

Interactive comment on “Large clean mesocosms and simulated dust deposition: a new methodology to investigate responses of marine oligotrophic ecosystems to atmospheric inputs” by C. Guieu et al.

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The authors thank the reviewer for the nice comments about the paper. Concerning the first remark about the degree of water exchange, we will make the same answer as for Rev #1 and mention that such calculation is not possible. On figure 8, an additional detail has been added to illustrate how the 2 parts were tied together. An additional argument is that the reproducibility of the results in between the DUST-meso is good as demonstrated in the paper and this would not have been the case if there were some leakages that would – if they did occur - have been necessary at random in between

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the 3 bags. Concerning the second point about the fact that we consider the 3 different bags having receive the same treatment are triplicates: we agree that in absolute, the 52 m³ water mass caught in each bag cannot be exactly the same and cannot be submitted to exactly the same forcing in term of light for example, and this is clearly expressed in the section p2706 line 23 to p2707 line 5. Taking into account the natural small scale variability and the difference in forcing, the numbers obtained in 3 bags receiving the same treatment are very much comparable for most of the parameters measured, indicating that the biological and chemical response did not differ from one bag to another receiving the same treatment and thus that the results can be considered as triplicates and that there was no evidence from the parameters measured that different assemblages had develop in bags receiving the same treatment with apparently identical initial conditions. We understand that the way it was presented was too straight and in the present version, we changed throughout the paper the term ‘triplicates’ by ‘3 bags receiving the same treatment’. The conclusion of the section 6.2 is now that indeed, the 3 bags receiving the same treatment can be considered as triplicates. Now, concerning the request to provide actual data to show in details the potential assemblage variation within and between treatments: as we indicate in the paper, the goal of this paper was not to show the data (this is currently being done in companion papers, see below) but to find a way to consider the whole data set in order to give a common validity based on our large/clean mesocosms approach. Those parameters include pigments that have been used to assess the contribution of the different algal groups in two size classes (<3 μm and >3 μm): those data (C. Brunet) will be used in (in prep) companion paper. So far, among the data ‘requested’ by the reviewer, we can mention the composition of the heterotrophic bacterial community, based on the fingerprint method (CE-SSC) P profiles of the three replicate Control-mesocosms and Dust-mesocosms: those data revealed good reproducibility throughout the experiment. (Lagdhass et al. in rev.) indicating that there was no potential assemblage variation within replicates (the paper is ‘in rev’ and can be provided on request). The following section has been added at the end of section 6.2: “The numbers obtained in three

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bags receiving the same treatment were very much comparable for most of the parameters measured, indicating that the biological and chemical response did not differ from one bag to another. Also, there was no evidence from the parameters measured that different assemblages had develop in bags receiving the same treatment (see for ex. Laghdass et al. 2010 on the evolution of the composition of the heterotrophic bacterial community). The results obtained in three bags receiving the same treatment can thus be considered as triplicates".

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