

## Dense GPS observation around the Atotsugawa Fault System (3)

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We have been conducting a dense GPS observation around the Atotsugawa Fault System in order to investigate generation and preparation processes of inland earthquake as a part of the New Observation and Research Plan for Earthquake Prediction (2nd term). GPS based displacement rates show significant crustal deformation around the fault system with right lateral and E-W shortening components. We modeled this GPS crustal deformation by using a block fault model (Hashimoto and Jackson, 1993), in which the surrounding area is divided into 8 rigid blocks by 25 faults. We estimated rigid block motions and slip rate deficits for all the faults so as to reproduce observed GPS data. The result demonstrates complete locking of the Atotsugawa fault and preparatory processes toward a future earthquake are going on. Relative block motion across the Atotsugawa fault is estimated to be 3mm/yr, comparable to the geologic rate. We conclude there is no observable creep motion on the Atotsugawa fault. Significant contraction is expected at the both ends of the Atotsugawa fault but their deformation style is not well known because of a poor coverage of the present GPS network. There are active volcanoes, Tateyama and Hakusan, at the both ends of the fault, so crustal heterogeneity related to volcanic activities may be responsible to the deformation at the ends of the fault. The Atotsugawa fault accommodates a right lateral slip component but a contraction normal to the fault is spread over a greater distance. In fact, we detected a prominent contraction around the Takayama-Oppara fault system about 30km south of the Atotsugawa fault. Since the GPS network was sparse in this area, we recently install an additional GPS site.

We report the present status and the latest results of the GPS network. In addition, we discuss results from single-frequency GPS stations installed close to the trace of the Atotsugawa fault.