

The 1986 submarine eruption and topography of the Fukutokuoka-no-ba at the southern part of the Izu-Ogasawara Arc, Japan

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The Fukutokuoka-no-ba volcano is located on the southern part of Izu-Ogasawara arc, approximately 1300km south of Tokyo. It is an active submarine volcano, which is characterized by large caldera with several central knolls and a subordinated volcanic island on caldera rim, Minami-Io Sima Island.

New multibeam bathymetry, and geomagnetic structure, reveals an oval caldera with a width of 10km and a length of 16km in NNW to SSE, which is filled by volcanic material from several central knolls. These central knolls extend in NNW direction, ranging in diameter from 100m to 2500m. The most active volcano, Fukutokuoka-no-ba in narrow sense, is a central knoll of 2.5km in diameter with a flat plane of 20m in depth.

During the past hundred year three large eruptions was observed in the knoll, Fukutokuoka-no-ba, 5km NNE of the Minami-Io-Sima Island. In these instances new islands was formed by these eruptions. In addition to these eruptions discolored sea surface was observed over 30 times since 1950. The last eruption, occurred on January 1986, is phreatomagmatic eruption with cock's tail jets and trachyandesitic pumice erupted. The last eruption formed a small new island above sea surface about 10m high with 600m long and 200m wide. This island was disappeared rapidly due to wave erosion within three months. Before this eruption it was observed that the volcano had the flat summit with 40m in depth in 1977, 1979 and 1982(Oosaka, 1991), after this eruption the summit quickly deepened in 14m until 1989, and then 20m in 2000.