We thank the reviewer for their careful reading of the manuscript and constructive remarks, which helped improve the quality of the manuscript. We have accepted all the recommendations, see details below (reviewer's comments in black, our replies in blue).

While investigating the origin of the line of low concentration north of Franz Josef Land in Fig.4, we found a bug in the namelist used to run CICE. We have rerun all the experiments with the corrected namelist. The revised results don't change the previous conclusions, but do alter figures at different magnitudes.

This manuscript analyzes impacts on sea ice thickness initialization on the simulation of sea ice extent and sea ice volume with the Los Alamos sea ice model (CICE) by comparing two sets of experiments initialized from the Climate Forecast System Reanalysis (CFSR) and CryoSat-2 satellite observations. The analysis of the experiments confirms results from earlier studies on initial sea ice thickness impacts on seasonal sea ice predictions. The manuscript is well structured and presentation of the results is reasonably clear. I would recommend acceptance of this manuscript for publication with a few minor revisions as listed below.

Lines 30-32: Suggest adding Collow's study to the citation. The work by Collow et al. (2015) is one of the earliest studies specifically on the need for improved sea ice thickness initial conditions. (Collow, T. W., W. Wang, A. Kumar, and J. Zhang, 2015: Improving Arctic sea ice prediction using PIOMAS initial sea ice thickness in a coupled ocean-atmosphere model. Mon. Wea. Rev., 143, 4618-4630. DOI: 10.1175/MWR-D-15-0097.1).

Done.

Line 41: Suggest indicating that the UFS is to be the next NOAA's operational coupled atmosphere-ocean-sea ice-land system for S2S predictions.

Done.

Fig. 1: Reduce thickness of the curves so the differences can be seen more clearly.

Done. The thicker lines were used initially for shown in ppt. Now with thinner lines, figures look more elegant. We have redone all line-figures with thinner lines in this manuscript. Thanks.

Lines 84-84; "The 12 once-per-month runs in 2014 are shown here as an example, as year to year variations are relatively small". Does this mean the amplitude of interannual variations is smaller than that of model errors?

We meant to say the conclusion from year 2014 in Fig.1 is valid for all other years, despite year to year variations. We redid Fig.1 with an all-year mean and standard deviation. This sentence is rewritten as:

"The Arctic SIE forecast matches the NSIDC observations better in the warm season than in the cold season both at 0.5-month and 5.5-month lead times, and the positive bias is biggest in

winter. The biggest interannual variabilities in the predicted Arctic SIE during this period are in September as shown by the standard deviation."

Lines 87-89: "The Arctic SIE forecast matches observations better in the warm season than in the cold season at all lead times, and a positive SIE bias is seen in the cold season. When the SIV in the Arctic is higher than observations or reanalysis to begin with, this positive SIV bias often remains in the model throughout the forecast.". Although initial sea ice thickness may have some impacts in the cold season, its impact is more significant during the melt season because it directly affects the melt rate. The larger SIE error in the cold season could be related to other factors such as model physics, atmospheric forcing, initial ocean state, and ocean dynamical processes.

This is exactly the case. We have replaced Fig.1 with a multi-year mean and standard deviation and modified this paragraph in the manuscript to:

"The Arctic SIV forecast at 0.5-month lead is higher than CryoSat-2 observations or PIOMAS reanalysis in the cold season. At 5.5-month lead time, the biggest positive bias in SIV is shifted to the warm season, suggesting the bias might be stemmed from the cold season. The impact of the positive SIV bias appears to be more significant during the melt season as the ice thickness directly affects the basal melting rate as shown later in Figs. 7 and 8."

Lines 94-97 and Fig 2: To see the comparison between CTRL and Alt-Init more clearly, I suggest adding two panels to show the differences between CTRL and Alt-Init, one for SIE and the other for SIV. For SIE, it looks like the improvement in the summer melt season (Jun-Sep) is larger due to the use of better initial sea ice thickness.

Thanks for this suggestion. We have added a difference plot in Fig. 2, which shows the buildup of bias in ice thickness with time much better.

Fig. 7: I suggest making the curves 7c and 7d thinner.

Done.

Lines 140-141: "Apparently, there are more bottom and top melt in the Beaufort, Chukchi and East Siberian Seas in the alt-init run than in the control run, …". It looks to me the Alt-Init produces less top melt (blue colors) in Chukchi Sea and East Siberian Sea, and a large part of Beaufort Sea in the lower-left panel of Fig. 8.

Sorry for the oversight. We left out the keyword "poleward". Now the modified text has changed to:

"Compared to the control experiment, the biggest difference is a larger basal melt in the Arctic region between 120°E and 120°W in the alt-init experiments, where the ice thickness is mostly below 1.5 m compared to above 1.5 m in the control experiment."