The steady crustal deformation around the Omaezaki, Sionomisaki, Muroto and Ashizuri, using InSAR time-series analysis 2

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At the Meteorological Research Institute, we are working on detection of crustal deformation using satellite SAR data as a method to detect changes in locked part such as slow slips and pre-slips at the plate boundary.

Especially focusing on the large-scale earthquake of the Nankai-Trough which is concerned about the occurrence in the near future, near the cape from Tokai to Shikoku which is close to the subduction zone of the plate and is thought to be susceptible to the change of the fixation state Analysis was conducted as an object.

We carried out InSAR time series for ALOS/PALSAR data to detect the steady crustal deformation around the cape from Tokai to Shikoku. As a result, we confirmed that the result of InSAR time series analysis correspond to GNSS data (Ando et al., 2018).

In this report, we tried to analysis for these data using InSAR time series analysis because of the archive data of ALOS-2/PALSAR-2 (operation period: 2014 -) has been adequately accumulated. In this analysis, interferograms were generated using RINC software (Ozawa et al., 2016), and then we carried out InSAR time series analysis about these data by SBAS method using GIAnT software (Agram et al., 2011). The data of each area used for the analysis is as follows.

Omaezaki: path 19 (18 scenes) and path 126 (11 scenes),

Shionomisaki: path 20 (16 scenes) and path 128 (11 scenes),

Muroto: path 21 (14 scenes) and path 128 (10 scenes),

Ashizuri: path 22 (14 scenes) and path 129 (10 scenes).

In principle, we used all data in which the archive exists for analysis in any path, but recalculated after excluding data which is clearly an error by checking the analysis result. The cumulative displacement result of Omaezaki (path 19) is shown in Fig.1.

As a result, we detected the elongation of displacement around the cape and shortening of displacement in the inland. The trends of these displacement distributions are similar to those of ALOS/PALSAR. In this presentation, we also report on the comparison with the GNSS observation results in the analysis area.

Some of PALSAR-2 data we used were provided by the Japan Aerospace Exploration Agency (JAXA) via the 6th ALOS-2 research announcement (RA-6). PALSAR-2 data belongs to JAXA. In the process of the InSAR, we used Digital Ellipsoidal Height Model (DEHM) based on the digital elevation map 10m-mesh provided by Geospatial Information Authority of Japan (GSI), and Generic Mapping Tools (P.Wessel and W.H.F.Smith, 1999) to prepare illustrations.

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