

Abstract Preview - Step 3/4

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Title: High Resolution Sea Ice Observation using Space-borne Fully Polarimetric SAR

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Text: Satellite images are an essential source of information for sea ice products such as the sea ice concentration maps issued by the national ice charting agencies. In this regard, Synthetic Aperture Radar (SAR) is especially valuable given its all-weather capabilities. Within this study we investigate the usefulness of fully polarimetric SAR by utilizing an automatic sea ice classification algorithm, developed for Near Real Time (NRT) services, on two sets of spatially and temporally near coincident fully polarimetric acquisitions from the ALOS-2, Radarsat-2 and TerraSAR-X satellites acquired during the N-ICE2015 sea ice drift study. Overlapping coincident sea ice freeboard measurements from Airborne Laser Scanner (ALS) data are used to validate the classification results. We analyzed the usefulness of 18 different polarimetric parameters for sea ice characterization. In order to deliver sea ice products in NRT savings in computational time are very important and by reducing redundant parameters we can speed up the delivery time. Validation with the coincident ALS data shows that 100 % of the open water is separated from the surrounding sea ice and that the sea ice classes have at least 96.9 % accuracy. A notable difference between the C/X-band and the L-band images was the high importance of entropy for the L-band sea ice classifications.

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