

Revision Note on the revised manuscript, Sinking fate and carbon export of zooplankton fecal pellets: insights from time-series sediment trap observations in the northern South China Sea (by Wang et al.), manuscript no. bg-2023-112, submitted for publication in Biogeosciences.

We would like to thank the handling Editor again for his positive feedback and thoughtful comments concerning our manuscript. We have revised our manuscript in response to all the minor comments. This Revision Note is written based on the annotated (using track changes) version of the manuscript (uploaded in the system). Below, the notes (in blue) explain how and where each point of comments has been addressed. The line numbers mentioned are new numbers in the annotated version of the manuscript.

Associate editor decision: Publish subject to technical corrections 09 Nov 2023

Dear Zhifei Liu and co-authors,

I would like to thank both reviewers again for their comments and you for your exemplary rebuttal. It was clear, well organized, answering questions and indicating changes, I wish everyone was so thorough and considerate, it made handling this manuscript a very positive experience. I have one or two minor suggestions. Line 20 and in your reply to comment #2 of reviewer 2, “the zooplankton community” or “zooplankton communities”. Line 34 and your answer to comment #5 of reviewer 2, amorphous fecal pellets suggest significant consumption? Do amorphous pellets allow for significant consumption, but are or can be the result of dissolution and currents etc. or are they the result of significant consumption, or both? Line 429 and your answer to comment #26 of reviewer 2, “strong hydrodynamic activity”. I think after considering these very minor suggestions your manuscript can be accepted for publication in Biogeosciences.

Best regards,

Marcel

Reply: We would like to thank your efforts in facilitating the peer-review process for this manuscript and for your careful review of the manuscript. Below we address your technical edits to the manuscript.

Comment #1:

Line 20 and in your reply to comment #2 of reviewer 2, “the zooplankton community” or “zooplankton communities”.

Reply: We thank you for this correction. Following your suggestion, we have changed “zooplankton community” to “zooplankton communities” in **Line 19** in the revised

manuscript. **Here's how I modified it:** *This study highlights that the sinking fate of fecal pellets is regulated by marine primary productivity, deep-sea dwelling zooplankton communities, and deep-sea currents in the tropical marginal sea, thus providing a new perspective for exploring the carbon cycle in the world ocean.*

Comment #2:

Line 34 and your answer to comment #5 of reviewer 2, amorphous fecal pellets suggest significant consumption? Do amorphous pellets allow for significant consumption, but are or can be the result of dissolution and currents etc. or are they the result of significant consumption, or both?

Reply: Thank you for raising this question. Surface-produced pellets are likely to be consumed and reworked by zooplankton and fragmented by currents during the sinking process. Therefore, we agree that the degradation and fragmentation of fecal pellets is due to a combination of zooplankton consumption and currents. **Here's how I modified Line 33** in the revised manuscript: *Several studies have revealed that the concentration of fecal pellets in the deep sea is significantly lower compared to the production rate of fecal pellets in the surface waters, and the presence of amorphous fecal pellets (mostly fragmented pellets) has been observed, indicating significant consumption by zooplankton and fragmentation by currents during the sinking process.*

Comment #3:

Line 19: Line 429 and your answer to comment #26 of reviewer 2, “strong hydrodynamic activity”.

Reply: Thank you for pointing out this problem. We have modified the sentence in **Line 390** in the revised manuscript. **Here's how I modified it:** *However, amorphous pellets are fragmented during the sinking process, indicating that surface-produced pellets are likely to be consumed and reworked by zooplankton grazing and fragmented by strong hydrodynamic activity.*