

# ***Interactive comment on “Variability and Trends in Physical and Biogeochemical Parameters of the Mediterranean Sea during a Cruise with RV MARIA S. MERIAN in March 2018” by Dagmar Hainbucher et al.***

## **Anonymous Referee #1**

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The MedShip program (GO-SHIP sections in the Mediterranean Sea) supports the investigation of its relevant objectives which are, amongst others, engaged in the determination of changes and of long-term variability of hydrographic and biogeochemical parameters in the Mediterranean Sea. This survey is a valuable contribution to improve the database of the Mediterranean Sea for a better understanding of the variability on multiple timescales and for numerical model evaluations.

Abstract:

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- Page 1 line 30: “internal processes”. Detail the meaning of “internal” (convection/mixing, ventilation others ?)

- Page 2 line 3: “we report on data”. Remove the “on”

- Say somewhere in the introduction that this cruise is part of the MedShip long-term repeat cruise section that is conducted every 5 years in Mediterranean Sea to observe changes and impacts on physical and biogeochemical variables.

- Table 1a: add the name of DO sensors: SBE43 others ?  $\mu\text{mol/l}$  or  $\mu\text{mol/kg}$  ? (table 1a vs table 1b). Remove the depth (m) variable which is deduced from the pressure sensor

Introduction:

- Page 5 lines 1 to 3: the sentence is not entirely true. The interannual variability of convection events is significant in the western Mediterranean Sea due to the variability of atmospheric forcing (wind intensity and duration) and the preconditioning event (LIW characteristics). In this context, some years are more convective than others, which has a different impact on the characteristics of the water masses.

Data provenance:

- Figure 1: the map is too small and this is impossible to distinguish the different plots

Methods:

- Table2: add the calibration date of the sensors

- Paragraph 3.1: indicate at which depths the salinity samples have been collected

- Section 3.6: authors do not mention the oxygen from the SBE43 sensor which is used now for 20 years. With Winkler measurements, the SBE43 can be corrected through the least square method which is used to adjust the calibration coefficients precisely ( $\pm 2 \mu\text{mol/kg}$ ). In this case, it is recommended to sample once day the

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entire water column for Winkler analysis. This procedure does not affect the accuracy of O<sub>2</sub> measurements. The authors should now have confidence in the SBE43 sensor as they do with the optode used for surface measurements. The strategy of collecting Winkler samples at all stations therefore seems to me inappropriate now. Indicate clearly at which depths the samples have been collected for Winkler analysis.

- Table 9 has to be rearranged (the text is illegible)

Discussions:

- Figure 2: indicate the name of straits etc. . . on the figure. Do as the figure 6 with the map of the cruise which will help to visualize the location of the T and S sections

- Figure 3: indicate the locations. It's difficult to understand where uCTD has been performed. Distance from where ?

- Page 26 line 10: replace "Med Sea" with "Mediterranean Sea"

- Figure 7: add the section map

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