

Improvement of Fuji Volcano Observation Network by NIED

Motoo Ukawa[1]; Eisuke Fujita[1]; Hideki Ueda[1]

[1] NIED

The National Research Institute for Earth Science and Disaster Prevention (NIED) constructed a volcanic observation network for Mount Fuji in 1990s, which consists of four observation stations with bore-hole seismometers and tilt-meters at hoot hill area about 10 km from the summit. The Subdivision of Geodesy of the Council for Science and Technology presented a report comprising a plan for the improvement of understanding the Fuji volcano which proposed the setting up of observational networks. Following this report, NIED started to add two observation stations at the high altitude area.

In 2002 first station (FJ5) was constructed at the site with altitude of 2100 m in the WNW direction from the summit, and in 2003 the second station (FJ6) was constructed at the site with altitude of about 2010 m in south direction from the summit. The distances from the summit are about 4 km for both stations. We installed short period seismometer of three components and two component tilt-meters at the bottom of the bore-hole with 200m for both stations. Because of no electric power supply and telephone lines, we use solar battery for electric power and radio telemeter system for data transmission to Tsukuba. We also installed single frequency GPS instruments at four stations around Mount Fuji including FJ5 and FJ6.

We started to analyze the data from FJ5 and FJ6 routinely since December 2003. Regarding with the tilt measurement, the S/N ratios of FJ5 and FJ6 are comparable to those of another four stations around Mount Fuji, although at present the initial drift is still large at FJ6. Because of the high altitudes at FJ5 and FJ6, the effects of weather condition on the tilt changes are lager than those at the lower altitude stations. Before this improvement of observation network, there was no tilt station from the summit to the altitude of about 1500m, and therefore the construction of the new stations greatly increased the detectability of crustal deformation of volcanic origin.

Regarding the seismic observation, detection limit of micro-earthquakes has become to be magnitude 0 for the region around Mount Fuji including the summit area. The new stations have detected small earthquake-like signals probably occurring at very shallow depths around summit area, showing high detectability after the improvement of network. Regarding with the GPS data, we need more evaluation because of the large difference between the stations in altitude.

In 2004 we are going to start data exchange among the institutes which are monitoring the earthquake activity around Mount Fuji. We will continue to evaluate the observational ability of our network.