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Interactive comment on "Composition and sources of sedimentary organic matter in the deep Eastern Mediterranean Sea" *by* R. Pedrosa-Pàmies et al.

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In this study Pedrosa-Pamies et al have analyzed slope and deep surface sediments collected in the EMS. The analysis was carried out at bulk and molecular level with the overarching goal to characterize the sedimentary OC accumulating in EMS sediments. The paper presents a suite of biogeochemical parameters that, interpreted via multivariate analysis, were used to understand composition and provenance of the material. Pedrosa-Pamies et al have carried out a significant amount of work and the data presented here are of high quality. I strongly recommend this paper for publication in BG after addressing the following major and minor points.

Major points.

Overall I found the text too wordy. The paper would gain fluency by making paragraphs shorter. Make sure that only the important information is conveyed and try to avoid redundant parts. Furthermore, sentences are a way too long, keep sentences to the point. To give you an example, among several, the potential contribution by IN has been presented at least three times in the discussion. While I agree on the presence of IN (likely ammonia within the mineral clay sheets), this repetition is clearly redundant and doesn't help the reader. Presentation and discussion of the data is fragmented in some sections, especially where the parallel construction is missing. For example, figure 8b has nothing to do with figure 8a. Rather move it to fig 4. Also, as part of the parallel construction, the authors should show both CPIs, not only the n-alkanols.

Another major issue I see here is the unit used for the PCA. Specifically I'm referring to the mass-normalized biomarker data. By doing so, it's not a huge surprise so observed covariance between terrestrial and marine biomarkers. I question whether this is really informative, because essentially they all mirror changes in OC content that, as the authors suggest, is driven by the surface area (grain size) of the mineral matrix. Have the authors considered presenting both sediment and OC normalized PCA results?

Additional points:

- I might have missed it but I do not see anywhere whether or not the TN/OC refers to the molar ratio. Make sure that the ratio is reported with the stoichiometry notation, as the Redfield ratio. If the ratio is indeed molar, make it explicit in the text. If not, tables, text and figures must be modified accordingly.

- Page 9944, line 1. Please list all the solvents used to elute F1, F2, and F3 fractions as well as how the silica gel column was packed (e.g. if deactivated, pre-packed, etc). Explain how the quantification was performed and how the extraction efficiency was assessed. Finally, how was the UMC quantified? (not in the method)

BGD

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- Page 9954, line 15 and page 9962, line 23. For the direct comparison with organic material supplied by dense water cascading events from the Adriatic margin, I recommend Tesi et al., 2008 DSR and Turchetto et al., 2007 MARGEO. You would quickly realize that Ionian sediments are more depleted than the material supplied by the Adriatic. This could suggest that either the Adriatic sediments do not make it to the Ionian sector or there are further changes/dilution occurring during transport.

- As far as the average composition of the African dust concerns, there is a great paper by Eglinton et al in G3, 2002. "Composition, age, and provenance of organic matter in NW African dust over the Atlantic Ocean". Re-elaborate the discussion to include these results in the discussion.

- What's the relationship between UCM and CPIs? Shouldn't they trace similar sources (petrogenic/oil sources). Please elaborate this in the text.

-Page 9957, line 26 "inorganic IN", please correct. -Page 9935, line 18 "approach is hired", please modify.

T.Tesi

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