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PATASWOT: a Cal/Val experiment in the Argentine Patagonian Continental Shelf during the 1-day repeat orbit of SWOT

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Objectives & Motivation

The Surface Water and Ocean Topography (SWOT) satellite mission launched December 16th 2022. SWOT sea surface height measurements can help retrieve the dynamics of the upper ocean at an unprecedented O(10km) resolution. SWOT surface maps are expected to have a resolution roughly one order of magnitude finer than what is now available with conventional satellite altimetry. This improvement in resolution is expected to be groundbreaking for several key ocean questions, including the energy budget, the connection between surface and internal dynamics, biogeochemistry and biodiversity, and the dynamics at the ice margin.





To have a better understanding of the new dataset, the satellite mission was designed to fly on a 1-day-repeat for three months. An international consortium, SWOT Adopt a Crossover – AdAc, www.swot-adac.org, has been created to obtain insitu measurements during this phase. Within this initiative, and the SABIO EUMETSAT-CNES project, two moorings were deployed in the Argentine Continental Shelf under the SWOT 1-day-repeat track. The two moorings were deployed at the sea bottom and are equipped with Conductivity, Temperature and Depth (CTD) recorders and an upper-looking current meter.



Pass #7 of SWOT (nadir: light blue line, swath: white shaded)



Artist's impression of the future SWOT satellite making sea surface height observations, even through clouds. Off-nadir radar interferometers gather data over two 60-km-wide swaths at once, with a conventional nadir altimeter in between. Credit: CNES



SWOT orbit during the fast-sampling phase (adapted from Wang et al., 2018a, © Copyright [2017] AMS). April-June 2023), the satellite was on a special orbit that overflowed a smaller portion of the global ocean with a repeat cycle of 1 day (twice per day on crossovers). This so-called fast-sampling phase will resolve both the spatial and the temporal variability of the ocean fine-scale features along the ~120km wide swath. The nominal orbit of SWOT will cover the entire

globe (between 78°N and 78°S) with a repeat cycle of 21 days.

Field activities

Moorings successfully deployed Between 12 and 14 of April 2023

Not yet recovered



Bathymetry (m) in the southern location





Calibration of ADCP compass

- Tweet

SWOT-AdAC (@SWOT_AdAC@sciences.re) @SWOT_AdAC

📌 Greetings from Ushuaia!

Everything is ready to deploy moorings for the #PatagonianContinentalShelf #SWOT cal/val period! 🖧 🚊 🗲





Lander ready to be deployed



Ready to deploy instruments!

Preliminary Results











- AVISO gridded and along track data patterns do not correspond with observations from SWOT
- Hovmöller diagrams suggest the propagation of a signal of about 1 m/s towards the south ?
- Units of standard product SWOT?
- Missing data?
- Tidal issue?

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