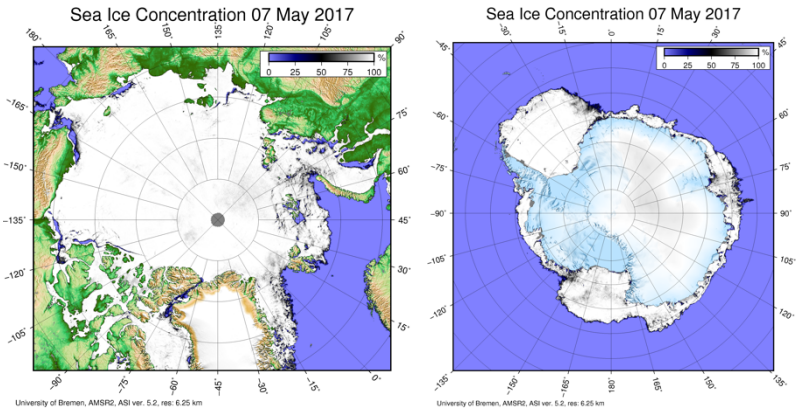
Master Thesis

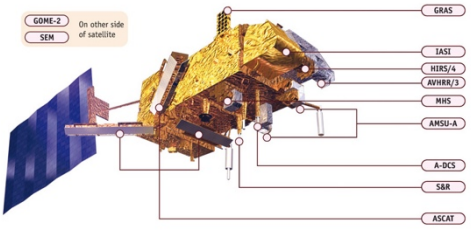
Remote sensing of sea ice with the ASCAT scatterometer onboard the Metop-A/B satellites



The IUP belongs to the leading providers of sea ice data from satellites. Since 2002 daily sea ice maps based on satellite passive microwave sensors are distributed (see www.seaice.uni-bremen.de).

Sea ice concentration and multiyear ice fraction can also be retrieved from active microwave scatterometer data. Several algorithms exist for the QuikSCAT satellite measurements at 13.4 GHz (Ku-band). However, the QuikSCAT dataset ends in 2009.

The ASCAT scatterometers on the MetOp satellites provide measurements at 5.3 GHz (C-band). MetOp-A was launched in 2006 and MetOp-B in 2012. The MetOp-C launch is planned for 2018. These two and later three satellites provide higher temporal sampling that either can be used to calculate a more accurate daily mean or provide additional information about the sea ice diurnal cycle.



MetOp satellite design

In this project, existing algorithms to calculate total and multiyear sea ice concentration will be adapted for the ASCAT measurements. Time series since 2006 will be obtained and compared with datasets from passive microwave observations. Differences, advantages and disadvantages of the two measurement types should be pointed out.

What you need and what you will learn

Microwave remote sensing basics and some computer programming experience will be helpful, best Python, Matlab, or IDL under Linux.

You will learn about active and passive microwave remote sensing of sea ice and how to analyzing datasets and time series from global earth observation satellites. Our working group offers an open discussion atmosphere and worldwide contacts to the leading institutions in the field.

Contact

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