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Interactive comment on "Macrofaunal colonization across the Indian Margin oxygen minimum zone" *by* L. A. Levin et al.

Anonymous Referee #3

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I do not have the much to say regarding this submission to Biogeosciences and agree with many of the points raised by the 2 previous reviews. I do have some minor points that I would like to see addressed before the paper is finally accepted. Page 9455 lines 12-28: Please merge these two paragraphs better as there seems to be a lot of repetition in both paragraphs Page 9456 Lines 22-23: Do you mean temperature and salinity at the seafloor? Page 9457 Lines 10: I do not think "occupied" is the best word to use. Page 9459 Lines 5: It would be nice to run the analysis using maximum transformed data (presence/ absence) as well. If the data analysis provides essentially the same results as the untransformed analysis, it would be possible to state that the differences in community structure between the different treatments are related mostly to compositional patterns rather than abundance patterns. Page 9461 Lines 1: It would be nice to have some description of the size of the different animals

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found in the different colonizer treatments as this would allow the reader to work out if the animals were migrating into the colonizer trays as larvae or as adults. Page 9461 Lines 19-25: I find the text confusing here because in one instance that authors state that 5 polychaetes were present in the 802m colonization trays and 2 of these were cirratulids. In the next sentence, they state that the other 5 polychaetes at the site represented a different family. Does this mean there were 7 polychaetes in the colonization trays? Please confirm or restructure the sentence. Page 9467 Lines 28-29: Change to "These may have entered trays as planktonic larvae and rapidly grew". Again, by having biomass/ size information about the animals, the reader would be better able at deciding if the fauna in the trays were larval colonizers or migratory adults. Would elevated sulfide concentrations also be limiting colonization of fauna in the OMZ as well as low O2? Comparing between the Levin et al seep study and this study would be a suitable comparison and may shed some light on the structuring effect of sulfide on colonization dynamics. This has been done to some degree but could be discussed in more detail in the discussion Page 9472 lines 5-10: I very much like the reasons that led to the experiments being set up in the first place, but I think realistic disturbance experiments are also needed. It may take far longer for fauna to colonize an area tens of kms in diameter that has been devastated by phosphate mining/ trawling than into a colonization tray where only the surrounding 1m of sediment has been impacted. I think it is important to stress that despite the fact that you see colonization into sediments at 1147m within a week, these results cannot be used as evidence for rapid colonization of seafloor habitats after phosphate mining/ fishing. This is not a criticism of the paper, but it would be good to emphasize this.

Figure 1: I found this figure worrisome from an eye-sight point of view. I am relatively young (at least I think so) and found the legends and symbols on the figure quite difficult to read. While this has highlighted the fact that I need to go and see an optician, please increase the sizes of the symbols/ text. This also applies to figures 7 and 9. Figure 6: I would like to see the total number of fauna found in the colonization trays on this figure or in the text, as I think only 1 polychaete was found at 817m. This would make things

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clearer to interpret here.

Interactive comment on Biogeosciences Discuss., 10, 9451, 2013.