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Biogeosciences Discussions



# *Interactive comment on* "Environmental variations in a semi-enclosed embayment (Amvrakikos Gulf, Greece) – reconstructions based on benthic foraminifera abundance and lipid biomarker pattern" *by* S. Naeher et al.

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Authors response to review of anonymous referee #1:

At first, we would like to thank referee #1 for helpful comments and critical review of the manuscript. Please find below our answers to each comment.

1)

Referee #1: Dinosterol can indeed be derived from diatoms, but is the absence of C22:6 FA that essential to rule out dinoflagellates? Were there no dinoflagellate cysts

found when looking for forams?

Answer: Behrens and Kyle (1996), Journal of Food Lipids (and references therin) report that C22 FA can originate from Cryptophyceae (Cryptomonads), Chrysophyceae (Golden Algae) and Dinophyceae (Dinoflagellates). According to Volkman (2003), Applied Microbiology and Biotechnology, the C22:6 FA is specific of dinoflagellates. Because of this specificity, the absence of this compound suggests an absence of dinoflagellates.

The study of dinoflagellates requires different preparation of the sediment samples and their size is smaller than that of foraminifera. Thus, their examination needs another type of microscope. So, we cannot answer this question based on foraminifera analysis.

2)

Referee #1: Silylation is followed by methylation. In that case also fatty acids are silylated and cannot be converted to FAMEs. Most likely it was done the opposite way?

Answer: We apologize for the misunderstanding. By saponification the fatty acids (FA) are separated from the neutrals. Then, the neutrals are further separated into an apolar and a polar fraction by NH2 columns. Therefore, we derivatised the fraction containing the FA by methylation, whereas the polar fraction was silylated.

We changed the sentence in the manuscript as follows: “After saponification and separation of fatty acids (FA) and neutrals, the latter were further separated into apolar and polar fractions over NH2 columns.” This correction added to page 7411, lines 28-29.

3)

Referee #1: P. 7418, 2nd paragraph: Were the average chain lengths (of the n-alkanes including those < C20) in Amvr13 and 15 also different? Higher ACL indicate higher terrestrial OM contribution.

Answer: The absolute concentrations of n-alkanes were generally higher in Amvr13,



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including the alkanes with longer chain lengths. But the relative content of long chained n-alkanes (C26-C36) was higher in Amvr15, which also supports the interpretation of relatively higher contributions of terrigenous material in Amvr15. But the difference was not very large, so we focused on more robust indicators (especially C/N ratios, $\delta$13C-TOC) to answer this question.

4)

Referee #1: p.7415, line 12; p.7418, line 27; p. 7419, line 3: change 'for' to 'of'.

Answer: We corrected these in the manuscript.

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Interactive comment on Biogeosciences Discuss., 9, 7405, 2012.