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Expanding observational capabilities in the Macaronesia region with ocean gliders

Carlos Barrera | PLOCAN

Co-Authors

C. Waldmann | Center for Marine Environmental Sciences -MARUM-. Bremen. Germany; R. Caldeira | Ocean Observatory of Madeira -OOM- Madeira Tecnopolo. 9020-105. Funchal. Madeira. Portugal; D. Alcaraz | Oceanic Platform of the Canary Islands -PLOCAN- Carretera de Taliarte s/n. 35214. Telde. Las Palmas. Spain; M.J. Rueda | Oceanic Platform of the Canary Islands -PLOCAN- Carretera de Taliarte s/n. 35214. Telde. Las Palmas. Spain; J. Brito | Oceanic Platform of the Canary Islands -PLOCAN- Carretera de Taliarte s/n. 35214. Telde. Las Palmas. Spain and O. Llinás | Oceanic Platform of the Canary Islands -PLOCAN- Carretera de Taliarte s/n. 35214. Telde. Las Palmas. Spain

Abstract (Oral Presentation)

Despite technology advances addressed to ocean monitoring has been significantly improved during last two decades with new platforms, sensors and telemetry systems, there are still many unsolved gaps in terms of data quality, reliability, efficiency and sustainability. These gaps becomes particularly relevant in ocean regions like the Macaronesia, fitted by archipelagos located notably far away one to each other.

Ocean gliders offer a new approach in terms of capacity and sustainability, allowing to perform observations in spatiotemporal scales hitherto unavailable. The present work shows preliminary results from the latest and most relevant glider missions conducted in the Macaronesia, where PLOCAN in partnership with OOM, MARUM and other partners from public and private sector. (1) A joint-initiative between Ocean Observatory of Madeira (OOM) and PLOCAN whose main goal focuses on strengthening glider endurance-lines between Madeira and the Canary Islands, as part of the global observation strategy conducted by the R3M. A buoyancy-driven glider was deployed in the South waters of Madeira Island aiming to cover the 250 nautical miles distance to Gran Canaria. Different physical and biological processes in coastal and open-ocean areas were identified during the mission, highlighting outflows, eddy structures, water masses characterization, etc. The glider mission also covered the seasonal sampling at ESTOC site (European Station for Time-Series in the Ocean, Canary Islands), playing the role as deep-ocean node of the PLOCAN Integrated Observatory. (2) A six-week glider mission conducted between Gran Canaria and Madeira with a Wave Glider SV2 unit, suited with a dedicated payload sensor configuration that included a passive acoustic sensor in order to monitor marine mammals in the area. (3) A mission led by MARUM with a Wave Glider SV3 unit to cover the distance between Cape Verde and Gran Canaria with the main aim to measure ocean currents in the upper layer with an ADCP installed into the float module, as well as to test a prototype of pH sensor. Unfortunately the mission couldn't end due to biofouling issues. (4) A transect mission with a buoyancy-driven glider performed between Ireland and Canary Islands, as part of the program Challenger One.