

Submarine caldera activity on South Hachijyo Bank, Izu-Bonin Arc.

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South Hachijyo Bank locates between Hachijojima Is. and Aogashima Is., which consists recent volcanic front of Izu-Ogasawara Arc. Multi narrow bathymetrical surveys, submersible dives and ROV dives were carried out around this bank. Caldera like depression structure is observed at the top of this Bank. This caldera is about 20km (E-W direction) \times 13km (N-S direction) in diameter. A small central cone with 100m in height and 1000m in diameter is observed in the central part of caldera floor. Same size of small cone estimated dome activity distribute in and around this caldera. Many rhyolitic pumice, basalt, and plutonic rocks were sampled from this bank. Rhyolitic pumice were divided into three types such as 1) N-type pumice with highly vesicle and less density, 2) M-type pumice with rare vesicle and high density, and 3) I-type pumice as intermediate character between N- and M-type pumice. Some types of skeletal crystal, which indicate subaqueous volcanic rock, are observed in these basaltic rocks. The caldera floor is composed of unconsolidated sediments and sorted N-type pumice fragments. Giant pumice block and altered M-type pumice are distributed from flank to upper part of the central cone. Small size of graven structure was observed on the top of this central cone. A small knoll composed by rhyolite is located at NE part of caldera. This knoll is divided into 3 geological units in ascending order as follows 1) massive rhyolite volcanic body, 2) rhyolitic hyaloclastite, and 3) rhyolite volcanic fragment. These character show subaqueous acidic dome activity. There are some stratified seismic layer estimated to volcanic sediment and dome intrusions were formed around this caldera by seismic survey. These geological features show that the caldera was formed mainly submarine dome formation and associated fragmentation, with occasionally small-scale explosion was also estimated on this caldera. These characters are estimated as an early stage of submarine caldera formation.