

## ***Interactive comment on “Occurrence, sources and transport pathways of natural and anthropogenic hydrocarbons in deep-sea sediments of the Eastern Mediterranean Sea” by C. Parinos et al.***

**Anonymous Referee #1**

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General comments:

This paper presents the biomarkers compositions of surface sediments from deep basins of EMS, which is related to relevant scientific questions within the scopes of BG. The dataset is qualified and well presented. The results fill in the blank of limited hydrocarbons data in deep basin of the EMS. They found the deep basins and canyons of the EMS act as traps of both natural and anthropogenic hydrocarbons. However, the results are missing some important background information such as the grain size, water masses distribution, marine shipping routines, atmospheric inputs variation, bottom oxygen content etc. The discussion seems quite weak more like a comparison study

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within subregions, lack of detailed discussion with factors on distribution of hydrocarbons, especially selective preservation of biomarkers in the deep basin and impact on the sedimentary record.

Specific comments

1. The title should be modified, because I was not convinced well with the transport pathways of hydrocarbons in this manuscript.
2. Abstract: the significant correlation with TOC might be contributed to grain size control, please make it clear; how the mesoscale variability of water masses impact the regional characteristics, please make a detailed explanation in discussion part.
3. Introduction:  
Add one paragraph of selective preservation of organic matter in deep sediments, how the record will be impacted.
4. Material sand methods  
Figure 1 should illustrate the mesoscale variability of water masses, the marine shipping routine, and atmospheric inputs variations.
5. Results:  
Consider to add grain size data, or SA data for the further discussion  
Less information available about hopanes series.
6. Discussion  
5.1 Hydrocarbon levels

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The comparison between shelf and deep basin of EMS should be emphasized here, the potential link or contrasting behavior will be helpful to further discussion; why not include hopanes series for the comparison.

#### 5.2 Sources

Considering the selective preservation of biomarkers in the sediments, source specified should also consider the potential impact.

#### 5.3 Regional

Part of the discussion should moved to results part, and here focused on how the water masses etc control the distribution of hydrocarbons. Please specify the atmospheric inputs and marine ship activities among those regions.

#### 5.4 Drives

This should be most important part of discussion, please develop it according the above suggestions.

7 Conclusion: please consider as summary instead of conclusion here.

#### Figures and Tables

Table 2 please specify the abbreviations of parameters

The End of review.

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Interactive comment on Biogeosciences Discuss., 9, 17999, 2012.