

Submarine geology of Sumisu and Torishima seamounts, Izu arc – preliminary results of KY03-10 cruise (3)

Hiroshi Shukuno[1]; Jiro Naka[1]; Yukari Kido[1]; Hiroshi Kawabata[2]; Kenichiro Tani[1]; Yoshihiko Tamura[1]; Richard S. Fiske[3]; Sharon Allen[4]; Jiro Naka KY03-10 Shipboard Scientists[5]

[1] IFREE, JAMSTEC; [2] JAMSTEC; [3] Smithsonian Institution; [4] Univ. Tasmania; [5] -

Izu arc consists of several Quaternary volcanoes and submarine caldera volcanoes. Sumisu caldera and Torishima caldera, located in the southern Izu Islands, have diameters of about 9 km and are accompanied by several volcanic knolls. Geological observations of Sumisu and Torishima seamounts are carried out with deep tow camera systems in KY03-10 cruise. We here report the preliminary geological features in addition to the geological and geophysical results of previous cruises (NT02-10 and KR02-16).

Sumisu seamount is characterized by a well-developed caldera form with a diameter of 9 km. The lower part of the caldera wall is composed mainly of dacitic and basaltic lavas, and the upper part is made up of volcanic breccias and bedded pumice. Both basalt-basaltic andesite and dacite-rhyolite are predominant eruptive products. The outer knolls of Sumisu seamount, such as Dai-ichi Sumisu knoll and Dai-ni Sumisu knolls, are mantled by large volumes of silicic pumice, most of which is huge angular blocks more than 1 m in diameter.

Torishima seamount indicates an unclear caldera form with a diameter of about 8 km and a central cone with about 5 km size. Torishima Island is located on the southern caldera rim. The caldera wall of the Torishima caldera is composed mainly of scoriaceous volcanoclastics, which are massive or crudely bedded deposits. The central cone consist of light colored volcanogenic fine sediments in the lower part and scoriaceous volcanoclastics in the upper part. We did not observe lava flows, dikes, sills or any other kind of igneous rocks.