

## **POTENTIAL FOR THE COMBINATION OF MULTIFREQUENCY SAR ACQUISITIONS AND OPTICAL DATA FOR POLYNIA RESEARCH**

T. Hollands <sup>a,\*</sup> and W. Dierking<sup>a</sup>

<sup>a</sup> Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, Earth Observing Systems / Polar Meteorology,  
27570 Bremerhaven, Germany – thomas.hollands@awi.de and wolfgang.dierking@awi.de

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### **ABSTRACT:**

Coastal polynias are highly dynamical open water areas in the sea-ice-covered oceans of the Polar Regions. Their occurrence is mainly triggered by strong katabatic winds that push the ice pack offshore. Due to the lack of an insulating thicker sea ice cover, polynias have a strong impact on the heat and energy exchange between ocean and atmosphere as well as on the ice production. In our project, we study the potential of the combination of data from multiple satellite sensors to study the evolution of such polynia events. We will present examples for combinations of different satellite data and analyse retrievable geophysical parameters characterizing polynia events for two test sites in Antarctica. The analysis will include time series from TerraSAR-X, Radarsat-2, Sentinel-1, Landsat 8, RapidEye and possibly ALOS-2 that were acquired between September and December 2014. The combination of data from the different sensors as well as the availability of time series provide deeper insights in the evolution of polynia events and the corresponding changes in the ice conditions.

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\*Corresponding author