

Continuous observation of crustal deformation by GPS network in Mt. Fuji

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Earthquake activity began to be observed in third part of August of 2000. Then number of earthquakes increases in October 2000. The activity of earthquake is high in November and December 2000. There occur more than 200 earthquakes in November 2000. The activity is not so high in the period from January to March 2001. However, number of earthquakes increased again in April and May 2001. Although the activity became low since June 2001, number of earthquakes is still more than that before August 2000. This activity since August 2000 is highest one since start of the telemetry observation system of earthquake in and around Mt. Fuji.

There are seismograph and tilt station operated by NEID around Mt. Fuji, and single-frequency GPS sites operated by AIST. However, data of those GPS sites are stored in own sites. As Mt. Fuji is huge mountain, reference sites where dual-frequency GPS receivers are installed are needed. And we need those data by telemeter system in order to monitor the crustal deformation in and around Mt. Fuji. Three dual-frequency GPS receiver were installed in our three sites in Mt. Fuji. In this paper we present the observation system and the preliminary results.

Three sites among seismic site operated by ERI were selected for GPS sites, which are FUJ, FJG and KMR. In FJG public phone and AC are available. In the other two sites as they are not available, mobile phone and batteries with Solar panels are used for data transfer and power supply to the system. Observation started in April 2001 at FUJ and FJG and in September at KMR.

GPS data are downloaded automatically once a day and make RINEX files. Downloading time of each station is 15 to 20 minutes (30 second sampling data). When the coordinates of these three stations are estimated automatically, Bernese GPS Software Ver. 4.2 with Bernese Processing Engine are used with IGS rapid ephemeris. The fixed site is FJG. We also analyze our GPS data with GEONET data around Mt. Fuji operated GSI. In this analysis the fixed site is Tsukuba site. As it is known that yearly periodic change appears in coordinate change of Tsukuba, we will change the fixed site.

The repeatability of KMR coordinate are 3.8mm(NS), 2.6mm(EW) and 10.8mm(UD), and those of FUJ coordinate after replacement of GPS antenna are 2.5mm(NS), 2.0mm(EW) and 8.9mm(UD). Those are better than those of old FUJ antenna position by 2 to 26mm. Crustal deformation related to the inflation or deflation of Mt. Fuji is not observed. Fixed site of Tsukuba in the analysis with GEONET site will be changed because Tsukuba coordinate indicate yearly periodic change.