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Monitoring the local heat content change over the Atlantic Ocean with the space geodetic approach: the 4DATLANTIC-OHC Project

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Given the major role of the Atlantic Ocean in the climate system, it is essential to characterize the temporal and spatial variations of its heat content. The 4DATLANTIC-OHC Project (<https://eo4society.esa.int/projects/4datlantic-ohc/>) aims at developing and testing space geodetic methods to estimate the local ocean heat content (OHC) changes over the Atlantic Ocean from satellite altimetry and gravimetry. The strategy developed in the frame of the ESA MOHeaCAN Project (<https://eo4society.esa.int/projects/moheacan/>) is pursued and refined at local scales both for the data generation and the uncertainty estimate. At two test sites, OHC derived from in situ data (RAPID and OVIDE-AR7W) are used to evaluate the accuracy and reliability of the new space geodetic based OHC change. The Atlantic OHC product will be used to better understand the complexity of the Earth's climate system. In particular, the project aims at better understanding the role played by the Atlantic Meridional Overturning Circulation (AMOC) in regional and global climate change, and the variability of the Meridional Heat transport in the North Atlantic. In addition, improving our knowledge on the Atlantic OHC change will help to better assess the global ocean heat uptake and thus estimate the Earth's energy imbalance more accurately as the oceans absorb about 90% of the excess energy stored by the Earth system.

The objectives of the 4DATLANTIC-OHC Project will be presented. The scientific requirements and data used to generate the OHC change products over the Atlantic Ocean and the first results in terms of development will be detailed. At a later stage, early adopters are expected to assess the OHC products strengths and limitations for the implementation of new solutions for Society. The project started in June 2021 for a 2-year duration.

Visit <https://www.4datlantic-ohc.org> to follow the main steps of the project.