

Interactive comment on “PROTEVS-MED field experiments: Very High-Resolution Hydrographic Surveys in the Western Mediterranean Sea” by Pierre Garreau et al.

Anonymous Referee #1

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In this manuscript, the authors present data from a series of field experiments realized in the Western Mediterranean Sea from 2015 to 2018. Data collection is mainly realized in two seasons through the use of several platforms as towed vehicles, free falling profiler, classical CTD stations and current profilers. The resulting dataset describes the physical properties of the water column at different spatial resolution according to the working depth of the instruments. It is worth mentioning the high level of resolution and ability to describe mesoscale and sub-mesoscale processes achieved in the very first layer of the water column. This resolution (about 1 nautical mile) is also typical of glider measurements, nevertheless, in this work, data presented have been collected in a shorter time, allowing a higher degree of synoptic-

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ity to be achieved. Data collected along depth has been also completed by under-
going measurements collected at surface on board the research vessel and by bio-
logical data collected through dedicated sensors. The paper is easy to read, well-
structured and provides detailed description of the data and of the field experiments
designed to collect them. Datasets are easy to access and are of full interest for sci-
entists focusing on mesoscale and sub-mesoscale processes, even if at least one link
(<https://www.seanoe.org/data/00512/62352/data/66880.pdf>) is not working.

I consider that this paper must be published after minor revision. Here are some com-
ments or questions and a few technical remarks that can be useful for the authors and
that should be addressed.

Line 24 “(about 10000 Km)” could be replaced by (total length about 10000 Km)

Line 28 TermoSalinoGraph (TSG) “CTD casts” could be replaced by Classical full depth
CTD stations have been realized. . . . Please define CTD acronym. I think that the
manuscript would benefit of a clear distinction between a CTD (instrument that is in-
cluded in the towed system as well as in the free fall profiler) and a classical CTD cast
performed when the ship stops in a sampling station. At the moment, in this manuscript
the term CTD is used for all the classical oceanographic stations and this could gener-
ate some confusion.

Line 29 “objects” may be replaced by “structures”

Line 30 “the aim of the survey. . . .” Please consider resentencing

Line 32 “biological sensors. . . .have been carried out” Please consider resentencing

Line 44 “chlorophyll a “ replace with chlorophyll a. Please be coherent throughout the
paper

Line 47 “As the scales” might be replasec by “As all these scales” “to develop obser-
vations” please replace with “to develop an observation strategy” Line 56-60 Please
consider to move here the figure 1 also adding the geographical references mentioned

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in the text (up to section 3). I would also move to the very first lines the name of the study area. Line 57 “depths under” maybe “below”

Paragraph 2.1 Please consider to add a figure showing the Mediterranean Sea and the oceanographic features described in this paragraph, as well as the location of the study area. Please add a description of the deep layer properties, or alternatively rename the paragraph to focus on surface and intermediate circulation and main water masses

Line 101 “patchy ocean” maybe “patchy ocean areas”

Line 106 show

Line 112 because of

Line 121 high resolution in situ data by glider have also been compared to the new generation salinity products by SMOS satellite as in “Aulicino, G.; Cotroneo, Y.; Olmedo, E.; Cesarano, C.; Fusco, G.; Budillon, G. In Situ and Satellite Sea Surface Salinity in the Algerian Basin Observed through ABACUS Glider Measurements and BEC SMOS Regional Products. Remote Sens. 2019, 11, 1361”.

Line 129 What you mean with “turning radius”? Is the ability to change direction?

Line 146 The parenthesis includes both oceanographic features that are described in the dataset and basins. Probably listing just one of the categories would be better.

Line 148 “weddies” have not been defined before

Line 155 “rapidcast” not mentioned or described before please add a description at lines 127-140 as for SeaSoar or MVP

Line 158 “CTD casts” maybe “classical CTD stations”

Line 160 “Shom” replace with “SHOM”

Line 165-166 Consider removing the inner parenthesis. i.e. “– VMADCP –”

Line 192-195 NBF and NC have already been defined, please use the acronyms

Line 204 “. . .to a strong Mistral gust, part of the cruise. . .”

Line 212 “lagrangian”

Line 217 “Finite Singular Lyapunov Exponents” consider adding a reference

Line 244 “given” or “giving”?

Line 280 (latitude and longitude)

Line 292 “Shom” should be SHOM. Please check throughout the entire manuscript

Line 294 in the case. . .which is the more common”

Line 298 “SBE 35’s” maybe “SBE 3’s”?

Line 319 “available for data” maybe “available for each dataset”

Line 320 “consists in” maybe “consists in the” “sensor” should be sensors”

Line 325 Are the gridded profiles averaged along depth only? The term gridded may confuse the reader

Line 340 What you mean with “higher temporal resolution”? Please clarify. If the float is enveloped in a structure it would provide longer observations in time.

5. Overview of the observations As stated in the introduction, here a limited number of sample analysis of the collected data are offered to the reader. Please consider adding a sentence at the beginning of the chapter that clarify this.

Line 356 “When deployed”

Line 376 “frequently show”

Line 379 ”CTD casts” should be “classical CTD stations”

Line 379-381 Please add the position of these casts on figure

Figure 3 Please consider splitting this figure in order to obtain an hgher definition for

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each plot

Line 398-401 Please consider resentencing

Line 404 “Some transects have been”

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