

## Activity of Miyakejima volcano - Observation of Japan Meteorological Agency -

# Seismological and Volcanological Department, JMA and Miyakejima Weather Station, JMA Katayama Hiroaki

Miyake-jima has been uninhabited since September 2000 due to the volcanic activity. Although the power supply and the telephone lines stopped and mud flows cut the roads at several places, Japan Meteorological Agency has made efforts to continue various observations for monitoring the volcanic activity. In this poster, we introduce our volcanic observations and their results at Miyakejima volcano.

We are carrying out visual observation, infrared observation and COSPEC measurement by the airplanes with support of Japan Defense Agency, Japan Coast Guard, Metropolitan Police Department and Tokyo Fire Department. We found a large collapse crater, about 700-800m across and about 100 m deep, at the summit of Oyama on 9 July 2000. After then, subsidence of summit crater had continued, and the caldera enlarged to diameter of 1.6km, and a depth of 400-500m late August 2000. Although the small-scale collapses of the caldera rims or small-scale advance of the crack are still observed, the geographical feature of the caldera has not changed a lot especially since September 2000. We started thermal observation in the caldera with an infrared camera in September, 2000. We have observed the high temperature in the southern part of the caldera, mainly near the main pits. Since October 2000, the highest temperature exceeded 300 C degrees. We started the SO<sub>2</sub> measurement by COSPEC in the end of August, 2000. The amount of released SO<sub>2</sub> increased gradually in September and became several tens of thousands ton/day at maximum. In the long run, the amount of released gas has been decreasing after last year, but still continues in high level; 10,000 - 20,000 ton/day now. The volcanic smoke is observed by high sensitivity cameras. Although major eruptions have not occurred since September 2000, the small-scale eruptions have been observed occasionally. Weak red glow is observed in some cases when the temperature in the crater exceeds 400 degrees C.

We installed six seismographs and four infrasonic microphones at Miyake-jima and the data are telemetered to JMA. We installed additional seven seismographs in January 2002 and the data are recorded at the disks at the stations. At Miyakejima volcano, small earthquakes have been observed. The hypocenters of high-frequency earthquakes are distributed beneath the summit and the northwestern of the island. The hypocenters of low-frequency ones are distributed in the shallow area beneath the summit. Isolated volcanic tremors have occurred since later 2000 and their activity sometimes becomes vigorous. The waveforms of the isolated volcanic tremors have been simplified with time and have become similar to those of typical low-frequency earthquakes. The low frequency microphones often detect small infrasonic signals (less than 5 Pa at the stations near the coast) associated with large isolated volcanic tremors (low-frequency earthquakes) and small-scale eruptions are sometimes observed associated with the tremors.

We started geodetic observation with GPS in September 2000. The observing points are arranged to the 12 place in the island now. The ground deformation associated with deflation of Miyake-jima has been observed. The baseline length between Ako and Tubota has been shortening but the rate has become smaller, 1.8 cm/month (November 2000) to 0.4 cm/month (August 2001).

The volcanic gas sensors are installed at six points and continuous observation of SO<sub>2</sub> and H<sub>2</sub>S have been carried out. The SO<sub>2</sub> concentration sets to several ppm near the coast and 20 ppm at the mountain side momentarily. The change of gas concentration has good correlation with the wind direction and the range to which the concentration becomes high is restricted on the downwind side.