

Interactive comment on “Brief communication: Atmospheric dry deposition of microplastics and mesoplastics in an Antarctic glacier: The case of the expanded polystyrene” by Miguel González-Pleiter et al.

Rachel Obbard (Referee)

rachel.w.obbard@dartmouth.edu

Received and published: 8 December 2020

This is an interesting finding and will be a valid addition to the cannon of literature on mesoplastic presence in polar regimes once some improvements are made. There are some places where the English needs improvement, but first allow me to discuss a major issue and two minor ones affecting the scientific quality.

First, the major one. Their conclusion seems premature, given that the authors don't discuss local meteorological conditions, starting with as prevailing wind direction or

C1

speed. If Figure 1 A and B have not been rotated (compass points on the inset would be useful!), prevailing wind would be from west to east, i.e. the lake area toward Artigas Beach. This makes their conclusion about the source suspect. They might be able to explain it based on weather during the collection period, i.e. recent high wind events. However, the alternative conclusion is that the particles were transported down off the glacier (unlikely unless research was being done there during this period), or from ships on the far side. Given their size, they probably aren't from longer range in the atmosphere, but the authors need to explain why this couldn't be the case. The authors could do this by discussing the wind speeds that would be needed to loft transport particles of this size (there is literature on this). Although this is a short communication, the authors need to examine these alternate explanations before they can conclude as they do.

In the paragraph Lines 121-131, the authors should discuss how they ensured that they themselves weren't the source of the particles they found. Could they have come off your clothes, your tools, your transport? Papers about micro (and meso) plastics generally address such potential contamination issues.

Line 145: Were you able to identify the particles which were not plastics? Were they soot, for instance? This might tell you something about the source of the plastics. For that matter, what are the activities at the Artigas Beach location? Is there incineration going on? Paint scraping? It would be interesting to know and might support your analysis.

The following are a few minor issues with English (and punctuation) by line number. Some affect understanding so should be corrected:

Lines 49-52: This sentence doesn't make sense as written. If you intend it as support for the preceding sentence, the first clause (“Despite . . . (Rignot et al., 2019)”) doesn't seem to add anything. Perhaps you need to break this into two different supporting sentences.

C2

Lines 52, 54, and a few others: You are missing the period after al in several places. Your citations should be of the form, Jones et al., <year>.

Line 57: Compartments isn't quite the right word here. How about calling them "discrete parts of the cryosphere"?

Line 68: There should be a comma after (79 %)

Line 208: "being EPS ubiquitous on the ice" doesn't make sense as written.

Thank you for the opportunity to review your paper.

Interactive comment on The Cryosphere Discuss., <https://doi.org/10.5194/tc-2020-261>, 2020.