

Organic Particle Export, Remineralization and Advection in the North Atlantic mesopelagic layer

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EXTENDED ABSTRACT

The mesopelagic layer of the oceans extends between ~200 and 1000 m depth and plays a fundamental role in global biogeochemical cycles and climate. In addition, it hosts a massive biomass of zooplankton and small fish, what is essential to regulate marine resources. However, scientific understanding and predictive capacity of biogeochemical processes in the mesopelagic zone are still underdeveloped. This lack of information has societal and economic costs because there is uncertainty in estimates of oceanic carbon storage (which inform policies for the reduction of carbon dioxide emissions), and it hampers the management of mesopelagic biological resources. In this way, this thesis would address the study of the carbon cycle and the associated biogeochemical processes. The main objective is to analyse the variability of the transport and transformation of particles that carry organic carbon from the surface to the deep sea in the North Atlantic. For this purpose, this study will focus on the analysis of simulations from dynamical (NEMO4 (Madec & NEMO team, 2008)) and biogeochemical (PISCES-v2 (Amount et al., 2015)) models, together with observations from bio-ARGO floats and satellite data.

References

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Author biography



M. Andrea Orihuela-García was born in Cádiz, Spain, in 1995. She studied the Ocean Sciences degree and the Environmental Sciences degree at the University of Cádiz, Spain, in 2019. After that she studied a master's degree on oceanography at the Universities of Cádiz and Las Palmas de Gran Canaria, both in Spain. She has been doing different stays abroad in Azores Islands (Portugal) and Valparaíso (Chile) and she has also done an internship in Algarve (Portugal) at the Physics' department of the *Centro de Investigação Marinha e Ambiental*. She has also worked as a scientist observer on board a fishing vessel, in collaboration with the *Instituto Español de Oceanografía*. Since September 2020, she started her Ph.D. at the Climate Prediction group, of the Earth Department in the Barcelona Supercomputing Center, supervised by Martí Galí and Yohan Ruprich-Robert.