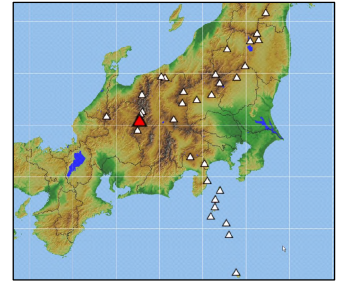


52. Norikuradake

Continuously Monitored by JMA

Latitude: 36°06'23" N, Longitude: 137°33'13" E, Elevation: 3,026 m (Kengamine)
(Triangulation Point - Norikuradake)



Overview of Norikuradake taken from east-northeast side on December 10, 2003 by the Japan Meteorological Agency



Tsuruga Pond taken from the east side on August 23, 1999 by the Japan Meteorological Agency

Summary

Norikuradake is a composite volcano which is arranged north to south. It can be divided into the Sencho volcano (Older Norikura volcano), and the Eboshi volcano, the Yotsudake volcano, the Ebisu volcano, and the Gongen ike/Takamagahara volcano (Younger Norikura volcano). It is composed mainly of andesite-dacite lava domes and lava flows, with gently slope at the foot of the volcano (Nakano, 1998). Many crater lakes and dammed lakes are located atop the summit. No fumarolic areas exist at the summit. The SiO₂ content of the andesite and dacite is between 53.7 and 69.6 wt %.

Red Relief Image Map

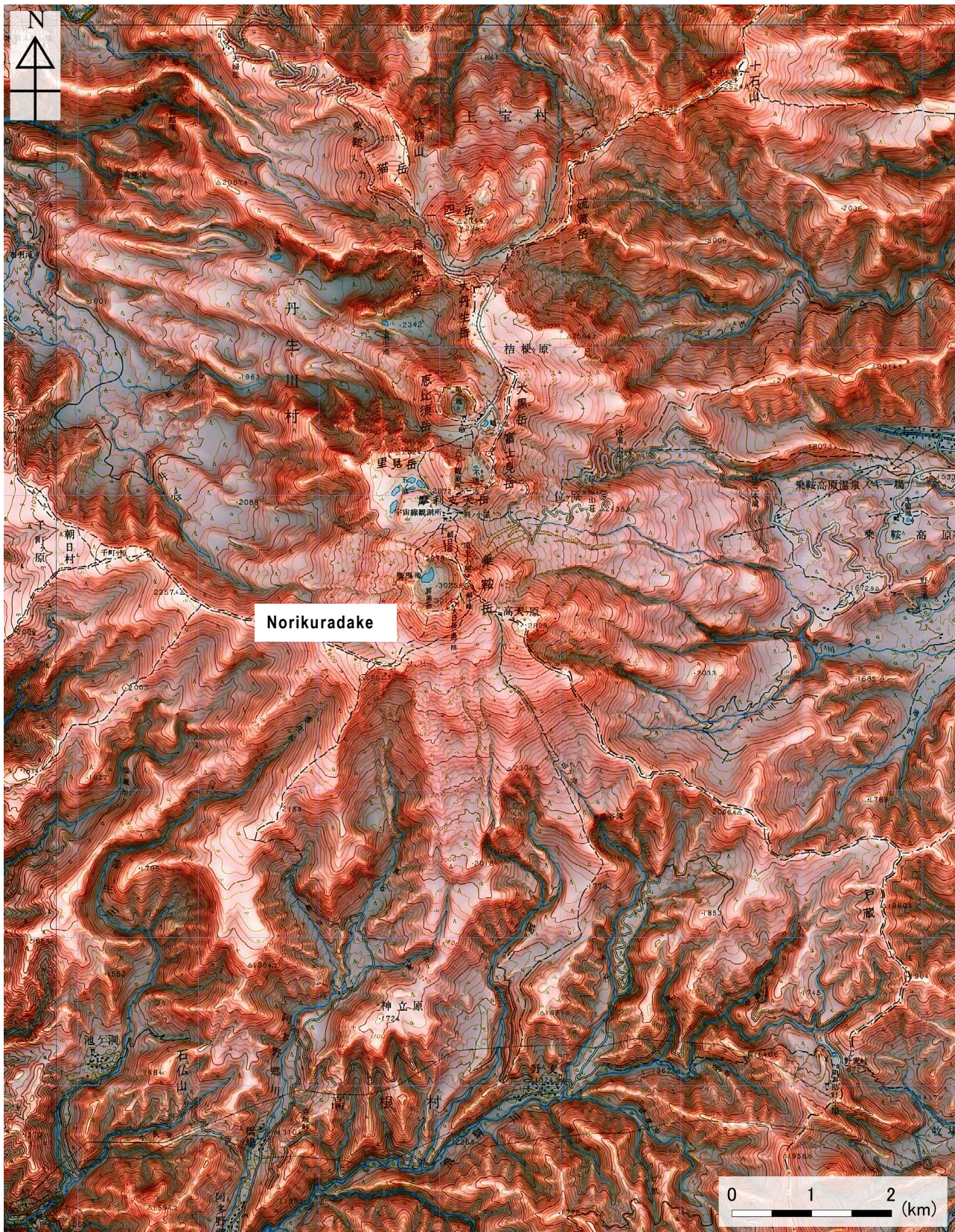


Figure 52-1 Topography of Norikuradake.

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

Chronology of Eruptions

- Volcanic Activity in the Past 10,000 Years

Kengamine erupted approximately 9,600 and 9,200 years ago. The former eruption ejected volcanic sand, and the latter one ejected volcanic ash and scoria, and produced a lava flow. Since then, several phreatic explosions have occurred whose sources are unknown. The most recent eruption occurred at the Ebisudake about 2,000 years ago, which ejected volcanic ash and resulted in a lava flow (Ozeki et al., 2000).

Period	Area of Activity	Eruption Type	Main Phenomena / Volume of Magma
9.9←→9.5 ka	Kengamine	Phreatic eruption → magmatic eruption	Kengamine volcanic sand eruption: Tephra fall. Magma eruption volume = 0.016 km ³ DRE. (VEI 3)
9.4←→9.1 ka	Gongenike crater	Phreatic eruption → magmatic eruption	Kuraigahara tephra and Iwaidani lava eruption: Tephra fall → lava flow. Magma eruption volume = 0.12 km ³ DRE. (VEI 3)
9.4←→2 ka		Phreatic eruption	Tephra fall.
9.4←→2 ka		Phreatic eruption	Tephra fall.
9.4←→2 ka		Phreatic eruption	Tephra fall.
9.4←→2 ka		Phreatic eruption	Tephra fall.
2 ka	Ebisudake	Phreatic eruption → magmatic eruption	Ebisudake tephra and Ebisu lava flow eruption: Tephra fall → lava flow. Magma eruption volume = 0.5 km ³ DRE. (VEI 3)

* Reference documents have been appended with reference to the Active Volcano Database of Japan, AIST (Kudo and Hoshizumi, 2006) for volcanic periods, areas of activity, eruption types, and eruption events. All years are noted in Western date notation. "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.
1990 (Heisei 2)	Earthquake	Earthquake swarms approximately 10 km south-southwest of the summit. January 24, M4.2.
1991 (Heisei 3)	Earthquake	Seismic activity remained high since the previous year. January 23, M4.3. Earthquakes continued, while decreasing in intensity, until the end of 1992.
1995 (Heisei 7)	Earthquake	August. Earthquake swarm approximately 2 km southwest.
2011 (Heisei 23)	Earthquake	Since the 2011 off the Pacific coast of Tohoku Earthquake (March 11, 2011) seismic activity has been high from 2 to 8 km away at the northern foot of the volcano. March 13, 20:23 - M3.1 (JMA scale seismic intensity of 2).

* Reference documents have been appended with reference to the Active Volcano Database of Japan, AIST (Kudo and Hoshizumi, 2006) for volcanic periods, areas of activity, eruption types, and eruption events.

Recent Volcanic Activity

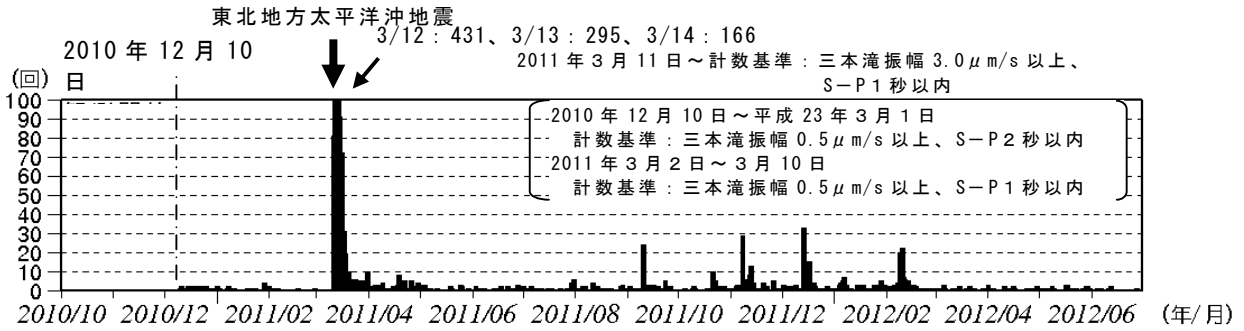


Figure 52-2 Number of earthquakes per day in and around Norikuradake.

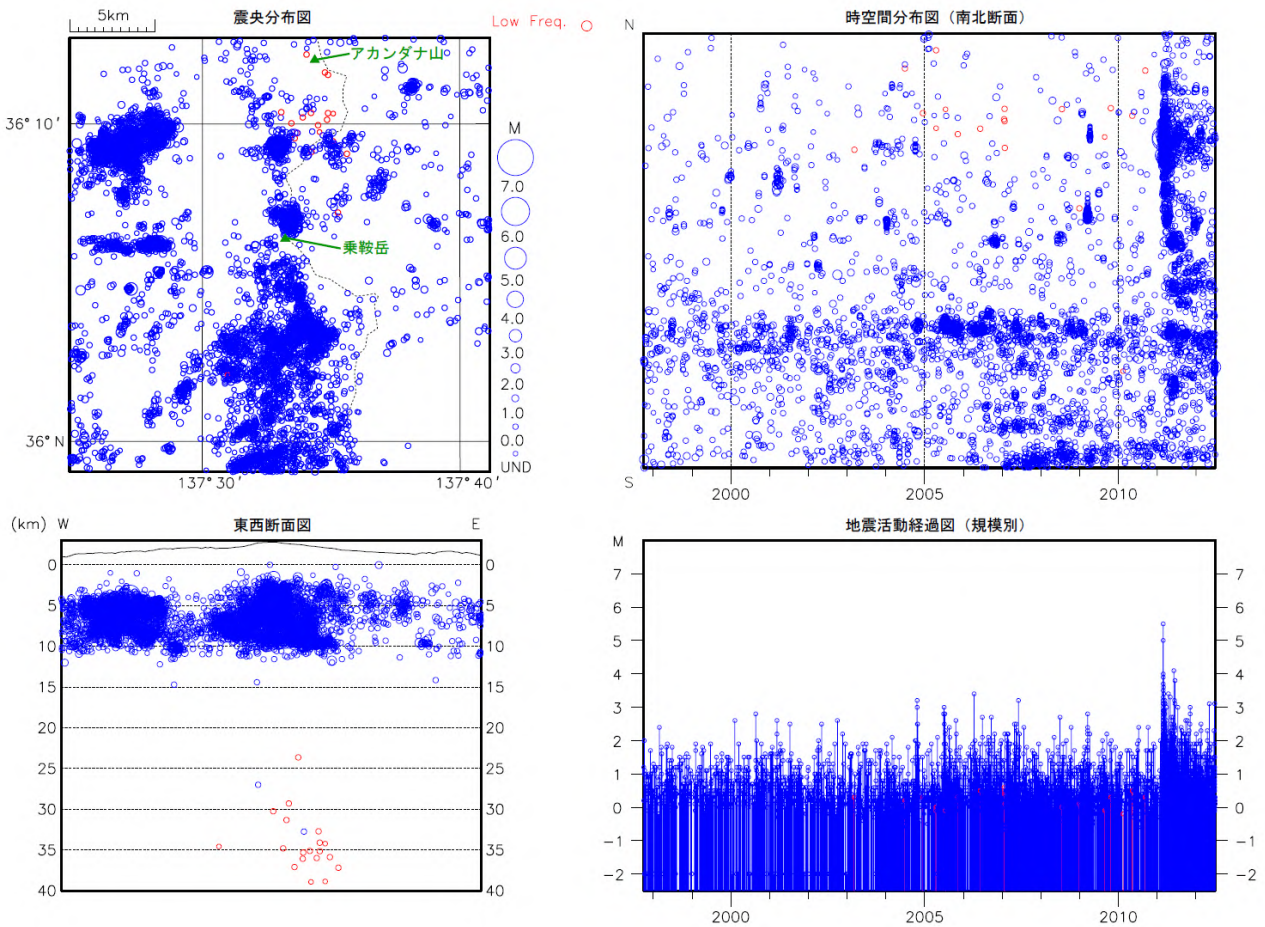


Figure 52-3 Activity of shallow VT earthquakes (blue circles) and deep low-frequency earthquakes (red circles) observed by a regional seismometer network (October 1, 1997, to June 30, 2012).

Since the 2011 off the Pacific coast of Tohoku Earthquake, seismicity increased 2 to 8 km north of Norikuradake, but this activity declined thereafter. Epicenter distribution (upper left), space-time plot (N-S cross-section) (upper right), E-W cross-section (lower left) and magnitude-time diagram (by scale) (lower right).

Information on Disaster Prevention

① Hazard Map

None

Social Circumstances

① Populations

- Nagano Prefecture:

Matsumoto City: 243,472 (1,846 in Azumi area)

(as of October 1, 2011 (Heisei 23) - according to the results of the Nagano Prefecture monthly population movement survey)

- Gifu Prefecture

Takayama City: 93,666 (450 in Takane area, 4,644 in Nyugawa area)

According to "Overall Population by Administrative Area (within each cho)" Takayama government data

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

- Nagano Prefecture:

Number of sightseers per year: Matsumoto (506,000: Norikura Kogen)

(according to the results of the 2010 sightseeing land usage statistical survey: Nagano Prefecture - Sightseeing Planning Division)

- Gifu Prefecture: Chubu-Sangaku National Park - Norikura area

Number of sightseers per year: Unknown

Number of mountain-climbers per year: Approximately 182,000 (number of passengers on Gifu Prefecture side of the Norikura Skyline) according to Takahama "Number of Visitors to Norikuradake in 2011"

③ Facilities

- Nagano Prefecture Norikura Nature Conservation Center

Monitoring Network

See Yakedake

Bibliography

Nakano, S. et.al. (1995) Geology of the Norikuradake district. Quadrangle Series, Scale 1:50,000, Geogical Survey of Japan, 139p. (in Japanese with English abstract).

Ozeki, N. et.al.(1997) Summary of Researches Using AMS at Nagoya University, **8**, 165-171. (in Japanese).

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