Patagonian Shelf Break Front: Seabed morphology, water masses and ocean currents

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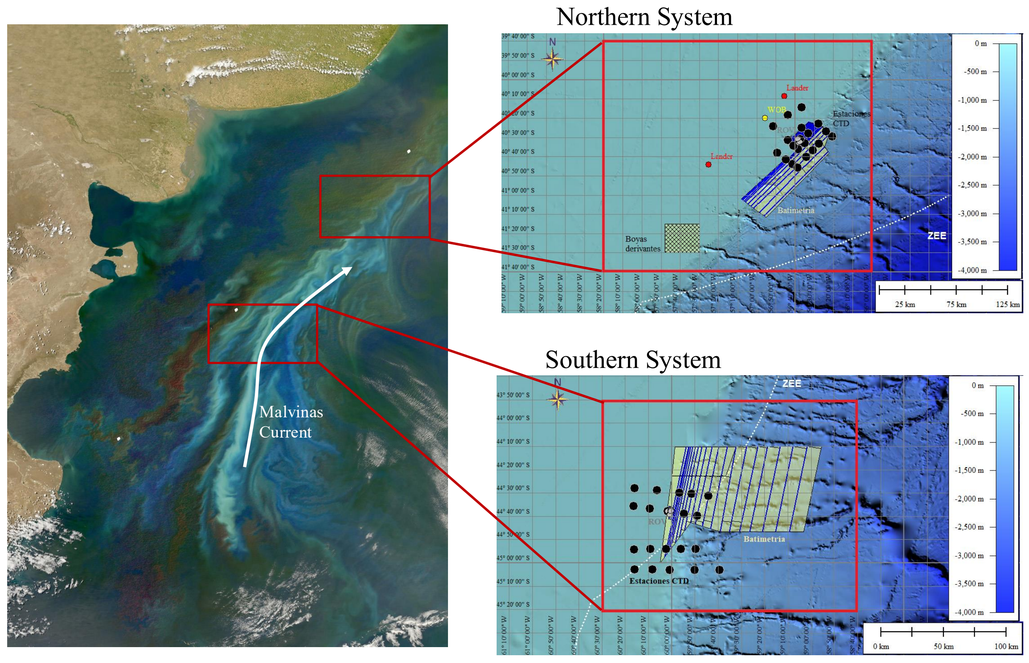
Introduction

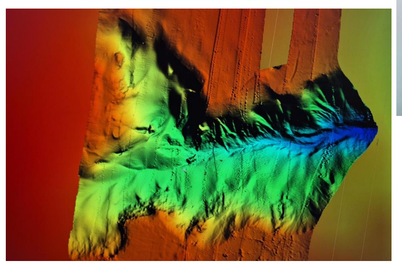
The Malvinas Current (MC) offshore Argentina carries nutrients and cold water from the south as a branch of the Antarctic Circumpolar Current, boosting primary productivity in the Southwestern Atlantic. Underwater canyons along Argentina's continental slope create irregularities in the seafloor that could change the path of this powerful current, facilitating an exchange of water masses between the shelf and the open ocean. Thus, **this project, A tale of two submarines canyons, aims to generate new knowledge on the interaction between submarine morphology associated with submarine canyons on the Argentine Continental Margin and the oceanographic dynamics linked to the MC, in two key sectors of the shelf break**: the Patagonian region (Southern System, 44-45°S) and the Bonaerense region (Northern System, 40-41°S). The scientific team form a **multidisciplinary** group with extensive experience in oceanography, marine geology, and biology in collaboration with the Schmidt Ocean Institute to use the R/V Falkor (too).



Geological activities

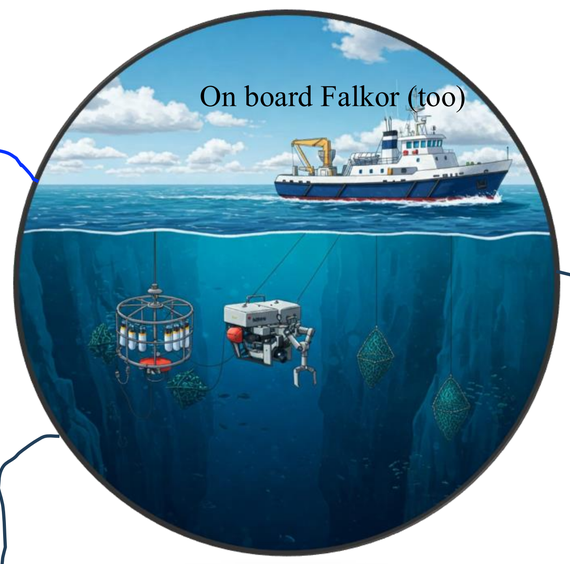
Echo sounder

ROV Subastian



Southern system

Pushcores

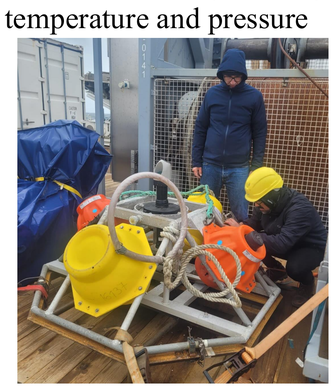


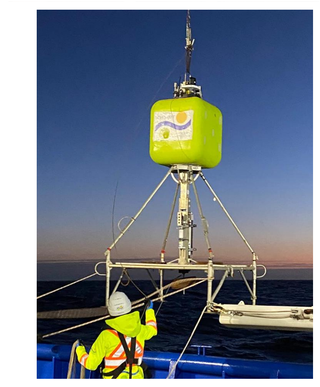
On going cruise: October 2025

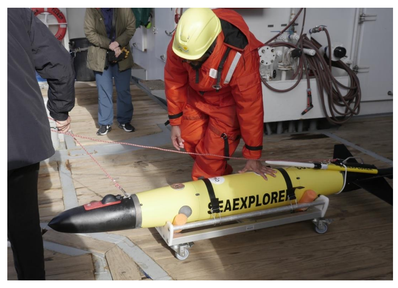
Physical activities

Buoy: oceanographic and meteorological variables

Lander 1: velocity, salinity, temperature and pressure







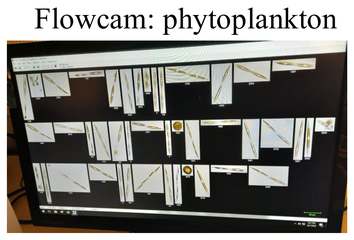
Glider: salinity, temperature, oxigen, fluorescence, and pressure

Lander 2: velocity, salinity, temperature, oxigen, and pressure

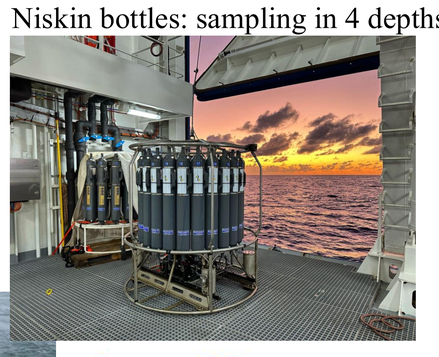
Carthe and SVP drifters

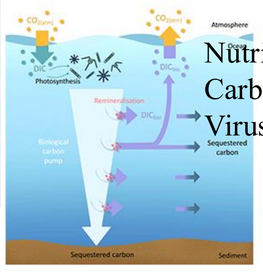
Biological activities

Flowcam: phytoplankton



Niskin bottles: sampling in 4 depths





Nutrients
Carbonate system
Virus

Final remarks

The cruise started the 3rd of October 2025, and the data collected so far have already yielded very interesting results in both bathymetric mapping and sediment analysis.

The trajectories collected during the first four days have prompted new questions concerning the circulation processes, revealing the complexity of the system under study.

The expected outcome is the generation of critical knowledge on the dynamics of nutrient availability on the Argentine shelf, its implications for the trophic web, and its influence on commercially important species.

Do you want to know more about the project?

Watch the dive stream!!

Follow us on Instagram

Acknowledgement

The following projects support this oceanographic cruise: Schmidt Ocean Institute, Fundación Williams and CNES "Comprehending the physical processes impacting the PATAgonian southwestern continental shelf and adjacent open ocean using SWOT data" (PATASWOT). The science team is grateful with the crew on board Falkor (too) for the support and organization.