

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

Anonymous Referee #2

Received and published: 19 May 2020

Dear Editor,

This is the review for the manuscript entitled “Modelling mussel (*Mytilus* spp.) microplastic accumulation.” by Stamataki et al.

First, I would like to apologise for the delay in reviewing the current manuscript, but the current situation did not allow me to do otherwise. In the current manuscript, a Dynamic Energy Budget model is developed aiming to simulate the uptake and excretion rate of microplastics, by two species of mussels at two different regions (North Sea and N. Ionian Sea). The authors claim that the biophysical regime (in this case chlorophyll and sea surface temperature) influences the accumulation rates in filter feeders.

Overall, I think that the paper is well-written, without any major issues or inaccura-

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cies. I appreciate the clear figures that allow following the manuscript. The literature is well cited and extensive. I truly enjoyed reading it; the authors have put substantial efforts in preparing their manuscript. I am, thus, recommending a few minor comments/suggestions for their consideration. My only semi-major comment, which does not impact the overall research output, is about the overestimation of the satellite-derived chlorophyll concentrations at the southern North Sea. Please see the specific comment in the next section.

Abstract

Line 7: MavroLithari should read Mavrolithari or Mavro Lithari.

Line 29-30: “...with MPs accumulation in mussel's soft tissue, temperature and chlorophyll-a.”. The sentence does not flow well. Please revise.

Introduction

It flows very well, with informative and well-referenced text. The novelty of the current study is clear.

Line 95 (and 97): DEB has been abbreviated in the abstract, please check the journal rules (if abbreviated in the abstract, is there a need to be abbreviated in the text too?). Once you find out the rule, please apply to the species *M. edulis* and *M. galloprovincialis* (lines 96/97).

Materials and Methods

Line 112: The North Sea is a marginal sea rather a semi-enclosed environment (clear openings and influence from the Atlantic from both sides).

Line 180: DEB is abbreviated again – please revise.

Line 250: chlorophyll-a concentrations (CHL-a, an index of phytoplankton biomass).

Line 258: in the future, please consider using the OC-CCI Chl-a product, which is a

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better product for coastal regions. Also available in Copernicus.

Line 265: it should read (i.e. SeaWiFS, MERIS, MODIS, VIIRS and OLCI-a). All these are abbreviations and not just names.

Please provide a simple reasoning why two different products of Chl-a were used for the two different study areas.

Line 275: $\sim 0.88 \text{ mg chl-a m}^{-3}$ = should read $\sim 0.88 \text{ mg m}^{-3}$. Please change throughout.

Line 282: sea surface temperature has been already abbreviated, please use the abbreviation (i.e. SST)

Line 325: "...Pouvreau et al., 2006). In order to. . ." insert a space after the punctuation mark (full stop).

Line 278 and Figure 1: it is a bit worrying to observe such high chlorophyll values in the coastal North Sea region. In reality, this environment is eutrophic (no doubt) and certainly very high concentrations are expected. However, your North Sea region belongs to CASE II waters, where algorithms tend to overestimate chlorophyll concentrations. In optically-complex Case II waters, Chl-a can not readily be distinguished from particulate matter and/or yellow substances (dissolved organic matter) and so global chlorophyll algorithms are less reliable. This has to be communicated to the readers.

Please add a few sentences to acknowledge the issue. To facilitate your revision, you will find this reference very useful:

International Ocean-Colour Coordinating Group – IOCCG (2000), Remote sensing of ocean colour in coastal, and other optically-complex waters, Rep. Int. Ocean-Colour Coord. Group 3, edited by S. Sathyendranath, Dartmouth, N. S., Canada.

The IOCCG reports are freely available and Open-Access.

RESULTS Line 448: please use the same units (they are the same after all $\text{mg m}^{-3} =$

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$\mu\text{g l}^{-1}$)

end

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