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1. Laboratory of Quaternary Geology and Geomorphology

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

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

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

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

1. Plate tectonics: The Quaternary tectonics including the historical process of seismic and volcanic activity are our special interest along the plate collision zone.
2. Tephra study: Tephra means a generic term on the volcanic ejecta excluding lava-flow and related explosive deposits. We are trying to identify the source volcano, age of the eruption and the distribution of widespread tephras that have covered the Japanese Islands through the Pliocene, Pleistocene and Holocene.
3. Paleo-environment and natural hazards: On the basis of geomorphological and sedimentological studies, paleo-environmental change and natural hazards history are reconstructed.
4. Chronological studies: We are improving chronological efficiency of tephro-stratigraphy, radio-isotope activity, historical records, and so on through studies on these objectives.
5. Modeling: For understanding correlation between intra-surface processes (volcanism, faulting etc.) and land formation, studies on computer simulation are carried out.
3) List of Research Activities in FY2013

**Peer-reviewed Articles**


Shirai, M. and Hayashizaki, R. 2013 Transport process of sand grains from fluvial to deep marine regions estimated by luminescence of feldspar: Example from the Kumano area, central Japan. *Island Arc* **22**: 242-257.


**Other Articles**


Ueki, T. 2013. What is the “Yobake” as a Japan's top 100 geological site?, Excursion of the scenic


**Books**


**Reports**


**Book Reviews**

Miscellaneous Reports

Presentations
Yamazaki, H. 2013. Active fault and seismic hazards. Special Lecture of Open University of Tokyo Metropolitan University, June, Shinjuku. (in Japanese)


Yamazaki, H. 2013. On the Tachikawa fault—Commentary about the active fault and earthquake—. Lecture for the Senior Class of the Koganei-shi East Community Center. October, Koganei. (in Japanese)


Yamazaki, H. 2013. Lecture on the active fault: Issue of the active fault in the atomic energy. Special Lecture of Nuclear Professional School, Graduate School of the University of Tokyo, October, Ibaraki. (in Japanese)


Suzuki, T. 2013. Knowing earthquakes and volcanoes in Japanese islands. Open University of Tokyo Metropolitan University, April and May, Chiyoda. (in Japanese)


Suzuki, T. 2013. Search for the seven Izu volcanic islands; Eruptive histories and their comparison of Hachijo-jima to Izu-oshima. 65th Lecture of Citizen University of Hachijo-jima, September, Hachijo-jima. (in Japanese)

Suzuki, T. 2013. Landforms, ground and natural disasters in Tama: Possibility of earthquake occurred
below cities by Tachikawa active fault and eruption of Fuji volcanoes. Seminar for Tama Nikkei Konwakai, September, Hachioji. (in Japanese)


Shirai, M., Omura, A., Ito, T. and Niwa, Y. 2013. Mass accumulation rate of hemipelagite at the Western Kumano Trough during the last ca.100 years. *Programme and Abstracts, Japan Association for Quaternary Research 43*: 8-9, August, Hirosaki. (in Japanese)


Niwa, Y., Shirai, M., Omura, A., Utsugawa, T., Watanabe, M. and Hayashizaki, R. 2013. Influence of porosity on electrical conductivity of stirred sediments gained from stable salinity environment:
Examples of hemipelagite at the Kumano Trough and lacustrine at the Sakuma dam lake. *Programme and Abstracts, Japan Association for Quaternary Research* 43: 120-121, August, Hirosaki. (in Japanese)


Oishi, M., Miwa, T., Geshi, N. and Shinohara, H. 2013. Making process of volcanic glass shards in the tephra, based on the analysis of grain component and texture: A case study of 2011 eruption of
Shinmoedake, Kirishima Volcano, Japan. *Programme and Abstracts, Japan Association for Quaternary Research* **43**: 4-5, August, Hirosaki. (in Japanese)


Ando, K. 2013. Extrapolation of whether the Kushibiki fault is the back thrust of the Fukaya fault or not –Using a maximum fault slip rate–. *Programme and Abstracts, The Seismological Society of Japan, Fall Meeting, 2013*: 112, October, Yokohama. (in Japanese)


2. Laboratory of Climatology

1) Staff

Jun MATSUMOTO Professor / D. Sc
Monsoon Climatology, Environmental Climatology

Hideo TAKAHASHI Professor / D.Sc.
Urban Climatology, Climatic Change, Rainfall Climatology

Hiroshi TAKAHASHI Assistant Professor / PhD (D.Sc.)
Climate System Study, Cloud-Precipitation Climatology, Regional Climate Modeling

2) Overview of Research Activities

Our laboratory investigates climate system on the Earth in various temporal-spatial scales. In particular, we focus on climate changes due both to natural and anthropogenic causes, for example, processes of heat island and heavy rainfall events over and around urban regions, and influences of land-use changes and deforestation on regional climates. We also investigate diurnal, intra-seasonal, and inter-annual variabilities and long-term changes of climate, in particular, rainfall activities in the Asian monsoon region, and influences of global warming on regional climates (future projection).

We apply three major methods, observation (monitoring), data-analysis of various global and regional datasets, and numerical modeling for investigating above-mentioned topics.

1. Climate changes and climate variability over Japan and around the world
2. Variability and seasonal changes of regional climate over Asian monsoon region
3. Observational study on formation processes of urban heat island, detailed structure of urban boundary layer, and elucidation of urban effects on short duration intense rainfall
4. Impacts of land-surface conditions and changes on cloud and precipitation activities, in particular, in the tropics
5. Reconstruction of past climate during the historical period in Japan and in East Asia
3) List of Research Activities in FY2013

**Peer-reviewed Articles**


Kiguchi, M., Miyazaki S., Kim, W., Kanae, S., Oki, T., Matsumoto, J. and Satomura, T. 2013. The heat flux from the land surface during the pre-monsoon season in the inland region of Thailand. *Climate and Land Surface Changes in Hydrology, IAHS Publications* **359**: 239-245.


**Other Articles**


Books
None

Reports
None

Book Reviews
None

Miscellaneous Reports

Presentations

Matsumoto, J. 2013. MAHASRI. Joint Meeting of the World Climate Research Programme Global Energy and Water Exchanges Project Hydroclimatology and Data and Assessments Panels, September, Rio de Janeiro, Brazil.


Endo, N. and Matsumoto, J. 2013. MJO controls on heavy precipitation events in central Vietnam during boreal autumn. IGU 2013 Kyoto Regional Conference, August, Kyoto.


Endo, N. and Matsumoto, J. 2014. Data rescue of meteorological data in French Indochina—Interannual variation of fall rainfall in Central Vietnam—. Proceedings of the General Meeting of


Region, March, Bali, Indonesia.


Zaiki, M., Akasaka, I., Kubota, H. and Matsumoto, J. 2013. Data-rescue of meteorological...
observation records in Southeast and East Asia from the 19th century to the first half of the 20th century. The 232nd Symposium of the Research Institute for Sustainable Humanosphere, Utilization of Long-term Data in Earth Environmental Sciences and Inter-disciplinary Research — Data Mining and e-infrastructure —, August, Tokyo. (in Japanese)


Hamada, J.-I., Mori, S., Wu, P., Hattori, M., Yamanaka, M. D., Matsumoto, J., Haryoko, U., Lestari,
S. and Syamsudin, F. 2013. Interannual variations of heavy rainfall over Jakarta metropolitan area, Indonesia. The 7th MU/EAR symposium, September, Uji. (in Japanese)


Nguyen-Le, D. and Matsumoto, J. 2013. Long-term trends and variations of rainy seasons in


Makita, H. and Matsumoto, J. 2013. Caspian Sea Level Changes in Recent Years. IGU 2013 Kyoto Regional Conference, August, Kyoto.


Yokoyama, H., Ando, H., Seto, Y., Hiroi, K., Nakayama, M., Kusunoki, K., Maki, M., Saitoh, Y. and


Ninomiya, D. and Takahashi, H.G. 2013. Long-term change of the seasonal variability of the winter


3. Laboratory of Environmental Geography

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

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

2) Overview of Research Activities

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

Recent research subjects are as follows;

1. Development of survey methodology for evaluation of soils in urban area
2. Characterization of sclerotium grains and their function in forest soil ecosystem
3. Geoarcheological study on ancient water environment of Kharga, Western Desert, Egypt
4. Environmental dynamics study of watershed area of SWIP dam in central Luzon, Philippines
5. Environmental risk evaluation of heavy metals around urban and mining area of Mongolia
6. Vegetation and land recovery after forest fire in taiga of Siberia perma frost area
7. Influence of land reclamation in Amur River Basin on dynamics of bio-elements
8. Effective application of plant residues for acid soil rehabilitation to enhance agricultural productivity
9. Influence of land use and land cover change in sub-urban areas on water quality in soils and water resources
10. Soil carbon sequestration from the view point of soil parent materials
3) List of Research Activities in FY2013

Peer-reviewed Articles


Other Articles


Books


Reports


Book Reviews
None

Miscellaneous Reports


Presentations


Bolormaa, O., Watanabe, M., Dorj, D., Yondonjamts, J. and Erdenetuya, O. 2013. Heavy metal distribution in surface soils around mining areas of Mongolia. 7th International Conference of the Urban Soils Working Group, SUITMA, of the International Union of Soil Sciences, September, Torun, Poland.


Tashiro, T., Morishima, W. and Watanabe, M. 2013. Reconstruction of paleoenvironment during last 4,000 years in central plain of Luzon, the Philippines. IGU 2013 Kyoto Regional Conference, August, Kyoto.

Tashiro, T., Watanabe, M., Collado, M.B. and Morishima, W. 2014. Relation between paleovegetation and paleoclimate by analysis of collected core sample in central plain of Luzon,


Kawahigashi, M. 2013. Fate of pollutants from urban ecosystems. 2013 TMU-NUM Education Exchange Program, October, Ulaanbaatar, Mongolia.


Kida, K. and Kawahigashi, M. 2013 Major element distribution in soils under asphalt pavement. Taiwan and Japan Joint Research Workshop, August, Pingtung, Taiwan.


4. Laboratory of Geographical Information Sciences

1) Staff

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

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

Daichi NAKAYAMA  Assistant Professor / PhD (D.Sc.)
Geographical Information Sciences, Remote Sensing, Computational Geomorphology

2) Overview of Research Activities

This laboratory is going to study the natural environment as a whole which is composed of geomorphology, climate, hydrology, vegetation, and so on. Concretely, deductive approach and inductive approach are combined for conducting studies. The former approach is going to explain results from causes by physical 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
3) List of Research Activities in FY2013

**Peer-reviewed Articles**


**Other Articles**


**Books**

None

**Reports**


**Book Reviews**


**Miscellaneous Reports**

The Japan Science Society (Matsuyama, H. is one of the supervisors) 2013. Cubic Earth—If the Earth were cubic—. The Japan Science Society, http://www.jss.or.jp/fukyu/cubicearth/.

Matsuyama, H. 2013. Brazil—Difficult for certified weather forecasters to predict its weather properly. 16th June, 2013, Nikkan Sports.


Matsuyama, H. and Izumi, T. 2014. Field work in physical geography—(4) How to make wonderful


Izumi, T. and Matsuyama, H. 2013. Field work in physical geography—(2) We would like to give up at the field if necessary—. *Chiri* **58**(12): 92-97. (in Japanese)


**Presentations**

Matsuyama, H. 2013. Global warming and urbanization affect springwater temperatures in Tokyo, Japan. The 8th International Symposium on Digital Earth 2013, August, Kuching, Malaysia.


influenced catchment: Case study on the upper and remote forested tropical watershed of Peninsular Malaysia. The 8th International Symposium on Digital Earth 2013, August, Kuching, Malaysia.


Nakayama, D., Hiramatsu, Y. and Matsuyama, H. 2013. The evaluation of the settle slope collapse hazard area considering the distribution of the population and buildings. IGU 2013 Kyoto Regional Conference, August, Kyoto.


Aoyama, M. 2013. Liquefaction damage in inland area caused by the 2011 off the Pacific coast of Tohoku Earthquake. IGU 2013 Kyoto Regional Conference, August, Kyoto.


Aoyama, M. 2014. Liquefaction occurrence ratio in the inland area caused by the 2011 off the Pacific coast of Tohoku Earthquake. Proceedings of the General Meeting of the Association of


Tanaka, D., Saito, H. and Matsuyama, H. 2013. Analyses of heavy rainfall events such as heavy rainfall of northern part of Kyushu in 2012 with the use of the snake line—Application of probability value of 50 years—. The 5th GIS-Landslide Workshop, November, Tsukuba. (in Japanese)
5 Laboratory of Urban and Human Geography

1) Staff

Yoshio SUGIURA    Professor / PhD (D.Sc.)
Human Geography

Yoshiki WAKABAYASHI    Professor / PhD (D.Sc.)
Urban Geography, Behavioral Geography, Geographical Information Sciences

Akihiro TAKINAMI    Associate Professor / PhD (D.Lit.)
Cultural Geography, Tourism Study, Francophone Studies

Hiroyuki TSUBOMOTO    Assistant Professor / PhD (D.Sc.)
Urban Geography, Office Study

Michiko HARAYAMA    Assistant Professor
Bibliometrics

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 FY2013

**Peer-reviewed Articles**


**Other Articles**


Co., Ltd. (In Japanese)


**Books**


**Reports**

Takinami, A. ed. 2014. *How to produce, process, sell and advertise the branded rice in Koriyama of Fukushima prefecture*. Hachioji: Laboratory of Urban and Human Geography, Tokyo Metropolitan University. (in Japanese)

**Book Reviews**

None

**Miscellaneous Reports**


**Presentations**


Kukimoto, M. and Wakabayashi, Y. 2013. Provision of web-based childcare maps by local
governments and the role of local NPOs. IGU 2013 Kyoto Regional Conference, August, Kyoto.
Kukimoto, M. and Wakabayashi, Y. 2013. Provision of web-based childcare support maps by local
governments in Japan. International Cartographic Conference (ICC) 2013, August, Dresden,
Germany.
Proceedings of the General Meeting of the Association of Japanese Geographers 2013 Autumn
Meeting 84: 47, September, Fukushima. (in Japanese)
Tsubomoto, H. 2013. Office location as workspace for white-collar worker in central Tokyo. The
30th Symposium of the Japanese Society of Geographical Science, October, Hiroshima. (in
Japanese)
Tsubomoto, H. 2014. Recent restructuring business space of central Tokyo—A case study of office
construction activities by the Knowledge-based industry after the 1990s—. The General Meeting
of the Global Economy and Management Geography Study Group of the Association of Japanese
Geographers 2014 Spring Meeting, March, Setagaya.
Ikeda, Y., Tsubomoto, H. and Wakabayashi, Y. 2013. Typology and location of convenience stores in
terms of sales mix in Minato Ward, Tokyo. Proceedings of the 2013 Annual Meeting of the
Abstract of the 8th Japan-Korea-China Joint Conference on Geography: 111-112, July, Fukuoka.
Koizumi, R. 2013. The changes of the spatial patterns of occupational structure in Tokyo
metropolitan area, 1985-2005: An extended shift-share analysis. IGU 2013 Kyoto Regional
Conference, August, Kyoto.
Komaki, N., Satake, Y., Kanmura, H, and Koizumi, R. 2014. Achievements and problems of
intelligence sharing in the conduct of an international conference: Through experiments of the
Japan-Korea-China Joint conference on geography. Proceedings of the General Meeting of the
Abe, C. and Wakabayashi, Y. 2014. The actual condition and problems of the child care support
center use in Kahoku City, Ishikawa Prefecture. Proceedings of the General Meeting of the
Tanaka, M. 2013. A collaborative effort to verbal guidance for visually impaired people as
volunteered geographic information. IGU 2013 Kyoto Regional Conference, August, Kyoto.
Fujikawa, S. 2014. FC Ryukyu's regional development of application for J League membership.
February Meeting of the Kanto Branch of Japan Association of Economic Geographers, February, Tokyo. (in Japanese)