Universität Bremen

Time-series of fast ice area derived from satellite radiometers

Project Description

Sea ice is an important component of the climate system and a sensitive indicator of climate change. The majority of sea ice is drifting pack ice. There are, however, significant areas of sea ice, which are attached to land or, e.g., icebergs and not drifting. Large areas of such fast ice exist at the Norske Øer ice barrier (Fram Strait), the Laptev Sea, or around Antarctica.

Long time series of the total sea ice area, including both drifting and fast ice, derived from satellite radiometer measurements start in the 1970s. In this project we want to derive similar time series for the fast ice extent in specific key regions. Brightness temperatures measurements obtained from the passive microwave radiometers SSM/I, SSMIS, AMSR-E and AMSR-2 between 7 and 89 GHz will be exploited. By analyzing the brightness temperature stability and noise over a time interval, e.g. one week, fast ice areas can be separated from drift ice. Long, decadal time series of fast ice extent will be obtained and interpreted.

Prerequisites

The candidate should have a strong interest in remote sensing and geophysical processes. Programming skills (preferable Python, Matlab, or IDL) are an advantage.

Contact

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