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***Interactive comment on* “Size distribution of particles and zooplankton across the shelf-basin system in Southeast Beaufort Sea: combined results from an Underwater Vision Profiler and vertical net tows” by A. Forest et al.**

Anonymous Referee #2

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General advice: suitable for publication with technical corrections.

This paper presents and discusses results obtained with a now classical association of three techniques to study particulate matters in the ocean: in situ imaging with the UVP5, semi-automatic (with the ZooScan) and manual analysis of net tow samples. Although not original in its approach, this study collects a large amount of data, and performs its exhaustive and pertinent analysis. These data were collected in the summer time in Southeast of Beaufort Sea. Still on the technical point of view, one could regret that the authors limited the comparison of the three approaches (in situ imaging,

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semi-auto and manual counting of net tows) on a pure descriptive level, e.g., technique #1 gives 2-5 times more copepods than technique #2, etc. Wouldn't it be time now to work on transfer functions and models in order to better assemble patchy datasets coming from different sampling devices? Based on subsamples that were (almost) simultaneously collected by the various devices, it should be possible to calibrate such transfer functions toward a common unit that would represent the best compromise to collect together such heterogeneous data. I think the authors had a little bit of information to work on that direction, but they did not take the opportunity to do so.

The discussion of the observed processes is rather exhaustive and seems pertinent, including it seems to consistently match and reinforce past bibliography on the subject. Note, however, that I am not a specialist of such analyses and I may be misled by the rigorous formulation of the hypotheses and conclusions.

The paper is clear and well written. The long discussion is justified by the amount of points to be discussed in this paper. I have little remarks, except:

p 11413, line 28: "This algorithm was used..." which algorithm?

p 11414, line 1: how stats are obtained (original training set, cross-validated on original training set? separate test set?)

p 11420, line 11. No maximum concentration of particles that could come from fluvial sediments... It would be nice here to connect with meteorological conditions in the area during the last weeks/months for a more complete explanation. A little bit is provided on p 11422, lines 17-20, but would be useful higher in the discussion.

p 11424, line 23: total copepods 2-5 times higher for net tows than for UVP. This is an example where conversion factors, transfer functions, models would be nice to better assemble the whole dataset.

Tables 2-4: too much data... consider a graph instead, maybe.

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