

## Strain distribution in the NE Japan arc as derived by GPS observations - strain concentration zone along the volcanic front -

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A dense GPS network was established in 1997 around Ou Backbone Range (OBR), northeastern Japan, by deploying 9 new continuous GPS stations so as to complement sparse portions of GPS Earth Observation Network (GEONET) operated by Geographical Survey Institute of Japan (GSI). This observation network is aimed to investigate the present surface deformation and to understand the relationship between the occurrence of intraplate earthquakes and the deformation process of the island-arc crust. Our GPS data are analyzed using a precise point positioning technique of GIPSY/OASIS-II. Coordinates of the GEONET stations have been supplied in daily SINEX files by GSI.

Obtained results of vertical displacements show slight upheaval near the Japan Sea coast, while subsidence near the Pacific Ocean coast. This overall pattern is in good agreement with the result obtained from the leveling surveys operated by GSI. In addition, the subsiding rates in the region between 39.0N and 39.6N are slightly larger than the surrounding regions. This may be related to the strain accumulation in OBR.

Producing grid data of horizontal displacement velocities and taking spatial derivatives, we can draw a map of strain velocity distribution. The result shows that a region between 38.8N and 39.8N in OBR demonstrates notable concentration of EW contraction. The region coincides with the area of active seismicity and includes the focal areas of 1896 (M7.2), 1962 (M6.5), and 1970 (M6.2) events. Observed strain is too large to explain by a total moment release of earthquakes that occurred in the same period as the GPS observations. There must be some possible sources of the strain concentration: viscoelastic deformation due to the large earthquakes, or aseismic slip along the deeper extension of active faults.