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Discussions

Interactive comment on "Definitive evidence of the Mediterranean Outflow heterogeneity. Part 2: all along the Strait of Gibraltar" *by* Claude Millot

Anonymous Referee #2

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the paper presents valuable data and evidence of heterogeneity of the MW current in the Strait of Gibraltar. But the paper is also very polemical and this does not have its place in a major journal. Referring to certain recent papers to support polemics is limited; many older papers do not claim homogeneity of the MW in the straits.

I am surprised that the papers by Madelain (1970) or by Zenk (1975) are not mentioned.

Furthermore, the paper goes all the other way, which is excessive. By declaring that the MW heterogeneity is sufficient to make it form several veins in the Gulf of Cadiz, the author denies the role of further diapycnal mixing on the gulf slope (clearly shown by Price and Baringer 1988 and later on by Cherubin 1997), or by the topographic steering effect of the canyons in the gulf. I strongly believe that all polemical aspects of this paper must go before it is published (part of them in the abstract, part of them in

the introduction, part of them in the conclusion).

Secondly, the paper offers little dynamical interpretation of the data. Assessing the role of bottom friction on the MW in the strait, of the entrainment of AW at the top of the MW layers, calculating orders of magnitudes of the diapycnic mixing rate in the straits, characterizing the mixing due to the internal waves, comparing the time for mixing with the time for advection (in a simple calculation I did, about 20 times longer) would give more support to the author's claim.

Thirdly, the paper contains many words expressing uncertainty "it is clear that, must be assumed, probably, might be, resembles, hypothesized..." or excess "tremendously, tremendous, dramatic consequences..." which are not quantitative and provide little information. They also must go.

typos and corrections abstract : and sinkS along the strait introduction : is a DYNAMICAL AND THERMODYNAMICAL machine which... figures 1a and 1b I cannot see the correspondence in geographical locations for the same colors lines 270-275 : the discrepancies seem dismissed here

all acronyms and variable names : q(E), S(E), MLS(E,C), S(C), sigma_q, S_q... must be defined.

In view of these remarks, this paper is inappropriate for publication in its present state and must be sufficiently revised to suppress polemics and to provide more scientific arguments connecting the various observations and quantifying the physics involved in this process.

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