

# Baltic+ Salinity



This project aims to study the potential benefit of incorporating satellite-derived Sea Surface Salinity (SSS) measurements into oceanographic and environmental applications within the Baltic Sea.

For such purpose, a team led by ARGANS Ltd (FR) with participation of Barcelona Expert Centre (BEC / ICM-CSIC, Spain) and the Finnish Meteorological Institute (FMI, Finland) will develop an innovative SSS product from the measurements obtained by the Earth Explorer SMOS. It incorporates advanced techniques for noise and bias correction to deal with the specific difficulties that the retrieval of salinity has in the region: land/sea contamination, sea/ice contamination, manmade radio-frequency interferences, and limitations in the current dielectric constant.

The project will generate data by modifying substantially the existing production chain from L0 data to L4 maps, aiming to obtain meaningful information for applications. The characteristics of the final products will be enhanced both spatially and temporally thanks to data fusion, in order to meet the end-user requirements. SSS accuracy will be also improved to meet the needs of the scientific community operating in this basin. In the first half of the project, the focus will be in improving the brightness temperatures and adequate the image reconstruction process specifically for the Baltic Sea.

In the second half of the project, the emphasis will be in the removal of remaining biases and generation of the fused L4 products, as well as assessing the performance and impact it has in the various case studies. Specific attention will be drawn to investigate the added-value of this new product to address the scientific challenges associated to salinity, as

identified by Baltic Earth community: salinity annual trends and budgets; insights of the coupling mechanisms involved in the interfaces atmosphere-ice-sea; climatological projections. In addition, it is expected to estimate how other types of studies would benefit of incorporating SSS, like regional biochemical models, or any other in which frontal areas identification could be of relevance. For instance, river run-offs, sea ice formation/melting and, marginally, North Sea water intrusions. The project benefits of the existence of a long time series of observations provided by SMOS, which allows the team to explore longer time scales. The expected higher time and spatial coverage will be key factors in the outcome of this project, in a region in which in situ observations of salinity are scarce or concentrated in the coastal areas. It is expected that the results of this activity will lead towards an increase in the presence of SSS data.

## **Contact**

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## **Dates**

2019 -2022