University of Bremen
Institute of Environmental Physics
Gunnar Spreen
gunnar.spreen@uni-Bremen.de

Thickness of thin sea ice in the Arctic

Daily maps of sea ice thickness up to 50 cm are produced in the Northern hemisphere at 40 km resolution for the freezing season (October to April)

To observe sea ice thickness from satellites has been a major goal for several decades. By use of L-band microwave data, the thickness of thin sea ice (< 50 cm) has been be retrieved since 2010 using SMOS

The thin ice thickness is derived from the polarization difference and the intensity of the L-band signal using an empirical method, which works well in the freezing season. Figure 1 shows the growth of ice thickness in the first three months of the freezing season. The upper graph presents the total ice concentration and the lower graph the mean ice thickness. Figure 2 shows an example of ice thickness map for the whole Arctic Ocean in November when freeing is very active in the Russian shelf seas.

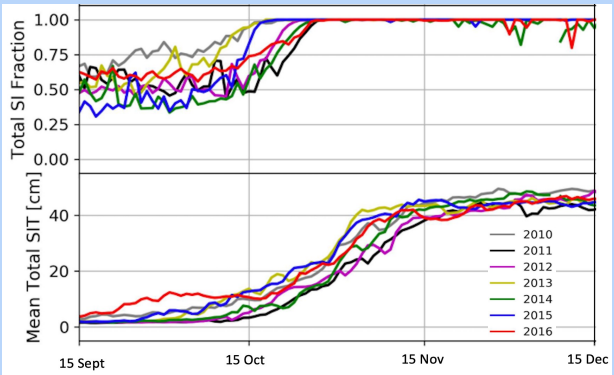

Figure 1. Growth of ice concetration and thickness in the Laptev Sea for the years 2010 to 2016

The thickness data are used to improve weather and climate prediction in NWP and GCM models using data assimilation.
The data are also used directly to support ship navigation in ice-covered areas.

Maps of thin ice thickness are produced by combining data from the SMOS and SMAP satellites. The maps are updated daily with the near real time maps generated within 24 hours of the last observation.

Tha data are available in png, HDF and GeoTIFF formats at
www.seaice.uni-Bremen.de

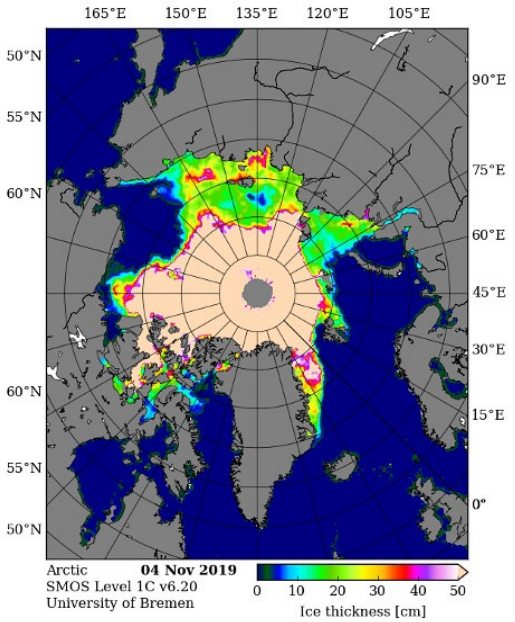

Figure 2. Map of thin ice thickness on 04 November 2019

INTAROS has received funding from EU's Horizon 2020 research and innovation programme - Grant Agreement No 727890