

## ***Interactive comment on “Hydrography and Circulation West of Sardinia in June 2014” by Michaela Knoll et al.***

**Michaela Knoll et al.**

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We would like to thank both referees for their helpful comments and input, which we want to address in the following way:

Referee #1

1. Comment It is not clear to me why to introduce the "new water" Temperature Minimum Layer (TML) in the wide water masses panorama as the same authors define it as "not an autonomous water mass, but consists of WIW modified continually on its way through the WMED." So I would suggest to use WIW anyway, even if it has characteristics that differ from other WIWs. If authors evaluate it is necessary a distinction then, like AW transforms in MAW during its path, I would suggest to define it as modi-

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fied Winter Intermediate Water (mWIW). This would better avoid any confusion and let immediately understand of what you are speaking about. Modifications in the whole manuscript are then necessary. Answer: the term 'Temperature Minimum Layer (TML)' was already used in some previous papers (e.g. Allan et al., 2008; Forryan et al., 2012. Turbulent mixing in the eddy transport of Western Mediterranean Intermediate Water to the Alboran Sea, JGR, 117, C09008, doi:10.1029/2012JC008284). They describe TML as a water mass which is strongly influenced by WIW but has lost its characteristic values due to mixing. Therefore, we did not create the term TML but only adopted it to distinguish between the cold water mass observed in the south and the WIW eddy. We are reluctant to introduce a new name like modified WIW (mWIW), though we agree, that this would be a suitable name and would avoid any confusions. Using the same expression WIW for both features might even increase confusion. If acceptable, we would like to stick to the term TML and replace 'influenced by WIW' by 'modified WIW' in Table 2 to make clear they have the same origin.

2. Comment: Two important papers, not mentioned here, should be considered in the comparison of water masses with historical data in the whole manuscript, in my opinion: the first paper is on water masses in the Sardinia Channel Bouzinac C., J. Font, C. Millot, (1999). Hydrology and currents observed in the channel of Sardinia during the PRIMO-1, experiment from November 1993 to October 1994. J. Mar. Sys., 20, 1-4, 333–355, https://doi.org/10.1016/S0924-7963(98)00074-8; the second focuses on the study of LIW in the Sardinian Sea in 2002-2004 and completes other papers mentioned in the manuscript (Sorgente et al., 2003; Puillat et al., 2003; Ribotti et al., 2004) on the hydrodynamics in the area Puillat I., R. Sorgente, A. Ribotti, S. Natale, V. Echevin, (2006). Westward branching of LIW induced by Algerian anticyclonic eddies close to the Sardinian slope, Chemistry and Ecology, 22, S1, S293 - S305, DOI: 10.1080/02757540600670760 Answer: thank you for pointing out the two important papers of Bouzinac et al. (1999) and Puillat et al. (2006) which we added to our study.

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### 3. Technical Corrections:

- page 3, line 29: delete comma (,) before bibliographic reference. Answer: done
- page 4, line 3: change "whole area" with "northern part of the area" as it is mentioned that it occurred above 39.6 °N (Ribotti et al., 2004). Answer: we pointed out that the salinity inversion occurred over the whole sampling field while the upwelling mainly took place north of 40° N.
- page 4, line 10: change 300 m in 400 m (see in Bouzinac et al., 1999; Puillat et al., 2006) Answer: done
- page 9, line 15 and page 13, line 29: add Borghini et al., 2014. Its Table 2 perfectly fits with what mentioned in the sentences. Answer: done
- page 12, line 21: delete the whole line as it is repeated at page 13, line 1. Answer: done
- page 13, line 10: delete "moving" as there are no permanent eddies in the Sardinian Sea. Answer: we delete 'northward moving' in this sentence, but added another sentence concerning the northward movement of the eddy observed during REP14-Med.

### Referee #2

1. Comment Section 2: I suggest to reduce strikingly the comparisons between sensors because this topic was already discussed in the technical report of Knoll et al 2015 and because, as the same authors explain in the first paragraph of section 4, "the differences between CTD sensors were not considered". Answer: we reduced the text in section 2 and eliminated former Fig. 4 and 5 to diminish the dominance of this section.
2. Comment Section 3. I suggest to don't repeat in the text the hydrographic characteristics already summarized in Table 2 (e.g. Line 28: : :. varied between 13.6 and 24 \_C and between 37.1 and 38.3: : :etc). Answer: in most cases we tried to avoid

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repetitions of characteristic values given in Table 2.

3. Comment Page 6, Line 30: Add a sentence to introduce/describe Fig 7 before to speak about their evidences/results. Answer: we added a sentence at the beginning of section 3 to introduce Fig. 5 (former Fig. 7).
4. Comment Section 5: reduce the first paragraph (Lines 24-29). Answer: we reduced the first paragraph of section 5.
5. Comment Lines 14-21: this paragraph appears not related with the context of Currents; put it in the right context or remove it. Answer: we removed the paragraph on weather conditions and upwelling.
6. Comment Fig. 1: Add bathymetry lines as in Fig 14 and specify the geographical location of transect 1, 5 10. Answer: We added bathymetry lines and transect numbers in Fig. 1.
7. Comment: Figure 12: remove this figure and add other two subplots in Figure 13. Answer: we changed the arrangement in Fig. 10 (former Fig. 12), but did not add them as subplots in Fig. 11 (former Fig. 13), since they do not refer to MAW or LIW like the other figure.

Please also note the supplement to this comment:

<https://www.ocean-sci-discuss.net/os-2017-45/os-2017-45-AC2-supplement.pdf>

Interactive comment on Ocean Sci. Discuss., <https://doi.org/10.5194/os-2017-45>, 2017.

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