

Biogeosciences Discuss., referee comment RC2
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Comment on bg-2020-481

Anonymous Referee #2

Referee comment on "Long-distance particle transport to the central Ionian Sea" by Léo Berline et al., Biogeosciences Discuss., <https://doi.org/10.5194/bg-2020-481-RC2>, 2021

General Comments:

This paper focus on the oceanographic and biological data collected during the PEACETIME cruise in the Ionian Sea in May 2017. The results focus on the heterogeneity of the water masses salinity, fluorescence and particle content observed along the ION-tr transect, suggesting their different origins and connecting them with the surface dynamics of the Ionian Basin. The ION-tr transect results in an interesting crossroads between three different water masses; their presence and characteristics are linked to the basin-scale circulation of the Ionian Sea.

I find this work very interesting and certainly suggest its publication, but I also believe that the authors can still work on improving the description of the context and results. The introduction should be used to explain the importance of this kind of studies and to introduce the dynamics and the surface circulation of the Ionian Sea, in order to give the reader the right elements to better understand and interpret the results. In this form, it becomes very difficult to follow the descriptions without a deep knowledge of the study area. The results of Lagrangian numerical simulation are an important point of this work, and the criteria chosen for the simulations should be explained in more detail.

Specific comments:

Introduction:

I like short, concise introductions, but I find this one too essential. It would be interesting to have a brief discussion of the main results in the literature and some considerations on the importance to study particle distribution.

Lines 47-48: these two sentences seem a repetition.

Lines 51:53: I suggest a broader explanation of the background (PEACETIME cruise) and of the objectives of this study. This sentence rather than explaining the objectives seems to anticipate the results in a cryptic way.

Materials and Methods:

Figure 1: I suggest reproducing the figure in a more accurate way. The transect ST8-tr is not labelled in the figure; the label of the ION-tr transect is positioned away from the transect itself; use different colours for circulation patterns and transects.

Results:

Lines 135-138: Figure 2 is introduced at the beginning of the results without context (it is unclear where the time series was derived from and why). I suggest inserting a paragraph at the beginning of the section that introduces and contextualizes the results explained below. For example, the authors could start by describing the Ionian surface circulation during PEACETIME cruise and explaining why that area was chosen the averages of SST and Chl-a. In the caption of Figure 2, the authors talk about an average on the "northern Ionian Sea", but actually the selected area involves almost all the Ionian Sea.

Lines 143-144: it should be better explained to the reader how to recognize these cyclonic and anticyclonic structures in Fig. 3a and 3b.

Line 153: this sentence is not clear for me! "Sufficient abundance" of what?

Line 155: add "...of Sicily, where lower salinities are associated to large abundance."

Line 163: add also a comment about the difference in speeds between AVISO and ADCP currents.

Section 3.3: It would be easier for the reader to follow this description by adding in the text an indication of the sub-plots referred to.

Section 3.4: The results of this figure are essential to understanding the discussions and conclusions sections of this work. For this reason I believe that the authors should explain more accurately what we see in the different panels of Figure 8 and then focus on the results of panels E and F. The rectangle enclosing the location of the ION-tr transect in Figure 8E is really hard to see.

Thecnical Commets:

Line 85: the acronym TSG is not defined

Line 111: check the spatial resolution of the SST.