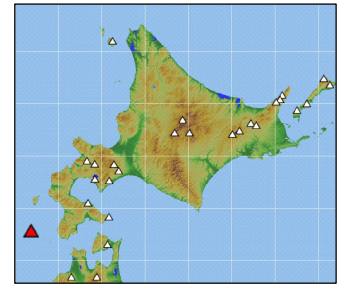


20. Oshima-Oshima

Latitude: 41°30'36" N, Longitude: 139°22'02" E, Elevation: 732 m (Eradake)
(Triangulation Point - Oshima)

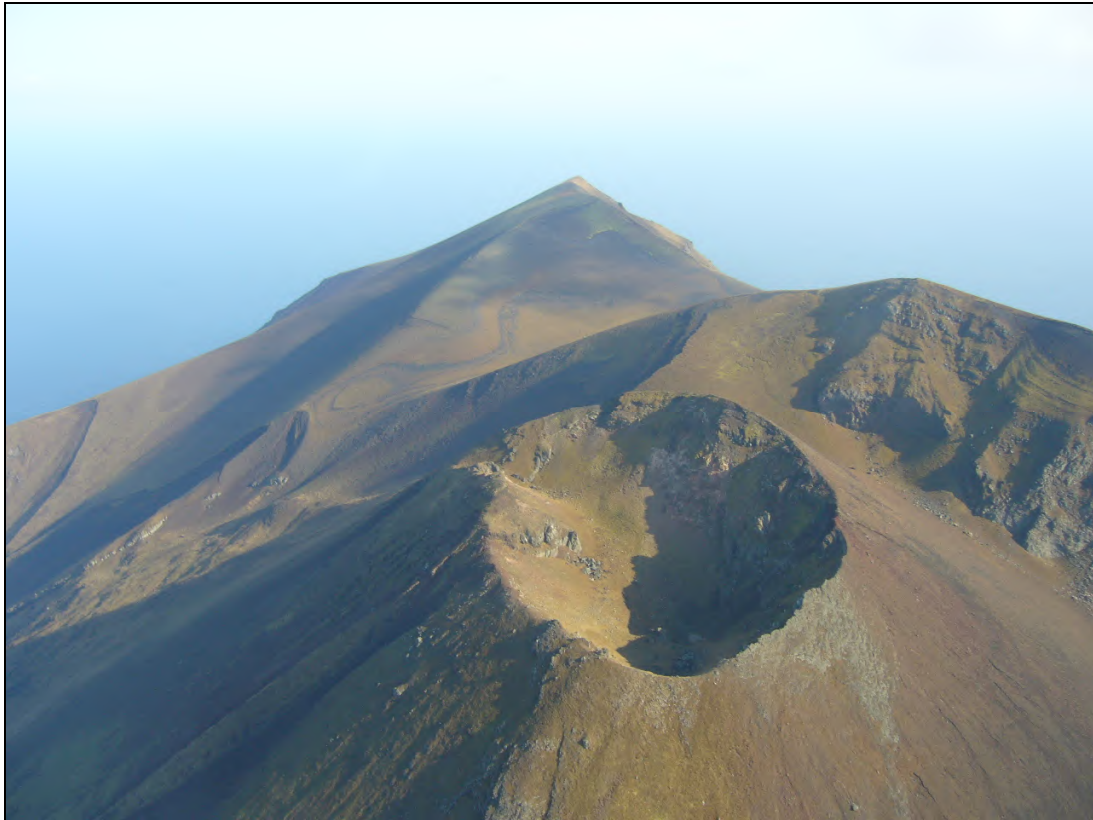


Overview of Oshima-Oshima, taken from southwest side on April 10, 2004 by the Japan Meteorological Agency

Summary

Oshima-Oshima is a basalt-andesite stratovolcano (47.8 to 61.7 wt.% SiO₂) with a relative height of approximately 2,300 m above the sea floor. It is located in the Sea of Japan, approximately 50 km west of the west coast in Hokkaido Oshima Peninsula. It is a desert island with about 4 km east-west and approximately 3.5 km north-south. Weak fumaroles exist on the central cone in the Nishiyama somma. The volcanic activity can be broadly divided into 3 stages (the Higashiyama stage, the Nishiyama stage, and the central cone stage). It is deduced that during the Higashiyama and Nishiyama stages a conical volcanic edifice was formed by lava flow and pyroclastic material. During the 1741 eruptive activity, a 2.4 km³ of collapse and debris avalanche occurred, creating a large tsunami, causing damage in the facing coast of Hokkaido (the coast between the current Matsumae and Kumaishi) and other locations bordering the Sea of Japan (Hayakawa, 1996; Satake and Kato, 2001).

Photos



Main crater at Kanpodake, taken from northwest side on October 31, 2007 by the Japan Meteorological Agency

Topography around the Crater

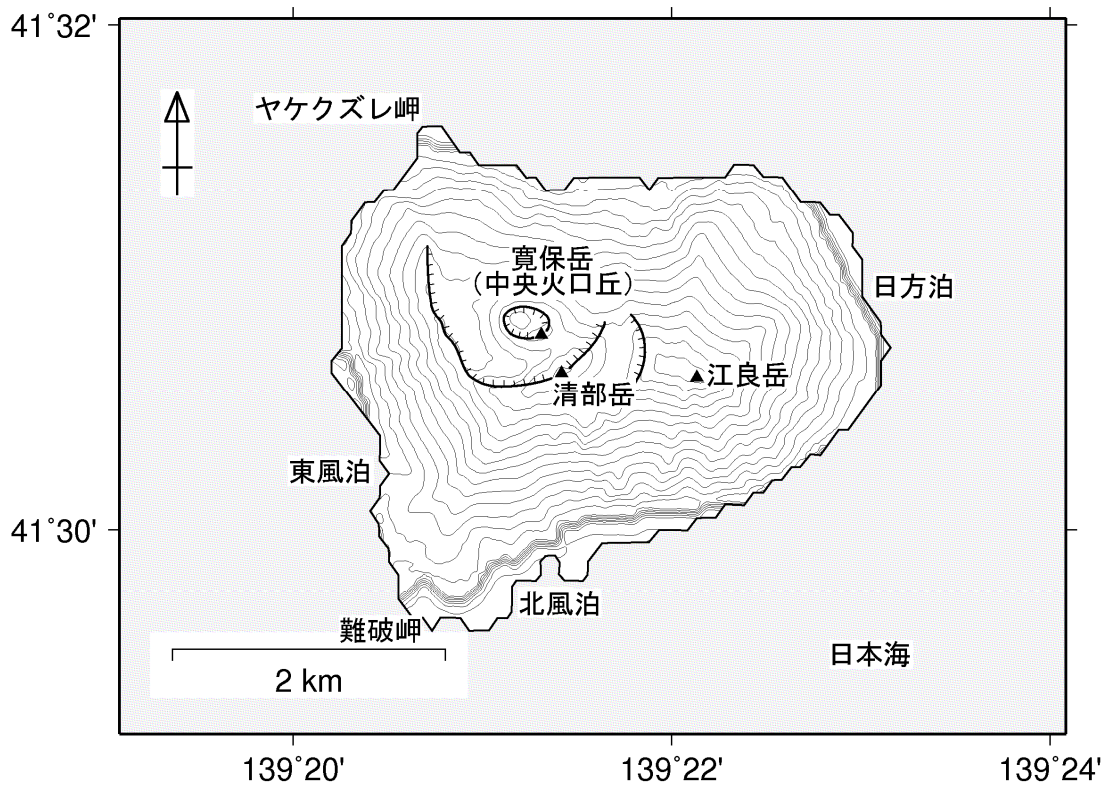


Figure 20-1 Detailed topography of the crater area.

Red Relief Image Map

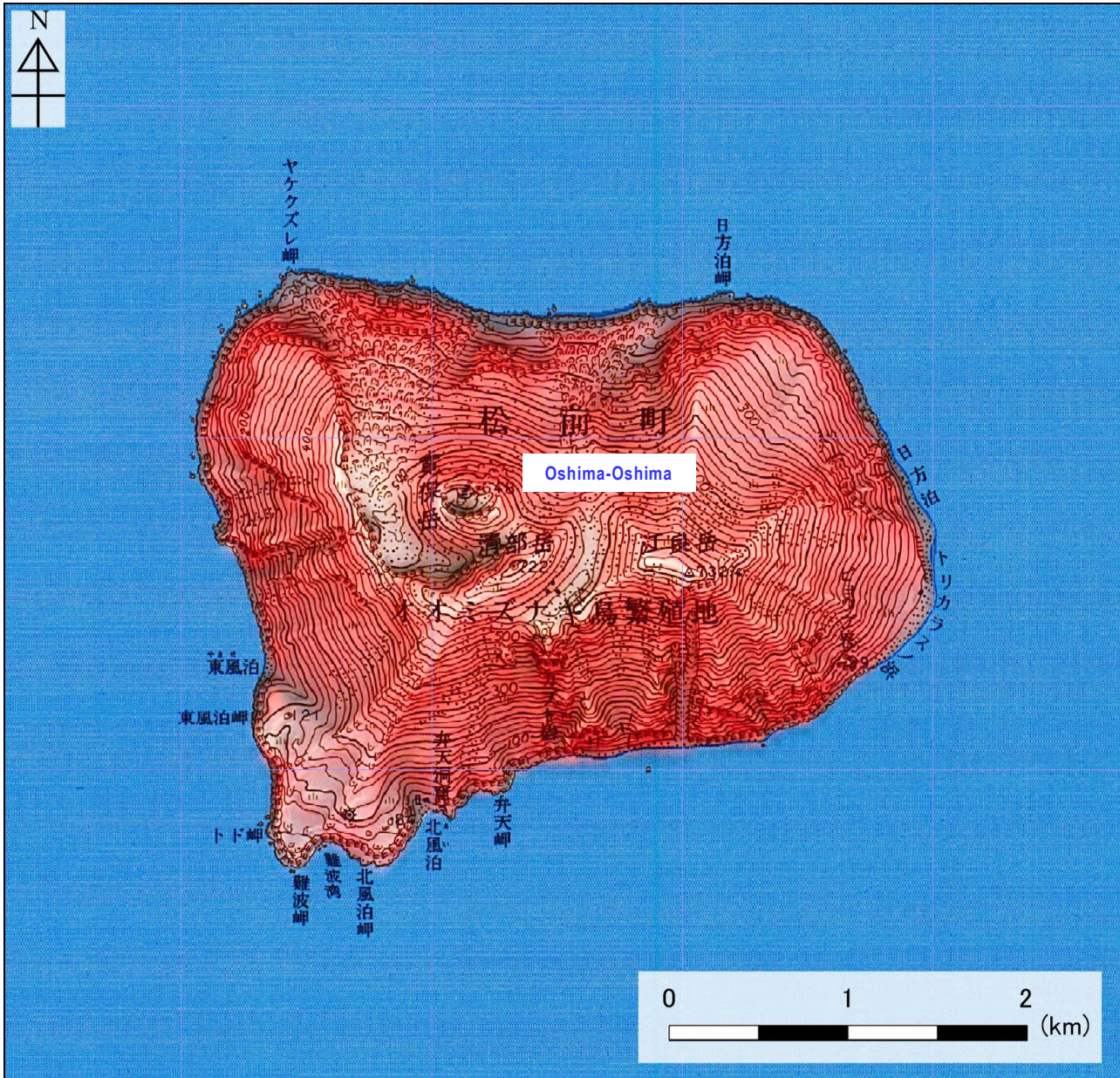


Figure 20-2 Topography of Oshima-Oshima.
1:50,000 scale topographic map (Oshima-Oshima) and digital map 50 m grid (elevation) published by the Geospatial Information Authority of Japan were used.

Submarine Topographic Map

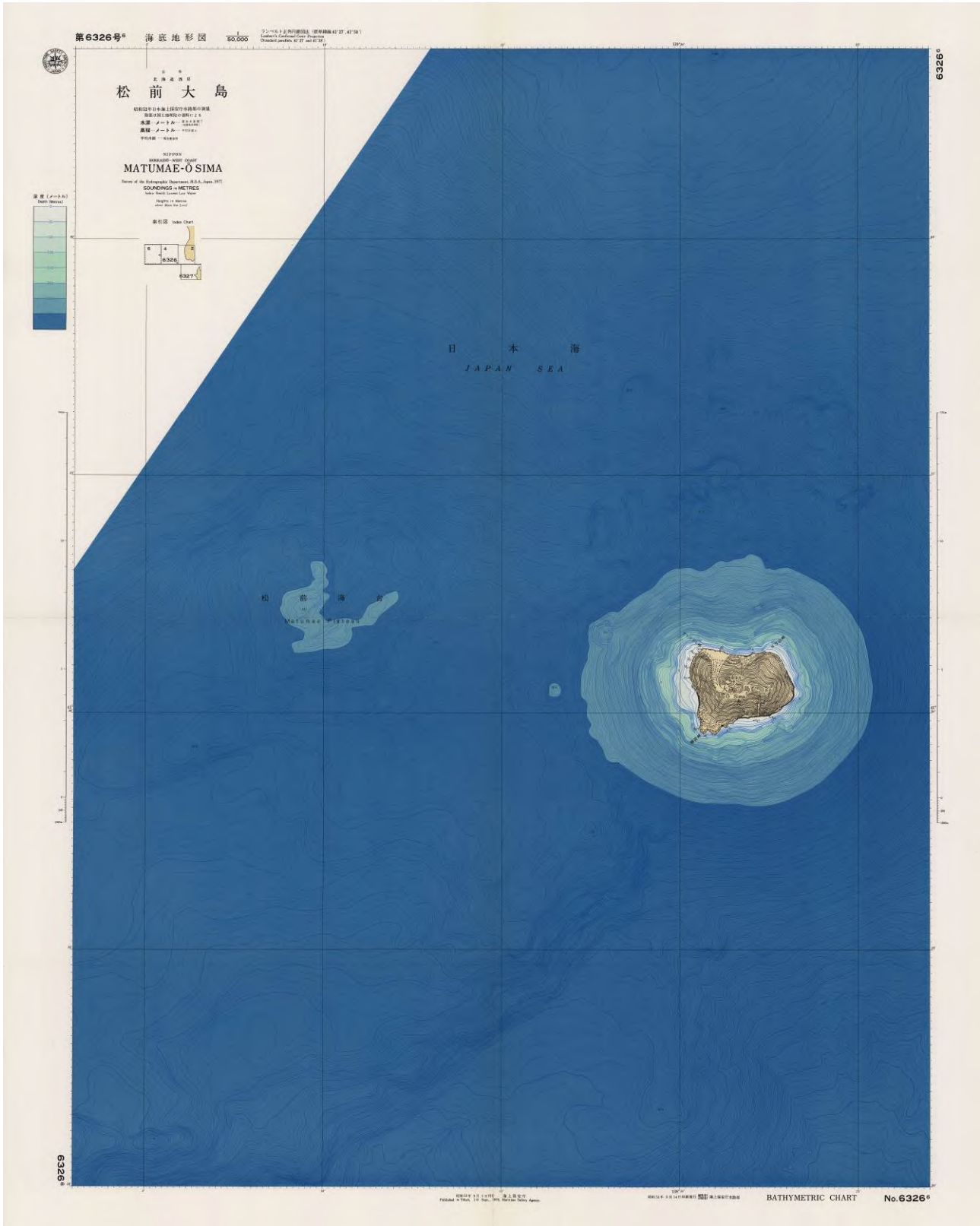


Figure 20-3 Topography of Oshima-Oshima (Maritime Safety Agency, 1978)..

Chronology of Eruptions

▪ Volcanic Activity in the Past 10,000 Years

Because it is an isolated island, and deposits are highly exposed, its detailed formation history is unknown, but the central cone is deduced to have been formed from ejecta on and after the activity of 1741 (Hayakawa, 1996).

Period	Area of Activity	Eruption Type	Main Phenomena / Volume of Magma
6.3←→1.6ka	Details unknown	?	Oshima volcanic ash eruption: Tephra fall.
1.7←→0.36ka	Details unknown	Magmatic eruption	Os-b eruption: Tephra fall.

* Reference documents have been appended with reference to the catalog of eruptive events during the last 10,000 years in Japan, database of Japanese active volcanoes, and AIST (Kudo and Hoshizumi, 2006) for eruptive period, area of activity and eruption type. All years are noted in calendar years. "ka" within the table indicates "1000 years ago", with the year 2000 set as 0 ka.

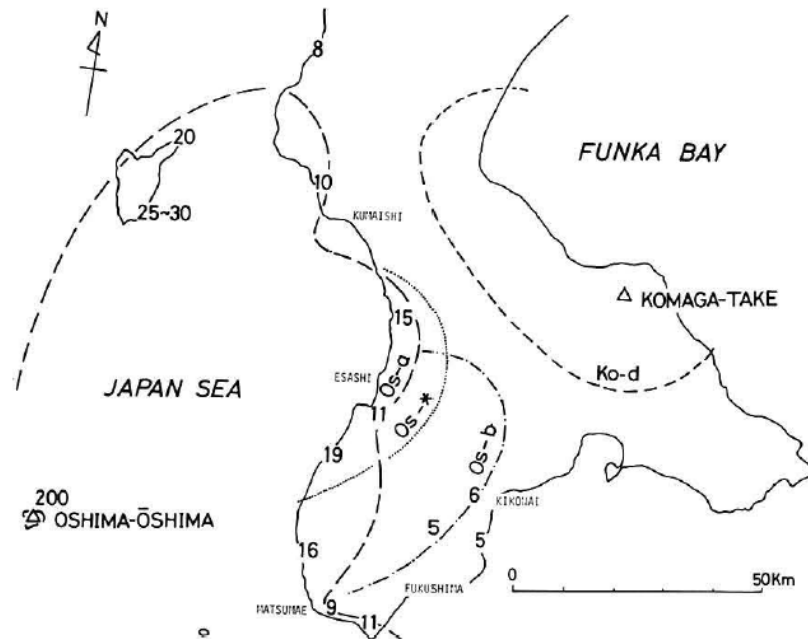
A←→B: Eruption events taking place at some point between year A and year B

▪ Historical Activity

Year	Phenomenon	Activity Sequence, Damages, etc.
1741 (Kanpo 1)	Magmatic eruption → (collapse) → magmatic eruption	On August 18, an eruption occurred at Nishiyama. Tephra fall → debris avalanche → Tephra fall / lava flow. On August 25, tephra fall made it dark even during midday at Esashi. On August 25 th , it produced a large tsunami, killing 1,467 (Hokkaido / Tsugaru) and washing away 791 homes.
1742 (Kanpo 1 to 2)	Large: Magmatic eruption	Eruptions assumed to have occurred from Nishiyama on January 22, from February 8 to February 24, and on May 18. Tephra fall (Os-a) / lava flow. Tephra fall on Matsumae and Tsugaru. Total ejecta for the 1741 to 1742 eruptions: 0.11 km ³ . Total magma eruption volume for those eruptions: 0.05 km ³ DRE. (VEI 4) Collapse volume: 2.4 km ³ .
1759 (Horeki 9)	Moderate: Magmatic eruption	On August 19, an eruption occurred at the Nishiyama central cone. Ash fell in Aomori. Total ejecta: 0.001 km ³ . Magma eruption volume: 0.0004 km ³ DRE. (VEI 2)
1786 (Tenmei 6)	Volcanic plume	A constant volcanic plume existed at this time.
1790 (Kansei 2)	Volcanic plume	Volcanic plume activity increased on around June 2.

* Reference documents have been appended with reference to the catalog of eruptive events during the last 10,000 years in Japan, database of Japanese active volcanoes, and AIST (Kudo and Hoshizumi, 2006) for eruptive period, area of activity and eruption type.

Main Eruptive Activity



Age		Komaga-take	Oshima-Ōshima
1929	AD	<u>Ko-a pumice fall</u>	
1905	AD	<u>Ko-b pumice fall</u>	
1856	AD	<u>Ko-c₁ pumice fall</u>	
1765?	AD	<u>Ko-c₂ pumice fall</u>	
1741-'42	AD		<u>Os-a ash fall</u>
1640	AD	<u>Ko-d pumice fall</u>	
		<u>Ko-* ash fall</u>	
1700±130 y.BP			<u>Os-b ash fall</u>
		<u>Ko-e ash fall</u>	
2750±110 y.BP			<u>Os-* ash fall</u>
		<u>Ko-f pumice fall</u>	

~~~~~ : intercalated by humus layers.

\* : specific name not yet given.

Data from Sasaki *et al.* (1970, 1971) and Katsui *et al.* (1975)

Figure 20-4 Distribution and stratigraphy of tephra from 1741 eruption (Katsui and Yamamoto, 1981).

## Recent Volcanic Activity

### ▪ Seismic Activity

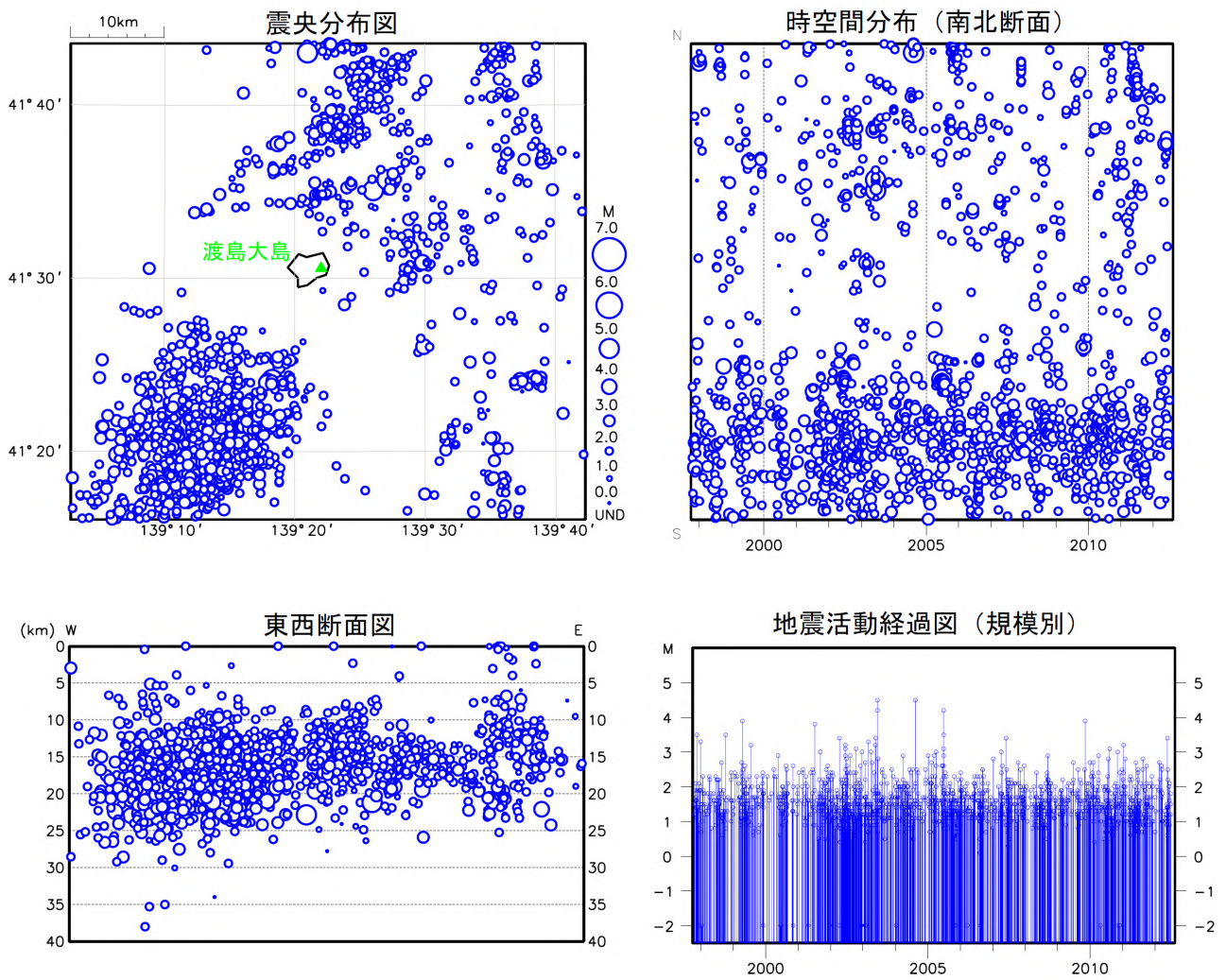


Figure 20-5 Activity of shallow VT earthquakes (blue circles) observed by a regional seismometer network (October 1, 1997, to June 30, 2012). Epicenter distribution (upper left), space-time plot (N-S cross-section) (upper right), E-W cross-section (lower left) and magnitude-time diagram (lower right).

## Information on Disaster Prevention

### ① Hazard Map

None

## Social Circumstances

### ① Populations

None

### ② National Parks, Quasi-National Parks, Number of Climbers

- Matsumae Yagoshi Prefectural Natural Park Oshima-Oshima

Number of mountain-climbers per year: 0 - The Natural Parks Act and Hokkaido nature park regulations prohibit landing on Oshima-Oshima without permission.

### ③ Facilities

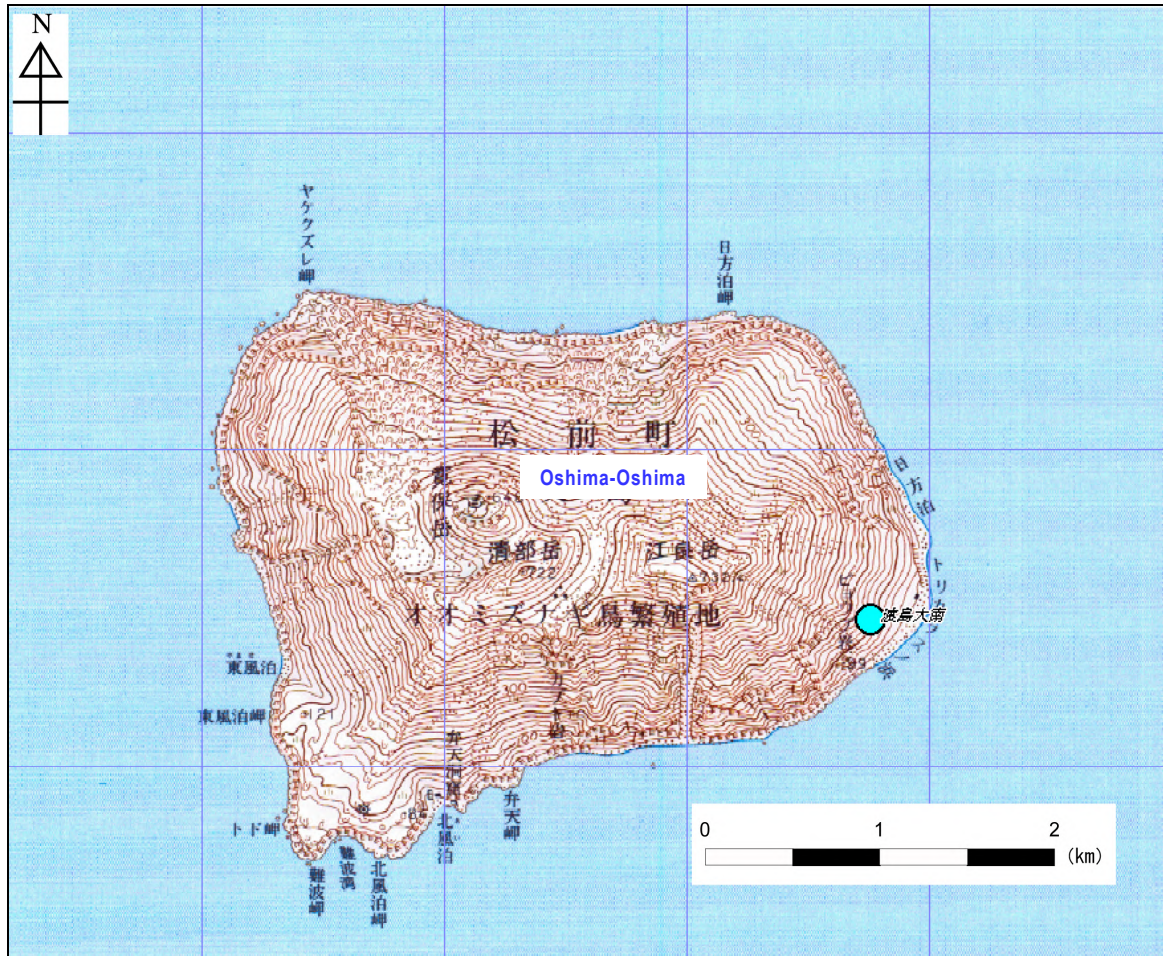
None



## Monitoring Network

### In and Around the Summit

\* Monitoring sites with multiple observation instruments are indicated by small black dots, and other symbols indicate types of monitoring.



1:50,000 scale topographic map (Oshima-Oshima) published by the Geospatial Information Authority of Japan was used.

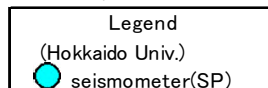


Figure 20-6 Local monitoring network.

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(Nakagawa, M., and Yamamoto, M.)