Application of ALOS PALSAR data in Dronning Maud Land, East Antarctica

Recent environmental change has a strong effect on Antarctic continent and its surrounding area. Above all, big discharge of ice shelf and thinning of ice sheet are frequently observed at West Antarctica, while it is said that such kind of changes are small at East Antarctica. Based on the above situation, we focus on the analysis of ice sheet / ice shelf using ALOS/PALSAR data on Dronning Maud Land, East Antarctica, where is said that an environmental change was small.

The uses of ALOS data in this study are in two ways; one is time series analysis of ice shelf at Lutzow Holm Bay, eastern part of Dronning Maud Land. There is a Japanese Antarctic base, Syowa Station in the eastern part of Lutzow Holm Bay. Syowa station receives ERS-1/2 and JERS-1 SAR data. Therefore, we applied time series analysis during 13 years of period using ALOS PALSAR data observed in 2008 and another archived SAR data, which were JERS-1 SAR data observed in 1995, ERS-2 data observed in 2000. The analysis result showed that the ice shelf at this region has started a large calving at the north western side of Riiser Larsen Peninsula. We are going to report quantitative change and characteristics of this region.

The other is DEM generation and evaluation at Sør Rondane Mountains using InSAR data. This region is the area where no accurate topographic data are acquired. 49th JARE (Japanese Antarctic Research Expedition) party carried out geological field work from November, 2007 to February 2008 linked with IPY project funded by National Institute of Polar Research. They observed GPS measurement at several parts of Mountains. In this study, we have a plan to use these GPS data and ICESat / GLAS altimeter data for validation of DEM extracted by PALSAR interferometry.

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