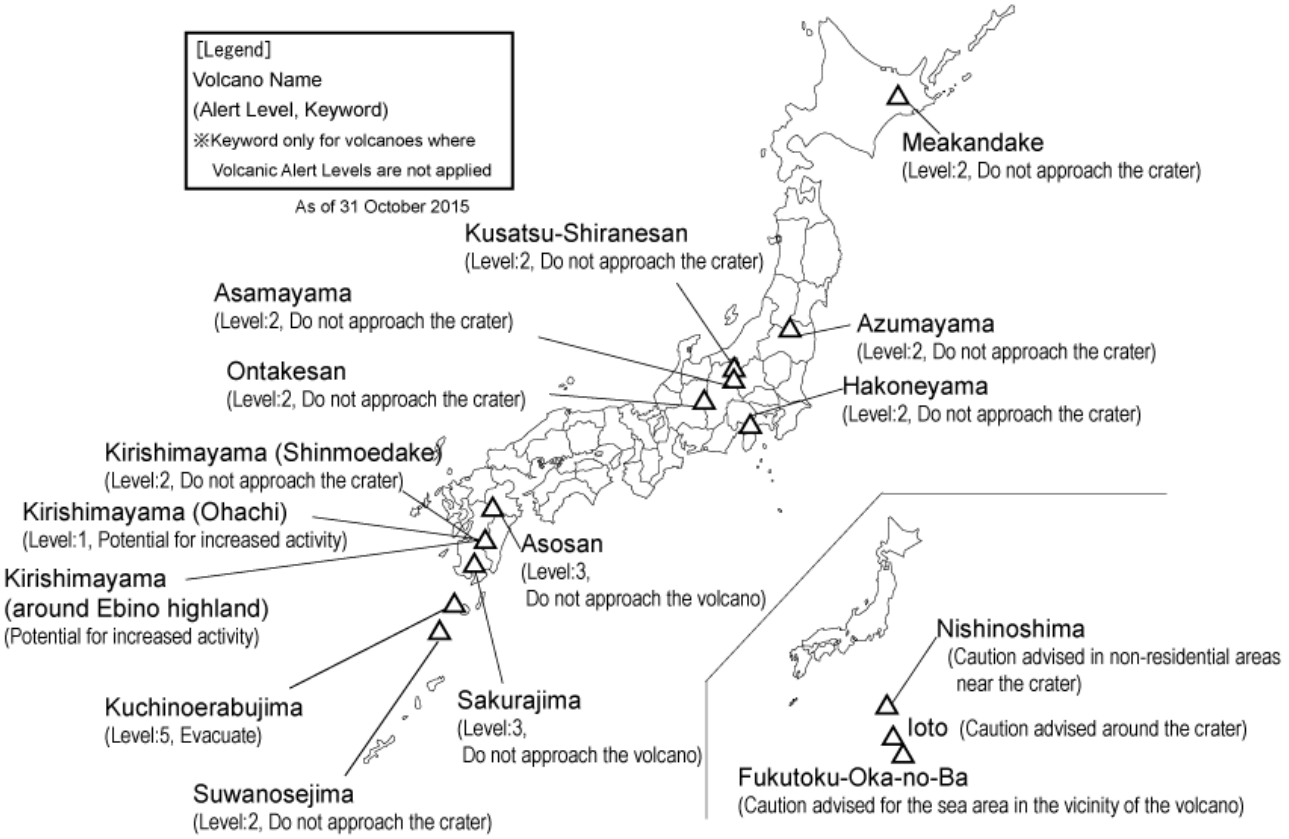
Monthly Volcanic Activity Report (October 2015)

Japan Meteorological Agency



Meakandake (Alert Level: 2)

A field survey and aerial observation conducted in collaboration with the Japan Coast Guard (JCG) on 1 October revealed a slight expansion of the geothermal field on the north wall of the Ponmachineshiri 4th crater and further violent plume emissions compared to those observed during the field survey conducted in July. A temperature rise was also seen at the bottom of the Ponmachineshiri 96-1 crater compared to the value observed during a field survey the previous October.

A field survey conducted from 2 to 5 November showed no remarkable changes in the extent of the geothermal field at the Ponmachineshiri 4th crater compared to that observed during the field survey in October, and no expansion was recorded. No remarkable changes were seen at other craters.

Further violent plume emissions and strong foul odors were also recorded at the 96-1 crater, reflecting the possibility of increased volcanic gas emissions.

Data from continuous observation of geomagnetic total intensity showed an almost-static state from March 2014 to mid-March 2015, since when a decreasing trend has been seen. This indicates an ongoing trend of increased thermal activity under the area around the Ponmachineshiri 96-1 crater since mid-March 2015.

Imperceptible volcanic seismicity in shallow parts under the area around the Ponmachineshiri crater began to fluctuate at high levels in mid-April 2015. It began a gradual decline in August and has remained at low levels since late-August with around 10 or less seismic events recorded a day.

A small-amplitude short-duration volcanic tremor was recorded at around 19:00 on 12 October, but no remarkable changes were seen in plume activity before or after the tremor. No changes were shown in observation data from low-frequency microphone and ground deformation, either.

Data from continuous GNSS* observation show a slight extension along baselines between Ponmachineshiri-Minami 2 and Akubetsu-River-Upper-Stream and between Meakan-Onsen-Minami 2 and Akubetsu-River-Upper-Stream, indicating a slight inflation of the volcano.

* GNSS (Global Navigation Satellite System) is a generic name for satellite positioning systems such as GPS.

Azumayama (Alert Level: 2)

Fumarolic activity at the Oana crater has remained at relatively high levels.

The height of fumes from the Oana crater (Issaikyouzan-Minamisanpuku Station) has remained at 100 m or less based on visual observation. Fumes from outside the Oana crater have been observed continuously since January, and fumarolic activity has remained at relatively high levels.

Field surveys conducted on 11, 12, 14 and 15 October indicated the continued presence of a geothermal field that has been expanding since 2013 in and around the Oana crater. Weak fumes along the mountain trail on the western side of Issaikyouzan were also observed.

Ongoing geomagnetic total intensity observation around the Oana crater showed a possibility of increased thermal activity beneath the area around the crater.

Volcanic seismicity immediately under the Oana crater has remained at low levels with 7 seismic events recorded (96 seismic events in September). No volcanic tremors have been recorded.

According to data from a tiltmeter at Joudodaira station, ground deformation with a slow rising trend had been seen on the western side (toward the crater) since April 2014 but stopped around July 2015. Continuous GNSS observation data had shown a slow change since around September 2014 indicating the inflation around Issaikyouzan, but it stopped around June 2015. Data from wide-area ground deformation observation by the Geospatial Information Authority of Japan (GSI) revealed a trend indicating that the volcano had been inflating along some parts of the baseline since around December 2014, but the trend stopped around July 2015.

Kusatsu-Shiranesan (Alert Level: 2)

According to field surveys conducted from 29 September to 2 October, geothermal areas were observed on the northern wall of the Yugama crater and a fumarolic area to the north, as observed during the previous field survey on 12 May. Fumarolic activity in a fumarolic area to the north has been at higher levels than those observed during the previous field survey. Aerial observation conducted on 13 October in collaboration with the Japan Ground Self Defense Force (JGSDF) Eastern Army Aviation Group also revealed a thermal area on the northern wall of the Yugama crater as observed during the previous observation on 16 March.

According to the Tokyo Institute of Technology, composition of gas in the fumarolic area to the north and chemical composition of water in the Yugama crater have shown changes indicating increased volcanic activity as before. Changes in data from continuous and repeated geomagnetic total intensity observation (considered indicative of a temperature rise beneath Yugama) were seen from May 2014 but stopped around July 2014.

Volcanic seismicity beneath Yugama and its southern area has increased since early March 2014 but has remained generally at low levels since August of the same year.

Data from ground deformation observation had shown a trend of inflation around Yugama since around April 2014, but this has declined since around April 2015.

Asamayama (Alert Level: 2)

No eruption has been recorded since the eruption on 19 June 2015.

Aerial observation conducted on 14 October in collaboration with the JGSDF Eastern Army Aviation Group revealed a thermal area in and around the center of the bottom of the Summit crater as before. No remarkable changes have been seen in thermal area distribution in the Summit crater compared with the previous observation on 24 June. No new ejecta or discoloration were seen in or around the crater, and no changes in the crater's geographical features were observed.

According to field surveys conducted on 8, 15 and 26 October, amounts of SO_2 emissions have remained large at 600 – 2,000 tons a day (1,900 tons a day on 30 September).

Weak volcanic glows visible only at night with a high-sensitivity camera continued at the summit crater and the volume of plume emissions has shown an increasing trend since June.

Imperceptible volcanic seismicity in very shallow parts immediately under the summit has remained at high levels. Many of the earthquakes were low-frequency BL types. The number of short-period BH-type volcanic earthquakes increased in July but has decreased since August. No migration of source locations to shallower parts

or other changes have been seen. The number of volcanic tremors showed a slight increasing trend from 19 August but has remained low since September. No volcanic tremors were recorded in October.

Data from electro-optical distance measurement show that there has been a trend of contraction between the summit and Oiwake since around June, reflecting the possibility of inflation in very shallow parts under the summit. Data from tiltmeter observation show an ongoing gradual change since around early June. Data from GNSS observation conducted by GSI also revealed a slight extension since around May. This suggests inflation in slightly deeper parts under the western side of the volcano.

The potential for small eruptions affecting areas around the crater remains.

Ontakesan (Alert Level: 2)

A field survey conducted on 7 October showed that ongoing white plume emissions continue to rise from the row of craters at the summit.

Volcanic seismicity has remained at low levels, but has not yet returned to the levels observed before August 2014.

A low-frequency earthquake was recorded on 22 October (none were recorded in September). No remarkable changes indicating increased volcanic activity were seen in observation data on plumes and ground deformation before, during and after the earthquake.

The potential for eruptions on the scale of the one that occurred on 27 September 2014 is considered low, as volcanic activity has remained at low levels and no eruptions have occurred since October 2014.

However, despite low levels of plume activity and seismic activity, the potential for a sudden eruption smaller than the one that occurred on 27 September 2014 cannot be eliminated.

Hakoneyama (Alert Level: 2)

No eruptions have been recorded since 1 July at Owakudani.

According to a field survey conducted on 9 October, violent emissions of fumes and steam were observed as before at the 15-1 crater, the 15-2, 15-3 and 15-4 fumaroles and the nearby Owakudani hot spring supply facilities. Ejection of material considered to be soil was observed in the 15-1 crater as the previous field survey on 29 September. The scale of this eruption was small with ejection heights lower than the crater rim, and no ejecta was scattered outside the rim during observation. No changes were seen in the size and form of the 15-1 crater. Thermal infrared observation showed a high-temperature area on the eastern side of the 15-1 crater as before. No remarkable changes have been seen in the overall situation at Owakudani (including amounts of fumes and steam) compared with the results of the previous field survey.

Volcanic seismicity has declined and remained at low levels since July. No low-frequency earthquakes and volcanic tremors have been recorded.

No changes indicating volcanic activity have been seen in JMA/Hot Springs Research Institute of Kanagawa Prefecture tiltmeter data or JMA volumetric strainmeter observation at Yugawara-Kajiya since August. Data from continuous GNSS measurement conducted by GSI show ground deformation indicating inflation of the volcano along baselines around Hakoneyama from April 2015. However, the trend indicating inflation of the volcano stopped around late August.

Despite a declining trend in seismic activity, the potential for small eruptions at craters or fumaroles around Owakudani remains until volcanic activity returns to the levels observed before late April. Fumarolic activity also shows a declining trend, but remains at high levels.

Nishinoshima (Near-crater Warning)

Reports from JCG and other institutions show that accumulation of lapilli pieces due to eruptions and lava flow have continued. Aerial observations were conducted on 13 and 18 October by JCG and on 29 October by the Japan Maritime Self Defense Force (JMSDF).

Aerial observation conducted on 13 October revealed small eruptions at the 7th crater occurring every 3 – 5 minutes.

The lava field on the lower side of the northeastern slope of a pyroclastic cone had thickened, and lava flowed to the north and west.

No lava flow as far as the sea was observed, and no remarkable changes were seen along the coast of the island.

Blue-white discolored water was seen along the coast of the island with a width of around 200 – 500 m.

Aerial observation conducted on 18 October revealed emissions of gray plumes from the 7th crater every 5 minutes or so. The duration of each eruption was around 1 minute. Light-yellowish-green discolored water was seen along the coast of the island.

No eruptions at the 7th crater were seen during aerial observation conducted from 11:50 to 11:53 on 29 October, but weak fumes were observed around the crater. Yellowish-green discolored water was seen along the coast of the island with a width of around 50 – 200 m.

Aerial observation conducted on 13 and 18 October showed no faults parallel to the coastline or cracks with the potential to generate tsunamis on the island or on newly formed land.

Eruptions are estimated to continue at the crater on the newly formed land, and submarine eruptions may also occur around the island. A submarine eruption affecting the sea surface may scatter ballistic projectiles or generate a base surge spreading across the surface at a high speed. Related impacts may reach areas as far as around 2 km away.

Ioto (Near-crater Warning)

Volcanic seismicity has remained at relatively low levels. A total of 2 volcanic tremors occurred. No anomalies were observed in other data during the period in which volcanic tremors were recorded.

Continuous GNSS measurement showed repeated rising trend and static state from around late February 2014 and the speed of the rising trend started to increase in around March 2015. Data from GNSS measurement conducted by GSI showed that the rate of deformation to the west began to increase in mid-April 2015, but the increase stopped around September.

Fukutoku-Oka-no-Ba (Near-sea-area Warning)

In aerial observation conducted on 18 October in collaboration with JCG, no discoloration considered to stem from volcanic activity was seen on the sea surface around Fukutoku-Oka-no-Ba. Discoloration and floating objects have frequently been identified in the water surrounding Fukutoku-Oka-no-Ba in recent years. The latest submarine eruption occurred on 3 February 2010.

Asosan (Alert Level: 3)

Small eruptions occurred at 02:59 and 06:02 on 23 October at the Nakadake No.1 crater. An eruption at 02:59 sent plumes as high as 1,400 m above the crater rim and ejected ballistic projectiles as far as the area around the crater. At the eruption at 06:02, plumes rose as high as 1,600 m above the crater rim.

A field survey conducted on 23 October revealed large volcanic projectiles over an area from the northwest to the western side of the Nakadake No. 1 crater.

Amplitudes of volcanic tremors fluctuated and remained large from 19 October, but have generally been small since a very minor eruption at 02:27 on 23 October.

The number of isolated volcanic tremors remained generally large until the eruption on 23 October. Volcanic earthquakes occasionally occurred.

Amounts of SO_2 emissions have been at 300 – 1,900 tons a day (900 – 1,900 tons a day in September).

Data from tiltmeter observation revealed no remarkable changes indicating volcanic activity. Continuous GNSS measurement showed a slight extension of the baseline across Kusasenri since around August, where a magma chamber is considered to be present in deeper parts.

Volcanic activity at the Nakadake No.1 crater has remained at high levels and the potential for eruptions on the same scale of the one that occurred on 14 September 2015 remains.

Kirishimayama (Shinmoedake) (Alert Level: 2)

Volcanic earthquakes occasionally occurred immediately under the Shinmoedake crater. 50 seismic events were recorded in October (7 seismic events in September). Volcanic seismicity temporary increased on 30 and 31 October with 18 and 17 seismic events, respectively. No volcanic tremors have been recorded.

According to GNSS observation data, ground deformation indicating deeper magma chamber inflation at several kilometers northwest of Shinmoedake stopped around January 2015. A slight extension has been observed along some baselines around Shinmoedake.

Small eruptions may occur at the Shinmoedake crater affecting the area around the crater.

Kirishimayama (Ohachi) (Alert Level: 1)

Volcanic seismicity has been at relatively high levels since around July. However, the number of volcanic earthquakes in October was 16, which was lower than that in September (50 seismic events). No volcanic tremors have been recorded.

No remarkable changes were seen in volcanic activity and no signs of eruption were observed, but volcanic seismicity has been at relatively high levels since around July.

Kirishimayama (around Ebino highland) (Potential for increased activity)

A small-amplitude volcanic tremor occurred at 15:46 on 19 October that lasted around 3 minutes and 30 seconds and another small-amplitude volcanic tremor occurred at 13:04 on 31 October that lasted around 2 minutes and 30 seconds. It was the first time to observe a volcanic tremor around this area since 2 September.

Accompanying the volcanic tremors on 19 and 31 October, data from a tiltemeter at Karakunidake NE Station showed an associated slight rising trend on the northwestern side of Ioyama.

Volcanic seismicity has temporary increased on 19 and 31 October with 14 and 17 seismic events recorded, respectively. A total of 68 seismic events occurred in October (28 seismic events in September).

According to field surveys conducted on 20, 28 and 31 October, no fumes were seen at or around Ioyama. Thermal infrared observation showed no remarkable changes in ground surface temperature distribution. H_2S odors were recorded in some areas of Ioyama as before.

According to continuous GNSS observation data, a slight extension has been observed along some baselines around Ebino highland.

No fumes were observed, but volcanic activity increased slightly with small-amplitude volcanic tremors recorded since around July.

Earthquakes occurred around 2 km southwest of Onaminoike from around 01:00 on 2 November. Shaking accompanied earthquakes at 01:43 and 08:08 on the same day around Makizono Town in Kirishima City was reported, and a seismic intensity of 1 on the JMA scale was registered in the Nakano area of Yokogawa Town in Kirishima City at 08:08. A total of 20 seismic events around 2 km from Onaminoike were recorded on 2 November.

A field survey conducted on 2 November revealed neither thermal anomalies nor fumes in or around Onaminoike. Data from tiltmeter observation showed only changes related to earthquakes, and no remarkable changes related to quakes have been seen in volcanic activity around the Shinmoedake crater, in Ohachi or on the Ebino highland (Ioyama).

Sakurajima (Alert Level: 3)

Very small eruptions occurred occasionally at the Showa crater but no explosive eruptions were observed. No eruptions were recorded at the Minamidake summit crater.

The number of volcanic earthquakes in October was 47, which was lower than that in September (569 seismic events). These occurred immediately under Minamidake at depths of around 2 – 3 km, around 2 km west of Minamidake at depths of 4 – 6 km and around 2.5 km east of Minamidake at a depth of around 5 km.

Data from tiltmeter and strainmeter observation conducted on the island show no remarkable changes since the rapid ground deformation observed on mid-August indicating the expansion of the volcano. Data from continuous GNSS observation show that the expanding trend of the volcano observed since around January 2015 turned into a contracting trend after the rapid expansion on 15 August. The extension of the baseline across the Aira Caldera (in the inner part of Kagoshima Bay) has remained static since the rapid ground deformation in mid-August. However, considering the volcano’s trend of contraction thereafter, extension and contraction activity is considered to be ongoing.

According to field surveys on 7 and 13 October, amounts of SO_2 emissions have remained small at 70 tons a day (80 – 400 tons a day in September).

Despite low levels of volcanic activity, repeated eruptions have occurred and long-term expansion of the Aira Caldera has continued.

Kuchinoerabujima (Alert Level: 5) ← Alert level update on 21 October

No eruption has been observed at the Shindake crater after the eruption on 19 June.

According to observations conducted on 14 October by the University of Tokyo's Graduate School of Science, Kyoto University's Disaster Prevention Research Institute, Yakushima Town and JMA, amounts of SO_2 emissions have remained at relatively low levels at 300 tons a day (100 tons on 12 September).

A field survey conducted on 15 October revealed no remarkable changes in geographical features around the crater or fume emissions. Thermal infrared observation showed that the temperature around a fissure to the west of the Shindake crater had decreased, having previously risen from around March until 29 May before the eruption.

Volcanic seismicity remained at low levels. No volcanic tremor has been recorded.

No remarkable changes have been seen in ground deformation observations after the eruption on 29 May.

No increasing trend has been seen in volcanic activity, and the potential for eruptions on the scale of the one that occurred on 29 May 2015 is low. However, considering the rising trend of the island continues that was observed before the eruption on 29 May, the potential for eruptions remains.

Accordingly, JMA issued a Volcanic Warning with Volcanic Alert Level 5 (Evacuate) on 21 October 2015, reducing the area in which caution is required.

An eruption may affect areas within 1.4 NM from the Shindake crater.

Suwanosejima (Alert Level: 2)

Eruptions occurred at the Otake crater on 2, 13 and 31 October and gray-white plumes rose as high as 800 m above the crater rim. According to the Suwanosejima branch of the Toshima Village administration, rumbling was heard on the island accompanying the eruption on 2 October. No explosive eruption occurred. Volcanic glows were observed at the crater at night with a high-sensitivity camera.

The potential for eruptions affecting areas around the crater remains.