

The article aims to relate certain marine bioindicators with aerosolised fluorescent particles and the presence of active aerosols such as CCN and INPs.

It is interesting the analysis carried out in the different localities and how they are affected by different air masses that have a strong influence on the results obtained for bioaerosols.

The article can be published if the following major and minor changes are made:

A. Major changes:

- Specify in the introduction, cruise observations and at the beginning of the corresponding section of the results, which bioindicators have been used. In the case of Chl-a, also add why was used it.

- The suggestion of new equations for the different calculations is good, but the components of each equation should be better explained, for example in the pag. 10.

- In "Cruise Observations section 2.2":
 - it is not explained how the filters used for chemical or INP analysis are processed. Only for the INP analysis, a vague reference is made to two articles, but I suggest explaining briefly in the text how this was done in this study. So, please explain the processing of both kind of filters: quartz and polycarbonate membrane filters.

 - I also recommend to specify where the TEPs and CSPs analyses were done: on the ship or in the laboratory after the campaign? If they were conducted in the laboratory after the campaign, how the samples were conserved until their processing? Moreover, in the line 30 when it's specified "after 1 min", what do you mean: after 1 min of each rinsed time or what specifically?

 - Also, how much seawater was used for Chl-a and nutrient analyses?

- Figure 2: please also include the representation of the different periods P1-P5 at the top of the right section (figs. 2e, 2f, 2g) to better see the intervals of the values. And add in the caption of the figure, the abbreviations used in the graphs, so that reader doesn't need to look up the meaning every time in the text.

- Figure 3: when this figure is explained in the text (pag. 8, lines: 10-13), it is stated that figs. 3c and 3d also show Chl-a dispersion, but they only show the dispersion of TEP (3c) and CSP (3d). Please modify it.
Also in the text, it's a bit confusing when the average values are mentioned, since the Chl-a values are included. In general, the structure of the paragraph is not very clear. Could it be possible to specify better the results, mentioning the correct figs and restructuring a bit the order of the values? For example, figs 3c and 3d are commented before than 3a and 3b.

- Pag 10: Line 2: Could you specify a reference where the DNA staining method is conducted? Or did you do this analysis? If yes, could you include it in the results or supplementary section?
- Page 11: The results obtained with CSPs are not discussed. Please add a brief summary.
- Section 3.4: Lines 2 and 3. Please make a revision of the text, since the commented values for the fig. 6 do not appear to be the same as those represented. In addition, the highest peaks are for P4 and P5 and not for P1 as indicated in the text.
- Figure 7: Graphs a) and e) represent the same data. Would it be possible to delete one of them? It is a bit confusing.
Also, specify the meaning of the abbreviation "AS" in the figure caption.
- Section 3.5: Pag 15: it is sometimes difficult to follow in the text to which graphs the mentioned values refer. I would recommend adding the figure or table number in brackets after each explanation of the values in the text.
Similar happens for figure 9 in page 16, it's not commented or specified the values.
Furthermore, fig 9. shows all fluorescent particles together and does not distinguish between fine and coarse, whereas it can be deduced from the text that fig 9. shows them separately. Please, explain it better.
- A list of abbreviations is necessary.

B. Minor changes:

- **Abstract:**

Last line of abstract, change "contributed" by "point", "define".

- **Introduction:**

Pag 4:

- Line3: specify in brackets what bioindicators you go to analyse: TEP, CSP and Chl-a. If it's the first time that Chl-a is mentioned, also write the complete word.

- **Results and Discussion:**

Pag 7:

- Line 26: where are represented the plots of mass concentrations of OM and Na⁺ mentioned in the text? Specify it in parenthesis.
- Line 28: could you mention a brief explanation why the OC, sulfate and sea salt were found in the period P4?

Pag 8:

- Line 20: What do you mean by "in this area"? Do you mean the P2 and P4 periods? It is not clear.
- Line: 28: same as in line 20 when mentioning: "in this period".

Pag 14:

- Line 25: the word "elsewhere" can refer to literally another place. Please specify whether it refers to another place on land, marine...

- **Conclusions:**

Pag 19: You explain the periods P1-P4, but you forgot to mention the P5. Could you add something about this period?

C. Typographical corrections:

1. Introduction:

Pag.2:

- Line 11, change "and" by "or"
- Line 17: full stop after the parenthesis.
- Line: 19: close parenthesis after *TEP*; When you mention "microlayer" at the end of the line, which one do you mean, "microlayer of water"? Specify it.

Pag.3:

- Line: 6: change "biomaterials" by "biological organisms"
- Line 21: in the Mediterranean Sea there is another study where INPs are analysed. It was carried out on an island in the Mediterranean Sea. Then, if you are referring to analyses carried out on a ship, don't mention it, but if you are referring to other analyses of bioparticles of marine origin where INP was analysed, mention that too. The reference is: Tang, K., Sánchez-Parra, B., Yordanova, P., Wehking, J., Backes, A. T., Pickersgill, D. A., Maier, S., Sciare, J., Pöschl, U., Weber, B., and Fröhlich-Nowoisky, J.: Bioaerosols and atmospheric ice nuclei in a Mediterranean dryland: community changes related to rainfall, *Biogeosciences*, 19, 71–91, <https://doi.org/10.5194/bg-19-71-2022>, 2022

Pag 4:

- Line 1: add a "s" to word "cycle".

Pag 10:

- Line 16: Rewrite it, specifying that the high correlation appears for "most" of bioindicators, or mention that" for TEP is lower than for CSP and Chl-a".
- Lines 24 and 25: "the correlation coefficients were almost unchanged when an exponent of 2 was used instead of 1 (see Table 2)".
Do you mean between which values? Be a little more specific.

2. Cruise Observations:

Pag: 4

- Line: 9: add a "s" to "measurement"

Pag 5: specify what is d_p and what is referred as "dry" and "wet" in the equation.

Pag 7:

- Line 5: delete the brackets after "respectively".

3. Results and discussion:

Pag 9:

- Line 11: at the end of the line is said that "...representing 2.5%" Is this value correct? Wouldn't you mean 25%?

If it's correct, in the line 20, is the value 7% correct too? Please, revise it.

- Line 15: add after "marine biogenic source" the following: "(according to our bioindicators analysis)".

Pag 10:

- Line 15: add "fluorescent" before the word "particles"
- Line 26: change "marine" by "fluorescent" or add "fluorescent" between "marine" and "bioaerosols".

Pag 11:

- Line 8: delete "(with bacteria, in some cases)". You don't have evidence of this in the present study.
- Line 15: change "formation" by "detection"
- Line 29: change "study" by "studies"

Pag 12:

- Line 15: it seems that there is an extra space between "Ocean" and "during". Delete the space.

Pag 14:

- Line 19: change Fig. "8d" by "7d"
- Line 20: change Fig "7e" by "7d"

Pag 15:

- Line 11: change Table "2" by "3"
- Line 26: after "...and strong winds" make a full stop.

4. Conclusions:

Pag 19, Line 9: delete "i.e" as you only analysed the three mentioned bioindicators (TEP, CSP and Chl-a) and no more.