

Abstract Preview - Step 3/4

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Title: PIPERS: Preliminary Analysis of Satellite Radar Imagery from Terra Nova Bay

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Text: Satellite images provide the opportunity to differentiate different ice units in and around the Terra Nova Bay Polynya (TNBP) in the Ross Sea (Antarctica) on different spatial scales. However, at a first stage, the separation of units is usually be carried out in terms of radar signature variations, i. e. the result are "radar units" with statistically significant signature differences. In a second step, the radar units have to be linked to observations in the field in order to enable a geophysical interpretation of the stage of polynya development and the sea ice conditions around the polynya. In this specific analysis we focus on the first step. The radar imagery acquired over the TNBP comprises data from TerraSAR-X strip-map dual-polarization (HH, VV) mode, TerraSAR-X ScanSAR mode (HH-polarization), Sentinel-1 extra wide-swath mode (HH and HV polarization), and Sentinel-1 interferometric wide-swath mode (HH-polarization). Dependent on the temporal gap between image acquisitions it is possible in some cases to produce layer stacks including different imaging modes. We use different segmentation methods (such as e. g. Support Vector Machine) to arrive at a map of different radar units with only small overlaps of their radar signatures (i. e. significant discernibility). The goal is to generate a temporal sequence of radar unit maps, which in the second step in collaboration with the PIPERS team can be related to ground data gathered in the field.

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