EGU21-9784
https://doi.org/10.5194/egusphere-egu21-9784
EGU General Assembly 2021

Anatomy of subinertial waves along the Patagonian shelf break in a 1/12° global operational model

Lea Poli[1], Camila Artana[2], Christine Provost[1], Jérôme Sirven[1], Nathalie Sennéchael[1], Yannis Cuypers[1], and Jean-Michel Lellouche[2]

[1]Sorbonne université, LOCEAN, France (leapoli1@yahoo.fr)

[2]Mercator-Ocean

The Patagonian slope hosts a variety of waves. We used a state of the art ocean reanalysis to examine waves at the shelf break and in the core of the Malvinas Current (MC) at periods larger than 10 days. Statistics over 25 years indicated three types of signals: in phase signals at specific locations of the shelf break to the south of 47°S, fast propagating signals all along the shelf break (phase speed from 140 cm/s to 300cm/s) at periods between 5 and 110 days, and slower signals in the core of the MC (phase speeds from 10 cm/s to 30cm/s) at 20-day, 60-day and 100-day periods.

The large zonal wind stress variations south of 47°S forced in-phase along-slope velocity variations and triggered fast propagating waves at distinct sites corresponding to abrupt changes in the shelf break orientation. The shelf break waves modulated the intensity of the inshore jet, which varied from 0 to 30 cm/s at 100 m depth, and had spatial and temporal structures and scales consistent with those of observed upwelling events. Slow propagating waves in the core of the MC had along-slope wavelengths between 450 and 1200 km and were not forced by the local winds. They were tracked back to the Drake Passage and the Malvinas Escarpment.