Miyakejima [Alert Level : 2]

Gas-and-steam plumes rose to a height of 100-600m above the crater rim. The sulfur-dioxide flux varied from 800 to 1,000 t/d in January 2011 (cf. 600-700 t/d; December 2010; Fig.1).

According to the report from Miyake village, high SO₂ concentration was sometimes recorded in some inhabited areas.

Seismicity has persisted at low levels.
There was no geomagnetic change reflecting inner heat state beneath Miyakejima.
GPS observation shows continuous deflation of the volcano originated from the shallow source.

Fig.1  Emission rate of SO₂ at Miyakejima.
Ioto [Near-crater Warning]

An aerial observation was conducted cooperation with JMSDF (Japan Maritime Self-Defense Force) on 29th and 30th January. No change of the distribution on both thermal anomalies and fumes in the island was detected, as well as the last observation on 29th July 2010.

According to the observation by NIED (National Research Institute for Earth Science and Disaster Prevention), seismicity has stayed at low levels.

According to the GPS observation by GSI (Geospatial Information Authority of Japan), landwide upheaval that was first observed from August 2006 and has slowed down since middle November 2010. The extension of the baseline in NS direction is still continuing.

Fukutoku-Oka-no-Ba [Near-sea-area Warning]

According to the information from the 3rd Regional Coast Guard Headquarters on 19th January, discolored blue-white, creamy white, and green sea water was emitted from multiple active vents, and drifted northeast in fan-like form with approximately 500 meters diameter (photo. 1).

According to the information from the JMSDF on 24th January, discolored sea water was confirmed on the sea surface above Fukutoku-Oka-no-Ba.

An aerial observation was conducted in corporation with JMSDF on 28th January. Discolored creamy white and thin-brown water was confirmed with no floating objects above the Fukutoku-Oka-no-Ba. No change of the distribution on both thermal anomalies and fumes in the island was detected, as well as the last observation in 29th July 2010.

Photo.1 Discolored sea water at Fukutoku-Oka-no-Ba taken on 19th January 2011. Minami-Ioto is at the upper-left of this photo. Courtesy of JMSDF.

Kirishimayama (Shinmoedake) [Alert Level : 2→3]

On 19th January, a minor eruption occurred at Shinmoedake in the Kirishimayama volcanoes group, which was thought to be a phreatomagmatic eruption. On 26th January at 07:31 a minor eruption occurred; at 14:49 it moved into the essential magma eruptions. At 18:00, the alert level was raised from 2 to 3, transitioning the volcano into a period of possible high activity (Target area had changed from the area around the crater to the non-residential areas near the crater). Lava fragment emissions from the summit crater were confirmed by the visual camera at night on the same day. Night-time glow was also visible by a high-sensitivity camera since 26th January. A middle scale of the explosive eruption occurred on 27th January at 15:41, and plumes rose as high as 2,500 m above the crater rim and went up into the clouds (photo 2). The last explosive eruption at Shinmoedake was 1959.
Photo.2 Explosive eruption occurred on 27th January at 15:41. Courtesy of Kagoshima Prefecture.

On the morning of 28th January, ERI (Earthquake Research Institute, The University of Tokyo) carried out an aerial survey over Shinmoedake. As the result, they revealed a lava dome, which a diameter of several 10 meters and the evidence of minor pyroclastic flow with 500-600 meters in length to flow through the southeastern direction from the crater (photo 3).

Photo.3 Shinmoedake taken on 28th January. (upper) Lava dome in the main crater (lower) evidence of minor pyroclastic flow to SW(red arrow). Courtesy of ERI.
According to the analysis by MRI (Meteorological Research Institute) and NIED from PALSAR (Phased Array type L-band Synthetic Aperture Radar) data of the ALOS (Advanced Land Observing Satellite), the amplitude images at Shinmoedake revealed that the lava accumulation in the main crater had grown by 500 meters in diameter (Fig.2). Also, JMA-MOT (Japan Meteorological Agency Mobile Observation Team) confirmed that a mid-scale explosive eruption occurred on 1st February at 07:54 sending ballistics (major axis; 70cm, minor axis; 50 cm) up approximately 3.2 kilometers away in a south-western direction.

On 31st January at 01:35 and 1st February at 11:20, the alert area enlarged, taking into account the danger of pyroclastic flow and ballistics.

Fig.2 The amplitude images of the ALOS/PALSAR acquired before and after the eruption at Shinmoedake. Taken on ascending orbit with an off-nadir angle of 21.5-43.4. Courtesy JAXA/METI.
Since 19th January, the activity had consisted of intermittent ash eruptions and the magnitude of eruption had grown to a large one and an ash plume rose to a maximum altitude of 3,000 meters above the crater rim on 27th January and 2nd February.

Seismic activity remained above background level, and a temporal increase in seismicity (32 times) was observed on 18th January. Since 28th January, daily seismic counts increased, and seismic events occurred 1,655 times (cf. 203 times; December 2010) in this period. Volcanic tremor became consecutive since eruption on 19th January, and larger in amplitudes after 26th January (Fig.3).

According to GPS measurements, the dilatation of the baselines that traverse the summit crater of Shinmoedake turned into contraction due to the increased ash emission from the summit crater.

According to the tilt observation, subsidence in summit area was observed from 26th January and turned into upheaval around 31st January, but grew stagnant from 2nd February.

According to GPS measurements by GSI, the crustal movement in and around Kirishimayama area were confirmed.

(*The PALSAR data used in the analysis were prepared by the ALOS ‘Daichi’ Domestic Demonstration on Disaster Management Application that Volcano Working Group coordinated by the CCPVE (Coordinating Committee for Prediction of Volcanic Eruptions). The PALSAR data belongs to JAXA/METI (Japan Aerospace Exploration agency/Ministry of Economy Trade and Industry). We would like to thank Dr.Shimada (JAXA) for the use of his SIGMA-SAR software.)
Fig. 3  Seismicity and plume activity at Shinmoedake from 2003 to February 11th 2011.
**Sakurajima [Alert Level : 3]**

Explosive eruptions increased from the middle of January. Small eruptions intermittently occurred since early January. In this period, eruptions occurred 102 times (cf. 62; December 2010), of which 88 times (cf. 52; December 2010) were explosive eruptions. Volcanic projectiles reached to about 800-1300m from the Showa-crater. No pyroclastic flow was observed.

Explosive eruptions occurred twice on 7th February at Minamidake summit crater whose last explosive eruption took place on the 3rd October 2009.

Volcanic seismicity has remained at relatively low levels.

The sulfur-dioxide flux elevated with an average of 800-1,700 t/d in January 2011 (cf. 2600 t/d; December 2010).

According to GPS measurement, the dilatation of the Sakurajima island turned into contraction or static state in about June 2010. The water-tube tiltmeter by MLIT (Ministry of Land Infrastructure, Transport and Tourism; 2.5km SE of Minamidake summit crater) suggested that the subsidence of summit has been slowing down since late November (Fig. 3). According to GPS measurement by the GSI, extension of the baselines that traverse Aira-Caldera (at closed-off section of Kagoshima bay) decelerated in about July 2010.

![Graph](image)

**Satsuma-Iojima [Alert Level : 2]**

White-plume activity at Iodake summit crater remained above background levels, and rose 100 meters (maximum; 300m) above the crater rim in this period. An occasional glow was confirmed at night with high-sensitivity camera.

Seismicity has stayed at low levels.

According to the information from the 3rd Regional Coast Guard Headquarters on 19th January, no change of the state was detected in and around the summit crater, as well as the last observation on 22nd October 2010.
Suwanosejima [Alert Level : 2]

Mainly inferred from seismic records, possible ash explosions occurred intermittently through this period. 26 explosive eruptions (cf. 17; December 2010) occurred in this period. Volcanic earthquakes and tremors remained at high levels.

According to the information from the 10th Regional Coast Guard Headquarters on 14th January, no change of state was detected in and around the summit crater.