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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We would like to deeply thank the Referee for the time and effort provided to review our manuscript and for his/her constructive comments that greatly helped us improve its quality during the revision process. We have addressed the Reviewer's suggestions for corrections/modifications in the revised version of the manuscript, in which certain parts (mainly abstract and discussion) have been re-worked accordingly. Overall, we believe that the manuscript has been significantly improved. Please follow our detailed responses to Reviewer's #1 comments below.

General comments 1. The abstract is not informative enough (such as Page 2, Line

15-20) and needs rewritten.

Response: Corrected according to the Reviewer's suggestion. The abstract has been re-worked in order to be more informative.

2. I am wondering why you didn't check the fatty acid composition, which is also important to address the OM sources.

Response: We agree with the Reviewer's view that fatty acid is an important class of lipids in the marine environment. In this study though, we have focused on lipid compounds that can be ascribed to: (a) characteristic planktic sources/ primary producers (namely diatoms, coccolithophorids, dinoflagellates, and nanoplankton species), (b) terrestrial biomarkers deriving from land plant waxes and (c) anthropogenic OM. The extend of re-working of OM in the water column and underlying sediments that can be attributed to microorganisms, zooplankton and benthic invertebrates, with their specific biomarkers concentrations will be presented thoroughly in a future paper.

3. The authors excluded a few stations when the do correlations bud did not provide evidence why some certain stations could be excluded.

Response: We have excluded a few stations in the correlation analysis in three occasions: (1) %OC and %TN vs. %lithogenic (stations BF15, H07 and H12), (2) $\ddot{A}\delta^{13}C$ vs. CaCO3 (station Red3), and (3) TERNA and TERNOH vs. Sitosterol (stations H07 and H12). The stations excluded present values for the corresponding parameters clearly out of the interval confidence on the population value of Pearson's correlation and the general trend of all other stations. This is due to their singular and exceptional geochemical composition/characteristics which is/are extensively discussed in section 5.2 of the BGD paper (e.g. pag. 9948 lines 13-22). Following the Reviewer's comment we have included in section 3.2.5 of the revised manuscript the aforementioned information that justifies our decision to exclude certain stations during correlation analysis.

Specific comments

1. Page 3 line 0-5 (P3L0-5), 'e.g.' or 'e.g.,'? Keep in consistent.

Response: Corrected according to the Reviewer's suggestion.

2. P3L0-5, I suggest include a reference.

Response: Following the Reviewer's suggestion we have added relevant references (Bouloubassi et al., 1997; Durrieu de Madron et al., 2000; Kaiser et al., 2014) that support that the deep sea receives inputs of organic particles from multiple sources, both autochthonous (e.g., primary production) and allochthonous (i.e. particulate matter from rivers, atmosphere and anthropogenic activities).

3. P15 section 4.4, would be nice to show a few typical chromatograms.

Response: Chromatograms of each eluted fraction containing the various compound classes have been thoroughly presented in several previous papers of the authors (e.g. Gogou et al., 1998; Parinos et al., 2013). We believe that it is beyond the scope of this study to present chromatograms, since this work is not focused only on biomarkers but contains many different parameters that correspond to numerous figures in the MS.

4. P18L0-5 (r = 0,65 and r = 0.72, respectively, p <0.05, : : :)

Response: Corrected according to the Reviewer's suggestion.

5. P20L20-25, why don't you normalize the TerNA, TerN-OH and Mar data to OC?

Response: and -OH (p 9952 line 22 and p9959 line 11 of BGD paper, respectively) and (p9952 line 24 and p9959 line 22 of BGD paper) values have not been normalized to OC contents because in this section the correlation of these variables to OC is investigated. If the values are normalized to OC contents, the subsequent correlation to OC has no statistical meaning.

6. The authors need to focus more on explaining their own results instead of providing lots of background information, such as P21L10-15, 25-29; P22L15-20. 7. P22L20-25, this information has been suggested by various previous studies.

Response: Following the Reviewer's suggestion the text of the revised manuscript has been extensively re-worked in order to delete background information and highlight instead the results of the present study. We would like to thank the Reviewer for this suggestion/comment.

8. P27L24, Straits'?

Response: Corrected according to the Reviewer's suggestion.

9. P45 Table 1, the longitude for west Ionian Sea sediments need to be corrected.

Response: Corrected according to the Reviewer's suggestion.

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