

Interactive comment on “Climate Response Functions’ for the Arctic Ocean: a proposed coordinated modeling experiment” by John Marshall et al.

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We thank the reviewer for these helpful comments and suggestions.

The reviewer makes a good point that the presentation of fig 2 and the motivation for the switches and gateway straits is not as well presented and motivated as it could be. As John noted, we are interested in examining how different models respond to climate change, and to understand the underlying processes and mechanisms. Thus we are all on the same page that the flux through various straits is important to diagnose. Measuring and comparing boundary currents themselves is a bit more problematic across a spread of different models (grids and resolution), but that being said we are certainly open to additional important metrics we may have missed and/or thoughts

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about how best to both assess Arctic change and compare across models.

To answer the reviewer's question about ensemble HF through Fram St: FWC is an integrated quantity in x,y,z whereas the HF is computed through a section, the latter quite sensitive to interannual forcing among other model setup choices, so it is not surprising on general grounds to see a larger envelope. We agree that the topic of ensembles is important, which is why we include section 3.4, but a more complete exploration of ensemble results is beyond the scope of this specific paper. But we will add more discussion on the Fig 9 results.

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