# Progress for detecting surface displacement associated with 2018 Boso SSE by ALOS-2 ScanSAR interferometry

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The slow slip event (SSE) is known to release accumulated strain energy with no or slight seismic wave radiation. The SSE is usually detected by highly accurate geophysical measurements such as the Global Navigation Satellite System (GNSS) and seismometers because of very small surface deformation on the order of millimeters to centimeters, and small ground oscillation (named as a tremor). Until now, several papers reported SSEs at Tokai area (e.g. Yamamoto et al. 2005, EPS; Ozawa et al. 2016, EPS), Cascadia (e.g. Dragert et al. 2004, EPS; Hawthorne and Bartlow 2018, JGR), and Nankai Trough (Kobayashi 2017, EPS; Ozawa 2017, EPS). The area around Boso Peninsla is also a location where SSEs have occuered with intervals of several years (Fukuda 2018, JGR). However, most of the reffered papers here used GNSS observations that have a limitation of low spatial resolution (Usually a few tens of kilometers between ground stations). In the previous presentation (Kinoshita et al., JpGU2019), we reported that the surface displacement of the 2018 Boso SSE could be detected by the stacking method of Sentinel-1 SLCs with an atmospheric delay correction based on the Japan Meteolorogical Agency Meso-Scale Model (MSM). In this study we performed the InSAR analysis using ALOS-2 ScanSAR data for the purpose of complementing the results derived from Sentinel-1 InSAR.
We performed the InSAR analysis using the RINC software version 0.41 to interfere 14 ScanSAR images. The ScanSAR data used here spans from January 2016 to September 2019. The path and frame are 17 and 2900, respectively. Topographic phase contributions were modeled and removed by the use of the SRTM4 30m DEM. All the interferograms were phase-unwrapped with the SNAPHU software. Since interferograms were to some extent contaminated by the phase noise due to ionospheric disturbances, we applied the Split Spectrum Method for all the interferograms to remove this.
Most of processed interferograms showed significant coherence to recover the SSE displacement, although the non-dispersive atmospheric delay signal was also significant. The ionospheric contribution that is the dispersive component of the atmospheric delay could be effectively removed by the Split Spectrum Method.
By the presentation, I will perform the time series analysis and the atmospheric delay correction to mitigate the non-dispersive atmospheric contribution and to detect the SSE signal. I will present the progress of this study in the presentation.

Keywords: InSAR, slow slip event, atmospheric delay

 