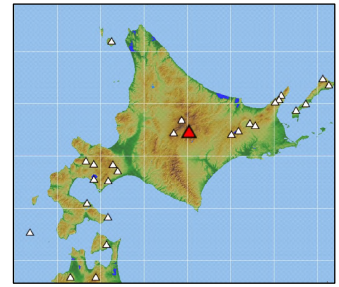


## 8. Maruyama

Latitude: 43°25'03" N, Longitude: 143°01'52" E, Elevation: 1,692 m  
(Maruyama) (Triangulation Point)



Overview of Maruyama taken from northwest side on July 2, 2007 by the Japan Meteorological Agency

### Summary

Maruyama is a small volcano, with a diameter of 2.5 km and a relative height of approximately 600 m, located on top of mainly Mesozoic basement rock. It is composed of multiple volcanoes, which are distributed to the north, and a volcano group (the Nipesotsu volcano group). The main volcanic edifice consists of an andesitic and dacitic lava dome and pyroclastic rock (The SiO<sub>2</sub> content is between 56.8 and 65 wt %). 9 small explosion craters and 3 explosion craters with diameters of 130 m to 300 m stretch for 1.2 km to the northwest of the east side of the summit.

A large amount of fumarolic activity has been confirmed at the bottom of the newest explosion crater, as well as many new hot springs, cold springs, fumaroles, and defoliated areas on the west and southeast slopes (Hokkaido University and the Obihiro University of Agriculture and Veterinary Medicine, 1990).



## Photos



No. 1 to No. 3 Craters taken from northeast side on June 29, 2005 by the Japan Meteorological Agency



No. 1 to No. 3 Craters taken from northwest side on July 20, 2012 by the Japan Meteorological Agency

## Topography around the Crater

See Major Volcanic Activities (1898 Eruption).



### Red Relief Image Map



Figure 8-1 Topography of Maruyama.  
1:50,000 scale topographic maps (Tokachi Gawa Joryu and Nukabira) 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

Many things are not known about activity at the volcano within the past 10,000 years, but deposits from the latest phreatic explosion cover volcanic ash from Tarumaesan and from Hokkaido-Komagatake, so, cross-referencing this with records in ancient documents, the explosion is considered to have occurred in 1898. Ejecta before that event are covered by volcanic ash from Tarumaesan and Hokkaido-Komagatake, indicating that they were emitted before 1694 (Aramaki et al., 1993). Slight fumarolic activity has been observed at the No. 3 crater, but volcanic activity is calm. Tectonic earthquake activity is frequently observed in the area around the volcanic edifice.

Period	Area of Activity	Eruption Type	Main Phenomena / Volume of Magma
3.7ka<	Unknown	Phreatic eruption	Tephra fall
3.7ka	Unknown	Phreatic eruption	Tephra fall. Total ejecta: 0.001 km <sup>3</sup> . (VEI 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. All years are noted in calendar years. "ka" within the table indicates "1000 years ago", with the year 2000 set as 0 ka.

A<: Eruption event before year A.

### ▪ Historical Activity

Year	Phenomenon	Activity Sequence, Damages, etc.
1898 (Meiji 31)	Medium-scale: Phreatic eruption	An eruption on December 2 formed the No. 1 crater. A lahar flow occurred, causing the river downstream to whiten. Total ejecta: 0.001 km <sup>3</sup> . (VEI 2)
1989 (Heisei 1)	Earthquake activity	An earthquake swarm, with a maximum magnitude of M4.5, occurred on the northwest side of Maruyama from January to July (JMA scale seismic intensity 3 in Shirogane Onsen, Nukabira, etc.)
2011 (Heisei 23)	Earthquake swarm	Since the 2011 off the Pacific coast of Tohoku Earthquake (March 11, 2012) earthquake activity had been high in shallow areas near the summit. One earthquake of seismic intensity 1 or greater on JMA scale occurred. On August 24, at 22:58, an earthquake with a magnitude of 4.2 occurred (JMA scale seismic intensity 1).

\* 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.



### Whole Rock Chemical Composition

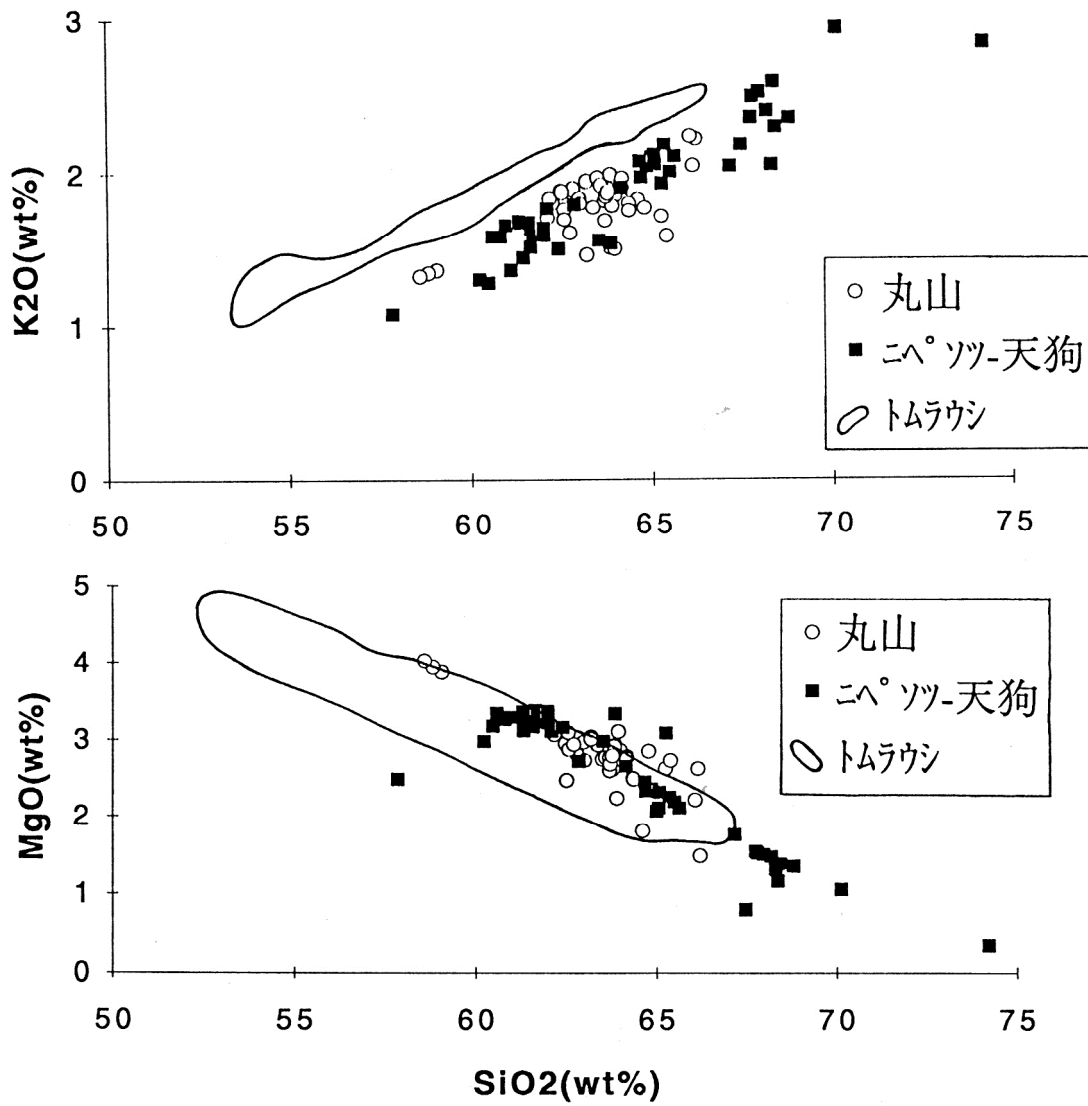


Figure 8-2 Whole rock chemical composition by Harker diagram of Maruyama and Nipesotsu-Tengudake volcano ejecta (Aramaki et al., 1993).  
This figure also shows the chemical composition of ejecta from Tomuraushi volcano nearby



### Major Volcanic Activities

#### • 1898 Eruption

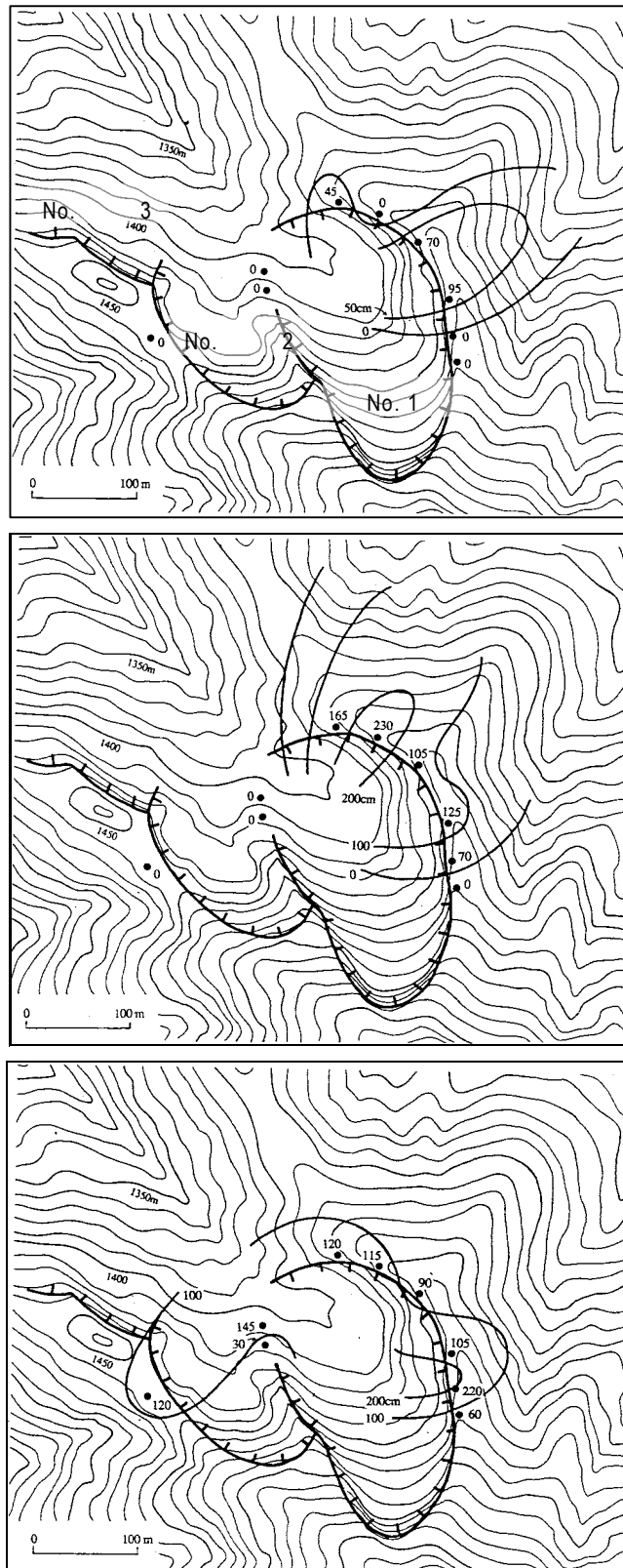


Figure 8-3 thicknesses of Ejecta, and isopach of 3 strata created in crater wall area by 1898 eruption.  
From top to bottom: My-a1, My-a2, My-a3 (Aramaki et al., 1993)



### Recent Volcanic Activity

#### ▪ Seismic Activity

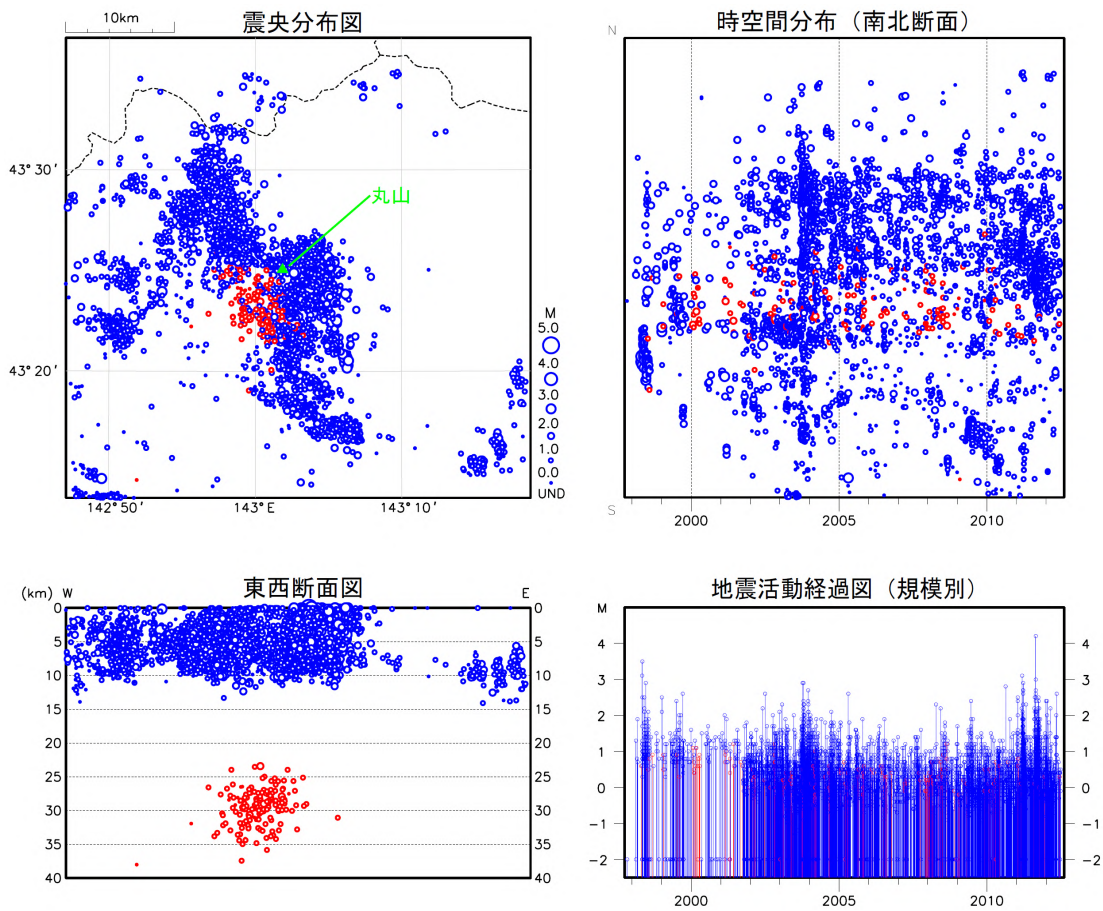


Figure 8-4 Activity of shallow VT earthquakes (blue circles) and deep low-frequency earthquakes (red circles) observed by a regional seismometer network (October 1, 1997, to June 30, 2012). Epicenter distribution (upper left), space-time plot (N-S cross-section) (upper right), E-W cross-section (lower left) and magnitude-time diagram (lower right).

#### ▪ Crater Interior Ground Temperature Distribution

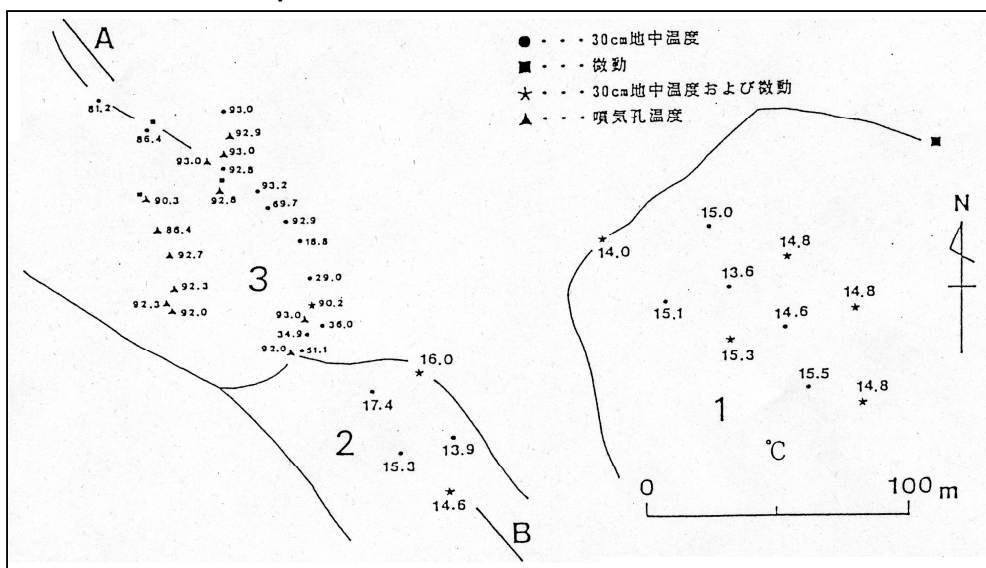


Figure 8-5 Distribution of ground temperatures in No. 1 to No. 3 craters (according to 1991 site survey) (Aramaki et al., 1993).



## Information on Disaster Prevention

### ① Hazard Map

None

## Social Circumstances

### ① Populations

- Population of Shintoku Tomuraushi area: 77 (from statistics current as of end of October 2011)
- Population of Kamishihoro Nukabira Onsenkyo, Horoka, and Mitsumata area: 123  
(from statistics current as of end of October 2011)
- Population of Shikaoi Lake Shikaribetsu area: 10 (from statistics current as of end of October 2011)

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

- Daisetsuzan National Park - Number of sightseers per year (total of approximately 755,800 for Shintoku, Kamishihoro, and Shikaoi)

Shintoku Tomuraushi area: Approx. 29,000

(according to 2010 Hokkaido-wide municipal sightseeing estimate study)

Kamishihoro side: Approximately 312,900 (from March, 2011, town statistical survey of Kamishihoro)

Shikaoi Town Shikaribetsukohan Onsen area: Approximately 413,900 (according to 2010 nation-wide municipal study)

- Number of mountain-climbers per year:
  - Shikaoi: 0 (according to regional survey by Shintoku police department from April to October, 2011)
  - Shintoku: 0 (according to regional survey by Shintoku police department from April to October, 2011)
  - Kamishihoro: Unknown

### ③ Facilities

- Kamishihoro  
Higashitaisetsu Museum

# 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 (Kitami, Obihiro, Asahikawa, Yubari-dake) published by the Geospatial Information Authority of Japan were used.

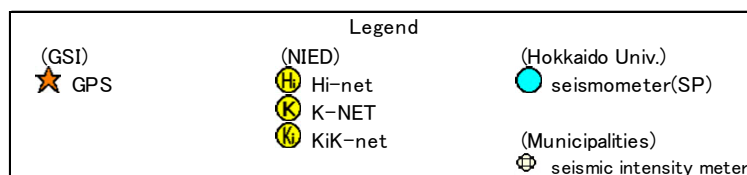


Figure 8-6 Regional monitoring network.



## **Bibliography**

Aramaki et al. (1993): Maruyama, Hokkaido Disaster Management Council, 82p (in Japanese).

Hokkaido University and the Obihiro University of Agriculture and Veterinary Medicine (1990): Rep. Coordinat. Commit. Predict. Vol. Erupt., **45**, 46-58 (in Japanese).

(Nakagawa, M.)