

Minor comments:

Considering that both the simulated relationships and the reconstructed temperatures have uncertainties, I think these should be more clearly reflected in a full uncertainty on the combined model-data estimate of LIG sea-ice area changes. For instance, the authors report on an average PI to LIG summertime Arctic warming of 4.5 ± 1.7 . There is thus a substantial uncertainty in this estimate. Using the model-based relationships that are described (plus uncertainty), what is the resulting uncertainty in the sea-ice area estimates when taking into account this 1.7K uncertainty?

We have now added the uncertainty values for the sea ice estimates computed from regression equations in the manuscript.

We also realised that a typo in our initial sea ice estimate resulting in an offset of 0.2 km² in the sea ice values from regression equations. This has been corrected in the manuscript.

Lines 443-444: repeat the model-based LIG relationship value here to help the reader directly compare the observational-based estimate.

Added in to sentence starting from line 448 as

This dynamic relationship is evident in the models for LIG, where there is a strong correlation of $r=0.86$ between the magnitude of ΔSIA and $\Delta SSAT$ amongst the models, and the intermodel relationship suggests sea ice decrease of 1.9 mill km² per 1K temperature rise (from the regression equation in Figure 7b)

Technical comments:

Line 311: estimatns (line 320 in revised with corrections) '**estimations**'

Line 421: Ko (Line 432) **Corrected the sentence**