New SMOS Sea Ice Concentration products

In a continuous effort to improve the quality of our data and provide a better service to our users, we present the **new SMOS**Sea Ice Concentration (SIC) product for the Arctic Ocean .

The new product is based on the algorithm presented in the paper Gabarro et al., 2017 [1]. The algorithm uses the differences between vertically-polarized brightness temperature (TB) measurements of two different incidence angles (i.e., angular differences or AD) and a Maximum-likelihood estimation to retrieve SIC. This AD index has lower sensitivity to cganfes in ice temperature, ice salinity and thin ice thickess (see [1] for more details) than the TB measurements, and is therefore more suitable for SIC retrievals.

The daily Arctic Sea Ice Concentration (SIC) product is provided in the NL EASE grid ($25 \, \text{km} \times 25 \, \text{km}$) and consists of a 3-day averaging of the ascending and descending SMOS Level 1B data provided by ESA (v6.20).

Due to the higher penetration of the L-band signal on the sea ice, SMOS underestimates SIC in the presence of thin ice (less than approx. 70 cm), which usually happens over marginal ice zones and freeze-up periods (October-March). Therefore, the SMOS data should be used taking it into account. The SMOS-derived SIC estimations can complement those from higher-frequency radiometers, yielding to enhanced SIC products.

A more detailed description of the methodology and the product can be found in the Product Description document available

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from the BEC webpage.

Please, do not hesitate to contact us in case you have any

question or comment at smos-bec@icm.csic.es. Your feedback is
most welcome!

Enjoy the products!

BEC team

[1] New methodology to estimate Arctic sea ice concentration from SMOS combining brightness temperature differences in a maximum-likelihood estimator, C. Gabarro, , A. Turiel, P. Elosegui, J.A. Pla-Resina, M. Portabella. The Cryosphere, 11:4, 1987–2002, 2017. DOI: 10.5194/tc-11-1987-2017-https://www.the-cryosphere.net/11/1987/2017/