



EGUsphere, referee comment RC2
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Comment on egusphere-2022-316

Anonymous Referee #2

Referee comment on "Modelling floating riverine litter in the south-eastern Bay of Biscay: a regional distribution from a seasonal perspective" by Irene Ruiz et al., EGU sphere, <https://doi.org/10.5194/egusphere-2022-316-RC2>, 2022

Review of „Modelling floating riverine litter in the south-eastern Bay of Biscay: a regional distribution from a seasonal perspective“, by Irene Ruiz et al.

Summary and scientific relevance:

This manuscript aims to investigate the seasonal trends of floating litter from riverine sources in the southeastern Bay of Biscay. Data from surface drifters were used in addition to virtual Lagrangian particles to determine the pathways of floating litter from riverine sources into the Bay of Biscay. The simulated particles were forced with high-frequency radar-measured currents and simulated wind fields. In addition, trajectories from four surface drifters were used to parameterize the wind drag coefficient of the particle tracking model.

Furthermore, the authors characterized riverine litter output by collecting litter with a transport barrier in the Deba river to gain insight into the typical types of litter and the buoyancy of items released from the rivers into the marine environment.

The scientific relevance of the present study is very high. There is still a significant deficit in understanding the dynamics affecting litter transport from the estuarine environments to the marine environment. Moreover, improved beaching parameterizations for numerical

models are of great importance for accurate predictions of marine litter dispersal.

However, there are some concerns about the overall structure, language, and analytical methods before the manuscript can be published in Ocean Science Discussions. Therefore, I recommend a thorough revision by the authors.

General comments:

The manuscript needs comprehensive language editing. There are a lot of spelling mistakes and many sentences are unclear to me. A thorough language editing for the manuscript is necessary to publish this study in Ocean Science.

Introduction:

The Introduction should be shortened. There are reiterative sentences and sections which are disconnected. Furthermore, technical details of the radar data should be moved to the methods section. References to webpages should be deleted as they just load the text.

Windage:

The method used to calculate the wind slip of the particles is questionable. The referenced numerical studies do not simply add different windage values and estimate the distance of the trajectories. Please go more in-depth here and use an appropriate method to compare your numerical trajectories with those of the drifters.

Furthermore, as I understand it correctly, the particles were re-initialized every 4 hours on the drifter trajectories. This may neglect submesoscale processes that significantly affect the dispersion and distribution of floating objects in the ocean. The effects of tides may be

underestimated, which of course, also play an essential role in the propagation and dispersion of particles in the Bay of Biscay. Please strengthen the study in this regard.

HF radar current observations and wind data:

The methodology of how the HF data is extracted and assimilated with the wind observations is, in my view, unclearly described. How are these data products incorporated on a uniform grid for further analysis? In addition, lines 178-180 indicate that the data extraction is questionable. Please clarify precisely how you extracted the data and what criteria were used for the quality check.

Particle transport model:

This paragraph does not describe the particle tracking module. The information given here is repetitive and only explains what the intent is for the particle simulations. Please describe exactly which way particle tracking was used. Are concepts for horizontal diffusion included and what scheme is used to move the particles forward in the module? It is not sufficient to cite studies that have used the same particle tracking module.

Discussion:

The various sections of the discussion seem very disconnected to me. I encourage the authors to streamline the discussion and bring together the multiple aspects of the study. Please try to connect the different aspects of the study (litter distribution, particle tracking and windage) in a better way in the discussion.

- Section 5.6 contains a lot of information about visual observations of litter with camera systems. For me, this is not related to the results of this study. If I understand it correctly, the study was conducted as part of the LIFE-LEMA project. This is also mentioned for the first time in this section and it is confusing to mention it here. Why is the camera system data not included in this study if the project also collected this data? I would recommend including the data or not mentioning it in this section.