

MEDLEY

Mixed Layer Heterogeneity

DURATION

15/12/2020 - 15/03/2024

BUDGET

181 550 €

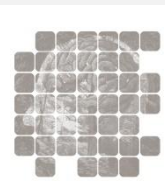
PROJECT DESCRIPTION

Transfers of heat, energy and gases through the ocean surface mixed layer are extremely complex and spatially heterogeneous. The discontinuous and dynamic sea ice cover, and the occurrence of oceanic eddies, fronts and filaments at the kilometre-scale, are important heterogeneities which regulate the thickness and properties of the mixed layer. Large discrepancies in mixed layer depth are found among climate models used for IPCC climate projections, partly due to a misrepresentation of the integrated effect of these heterogeneities. This limits the usefulness of these models in assessing the impacts of future climate change in Europe and on marine ecosystems.

MEDLEY (MixED Layer hETerogeneityY) is a European project carried within the JPI Oceans & Climate, aiming at improving our understanding of mixed layer heterogeneity in the northern North Atlantic, a hotspot of anthropogenic CO₂ storage, and in the rapidly warming Arctic Ocean. Its core objectives are (1) to evaluate the spatial heterogeneity of fluxes and of the processes controlling the ocean mixed layer and (2) to improve the representation of the transfers through the mixed layer in climate models by taking this heterogeneity into account .

The project integrates state-of-the-art observational datasets and basin-scale ocean models resolving the kilometre scale, innovative sea ice models, and the latest generation of climate models with an eddying ocean component. Building on interdisciplinary collaborations between its members, MEDLEY will take advantage of the most advanced data analysis methods. We will focus on NEMO, the Nucleus for European Modelling of the Ocean, a European modelling platform used by all MEDLEY members. The project aims at a better tuning and consistency of mixed layer representation (parameterizations) in NEMO-based climate models, gained through multi-scale modelling and validation against recent high-resolution observations.

MEDLEY will use a web site, scientific publications and presentations at international conferences to disseminate its results. We will give the post-doctoral researchers hired on the project plenty of opportunities to present their work at international conferences and during seminars. This is indeed an important aspect of promoting their research and raising their profile. The most significant publications will be accompanied by press releases prepared with the support of institutional communication specialists. The participation of MEDLEY partners in key international networks and working groups will reinforce the dissemination of the results, in particular to IPCC. In addition, events will be organized at different sites to inform the general public about the role of the ocean in the climate system and the importance of the upper ocean dynamics. Finally, the numerical tools developed within MEDLEY will be made openly available to the whole climate modelling community through relevant channels.



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