



Operational multisensor sea ice concentration algorithm utilizing Sentinel-1 and AMSR2 data

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The Norwegian Ice Service provide ice charts of the European part of the Arctic every weekday. The charts are produced from a manually interpretation of satellite data where SAR (Synthetic Aperture Radar) data plays a central role because of its high spatial resolution and Independence of cloud cover. A new chart is produced every weekday and the charts are distributed through the CMEMS portal. After the launch of Sentinel-1A and B the number of available SAR data have significant increased making it difficult to utilize all the data in a manually process.

This in combination with a user demand for a more frequent update of the ice conditions, also during the weekends, have made it important to focus the development on utilizing the high resolution Sentinel-1 data in an automatic sea ice concentration analysis.

The algorithm developed here is based on a multi sensor approach using an optimal interpolation to combine sea ice concentration products derived from Sentinel-1 and passive microwave data from AMSR2. The Sentinel-1 data is classified with a Bayesian SAR classification algorithm using data in extra wide mode dual polarization (HH/HV) to separate ice and water in the full 40x40 meter spatial resolution. From the classification of ice/water the sea ice concentration is estimated by calculating amount of ice within an area of 1x1 km.

The AMSR2 sea ice concentration are produced as part of the EUMETSAT Ocean and Sea Ice Satellite Application Facility (OSI SAF) project and utilize the 89 GHz channel to produce a concentration product with a 3km spatial resolution.

Results from the automatic classification will be presented.