

## Abstract Preview - Step 3/4

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Session: OS-3 Sea ice extent, properties, volume & ice shelves: modern and paleo records

Polar program: None

**Title:** PIPERS: Seasonal change of sea ice in the Ross Sea using Sentinel SAR images

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**Text:** Sentinel synthetic aperture radar (SAR) Ground Range Detected (GRD) images of the Ross Sea are used to monitor the sea ice types (thickness), sea ice phenology, and area of the new ice produced in both Terra Nova Bay and Ross Ice Shelf polynyas. The backscatter generated from IW mode is used to distinguish the sea ice texture because of its fine spatial resolution. The backscatter from EW mode, with coarser resolution and larger areal coverage, is used to examine the sea ice phenology. From April 10 to June 5, the PIPERS cruise collected sea ice information about the Ross Sea, providing sea ice types and corresponding ice thicknesses, as well as observed ice productions in the two polynyas. This serves as ground truth for backscatter values from different ice types, ice thicknesses, and patterns of new ice formation seen in the large-scale images. The temporal variation of backscatter in the Ross Sea from March 1 to December 24, 2017 is computed based on GRD images from EW mode, and used to determine the date of freeze onset, ice on, melt onset, and ice off according to the backscatter intensity and fluctuation amplitude. The ice production from the two polynyas is also estimated based on GRD images for the 2017 season.

**Preferred Presentation Type:**  Oral Presentation

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