

THE AIRBORNE X-BAND SAR SYSTEM (Pi-SAR2) OF NICT: SYSTEM DESCRIPTION AND PRELIMINARY RESULTS

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ABSTRACT:

An airborne polarimetric and interferometric synthetic aperture radar system (Pi-SAR2) was developed by the NICT (National Institute of Information and Communications Technology, Japan) from 2006 to 2009, as a successor to the Pi-SAR (X-band). The system provides high-resolution, X-band, polarimetric data. In both the azimuth and slant range directions, the resolution is 0.3m for high-resolution mode. Furthermore the system has a cross-track interferometric function for VV polarization that measure the ground height aiming at height accuracy of 2m. The system has two antennas with vertical and horizontal polarizations for polarimetric observation and one auxiliary antenna with vertical polarization for interferometric observation. The system has three independent receiving components for each antenna with the maximum data recording rate of 200MByte/s/ch. The observation width in the slant range is 5 km for the high-resolution observation and 10km for the middle-resolution observation with the resolution of 0.5m. The first test flight was carried out in autumn 2008. In this paper we report the Pi-SAR2 system, its ground processing facility, and its performance.