[JJ] Evening Poster | B (Biogeosciences) | B-BG Biogeosciences & Geosphere-Biosphere Interactions

[B-BG03]Microbial ecology in earth and planetary sciences

convener:Michinari Sunamura(University of Tokyo Dept. of Earth &Planetary Science), Natsuko Hamamura(Kyushu University), Keisuke Koba(京都大学生態学研究センター, 共同), Yuki Morono(Kochi Institute for Core Sample Research, Japan Agency for Marine-Earth Science and Technology)
Wed. May 23, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)
Microbes have exerted the great influences on earth environments through the history of earth. Microbial ecology is a study of interaction between microbes and surrounding environments. Research target of Microbial ecology covers most of environments on the earth and planet, e.g. soil, subsurface, subseafloor, ocean, river, lake, air, space, volcano, fault and earthquake, minerals, and more. In this session , we aim to exchange informations of microbial distribution, population dynamics, function, effect on material cycles between microbial ecologist and earth&planetary scientist. We hope effective discussion from interdisciplinary approaches in this session.

[BBG03-P05]Is the hadal trench biosphere formed within the Indian Ocean Transform Fault?

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Hadal zone with water depth exceeding 6000 m exists in the trench of the western Pacific Ocean. An unique hadal trench biosphere, which is different from in the general deep sea area, has been found in the trench. There has been proposed constraints defining this microbial community structure; 1. the increase in pressure due to water depth, 2. the formation of an unique water mass structure due to the topography , slope collapse, sediment coverage degree, and deep ocean bottom current. On the mid-oceanic axis with low- and medium-spreading rates, there is a transform fault forming a deep-water valley that is deeper than the surrounding deep sea floor. In this study, we investigated a water mass structure and a microbial community structure in Marie Celeste in the central Indian ridge, which can be contrasted with the hadal trench biosphere. We conducted CTD-caroucel casts at 2 points in the fault and 1 point outside the fault. Water temperature, salinity, pressure have been continuously changing inside and outside the trench, and no characteristic water mass formation was found in the fault. In addition, the microbial cell density decreased with the increasing water depth, and the diversity of prokaryote increased with water depth. On the other hand, the microbial community structure of the seawater above the seafloor in the transform fault showed a high similarity to the microbial community structure of 2000-3500-m deep seawater layer, which is shallower than the immediate upper layer. These results are similar to the general deep sea area. We concluded that the hadal trench biosphere is not formed only by the geomorphic elements of a canyon.