Ocean Sci. Discuss.,
https://doi.org/10.5194/os-2020-11-RC1, 2020
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Ocean Science
Discussions

Interactive comment on "Modelling mussel (*Mytilus* spp.) microplastic accumulation" *by* Natalia Stamataki et al.

Anonymous Referee #1

Received and published: 10 April 2020

This manuscript presents a DEB-bioaccumulation model for microplastics. The model was calibrated and corroborated with field data available in the North Sea and Northern Ionian Sea, showing some skill in reproducing the (few) available observations. The topic is of interest to the readership of this Journal. The manuscript is very well written and clear. The model, the simulations and the analyses are robust and discussed thoroughly. I have a number of comments that I reported in the pdf version of the manuscript that I am attaching to this review. Here I will mention just two moderate concerns of mine regarding this work. 1) The authors used an ocean-colour chlorophyll product as input of the DEB model. However, this product might be biased in optically complex coastal waters, such as the Southern North Sea considered in this manuscript. The issue is relevant, because

the authors pointed out the impact of the high chlorophyll concentration on the results they obtained in the North Sea. I recommend that the author discuss the reliability of the chlorophyll product they used. For example, they could compare the ocean colour product with in situ chlorophyll data from the ICES database (https://www.ices.dk/marine-data/data-portals/Pages/default.aspx), or with the NSBC climatology (https://icdc.cen.uni-hamburg.de/1/daten/ocean/knsc-hydrographic0/) 2) The authors should point out and discuss a bit more extensively some flaws in the results of their simulations and analysis (e.g. the overestimation of the observed MCs in Figure 6, and the mismatch between the regression results and the data at two sites in Figure 13). I appreciated that these flaws were clearly mentioned in the conclusions. I don't think that these issues compromised the value of the work. More minor to moderate issues are mentioned in the attached pdf of the manuscript.

Please also note the supplement to this comment:
https://www.ocean-sci-discuss.net/os-2020-11/os-2020-11-RC1-supplement.pdf

Interactive comment on Ocean Sci. Discuss., https://doi.org/10.5194/os-2020-11, 2020.