Second review of "Contribution of sea-ice albedo and insulation effects to Arctic amplification in the EC-Earth Pliocene simulation" for *Climate of the Past*.

Summary:

This manuscript examines the impact of sea ice changes on the surface air and sea temperatures in the Arctic during the Pliocene, as simulated by EC-Earth. Specifically, they examine the energy flux impact of differences in surface albedo and surface ocean insulation spatially correlated with the changes in sea ice between the Pliocene and pre-industrial eras. They found that a reduction in albedo allows for much stronger short-wave heating during May, causing the biggest SST difference between the two eras to be during August. They also found that this extra stored heat was released back to the atmosphere via enhanced surface heat fluxes due to the decrease in sea ice insulation. This resulted in SAT differences between the two eras being largest during winter, and with an inverse seasonal timing relative to SST.

Paper recommendation:

The authors have adequately responded to my concerns, both in the main document and in the supplement, and have substantially improved the manuscript. A few very minor issues and grammatical corrections still need to be made (which are listed below), but once they have been dealt with then I believe the paper will be ready for publication. Given this, I am recommending "**Accept after technical corrections**", and look forward to seeing the final, published version of the manuscript.

Minor issues:

1. What units are the "SIC change" values in for figures 5 and 9?

2. Line 312: I would replace "bulk heat transfer coefficient" with "bulk transfer coefficients", as the coefficient for sensible heat is not necessarily the same as the coefficient for evaporation/latent heat.

Grammatical and cosmetic issues:

Line 12: Replace "current warming climate" with "the current warming climate".

Line 30: Replace "by National Snow" with "by the National Snow".

Line 35: Replace "results from local" with "results from the local".

Line 52: Replace "sea ice effect" with "sea ice effects".

Line 59: Replace “affect climate system” with “affect the climate system”.

Line 61: Replace “refer these two effects” with “refer to these two effects”.

Line 64: Replace “Community Atmospheric General Circulation Model” with “Community Atmosphere Model”.

Line 67: Replace “separate contribution” with “separate contributions”.

Line 81: Replace “is preindustrial” with “is a preindustrial”.

Line 96: Replace “In LIM3, surface” with “In LIM3, the surface”.

Line 140: Replace “is based on TOA” with “is based on the TOA”.

Line 144: Replace “is decomposing radiative perturbation into individual contribution” with “is decomposing the radiative perturbation into individual contributions”.

Line 151: Replace “each factors” with “each factor”.

Line 152: Replace “perturbation” with “perturbations”.

Line 165: Replace “of sea ice” with “of the sea ice”.

Line 181: Replace “of response” with “of the response”.

Line 181: Replace “degree” with “degrees”.

Line 192: Replace “during Pliocene” with “during the Pliocene”.

Line 203: Replace “in EC-Earth” with “in the EC-Earth”.

Line 246: Replace “that albedo” with “that the albedo”.

Line 252: Replace “degree of freedom” with “degrees of freedom”.

Line 267: Replace “with albedo effect” with “with the albedo effect”.

Line 299: Replace “individual month” with “individual months”.

Line 322: Replace “similar but different” with “similar, but not exactly the same”.

Line 357: Replace “by annual” with “by the annual”.

Line 362: Remove one of the two “indirectly” words from this sentence.

Line 364: Replace “to insulation effect” with “to the insulation effect”.

Line 377: Replace “within Arctic” with “within the Arctic”.

Line 550: Replace “to albedo effect” with “to the albedo effect”.

Line 597: Replace “The diagonal stripe in (c)” with “The diagonal stripe in (c) and (f)”.

Line 658: Replace “vapour change to” with “vapour change due to”.

Line 670: Replace “to insulation effect” with “to the insulation effect”.