

Department of Earth System Science

Research Area : Dynamic Geology

(URL : <http://earth.desc.okayama-u.ac.jp/en/research/research.html>)

Shigeyuki SUZUKI, Professor
Daisuke NAKAMURA, Associate Professor
Toshio NOZAKA, Associate Professor
Junji YAMAKAWA, Assistant Professor

Research Themes :

- 》 Structural development of island arc [Suzuki]
- 》 Deciphering of evolutionary history of orogenic belts from the petrological study of ultrahigh-pressure metamorphic rocks [Nakamura]
- 》 Petrology of oceanic lithosphere and ophiolites [Nozaka]
- 》 Estimation of the spatial statistical distributions of the chemical and physical properties of minerals by geostatistics [Yamakawa]

Representative Publication :

- [Walia, M., Knittel, U., Suzuki, S., Chung, S-L., Pena, R.E., Yang, T.F.](#), No Paleozoic metamorphics in Palawan (the Philippines)? Evidence from single grain U-Pb dating of detrital zircons., *Journal of Asian Earth Sciences* 52, 134-145. (2012)
- [Miyazaki, T., Nakamura, D., Tamura, A., Svojtka, M., Arai, S. & Hirajima, T.](#), Evidence for partial melting of eclogite from the Moldanubian Zone of the Bohemian Massif, Czech Republic., *J. Mineral. Petrol. Sci.* 111, 405-419 (2016)
- [Nozaka, T.](#), Metasomatic hydration of the Oeyama forearc peridotites: Tectonic implications., *Lithos* 184-187, 346-360. (2014)
- [Kawase, M., Yamamoto, K., Takagi, K., Yasuda, R., Ogawa, M., Hatsuda, Y., Kawanishi, S., Hirofumi, Y., Myotoku, M., Urashima, Y., Nagai, K., Ikeda, K., Konishi, H., Yamakawa, J., Tani, M.](#), Non-Destructive Evaluation Method of Pharmaceutical Tablet by Terahertz-Time-Domain Spectroscopy: Application to Sound-Alike Medicines. *J. Infrared Milli Terahz Waves*. DOI 10.1007/s10762-013-9994-2(2013)

Research Area : Physics of the Earth and Planetary Interior

(URL: https://www.gnst.okayama-u.ac.jp/en/about_us/stafflist_elms_en/)

Hiroshi TAKENAKA, Professor
Satoru URAKAWA, Professor
Takashi KUMAMOTO, Professor
Nobuhisa MATTA, Professor
Koji UNO, Professor

Research Themes:

- 》 Modeling of seismic waves and study on strong motion [Takenaka]
- 》 Evolution of the Earth and planetary interior [Urakawa]
- 》 Mineral physics at high-pressure and temperature [Urakawa]
- 》 Tectonics of the Asian continent from paleomagnetism [Uno]
- 》 Neotectonics and Tectonic geomorphology [Matta]
- 》 Seismic hazard assessment of active faults in Japan [Kumamoto]

Representative Publication :

- [H. Takenaka, M. Komatsu, G. Toyokuni, T. Nakamura, and T. Okamoto](#), Quasi-Cartesian finite-difference computation of seismic wave propagation for a three-dimensional sub-global model, *Earth, Planets and Space*, 69:67, doi:10.1186/s40623-017-0651-1 (2017).
- [Y. Shimoyama, H. Terasaki, S. Urakawa, Y. Takubo, S. Kuwabara, S. Kishimoto, T. Watanuki, A. Machida, Y. Katayama, T. Kond](#), Thermoelastic properties of liquid Fe-C revealed by sound velocity and density measurements at high pressure., *Journal of Geophysical Research*, 121, 7984-7995 (2016)
- [K. Uno, K. Furukawa, and Y. Hatanaka](#), An analysis of apparent polar wander path for southwest Japan suggests no relative movement with respect to Eurasia during the Cretaceous., *Phys. Earth Planet. Inter.* 267, pp. 19-30 (2017).
- [N. Matta, Y. Ota, WS Chen, Y. Nishikawa, M. Ando, LH Chung](#), Finding of Probable Tsunami Boulders on Jiupeng Coast in Southeastern Taiwan. *Terrestrial, Atmospheric and Oceanic Sciences*, 24, pp.159-163. (2013).
- [T. Kumamoto, K. Oonishi, Y. Futagami and M. W. Stirling](#), Examination of the correlation between tectonic landforms and shallow subsurface structural datasets for the estimation of seismic source faults. *Earthquake, Tsunami and Nuclear Risk-Beyond the Fukushima* Springer, 3-30. (2016).

Research Area : Geochemistry and Cosmochemistry

(URL: <http://earth.desc.okayama-u.ac.jp/>)

Katsuyuki YAMASHITA, Associate Professor

Mayuri INOUE, Associate Professor

Osamu OKANO, Assistant Professor

Research Themes:

- 》 Time-scale on meteorite parent body and planet formation [Yamashita]
- 》 Isotopic study on origin and evolution of solar system materials [Yamashita]
- 》 Reconstruction of paleo-climate and paleo-environments using coral skeletons [Inoue]
- 》 Study of biomineralization of marine biogenic carbonates [Inoue]
- 》 Chemical differentiation processes in the formation of chondrite parental bodies [Okano]
- 》 Geochemical characteristics and petrogenesis of Cenozoic igneous rocks in Southwest Japan [Okano]

Representative Publication :

- Onoue, T, Zonneveld, J-P, Orchard, M. J., Yamashita, M., Yamashita, K., Sato, H. and Kusaka, S., Paleoenvironmental changes across the Carnian/Norian boundary in the Black Bear Ridge section, British Columbia, Canada, *Palaeogeography, Palaeoclimatology, Palaeoecology* 441, 721–733 (2015).
- Inoue, M., Gussone, N., Koga, Y., Iwase, A., Suzuki, A., Sakai, K. and Kawahata, H. Controlling factors of Ca isotope fractionation in scleractinian corals evaluated by temperature, pH and light controlled culture experiments. *Geochim. Cosmochim. Acta* 167, 80–92 (2015).
- Inoue, M., Ishikawa, D., Miyaji, T., Yamazaki, A., Suzuki, A., Yamano, H., Kawahata, H. and Watanabe T. Evaluation of Mn and Fe in coral skeletons (*Porites* spp.) as proxies for sediment loading and reconstruction of 50 yrs of land use on Ishigaki Island, Japan. *Coral Reefs* 33, 363–373 (2014).
- Yokoyama, T., Misawa, K., Okano, O., Shih, C.-Y. Nyquist, L.E., Simon, J.I., Tappa, M.J. and Yoneda, S. Rb–Sr isotopic systematics of alkali-rich fragments in the Yamato-74442 LL-chondritic breccias., *Earth and Planetary Science Letters* 366, 38–48(2013).
- Yamashita, K., Maruyama, S, Yamakawa, A. and Nakamura, E., ^{53}Mn - ^{53}Cr chronometry of CB chondrite: evidence for uniform distribution of ^{53}Mn in the early solar system, *Astrophysical Journal*, 723, 20–24 (2010).

Research Area : Atmospheric and Hydrospheric Sciences

(URL: https://www.gnst.okayama-u.ac.jp/en/about_us/stafflist_elms_en/)

Toru NOZAWA, Professor

Teruo AOKI, Professor

Kuranoshin KATO, Professor

George L. HASHIMOTO, Associate Professor

Research Themes:

- 》 Mechanism Analysis on Climate Change and Variability [Nozawa]
- 》 Climate Modeling and Global Warming Projection [Nozawa]
- 》 Radiation process in cryosphere [Aoki]
- 》 Satellite Remote Sensing of Snow/ice surface [Aoki]
- 》 Multi-scale Weather and Climate System, Related Extreme Events and Climate Variability in East Asia [Kato]
- 》 Interdisciplinary Research on Climate, its Variability and Cultural Understanding Education [Kato]
- 》 Evolution of Planetary Surface Environment [Hashimoto]
- 》 Planetary Climatology [Hashimoto]

Representative Publication :

- H. Kawase, T. Takemura, and T. Nozawa, Impact of carbonaceous aerosols on precipitation in tropical Africa during the austral summer in the twentieth century, *J. Geophys. Res.*, **116**, D18116, doi:10.1029/2011JD015933 (2011).
- M. Abe, T. Nozawa, T. Ogura, and K. Takata, Effect of retreating sea ice on Arctic cloud cover in simulated recent global warming, *Atmos. Chem. Phys.*, **16**, pp.14343–14356, <https://doi.org/10.5194/acp-16-14343-2016> (2016).
- T. Aoki, K. Kuchiki, M. Niwano, Y. Kodama, M. Hosaka, and T. Tanaka, Physically based snow albedo model for calculating broadband albedos and the solar heating profile in snowpack for general circulation models, *J. Geophys. Res.*, **116**, D11114, doi:10.1029/2010JD015507 (2011).
- T. Aoki, S. Matoba, S. Yamaguchi, T. Tanikawa, M. Niwano, K. Kuchiki, K. Adachi, J. Uetake, H. Motoyama, and M. Hori, Light-absorbing snow impurity concentrations measured on northwest Greenland ice sheet in 2011 and 2012, *Bull. Glaciol. Res.*, **32**, pp.21–31, doi:10.5331/bgr.32.21 (2014).
- K. Otani, and K. Kato, Decrease in Baiu precipitation and heavy rainfall days in late June of the 2000s in northwestern Kyushu, western Japan, *SOLA*, **11**, pp.10–13, doi:10.2151/sola.2015-003 (2015).
- H. Kato, and K. Kato, Climate and Music -Spring and songs in Japan and Germany- (in Japanese), *Kyodo Shuppan* (2014).
- G. L. Hashimoto, M. Roos-Serote, S. Sugita, M. S. Gilmore, L. W. Kamp, R. W. Carlson, and K. H. Baines, Felsic highland crust on Venus suggested by Galileo Near-Infrared Mapping Spectrometer data, *J. Geophys. Res.*, **113**, E00B24, doi:10.1029/2008JE003134 (2008).
- K. Hamano, H. Kawahara, Y. Abe, M. Onishi, G. L. Hashimoto, Lifetime and spectral evolution of a magma ocean with a steam atmosphere: its detectability by future direct imaging, *Astrophys. J.*, **806**, article id. 216, 17pp (2015).