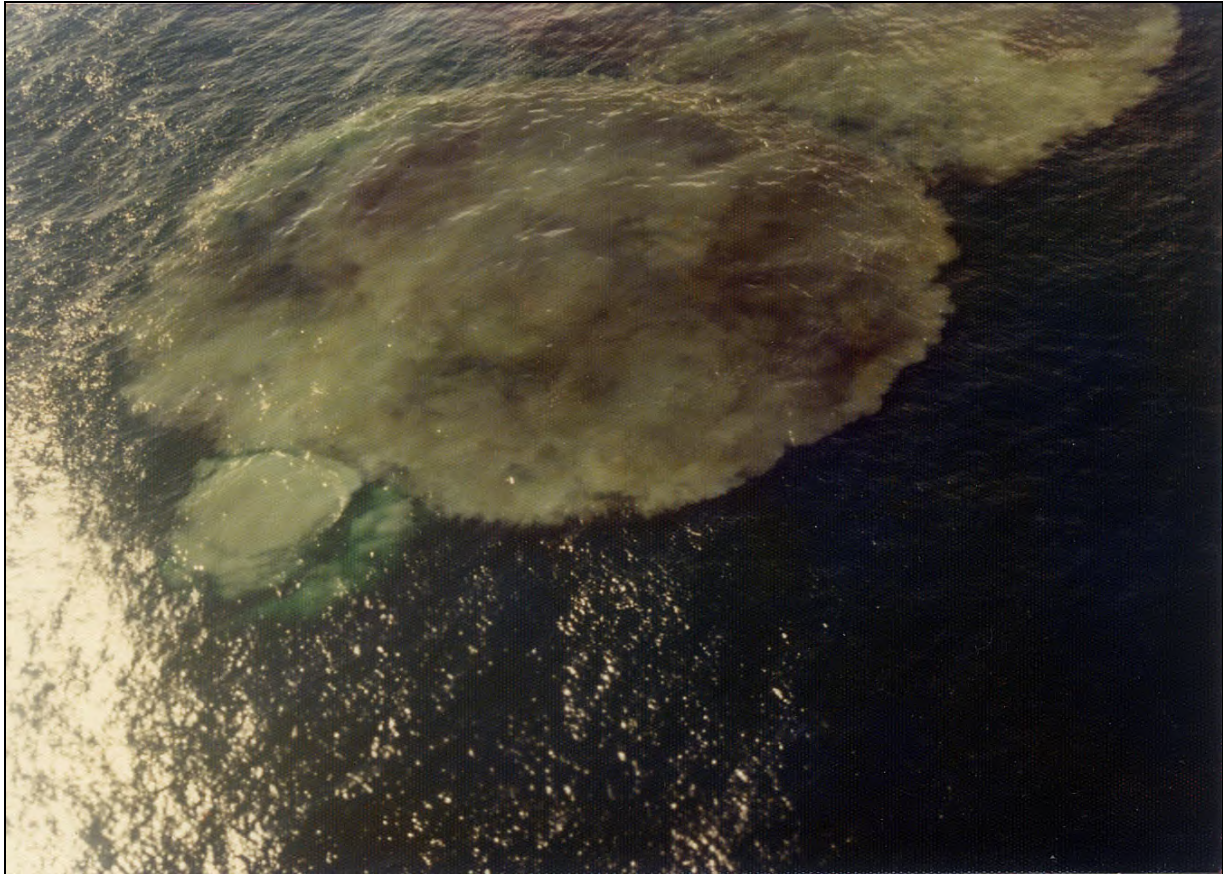
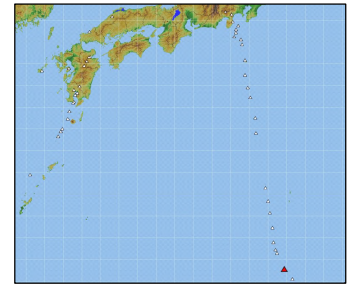


## 77. Minami-Hiyoshi Seamount

Latitude: 23°30.0' N, Longitude: 141°56.1' E, Depth: -107 m (Shallowest Point at Summit)



Discolored Water on January 10, 1977. Courtesy of the Maritime Safety Agency.

### Summary

The Minami-Hiyoshi Seamount is a submarine volcano located at the northern tip of the Mariana arc, approximately 1,330 km south of Tokyo and approximately 150 km south-southeast of Itoya. Its volcanic edifice is roughly conical, and a crater 1 km in diameter is located at its summit. It has a central cone which rises to 99 m below the sea surface. It also has a chain of parasitic crater running from north-northeast to south-southwest (Onodera et al., 2002). The SiO<sub>2</sub> content of the rock of Minami-Hiyoshi Seamount is 50.7 to 62.1 % by weight.

No records exist of eruptions before 1975, but in August, 1975, and February, 1976, submarine eruptions accompanied by explosion sounds and sea surface upwelling occurred. In December, 1976, sulfur was discharged, and in 1977, a large-scale discolored water was observed. Discolored water was also observed in 1992 and 1996. No notable activity has been reported since 1996.

### Submarine Topographic Map

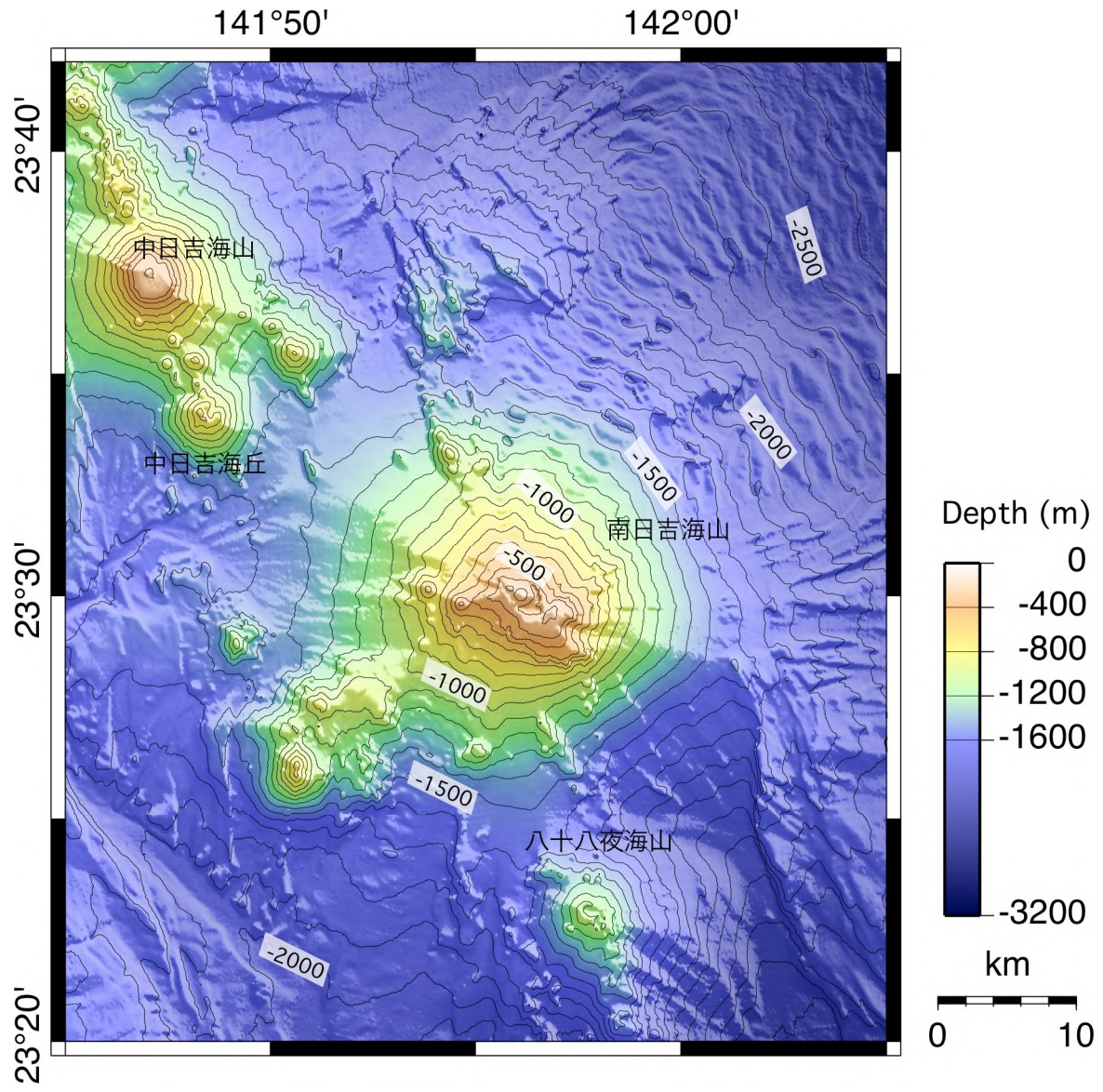


Figure 77-1 Submarine topographic map of the Minami-Hiyoshi Seamount area (Japan Coast Guard).



## Chronology of Eruptions

### ▪ Historical Activity

Year	Phenomenon	Activity Sequence, Damages, etc.
1975 (Showa 50)	Eruption	August 25. A submarine eruption occurred. A whirlpool measuring 25 m in diameter appeared after the sea surface upwell subsided.
1976 (Showa 51)	Eruption	Approximately February. A submarine eruption occurred. Explosion sounds at night.
1976 (Showa 51)	Discolored water	December 20. Sulfur discharge
1977 (Showa 52)	Discolored water	January 9 to March 28. Large scale discolored water.
1978 (Showa 53)	Discolored water	January 26 to March 24.
1992 (Heisei 4)	Discolored water	February 12 to March 4.
1996 (Heisei 8)	Discolored water	January 11 and 12.

\* Volcanic periods, areas of activity, and eruption types taken from the Active Volcano Database of Japan, AIST (Kudo and Hoshizumi, 2006 ) and the Database of the Maritime and Submarine Volcanoes in Japan (Japan Coast Guard, 2006).

## Recent Volcanic Activity

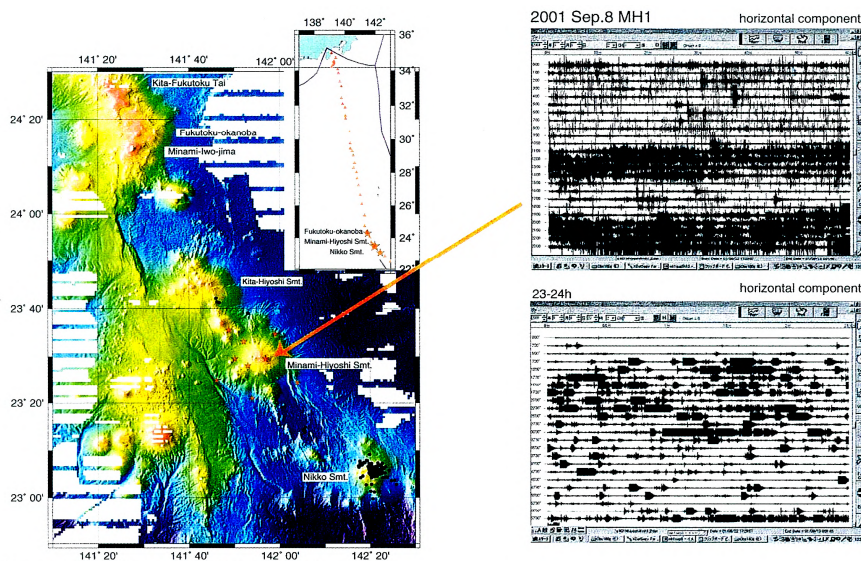


Figure 77-2 Minami-Hiyoshi Seamount area seismic activity from August 5 to September 10, 2001 (Maritime Safety Agency, 2003).

Most earthquakes for which hypocenter locations were determined occurred near the Nikko Seamount. The highest level of activity was on August 5 (UTC) (figure at left). There were also records of continuous extremely small events which were only recorded at the ocean bottom seismometer (MH1) installed at a depth of 197 m near the summit of the Minami-Hiyoshi Seamount (figure at right). At top right are the waveforms for the full day of September 8. At bottom right is an expanded view of 23:00 to 24:00 on September 8.

## Interior Structure

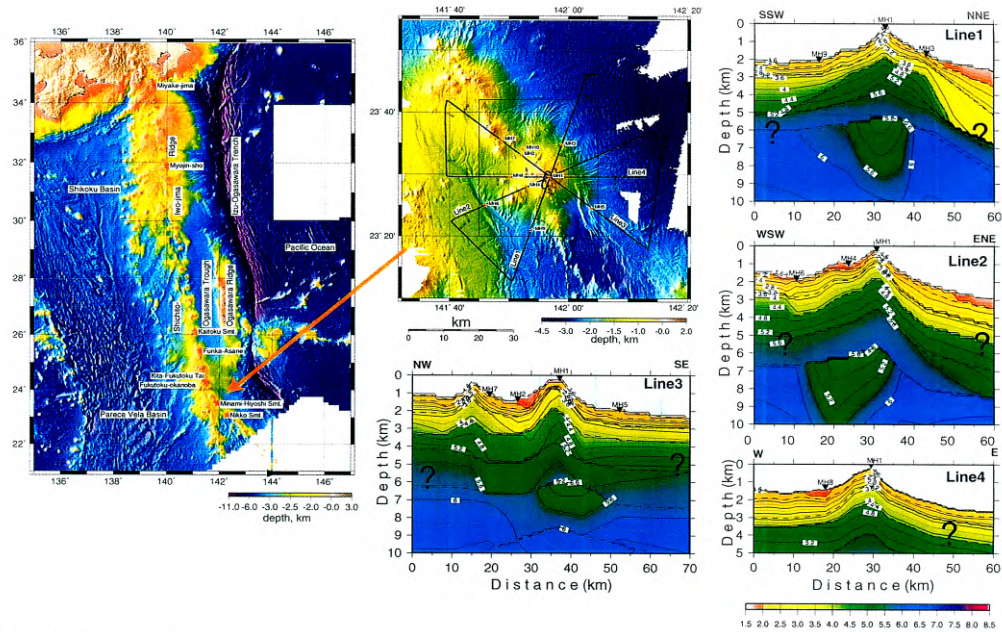


Figure 77-3 P wave velocity structure of the Minami-Hiyoshi Seamount area (Maritime Safety Agency, 2003).

The positions of seismic survey lines and the ocean bottom seismometer (indicated by a red star) are shown at center top. At center bottom and on the right are the structure models hypothesized based on two dimensional survey line tracing of each survey line. Velocities are higher in the shallow area directly below the Minami-Hiyoshi Seamount than in the areas around it, but there are indications of a low velocity area at a depth of approximately 6 km.

### Information on Disaster Prevention

#### ① Hazard Map

None

### Bibliography

Japan Coast Guard (2003): Report of Coordinating Committee for the Prediction of Volcanic Eruption, **84**, 78-80 (in Japanese).

Onodera, K. et al. (2002): Chikyū Monthly, **39**. 165-171 (in Japanese).

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