

Short-term slow slip event monitoring by joint analysis of crustal strain, tilt and groundwater changes

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National Institute of Advanced Industrial Science and Technology (AIST) and National Research Institute for Earth Science and Disaster Prevention (NIED) have been exchanging crustal strain data of AIST and crustal tilt data of NIED since 2011. We developed a joint analysis method using crustal strain and tilt, and estimated fault models of short-term Slow Slip Events (S-SSE) [Itaba et al., 2011]. We can detect S-SSEs of about Mw5.5 or more by this joint analysis within the wide range in Shikoku, Kii Peninsula and Tokai.

The space density of Aichi Prefecture and Shizuoka Prefecture is low though AIST has a strain observation network in Shikoku, Kii peninsula, and Tokai. On the other hand, Japan Meteorological Agency has many strain observatories in Tokai. Moreover, in recent years, the groundwater changes associated with S-SSEs are observed at the groundwater observation network of AIST. Consequently, we developed a new joint analysis method of crustal strain, tilt and groundwater changes.

In this presentation, we will introduce this joint analysis method, detectability of S-SSE and the example of joint analysis.

Keywords: short-term slow slip event, tremor, strain, tilt, groundwater, crustal movement