**Enhancement of autonomous ocean observation networks in the Atlantic Ocean**

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Within the AtlantOS (Optimising and Enhancing the Integrated  Atlantic Ocean Observing Systems) H2020 project, a specific work package is dedicated to development of autonomous observing networks. It is based on innovative platforms with multidisciplinary sensor modules such as gliders, drifters, moorings, floats and tagged animals. This work package is built on existing capacities for autonomous observing networks on both sides of the Atlantic. It will improve the systematic collection of ocean observations recorded in-situ, and will enhance intersections not only between the various autonomous platforms but also with other ones, including ship-based platforms and remote sensing. Autonomous ocean observation technologies are enabling to reduce the costs of in-situ ocean observation, but so far they have to be optimized to integrate the biological and ecosystem dimension into observing systems. For each autonomous platform network of this work package, the work will first focus on the enhancement of data acquisition capabilities. This will be done by upgrading observatories through increasing their spatio-temporal coverage, by integrating new sensors allowing the measurement of Essential Ocean Variables and by linking to the biological dimensions. These developments will be in particular undertaken through sampling strategies resulting from Observing System Simulation Experiments. Data stream of each network will be standardized and, where possible, appropriate real-time and delayed-mode data quality control procedures will be implemented and more generally integrated into a more global and unified data management system. Finally, the autonomous observation networks will be promoted to a wider user community to enhance cross-system integration and to achieve the sustainability of such integrated networks of the future.