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Interactive comment on "Effects of the arrival of fresh organic matter on eroded and nutrient-depleted trawling grounds (Gulf of Castellammare, SW Mediterranean)" *by* Sarah Paradis et al.

Xavier Durrieu de Madron (Referee)

demadron@univ-perp.fr

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In this paper, the authors attempt to highlight the long-term (over decades) impact of bottom trawling on the sedimentological, radioisotopic and biogeochemical characteristics of the sediment by comparing two contrasting sites, one regularly impacted by trawling activity and the other outside the area heavily impacted by trawling. They thus reveal important differences that demonstrate the erosive effect of recurrent trawling activity, the transport of part of the resuspended sediment to non-trawled areas, and the ability of benthic communities to adapt to substrate alteration and organic matter

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inputs of planktonic origin. The manuscript is generally concise and clear. It is also well organized and illustrated. The following remarks and suggestions should clarify some points.

Page 2, Lines18-19. The comparison of the impact of storms versus trawling is not discussed in the article by Durrieu de Madron et al, 2005, but by Ferré et al, 2008. (Ferré B., X. Durrieu de Madron, C. Estournel, C. Ulses, G. Le Corre (2008). Impact of natural and anthropogenic (trawl) resuspension on the export of particulate matter to the open ocean. Application to the Gulf of Lion (NW Mediterranean). Continental Shelf Research, 28, 2071–2091).

Page 3, Lines 6-8 Since when has bottom trawling been practiced on the continental slope? Is it since the 1990 ban or was this area trawled before? This information would be useful to give an effective duration of trawling activity in the study area.

Page 2, Line 26. It is a cyclonic circulation (anti-clockwise) and not an anticyclonic circulation. On the other hand, I imagine that currents on the continental shelf are variable and strongly impacted by wind, while the circulation along the continental slope is probably more permanent. I suggest simply writing "A cyclonic along-slope current dominates the Gulf's circulation".

Page 3, Lins 12-13. The sampling strategy includes three multi-tube corer deployments at the same station from which 3 cores are collected. Did you analyze each slice of sediment of the 9 cores thus collected and then estimate the mean and standard deviations, or did you mix all the sedimentary material of the different cores before analyzing it and the error bars shown correspond then to the instrumental error.

Page 3, Line 21-24. Can you indicate the size limits between clays and silts, and silts and sands?

Page 4, Line 2. Indicate the maximum depth of the cores on which these analyses were performed.

Page 7, Line 8-13. It would be useful here and for the discussion to know more about the fishing gears. Can you specify the main types and characteristics of bottom trawls used by fishermen in this region? Are they beam or otter trawls? Are they equipped with rollers or chains?

Page 10, Lines 14-16. Do you have any information on the intensity of the bottom current to estimate their capacity to transport or even remobilize fine sediment?

Page 10, Lines 29-34. Do you think that the benthic and epi-benthic communities are the same between the two sites (trawled and untraveled) given the differences in the substrate? Could different species induce significant differences in the organic matter turnover rate? Meiofauna biodiversity is not addressed in this article, but I think it would be interesting to consider this possibility in the discussion (if it makes sense)?

Captions of Figures 2, 3, 4, 5 and 7. Explain the vertical blue and red scales, as well as acronyms (SML: Surface Mixed Layer, constant SR : constant Sedimentation Rate)

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