University of Bremen
Institute of Environmental Physics
Christian Melsheimer
melsheimer@uni-Bremen.de

Daily maps of Arctic multiyear sea ice concentration

Multiyear ice concentration maps (MYIC) are produced daily at 12.5 km resolution during the freezing season in the Arctic (October to May).

The MY ice in the Arctic has decreased signiificantly in the last decade. In the 1980s MY ice covered most of the Arctic Basin, but presently the MY area is limited to the area north of Greenland and Canada (Fig. 1).

Multiyear ice is physically different from firstyear ice and younger ice in terms of salinity, thickness, density, snow cover and mechanical properties. Data om MYIC is essential for understanding and modeling sea ice evolution from year to year. The data are also important for ice navigation and operations in ice. MYIC is retrieved from microwave emission and backscatter data between 5 and 37 GHz. Data come from satellite-borne radiometers AMSR-E or AMSR2 (since 2002), and from scatterometers ASCAT (on Metop) or Seawinds (on Quikscat).

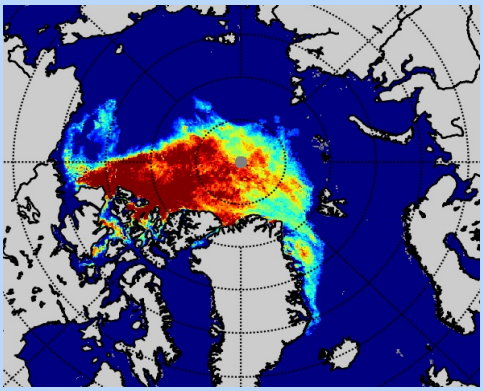

Figure 1. Map of MYI in the Arctic om 01 Dec. 2020

DailyMYI data spanning more than 10 years are used (1) for validation or initialisation of ice-ocean-atmosphere models; (2) as ancillary data for other retrievals; (3) for locating possible old ice (nagivation). Daily maps of MYIC are produced as images (PNG) and gridded data (NetCDF).
Data and maps are available at:
https://seaice.uni-bremen.de/

References:

Ye, Y., M. Shokr, G. Heygster, and G. Spreen (2016) Improving multiyear ice concentration estimates with ice drift. Remote Sens., 8(5), 397, doi:10.3390/rs8050397

Ye, Y., G. Heygster, and M. Shokr (2016) Improving multiyear ice concentration estimates with air temperatures. IEEE Trans. Geosci. Remote Sens., 54(5), 2602–2614, doi:10.1109/TGRS.2015.2503884.

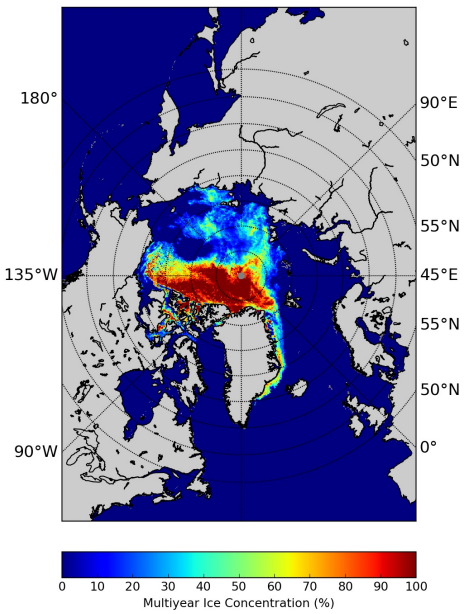

Figure 2. Map of MYI in the Arctic om 15 March 2021

Contributors:
C. Melsheimer and G. Spreen (U. Bremen)
Y. Ye and M. Shokr (Environment Canada)

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