

Ground Deformation of Active Volcano in Kunashiri and Etorofu Islands using InSAR time series analysis

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ALOS has an L-band SAR (PALSAR), which is not affected by vegetation, and the interference is good even in mountainous areas. So these methods are effective for the crustal deformation observation of volcanic areas.

In previous studies, we have reported the analysis results about all domestic active volcanic areas, using D-InSAR of ALOS since 2007. However, ALOS has suspended the operation in May 2011. Therefore, we did not do D-InSAR analysis for the period thereafter. In recent years, InSAR time series analysis technique called PS-InSAR and SBAS has been developed, a number of cases have been reported.

There are 11 active volcanoes in the Kunashiri and Etorofu island, Southern Kuril Islands. It has still continued an active volcanic activity in the some volcanoes of them. In this report, we have take advantaged of the archive data of ALOS/PALSAR, and tried to analyze the ground deformation of around these 11 active volcanoes using *StaMPS* program was developed by the Stanford Institute of Technology. Note, we analyzed except for the data captured in the winter in order to remove the effect of the snow. Also, besides PS-InSAR and SBAS methods, *StaMPS* program has the analysis methods to merge these results. Therefore, we will also present about the difference of these results.

Some of PALSAR data were prepared by Japan Aerospace Exploration Agency (JAXA) via the Coordinating Committee for the Prediction of Volcanic Eruption (CCPVE) as part of the project "ALOS Domestic Demonstration on Disaster Management Application" of the Volcano Working Group. Also, we used some of PALSAR data that are shared within PALSAR Interferometry Consortium to Study our Evolving Land surface (PIXEL). PALSAR data belongs to Ministry of Economy, Trade and Industry (METI) and JAXA. In the process of the InSAR analysis, we used "the ASTER Global Digital Elevation Model" was developed jointly by METI and the United States National Aeronautics and Space Administration (NASA), and Generic Mapping Tools (P.Wessel and W.H.F.Smith, 1999) to prepare illustrations.

Keywords: InSAR time series analysis, Ground deformation, ALOS/PALSAR, Domestic active volcano