



EGUsphere, author comment AC2
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Reply on RC1 and RC2

Moritz Baumann et al.

Author comment on "Drivers of particle sinking velocities in the Peruvian upwelling system" by Moritz Baumann et al., EGU sphere,
<https://doi.org/10.5194/egusphere-2022-814-AC2>, 2022

Dear Mrs. Cavan and Mr. Laurenceau-Cornec,

first of all, we would like to express our thankfulness for your friendly and constructive feedback. You have obviously spent a lot of time going through the manuscript and have given lots of thought as to how to improve it.

The comments from both of you are quite compatible and we have identified among them three main concerns:

- More complete information about the methodology should be provided. Additionally, a discussion about the limitations of the deployed methods is needed.
- Information on the nature of sampled particles is of great importance in order to better interpret a variety of the shown data and understand the involved processes.
- The conclusions drawn from our analyses need to factor in the uncertainties of this highly regional and specific data set and need to be tuned down accordingly.

We fully agree with each of these points and believe that they will greatly enhance the value of our submitted manuscript. Furthermore, we are very confident that we can address most of your concerns to your full satisfaction.

However, we have relatively limited options at our disposal regarding the second point. Doing an in-depth analysis on the particle pictures, in order to provide information on the particle types, will unfortunately not be possible. The reason for this is that we experienced a grave loss of video data on the FlowCAM device. In consequence, we ended up with particle picture collages that are by no means representative and thus unfit to perform (semi-) quantitative analyses on. We can neither link particle pictures to sinking velocities, nor perform a random sampling of representative particle pictures without bias. We will hence not be able to link particle classes to sinking velocities, different experimental time points or the prevalent phytoplankton community composition.

One important point regarding the nature of sinking particles was the contribution of fecal pellets to the downward flux. To this end, we can incorporate biomass data from zooplankton net sampling in the manuscript, which could give some evidence on the possible contribution of fecal pellets to the downward flux. This would at least partly

address the issue of missing knowledge about particle types.

Typically, we would have sent you the answers to your comments and entailed revisions in the manuscript today. However, since I, the main author, defended my PhD thesis just last week, there was insufficient time to do so. As I am now not under a working contract in the scientific field anymore, taking the time to work on your comments will be scarce. Therefore, before working in the revisions, we would like to kindly ask for your opinion. Do you think the changes to the manuscript, that we deem possible, will be sufficient to pursue the publication of the paper?

We thank you very much for your time and consideration.

With kind regards,

Moritz Baumann