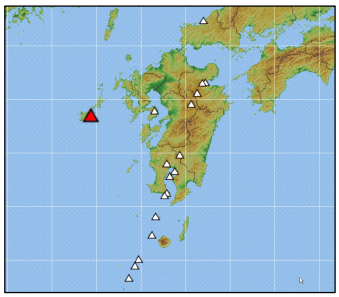
86. Fukue Volcanoes



Latitude: 32°39'24" N, Longitude: 128°50'56" E, Elevation: 315 m (Onidake)
(Spot elevation measured by JMA)
Latitude: 32°39'37" N, Longitude: 128°51'55" E, Elevation: 315 m (Hinodake)
(Triangulation Point - Hinodake)

Distant View of Onidake on September 17, 2004 by the Japan Meteorological Agency

Onidake Crater on August 28, 2003 by the Japan Meteorological Agency

Summary

Fukue Island is one of the Goto Islands in Nagasaki Prefecture. It is composed of the Kishiku and Miiraku volcanoes in its northwest, and the Fukue and Tomie volcanoes in its southeast. Fukue Island began with alkali basalt activity at the Kishiku volcano 680,000 to 940,000 years ago. After that, alkali basalt activity occurred approximately 300,000 years ago in the Miiraku and Fukue areas (Nagao et al., 2002). The most recent eruption produced the Hinodake lava flow (Terai, 1989). The latest period of activity in the Fukue volcanoes began approximately 90,000 years ago (Nagao et al., 2002). The latest period of activity is divided into the following stages. I) Highly fluid pahoehoe lava was discharged, II) a large-scale discharge of lava occurred, forming a lava plateau with a relative height of approximately 30 m, III) many small-scale flows of lava occurred, IV) a volcanic block cone and lava lake were formed, and V) a small lava flow flowed over the crater wall. It is possible that the Tomie volcano became active at the same time as the latest period of Fukue volcano group activity (Terai, 1989). The SiO_2 content of basalt is between 47.2 and 52.0 wt %.

Red Relief Image Map

Figure 86-1 Topography of the Fukue volcanoes.

1:50,000 scale topographic maps (Tomie and Fukue) and digital map 50 m grid (elevation) published by the Geospatial Information Authority of Japan were used.

Submarine Topographic Map

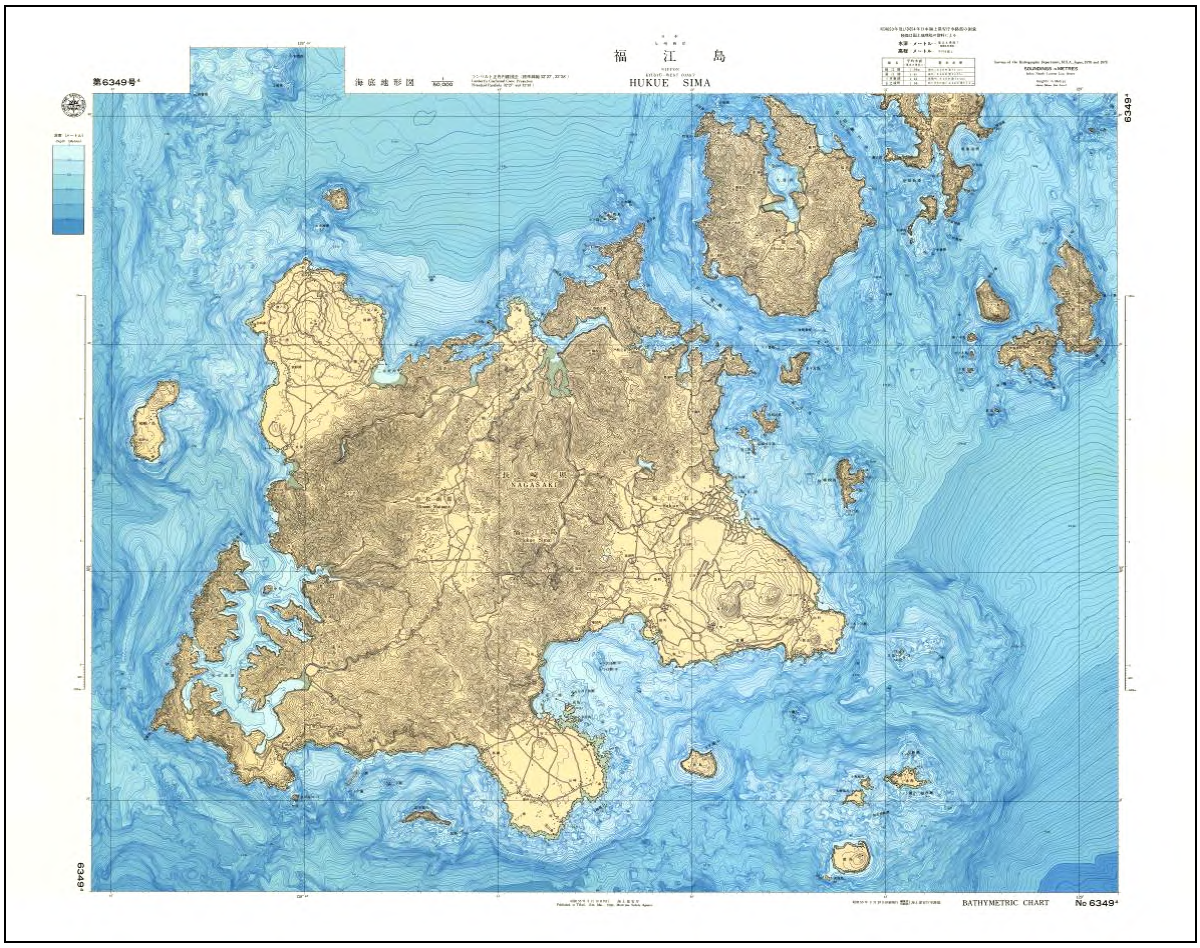


Figure 86-2 Submarine topographic map of the Fukue volcanoes (Maritime Safety Agency, 1980).

Chronology of Eruptions

・Volcanic Activity in the Past 10,000 Years

Details regarding activity during the past 10,000 years are unknown, but ruins from the late Jomon era have been found below air-fall scoria, so it has been concluded that the most recent activity was between 2,000 and 3,000 years ago (Terai, 1989).

According to Nagaoka and Furuyama (2004), age measurement has been performed on the soil directly below the Onidake air-fall scoria layer, which is composed of the most recent ejecta from Onidake, finding the activity to have occurred approximately 18,000 years ago. Air-fall scoria has also been found mixed in with the black soil layer on top of this, so the discharge period has been reported as approximately 2,300 to 2,400 years ago. The source crater is unknown, but it is inferred to be within the Fukue volcano group (Nagaoka and Furuyama, 2004).

Period	Area of Activity	Eruption Type	Main Phenomena / Volume of Magma
2.4ka	Southern Fukue volcanoes such as Kurojima, Ojima, or Akajima are possible volcanic sources	Magmatic eruption[1]	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.

・Historical Activity

There are no records of volcanic activity.

Recent Volcanic Activity

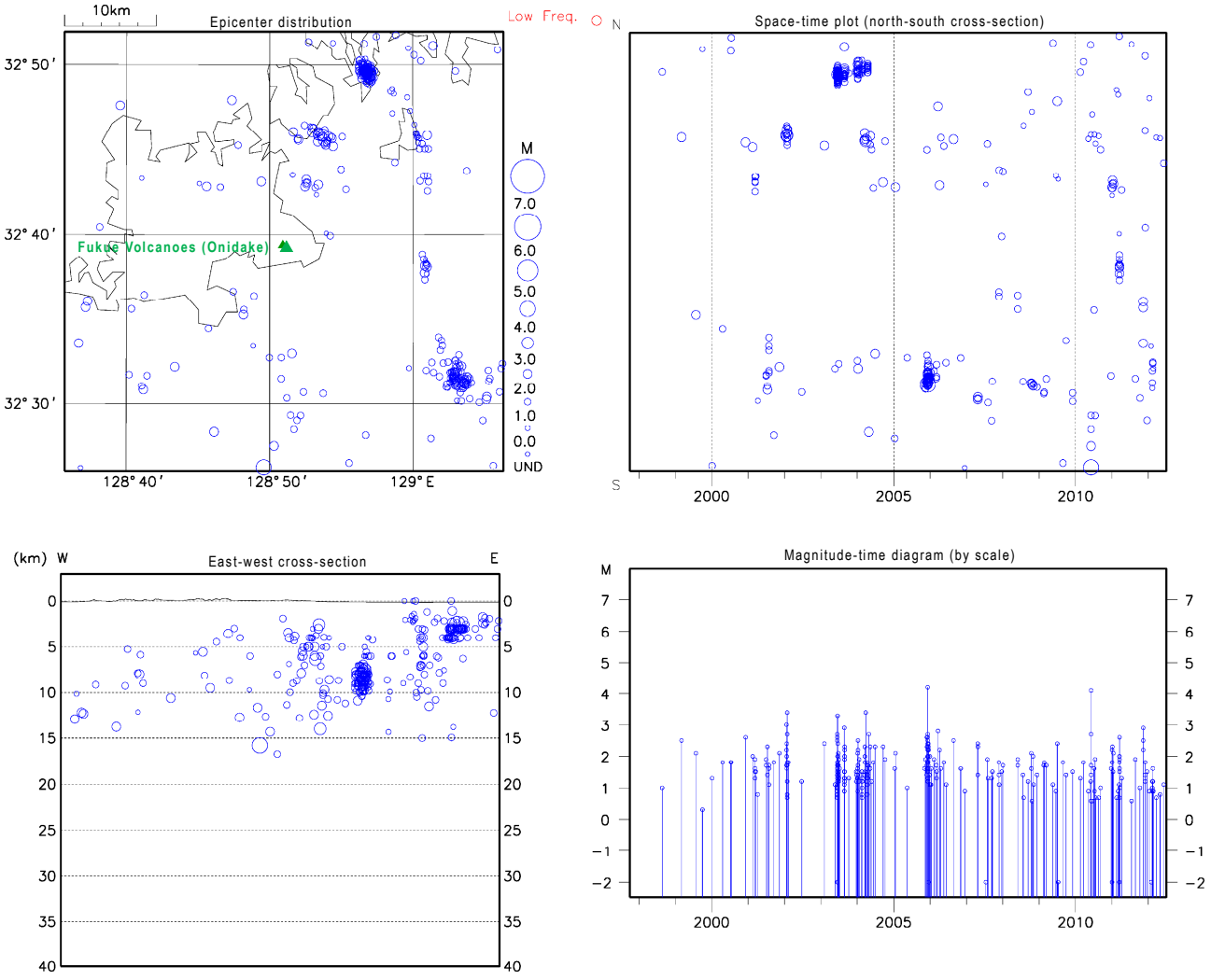


Figure 86-3 Activity of shallow VT earthquakes (blue circles) and deep low-frequency earthquakes (red circles) observed by a regional seismometer network (October 1, 1997 to June 30, 2012). Epicenter distribution (upper left), space-time plot (N-S cross-section) (upper right), E-W cross-section (lower left) and magnitude-time diagram (lower right).

Information on Disaster Prevention

①Hazard Map

None

Social Circumstances

①Populations

- Goto City:　41,679 (as of October 31, 2011)

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

- Saikai National Park - Designated on March 16, 1955 (Showa 30)
- Number of mountain-climbers per year: Unknown

③Facilities

- Disaster response related facilities (including museums and memorials)

  None
- Capacities and locations of evacuation facilities

  None

Monitoring Network

Wide Area

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

1:200,000 scale regional maps (Fukue, Nagasaki, Tomie and Nomozaki) published by the Geospatial Information Authority of Japan were used.

Legend

(JMA)	(GSI)	(NIED)	(Kyushu Univ.)	(Municipalities)
seismic intensity meter	GPS	F-net	seismometer(SP)	seismic intensity meter
seismometer(SP) (For earthquakes and tsunamis)		K-NET		

Bibliography

Japan Coast Guard (1980): Basic map of the sea in coastal waters (1:50,000) Fukue Shima (in Japanese with English Abstract).

Nagao, T., et al. (2002) Abstracts of the 109th Annual Meeting of the Geological Society of Japan. 296 (in Japanese).

Nagaoka, S. and Furuyama, K. (2004): Journal of Geography, **113**, 349-382 (in Japanese with English Abstract).

Terai, Y. (1989): Programme and abstracts the Volcanological Society of Japan. **2**, 53 (in Japanese).

(Nagao, T.)