Nikko-Shiranesan [Warnings around the crater]

After "The 2011 off the Pacific coast of Tohoku Earthquake" on 11th March, seismicity became higher at a depth of about 5 kilometers of W and NW foot, and 5-10 kilometers of E and SE foot of Mt. Nikko-Shiranesan, which was gradually followed by lower level of seismic activity at the former seismicity. A M3.5 earthquake on 9th April at 06:30 occurred at about 5km W of the summit, whose maximum JMA seismic intensity was 3.

In the reporting period, seismic intensity of felt earthquakes was as follows; intensity 3; 1 time, intensity 2; 1 time, intensity 1; 3 times), respectively.

No volcanic tremor was observed.
No fume was observed.

Yakedake [Alert Level : 1]

Just after "The 2011 off the Pacific coast of Tohoku Earthquake" on 11th March, seismicity became higher in the shallow parts beneath the summit and at NW foot of Mt. Yakedake, which included many felt-earthquakes, subsequently became at lower level of seismic activity. A M2.4 earthquake occurred on 3rd April at 01:52 at N foot of Mt. Yakedake, which recorded intensity 1 at Takayama city in Gifu Pref, but it tends to return to the background level.

No volcanic tremor and low-frequency earthquake were observed.
No remarkable fume was observed.
Fujisan [Alert Level : 1]
After a M6.4 earthquake occurred on 15th March at 22:31 at around south of the summit, many earthquakes following the main shock extended to right below the summit from the main shock. Aftershocks have been becoming at lower level.
Deep low-frequency earthquakes around at a depth of 15km stayed at low level.
No volcanic tremor and low-frequency earthquake in the shallow parts were observed, and no fume was observed.

Miyakejima [Alert Level : 2]
Gas-and-steam plumes rose to a height of 100-500m above the crater rim.
The sulfur-dioxide flux was 700 t/d in April 2011 (cf. 600-1,110 t/d; March; Fig.1).
According to the report from Miyake village, high SO2 concentration was sometimes recorded in some inhabited areas.
Seismicity has stayed at low level.
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]
According to the observation by NIED (National Research Institute for Earth Science and Disaster Prevention), seismicity in shallow parts in Ioto has remained at high level since February 2011.
According to the GPS observation by GSI, landwide upheaval that was first observed from August 2006 slowed down since middle November to December 2010, but has been on the increase since late January 2011. The extension of the baseline in NS direction is still continuing and recently southward displacement has been remarkably seen in the south end.

Fukutoku-Oka-no-Ba [Near-sea-area Warning]
According to the information from the JCG(Japan Coast Guard), JMSDF (Japan Maritime Self-Defense Force), and JMA, discolored water has frequently been observed around Fukutoku-Okano-Ba in recent years.

Asosan [Alert Level : 1]
A small scale of mud eruption with 5-10 meter high, has been observed at the first crater in Nakadake since 5th May 2011. The last mud eruption occurred on 18th February 2008.
Volcanic seismicity has remained at relatively low level. Continuous tremor with small amplitudes has been observed since 2nd May.
Ash eruptions have occurred 3 times at Shinmoedake, although no explosion(*) was observed in the reporting period. Maximum grayish plume height rose as high as 3000m above the crater rim and flew to E on 3rd April at 08:41, accompanying ballistics as far as approximately 600m out of the crater. Another maximum grayish plume height rose as high as 2000m above the crater rim and flew to SE on 18th April at 19:22, accompanying ballistics as far as approximately 1km to west and north direction out of the crater (Photo 1). No pyroclastic flow was observed for both eruptions.

A hearing investigation and a field survey were conducted, and showed that for the eruption on 3rd April at 08:41, ashfall extended to E direction from the crater and reach the sea of Hyuga, and for the eruption on 9th April at 01:06, ashfall extended to ENE direction from the crater and reach a part of Shintomi-town (60km from the summit crater), and for the eruption on 18th April at 19:22, ashfall extended to E direction from the crater and reach the sea of Hyuga, small lapillus were blown up to approximately 9 kilometers. Those with maximum diameter of 2cm fall down in Takaharu-town (about 9km E), which damaged solar water heaters and solar panels in residential area.

(*) Explosion at Shinmoedake is defined as the one which accompanies air shock more than 20 Pa with explosive earthquake.

Seismicity has stayed at high levels. Seismic events occurred 3,840 times in this period (cf. 2,261 times; March). Temporal increases of seismicity were sometimes observed just before and after eruptions. But such seismicity observed on 24th to 25th April accompanied with no eruption. Hypocenters were located at a depth of 2km to the shallow parts of Shinmoedake. Small-scale of tremors were sometimes occurred. Duration of tremors was 42h13m in total (cf. 87h38m; March) (Fig 2).
Aerial observations were conducted in cooperation with JASDF (Japan Air Self-Defense Force) and MLIT (Ministry of Land, Infrastructure, Transport and Tourism) on 26th and 28th April, and they revealed that the lava accumulated inside the crater was 600m in diameter, and that it remains unchanged since 22th March. Moreover, white plume was confirmed at a height of 50-300m above the crater rim along the N, E and SE parts of the margin of lava. Comparing 25th February and 2nd March, deposited material was increased inside the crater on 28th April. Infrared observation showed no major change regarding the heat distribution in the reporting period, and high-temperature area corresponded to comparatively plume area (Photos 2 and 3).

Fig.2 Seismicity and plume activity at Shinmoedake from 2003 to April 2011.
The sulfur-dioxide flux of 100-200 t/d was observed on 2nd and 21st April (cf. 1,300 t/d; 2nd March, 200-500 t/d; 8th, 10th, 15th, 17th, 18th, and 30th March). GPS measurements by GSI revealed that magma supply to deeper magma chamber around several kilometers NW of Shinmoedake has continued.

According to tilt observation (at about 3km SE of Shinmoedake), both slight amount of upheavals in summit area before several days of eruptions on 3rd, 9th and 18th April, and subsidence just after eruptions were confirmed. Conversely, no eruption occurred and subsidence was confirmed, although some tilt change was confirmed since 22nd 05 a.m. (Fig.3).

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Number of eruptions including explosive eruptions at Showa-crater has remained at high level. In this period, eruptions occurred 109 times (cf. 72; March), 92 cases of which were explosive eruptions (cf. 57; March). Ballistics reached to about 800-1300m from Showa-crater. An explosive eruption on 4th April at 16:47 rose as high as 3,000m above the Showa crater. An explosive eruption on 30th April at 22:42 accompanied pyroclastic flow, which flew down to E, as far as 600m from the crater. Volcanic glows were sometimes confirmed at night with a high-sensitivity camera.

There was no eruption at Minamidake summit crater.

Volcanic seismicity has remained at relatively low level.

The sulfur-dioxide flux was measured with an average of 400-1,700 t/d in April (cf. 700-1,700 t/d; March).

According to GPS measurement, no volcanic change at Sakurajima island was observed in this period. The water-tube tiltmeter by MLIT (2.5km SE of Minamidake summit crater) suggested that the subsidence of summit has been slowing down since late November, but has been accelerating since early February 2011 due to the trend of emitting much volcanic ash (Fig.4).

According to GPS measurement by the GSI, extension of the baselines that traverse Aira-Caldera (at closed-off section of Kagoshima bay) has been confirmed.

![Fig. 4 Tilt change observed by water-tube tiltmeter at station Arimura from January 2009 to April 2011, corrected for tidal response and eruptions. Summit upheaval corresponds to positive tilt. In the upper figure, red bars denote monthly frequencies of explosions from Showa-Crater.](image)
Satsuma-Iojima [Alert Level : 2]

White-plume activity at Iodake summit crater remained above background levels, and rose less than 200 meters (maximum; 500m) above the crater rim in this period. Volcanic glows were sometimes confirmed at night with a high-sensitivity camera.

Seismicity has stayed at low level.

A volcanic tremor with small amplitude and short duration occurred in this period.

Suwanosejima [Alert Level : 2]

Possible ash explosions at Mitake crater occurred intermittently through this period. Two explosive eruptions (cf. 5; March) occurred in this period. Plume activity at Otake summit crater remained above background levels, and rose maximum 1,000 meters (cf. 1,200m; March) above the crater rim in this period. Also, volcanic glows were sometimes confirmed at night with a high-sensitivity camera.

Just after "The 2011 off the Pacific coast of Tohoku Earthquake" on 11th March, A-type seismic activity became higher, subsequently became at lower level. Volcanic earthquakes and tremors remained relatively high.