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Interactive comment on "Impact of open-ocean convection on particle fluxes and sediment dynamics in the deep margin of the Gulf of Lions" *by* M. Stabholz et al.

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This paper deals with the impact of open-ocean convection (OOC) on particle fluxes and sediment dynamics in the deep margin of the Gulf of Lions. The data set is mainly constituted by time-series of particle fluxes and oceanographic parameters (temperature, salinity and currents) acquired between September 2007 and April 2009 at 5 instrumented mooring lines deployed between 2050 and 2350m-depth in the deepest continental margin and adjacent basin. CTD casts were carried out prior and after the turnarounds of moorings. Short sediment cores were collected in 3 of the 5 sites to measure sediment accumulation rates, organic carbon contents and grain-size. Fur-

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ther data consist in sea surface chlorophyll-a concentration by satellite, Integrated Net Heat Fluxes, seabed morphology by side-scan sonar images.

Overall, the manuscript is well organized, written and illustrated. The topic is suitable for the journal and of broad international interest. While in the past it has been well documented the increase of the total mass flux during dense shelf water cascading events on the continental slopes for sediment resuspension by accelerated bottom currents, the novelty of this paper stands in documenting enhanced particle fluxes, and currents able to resuspend sediment from the seabed of the basin also during deep OOC events, when the OOC affects the whole water column. I agree the first reviewer that the manuscript is well written and structured until the Discussion. Then, authors spend more to compare previous papers/dataset with respect to discuss their data. The paragraph 5.1 Comparison with other NW Med oceanic sites carries no novel considerations. In summary, this manuscript could become a reference paper if the Discussion chapter will be improved (re-organized and re-written), looking for to better outline the new findings of this study and increasing the integration between different kind of data.

Minor comments: It was not explained why were chosen only 3 of 5 sites for sediment analyses. Fig. 1– CLD1000 is not explained in the caption, neither in the text. Is it part of your experiment or it is just used as reference? Cited also in Fig. 2, and Fig. 5. In the text, it is cited in a different way (LDC1000) in paragraph 4.2 (row 293), but it is not explained if data belong this manuscript or to other authors. Fig. 4 - Too many instrumented levels with respect to what explained in the Materials and Methods, specially in the third deployment period! Temperature was measured at about 30 levels. Fig. 5 – a), b) and c) are not in the right order. In SW2060, there is an ADCP but no such data are shown. No salinity time series is shown, although in the Methods, SBE37s are described. For OCC, "low" is used as contrary of "deep", whereas "shallow" sounds better. You use the same for DSWC. The sedimentation rates of table 3 are (too) high for slope sediments. I suspect that some mixing is

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responsible for this. It should be useful to show the Pb-210 profiles. Further minor comments are along the attached manuscript.

Please also note the supplement to this comment:
http://www.biogeosciences-discuss.net/9/C5734/2012/bgd-9-C5734-2012-supplement.pdf

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