A TIME SERIE STATION AT THE EASTERN ENTRANCE OF THE STRAIT OF GIBRALTAR

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SUMMARY.- During the ¿Dónde vá? experiment in October 1982 a station located at about 36°02'N, 5°14'N -average bottom depth 800 m- was occupied for 20 hours. Ten casts were made with a continuos recording Neil Brown Mark III CTD. The survey period coincided with the occurrence of two low and high waters at the Strait.

RESUME. - Au cours de l'expérience "Donde Va" en octobre 1982, une station océanographique -36°02'N, 5°14'W- a été occupée pendant 30 heures. On a obtenu dix profils de bathysonde CTD Neil Brown Mark III. La période d'observation coïncide avec la présence d'un cycle de marée.

The station was close to the point C2 (Lacombe and Richez, 1982) and near point G (Cavanie, 1973). It lasted some 20 hours (October 7th., 16.00 h. to October 8th., 12.30 h.), during the neap tides period. The casts were made about one hour apart, ten lowerings in total. The time series were drawn using the data from both the down and up records for each cast. The series are reffered to the tides at Tarifa.

The variations of potential temperature (θ) and practical salinity (S) with time showed a wave-like pattern in the whole water column though more uniform in the upper layer. Its periodicity conforms that of the semidiurnal component of the tides in the Strait (Lacombe and Richez, 1982).

The interface (37 X 10^{-3}, 14.5°C)) reached the shallowest depth some 4 or 5 h. after high water at Tarifa (HWT) and sank very fast about 1 or 2 h. before low water (LWT), reaching the lowest depth some 8 h. after HWT.

The elongation of the salinity interface oscillation was around 80 m. The depth of the interface diminished relatively slow, it took almost 8 h. from trough to crest. But it increased very fast, in 3 h. it sank 80 m.

In the lower layer the amplitud of the isolines variations was larger where the Levantine Intermediate water (LIW) was manifest. At two casts where the LIW signature was very strong ($S > 38.47 \times 10^{-3}$, $\theta > 13.15°C$; $S > 38.45 \times 10^{-3}$, $\theta > 13.10°C$, respectively) between the 200 and 600 m., the upper 38.43×10^{-3} isohaline raised some 200 m., the same order than for the 13°C isotherm. In the rest of the serie the S maximum was always smaller than 38.44×10^{-3} and the depth of the isolines did not vary that much.

The Deep water (DW) -that in this part of the Strait occupies a thin layer close to the bottom-, was clearly detected at one cast where θ was less than 12.80°C.

Since there were not current measurements simultaneous with the station in that point, I had to rely upon current data from other authors (mainly Lacombe and Richez, 1982) to interpret the pictures obtained.

During ebb tide it started an intrusion of North Atlantic Central Water (NACW) ($S < 36.20 \times 10^{-3}$) as the Atlantic water was accumulating between this point and the western entrance of the Strait (Ziegenbein, 1969; Boyce, 1975). Also θ inversions were present.

The LIW signature was weak as the current there was inflowing too. When it reversed the interface became steeper till sank rapidly when the upper inflow reached the maximum and the two layers system was not anymore at equilibrium (Cavanie, 1973). As the outflow increased the LIW was more evident.

During flow tide the upper inflow decreased and the lower layer continued outflowing. The interface began raising again and the upper layer was occuppied by an Atlantic water mixed with some Mediterranean water ($S > 36.40 \times 10^{-3}$) and the layer became homothermic ($\sim 17°C$). The θ inversions dissapeared.

When the ebb tide restarted, the lower current reversed to inflow and the cycle began again.

The DW was more visible in the cast where the strong LIW signal was weaker. This difference in values between both casts could be a manifestation of the tide diurnal component.

A problematic point here was the spotty nature of the LIW core. Why did not its signature last more time during the flood tide, when the outflow increased and reached a maximum?. Obviously the sampling rate hindered a more detailed picture, but even so it does not look as a sufficient answer to the problem.

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