

General comments:

This is my second time reviewing the manuscript of Tzortiz et al. Overall, the datasets and plots are convincing and the results constitute a novel and interesting contribution to the study of phytoplankton community dynamics in the Mediterranean Sea. I can see that attempts have been made to address my previous comments and indeed, some parts of the manuscript have been improved. However, unfortunately the manuscript appears hastily written at times, and contains sections that are either confusing or grammatically incorrect. In addition, I still feel the authors need to spend some more time on their discussion to really smooth out their interesting story. For examples, the results are extremely detailed, yet the discussion seems speculative and broad at times. Overall, the manuscript has potential, but in my opinion, is currently not at an adequate level for publication in Biogeosciences. I recommend the manuscript for major revisions.

Specific comments:

Abstract:

Line 2. I would re-phrase “samplings” to something like “in situ – based studies”. It sounds a bit strange grammatically otherwise. I would also mention that you are referring to fine scale ocean dynamics when mentioning the lack of in situ data.

Line 8. Please move “at high spatial resolution” to come after “both physical and biogeochemical variables”.

Line 9. Particular attention was “*given to*”?

Line 13. I would remove “With respect to previous studies”.

Introduction:

Line 20. Phytoplankton “**are**”? Please also add “the” before “ocean”, and also change ocean to oceans.

Line 21. “It is”? I presume you mean phytoplankton. Please rephrase to “they are” and check the grammar for this elsewhere (e.g., in line 22).

Line 23. Can probably remove Line 23 (e.g., from “Ptacnik...”). Not sure if it really adds anything extra to your first paragraph.

Line 26. Change “but also”, to “and also”.

Line 57 – 58. Please rephrase this. It sounds a little bit contradictory as you state that the effect of fine scale is non predictable (which in some aspect is what you’re trying to do in this manuscript?)...

Line 75. “have allowed **researchers/the authors** to capture”?

Line 82. “dedicated to **providing**”? Would also make “surface current” plural.

Results:

Lines 205-213. You state the existence of a fine-scale structure (e.g., line 211) and then state that the FLSE/current direction are *likely* influenced by the presence of a fine scale structure. I would rephrase as this sounds a little bit contradictory.

Line 248. Please correct the grammar in this sentence (e.g., “this can be explained because...”). Also, I’m not sure what you mean by “were realized”. Please check carefully your sentences throughout the MS.

Line 252 – 260. Is it possible to just re-arrange this paragraph slightly. I think it would be good to start the paragraph by stating that the two different surface water masses can be clearly seen in the glider transects – your most important result from the plot I suppose? Currently, you focus on distinguishing between surface and intermediate waters.

Some of the figures (e.g., figure 5) are a little difficult to read, particularly in terms of the size of axis labels and the tick markers. If possible, I would increase their size for the reader.

Section 3.3. This is a nice analysis, and the cytometry results are clear. If possible, please try and improve the grammar and smoothness of how the paragraphs are written, as there are several instances where it is difficult to follow (e.g., “the distribution of this latter”, “unambiguously put in evidence”, “thanks to their light scatter”).

Discussion:

Lines 368-374. I can see a deepening of the DCM at around 38 degrees 30’, but not sure if you can state that this continues (at least clearly) north of that latitude. The actual maximum Chl-a value (0.8-0.9 µg/l) appears to remain at a fairly constant depth along the transect. That being said, I can see the lower “boundary” of the DCM is generally deeper. I would be careful with the wording here

Line 385. I do not see any correlation analysis presented in Figure A5?

Section 4.2 Although I appreciate the authors considered my previous comment regarding further discussion of this analysis (it was generally skipped over in the last version’s discussion), this section is a little bit confusing, especially towards the end. For example, in line 391, the authors state that the high contents of tryptophan and tyrosine *must be* correlated with microphytoplankton. In the next sentence, it states that microphytoplankton *might* produce these fluorophores. General, loose connections are made and further justification of your statements or a re-wording of the text is needed. Overall, I’m not sure of the strength of the author’s discussion here. In addition, you are now discussing the results you have already presented, but rather presenting new results/figures not included in the main manuscript. I don’t want to discredit the author’s

hard work in this revision, but some improvement is still needed in the flow/organisation of the discussion section.

Section 4.3. Some work is needed here. The last paragraph particularly seems hastily written, is grammatically incorrect and diverges from other parts of the manuscript that are generally well-written. E.g., Lines 430 – 436. It is currently not at publication level.