

# IS THE ALTERNATIVE LIW PATH BECOMING MORE IMPORTANT?

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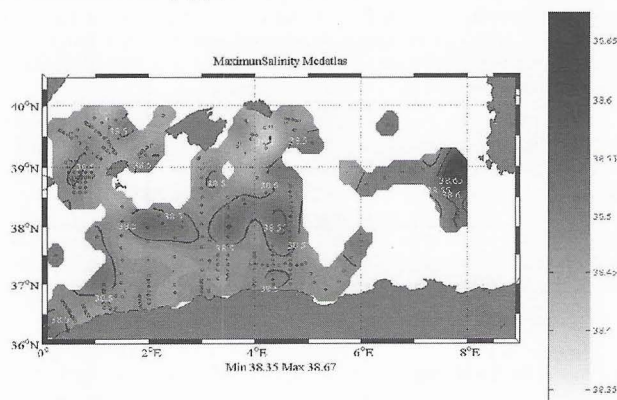
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## Abstract

During July 2003, intense (38.60) signal of LIW was found south of the Balearic archipelago. Comparison with historical data shows as this high LIW values in the Algerian basin have not been found before. This new data rise up the question about the importance of this alternative path for the LIW transport into the western Mediterranean sea.

**Keywords:** LIW, Algerian Basin, circulation

The principal path of the LIW in the western Mediterranean sea is following a cyclonic loop that begin in the strait of Sicily, surround western Italy, Corcega Sardinia, the French coastline and the Spanish one until they arrive to the Alborán Sea. Completing the loop some waters also flow back eastward along the Algerian coastline. In spite the many studies done in the Algerian Basin, a direct path of LIW from the channel of Sardinia to the Alborán Sea have not been found, neither Leddies due to the LIW vein becoming unstable near the southwestern corner of Sardinia [1,2]. On the other hand, some data corroborates the second route for the transport of LIW westward through the Algerian basin. As hypothesized by [3], eddies from the Algerian current could catch LIW near the Strait of Sardinia and drift it westward. This overall circulation at intermediate depths is clearly observed for the Algerian Basin in figure 1, where the distribution of the salinity maximum for the historical data (Medatlas, 2002), with the box delimited by 0°W, 8°W and 38°N, is represented. The maximum salinity is found in the neighbourhood of the Strait of Sardinia ( $S > 38.66$ ), decreasing westward, with its axis along the centre of the basin. This structure is associated with the secondary route for the LIW [3],[4].

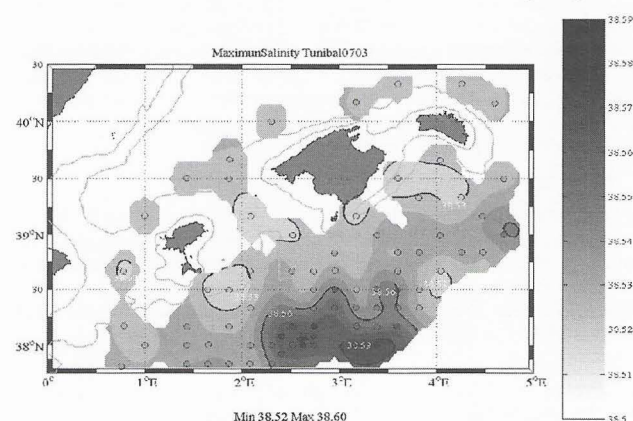


**Fig. 1.** Horizontal distributions of the salinity maximum for all CTD profiles from the Medatlas 2002 database found within the box delimited by 0°W-8°W, 40°N and the northern African coast.

During July 2003 the Tunibal0703 survey was carried out, by the Instituto Español de Oceanografía, on the waters surrounding the Balearic Archipelago. CTD data during this survey was obtained with a SBE-911+, and post-cruise calibration was carried out with salinity bottles and an AutoSal-Guideline salinometer, yielding standard WOCE accuracy for salinity. For redundancy two stations were carried out with a SBE-25 attached to the SBE-911+, yielding differences within the technical specifications of the sensors.

The intermediate circulation in the northern Algerian Basin during Tunibal0703 shows a pattern of LIW with maximum salinity values up to 38.60 and temperatures up to 13.6°C, as can be observed in figure 2, where the distribution of the salinity maximum during that survey is represented. The depth of this maximum is generally between 300 and 600 Dbar. Southern than Mallorca the high salinity values appear. The data in the upper layer (not shown), denote strong anticyclonic circulation and waters of atlantic origin, therefore indicating a possible source for these LIW: drifted from the strait of Sardinia by an anticyclonic Eddie formed in the Algerian current. The

horizontal distribution of maximum salinity depth and dissolved oxygen at this surface denote a frontal zone for clearly different LIW. The importance of the data presented here resides in that this high values have not been found before in the western Algerian basin. Therefore, it could be that the role of this alternative LIW path were more important as thought before, as indicated by the data gathered during the similar surveys carried out in 2001 and 2002 summer, where LIW salinities of 38.53 and 38.55 were observed in the same area. Or even that the discussion of 'Leddies' could be open again.



**Fig. 2.** Horizontal distributions of the salinity maximum found during Tunibal0703.

## References

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