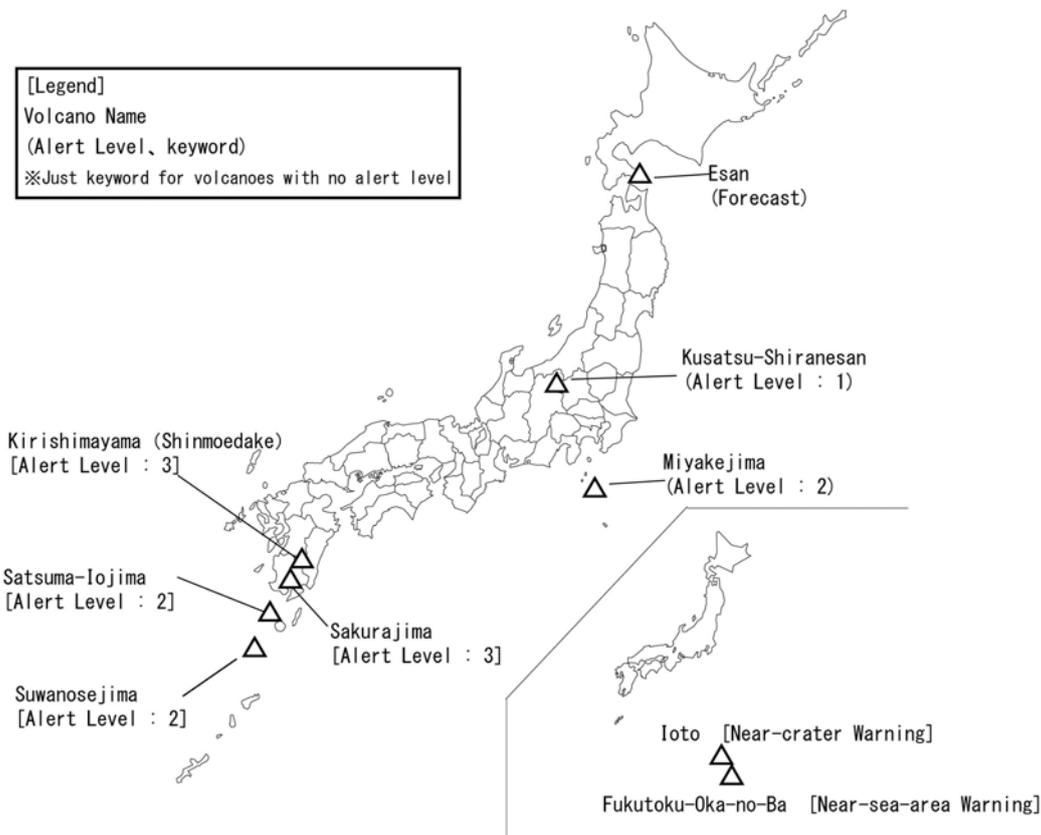


Monthly Volcanic Activity Report (March, 2012)



Esan [Forecast]

Steam plumes rose to a height of not more than 100m above the crater rim. Aerial observations were conducted in cooperation with MLIT (Ministry of Land, Infrastructure, Transportation and Tourism) on 16th and with JCG (Japan Coast Guard) on 23rd, resulting in no change in crater detected by visual or infrared observation.

A small-amplitude and short-duration volcanic tremor occurred at PM11:22 on 30th. After that, small volcanic earthquakes temporarily increased till early on 31st. We couldn't observe steam plumes because of cloud, but there was no change in air vibrations and crustal deformation data. According to field surveys on 2nd April, there was no change in steam plumes of X, Y crater.

No remarkable crustal change was observed by GPS.

Kusatsu-Shiranesan [Alert Level : 1]

According to field surveys on 8th, there was high temperature area in northern slope of Mizugama crater and northern fumarolic area, which was the same as that observed in the previous surveys on 27th June, 2011. Very weak steam plumes at northern fumarolic area of Yugama were sometimes observed by a camera at Okuyamada, though we couldn't observe them for long periods because of bad weather and mechanical trouble. No steam plumes were observed by a camera at Ainominesancho except for the period of bad weather. By Tokyo Institute of Technology's camera located inside the Yugama crater, no steam plumes were observed except for the period of bad weather.

According to observation of Tokyo Institute of Technology, earth temperature in fumarolic area at NE of Yugama crater has remained high level since the rapid rise in May 2009, while temporary drop in temperature has been observed sometimes.

Volcanic earthquakes with small amplitude have temporarily increased sometimes, hypocenters of which were located just beneath the south of Yugama. No tremor was observed.

No remarkable crustal change thought to be caused by volcanic activity was observed with GPS.

Small seismicity increased from PM11:00 on 1st April to AM2:00 on 2nd April, and then subsided. Its hypocenters were presumed to distributed around south of Yugama. No volcanic tremor was observed. Accompany with that seismicity, no change of fume was observed by the cameras at Okuyamada and Ainominesancho. As for the camera installed in the Yugama crater by Tokyo Institute of Technology, it does not work at night. No remarkable crustal change was observed by GPS and tiltmeters.

Miyakejima [Alert Level : 2]

Gas-and-steam plumes rose to a height of 100-300m above the crater rim.

According to a field survey on 15th and 22nd March, the sulfur-dioxide (SO₂) flux was 900t/d and 600t/d respectively, (cf. 900 t/d on 10th February; Fig.1) which showed the volcanic gas remained a little higher than usual. According to the report from Miyake village, high concentrations of SO₂ were sometimes recorded in some inhabited areas.

Aerial observations using an infrared camera were conducted in cooperation with JGSDF (Japan Ground Self-Defense Force) on 7th March. They revealed that high temperature areas remained around main crater located south wall of summit crater, which was the same as the result of the previous survey in January, 2010.

There was no geomagnetic change reflecting inner heat state beneath Miyakejima.

Seismicity has stayed at a low level. Hypocenters were located just beneath the summit crater of Miyakejima as before. No tremor was observed.

According to GPS observation, ground deformation indicating contraction of shallow parts of mountain has still continued but been gradually getting smaller. Also, long-term extension of the baseline along N-S section of Miyakejima has been observed since 2006, indicating expansion of deep parts.

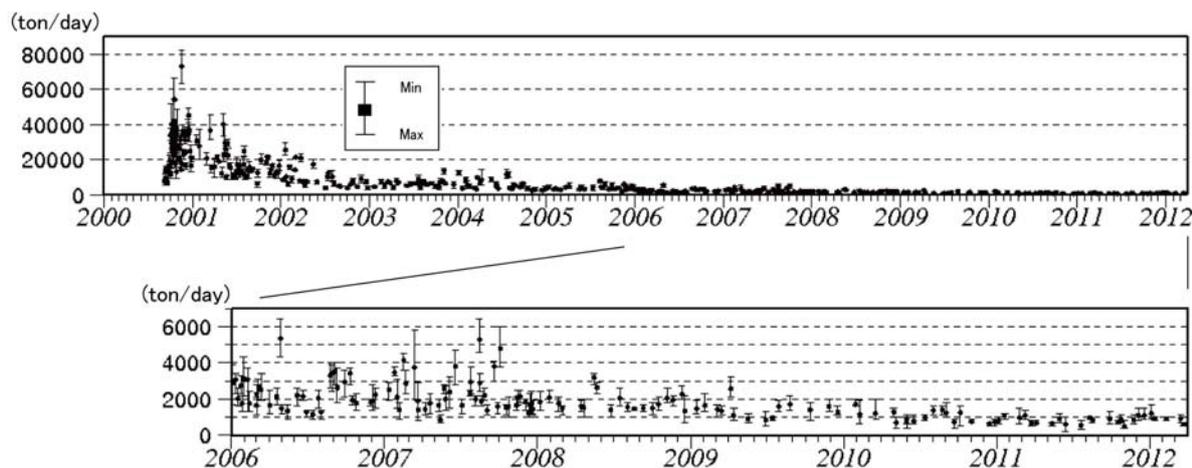


Fig.1 Emission rate of SO₂ at Miyakejima.

Ioto [Near-crater Warning]

【old crater (so-called: Million dollar hall)】

During field surveys in cooperation with JMSDF (Japan Maritime Self-Defense Force) from 7th to 9th, JMSDF reported that mud ejection have occurred at old crater in the west of the island at AM 8:20 on 7th, and field surveys of the area were made immediately. By PM 1:25, intermittent ejections of steam plumes, mud and small rocks accompanied with very small phreatic eruption were observed. A major ejection hall was the same as that of previous ejection (early February 2012), and mud was scattered 100m NE from there. Fume rose up to 20m, small ash deposits rose up to over 10m and scattered within 20m in every direction. On the morning of 8th, a trace of new mud ejection was found and the ejection hall was full of mud. There was a high-temperature area around ejection walls. Temperature of an area several meters from the most northerly ejection hall was about 100°C and around 10°C higher than before (14th to 15th February, 2012). Observation of earth temperature showed an upward tendency in the long term in spite of some unexplained drops, which is in accord with thermocouple thermometer data. This thermal observation is continuing now.

【Asodai depression hole】

Water level in Asodai depression hole rose up compared with the previous observation (16th to 18th November, 2011). By thermal infrared, temperature of mud water was estimated about 100°C like the previous observation. Ejection of hot water occurred at intervals. The steam plumes accompanied with the ejection of mud water showed an increase in volume than before and rose to a height of about 20 m from top of the hall smelling SO₂ a little.

【Higashiyama fumarolic and thermal area】

There was high temperature area like the previous observation (16th to 18th November, 2011). Earth temperature observed 10cm under the surface was 100°C. Steam plumes were ejected in high volume and smelled sulfurous.

【Other area】

No remarkable change in state of fumarolic gas or ground heat was observed compared with previous observations (November 2011).

【By Camera watch】

Monitoring with a camera placed at Asodaihigashi (about 900m ENE of Asodai depression hall) showed the volume of fume from Asodai depression hole located west of the island was low level and the height of the fume was 10-80m.

No fume was observed in Idogahama located NE of the island.

Seismicity in Ioto has remained at a relatively high level since February 2011. Low-frequency as well as high-frequency earthquake seismicity was slightly active. A tremor (duration time 90min) accompanied with very small phreatic explosion occurred from AM 11:53 to PM 1:25 on 7th.

According to GPS observation by GSI (Geospatial Information Authority of Japan), upheaval of entire island that started in August 2006 had accelerated since the end of January 2011, but had slowed down since late December of that year. Recently, remarkable southward displacement has been seen in the south end.

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

According to the information from the JCG, JMSDF, and JMA, discolored water has been frequently observed in surrounding waters of Fukutoku-Oka-no-Ba in recent years.

Kirishimayama (Shinmoedake) [Alert Level : 3]

No eruption was observed in the reporting period at Shinmoedake (the last explosive eruption occurred on 1st March, 2011, while the last eruption on 7th September in the same year). As before, white plume height was approximately 50m on average (maximum; 400m) above the crater rim.

Aerial observations were conducted in cooperation with JASDF (Japan Air Self-Defense Force) on 7th and with Miyazaki Pref. on 13th March. They revealed that the diameter of lava accumulated inside the crater remained about 600m and that white plume including blue-white sulfur dioxide rose up mainly from the E and N margin of lava, which was the same as the result of the previous survey (Photo 1). Infrared observations revealed no significant change in the temperature distribution of the surface of lava and revealed comparatively high-temperature area at the margin of lava. There was a relatively high-temperature area in a part of the crack in the western slope, though plume was not observed.

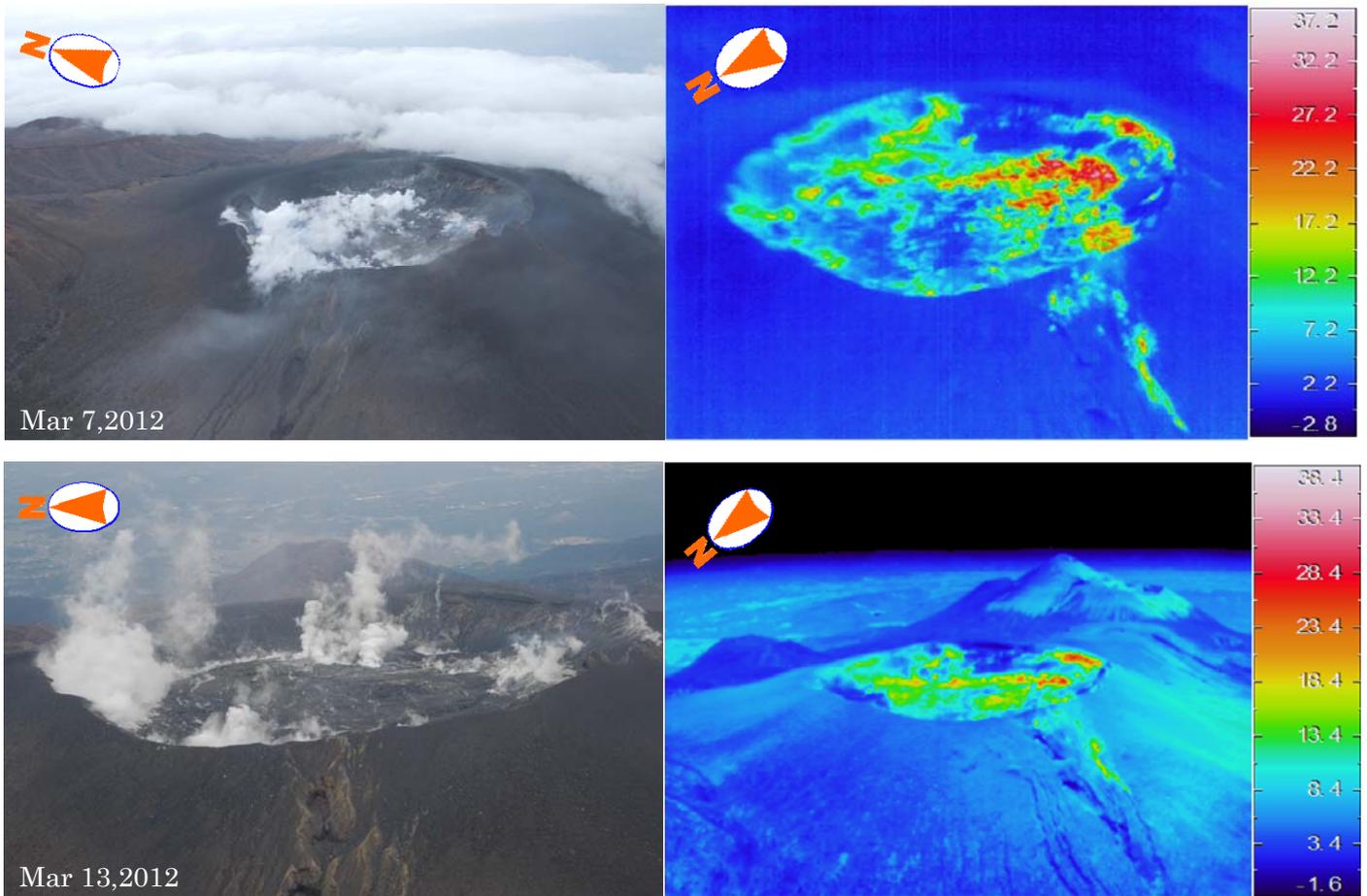
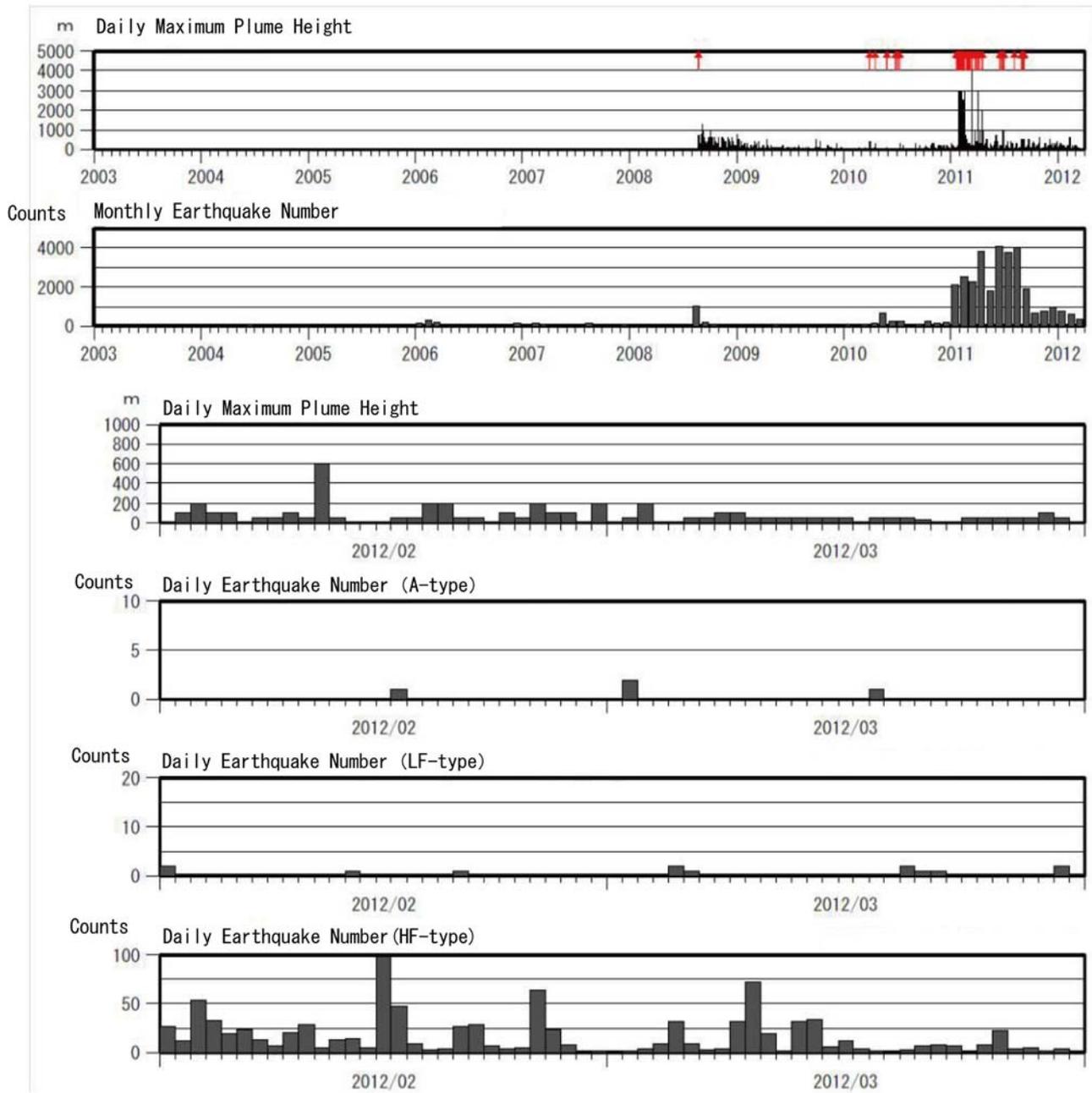


Photo.1 Aerial survey on 7, 13 March. Courtesy of JASDF and Miyazaki Pref.

Seismicity remained at a relatively high level. Seismic events occurred 368 times in March (cf. 611 times in February). Most hypocenters were located at a depth of 0-2km below sea level around Shinmoedake as previous ones. No volcanic tremor was observed (cf. 1 time in February).

According to wide area deformation observations by GPS measurements of GSI, the extension of baselines, caused by magma supply to deeper magma chamber at around several kilometers NW of the crater, had been gradually slowing down since December in 2011, and has almost stopped thereafter. There was no remarkable change related to volcanic activity according to observations by tiltmeters and narrow area GPS measurements around Shinmoedake.

According to field survey on 22nd March, the sulfur-dioxide flux was 100 t/d (cf. 200t/d; in February).



※ The notation “↑” stands for eruptions.

Fig 2. Seismicity and plume activity at Shinmoedake from 2003 to March 2012.

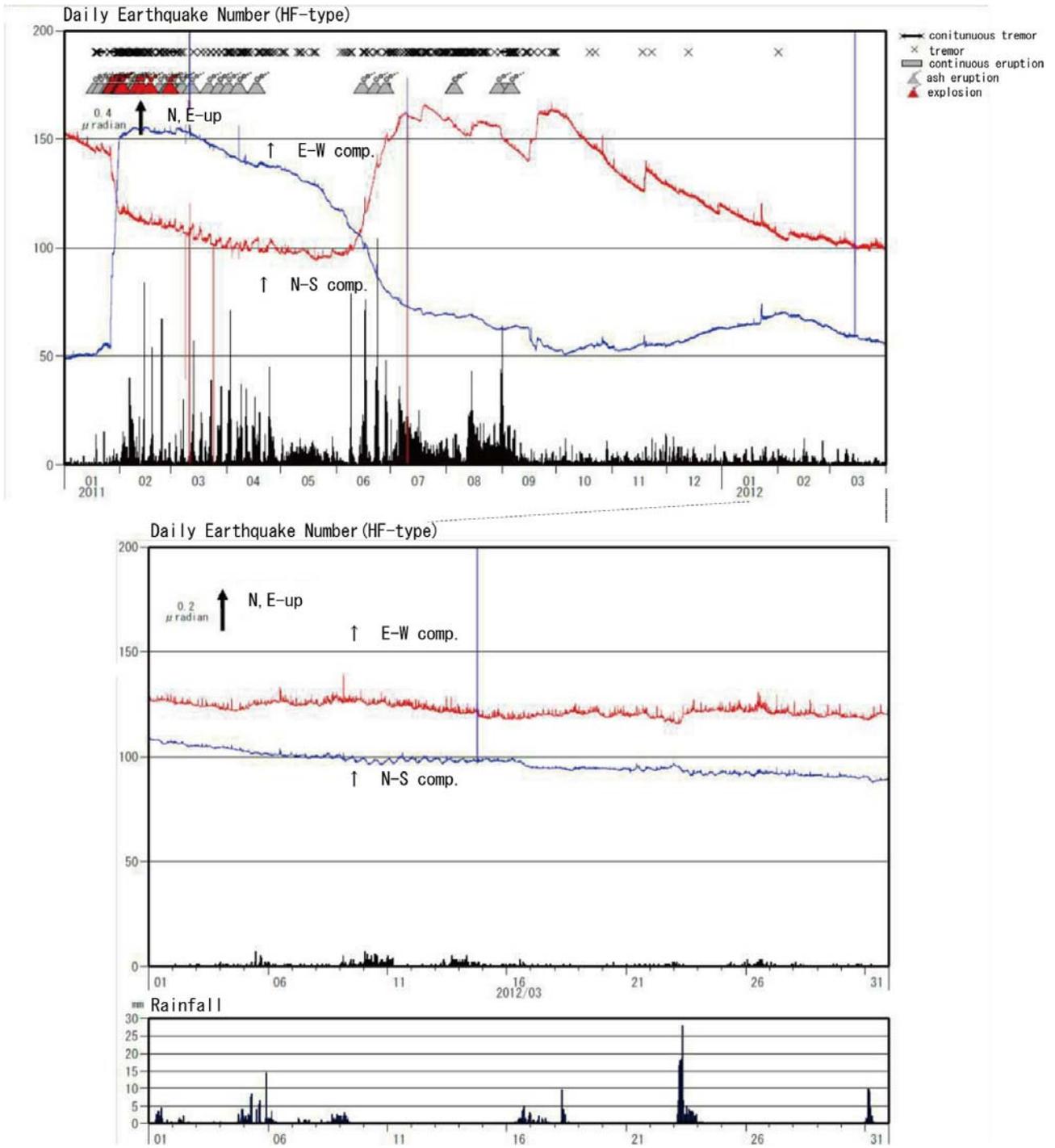


Fig.3 Tilt observation at Shinmoedake from 2003 to March 2012.

Sakurajima[Alert Level : 3]

Number of eruptions including explosive ones at Showa-crater has remained large. In this period, eruptions observed 128 times (cf. 103 in February), 112 cases of which were explosive ones (cf. 93 in February). As well as reaching areas about 1300-1800m away from the Showa-crater 3 times, ballistics reached areas about 2000m away from the Showa-crater during an explosive eruption at PM 3:07 on 12th. The maximum plume height reached to 2,500m above the crater rim. Very small pyroclastic flow was observed at AM 0:55 on 22nd (last observed: 26th October, 2011) and it flowed down to east about 300m. Volcanic glows were sometimes observed clearly at night with a high-sensitivity camera.

At Minamidake summit crater, very small eruptions have been sometimes observed. The maximum plume height reached to 300m above the crater rim. Weak volcanic glows were observed at the crater in the night by a high-sensitivity camera on 22nd (last observed: 19 May, 2009) .

Volcanic seismicity has remained at a relatively low level. Earthquakes occurred 892 times (cf. 593 times in February). Hypocenters were located at a depth of approximately 1-3 km below sea level just underneath Minamidake and approximately 2 km below sea level underneath eastern area of Sakurajima. Number of tremors accompanied by eruption amounted to 480 in March (cf. 192 in February). Duration of them was 92h46m in total in March (cf. 22h32m; February), which was longer than in the previous month.

According to field surveys on 14th and 28th March, sulfur-dioxide flux was 2,400 t/d on average (cf. 2,300-2,900 t/d in February), which remained at a high level.

The slight upheaval of the mountain had continued since November 2011, but turned to stop in February 2012 according to observations by a water-tube tiltmeter installed by MLIT at 2.5km SE of Minamidake summit crater. According to continuous GPS measurement, slight extension inside Sakurajima Island has been observed since around September 2011. According to GPS measurement by GSI, long-term extension of the baselines that traverse the Aira-Caldera (at closed-off section of Kagoshima bay) has been observed. That indicates the expansion of deeper magma chamber beneath the Aira-Caldera.

The amount of ashfall was up to 12g/m² in March (total of 4 days' ashfall) at Kagoshima Local Meteorological Observatory (about 10km west of the volcano). From observation data by Kagoshima Pref., total amount of ashfall was estimated at 520,000 ton in February, which was about the same as 510,000 ton in January 2012.

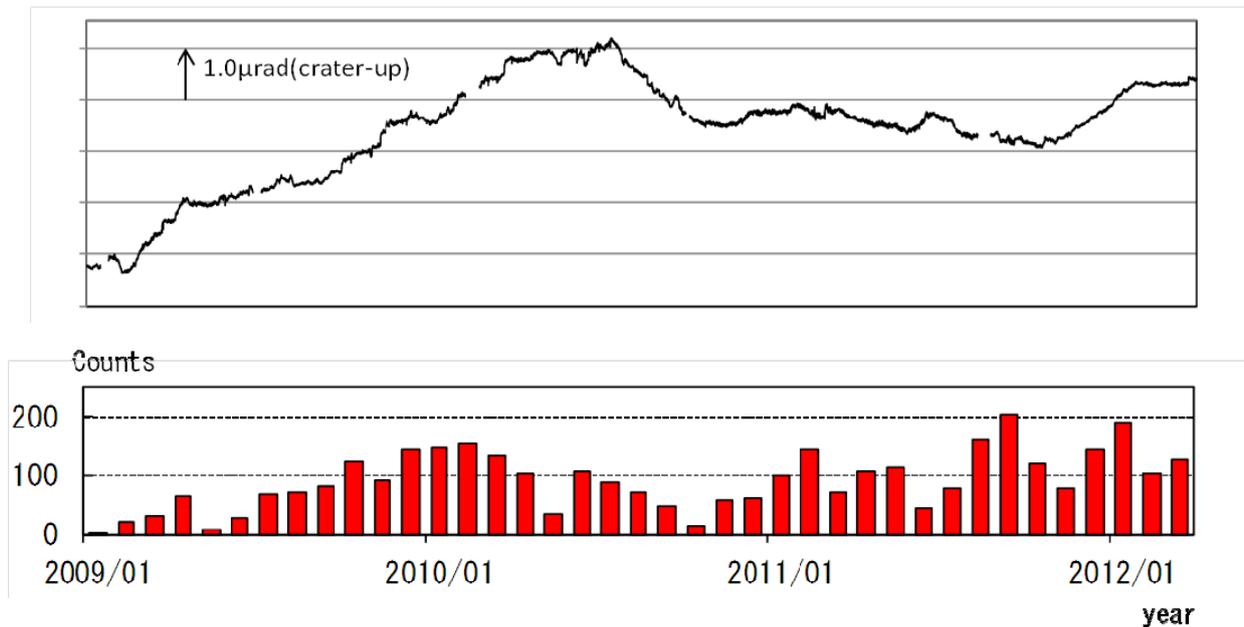


Fig 4. Tilt change observed by water-tube tiltmeter at station Arimura from January 2009 to March 2012, eliminating tidal response and eruptions. Upheavals of the summit side correspond to positive tilts. In the bottom figure, red bars denote monthly frequencies of explosions of the Showa-Crater.

Satsuma-Iojima [Alert Level : 2]

Plume activity at Iodake summit crater remained at a relatively high level. A white plume rose up to 400m above the crater rim in this period.

Seismic activity remained at the background level. Seismic events occurred 201 times (cf. 189 times in February 2012).

A small-amplitude and short-duration volcanic tremor was observed (cf. 0 in February).

No remarkable crustal change was observed by GPS observation.

Suwanosejima [Alert Level : 2]

An explosive eruption occurred on 6th March (cf. once in February 2012).

Maximum plume height was 200m above the crater rim in this period (cf. 400m in February 2012).

Weak volcanic glows were sometimes observed at the crater in the night by a high-sensitivity camera.

Seismic activity remained at a low level.

Duration of tremors in March was 0h17m in total, which was shorter than in the previous month (cf. 0h58m in February).

No remarkable crustal change was observed by GPS observation.