

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 changes in ice temperature, ice salinity and thin ice thickness (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 (25km x 25km) 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 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. Eloisegui, 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/>