

General comments

This is my second time to review this manuscript. Comparing to the previous version, the authors have done a lot of works to address my major concerns and those of the other reviewer. Specifically, many details relating to the involved parameterizations in WRF, ROMS and CICE, the changes in ice, atmospheric and oceanic states, and the ice mass budget analysis in CICE have been added into the revised manuscript. Based on my evaluation, now the manuscript could be done as a minor revision.

Specific comments

Line 204-208: The description of “ice mass budget analysis” in CICE is quite brief. The authors should introduce it in details because of that lots of the following paragraphs relate to the method.

Line 262: the authors should notice that Y21_CTRL generates colder bias (worse result) than Y20_MOD in the central Northern Atlantic in August, as a complementary to the better result of “especially over eastern Siberia and the Atlantic sector in July to September ”

Line 297: change Y20_CTRL to Y21_CTRL and Y21_MOD to Y20_MOD

Line 321-323: This is a comment (NO need to reply). Atmospheric heat flux at ice surface and oceanic heat flux at ice bottom contribute more “directly” to sea ice area and sea ice thickness change, rather than sea ice extent change, as sea ice extent change is also affected by wind forcing and ocean currents.

Line 393: why there is frazil ice formation in July? This is quite anti-intuitive. Line 396-408 give some explanations on it, but I would like to say that it is a “purely” model adjustment, I am not sure whether this will happen in the real ocean.

Line 468-486: the description of Y21_MAR-7 experiment does not present useful information or novelty to the manuscript. I suggest the authors to consider removing the part.