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GLIDER SOUTH – Pristine water column data in the Southern Sicilian Channel

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The stretch of sea southward of the Maltese Islands up to the Libyan shelf is practically an unexplored area of the Mediterranean Sea. Except for a very limited number of oceanographic surveys, data are very scarce and provide only a coarse description of the hydrographical conditions in the region. Knowledge about the thermohaline characteristics and the water mass circulation in the southern Sicilian Channel is mainly derived from regional scale numerical simulations and satellite observations. The surface circulation appears to be complex with the presence of gyres, eddies and current bifurcations, and characterized by a significant seasonal modulation.
This data deficit is addressed in the GLIDER SOUTH project by using a dedicated glider mission to collect an extensive set of water column profiles along a repeated transect in the area. Underwater gliders have become an integral part of observational platforms for the autonomous acquisition of ocean data up to depths of 1000 m, at high spatial resolution, for long periods of time, and able to operate even under adverse meteorological conditions.

GLIDER SOUTH has provided pristine water column observations that provide new insights on the dynamic phenomena in the stretch of sea between Malta and Libya. Important targets concern the vertical water column structure associated to mesoscale and sub-mesoscale circulation features appearing and monitored by satellite during the glider mission; tracing of the Bifurcation Atlantic Tunisian Current through its subsurface signatures; assessing for any particular water column structure and water masses in association to bathymetric features such as the Malta Graben southwest of the Maltese Islands; and obtaining direct observations on the westward Levantine Intermediate Water flow south of the Maltese Islands.

Furthermore, the collected data is used to validate numerical forecasting models of the area like the Tyrrhenian Sicily Channel Regional Model TSCRM. The sea glider was further employed along a track close to the Maltese Islands to demonstrate how adaptive monitoring strategies using remotely controlled unmanned devices provide cost effective methods to routinely collect basic marine data and measure the health of coastal waters.