

Southern Ocean Freshwater



The overarching goal of SO- FRESH is to quantify changes in ocean surface salinity in the Southern Ocean, and link such changes to sea ice melting and freezing (i.e. explore the synergies between different EO products of sea ice concentration and SST), precipitation (combined with reanalysis products) and ice sheet melt (combined with satellite-derived estimates of ice sheet melting; ESA-NASA IMBIE, Shepherd et al., 2019). It will be particularly important to estimate SSS in polynyas (i.e. ice-free areas within the sea ice zone), near the sea ice edge, and in the vast areas of the Southern Ocean that become ice free when sea-ice melts and retreats in summer.

The SSS product to be generated in this project will cover the years from 2011 to the present. It can be specifically used to investigate:

1. drivers and consequences of sea ice decline, which started in 2014 after decades of increase;
2. the formation of a large polynya in the Weddell Sea in 2016 and 2017; and
3. SSS data near the Antarctic Coast measured during summer and potentially during winter in coastal ice-free areas (i.e. coastal polynyas) will allow us to better connect changes in ocean coastal processes and ice sheet melting.

The combination of SSS, SST and surface ocean velocity estimates using the recent altimetry product of sea surface

height in the sea ice-covered Southern Ocean (Cryosat; Naveira Garabato et al., 2019) will provide us with an unprecedented view of the Antarctic coastal regions.

Partners

- ARGANS LIMITED (GB)
- Barcelona Expert Center BEC-CSIC (ES)
- National Oceanography Center NOC (GB)

Contact

Estrella Olmedo: olmedo@icm.csic.es

Carolina Gabarró: cgabarro@icm.csic.es