



Groundworking for a future permanent monitoring station in the Strait of Gibraltar: the INGRES project

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This work shows the INGRES project (“Water exchanges through the Strait of Gibraltar and their response to meteorological and climate forcing” REN 2003-01608/MAR), which began in May 2004 with the technical objective of setting up monitoring stations in the Strait of Gibraltar. We hope that those stations let us estimate both the Mediterranean Outflow (MW) into the Atlantic Ocean (ADCP-based observations) in a right way and the Atlantic inflow (AW) into the Mediterranean Sea with the help of indirect estimators.

The aim of this technical objective is to analyse the effect that the lost of the hydraulic control in the Camarinal sill produces in the Espartel one, and whether this place (the Espartel sill) acts as the real hydraulic control of the MW outflow. Besides, we seek to quantify the outflow response to both meteorological forcing and fortnightly signal tide, including the phenomena of outflow interruption and the environmental conditions that make it possible.

Long-term monitoring of the exchanged flows in this area is a very important issue in the studies of climatic variability and trends, not only because of the suspected role that the Mediterranean outflow plays in the deep water formation in the North Atlantic and, hence, in the conveyor belt circulation, but also to assess the climatic impact in the Mediterranean Sea, being the Strait of Gibraltar a privileged monitoring place to observe changes and trends in the Mediterranean.

Nowadays, only one monitoring station works in the Espartel sill. This station includes

an ADCP moored at 345 meters of depth that records the water column velocity; one RCM that measures the velocity and direction of the current near the bottom (250 meters) and one microcat that records AM temperature and salinity values at 256 meters depth. The data is collected each four months and we already have one-year collected data.

The final aim of the INGRES project is both to prove the viability and functionality of the oceanographic stations in the Strait of Gibraltar and to establish the groundwork for a future permanent station. As a first step, an extension of this project will be applied (INGRES II).