

## New GEONET System - Toward Real-Time Crust Monitoring

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The GPS Earth Observation Network system (GEONET) of Geographical Survey Institute (GSI) has been playing important role to monitor the crustal deformation of Japan, and the requirements for accuracy and timeliness have become higher and higher since the start of the operation. From 2002 to 2003, GSI upgraded GEONET system enable to monitor crustal deformations in real-time to meet new requirements. In this presentation, we introduce new GEONET system and its potential for crust monitoring.

### (1) Reinforcement of the network

The number of GEONET stations increased to 1200 by adding 253 new stations. The most appealing point is that the new sites include the Minamitorishima Island which is at the eastern end of Japanese territory and only the island of Japan on the Pacific Plate. GPS antennas of existing GEONET stations were replaced by choke ring antennas of Dorne Margolin T type along with those of the new stations. This replacement is expected to reduce sampling noise and to resolve the problem with phase center variations.

### (2) Real-time data transmission

In 2002, the data from 200 GEONET stations were transferred in real-time through IP/VPN network and have been provided for public. In 2003, the number of stations providing data in real-time will increase to cover whole Japan and 1 Hz data from these sites are provided to commercial users for positioning service. The 1 Hz data are also sent to GSI and the decimated data to 30-second interval are stored in the database of GEONET as RINEX formatted data.

### (3) Enhancement of routine analysis

In new GEONET system, quasi-real-time analysis are added to precedent two types of analyses; the most precise final analysis (daily) using IGS final orbits and the rapid analysis (daily) using the IGS rapid/predicted orbits. In the new analysis, solutions are obtained every 3 hours with sliding data window of 6 hour period. The system is also capable to carry out RTK-type analysis with 1 Hz data for selected baselines (less than 50 sites).

With the new functions mentioned above, the new system enables us to monitor crustal deformations more timely than before.