

# ***Interactive comment on “Definitive evidence of the Mediterranean Outflow heterogeneity. Part 3: at the Strait of Gibraltar exit” by Claude Millot and Mikhail Emelianov***

## **Anonymous Referee #1**

Received and published: 25 September 2017

**General comments** The present manuscript is the third part of a trilogy dedicated to provide evidence of the outflow heterogeneity in Strait of Gibraltar itself, based on different sets of (mainly CTD) data collected in the eastern, center and western sides of the Strait, thus contradicting the generalized idea of the main role of Gulf of Cadiz's bathymetry on this heterogeneity. The present manuscript complements the first and second parts (based on data collected at the Strait entrance and along the Strait), by showing evidence of the heterogeneity of the outflow at the Strait exit and also demonstrating the strong spatial and temporal variability of the Mediterranean Outflow. Suggestions are made for future sampling strategies in the Strait of Gibraltar, trying to overcome the problems connected with this extreme variability. Interesting hints for

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problems to be solved by numerical modeling are also presented.

**Specific comments** In general, the written text could benefit from clarification in some places. It is my feeling that the manuscript could be more efficient and lighter by much reducing the number of figures that are not essential (e.g., some of the figs. 8), since this is not an exhaustive scientific report but a manuscript.

**Technical corrections** In the whole text, there are many cases of wrong letterings for the potential temperature ( $q$  instead of  $\bar{\sigma}$ ) and potential density anomaly ( $Sq$  instead of  $\bar{\sigma}_\theta$ ), as it happened already in the previous two parts of the trilogy. Line 25: (over 30 x 30 km) Line 28: each other Line 33: splitting not needing Line 143: maximum potential densities Line 171: Material (instead of Materiel) Line 246: on the basis of Line 265: Fig. 2b' caption should be under the figure Line 285: but all four colors are Line 412: is coloring in Figs. 4a and 4b connected with coloring in Fig. 2b? Line 517: isn't the "northern part of the transect" on the right hand side of the MO? Line 530: much shallower Line 806: associated with (for not repeating linked to) Line 881: refer the black circle meaning in the figure's caption Line 929: shallower by 25 m in the two... Line 936: refer the black circles meaning in the figure's caption. In fact, the gray lines and little crosses and dots within the black circles in Figure 11c (and also in Fig. 15b) are not clear at all. Line 1090: As in Fig. 13a Line 1194: and Survey-2, Transect-1 Line 1297: clarify "is almost far upstream the central zone" Line 1314: being very (?) south Line 1382: light gray lines are referred Fig. 17e'caption but these lines are almost invisible Line 1407: along-Strait transects Line 1456: up to now, a correct understanding Line 1493: in the references, besides CIESM Group 2002 we have also Millot and Briand 2002, which is the respective Executive Summary. Only one of these references should appear. Lines 1508-1510: left-hand side of the MO and right-hand side of the MO shouldn't correspond to southern and northern sides? Line 1538: can be obtained in an efficient manner Line 1555: a tow-yo transect Line 1565-1573: explain the "never" that appears in the Figure 19. Line 1621 and 1622: explain the meaning of  $\Delta\sigma_M$  and  $\Delta\sigma_O$  (which I presume are  $\Delta\sigma_M$  and  $\Delta\sigma_O$ )

sigmaO; what are the M and the O?) Line 1666: were no longer straight Line 1677: was not yet split Line 1748: ...Experiment, kindly made available to us, with... Line 1753: with respect Line 1817: Béthoux et al. 1990 is not referred in the text Line 1832: the date (2017) should come at the end and not in the middle Line 1857: Millot & Garcia-Lafuente 2011 is not referred in the text

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Interactive comment on Ocean Sci. Discuss., <https://doi.org/10.5194/os-2017-54>, 2017.

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