

RECENT FLOW OBSERVATIONS IN THE STRAIT OF GIBRALTAR

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A new two-year (April '94 - May '96) field program has been started to measure the exchange through the Straits of Gibraltar and Sicily in coordination with efforts from the European Community in the PRIMO-1 Program. This new effort concentrates on measuring the exchange through the Strait of Gibraltar, where current, conductivity, temperature, and pressure measurements are being made at two sites along the Strait axis, one at the sill (Camarinal) and the other at a section between Gibraltar and Ceuta at the eastern end of the Strait. These measurements are complemented by an array of four pressure sensors, also measuring conductivity and temperature, at Punta Camarinal and Tangiers across the sill section and at Ceuta and Algeciras. Two other pressure, conductivity and temperature sensors are deployed across the Strait of Sicily in Mazara del Vallo (Sicily) and Cape Bon (Tunisia) to complement PRIMO-1 current meter moorings deployed across the Strait of Sicily.

It has been more than eight years since the Gibraltar Experiment (Oct '85—Oct '86) ended, and still some of the important questions that it posed have not been properly answered. Most importantly :

(a) Is the hydraulically controlled exchange always maximal, or does it switch at times to a submaximal exchange state and if so, is this switching seasonal ?

(b) What is the best observational method to efficiently and continuously monitor this exchange state ?

and (c) How is this alternating state affecting the magnitude of the exchange between the Mediterranean Sea and the Atlantic Ocean ?

This new field program is designed to address these questions, and also, by complementing the intense PRIMO-1 effort that is simultaneously focusing on the interior of the Mediterranean Sea, to appropriately address more global questions about the straits role in the Sea's circulation. Another important objective of the new measurements is to obtain accurate estimates of salt and heat fluxes occurring through the Strait of Gibraltar. These fluxes relate to integral climatic processes affecting the whole Mediterranean basin. For example, the salt flux at Gibraltar is a direct measure of net evaporation over the Sea, a measurement difficult to obtain from observations over the whole basin.

During this communication, we will present the preliminary results obtained from the first six months of deployment (April '94 - October '94) in relation to the overall objectives of this new field effort.