

# Detection of multiple inflection points in time-series of GNSS-acoustic data for a shallow part of the Nankai Trough based on a MCMC method

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Long-term slow slip events (SSEs) had been detected by onshore GNSS array and mainly estimated at a deeper part of locked zone on subduction plate interface, but recently we are able to estimate long-term SSEs at a shallow part of the subduction zone thanks to development of seafloor GNSS-A measurement (Yokota and Ishikawa, 2020). Here we try to detect unsteady seafloor deformation along the Nankai Trough from the GNSS-A time-series data, using a Markov Chain Monte Carlo (MCMC) method which does not assume a fixed duration (e.g. 1 year) of unsteady deformation. We expect that this method is useful to detect multiple inflection points with uncertainties (as posterior probability distribution). As a result, we find six observation points with unsteady deformation after 2012. One point suffers a very long-term (over five years) undefined event, probably a landslide-like event. Other two points are influenced by previously-reported slow earthquakes based on different observations (Kobayashi, 2014; Araki et al., 2018). In the other three points, the unsteady deformation can be explained by a long-term SSE (~Mw7) in a shallow part along the Nankai Trough as proposed by Yokota and Ishikawa (2020).

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