ESSDD

Interactive
comment

Interactive comment on "Hydrography in the Mediterranean Sea during a cruise with RV *Tethys 2* in May 2015" *by* Vincent Taillandier et al.

Anonymous Referee #1

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General Comments

Dear Editor.

I have read the manuscript entitled "Hydrography in the Mediterranean Sea during a cruise with RV Tethys 2 in May 2015" by Taillandier et. al. and I have also browsed the accompanying Datasets.

The manuscript provides an in-depth description of a data set collected within a cruise specifically planned to provide an assessment of the initial state of a set of biogeochemical Argo floats deployed within the cruise. The record addressed here corresponds to the cruise acquisition from CTD and underway systems, including hydrography, current

velocities and biogeochemical variables.

Data format is understandable, adequate for a spreadsheet thought not following standards as e.g. SeaDataNet nor using a Hierarchical Data Format to ease the direct access from users. This forces the user to implement its own code to import the dataset into analysis software.

My main concern about the paper is that there is an extensive description of data collection and processing procedures (too detailed in my view), while the presentation of the record is almost absent. For each variable group the authors provide the same sequence of subsections: Presentation of the different measurements → Data Processing → Data quality Control. Most of what it is shown directly replicates the standard procedures that can be found on available documents, as the GO-SHIP Manual or technical notes related to equipments. It is even provided the Seabird software sequence applied for the CTDs (as recommended for their CTD model/sensors).

I would suggest the authors to reduce the details on processing whenever it follows any published protocol, and also reduce the details of calibration coefficients/parameters determination, or at least try to provide the information graphically. It would be desirable that data gathering techniques and processing procedures could be audited by external reviewers to such a high level of detail, but this would be a very technical task. It is unfeasible for a science reviewer to check that procedures for all sensors and analysis from samples follow good practices. Note that due to the different disciplines involved the ms imply 15 co-authors; surely all of them specialized in few of the presented measurements. For example I cannot assess whether the nutrient values provided are meaningful or not.

As I understand, the aim of the ESSD paper should be providing only the processing details that, for whatever reason, do not follow the published standards, and to show the dataset highlighting its significance with respect to the existing record. Thus, the potential user do not have to download and plot himself the record before knowing

whether it will be useful for his purposes.

Also, I acknowledge that this BGC-Argo pre-launch exercise is interesting but I am not sure that this single cruise is enough to support a ESSD paper on its own. I have browsed oceanographic cruise data papers in the ESSD journal and found few, typically covering very extensive campaigns (e.g. doi:10.5194/essd-7-231-2015). The dataset presented here provide profiles just at 7 sites. I feel that data papers are more adequate for collections of cruises. This appreciation is of course subjective and, as long as the editor considers the contents of this dataset enough to support a paper, I will not object.

Therefore, in case that the editor considers the dataset present gathered is sufficient for a single ESSD paper, I suggest a major revision. The revised draft should substantially reduce the details on processing and avoid most tables (up to 8 in the current version) and include figures of the measured fields (CTD profiles, LADCP profiles, biogeochemical) so readers can see spatial changes across different basins. SADCP record should also be shown as an oceanographic section. I also miss extended discussion on the role of short-term variability in the misfit between CTD profiles and Argo floats (e.g. is the misfit in Argo vs CTD hydrography comparable for example to that seen among consecutive CTDs at the same site?). Finally, it would be interesting to see (graphically) how nutrients and O2 at depth relate to known background climatological fields.

Specific Comments

p2. l.4-5. Provide references on these "few ocean observation sites".

Section 1.2 I understand that the cruise is dedicated to the maintenance of the Argo-BGC fleet by adding more floats to the array. Some questions arise to me:

- Can you provide info on how many buoys were active at the time of the cruise?.

- Was not possible to perform any calibration profile at positions of active Argo-BGC at the time of the cruise?.

- Where were the 10 floats deployed? I assume 7 were launched at the CTD positions provided but what about the remaining three?, do these correspond to the Levantine basin?.

p3. l.20. Why only the LOV BGC-Argo were considered?

p3. l.26. "Note that the floats were programmed to profile everyday at noon". Should be pointed before, readers not familiar with this array expect Argo floats to profile once every 10 days. Moreover you have said that the floats cycle on weekly basis (p.2 l.8) and again say in the conclusions.

p3. para6. Please explain better, didn't you get permission to perform CTDs in the Levantine basin but to sail there and launch Argo floats?

Section 2.1.2. The reference Le Bot et. al. is absent in the bibliography. Could you explain differences (if any) between the Cascade processing and the more widespread software CODAS? Could you comment further in the bottom track correction through Gebco?. It is not clear to me whether you use LADCP downlooker bottom track to constrain the final profile solution.

p7. l.22– explain further why choosing the layer 750–1000 m, how does the de-correlation scale increase with depth? Is 750 m deeper than the extent of a typical eddy?. l.25, what is the $0.01°C$ (or in PS) threshold?

p9. l.15 Regarding the O2 sensor hysteresis correction, are you following any Sbe technical note directly (if so please indicate which version) or did you programmed specific software?.

l.21 why 2.8 standard deviation?.

l.25 Why do you use CTD temp instead of the built-in temperature of Rinko software?.

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You cannot account for inner sensor thermal lag using an external thermometer.

p.15 l. 24– I do think that a Dataset including pre and post mission calibration would be very valuable.

p.22 (Table 2). Provide deployment positions.

p.23 (Table 3). How is the error magnitude compared to the actual velocity?.

p.28 (Fig.2). Should not the residuals of the Rinko sensor provide zero-average bias after the calibration against Winkler?.

Technical Corrections

- p2. l.30 "are to be" sounds weird to me. Next sentence delete "and".

- p3. l.2. 3000nm, add space. Also along para.3 (1000m etc)

- p3. l.25. Re-word "calibration exercises could have been drawn".

- p4. l.26 I would say assembled instead composed.

- p8. l.1. The date in ref to Winkler work does not match that on the bibliographic list.

- p12. l.31 should read right panel.

- p15. l.20 replace "until" by "up to"