

PRELIMINARY RESULTS OF CURRENT AND TEMPERATURE MEASUREMENTS COLLECTED IN THE CHANNEL OF SARDINIA FROM JULY 1999 TO APRIL 2000

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Abstract

Current and temperature data were collected in the channel of Sardinia with 12 currentmeters set on 5 moorings at intermediate and great depths during a 8-month experiment. Improving our understanding of the circulation there is essential since this is a key area where, in particular, most of the dense water formed in the Western Mediterranean (in the Gulf of Lions) is expected to flow eastward (before sinking in the deeper part of the Tyrrhenian sea), while a mixture of the densest Eastern and Western Mediterranean waters is expected to flow westward.

Key-words : currents, temperature, strait and channel, Eastern Mediterranean, Western Mediterranean.

Experiment description

Five moorings were deployed across the Channel of Sardinia (from 38°06' N-09°18' E to 38°32' N-08°47' E, i.e. along an MFSP XBT-transect) in July 1999 and recovered in April 2000 with the INSTM² R.V. "HANNIBAL". Moorings, named M1 to M5, were spaced ~10 miles apart (Fig.1) and equipped with Aanderaa currentmeters set at 500 and 900 m (M1 and M5), 1000 and 1400 m (M2 and M4), 500, 1000, 1400 and 1900 m (M3) with a 1 hour sampling interval. This mooring array is thus more complete than the one previously analysed by Bouzinac *et al.* [1] in the same area.

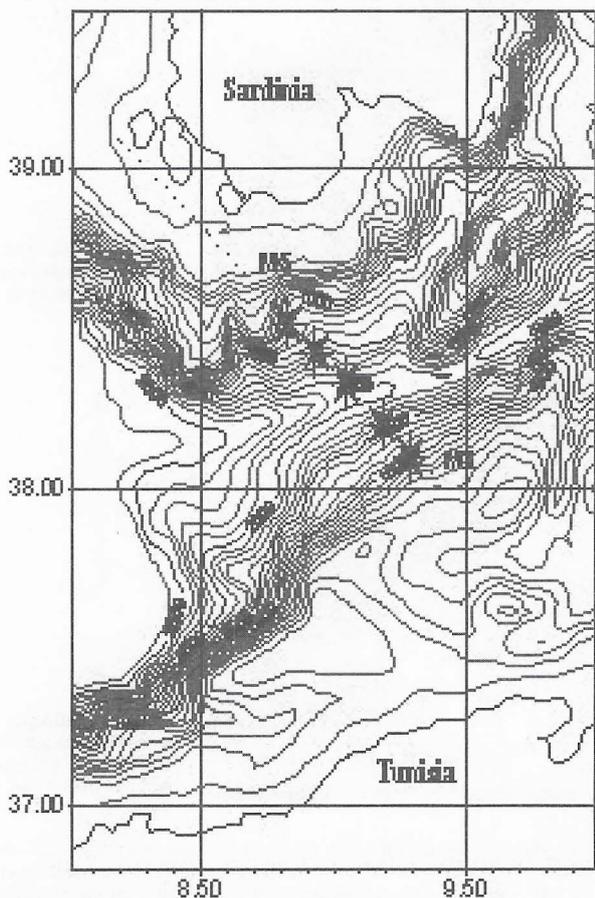


Fig.1: Moorings location and 100-m spaced isobaths

Data and data processing

Instrumental problems have delayed the data analysis but several results have already been obtained that will be completed in the forthcoming months. First, and in order to check the validity of some automatic and hand-made corrections to instrumental problems, a tidal current analysis has been made (Fig.2) and successfully compared with results already obtained in the Algerian basin [2]. All statistical computations have been made.

Preliminary results

Progressive vector diagrams (Fig.3) combined with related temperature record (ie by displaying each point of the PVDs with a colour representative of temperature, but this kind of figure can't appear in this present paper) clearly illustrate the fact that, as expected, intermediate and deep waters are relatively cool and flow eastward along the Tunisian slope while

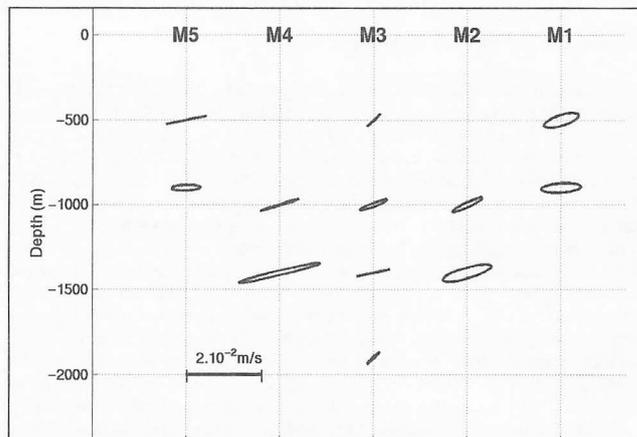


Fig.2: Ellipses for M2 at each point of the five moorings

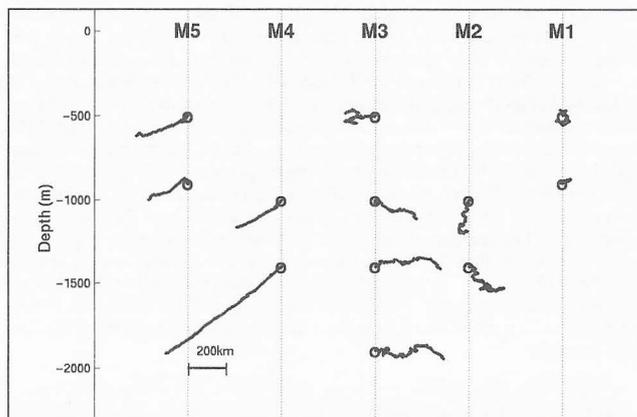


Fig.3: Progressive Vector Diagrams at each point of the five moorings

they are relatively warm and flow westward along the Sardinian slope. Comparisons with XBT data support the relatively large variability of the temperature distribution across the channel, as already evidenced by Sammari *et al.* [3].

An empirical orthogonal functions analysis is on hand to try specifying the characteristics of the various flows, determining whether the eastward and westward flows are correlated or not.

Acknowledgements

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