

Interactive comment on “Sinking microplastics in the water column: simulations in the Mediterranean Sea” by Rebeca de la Fuente et al.

Anonymous Referee #2

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Comments on the manuscript “Sinking microplastics in the water column: simulations in the Mediterranean Sea” by de la Fuente et al.

The authors present presents an important analyzing methodology and tools to study the behavior of the microplastics in the ocean. They specifically focus on the distribution of negatively buoyant rigid microplastic particles in the water column with simulations carried out in the Mediterranean Sea. The modeling tools and methodology followed are reasonably laid out and the paper is well-written. The paper is a useful contribution to the literature in this area. I recommend the publication of the paper after minor revisions suggested below.

1) There is a lack of a discussion on the interaction of these specific rigid microplastic particles considered in the analysis and other particles such as marine snow and

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detritus matter that are abundant in the Ocean and transported to the seafloor as aggregates. Microplastics can be scavenged by these settling aggregates. Wouldn't this be an important process that would affect the distribution of microplastics in the water column?

2) Authors show that for fixed horizontal and vertical diffusion coefficient values that are chosen to represent small scale turbulent flow structure has a moderate error. The horizontal diffusion coefficient used $7.25 \text{ m}^2/\text{s}$ seem to be rather large for depths below the mixing layer. Could this have contributed to a large error margin seen in horizontal displacement for the cases shown in Appendix A?

3) Fig A3, A4 caption mentions 'Dashed region indicates the range of the distances among the individual pairs of particles.' I do not see the dashed region referred in these figures.

4) Lines 333-334: 'Both functions have been normalised to have area one, so that they can be displayed in the same plot'. What is area one?

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