Comprehending the physical processes impacting the PATAgonian southwestern continental shelf and adjacent open ocean using SWOT data (PATASWOT).

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The main objective of PATASWOT is to improve our understanding of the physical processes impacting the Patagonian continental shelf and adjacent open ocean through the use of SWOT data, traditional satellite altimetry, in-situ and model output data. The objective is motivated by the three following questions: (Q1) What are the main physical drivers of the large biological activity observed over the Patagonian shelf and slope? (Q2) Does the Malvinas Current (MC) act more as a blender or as a barrier between open ocean and shelf waters? (Q3) How the first levels of the nutrient chain (phytoplankton and dissolved inorganic nutrients) are structured within the water column according to the physical conditions characteristic of the Patagonian shelf, Patagonian upper slope, and oceanic water beyond the MC? To provide the data necessary to answer these questions we propose an Eulerian and a Lagrangain field experiments. The Eulerian experiment will collect in-situ physical (temperature, pressure, salinity, currents) through two fixed moorings to be deployed in the Patagonian shelf and in the upper slope of the shelf-break. The Lagrangian experiment consists of deploying a dense (N=40) array of drifters anchored at 50 cm and 15 m depth. The drifters will be recovered after2 72 hs. The R/V employed will track the drifters and multiple sampling of the water column will be made at different depths. The in-situ dataset collected will (i) serve as input for a tidal regional numerical model (developed by a complementary project) that will in turn serve to provide a better correction of SWOT data; (ii) compute vertical velocities that will be related to the spatial distribution patterns of the phytoplankton and of satellite chlorophyll-a images and (iii) characterise the exchanges between the slope and the shelf. The capability of SWOT to observe the small ocean scales of the study area will be assessed with all the in-situ measurements of the experiment (in particular the drifters). The link between these fine scales and the biological conditions will then be studied

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