

## Dense GPS observations across the Kitakami-teichi-seien fault zone, NE Japan (1)

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In order to investigate detailed crustal deformation and underground structure around inland active faults, a dense GPS observation has been initiated across the Kitakami-teichi-seien fault zone in 2007. This observation is a part of the investigation project conducted by the Japan Nuclear Energy Safety Organization (JNES) to establish evaluation techniques of seismogenic faults. In this project, two typical dip-slip and strike-slip active inland faults are selected as the test fields, and comprehensive researches have been started around each test field by means of geological and geophysical methods.

The Kitakami-teichi-seien fault zone (KTSFZ) is a typical dip-slip active fault and located along the eastern edge of the Ou backbone range (OBR) in Northeastern Japan. Based on the recent GPS measurements, Sato et al. (2002) and Miura et al. (2004) found a strain concentration zone with EW contraction along OBR. Hasegawa et al. [2005] proposed a model of the crustal deformation that the shortening deformation occurs in the weak region in the lower crust beneath the Ou Backbone Range, which has been revealed by high-resolution seismic tomography (e.g., Nakajima et al., 2001) and causes shear faulting in the upper crust. However, it is still difficult to derive the deformation pattern with fine scale, which is essential to construct a reliable model because of the sparseness of the present GPS stations. Therefore we needed to establish a dense GPS observation network around this fault zone.

In October 2007, we constructed 7 continuous GPS sites across the southern part of KTSFZ with a spacing of about 5 km by combining with the present GPS stations operated by the Geographical Survey Institute (GSI), the National Astronomical Observatory (NAO), and Tohoku University. We set GPS equipments (Trimble NetRS receiver and Zephyr Geodetic antenna) at public facilities (e.g. elementary schools) and collecting carrier phase data with 30 seconds interval. These data are transmitted to Research Center for Prediction of Earthquake and Volcanic Eruptions, Tohoku University (RCPEV) using TCP/IP through a public ISDN network.

At present, all sites are running favorably. We will develop an automated coordinate analysis system using multi-institutional GPS observation data in the immediate future. In this presentation, we will introduce this dense GPS observation system with preliminary results from GPS data analyses and the future research plans.

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