Ocean Sci. Discuss.,
https://doi.org/10.5194/os-2018-136-RC2, 2019

Ocean Science
Discussions

Interactive comment on "Technical note: On the importance of a three-dimensional approach for modelling the transport of neustic microplastics" *by* Isabel Jalón-Rojas et al.

Anonymous Referee #2

Received and published: 8 April 2019

The manuscript describes the trajectory and fate differences of the neustic microplastic in three scenarios, i.e. 2D only, 3D weak vertical turbulence and 3D strong vertical turbulence. And it tries to indicate the importance of the 3D approach. The manuscript is well organized and clearly analyzed all the numerical experiments. I am providing some comments that are required to be considered by authors. 1. The conclusion of the manuscript is obvious. Because of vertical transport, MPs may be trapped and driven by the horizontal currents at difference depth, for numerical models at difference sigma layer. And due to the difference of the horizontal current field at different sigma layer, the trajectories and fates of MPs in 3 scenarios are different. I noticed the vertical transport of MPs is driven by random walks, vertical current and vertical diffusivity.

The manuscript only evaluated the importance of vertical diffusivity, but what is the contribution of the other two factors? 2. What is the vertical resolution of the hydrodynamic model? How could it be if the vertical resolution changes? 3. page 4 line 22-23: not all the particles stay in the bay in the 3D approach with weak vertical turbulence. 4. page 6 line 1-2: Without validation, there is no stand for the author to conclude a "more-accurate" prediction.

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