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## ***Interactive comment on “Trophic state of sediments from two deep continental margins off Iberia: a biomimetic approach” by A. Dell’Anno et al.***

**A. Dell’Anno et al.**

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We would like to thank very much Referee #2 for his/her positive comments and appreciation of the main outputs of our study. According to his/her general comments and suggestions the following changes and amendments have been made: 1. Also according to the comment raised by the Referee#1, the title has been modified as follows “Trophic state of benthic deep-sea ecosystems from two different continental margins off Iberia”. 2. Differences in primary productivity of surface waters in the two continental margins investigated have been included in the amended version of the manuscript. In particular data on primary productivity dur-

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ing our sampling periods have been extracted from the ocean productivity database <http://www.science.oregonstate.edu/ocean.productivity/index.php>. 3. Standardized Y scales were utilized in the different Figures to allow an easier comparison between the two different investigated regions.

p.17623, l.22-23 Authors describe dense water cascading in the canyon. Is there any evidence (eg. measurements by moorings) that suchlike cascading also occurred during the period of investigations?

In the amended version of the manuscript we better clarified that DSWC events affecting Cap de Creus canyon and the adjacent open slope occurred a few months before (i.e. winter/early spring 2005 and 2006) the collection of sediments occurred in October 2005 and August 2006. These events have been documented by long-term and high-resolution mooring investigations carried out in this area on the last two decades (Heussner et al., 2006; Canals et al., 2006; Palanques et al., 2012). In particular, we specified that these major DSWC events, driven by exceptionally strong and dry northern winds, spreading down to the Catalan margin with maximum bottom current velocities nearing 1 m/s (Canals et al., 2006; Palanques et al., 2012) conveyed large amounts of organic material (up to 75% of the total annual particle flux) in Cap de Creus Canyon and the adjacent open slope (Canals et al., 2006; Sanchez-Vidal et al., 2008 and 2009; Pasqual et al., 2010).

p.17624, l.18 Avoid self citation. Better use citation of one of the first authors mentioning this parameter (eg. Thiel 1978).

Self citation has been removed and replaced with the suggested reference.

p.17625, l.4 >selected< instead of >select<

Modified accordingly

p.17628, l.4 CPE in total (total phytopigment) only has limited usability as a parameter for really fresh input of primary organic matter. While chl a has half-life rates of 14d

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(Sun et al. 1991), phaeopigments half-life rate is in an order of 40d (Furlong & Carpenter 1988). Thus, pure chl a seems to be a better parameter for fresh phytodetritus input.

The Referee is right. Here we wanted just to point out that CPE was used as a proxy of organic material produced by photosynthesis and a potential source of food. We thus deleted the term “fresh”.

p.17632, l.6-8 Here it would be nice if authors would compare their results with measurements for primary production in the euphotic zone either from CTD casts or from satellites.

Data of primary production derived from satellite has been included.

p.17633, l.13 I'm not sure if >vehicle< is the right term in this case. I would use >source<.

Accordingly we replaced the term “vehicle” with “source”

p.17643, l.11-12 for me it is unclear how the mentioned mechanisms affect the discussed results. Authors should describe the mentioned mechanisms first and then how they might interact with the presented results.

We fully agree with Referee#2. To clarify this point, additional information on the mechanisms of particle transport in the study areas has been included in the Material and Methods section and the sentence modified also for accomplishing the request of Referee#1.

p.17643, l.13 processes >are< able

Correct. This has been modified.

p.17643, l.20-22 if authors discuss significances, they should mention calculated p values.

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Many of the statistical results from our study refer to multiple interactions. Thus, to avoid an excess of P values and other relevant statistics (i.e., F, MS and degrees of freedom for ANOVAs and t values for pairwise post-hoc comparison tests) in the main text, for brevity, the outputs of all statistical tests were already reported in the supplementary material of the previous version of the manuscript. We think this option keeps the reading easier.

p.17643, l26-p.17644, l.3 In this part of the discussion a interesting theory is described. However authors' conclusions remain a bit nebulous. This passage would become easier to understand if authors describe how the foraging theory leads to the mentioned important clues in more detail. They should also describe which clues are essentially.

In the amended version of the manuscript we better clarified this concept by providing additional support from the literature as also requested by the Referee#1.

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