

Flow velocity measurements of ice streams in the southern part of Soya Coast, Antarctica, by DInSAR

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Differential Interferometric Synthetic Aperture Radar (DInSAR) is an effective tool to measure flow rate of ice streams on Antarctic continent. In this study, we applied the DInSAR technique to L band (wavelength 23.6cm) SAR data acquired by ALOS/PALSAR, and tried to measure flow velocity around Skallen, in the southern part of Soya Coast, East Antarctica. We used 9 scenes (Path633, Row 571-572), observed during the period from November 23, 2007 through January 13, 2010. In order to remove topographic fringes in the interferograms, we used a digital elevation model ASTER GDEM.

According to the analysis, ice flow rate of up to 3.5cm/day was obtained in the line of sight direction. Although no displacement is expected in areas of outcrops in general, we found displacements up to 37cm in the outcrops of obtained displacement maps. These displacements are considered to be apparent ones and must contain errors induced in the process of analysis. Therefore, it is possible to use apparent changes as a measure of the error contained in ice flow rate estimation.

In this presentation, we will show the results of flow rate estimation of the ice streams, and discuss the errors included in the flow rate estimation.

Keywords: Differential Interferometric SAR, Antarctic ice sheet, ice stream