

## **Multi-Phase-Center Processing of POLARIS Data – Recent Results from Greenland and Antarctic Campaigns**

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ESA's P-band POLarimetric Airborne Radar Ice Sounder (POLARIS) was deployed in Oct. 2009 over Greenland in a single aperture, polarimetric configuration. The campaign included over-flights above the NEEM and NGRIP ice core drill-sites in the directions parallel and orthogonal to the ice flow for studying the effects of the bi-refringence (ice crystal anisotropy). POLARIS was subsequently enhanced with a larger antenna having four independent phase-centers for enabling off-line, digital beam-forming capability. This newly configured POLARIS was flown over Antarctic Peninsula and Dronning Maud Land in East Antarctica, including over-flights above the EPICA drill-site at Kohnen Station.

This paper presents the overview of the enhanced POLARIS instrument, the development of the multi-phase-center processor for across-track clutter attenuation, and representative ice profiles obtained during the campaigns. Those campaign results demonstrate the high sensitivity of POLARIS, enabling imaging of bedrock through ice sheet of more than 3000 m thickness.