Biogeosciences

Discussions

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Interactive comment on "Characterising the surface microlayer in the Mediterranean Sea: trace metals concentration and microbial plankton abundance" *by* Antonio Tovar-Sánchez et al.

Anonymous Referee #2

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This manuscript describes trace metal concentrations, along with biological parameters, in aerosols, sea-surface microlayer (SML), and surface waters (SSW) at a number of stations in the Mediterranean Sea. The data appear to be carefully collected and analyzed and of high quality. However, the manuscript is marred by numerous grammatical and other errors, and it needs to be thoroughly edited before it would be acceptable for publication.

However, more substantively, the manuscript doesn't tell much of a story about most of the data, and a few of the relationships that it does present are not supported. In general, it focusses on correlations between parameters, and these can always be

tricky. If a chemical and biological parameter are negatively correlated, is it because the chemical is exerting a toxic influence? Or because biology is drawing down the chemical? Or because both are being differentially affected by something else entirely. We just don't know, but this ms makes some unsupported conclusions nonetheless.

Specific comments There are numerous mis-spellings, grammatical and punctuation errors throughout the manuscript that should be corrected. I have highlighted a subset of these encountered in the first half of the manuscript here, but the entire manuscript needs careful attention and correction of these.

Additionally, I the ms would benefit from more general written description of trends in the results (or state that there are no trends). Currently the reader is left largely to pick their way through the massive, tiny-font tables.

Title: should be "trace metal concentrations" P2, L2: what does it mean for an ecosystem to be "ecologically regulated"? P3, L15: should be "underlying" P4, L15: are the fine or the coarse particles <40 um? P4, L19: year for Rupprecht & Patashnick? P4, L24: what is meant by "the cruise smoking"? P4, L18: how was the sample collected off the glass plate? With a water or acid rinse? If so, how was dilution of original sample estimated? P5, L22: double citation (also check for other instances of this) P6, L4: dissolved samples were not irradiated? Was a particulate CRM analyzed? What was the digestion approach for the particulate/total phase? How long were samples acidified for? P7, L4: I assume this should be 0.5 um P8, L28: here and later the text to refers to "previous studies" but only one study is cited P9, L3: is it standard deviation or error presented here and in other parentheses? P10, L18: in the discussion of residence times the ms refers to particulate metals, but the methods only describes collecting a dissolved (filtered) and a total (unfiltered) fraction. So, how can the behavior of the particulate fraction be isolated and determined? Please explain the assumptions made to do this, so they can be evaluated. P11, L4: what does "dynamic" mean here? P11, L7: this is an example of the selective explanation of elemental behaviors. Is the influence of wind on just Co, or Co and Ni? Additionally, why would wind effect only one or two of

the metals? Would wind not have the same physical transport or diffusion and mixing effects on all metals? Please provide some additional discussion of this very selective effect. P11, L11: it should be "nucleic acid" P11, L13: the methods for characterizing all of these separate biological groups needs to be provided and justified: why were these groups characterized? P11, L24: how is SML fraction different from T-SML? P12, L2: bacterial assimilation would result in no change in T-SML, which includes both dissolved and particulate fractions. P12, L23: why would regeneration in the east only be active for Co, when many other bioactive metals are also remineralized actively? P13: I think there is inadequate support for the conclusion that Ni is inhibiting growth in the surface waters, particularly given the lack of relationship with primary production and chl a. P14, L13: how can there be a 'major difficulty of mobility' (a strange term, I feel) for Fe when the residence times are only a few minutes (table 3)?

Fig S2: please include the year in the date in the caption Fig S3: the figure does not match the caption

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