Spatio-temporal variation of the crustal deformation in Tokai area

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Anomalous crustal deformation was found in Tokai area since the 2000 autumn. Ozawa et al. (2001) investigated this deformation with the time-dependent inversion method, and imaged the spatio-temporal evolution of anomalous slip at the plate interface. By fixing Ohgata (Niigata Pref.), they found that the slip is localized beneath the Lake Hamana, and that it lasted over 1 year. Their result further suggests that the slip is decelerating now. On the other hand, GSI(2002) fixed Inagawa (Hyogo Pref.). This result suggests that the event is still going on. So, the choice of the fiducial site is an important issue. In addition to this event, Kimata (2001) pointed out that similar slow slip events ware found in leveling data.

For the aim of understanding detailed spatio-temporal history of those slow slip events, we are analyzing both of GPS and leveling data. We began with GPS data. In order to avoid the fiducial station problem, we return to normal equations. First we deconstrain the solution, then we combined all solutions. Next, we selected about 30 stations to define a local reference system, and impose an internal constraint to align the whole network to the defined local reference system. We rewrote a set of Kalman Filter equations so as to the hyperparameters to be estimated together with other model parameter with Extended Kalman Filter. Our result is similar to Ozawa et al.(2001) result; the slip is localized near the lake Hamana, and slip is decelerating since the 2001 autumn. In the meeting, we will report the result of leveling data analysis.