Oral | Symbol M (Multidisciplinary and Interdisciplinary) | M-IS Intersection

[M-IS25_28AM2] Evolution of the Pelagic Realm

Convener:*Atsushi Matsuoka(Department of Geology, Faculty of Science, Niigata University), Toshiyuki Kurihara(Graduate School of Science and Technology, Niigata University), Yasuhiro Kato(Department of Systems Innovation, Graduate School of Engineering, University of Tokyo), Tetsuji Onoue(Earth and Environmental Sciences, Faculty of Science, Kagoshima University), Katsunori Kimoto(Japan Agency for Marine-Earth Science and Technology), Tatsuo Nozaki(Institute for Research on Earth Evolution, Japan Agency for Marine-Earth Science and Technology), Hayato Ueda(Faculty of Education, Hirosaki University), Kenta Kobayashi(Department of Geology, Faculty of Science, Niigata University), Takashi Hasegawa(Division of Global Environmental Science and Engineering, Graduate School of Natural Science and Technology, Kanazawa University), Chair:Atsushi Matsuoka(Department of Geology, Faculty of Science, Niigata University)

Mon. Apr 28, 2014 11:00 AM - 12:45 PM 411 (4F)

This session focuses on the evolution of ecosystem in the pelagic realms, including discussions on all aspects of pelagic biota covering biostratigraphy, biochronology, evolution, and biogeography, which are important to the reconstruction of the spatio-temporal framework in the pelagic realm. Reconstructions of plate configuration through time are included in the scope of this session. Biological, geochemical, sedimentological approaches to the pelagic environments are welcomed.

11:30 AM - 11:45 AM

Stratigraphy and formation process of Late Cretaceous pelagic sediments in the Wadi Hilti area of the Oman Ophiolite

3-min talk in an oral session

*Yumi AGUI1, Kousuke HARA1, Toshiyuki KURIHARA1 (1.Graduate School of Science and Technology, Niigata University)

Keywords: Oman Ophiolite, pelagic sediments

The Oman Ophiolite consists of mantle peridotites, gabbros, a sheeted dyke complex, and basaltic lavas. The extrusive rocks have been subdivided into three volcanic units: the V1 lava with the N-MORB signature, the V2 lava formed by intra-oceanic volcanism, and the V3 lava generated by intra-plate seamount magmatism (Ernewein et al., 1988). Pelagic sediments commonly occur at the boundaries between these volcanic units. Thick sediments upon the V1 lava in the Wadi Jizzi area are subdivided into the Suhaylah and Zabyat formations; the former is composed of metalliferous and fine-grained pelagic sediments of Cenomanian-Santonian? age, and the latter consists of conglomerate derived mainly from a collapsed oceanic crust during the thrusting stage (Fleet and Robertson, 1980; Tippit et al., 1981; Woodcock and Robertson, 1982; Robertson and Woodcock, 1983). The V2 and V3 lavas are widely distributed in the Wadi Hilti area, about 25 km west of Sohar, northern Oman Mountains. Recently, the eruption and emplacement mechanism of the V3 lava has been studied by Umino (2012). Pelagic sediments, about 50 m thick at a maximum, overlie the V2 lava and are covered by the V3 lava. The sediments also occur on and within the V3 lava. Based on our field examination for several sections in the Wadi Hilti area, the stratigraphy of the pelagic sediments on the V2 lava consists of metalliferous sediments, micritic limestone, red mudstone, conglomerate, V3 lava, and siliceous mudstone, in ascending order. We first found conglomerate containing gravels of lavas and pelagic cherts from this area. From fine-grained pelagic sediments on the V2 and V3 lavas, we obtained *Rhopalosyringium scissum*
O'Dogherty and *Hemicryptocapsa polyhedra* Dumitrica that can be assigned to a Turonian age (O'Dogherty, 1994). In addition, *Rhopalosyringium petilum* (Foreman) and *Guttacapsa biacta* (Squinabol) were recovered from a block of siliceous mudstone probably within the conglomerate. According to O'Dogherty (1994), the co-occurrence of these species is restricted to be middle to late Cenomanian. Based on these age assignments, the fine-grained pelagic sediments on the V2 lava (metalliferous sediments, micritic limestone, and red mudstone) in the Wadi Hilti area can be correlated with the Turonian part of the Suhaylah Formation in the Wadi Jizzi area. This reveals that the activity of the V2 lava was terminated in Turonian. The conglomerate and the siliceous mudstone on the V3 lava are correlated with the Zabyat Formation, indicating that the eruption of the V3 lava occurred in Turonian. These age constraints for basaltic extrusive rocks imply that the tectonic setting from subduction to oceanic-thrusting changed rapidly in a short period of Turonian time.