

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

Anonymous Referee #1

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General comments The presence in the Gulf of Cadiz and further downstream, of four distinct layers of Mediterranean Water constituting well identified cores, has been generally attributed to bathymetric effects in the Gulf, although some authors sustain the existence of this heterogeneity already in the Strait of Gibraltar. The main reason for this controversy lies in the lack of appropriate historical data in the Strait itself. The present manuscript, which is the second part of a sequence of three, provides evidence of heterogeneities of the Mediterranean Outflow along the Strait and is based on a set of CTD transects and yo-yo time series within the Strait. The main objective is to show that the Mediterranean Outflow is already heterogeneous in the Strait itself. The importance of the present manuscript, which complements the first part relative to the Strait entrance, is not only the evidence of the heterogeneity of the outflow within the Strait

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but also the demonstration of the spatial and temporal variability of the Mediterranean Outflow and the suggestions on the sampling strategy in such a complex area as the Strait of Gibraltar.

Specific comments In general, the written text (as happens with the first part of the series) could benefit from clarification of the text in some places. The figures illustrate the main conclusions of the manuscript, but some of them could improve by clarifying the respective captions. Page 10, Fig. 2b; page 13, Fig. 2c; page 24, Fig. 2i: the light gray lines of the yo-yo time series are almost invisible in a print Lines 183-188: make more clear the sentence “In addition, . . . Strait entrance” Lines 587-590: clarify the sentence contained in these lines Page 28, Fig. 3a caption: the meaning of the light blue lines and of the dark blue lines should be referred (with mention to the “first group” defined in the text) Page 29, Fig. 3b caption: refer to the “second group” Page 31, Fig. 3d caption: refer to the “third group” Lines 735: clarify the sentence “we inferred. . .” Lines 765-773: clarify the text, which is rather confusing

Technical corrections In the whole text, there are several cases of wrong letterings (normal instead of symbol) for the potential temperature (q instead of θ) and potential density anomaly (S_q instead of $\sigma\text{-}\theta$) Abstract, line 16: the meaning of “left-hand” or “right-hand” depends on the way you are looking at. Line 106: maybe Fig. 1 of Part I should be referred or, otherwise, give the θ, S values for SAW and NACW Line 109: figures below, which is 10°C , . . . Fig. 1a caption: Since latitudes and longitudes in the figure’ axes are in decimal format, there should be a correspondence when lat. or long. values are referred in the caption, e.g., $50^\circ 50' \text{W}$ (-5.8°W) Line 163: Millot (2008) is not in the References Fig. 1c caption: explain the meaning of the dot and the cross within circles Line 267: few hours apart Line 269-270: link the m with the exponent -3 (m^{-3}) Line 439: one can retain Line 548: while in its upper part it is similar. . . Line 560: when referring to “the orange MW”, a reference should be made to Table 1 of Part I Line 562: this light (?) Line 604: is close to the . . . Line 705: homogeneous, in cyan, . . ., in blue, . . . Pages 35, 36 and 37: Figures 5a, 5b and 5c should

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all have the same depth intervals (either 25 m or 20 m) in the z scale Line 763: much more contrasted Line 798: ἰΑῖς (orange) Line 1021: Millot (2008) is missing in the references (although it is referred in the text) Line 829: in particular the... Line 865: clarify "MO so as follow" Line 879: define "Mediterranean Inflow" Line 884: S displays Line 942: 1-2 days before Line 949: CTD through Line 986: Baringer & Price, 1997b is not referred in the text Line 990: CIESM group, 2001, is not referred in the text Line 994: García-Lafuente et al., 2011, is not referred in the text Line 1010: Millot, 2013, is not referred in the text

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