

Support of research vessels in the Antarctic with near-real time radar information: an innovative service at DLR's Antarctic station

GARS O'Higgins

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Abstract

Even for vessels of high ice class or icebreakers sea ice conditions in Antarctic waters could be very challenging. Reliable information from earth orbiting satellites could therefore be highly desirable. The German satellites TerraSAR-X (TSX) and TanDEM-X (TDX) are capable to deliver precise information about the sea ice cover, independent of the time of day and cloud coverage.

The German Antarctic Receiving Station GARS O'Higgins of the German Aerospace Center (DLR) is now qualified for near-real time (NRT) processing of TSX/TDX data. Thus it supports research vessels travelling through ice-covered waters in the Antarctic providing navigation guidance in NRT by the use of image products from Synthetic Aperture Radar (SAR) acquisitions.

For this purpose, TSX/TDX data are downlinked to GARS O'Higgins directly after the acquisition and locally processed in NRT. Subsequently, just about one hour after the image is acquired by the satellite, the TSX/TDX image product is delivered from GARS O'Higgins and available via email on the vessel. Such a product could be generated up to twice a day. First test campaigns have been performed successfully during the Antarctic summer seasons 2015/2016 and 2016/2017 and will be presented here.

Keywords: Antarctica; sea ice information; TerraSAR-X; near-real time (NRT) data processing