VALIDATION OF SEA ICE TYPE CLASSIFICATION AROUND GREENLAND USING QUIKSCAT SEAWINDS DATA

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ABSTRACT

Space borne Ku-band (13.4 GHz) pencil beam QuikScat - SeaWinds scatterometer backscatter ($\sigma_0$) data over sea ice in Greenland waters provide effective separation between ice and water and ice types. The EUMETSAT Ocean & Sea Ice Satellite Application Facility programme is currently testing the data in the operational sea ice classification product. Climatological $\sigma_0$-parameter signatures are used as reference in the automated Bayes maximum likelihood ice type classification. This reference is defined by co-location of sea ice charts issued by the Danish Meteorological Institute and SeaWinds data. Ice concentration and ice type defined in the ice charts are closely related to the $\sigma_0$-parameters and six categories are defined accordingly. However, snow and ice properties not defined in the ice charts also contribute to the $\sigma_0$-parameter variability and thereby the high $\sigma_0$-parameter signature standard deviation in each of the six categories. The validation using additional ice charts and SeaWinds data shows that the classification accuracy for low and even medium concentration ice types is poor, while the accuracy for high concentration ice types is good. By pre-selecting the ice concentration, the classification accuracy improves for first-year ice categories. The high concentration multi-year ice misclassifications are primarily due to the selection and definition of ice classes and the classification improvement by introducing ice concentration is therefore moderate. The initial results show that the ice classification using SeaWinds data is improved by careful selection of categories and in combination with other data sources.