

To  
Dr. Alessio Rovere  
ESSD topical editor,  
Referees #1-2  
and Cc  
Dr. Giuseppe M.R. Manzella  
ESSD Chief Editor,  
and  
the ESSD Editorial Support Team

Oristano, 01/09/2023

Subject: reply to Referee's comments on "A new released Mediterranean drifters' dataset" by Alberto Ribotti, Antonio Bussani, Milena Menna, Andrea Satta, Roberto Sorgente, Andrea Cucco, and Riccardo Gerin, Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2022-344>

Dear Topic Editor,

Thank you very much for your hard work in choosing and following referees and your valid suggestions. Below we answer to your final comment on the dataset's format:

**COMMENT:** ... However, one reviewer has a very important remark regarding your NETcdf file format, which apparently is not up to the Copernicus standard. I strongly encourage you to answer to all new comments, with particular regards to this one, so we can proceed with your MS.

**REPLY:** as answered to the Referee's 2 comment probably the Copernicus format is not the best for describing Lagrangian data; nevertheless, it allows Lagrangian data to be included. For consistency with other datasets developed and published in the past, we prefer to keep the Copernicus dataset as well. The metadata of the Copernicus-compliant files were updated to Copernicus format 1.6 and the files were successfully scanned with the Copernicus format checker (version 1.16). Furthermore the dataset was completely revised following the example given by the referee and the metadata was updated. The new NetCDF files were successfully tested with the Panoply programme that was indicated by the same referee in his first review.

Best regards,



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Dear Referees,

thank you very much for your valid suggestions. We have devoted our best efforts to improve the submitted manuscript, aided by your insightful comments. We conducted a point-by-point response to your comments and queries and the manuscript has been edited and corrected, accordingly. The details of these changes can be found in the ensuing point-by-point responses to each and every comment/suggestion.

Referee's queries are shown in *italics* to differentiate our replies introduced by a **REPLY:** in **bold**.

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## Anonymous Referee #1

### Referee comments

RC2: ['Comment on essd-2022-344'](#), Anonymous Referee #1, 31 July 2023

*In this version of the manuscript, the authors have taken into account all the changes suggested in the previous revision. The title of the paper has been changed, and the data uploaded to the SEANOE platform has been revised.*

*Here are some comments:*

*INTRODUCTION Could you add some information in Fig.1 about the locations that you mention in the text? It's just to have an idea about the available drifters in every place.*

**REPLY:** We have re-plotted the Fig.1 adding most of the locations mentioned in the text. It was not always possible due to the presence of drifters' tracks

### *THE DRIFTERS*

*Tracks 1998-1999 Line 95: It is necessary to add information about the location of the Company? You do not give such information to others.*

**REPLY:** the referee is right. The location has been deleted.

*Tracks 2015-2022: coastal and offshore Nomad drifters*

*Line 169: you mention that LCFs are provided with a temperature sensor, but you do not give the temperature information in the NetCF. Why? If you do not put this information I'll mention it in the text because, in my opinion, it's a bit confusing for the readers. They could think that they could use temperature information for those drifters.*

**REPLY:** The referee is right and so we added the following sentence after having mentioned LCF drifters at line 169: "Furthermore, as most platforms are not equipped with additional sensors, for the purposes of data uniformity we have not considered temperature data acquired with LCF drifters, but only position data." Another sentence is however also taken up in the paragraph on data processing and considers temperature data from all drifters described in the previous paragraphs.

*Line 182: you could mention other studies where Southtek drifters have also been employed:*

*Sala I., Bolado-Penagos M., Bartual A., Bruno M., García C.M., López-Urrutia A., González-García C. and F. Echevarría (2022). A Lagrangian approach to the Atlantic Jet entering the Mediterranean Sea: Physical and biogeochemical characterization. Journal of Marine Systems. 2022, 226, doi: 10.1016/j.jmarsys.2021.103652*

*Bolado-Penagos M., González C. J., Chioua J., Sala I., Gomiz-Pascual J.J., Vázquez A. and M. Bruno (2020). Submesoscale processes in the coastal margins of the Strait of Gibraltar. The Trafalgar – Alboran connection. Progress in Oceanography, 2020, 118, 102219 DOI: 10.1016/j.pocean.2019.102219*

**REPLY:** We have used these two references in the first sentence of the paragraph on Southtek's drifters

*Line 199: you have mentioned the other figures in the text as: “Fig. ”, so please, write Fig. 3 similarly.*

**REPLY:** We have modified it accordingly.

*Line 262: same comment for Fig. 5.*

**REPLY:** We have modified it accordingly.

#### *DATA AVAILABILITY*

*Line 274: add “s” to “in the first meters”.*

**REPLY:** We have added it accordingly.

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## Anonymous Referee #2

### Referee comments

RC2: ['Comment on essd-2022-344'](#), Anonymous Referee #2, 01 July 2023

*"A new released Mediterranean drifters' dataset": That is not a very good title as it is doomed to become obsolete. You should consider something more general such as "A dataset of drifters in the Mediterranean Sea".*

**REPLY:** We agree with the referee. We have changed the title in "A Mediterranean drifters' dataset"

*The manuscript is greatly improved from the original submission. It still contains some odd grammatical phrases and I provide below some indications on how to correct those.*

*My on-going and main concern is about the format of the NetCDF files. These still contains variables with dimensions of the same name. As an example, the variable "Lon" has dimension "Lon", the variable "u" has dimension "u" etc. Because your drifters do not share a common uniform time dimension, there is only one dimension/coordinate per drifter and per file and that is something that could be called "obs" or "observation" or again "index". See as an example the individual NetCDF files of the NOAA Global Drifter Program. You state that you follow a Copernicus format standard but this one clearly does not apply to Lagrangian data. I do not approve of the distribution of this Lagrangian dataset with such a format. The editor may disagree with me.*

**REPLY:** We agree with the referee. We have changed the title in "A Mediterranean drifters' dataset"

*l11: realised -> conducted*

**REPLY:** We have corrected accordingly.

*l48: were interrupted to restart : were interrupted but restarted?*

**REPLY:** The referee is right. We have corrected accordingly.

*l61: (and after) enterprise -> company? manufacturer?*

**REPLY:** We have changed with "company".

*l62: What is GPRS?*

**REPLY:** We have added the following sentence: "GPRS (or General Packet Radio Service) was the first cellular system specifically designed for packet-switched, medium-speed data transfer over a cellular network, so it can only be used in coastal areas covered by a cellular network and is less expensive than GPS."

*l68: re-elaborated? re-processed?*

**REPLY:** We have corrected in "re-processed"

*l87: realised? -> built, manufactured?*

**REPLY:** We have corrected in "produced"

*l108: triangulation? -> positioning*

**REPLY:** We have cancelled “triangulation” that can lead to misinterpretation of the difference in positioning between ARGOS and GPS satellite systems. We thank the referee for this comment.

*l119: strictly linked with the presence of satellites: What does this mean?*

**REPLY:** ARGOS uses a Doppler system to calculate the position of an object on Earth. The object sends tags to the satellites passing over its area that turn this information to a data centre on Earth. This centre calculates the position of the object through the variation of the position of the satellite, its speed and distance from the Earth, and other parameters then transmitting the calculated position directly to the owner of the object. At least 4 satellites are necessary to have an acceptable error in the calculation of the position.

We preferred to avoid such a long description that can confuse the reader. Since there is already a short sentence in the previous lines on this point (l114-l116), we preferred to delete the sentence correctly underlined by the referee.

*l142: during experiments: that is obvious and I would remove.*

**REPLY:** The referee is right. We have cancelled it.

*l152: made in plastic -> made of plastic*

**REPLY:** Corrected accordingly.

*l224: "db\_med24\_nc\_1986\_2016": what is that?*

**REPLY:** The referee is right. We have modified the sentence (and reference) as follows: “included in a dedicated dataset of over 2000 files (Menna et al., 2018b).”

*l226: till? What do you mean?*

**REPLY:** The referee is right. We have re-written the sentence as follows: “Drifter data with acquisition frequency between a few minutes to 2 hours were interpolated at 1-hour intervals, then if more than 2 to 6 hours were interpolated at 3-h, and if more than 6 hours at 6-h intervals.”

*l225-226: You keep mentioning acquisition frequency but really you are describing acquisition period or interval.*

**REPLY:** The referee is right. I have changed “frequency” with “interval”

*l227: central, forward, or backward finite differences? What do you do for end points?*

**REPLY:** The velocities were calculated considering the central finite differences. We added this information in the text and indicated that the velocity of the first and last point was set as 9999.

*l248: See my general comment.*

**REPLY:** The dataset was completely revised following the example given by the referee and the metadata was updated. Now the variables Time, Lon, Lat, u and v have a single variable as dimension, which has been named 'obs'. The new NetCDF files were successfully tested with the Panoply programme that was indicated by this referee in his first review.

Probably the Copernicus format is not the best for describing Lagrangian data; nevertheless, it allows Lagrangian data to be included. For consistency with other datasets developed and published in the past, we prefer to keep the Copernicus dataset as well. The metadata of the Copernicus-compliant files were updated to Copernicus format 1.6 and the files were successfully scanned with the Copernicus format checker (version 1.16).

The DOI on SEANOE will consequently have two distinct datasets (one according to the format useful for Panoply and another according to the Copernicus standard). The end user will be then free to choose the dataset that suits him best.

The text of the paper has been modified in several places to indicate this bipartition of datasets.

*1269-270: Will you be implementing a versioning system?*

**REPLY:** This was our initial idea but during this revision we verified that it is better to create further datasets. We have changed the final sentences as follows: “Lastly, the dataset presented here collects 158 interpolated drifter tracks. Further data will be part of an additional dataset and comparable, as they will be processed according to the same criteria described in this paper.”