanese)

Book Reviews

Takahashi, T. 2025. Book review (Ono, E. and Sato, Y.: Geoarchaeological study in Japan). *Geographical Review of Japan* **98A**: 64-65. (in Japanese)

Miscellaneous Reports

Ishimura, D., Kagohara, K., Kumaki, Y. and Tajikara, M. 2024. Active Fault Map in 1:25,000, "Hiraizumi" Geospatial Information Authority of Japan. (in Japanese)

Kobayashi, M. 2025. Visiting the traces of Mt. Fuji's eruption (Part 5), Fuji-Sagamigawa Mudflow: Large volcanic mudflows caused by an eruptions at the northern foot of Mt. Fuji. *Mt. Fuji World Heritage Column*: 33. (in Japanese)

Kobayashi, M. 2024. Visiting the traces of Mt. Fuji's eruption (Part 4), Susono Lava Flow: Columnar joints of Byobu-iwa in Keigashima Canyon. *Mt. Fuji World Heritage Column*: 27. (in Japanese)

Utsugawa, T. 2024. Evaluation of gravel form based on the kernel density analysis utilized with GIS. *GISNEXT* **89**: 45. (in Japanese)

Presentations

Aoki, K., Ishimura, D. and Takahashi, T. 2024. Developments and ages of marine deposits and dissected valley filling with organic sediments at the sea cliff in Menokoshi, Noheji-cho, Aomori. *Abstracts of Japan Geoscience Union Meeting 2024*: HQR05-P01, May, Chiba.

Danjo, S. 2024**.** Scale of the Nirasaki Debris Avalanche and characteristic of hummocks. National Geography Major Graduation Article Conference 2024, March, Online. (in Japanese)

Fukushima, T., Suzuki, T., Fukushima, I. and Yamakawa, C. 2025. Significance of newly found buried forest showing creatures living sea and land two million years ago. Visualization Exhibition of Fossils in the Tama Area. March, Akishima. (in Japanese)

Fukushima, Y., Ishimura, D., Takahashi, N., Takahashi, T. and Toda, S. 2024. Three-dimensional displacement field associated with the 1 Jan. 2024 Noto Peninsula earthquake obtained from

SAR pixel offset analysis. *Abstracts of Japan Geoscience Union Meeting 2024*: STT35-P02, May, Chiba.

Fukushima, Y., Ishimura, D., Takahashi, N., Iwasa, Y., Malatesta, L., Takahashi, T., Tang, C., Yoshida, K. and Toda, S. 2024. Landscape changes associated with the 2024 Noto Peninsula Earthquake, Japan, revealed through integration of geodetic and geomorphological approaches. *AGU 2024 Annual Meeting*: NH51B-01, December, Washington D.C., USA.

Hara, Y. Toda, S., Takahashi, T., Torii, M. and Tsukawaki, S. 2024. Effects of landform changes from the distribution of surface deformations related to the liquefaction in Uchinada Town induced by the 2024 Noto Peninsula Earthquake. *Abstracts of 30th Meeting of Japan Society of Engineering Geology Tohoku Branch*: 15-16, July, Sendai. (in Japanese)

Hara, Y. Toda, S., Takahashi, T., Torii, M. and Tsukawaki, S. 2024. Relationship with geological structures and distribution of surface deformations related to liquefaction in Uchinada Town induced by the 2024 Noto Peninsula Earthquake. *Abstracts of Japan Geoscience Union Meeting 2024*: U15-P106, May, Chiba. (in Japanese)

Hashimoto, M. and Suzuki, T. 2024. A study of relationship between distance from the source and morphology of volcanic glass using the Ontake-1 tephra – Focusing on the certification of descent unit by the refractive index and changes of the bubble width –. *Abstracts 2024 the 131 Annual Meeting of the Geological Society of Japan*: T15-P-36, September, Yamagata. (in Japanese)

Hashimoto, M. and Suzuki, T. 2024. Variation of bubble width of volcanic glass depending on distance from the source volcano. *Japan Association for Quaternary Research, Programme and Abstracts* **54**: 43, August, Sendai. (in Japanese)

Hiramine, R., Ishimura, D. and Yamada, K. 2024. Drifted pumice from Ioto found in the Nansei Islands. *Abstracts of Japan Geoscience Union Meeting 2024*: SCG54-10, May, Chiba. (in Japanese)

Homma, H. and Shirai, M. 2024. Transport process of beach sand grains from the Teradomari Coast to the southern Niigata Coast estimated from grain size distribution. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2024*: 34-35, April, Kumamoto. (in Japanese)

Homma, H., Tamura, T. and Shirai, M. 2024. Residual luminescence signal and grain size of beach sand reveal longshore transport beyond multiple headlands bounding pocket beaches. *Abstracts for IGCP725 "Forecasting Coastal Change" Second Annual Meeting*: 70, September, Quezon, Philippines.

Ishimura, D. 2025. Distribution and occurrence of drift pumice on the present coast and in the sediments. 2024 FY Symposium of Volcano Practical Human Resource Development Support Program Japan, March, Online. (in Japanese)

Ishimura, D. 2024. Volcanoes and pumice drift in the Izu and Ogasawara Islands. Public lecture of Tokyo Metropolitan University, July, Ogasawara. (in Japanese)

Ishimura, D. 2024. How do we know paleo-hazards and link them to future disaster risk assessment? 11th Japanese-French Frontiers of Science (JFFoS) Symposium, Session 5: Uncovering Paleo Disasters and Human Impacts on Modern Earth Science (Earth Science/Geosciences/Environment), May, Strasbourg, France.

Ishimura, D. 2024. Characteristics of drift pumice from the 2021 Fukutoku-Oka-no-Ba eruption in Japan. 11th Japanese-French Frontiers of Science (JFFoS) Symposium, May, Strasbourg, France.

Ishimura, D. and Toda, S. 2024. Issues related to interpretation of co-seismic surface ruptures in recent large inland earthquakes. *Programme and Abstracts JSAF 2024 Fall Meeting and Symposium*: 19-20, November, Nagano. (in Japanese)

Iwasa, Y., Hama, A., Sugita, S., Ishimura, D., Malatesta, L.C. and Nakata, T. 2024. Investigation of topographic changes associated with the 2024 Noto Peninsula earthquake using affordable mobile LiDAR and CLAS-GNSS. *Abstracts of Japan Geoscience Union Meeting 2024*: U15-P91, May, Chiba. (in Japanese)

Jimba, N., Suzuki, T. and Taniguchi, H. 2024. Reconstruction of 19th century eruptive activity on the Izu-Oshima Volcanic Island by using historical documents. *Abstracts of Japan Geoscience Union Meeting 2024*: SVC26-P14, May, Chiba. (in Japanese)

Kawabata, M. and Suzuki, T. 2024. Detailed description and eruption sequence of the Rishiri Wanko-no-sawa tephra and the Rishiri Hotoku tephra, Hokkaido. *Abstracts of Japan Geoscience Union Meeting 2024*: SVC26-P02, May, Chiba. (in Japanese)

Kiyozuka, Y., Yamada, M., Naruse, H., Ishimura, D., Nakanishi, R. and Maehashi, K. 2024. Estimation of hydraulic conditions using inverse model: Application to tsunami deposit in Uchiura area, Noto Town, Ishikawa Prefecture. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2024*: 8, April, Kumamoto. (in Japanese)

Kobayashi, M. 2024. Our world heritage "Fujinology", formation of land in Fujieda/Shizuoka and influence of volcanic eruptions. Shizuoka Prefectural Educational Research Association, Science Education Research Fujieda City University General Education Course (Regional Studies Course), December, Fujieda. (in Japanese)

Kobayashi, M. 2024. Research of eruption history of Mt. Fuji and revision of hazard maps and warning and evacuation plans based on the results. Shizuoka Prefectural Educational Research Association, Science Education Research Division Summer Research Conference, August, Fuji. (in Japanese)

Kobayashi, M. 2024. Warning and evacuation methods for Mt. Fuji eruption based on volcano hazard map. Shizuoka University Eastern Region Citizens' Lecture, June, Numazu. (in Japanese)

Maehashi, K., Yamada, M., Naruse, H., Ishimura, D., Nakanishi, R. and Kiyozuka, Y. 2024. Wave source estimation of the 2024 Noto Peninsula earthquake tsunami based on field surveys and numerical tsunami simulations. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2024*: 4, April, Kumamoto. (in Japanese)

Malatesta, L.C., Weiss, N., Ishimura, D., Gailleton, B., Nishimura, T., Takahashi, N., Tsukamoto, S., Komatsu, T., Iwasa, Y., Sueoka, S. and Kataoka, K. 2024. The 2024 Noto Peninsula Earthquake and the million year preceding it. *Abstracts of Japan Geoscience Union Meeting 2024*: U16-05, May, Chiba.

Malatesta, L.C., Weiss, N., Tsukamoto, S., Sueoka, S., Ishimura, D., Gailleton, B., Nishimura, T., Takahashi, N., Kataoka, S.K., Komatsu, T. and Iwasa, Y. 2024. The 2024 Mw 7.5 Noto Peninsula earthquake illuminates a past shift in tectonic plate boundaries across Central Japan. *AGU 2024 Annual Meeting*: EP21C-03, December, Washington D.C., USA.

Nakamura, Y. and Ishimura, D. 2024. Major developmental factors of deep-seated gravitational slope deformation (DGSD) and the effect of fault distribution. *Programme and Abstracts JSAF 2024 Fall Meeting and Symposium*: 5-6, November, Nagano. (in Japanese)

Nakanishi, R., Yamada, M., Naruse, H., Ishimura, D., Kiyozuka, Y. and Maehashi, K. 2024. Reconstruction of coastal tsunami waveforms from the 2024 Noto Peninsula Earthquake using sediment transport modeling. *Japan Association for Quaternary Research, Programme and Abstracts* **54**: 31, August, Sendai. (in Japanese)

Nakanishi, R., Yamada, M., Naruse, H., Ishimura, D., Kiyozuka, Y. and Maehashi, K. 2024. Reconstructing the tsunami deposits of the 2024 Noto Peninsula earthquake using sediment transport modeling. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2024*: 6, April, Kumamoto. (in Japanese)

Sasaki, S., Fujimori, K., Yamada, M. and Ishimura, D. 2024. Primary report of the microfossil assemblages from Tsunami deposit in Onuma on the southern part of the Sanriku Coast, northeast Japan. *Abstracts 2024 the 131 Annual Meeting of the Geological Society of Japan*: T16-O-6, September, Yamagata. (in Japanese)

Shirai, M. Kawajiri, K. and Utsugawa, T. 2024. Sedimentary characteristics of the Fuji-Sagamigawa Lahar deposit estimated from lithological composition of matrix. *Abstracts of Japan Geoscience Union Meeting 2024*: HQR05-P07, May, Chiba. (in Japanese)

Shirai, M. Utsugawa, T. and Kawajiri, K. 2024. Flowing down process of the Fuji-Sagamigawa Lahar estimated from lithological composition of matrix (part 2). *Japan Association for Quaternary Research, Programme and Abstracts* **54**: 62, August, Sendai. (in Japanese)

Shirai, M. Utsugawa, T. and Kawajiri, K. 2024. Reevaluation of Fuji-Sagamigawa Lahar deposit of the upper reaches of the Sagami River, central Japan. *Abstracts for Annual Metting of the Sedimentological Society of Japan 2024*: 40, April, Kumamoto. (in Japanese)

Suwa, K., Takahashi, T., Toda, S. and Ishikawa, R. 2024. Stratigraphy and volume of the phreatic eruption deposits during the Holocene in Kurikoma Volcano, northeastern Japan. *Japan Association for Quaternary Research, Programme and Abstracts* **54**: 47, August, Sendai (in Japanese)

Suzuki, T. 2025. Izu island volcanoes viewed from the sea, March, Pacific Ocean. (in Japanese)

Suzuki, T. 2025. Wonderous stories on boring core and fossils in the Tama area, Japan. Visualization Exhibition of Fossils in the Tama Area, March, Akishima. (in Japanese)

Suzuki, T. 2024. Landform and underground geology of the Ota to Setagaya Wards: Higashi-kurume and Kita-tama Formations. Lecture for Plaintiffs Seeking Injunction against Construction of the Linear Chuo Shinkansen, November, Ota-ku. (in Japanese)

Suzuki, T. 2024. Development of landforms in 23 Wards and Tama. Series of the Open College, Waseda University: Tales from topographic lands in Tokyo: three million years history of landforms and geology, June, Nakano-ku. (in Japanese)

Suzuki, T. 2024. Landforms of Tokyo viewed from the Kanto Plain. Series of the Open College, Waseda University: Tales from topographic lands in Tokyo: three million years history of landforms and geology, June, Nakano-ku. (in Japanese)

Suzuki, T., Sugasawa, D., Kawabata, M., Hashimoto, M. and Jimba, N. 2024. Catalogue of Lower Pleistocene tephras in the Kasuga and Obama Formations, Inubo Group, east Kanto, NE Japan. *Japan Association for Quaternary Research, Programme and Abstracts* **54**: 53, August, Sendai. (in Japanese)

Suzuki, T., Shoda, K., Hashimoto, M., Kawabata, M., Jimba, N. and Sugasawa, D. 2024. Tephrochronological study on the Quaternary Kazusa Group in the western part of the Tama Hills, west Kanto Plain, NE Japan. *Abstracts 2024 the 131 Annual Meeting of the Geological Society of Japan*: G6-O-6, September, Yamagata. (in Japanese)

Suzuki, T., Shoda, K., Hashimoto, M., Kawabata, M., Jimba, N. and Sugasawa, D. 2024. Tephrochronological examination of the relation between marine isotope stages and glacial cycles recorded in the Kazusa Group in the Tama Hills, Kanto, NE Japan. *Japan Association for Quaternary Research, Programme and Abstracts* **54**: 16, August, Sendai. (in Japanese)

Suzuki, T., Kawabata, M., Jimba, N., Sugasawa, D., Albert, P., Molly, F. and Manning, C. 2024. Re-examination of magnitude and precise ages of Early Pleistocene huge Shirakawa Ignimbrites associated with caldera forming-eruption in Northeast Japan. *Abstracts of Japan Geoscience Union Meeting 2024*: SVC30-P08, May, Chiba. (in Japanese)

Takahashi, N., Ishimura, D., Ohta, R., Arai, Y. and Yamane, Y. 2024. Contrasting grain size evolution in headwaters controlled by rock strength and provenance. *Abstracts of Japan Geoscience Union Meeting 2024*: ACG43-P05, May, Chiba. (in Japanese)

Takahashi, N., Ishimura, D., Yamada, K., Ohta, R., Arai, Y. and Yamane, Y. 2024. Three-stage evolution of particle shape in the headwaters. *Proceedings of the General Meeting of the Association of Japanese Geographers* **107**: 242, March, Setagaya-ku. (in Japanese)

Takahashi, N., Fukushima, Y., Ishimura, D., Iwasa, Y, Malatesta, L.C., Takahashi, T., Tang, C., Yoshida, K. and Toda, S. 2024. Landscape changes caused by the 2024 Noto peninsula earthquake and its relation to the long-term landscape evolution. *Abstracts of Japan Geoscience Union Meeting 2024*: U16-P01, May, Chiba.

Takahashi, T., Yamane, Y. and Suwa, K. 2024. Magnitude–frequency distribution on the landslides induced by the 1923 Taisho Kanto Earthquake in the western part of the Kanagawa Prefecture, central Japan. *Abstracts of Japan Geoscience Union Meeting 2024*, HGM03-08, May, Chiba. (in Japanese)

Takahashi, T., Yamane, Y., Suwa, K. and Toda, S. 2024. Estimated volume and magnitude-frequency distribution of landslides induced by the 1923 Kanto Earthquake (Mw 7.9) in the western Kanagawa Prefecture, central Japan. *AGU 2024 Anual Meeting*: NH11C-2243, December, Washington D.C., USA.

Takahashi, T., Ichikawa, R., Suwa, K., Ogura, T. and Toda, S. 2024. Volume and ages of the lahar deposits and mud tephra beds since the middle Holocene in the Kurikoma Volcano, northeastern Japan. *Quarterly Journal of Geography* **76**: 146, May, Sendai (in Japanese)

Takahashi, T., Sugiura, A., Suzuki, H., Hori, K. and Toda, S. 2025. Study for the landform development of the alluvial plain along the Hasama River and the formation of Izunuma and Uchinuma lakes. *Report Session for the Research Grants of the Mt. Kurikoma Area Geopark in 2023*, March, Kurihara. (in Japanese)

Tamura, Y., Ogura, T., Takahashi, T., Sato, M. and Oguchi, C. 2025. Preliminary study for the assessment of disaster risk using Underground Built Heritage (UBH) in the Kashio River basin, Kanagawa Prefecture, Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers* **107**: 314, March, Setagaya-ku. (in Japanese)

Tang, C., Fukushima, Y., Toda, S., Yoshida, K., Takahashi, N. and Takahashi, T. 2024. Extreme coseismic uplift and faulting complexity during the January 1, 2024, Mw 7.5 Noto Peninsula earthquake. *Abstracts of Japan Geoscience Union Meeting 2024*, SGD02-P10, May, Chiba.

Taya, A. and Yamada, M. and Takahashi, T. 2024. Study for the method to distinguish between mainstream and tributary gravels of fluvial terraces based on roundness using image analysis. *Abstracts of Japan Geoscience Union Meeting 2024*, HGM03-P05, May, Chiba. (in Japanese)

Toda, S. and Ishimura, D. 2024. The relationship between the 2024 Noto-hanto, Japan, earthquake and short active faults nearby. *Abstracts of Japan Geoscience Union Meeting 2024*: SSS11-05, May, Chiba. (invited, in Japanese)

Utsugawa, T. and Shirai, M. 2024. Pebble provenance focused on gravel shape: A case study of the marine terrace deposits in Joban coastal region. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2024*: 21-22, April, Kumamoto. (in Japanese)

Watanabe, M., Masselink, G., McCall, R.T., Ishimura, D., Yamada, M. and Switzer, A.D. Numerical modelling of gravel transportation by the 2011 tsunami at Koyadori, Japan, with Xbeach-G. 9th Global Energy and Water Exchanges Open Science Conference, July, Sapporo.

Watanabe, T. and Ishimura, D. 2024. Relationship between tectonic landform and deep-seated gravitational slope deformation in the Sekita Mountains. *Programme and Abstracts JSAF 2024 Fall Meeting and Symposium*: 3-4, November, Nagano. (in Japanese)

Watanabe, T. and Nakamura, Y. 2024. Distribution and characteristics of deep-seated gravitational slope deformation features in volcanic edifice based on a high-resolution digital elevation model. *Programme and Abstracts, the Volcanological Society of Japan 2024 Fall Meeting*: 231, October, Sapporo. (in Japanese)

Watanabe, T., Ishimura, D., Aoki, K. and Takahashi, T. 2024. Revisiting the tephra characteristics and correlation of young Ontake lower tephra group. *Abstracts of Japan Geoscience Union Meeting 2024*, SVC30-P12, May, Chiba. (in Japanese)

Yamada, K., Ishimura, D., Narusawa, M., Ishizawa, T. and Yamada, M. 2024. Rgrains: Efficient Measurement and Analysis of Particle Shapes Using Image Analysis. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2024*: 12, April, Kumamoto. (in Japanese)

Yamada, M., Fujino, S., Ishimura, D., Kusumoto, S., Wang, Y., Yamaguchi, K., Kaneko, R. and Satake, K. 2024. Mega-tsunami Generated by the 7.3 ka Eruption of the Kikai Caldera: Geological Traces and Numerical Tsunami Calculations Revealed the Whole Picture. The International Workshop on Mega Earthquakes and Tsunamis – Progress in 20 Years since the 2004 Sumatra-Andaman Earthquake and Future Perspectives, June, Bunkyo-ku.

Yamada, M., Naruse, H., Ishimura, D., Nakanishi, R., Maehashi, K. and Kiyozuka, Y., 2024. Tsunami behaviour inferred from widespread tsunami deposits in Noto Town by the 2024 Noto Peninsula earthquake. The 18th East Eurasia International Workshop, 2024-18, October, Shimane.

Yamada, M., Naruse, H., Ishimura, D., Nakanishi, R., Maehashi, K. and Kiyozuka, Y. 2024. Tsunami behavior and deposits in Noto Town by the 2024 Noto Peninsula Earthquake. *Abstracts of Japan Geoscience Union Meeting 2024*: MIS20-05, May, Chiba.

Yamada, M., Naruse, H., Ishimura, D., Nakanishi, R., Maehashi, K. and Kiyozuka, Y. 2024. Tsunami deposits formed in Suzu City and Noto Town by the 2024 Noto Peninsula earthquake. *Abstracts of Japan Geoscience Union Meeting 2024*: U15-P73, May, Chiba.

Yamada, M., Naruse, H., Ishimura, D., Nakanishi, R., Maehashi, K. and Kiyozuka, Y. 2024. Post-tsunami survey on tsunami traces and deposits associated with the 2024 Noto Peninsula earthquake. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2024*: 2, April, Kumamoto. (in Japanese)

Yamada, M., Naruse, H., Ishimura, D., Nakanishi, R., Maehashi, K. and Kiyozuka, Y. 2024. Outcrops of modern upper shoreface deposits emerged by coastal uplift associated with the 2024 Noto Peninsula earthquake. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2024*: 63, April, Kumamoto. (in Japanese)

Yamada, M. and Suzuki, T. 2024. Stratigraphy and source of Jobu-Nanakura Tuff in Pliocene marine deposits of the back-arc region, NE *Japan. Japan Association for Quaternary Research, Programme and Abstracts* **54**: 28, August, Sendai. (in Japanese)

Yamada, M., Ishimura, D., Shirai, M. and Homma, H 2024. Characteristics of shallow marine sediments observed due to the uplift with the 2024 Noto Peninsula earthquake. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2024*: 65-66, April, Kumamoto. (in Japanese)

Yamane, Y., Toda, S., Torii, M., Hara, Y., Ishimura, D., Takahashi, N., Okuno, M. and Fukuda, Y. 2024. Verifying variability and duplicability of near surface fault deformation: Re-excavation of pre-earthquake paleoseismic trenches, Futagawa fault, Central Kyushu, Japan. *Abstracts of Japan Geoscience Union Meeting 2024*: SSS11-10, May, Chiba. (in Japanese)

Yoshida, K., Tada, N., Sato, T., Kitada, K., Hanyu, T., Hamada, M., McIntosh, I., Hagiwara, Y., Hiramine, R., Takai, S., Harano, A., Kuroda, M., Tamura, Y. and Ono, S. 2024. Basaltic old knoll at the northeastern flank of Nishinoshima. *Abstracts of Japan Geoscience Union Meeting 2024*: SCG54-03, May, Chiba. (in Japanese)

Yoshida, Y., Ishimura, D. and Watanabe, T. 2024. Active fault distribution using high-precision DEM in mountainous areas of middle-eastern Shikoku. *Programme and Abstracts JSAF 2024 Fall Meeting and Symposium*: 49-50, November, Nagano. (in Japanese)

2. Laboratory of Climatology

1) Staff

Professor : Hideo TAKAHASHI
Urban Climatology, Climatic Change, Rainfall Climatology

Professor : Yoshihiro IIJIMA
Climatology, Cryospheric Science, Future Earth Science

Assistant Professor : Hiroshi TAKAHASHI
Asian Monsoon, Cloud-Precipitation Climatology, Regional Climate Modeling

Project Associate Professor : Jun-Ichi HAMADA
Tropical Climatology, Meteorological Observation

Project Researcher : Yoshihito SETO
Urban Climatology, Local Climatology, Statistical Analysis

Project Researcher : Masato NODZU
Tropical Climatology, Satellite Meteorology, Climatology over Small Islands

Project Researcher : Anu GUPTA
Monsoon Climatology

2) Overview of Research Activities

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

To explore the topics mentioned above, we primarily apply following methods: observation (monitoring), data analysis of diverse global and regional datasets, and numerical modeling.

1) Global- to regional-scale climate change, climate variability, and seasonal changes in Japan and the Asian monsoon regions, and other regions of the world
2) Climate change and its environmental response and adaptation of the human society
3) Observational and statistical studies on the heat islands, short-term heavy rainfall, detailed structure of urban atmosphere, and local wind system structure
4) Synoptic- to mesoscale atmospheric phenomena related to weather in Japan and Asian regions
5) Interaction between surface conditions and cloud/precipitation activity, especially in the tropics
6) Reconstruction of past climate during the historical period in Japan and in East Asia

3) List of Research Activities in FY2024

Peer-reviewed Articles

Sato, K. N., Iijima, Y., Okajima, K., Sekiya, N. and Watanabe, K. 2024. Influence of pixel extraction area and flight altitude on estimation of soil chemical properties in paddy field using UAS remote sensing. *Journal of Japanese Society of Soil Physics* **158**: 29-42. (in Japanese with English abstract)

Seto, Y. and Takahashi, H. 2025. Local wind patterns and pressure fields associated with temperature distribution in summer over the Kanto Plain, Japan. *SOLA* **21**: 34-42. https://doi.org/10.2151/sola.2025-005

Takahashi, H. G. 2024. Role of tropical disturbances along the South Asian monsoon trough in the 2022 Pakistan floods and the implications for interannual variability. *Journal of Climate* **37**: 5609-5627. https://doi.org/10.1175/JCLI-D-23-0186.1

Other Articles

Ajayamohan, R. S., Martin, G., Turkington, T., Fujinami, H., Basconcillo, J., Annamalai, H., Jayawardena, S., Ashrit, R., Takahashi, H. G. and Koh, T. Y. 2024. Asian summer monsoon variability during 2022–2023: Beyond canonical teleconnection patterns. *GEWEX Quarterly* **33**(3): 4-7. https://www.gewex.org/gewex-content/uploads/2024/10/Q32024.pdf

Iijima, Y. 2024. 5-2 Resource development and disaster adaptation. In Arctic Environmental Research Consortium Long-Term Vision Editorial Committee (Eds.), *Arctic research: Current status and future prospects*. 290-299. Tokyo: Kaibundo. (in Japanese)

Nakajima, K. and Takahashi, H. 2025. Temporal and spatial structure of the local strong wind "Kiyokawa dashi" in the Shonai Plain, Yamagata prefecture, Japan. *Geographical Reports of Tokyo Metropolitan University* **60**: 64-72.

Nodzu, M. I., Nomoto, R., Sugiura, T., Sengoku, K. and Matsumoto, J. 2025. Global distribution

of spring precipitation. *Geographical Reports of Tokyo Metropolitan University* **60**: 73-80.

Oka, A., Takahashi, H., Suzuki, H. and Oonishi, M. 2025. Recent thirty-year trends in the frequency of summertime localized intense rainfall in and around the Tokyo metropolis. *Geographical Reports of Tokyo Metropolitan University* **60**: 17-24.

Seto, Y. 2025. Recent characteristics of local wind systems and temperature during nighttime in summer over the Kanto Plain. *Geographical Reports of Tokyo Metropolitan University* **60**: 41-48.

Seto, Y., Cui, L., Kokubu, Y. and Ueno, H. 2024. A survey of the heat environment before and after the growth of urban green spaces in redevelopment areas in Tokyo. *Annual Report of the Tokyo Metropolitan Research Institute for Environmental Protection 2024*: 80-81. (in Japanese)

Takahashi, H. G. 2024. GPC/m: Global precipitation climatology by machine learning; Quasi-global, daily, and one degree spatial resolution. *Zenodo*. https://doi.org/10.5281/zenodo.13743725

Takahashi, K. and Takahashi, H. 2025. Influence of the Tokyo heat island phenomenon on local wind systems at nighttime in summer. *Geographical Reports of Tokyo Metropolitan University* **60**: 49-56.

Yamato, H., Takahashi, H. and Mikami, T. 2025. Factors contributing to high temperature areas on sunny summer days in the central Kanto Plain: An investigation of their relationship with the surface wind system. *Geographical Reports of Tokyo Metropolitan University* **60**: 97-104.

Books

None

Reports

None

Book Reviews

Iijima, Y. 2024. Book review of “Creatures Living in Snow and Ice.” *JpGU Newsletter* **20** (3): 23. (in Japanese)

Miscellaneous Reports

None

Presentations

Abe, T. and Iijima, Y. 2024. Terrain changes in permafrost areas observed by synthetic aperture

radar: Capturing deformations of several centimeters from space. *The 52nd Visualization Information Symposium*, July, Naha. (in Japanese)

Abe, T., Iwahana, G., Amada, T. and Iijima, Y. 2025. Satellite SAR-based ground surface displacement measurement and field survey in Alaska's Poker Flat, *Joint Research Conference on Interdisciplinary Studies Related to Permafrost, Hokkaido University Institute of Low Temperature Science*, February, Sapporo. (in Japanese)

Abe, T., Iwahana, G., Amada, G. and Iijima, Y. 2024. Seasonal surface displacement associated with freeze-thaw cycles in interior Alaska revealed by ALOS-2 InSAR. *American Geophysical Union Fall Meeting 2024*, December, Washington DC, USA. (poster)

Abe, T., Iwahana, G., Amada, G. and Iijima, Y. 2024. Phase changes associated with seasonal ground surface displacement and snow cover in interior Alaska detected by ALOS-2 InSAR. FY2024 The Joint PI Meeting of JAXA Earth Observation Missions, November, Chuo-ku.

Abe, T., Iwahana, G., Amada, G. and Iijima, Y. 2024. Effect of snow cover in interferometric SAR: a case study in permafrost regions. The 142nd Annual Meeting of the Geodetic Society of Japan, October, Kure. (poster, in Japanese)

Abe, T., Iwahana, G., Amada, G. and Iijima, Y. 2024. Seasonal surface displacement and permafrost environmental changes associated with permafrost freezing and thawing in Poker Flat, Alaska. *Summaries of JSSI and JSSE Joint Conference on Snow and Ice Research 2024*: 204, September, Nagaoka. (in Japanese)

Abe, T., Iwahana, G., Amada, G. and Iijima, Y. 2024. Seasonal surface displacement associated with permafrost freezing and thawing in the vicinity of Fairbanks, Alaska, using ALOS-2 interferometric SAR. *Abstracts of the Japan Geoscience Union Meeting 2024*: ACG42-P01, May, Chiba. (in Japanese)

Abe, T., Takaya, K., Kurata, N., Ise, T. and Iijima, Y. 2024. Permafrost degradation between the Lena and Ardan rivers in eastern Siberia revealed by multiple satellite data and analysis. *Abstract of the 77th (Autumn 2024) Conference of the Remote Sensing Society of Japan*: B-11, November, Yamaguchi. (in Japanese)

Abe, T., Takaya, K., Kurata, N., Ise, T. and Iijima, Y. 2024. Permafrost degradation in the Lena-Aldan interfluve, Central Yakutia in eastern Siberia, revealed by multiple satellite datasets and analysis. Norwegian Geophysical Society 1st General Assembly, June, Bergen, Norway.

Aoyama, M., Takahashi, H. G. and Shimizu, S. 2024. Study on downbursts and gust fronts in the Kanto Plain. *Abstracts of the Meteorological Society of Japan 2024 Fall Meeting* **126**: 504, November, Tsukuba. (in Japanese)

Fujinami, H., Kanamori, H. and Takahashi, H. G. 2025. Diurnal variations in precipitation in East Asia during the rainy season. Monsoon Research Workshop, Feburary, Nagoya. (in Japanese)

Fujinami, H., Kanamori, H. and Takahashi, H. G. 2024. Diurnal variations in precipitation in East

Asia during the rainy season. *Abstracts of the Meteorological Society of Japan 2024 Fall Meeting* **126**, November, Tsukuba. (in Japanese)

Gomi, S. and Takahashi, H. 2025. Characteristics of the “Enrei-oroshi” in the Suwa area, Nagano Prefecture, Japan: Based on ground meteorological observations. *Proceedings of the General Meeting of the Association of Japanese Geographers* **107**: 215, March, Setagaya-ku. (in Japanese)

Gomi, S. and Takahashi, H. 2024. Occurrence of the “Enrei-oroshi” in the Suwa area of Nagano Prefecture, Japan. *Abstracts of the Meteorological Society of Japan 2024 Fall Meeting* **126**: 387, November, Tsukuba. (in Japanese)

Hamada, J.-I and Mori, S. 2024. Intraseasonal variations of lightning activities over the south-western coastal region of Sumatra during the YMC campaign observation periods (2015/2017). *Abstracts of the 15th Tropical Meteorology Meeting*, September, Hachioji. (in Japanese)

Harada, K. and Takahashi, H. 2024. Relationship between the movement pattern of the shear line formed along the south coast of Kanto and the formation of the local cyclone. *Abstracts of the 80th Japanese Study Group for Climate Impact and Application*: 4-5, December, Online. (in Japanese)

Iijima, Y. 2024. Exchange with Russian Siberian researchers on Arctic environmental research: Discussion at ISIRA. JCAR General Meeting, December, Tachikawa. (in Japanese)

Iijima, Y. 2024. Current trends in climate change in the Arctic and Northern Eurasia. Meteorology and Hydrology Section Meeting at JSSI and JSSE Joint Conference on Snow and Ice Research 2024, September, Nagaoka. (poster, in Japanese)

Iijima, Y., Abe, T., Fujioka, Y., Saito, H., Boyakova, S. and Fedorov, A. N. 2024. Climate change impacts on permafrost environment and local perception in Eastern Siberia: Implications for adaptation. The 35th International Geographical Congress 2024, August, Dublin, Ireland.

Iijima, Y., Abe, T., Saito, H., Ise, T., Nagai, Y., Oishi, Y., Park, H. and Hiyama, T., 2025. Lake and drained lake basin system under permafrost degradation and its impacts. *Proceedings of the General Meeting of the Association of Japanese Geographers* **107**: 322, March, Setagaya-ku. (in Japanese)

Iijima, Y., Miyazaki, S. and Abe, T. 2024. Detection of different ice conditions in northern Alaska tundra lakes depending on water depth using C-band backscatter characteristics. *Summaries of JSSI and JSSE Joint Conference on Snow and Ice Research 2024: 205*, September, Nagaoka. (in Japanese)

Iijima, Y., Takakura, H., Tabata, S. and Hiyama, T. 2025. The reality and effectiveness of the Japanese side's recent collaborative studies on Russia. Arctic Science Summit Week（ASSW） 2025 and the Fourth International Conference on Arctic Research Planning (ICARP IV) Summit 2025, March, Boulder, USA.

Kamizawa, N., Takahashi, H. G. and Dado, J. M. B. 2024. Long-term changes In summer Asian

monsoon precipitation over the past 60 years. 9th Global Energy and Water Exchanges Open Science Conference, July, Sapporo. (poster)

Kitabayashi, S. and Takahashi, H. G. 2024. Climate response to anthropogenic aerosol forcing over and around the Indian subcontinent. 9th Global Energy and Water Exchanges Open Science Conference: 14-P29, July, Sapporo. (poster)

Matsumoto, G., Takahashi, H. and Kusaka, H. 2024. Evaluation of the heat environment on artificial turf grounds. *Abstracts of the Meteorological Society of Japan 2024 Fall Meeting* **126**: 317, November, Tsukuba. (in Japanese)

Matsumoto, G., Takahashi, H. and Kusaka, H. 2024. Evaluation of the thermal environment on artificial turf. The 4th Asian Conference on Meteorology (ACM) 2024, November, Tsukuba. (poster)

Matsumoto, G., Takahashi, H. and Kusaka, H. 2024. Evaluation of the heat environment on artificial turf and natural turf fields based on ground meteorological observations on sunny summer days. The 3rd Symposium on Urban Extreme Weather and the 20th Symposium on Typhoon Research, September, Uji. (in Japanese)

Matsuzaki, Y. and Takahashi, H. G. 2024. The relationship between cloud formation and rainfall activities associated with cold surge activities around the Philippine in winter. *Abstracts of the Meteorological Society of Japan 2024 Fall Meeting* **126**: 398, November, Tsukuba. (in Japanese)

Matsuzaki, Y. and Takahashi, H. G. 2024. The impact of cold surge over the Philippine Sea for the rainfall activities and its seasonal march. *Abstracts of the Meteorological Society of Japan 2024 Spring Meeting* **125**: 50, May, Bunkyo-ku. (in Japanese)

Miyazaki, S., Iijima, Y. and Abe, T. 2024. Detection of ice cover over northern Alaskan tundra lakes using Sentinel-1 satellite backscatter intensity. *Abstracts of the Japan Geoscience Union Meeting 2024*: STT35-P08, May, Chiba. (in Japanese)

Nodzu, M. I., Matsuyama, H. and Matsumoto, J. 2025. Utilization of the GSMaP data in a climatological analysis on seasonal march of global precipitation. *Abstracts of the FY2024 Joint Workshop on the GPM Satellite and Satellite Observation Simulators*: 22-23, March, Nagoya &Online. (in Japanese)

Nodzu, M. I., Matsuyama, H. and Matsumoto, J. 2025. Analysis of regions with substantial spring and/or autumn precipitation using two global precipitation datasets. *Proceedings of the General Meeting of the Association of Japanese Geographers* **107**: 225, March, Setagaya-ku. https://doi.org/10.14866/ajg.2025s.0_334 (in Japanese)

Nodzu, M. I., Matsuyama, H. and Matsumoto, J. 2024. Evaluation of the GSMaP data over the islands in the Izu Islands using the enhanced gauge observation network. FY2024 The Joint PI Meeting of JAXA Earth Observation Missions, November, Chuo-ku.

Nodzu, M. I., Nomoto, R., Sugiura, T., Sengoku, K. and Matsumoto, J. 2024. Global distribution

of regions with substantial spring precipitation peaks. *Abstracts of the Meteorological Society of Japan 2024 Fall Meeting* **126**: 366, November, Tsukuba. (poster, in Japanese)

Nodzu, M. I., Matsuzaki, Y., Kanno, H., Matsuyama, H. and Matsumoto, J. 2024. Analyses using gauge data from dense networks of observation in small remote islands in the southeastern ocean of Japan for deeper understanding the atmospheric water cycles over the oceans. 9th Global Energy and Water Exchanges Open Science Conference. July, Sapporo. https://www.gewexevents.org/osc-2024-week/tuesday/

Nodzu, M. I., Bui-Thi, K. H., Nguyen-Quang, V., Pham-Thi, T. H., Ngo-Duc, T., Matsumoto, J. and Nguyen-Vinh, T. 2024. Evaluation of the GSMaP data for tropical cyclone precipitation over Vietnam with quantitative precipitation estimation data with ground observation. *Abstracts of the 15th Tropical Meteorology Meeting*: 10, September, Hachioji. (in Japanese)

Nodzu, M. I., Bui-Thi, K. H., Pham-Thi, T. H., Ngo-Duc, T., Matsumoto, J. and Nguyen-Vinh, T. 2024. Assessing offshore rainfall during tropical cyclones approaching Vietnam using satellite-based and surface observations. 9th Global Energy and Water Exchanges Open Science Conference. July, Sapporo. https://www.gewexevents.org/osc-2024-week/tuesday/

Sengoku, K. and Takahashi, H. 2024. Various structures of the cold-air damming in the Kanto Plain based on the surface wind field. The 4th Asian Conference on Meteorology (ACM) 2024, November, Tsukuba. (poster)

Sengoku, K. and Takahashi, H. 2024. Variety of the cold-air damming structure in the Kanto Plain. *Proceedings of the General Meeting of the Association of Japanese Geographers* **106**: 34, September, Nagoya. (in Japanese)

Sengoku, K. and Takahashi, H. 2024. Various structures of cold-air damming in the Kanto Plain. *Abstracts of the 79th Japanese Study Group for Climate Impact and Application*: 20-21, April, Online. (in Japanese)

Sengoku, K., Takahashi, H. and Kusaka, H. 2024. Temporal changes in the structure of cold-air damming in the Kanto Plain. *Abstracts of the Meteorological Society of Japan 2024 Fall Meeting* **126**: 190, November, Tsukuba. (in Japanese)

Sugiura, T. and Takahashi, H. G. 2025. Seasonality of factors contributing to persisting and decaying MJO based on a budget analysis of moist static energy. Habitable Japan FY2024 General Meeting, March, Niigata. (poster, in Japanese)

Sugiura, T. and Takahashi, H. G. 2024. Seasonal differences in the relationship between the MJO and the evolution of the moisture field. *Abstracts of the Meteorological Society of Japan 2024 Fall Meeting* **126**: 395, November, Tsukuba. (in Japanese)

Sugiura, T. and Takahashi, H. G. 2024. Seasonal differences in moisture field evolution associated with MJO propagation. The 10th MJO workshop, October, Nagoya. (in Japanese)

Sugiura, T. and Takahashi, H. G. 2024. Seasonal variations in the dominant effects on the

evolution of the MJO moisture field. *Abstracts of the 15th Tropical Meteorology Meeting*: 2, September, Hachioji. (in Japanese)

Sugiura, T. and Takahashi, H. G. 2024. Seasonality of MJO decay around the Maritime Continent. Otsuchi Symposium, August, Otsuchi. (poster, in Japanese)

Sugiura, T. and Takahashi, H. G. 2024. Overcoming the barrier of Maritime Continent: Background fields affecting MJO propagation and the seasonality of the effects. 9th Global Energy and Water Exchanges Open Science Conference: Session 06 P27, July, Sapporo. (poster)

Takahashi, H. 2024. Climatic features of the Tama region and the recent heat environment associated with global warming. Minamitama Agricultural Development and Extension Project Forum 2024, December, Hino. (invited, in Japanese)

Takahashi, H. G. 2025. A trial product of daily precipitation (GPC/m: Global Precipitation Climatology by Machine Learning). *Abstracts of the FY2024 Joint Workshop on the GPM Satellite and Satellite Observation Simulators*: 11, March, Nagoya.

Takahashi, H. G. 2025. Role of tropical disturbances along the South Asian monsoon trough in the 2022 Pakistan floods and the implications for interannual variability. Monsoon Research Workshop, Feburary, Nagoya. (in Japanese)

Takahashi, H. G. 2024. Precipitation characteristics of the Asian monsoon associated with land-atmosphere coupling processes using high-resolution models and satellite data. 9th Global Energy and Water Exchanges Open Science Conference: 20-P59, July, Sapporo. (poster)

Takahashi, H. G., Sugimoto, S. and Sato, T. 2024. Impact of spring land-surface conditions over the Tibetan Plateau on the early summer Asian monsoon using an AGCM large ensemble. 9th Global Energy and Water Exchanges Open Science Conference, July, Sapporo.

Takaya, K., Kurata, N., Ise, T. and Iijima, Y. 2025. Analysis of Sentinel-2 satellite images using deep learning models: Detection of environmental changes. ArCS II Final Results Presentation Meeting, March, Tachikawa. (in Japanese)

Yamato, H., Takahashi, H. and Mikami, T. 2025. Long-term trend of daily maximum temperatures on sunny summer days in the Tokyo metropolitan area: Using data from the high-density temperature observation network. *Proceedings of the General Meeting of the Association of Japanese Geographer*s **107**: 310, March, Setagaya-ku. (poster, in Japanese)

3. Laboratory of Environmental Geography

1) Staff

Professor: Masayuki KAWAHIGASHI

Soil Ecology, Environmental Chemistry, Material Dynamics in Ecosystems

Professor: Keiichiro YOSHIDA

Vegetation Geography, Biogeography, Relationships between Nature and Human

Assistant Professor: Dahédrey Payandi-Rolland

Biogeochemistry, Hydrology, Microorganisms and Environment Interactions

Project Assistant Professor: Chisato Yamashina

Ecology, Physical Geography, Animal-plant Interaction

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 soil science, vegetation science, forest ecology, landscape design, political ecology, folklore, anthropology and so on. Our research methods are in primary based on field surveys and monitoring observations on soil, vegetation, local climate, land and water, and interview surveys. We also conduct physical and chemical analysis of various environmental samples collected in the field to understand environmental changes. In addition, we use and analyze remote sensing data from satellites and UAV, and develop analysis and investigation methods. Research fields extend from domestic to widely overseas, with an overseas focus on environmental change and human responses in arctic, tropical, subtropical, semi-arid, and desert regions in Europe, Mongolia, Southeast Asia, South America, and the Pacific Islands. Current major themes are as follows.

1. Monitoring of environmental parameters in Japan and overseas to predict short- and long-term environmental changes
2. Impact of human activities on soils and waters in various terrestrial ecosystems
3. Analysis of waste dynamics affecting to natural ecosystems
4. Vegetational shifts on mountainous areas induced by climate change

5. Long-term monitoring of forest dynamics related to topography
6. Conservation and sustainable use of natural environments in semi-arid tropical regions

3) List of Research Activities in FY2024

Peer-reviewed Articles

Bakker, M., Legout, C., Biron, R., Nord, G., Bouteiller, C.L., Boithias, L., Camenen, B., Cotel, S., Coulaud, C., Denis, H., Dramais, G., Droujko, J., Fovet, O., Freche, G., Grippa, M., Coz, J.L., Lucas, A., Martinez, J.-M., Meric, F., Mora, H., Némery, J., Payandi-Rolland, D., Pierrefeu, G., Probst, A., Probst, J.-L., Raclot, D., Ribolzi, O., Rousseau, C., Salvador-Blanes, S., Santini, W., Seve, F., Thollet, F., Vanhooydonck, P. and Zanker, S. 2024. Intercomparison of optical scattering turbidity sensors for a wide range of suspended sediment types and concentrations. *CATENA* **245**: 108307. https://doi.org/10.1016/j.catena.2024.108307

Battulga, B., Munkhbat, D., Matsueda, M., Atarashi-Andoh, M., Bolormaa, O., Koarashi, J. and Kawahigashi, M. 2024. Uncovering the characteristics of plastic-associated biofilm from the inland river system of Mongolia. *Environmental Pollution* **357**: 124427. https://doi.org/10.1016/j.envpol.2024.124427

Joffre, M., Sauvage, S., Macary, F., Bahi, A., Tournebize, J., Probst, A., Probst, J.-L., Payandi-Rolland, D. and Sánchez-Pérez, J.M. 2024. The role of ponds in pesticide dissipation at the catchment scale: The case of the Save agricultural catchment (Southwestern France). *Science of The Total Environment* **934**: 173131. https://doi.org/10.1016/j.scitotenv.2024.173131

Kajiwara, T. and Kawahigashi, M. 2024. Evaluation of growth environment of planting base for coastal disaster prevention forests based on multi-point soil surveys – A case study of coastal disaster prevention forests in Sendai plain, Miyagi prefecture. *Japanese journal of forest environment* **66(2)**: 51-60. (in Japanese) https://doi.org/10.18922/jjfe.66.2_51

Morishita, M., Ise, Y., Hayano, M., Maejima, Y. and Takata, Y. 2025. A binary prediction model to assess the oxidation of Gley Lowland soils in Japan. *Soil Science and Plant Nutrition*: 341-352. https://doi.org/10.1080/00380768.2024.2448453

Munkhbat, D., Battulga, B., Bolormaa, O. and Kawahigashi, M. 2024. Dynamics of plastic debris and its density change between river compartments in the Tuul River system, Mongolia. *Environmental Science and Pollution Research* **31**: 65548-65558. https://doi.org/10.1007/s11356-024-35584-w

Nishikura, S. and Kawahigashi, M. 2024. Effect of particle size distribution of sediments on development of polder soils in Japan. *Journal of Soils and Sediments* **25**: 625-634. https://doi.org/10.1007/s11368-024-03831-9

Other Articles

Kawahigashi, M. 2024. Do you know that we have covered fertile land with concrete? *Bousei*, Aug, 2024, 16-22. Tokai University Press. (in Japanese)

Munkhbat, D., Miyao, Y., Payandi-Rolland, D. and Kawahigashi, M. 2025. Plastic litter distribution along the Japanese coastal areas. *Geographical Reports of Tokyo Metropolitan University* **60**: 113-120.

Takata, Y., Hayano, M., Morishita, M., Takimoto, T., Kobayashi, S., Mochizuki, K., Koga, N. and Hara, Y. 2025. The AI-soil map and Soil-Environmental application programming interface for visualization of fertilization effect of each agricultural field. *Journal of the NARO Research and Development* **20**: 43-52. (in Japanese)

Books

Yoshida, K. (chief ed.) 2024. *Geography* ("Chiri-Sogo", a high school textbook authorized by the Minister of Education, Culture, Sports, Science and Technology). Tokyo: Jikkyo Shuppan Co., Ltd. (in Japanese)

Reports

None

Book Reviews

None

Miscellaneous Reports

None

Presentations

Hama, A., Yoshida, K. and Higa, M. 2024. Utilization of UAV remote sensing for vegetation surveys near the treeline. *Proceedings of the General Meeting of the Association of Japanese Geographers* **106**: 73, September, Nagoya. (in Japanese)
https://doi.org/10.14866/ajg.2024a.0_95

Higa, M. and Yoshida, K. 2024. Vegetation structure and site environment on the Okara-sawa alluvial fan, Mt. Rishiri, Hokkaido, Japan. *The 14th Conference of International Consortium of Landscape and Ecological Engineering*, October, Kitakyushu.

Hosobuchi, A. and Yoshida, K. 2025. Estimation of wind-shaped tree distribution and wind environment in the windswept areas of Osado Mountains using UAV. *Proceedings of the General Meeting of the Association of Japanese Geographers* **107**: 187, March, Setagaya-ku. (in

Japanese) https://doi.org/10.14866/ajg.2025s.0_265

Kajiwara, T. and Kawahigashi, M. 2025. The impact of litter falls quantity and differences in soil materials on soil formation in coastal forest planting bases. *Proceeding of the General Meeting of the Association of Japanese Geographers* **107**: 186, March, Tokyo. (in Japanese)

Kajiwara, T. and Kawahigashi, M. 2024. Consideration of spatial heterogeneity in coastal forest planting bases – A case study of coastal forests in the Sendai Plain. *PEDOLOGIST* **68(2)**: 101, October, Niigata. (in Japanese)

Kajiwara, T. and Kawahigashi, M. 2024. Assessment of the growth environment of coastal forest planting bases using spatial statistical analysis – A case study of coastal forests in the Sendai Plain. *Abstract of Japanese Society of Soil Science and Plant Nutrition* **70**: 82, September, Fukuoka. (in Japanese)

Kawahigashi, M., Takahashi, T. and Kida, K. 2024. Soil developmental process of human transported materials. *Proceedings of The 7th International Soil Classification Congress*: 15, June, Obihiro.

Kida, K., Ono, K., Imaya, A. and Kawahigashi, M. 2024. Soil development stage should be expressed in designation of human transported master horizons. *Proceedings of The 7th International Soil Classification Congress*: 39, June, Obihiro.

Koseki, H., Yoshida, K., Ushiyama, M., Hori, K. and Takahashi, N. 2025. The current state and challenges of disaster prevention education in 'Geography'. *Proceedings of the General Meeting of the Association of Japanese Geographers* **107**: 279, March, Setagaya-ku. (in Japanese) https://doi.org/10.14866/ajg.2025s.0_61

Morishita, M. 2024. Data-intensive approaches to updating and utilizing the soil map in Japan. *2024 AFACI-BSWM-FFTC International Workshop & Symposium on Development of the Soil Atlas of Asia and National Soil Information Systems for Soil Health and Other Applications*, June, Quezon, Phillipines. (invited)

Morishita, M., Fujita, I. and Ishitsuka, N. 2024. Development of spatial agricultural field diagnosis using drone aerial images: Comparison of analysis methods based on ground truth data. *PEDOLOGIST* **68(2)**: 100, October, Niigata (in Japanese).

Morishita, M., Sahara, T. and Sakurai, G. 2024. Comparison of rice yields according to the distribution trends of Lowland soil groups in each municipality. *Abstracts of the Japanese Society of Soil Science and Plant Nutrition* **70**: 89, September, Fukuoka. (in Japanese)

Munkhbat, D. and Kawahigashi, M. 2024. The microplastic dynamics between river surface water and sediment compartments. *MICRO 2024*, September, Spain.

Munkhbat, D. and Kawahigashi, M. 2024. The plastic distribution patterns and fertilizer capsule occurrence along the Niigata and Yamagata prefecture seashores, Japan. *Abstracts of Japan Geoscience Union Meeting 2024*: AHW22-P22, May, Chiba.

Payandi-Rolland, D., Shirokova, L.S., Benezeth, P., Manasypov, R.M. and Pokrovsky, O.S. 2024. Dissolved and colloidal organic carbon and trace metals in thermokarst lakes of the Western Siberia Lowland. *Abstracts of Japan Geoscience Union Meeting* 2024: MIS14-11, May, Chiba.

Payandi-Rolland, D., Yadamsuren, G., Tserendondiv, S., Orgilbold, M. and Kawahigashi, M. 2024. The case of Mongolian peatland, livestock herding and water quality. *The Society of Wetland Scientists (SWS2024)*, November, Taipei, Taiwan.

Sakurai, G. and Morishita, M. 2024. Statistical analysis of the relationship between soil classification and crop productivity across multiple crops. *Abstracts of the Japanese Society of Soil Science and Plant Nutrition* **70**: 89, September, Fukuoka. (in Japanese)

Takahashi, T. and Kawahigashi, M. 2024. Soil formation processes of human-made soils under artificial forests by geostatistical analysis of soil physicochemical properties. *PEDOLOGIST* **68(2)**: 97, October, Niigata. (in Japanese)

Takahashi, T. and Kawahigashi, M. 2024. Spatial variation of soil properties with pedogenesis of the planting base in a landfill site. *Proceedings of The 7th International Soil Classification Congress*: 10, June, Obihiro.

Teshirogi, K., Yoshida, K., Yamashina, C. and Hama, A. 2025. Determinants of the treeline on the northwestern slope of Mt. Fuji: An analysis using high-resolution geographical data. *Proceedings of the General Meeting of the Association of Japanese Geographers* **107**: 183, March, Setagaya-ku. (in Japanese) https://doi.org/10.14866/ajg.2025s.0_104

Tezuka, M. and Kawahigashi, M. 2024. Influences of installation of solar panels on soil. *Abstract of Japanese Society of Soil Science and Plant Nutrition, the Kanto Regional meeting*: 19, November, Kofu. (in Japanese)

Yadamsuren, G., Yamkhin, J., Kawahigashi, M. and Batbayar, N. 2024. Ground temperature regime of isolated permafrost in northeastern Mongolia. *12th International Conference on Permafrost*: 16-20, June, Whitehorse, Canada. (Online)

Yamasaki, Y. 2024. The distribution and natural conditions of tropical montane cloud forest on east-facing slope of Mt. Oma in Kosrae. *Proceedings of the General Meeting of the Association of Japanese Geographers* **106**: 75, September, Nagoya. (in Japanese) https://doi.org/10.14866/ajg.2024a.0_57

Yoshida, H., Yoshida, K., Takyu, M. and Isogai, T. 2025. Altitudinal changes of inter-specific competitions at the forest ecotone. *Proceedings of the General Meeting of the Association of Japanese Geographers* **107**: 188, March, Setagaya-ku. (in Japanese) https://doi.org/10.14866/ajg.2025s.0_117

Yoshida, H., Yoshida, K., Takyu, M. and Isogai, T. 2024. Altitudinal variation in the spatial distribution of tree species at the forest ecotone. *Abstracts for 29th Annual Meeting of the Society of Vegetation Science*: 62, October, Tsukuba. (in Japanese)

Yoshida, K. 2025. Treeline formation and dynamics under climate change from the perspective of dynamic processes of tree species. *Proceedings of the General Meeting of the Association of Japanese Geographers* **107**: 189, March, Setagaya-ku. (in Japanese) https://doi.org/10.14866/ajg.2025s.0_157

Yoshida, K., Hama, A. and Yoshida, H. 2025. Spatial pattern of canopy tree height related to fine-scale topography within the forest ecotone. *Proceedings of the General Meeting of the Association of Japanese Geographers* **107**: 52, March, Setagaya-ku. (in Japanese) https://doi.org/10.14866/ajg.2025s.0_153

Yoshida, K., Hama, A. and Yoshida, H. 2024. Understanding forest structure and tree activity in relation to topography at vegetational ecotone using close-range remote sensing. *Abstracts for 29th Annual Meeting of the Society of Vegetation Science*: 49, October, Tsukuba. (in Japanese)

Yoshida, K., Higa, M., Hama, A. and Wakamatsu, N. 2024. Spatial pattern formation of the forest vegetation mediated by lava flow morphology on Mt. Rishiri, northern Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers* **106**: 74, September, Nagoya. (in Japanese) https://doi.org/10.14866/ajg.2024a.0_85

4. Laboratory of Geographical Information Sciences

1) Staff

Professor: Hiroshi MATSUYAMA

Hydrometeorology, Land Surface−Atmosphere Interaction, Statistical Analysis, Programming

Assistant Professor: Takeki IZUMI

Urban Climatology, Geographical Information Sciences, Numerical Meteorological Modelling

Assistant Professor: Daichi NAKAYAMA

Geographical Information Sciences, Remote Sensing, Computational Geomorphology

Project Researcher: Takanori WATANABE

Urban Climatology, Atmospheric Chemistry, Air Quality Modelling

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 lows 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 FY2024

Peer-reviewed Articles

Editorial Committee of History of Geosciences in Japan, Tokyo Geographical Society (including H. Matsuyama). 2024. Trends of geosciences after the Pacific War in Japan, 1945 to 1965 Part-8. *Journal of Geography (Chigaku Zasshi)* **133**: 219-240. (in Japanese with English abstract) https://doi.org/10.5026/jgeography.133.219

Matsuyama, H. 2024. Causes for the occurrence of severe drought at the Ogasawara (Bonin) Islands during the El Niño event in 2018–2019. *Atmosphere* **15**: 1005. https://doi.org/10.3390/atmos15081005

Sunako, S., Fujita, K., Yamaguchi, S., Inoue, H., Immerzeel, W., Izumi, T. and Kayastha, R. 2024. Quality assessment of multiple UAV-SfM DEMs derived for impact assessment of a co-seismic avalanche in the Himalayas. *Journal of Disaster Research* **19**: 865-873. https://doi.org/10.20965/jdr.2024.p0865

Suzuki, K. and Matsuyama, H. 2024. Is the drying trend in Chichi-jima, Ogasawara (Bonin) Islands continuing in the 21st century based on climate differences around the year 2000? *Journal of Geography (Chigaku Zasshi)* **133**: 533-547. (in Japanese with English abstract) https://doi.org/10.5026/jgeography.133.533

Suzuki, K., Saito, H. and Matsuyama, H. 2024. Is precipitation likely to occur in the Aso region in early spring (first week of March) based on local traditional event known as "*Noyaki*" (controlled burning)? *Journal of Geography (Chigaku Zasshi)* **133**: 129-141. (in Japanese with English abstract) https://doi.org/10.5026/jgeography.133.129

Yoshida, K. T., Nakayama, D. and Matsuyama, H. 2025. Construction of landslide detection model using optical satellite images and DEMs by machine learning: An analysis with decision tree model that trained multiple cases. *Journal of the Remote Sensing Society of Japan* **44**: 317-334. (in Japanese with English abstract) https://doi.org/10.11440/rssj.2023.010

Other Articles

Fujitsuka, Y. 2024. Gentrification in East London and regional geography education. *The New Geography* **72**(1): 72-79. (in Japanese)

Fujitsuka, Y. 2024. Gentrification. In *The encyclopedia of economic geography*, ed. The Japan Association of Economic Geographers, 394-395. Tokyo: Maruzen Publishing. (in Japanese)

Matsuyama, H. 2025. Geostory about water in Japan (1). In *Geostory*, ed. Omori, S. and Miyashita, A., 191-210, Tokyo: The Open University of Japan.

Matsuyama, H. 2025. Geostory about water in Japan (2). In *Geostory*, ed. Omori, S. and Miyashita,

A., 211-227, Tokyo: The Open University of Japan.

Nanri, S. 2025. The current state and challenges of generative AI in secondary education. *Reviews in Higher Education of Hiroshima University* **177**: 61-72. (in Japanese)

Nemoto, Y. 2025. “Thorough use of ICT” An introduction to GIS for historical learning. In *Geography, history, and civics resource ChiReKo 2024, 3rd semester issue*, ed. Teikoku-Shoin, 24-27, Tokyo: Teikoku-Shoin. (in Japanese)

Watanabe, T. I. and Yoshida, K. T. 2025. Automated volcanic glass shard counting system for cryptotephra analysis using open-source hardware and software. *Geographical Reports of Tokyo Metropolitan University* **60**: 121-128.

Books

None

Reports

None

Book Reviews

Matsuyama, H. 2025. Book review (Mizuno, K.: Kyoto University geographer, what did he go to the frontier to find out?). *Geographical Review of Japan* **98A**: 25-26. (in Japanese)

Matsuyama, H. 2025. Book review (Korstanje, J. Machine learning on geographical data using Python). *Chiri* **70**(2): 104. (in Japanese)

Matsuyama, H. 2025. Book review (UTokyo Center for Climate Solutions ed.: Climate change and society: A primer on global warming issues). *Geographical Review of Japan* **98A**: 68-69. (in Japanese)

Matsuyama, H. 2024. Book review (Department of Geography, School of Letters, Senshu University ed. Man and mountains). *Geographical Review of Japan* **97A**: 206-207. (in Japanese)

Matsuyama, H. 2024. Book review (Japanese Association of Groundwater Hydrology ed.: Illustrated spring waters in Japan). *Chiri* **69**(6): 105. (in Japanese)

Matsuyama, H. 2024. Book review (Kondo, J.: Familiar meteorological wonders). *Geographical Review of Japan* **97A**: 252-253. (in Japanese)

Matsuyama. H. 2024. Book review (Ito, T. and Suzuki, Y. eds.: Recommendations for sustainable society: 100 years of three generations of geographers). *Journal of Geography (Chigaku-Zasshi)* **133**: N61-N62. (in Japanese)

Matsuyama, H. 2024. Book review (Maruyama, H.: 500 years of the Amazon –Conflicts over colonization and development–). *Geographical Review of Japan* **97A**: 313-314. (in Japanese)

Matsuyama, H. 2024. Book review (Norton, W. and Walton-Roberts, M., Cultural geography: Environments, landscapes, identities, inequalities. Translated by Yamamoto, S., Kanno, M. Tabayashi, A. and Kikuchi, T.). *Chiri* **69**(10): 104. (in Japanese)

Matsuyama, H. 2024. Book review (Yoshimizu, H.: Lesson design based on geographical lenses). *Geographical Review of Japan* **97A**: 368-369. (in Japanese)

Miscellaneous Reports

Hasegawa, K. 2024. Blessings of nature and human activities in a disaster-prone country. *Chiri* **69**(9): 88-94. (in Japanese)

Matsuyama, H. 2024. A proposal for the nickname of Shinkansen. *Report of Old Boys/Girls of Wandervogel Club in the University of Tokyo in 2025*: 47-49. (in Japanese)

Presentations

Aoyagi, Y. and Saito, H. 2024. Preliminary study on evacuation-difficult areas using network analysis of tsunami evacuation facilities assuming multiple scenarios. *Abstracts of Japan Geoscience Union Meeting 2024:* HDS10-P09, May, Chiba. (in Japanese with English abstract)

Fujitsuka, Y. 2025. Gentrification in Spittlefields, East London. Video Lecture, Osaka Metropolitan University. (in Japanese)
https://www.omu.ac.jp/lifelong-learning/course/movie/index.html

Fujitsuka, Y. 2024. Change of industries and gentrification in Tokyo. *Proceedings of the 2024 Annual Meeting of the Human Geographical Society of Japan*: 74-75, November, Higashi-Osaka. (in Japanese)

Kanno, H. 2025. Consider the climate on islands −Comparison with the Republic of Kiribati−. Open Lecture of Tokyo Metropolitan University, March, Chichi-jima. (in Japanese)

Kanno, H. 2025. The research history of Dr. Yasumasa Kodama. The 20th Yamase Workshop, February, Morioka. (in Japanese)

Matsuyama, H. 2025. Causes for the occurrence of severe drought at the Ogasawara (Bonin) Islands during the El Niño event in 2018–2019. Open Lecture of Tokyo Metropolitan University, March, Chichi-jima. (in Japanese)

Matsuyama, H., Nodzu, M. I. and Matsumoto, J. 2024. Ground evaluation of the GPM observation and the GSMaP data over the Izu and Ogasawara Islands. The Joint PI Meeting of JAXA Earth Observation Missions, FY2024. November, Chuo-ku.
https://pco-prime.com/pi_joint_ws2024/program/pdf/gpm_pmm.pdf

Nakayama, D. 2024. Introduction to the analysis of behavior patterns using scikit-mobility. GIS Day in Tokyo 2024, December, Hachioji. (in Japanese)

Ono, H., Kanno, H. and Noguchi, M. 2024. Water supply projects and water quality changes in

the Republic of Kiribati. *Proceedings of the General Meeting of Japanese Society of Regional and Agricultural Development in Autumn 2024*: 33-34, November, Hirosaki. (in Japanese)

Taima, O. and Saito, H. 2025. Time-series analysis of active landslides in the Southern Japanese Alps using D-InSAR −A case study of the Morokozawa landslide−. *Proceedings of the General Meeting of the Association of Japanese Geographers* **107**: 256, March, Setagaya-ku. (in Japanese) https://doi.org/10.14866/ajg.2025s.0_84

Taima, O. and Saito, H. 2025. Slope movements of the Morokozawa landslide in the Southern Japanese Alps observed by D-InSAR. *The 2024 Annual Meetings of PIXEL, the Joint Usage of Earthquake Research Institute, the University of Tokyo*: Session 3-2, February, Bunkyo-ku. (in Japanese)

Taima, O. and Saito, H. 2024. Preliminary analysis of morphological features of deep-seated landslides −A case study of eastern Kochi Prefecture−. *Proceedings of the General Meeting of the Association of Japanese Geographers* **106**: 187, September, Nagoya. (in Japanese) https://doi.org/10.14866/ajg.2024a.0_68

Takeda, K., Nakayama, D. and Matsuyama, H. 2025. Reproduction of crowding in tourist areas using MAS and study of its solutions: A case study in Enoshima, Fujisawa City, Kanagawa Prefecture. *Proceedings of the General Meeting of the Association of Japanese Geographers* **107**: 108, March, Setagaya-ku. (in Japanese) https://doi.org/10.14866/ajg.2025s.0_215

Tsuchiya, H. and Matsuyama, H. 2024. Extraction of aspect ratio of quasi-stationary band-shaped precipitation systems, named “Senjo-Kousuitai” using directional variogram and the investigation of precipitation threshold. Study Conference of Japan Society of Hydrology and Water Resources in 2024, September, Koto-ku. (in Japanese) https://doi.org/10.11520/jshwr.37.0_21

Tsuchiya, H. and Matsuyama, H. 2024. Extraction of aspect ratio of quasi-stationary band-shaped precipitation systems, named “Senjo-Kousuitai” using directional variogram along with its evaluation. 9th Global Energy and Water Exchanges Open Science Conference, July, Sapporo.

Yamamoto, A. and Saito, H. 2024. Study on the terrestrial environmental factors and spatial differences of red soil runoff using Random Forest. *Abstracts of Annual Meeting of Inter-University Research Activities in Japan (CSIS DAYS 2024)*: A17, November, Kashiwa. (in Japanese)

Yamamoto, A. and Saito, H. 2024. Terrestrial environmental factors of red soil runoff affecting coral reefs and its spatial and seasonal differences. *Abstracts of the Japanese Coral Reef Society, 27th Annual Meetings*: P-65, November, Miyazaki. (in Japanese with English abstract).

Yamamoto, A. and Saito, H. 2024. Terrestrial environmental factors of red soil runoff and its spatial differences in Ishigaki and Iriomote Islands. *Proceedings of the General Meeting of the Association of Japanese Geographers* **106**: 63, September, Nagoya. (in Japanese)

https://doi.org/10.14866/ajg.2024a.0_144

Yamamoto, A. and Saito, H. 2024. Terrestrial environmental factors of red soil runoff causing coral reef decline and its regional differences −A case study of Ishigaki and Iriomote Islands−. *Abstracts of Japan Geoscience Union Meeting 2024:* HGG02-06, May, Chiba. (in Japanese with English abstract)

Yoshida, K. T., Nakayama, D. and Matsuyama, H. 2025. Flooded area detection based on C-band SAR data using machine learning model. *Proceedings of the General Meeting of the Association of Japanese Geographers* **107**: 196, March, Setagaya-ku. (in Japanese)
https://doi.org/10.14866/ajg.2025s.0_235

Yoshida, K. T., Nakayama, D. and Matsuyama, H. 2025. Extraction of flooded areas based on C-band SAR satellite data using machine learning model. 27th CEReS Symposium on Environmental Remote Sensing, February, Chiba. (in Japanese)

5. Laboratory of Urban and Human Geography

1) Staff

Associate Professor : Akihiro TAKINAMI
Regional Studies, Representation Studies

Associate Professor : Masahiro TANAKA
Social Geography, Cartography, Geographic Information Science

Associate Professor : Naoto YABE
Quantitative Geography, Urban Geography

Assistant Professor : Hiroyuki TSUBOMOTO
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
    1) Location of economic activities
    2) Human migration, commodity flow, and spatial diffusion of information
    3) Mental map and spatial behavior
    4) Time geography
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. Representations of places and regions
    1) Spatial discourse analysis
    2) Cultural geography
    3) Landscape studies
5. Geographical thought
    1) History of modern geography
    2) Bibliometric research of geographical studies
    3) Cartography

3) List of Research Activities in FY2024

Peer-reviewed Articles

Tsubomoto, H. 2024. A study of working and residential places in suburban Tokyo, focusing on a survey of residential in a large new town. *Annals of the Japan Association of Economic Geographers* **70**: 46-57. (in Japanese with English abstract)

U, Y. 2024. Comparison of inbound package tours to Japan in terms of travel agents' management strategies: Countryside visitation from Taiwan and mainland China to Toyama Prefecture, Japan. *E-journal GEO* **19**: 165-177. (in Japanese with English abstract) https://doi.org/10.4157/ejgeo.19.165

Yabe, N. 2024. Mapmaking process reading from local distortions in historical maps: A geographically weighted bidimensional regression analysis of a Japanese castle map. *ISPRS International Journal of Geo-Information* **13**: 124. https://doi.org/10.3390/ijgi13040124

Yanagida, Y. 2024. Analysis of regional differences in academic ability using geographically weighted regression: Case study of Saitama prefecture. *E-journal GEO* **19**: 192-207. https://doi.org/10.4157/ejgeo.19.192

Other Articles

Koizumi, R. 2025. Analysis of working and living in Tokyo in 2024 from a geographical view. *The annual report of kanto society of urbanology* **26** (printing, in Japanese)

Koizumi, R. 2024. A new urban style spreading in the castle town of Odawara. In *Daigaku-teki Kanagawa-guide*, ed. Hirayama, N., 255-266. Kyoto: Showado. (in Japanese)

Koizumi, R. 2024. The Chicago school and the concentric circle model. In *Encyclopedia of economic geography*, ed. The Japan Association of Economic Geographers, 382-383. Tokyo: Maruzen publishing. (in Japanese)

Koizumi, R. 2024. Juutaku-sugoroku. In *Encyclopedia of economic geography*, ed. The Japan Association of Economic Geographers, 390-391. Tokyo: Maruzen publishing. (in Japanese)

Takinami, A. 2025. How newspaper discourse and place characteristics interact: Evidence from World Cup articles of Le Monde. *Geographical Reports of Tokyo Metropolitan University* **60**: 105-112.

U, Y. 2025. Evolution of tourism destination network: the case of Chinese package tours to Japan from 2006 to 2016. *Geographical Reports of Tokyo Metropolitan University* **60**: 129-138.

Wakabayashi, Y. 2024. Geographic Information Systems. In *Encyclopedia of economic geography.* ed. The Japan Association of Economic Geographers, 582-583. Tokyo: Maruzen publishing. (in Japanese)

Yabe, N. 2024. Lehman shock. In Encyclopedia of economic geography, ed. The Japan Association of Economic Geographers, 180-181. Tokyo: Maruzen publishing. (in Japanese)

Books

Ash, J., Kitchin, R. and Leszczynski, A. eds. Translated by Tanaka, M., Futamura, T., Kirimura, T. and Koizumi, R. 2025. *Digital geographies: Transforming spaces and transformation of geography*. Tokyo: Akashi-Shoten. (in Japanese)

Reports

None

Book Reviews

Wakabayashi, Y. 2025. Book review（Samson, M.: Invisible lines）. *Chiri* **70**(1): 105. (in Japanese)

Wakabayashi, Y. 2025. Book review（Kojima, K.: History of the Ainu place names）. *Chiri* **70**(2): 102. (in Japanese)

Wakabayashi, Y. 2025. Book review（Cheshire, J. and Uberti, O.: Atlas of the invisible）. *Chiri* **70**(3): 104. (in Japanese)

Wakabayashi, Y. 2025. Book review（Kirimura, T. Uesugi, M., Yonejima, M., Ai, H. and Suzuki, S.: GIS and geospatial information from the basics）. *Map* **63**(1): 25. (in Japanese)

Wakabayashi, Y. 2024. Book review（Deutscher, G.: Through the language glass）. *Chiri* **69**(5): 106 (in Japanese)

Wakabayashi, Y. 2024. Book review（Ogiwara, K. : Introduction to data thinking）. *Chiri* **69**(6):103. (in Japanese)

Wakabayashi, Y. 2024. Book review（Ruggeri, C.: Atlas of modern world cities）. *Chiri* **69**(7):105. (in Japanese)

Wakabayashi, Y. 2024. Book review（Araki, M.: Geographical indications and the future of

regional brands in Japan). *Chiri* **69**(9): 103. (in Japanese)

Wakabayashi, Y. 2024. Book review (NHK news crew: Redevelopment in an era of declining population: “sinking towns” and "floating towns"). *Chiri* **69**(10): 102. (in Japanese)

Wakabayashi, Y. 2024. Book review (Moreno, D.: 15-minute city). *Chiri* **69**(11): 102. (in Japanese)

Wakabayashi, Y. 2024. Book review (Yoshida, Y. and Kageyama, H. eds: Understanding gender and urban space from the geographical perspective). *Chiri* **69**(12): 105. (in Japanese)

Miscellaneous Reports

Wakabayashi, Y. 2024. Introducing new book review members: Three books recommended. *Chiri* **69**(4): 121-122. (in Japanese)

Wakabayashi, Y. 2024. Introduction of the subcommittee of map literacy. *Map* **63**(4): 29. (in Japanese).

Yamamoto, S. 2025. Development of a map viewer specialized in overlapping layers. *The Journal of Survey* **75**(1): 60-61.

Presentations

Arahori, T. 2025. Utilization of pollution hazard maps and geographical information in chemical contaminations. – An examples of information distribution on Per- and polyfluoroalkyl substances (PFASs) –. *Proceedings of the General Meeting of the Association of Japanese Geographers* **107**: 278, March, Setagaya-ku. (in Japanese)
https://doi.org/10.14866/ajg.2025s.0_321

Arahori, T. 2024. Health risk assessment using health indexes: Analysis of geographical disease burden using Disability-Adjusted Life Year (DALY) and disease mapping. *Abstracts of Japan Geoscience Union Meeting 2024*: HTT17-02, May, Chiba. (invited, in Japanese)

Arahori, T. 2024. Dissemination of risk information in organo-fluorine compounds (PFAS) – A discussion on spatial thinking and decision-making support with hazard maps –. *Proceedings of the General Meeting of the Society of Risk Analysis* **37**: 15-17, November, Shizuoka. (in Japanese)

Hirama, K., Yabe, N., Yokota, K., Otsuka, Y., Furuhashi, K. and Watanabe, K. 2024. Spatial patterns of human movement in relation to crime occurrences: Focusing on cases of street crimes in Sendai urban area. The 33rd Annual Conference of the Geographic Information System Association, October, Uji. (poster, in Japanese)

Koizumi, R. 2024. Analysis of working and living in Tokyo in 2024 from geographical view. International Seminar on Annual Meeting of Kanto Society of Urbanology, May, Bunkyo-ku. (invited, in Japanese)

Kuriki, R. 2025. Effectiveness and problems of urban-type bike-share as a new public transportation system in the suburbs of metropolitan areas. National Geography Major Graduation Article Conference 2024, March, Online. (in Japanese)

Kuriki, R. 2025. Effectiveness and problems of urban-type bike-share as a new public transportation system in the suburbs of metropolitan areas. *Proceedings of the General Meeting of the Association of Japanese Geographers* **107**: 280, March, Setagaya-ku. (in Japanese) https://doi.org/10.14866/ajg.2025s.0_59

Kuriki, R. 2024. Locational characteristics of bike-sharing stations in the center of Sapporo city. The Hokkaido Geographical Society Spring Academic Conference 2024, June, Online. (in Japanese)

Kuriyama, E., Yamamoto, M., Okamoto, K., Oguchi, T. Ohnishi, K., Saito, A., Tsuruoka, K. Yamauchi, H. and Wakabayashi, Y. 2024**.** Exploring complementary methods for the Time Series Topographic Map Viewer "Konjyaku Map". *Papers and Proceedings of the Annual Conference of the Japan Cartographers Association 2024*, August, Chiyoda-ku. (in Japanese) https://doi.org/10.11212/jjca.62.Supplement_7

Matsumoto, A., Hata, T. D., Nagasawa, N. Tanaka, M. and Yokoyama, Y. 2024. Place attachment in a tower block neighborhood: Does “Tawaman” dissolve the diversity of the community and place identity? The 28th International Association People-Environment Studies Conference, July, Barcelona, Spain.

Matsumoto, A., Onuma, W., Hata, T. D., Tanaka, M., Nagasawa, N. and Yokoyama, Y. 2024. Place attachment in suburban redevelopment area (1): Interview with residents of Musashikosugi, Kawasaki City, Kanagawa Prefecture. 2024 Annual Conference of the Architectural Institute of Japan Kanto Branch, August, Chiyoda-ku. (in Japanese)

Mori, T. 2024. Background to the abolition of the Yubari branch line of the Sekisho Line and changes in accessibility in Yubari City. The Hokkaido Geographical Society Spring Academic Conference 2024, June, Online. (in Japanese)

Onuma, W., Matsumoto, A., Hata, T. D., Tanaka, M., Nagasawa, N. and Yokoyama, Y. 2024. Place attachment in suburban redevelopment area (2): Questionnaire survey of residents of Musashikosugi, Kawasaki City, Kanagawa Prefecture. 2024 Annual Conference of the Architectural Institute of Japan Kanto Branch, August, Chiyoda-ku. (in Japanese)

Saito, A., Ishizaki, M., Okada, K., Tsubomoto, H. and Noma, M. 2025. ABW and SOF: How can facilities contribute to work styles and management? Facility Management Forum 2025, February, Online. (in Japanese).

Tanaka, M. 2024. Are human geographers cartographers?: Usage of maps in Japanese human geography papers. 35th International Geographical Congress 2024, August, Dublin, Ireland.

Tanaka, M. 2024. Promotion of barrier-free environment through participatory GIS: A case study of tactile paving mapping project in Kita-ku, Tokyo. *Abstracts of Japan Geoscience Union Meeting 2024*, May, Chiba.

Tsubomoto, H. and Kuwabara, Y. 2025. Housing supply and settlement trends in Tama City, Tokyo western suburb since 2000. *Proceedings of the General Meeting of the Association of Japanese Geographers* **107**: 284, March, Setagaya-ku. (in Japanese)
https://doi.org/10.14866/ajg.2025s.0_243

Wakabayashi, Y. 2024. Rethinking map literacy in the age of ubiquitous mapping. The First Asian Cartographic Conference (AsiaCarto 2024), December, Hong Kong.

Wakabayashi, Y. 2024. Diversification of the suburbs of Tokyo amid population decline and aging: Focusing on the problem of housing vacancy and its countermeasures. 35th International Geographical Congress 2024, August, Dublin, Ireland.

Yabe, N. 2025. An experiment to map the movement of nutrients through the import and export of foods. The 4th Public Seminar of Organic Material Circulation Project in Research Institute for Humanity and Nature, March, Online. (in Japanese)

Yabe, N. 2025. Considering the food desert with WebGIS. The 1st Chiri Sougou Online Seminar 2025, March, Online. (in Japanese)

Yabe, N. and Wakabayashi, Y. 2025. Changes in residential preference during the COVID-19 pandemic in Japan: Results of multilevel analysis. *Proceedings of the General Meeting of the Association of Japanese Geographers* **107**: 269, March, Setagaya-ku. (in Japanese)
https://doi.org/10.14866/ajg.2025s.0_25

Yagai, H. and Wakabayashi, Y. 2024. Time-geographic approach to evaluating public transportation service levels in the Sanriku region of Japan. The 5th International Time-Geography Conference, August, Toyama.