

List of Dissertation Abstract (Environment and Natural Sciences Earth and Ecology Course)

Name	Supervisor	Title	Abstract
Tokiyu OKIMURA	Akira MORI	Functional and taxonomic perspectives for understanding the underlying mechanisms of native and alien plant distributions	We surveyed the distribution of alien and native plant species and their functional traits on the roadside vegetation. We established 362 quadrats, and measured vegetation, environmental and spatial factors, and also collected functional traits data. Our results indicate that a particular set of alien species, which have high dispersal ability, distribute in a wide range, but range expansion of other alien species is still limited to areas adjacent to the human settlement. In addition, alien species have relatively superior dispersal and competitive abilities to native species. Functional traits could help management to select alien species, which are specifically of concern, to achieve prevention and termination of alien species.
Michiru KASAHARA	Akira MORI	Elucidating the important drivers of fungal community structures in leaf litter	Explaining the factors that structure the variations in biodiversity have been one of the main themes in ecology. While studies on this theme for plants have been frequently carried out, those for fungi are less conducted. In forest soils, they play an essential role in decomposition of plant litter. The main objective of this study was to disentangle the effects of spatial variation, environmental variables, and host tree species on fungal decomposer communities. Our study suggests that fungal decomposer community in leaf litter are structured by biotic/abiotic factors such as host tree species and environmental variables rather than geographical distances.
Misa KOHASE	Ryuichi MAJIMA	Stratigraphy and sedimentary environments at the type locality (Yokohama City) of the Lower Pleistocene Nojima Formation of the Kazusa Group	The Nojima Formation of the Kazusa Group was first proposed in the strata exposed at the Nojima Park located at Yokohama City and originally designated as tuffaceous sandstones. As a result of our detail geologic survey, the Nojima of the park consists of an upward fining sequence, as muddy sandstones, sandy mudstones, and mudstones in ascending order. This sequence is estimated to be 100 - 300 m in paleo-bathymetry based on molluscan fossils, and to be near the upper boundary of the Olduvai Subchronozone (1.78 Ma) in age based on microfossil and paleomagnetic stratigraphies.

Yuta KOBAYASHI	Akira MORI	The potential role of tree diversity in reducing shallow landslide risk	Recently, interest in utilizing ecosystems for disaster risk reduction (DRR) has increased, even though there remains considerable uncertainty regarding the role of ecosystems. To explore the desired state of an ecosystem for DRR, we compared the severity of shallow landslides with tree species richness. We found that the predictability of the model, which evaluated relationships between landslide volume and environmental variables in watersheds throughout the Japanese Archipelago, increased with tree species richness. This finding suggests that biodiversity is likely associated with shallow landslide risk reduction, emphasizing a possible reduction of spatial and temporal uncertainty in the roles of woody vegetation.
Yuki SATO	Masahiro ISHIKAWA	Sintering experiment of K-feldspar aggregates of nano-sized powders	Microcline is a K-feldspar with composition $KAlSi_3O_8$ , and is one of the main constituent minerals in the earth's crust. Microcline nanoscale powders were prepared by zirconia bead mill, and sintering behavior, grain growth and crystalline. Microcline aggregates are obtained after sintering at 1173-1353K and atmospheric pressure. The effects of sintering temperature and time on the grain growth kinetics of microcline aggregates slightly examined. Crystalline of microcline grains decreases significantly by intense milling with zirconia bead mill, but increases slightly by sintering.
Asuka SEKI	Ryuichi MAJIMA	Shell microstructures and growth line analysis of a chemoautotrophic bivalve <i>Lucinoma spectabilis</i> (Yokoyama) from the Lower Pleistocene Koshiha Formation of the Kazusa Group, Yokohama City, centred Japan	The shell microstructures and growth line patterns within the radial sections of chemoautotrophic bivalve <i>Lucinoma spectabilis</i> are studied based on the three fossil specimens collected from the ancient cold-seep site of the Lower Pleistocene Koshiha Formation exposed at Yokohama City. In the outer layer of the largest specimen, its late stage has a different shell microstructure from those of the early and middle stages. The accretionary patterns of growth lines and the distributions of the surface ornamentations such as concentration ribs evidently suggest that growth rates of the largest specimen are larger than that of the small and intermediate ones.
Masakazu NAKANO	Taizo NAKAMORI	Preference of <i>Morulina alata</i> (Collembola: Neanuridae) for fungal sporocarps and effects of gut passage on spores	Some soil invertebrates such as springtails feed on fungal sporocarps, which produce spores for reproduction. Soil invertebrates are thus likely to carry spores to fungal substrates in soil. The possibility of endozoochory has been studied little for springtail species without molar plates. In Japan, <i>Morulina alata</i> (Neanuridae), which lack molar plates, has been observed in sporocarps. This study aimed to elucidate the possibility of endozoochory by <i>M. alata</i> . Our results suggest that spore dispersal of some fungus via ingestion by <i>M. alata</i> is possible.

Yuki MIYAKE	Ryuichi MAJAM	Paleoenvironmental analysis of the Lower Pleistocene Nojima Formation (northern Miura Peninsula) based on the planktonic foraminiferal assemblages	Planktonic foraminifer assemblages of the Olduvai subchronozone are analyzed based on 36 samples in the core obtained from the Lower Pleistocene Nojima Formation. I identify 11 genera and 33 species and recognize MIS 74 to MIS 64 based on the fluctuations of the abundance ratios of several characteristic species. I calculate the first and last occurrence of <i>Globorotalia truncatulinoides</i> and <i>Neogloboquadrina asanoi</i> in 1.916Ma and 1.828Ma, respectively. I determine the depositional age of the type locality (Nojima Park) of the Nojima Formation based on the planktonic foraminifers, paleomagnetic record, and calcareous nannofossils within 1.828 Ma to 1.67 Ma.
Kaori MOTOKI	Ryoji WANI	Effect of fixation methods on expression profile in metatranscriptome analysis of epibiotic bacteria	To understand the metabolic activity of epibiotic bacteria on the ventral surface of the galatheid squat lobster <i>Shinkaia crosnieri</i> inhabiting hydrothermal vents of Okinawa Trough, the metatranscriptomes of the symbionts were analyzed from specimens fixed in situ and after recovery on-board. Results of the analyses revealed a difference in expression profile between the two fixation methods, most likely due to responses to the abrupt environmental changes such as depletion of energy sources for chemosynthesis and increase in ammonia post-sampling seen in the on-board fixed samples. Furthermore, major energy metabolisms and carbon fixation pathways of the three main groups of epibionts were shown through mRNA analyses.
Megumi WADA	Tomohiko KIKUCHI	Spatio-temporal variation of Dinoflagellate assemblages in the north-western part of Sagami Bay, Japan	In the western part of Sagami Bay, several dominant dinoflagellates such as <i>Ceratium</i> spp. and <i>Noctiluca scintillans</i> are dominant as representative HAB species. Besides these species, occurrence mechanism of HAB have not well been analyzed. This study focused of the HAB mechanism of the species which have not been reported as non-HAB species in the field. Optimum water temperature, salinity, nutrients uptake characteristics, amount prey, etc. of non-reported HAB species are cleared to differ from the field condition. and uploaded to our school's website.
Xiaodai XU	Akiko SAKAI	Please fill in here the English title	<i>Trachycarpus fortunei</i> is an exotic temperate palm introduced to Japan as ornament plants and began to show significant invasive expansion phenomena generally from 1970s. Ameliorated temperature caused by climate change and forest fragmentation generated by urbanization have been assumed to have connection with the expansion. I investigated fragmented forests in Kanagawa, to verify differences in palm's physiological characteristics, especially the reproduction size and growth rate, along a gradient from urban to mountain area. Additionally, two species distribution models and landscape index were applied to analyze the effects of climate change and forest fragmentation on the invasive expansion, respectively, and tried to compare these effects of two drivers.