

Interactive comment on “Basin-scale sources and pathways of microplastic that ends up in the Galápagos Archipelago” by Erik van Sebille et al.

Erik van Sebille et al.

e.vansebille@uu.nl

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Reviewer 1:

This is a interesting manuscript that I think is worth publication. I have two rather minor points. I think the manuscript would benefit from a more full discussion regarding comparison/ analysis of the forward and backward trajectory analysis.

Following also the comments from reviewer 2, we have been more careful in our discussion of the forward and backward scenarios. The key difference is that one scenario analyses the fate of plastic, while the other scenario analyses the origin of plastic. Because release scenarios are also very different, they are not one-on-one comparable. We have now clarified this in the manuscript by explicitly calling the scenarios ‘Origin

C1

from Galápagos’ and ‘Fate from the South American coastline’. We have also added some further discussion of the hysteresis to section 3 (page 5, lines 19-21 of the track-changed manuscript).

Also, I would appreciate that the forward model is run for a longer time and spans a larger area for initiation. Plastic has entered the ocean for a long time, and the two year trajectory analysis is a bit short. At least the restriction in the analysis for using a two year simulation should be considered.

We have now redone all the forward analyses tracking particles for 5 years. See Figure 1 for the histogram maps, which shows that more particles reach the Western Tropical Pacific and leak into the Indian Ocean, but differences in the Eastern Pacific are relatively minor.

In fact, there are no extra particles that reach the Galápagos region if the simulations are run for 5 years in the currents+waves simulations, something that was already expected from the original manuscript Figure 5, which indicated that all particles that reach the Galápagos do so within one year. However, there are some differences in the currents only simulations, with more particles from the north of the Equator (Figure 2).

Given these (small) differences, we have now updated all forward analysis in the manuscript to the 5-year simulations and changed the figures and text accordingly.

Please also note the supplement to this comment:

<https://www.ocean-sci-discuss.net/os-2019-37/os-2019-37-AC1-supplement.pdf>

Interactive comment on Ocean Sci. Discuss., <https://doi.org/10.5194/os-2019-37>, 2019.

C2

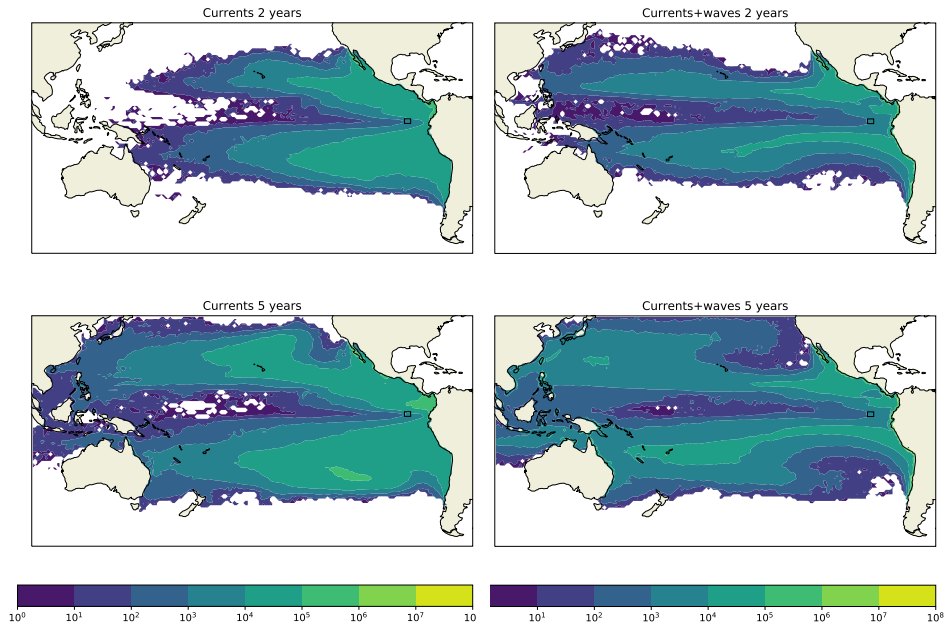


Fig. 1. Histogram of the 'Fate from the South American coastline' simulation particle trajectories, for 2-year long simulations (top row) and 5-year long simulations (bottom row).

C3

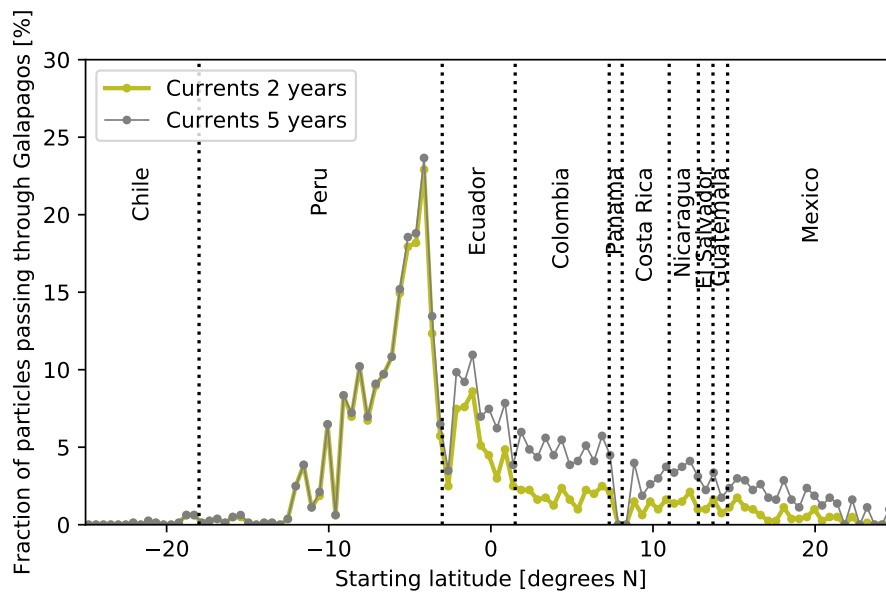


Fig. 2. Comparison of the fraction of particles that pass through the Galápagos box for the currents-only simulation of lengths 2 years (original manuscript) and 5 years (revised version). Note that there was

C4