

Monitoring movements of Antarctic Ice Sheet and Glaciers on Coastlines by SAR

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Working Group (3) InSAR for Polar Regions, Sub-Commission 4.4:

Applications of

Satellite & Airborne Imaging Systems,

IAG (International Association of Geodesy) Chair: Makoto Omura (Kochi Women's

University, Japan)

Related International Research Project

Working Group (3) InSAR for Polar Regions, Sub-Commission 4.4:

Applications of Satellite & Airborne Imaging Systems, IAG, will plan an international research project to apply InSAR for monitoring of surface topography and its change in polar regions. The project will conduct InSAR research for some selected areas on Antarctic/Arctic coastline by applying archived SAR data from JERS-1, ERS-1/2 and RADARSAT or newly acquired data by ENVISAT and ALOS. The WS is chaired by Dr. Omura who is the Principal Investigator of this research program for IPY4.

Description of the Program

Monitoring of surface topography and its change in Antarctica will show movements of ice sheet and glaciers. Studies of the movements will provide some important knowledge on relationship between the movement of ice sheet or glaciers and climate change. InSAR is one of the best procedures to map movements of ice sheet and glaciers in Antarctica which is very large and is sometimes covered by clouds (Figure 1). However, very rare ground control points (GCPs) prevent quantitative monitoring of the movements. So we will conduct an InSAR program for some selected areas on Antarctic coastline, where relatively dense GCP distribution is attained. Members of this program will analyze the data independently and compare their InSAR results under cooperation with IAG SC 4.4 WG(3) mentioned above. The program will show better way for InSAR in Antarctica and provide snapshots of the velocity field of the movements. The snapshots will archived for future comparison of the movements. JERS-1 and ERS-1/2 SAR data for the Antarctic coastline between East longitude 0 - 90 degrees were received at the Syowa Station and archived at NIPR. Furthermore, ENVISAT and ALOS will observe the areas in the duration of IPY4 (March 2007 - March 2009). This program aim to provide both better InSAR procedure and basic scientific data in Antarctica