[JJ] Evening Poster | M (Multidisciplinary and Interdisciplinary) | M-ZZ Others

[M-ZZ41]Marine manganese deposits: from basic to applied sciences

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Marine manganese deposits include nodules and crusts of massive iron-manganese oxide aggregates associated with useful metals. The deposits are known as potential resources of cobalt, copper, nickel, rare earth elements, platinum, and tellurium. However, the controlling parameters on the regional and temporal variations in chemical and mineralogical composition have not been clarified yet. In this session, various factors in the growth of manganese oxides, enrichment and circulation of metals, paleoenvironment, and formation age of manganese deposits will be discussed from viewpoints of geology, mineralogy, paleocean sciences, geochemistry, microbiology, and sea floor engineering.

[MZZ41-P05]Geochemical features of ferromanganese nodules in the Minamitorishima EEZ

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Ferromanganese (Fe-Mn) nodules are spherical solid materials mainly composed of Fe-Mn-(oxyhydr)oxides, which are widely distributed on the deep seafloor around the world. Because they are enriched in critical metals such as Co and Ni, they are expected as a potential resource for these elements.

In 2010, a dense field of Fe-Mn nodules was discovered for the first time on a small seamount approximately 300 km east of Minamitorishima Island, in the Japanese Exclusive Economic Zone (EEZ) [1]. Collected Fe-Mn samples are structurally and compositionally similar to Fe-Mn crusts in the Minamitorishima EEZ, suggesting that they originated from hydrogenetic precipitation of Fe-Mn-(oxyhydr)oxides [1].

In 2016, to investigate the distribution and variation in chemical composition of Fe-Mn nodules in the Minamitorishima EEZ, the cruise YK16-01 of R/V *Yokosuka* was conducted. During this cruise, we discovered several areas where Fe-Mn nodules were densely distributed in the eastern to southeastern part of the Minamitorishima EEZ. We collected Fe-Mn nodule samples by seven dives of the Shinkai 6500 in the eastern to southern parts of the Minamitorishima EEZ.

In this study, major and trace element analyses of collected samples have been performed to understand geochemical features, and the origin of Fe-Mn nodules in the Minamitorishima EEZ. In the presentation, we will discuss the cause of the variation in geochemical features and its implication for the growth process of the Fe-Mn nodules.

[1] Machida, S. et al. (2016) "Geology and geochemistry of ferromanganese nodules in the Japanese Exclusive Economic Zone around Minamitorishima Island." Geochemical Journal 50, 539-555.