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Interactive comment on "Going with the floe: tracking CESM Large Ensemble sea ice in the Arctic provides context for ship-based observations" *by* Alice K. DuVivier et al.

Anonymous Referee #1

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This paper uses the CESM Large Ensemble to simulate possible floe tracks and floe thermodynamics throughout the course of MOSAiC. It suggests that the model tracks can assist with campaign planning and put the observations into context.

The paper is very well written, easy to follow, and provides clear graphics. Nevertheless, I unfortunately have severe doubts whether it really is suitable for publication in The Cryosphere. This is primarily because the relevance of the paper is somewhat unclear given its current framing.

1. If this really is meant as a guidance document to help campaign planning for MOSAiC, it probably is best communicated to the MOSAiC planning staff rather than pub-

lished as a scientific paper. However, for this particular purpose, seasonal prediction systems initialized with the currently observed sea-ice state of the Arctic seem much better suited than a free simulation from a coupled climate model. It is my understanding that such system is in place to help the planning of MOSAiC, which by now is based on 45,000 individual simulations (see https://www.polarprediction.net/yopp-activities/sidfex/ for details).

2. The same holds for the assessment of "likely sea-ice conditions that the campaign will encounter during the year-long experiment". An initialized seasonal prediction system continuously updated until the start of MOSAiC likely provides more robust answers than a coupled, free simulation.

3. I must admit that I also failed to fully grasp the relevance of the discussed virtual floe track and floe evolution in a perennial ice cover. Maybe somewhat more discussion could be provided to explain why this discussion is included, given that the perennial ice cover discussed here no longer exists.

These are just my initial reactions after reading the paper. However, maybe (hopefully!) there's been a misunderstanding. In this case, I hope that the authors can sharpen the arguments for the overall framing of this paper.

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