To reviewer 2 (Qiong Zhang)

The authors have made efforts to improve the manuscript by considering two reviewers' comments.
Thank you very much for your review and comments. Our manuscript is much more improved by introducing your suggestions.

I have gone through the author response and revised manuscript and found some inconsistence. Major part appears in the sea ice part, where author followed my suggestion and presented the sec ice concentration in Fig 10-13, but did not change the presentation in the manuscript (section 3.2.2), where they still talk about the ice thickness.
This was my mistake. Corresponding texts are modified.

When show the sea-ice concentration, the change from 127K and PI can be visually observed, the difference between the two does not provide more helpful information but may lead to some confusion, such as those ocean area without sea-ice both in PI and 127K now appear in a yellow colour (0-10% in scaling). I suggest to remove the third panel of sea-ice difference between the two periods.
We removed the difference of sea ice concentration in Figures 10, 11, 12 and 13.

A few minor comments:
1. All the figures do not label latitudes and longitudes, expect Figure 5 which I asked to add lat-lon, it would be better to have lat-lon labels in all the figures.
We added lon-lat labels in all figures as far as possible.

2. In line 111, it is already defined that in this paper the two experiments refer to PI and 127K, but in table 1 and table 2 it still use piControl and lig127k, and in fig1, fig7, fig9 used 127ka, should be consistent throughout the paper.
Name of experiments are unified throughout this paper.

3. Line 126, "… referred to by MATSITO", does it mean "… referred to MATSITO"?
This part is modified.

4. Fig 6 caption, unit K should be after the temperature change, the same for the unit of precipitation in Fig 9.
These units are relocated as suggested.

5. Fig6 and Fig7, it is better to show all the proxy data in one figure. When it is separated, it is hard to compare the large scale feature

Two proxy data are combined into one figure in Figures 6 and 7.

To Editor (Bette Otto-Bliesner)

Thank you for your suggestions. We introduced the calendar adjustment and feedback analysis method. New figures became more helpful in explaining our results.

Please consider:

1) Applying the PaleoCalAdjust software to your monthly output. It is available at https://github.com/pjbartlein. As shown in Bartlein and Shafer, GMD, 2019, it is especially important for 127ka and seasonal anomalies. Particularly, your Figures 1, 4, 8, and 9.

We applied PaleoCalAdjust to all monthly output. All related figures are redrawn (figures 1, 4, 5, 8, 9, 10, 11, 12, 13, 14 and 15). To keep consistency, corresponding texts are modified.

2) Including one additional figure, the surface temperature changes for the Arctic (north of 60N) decomposed as in Fig. 5 of Yoshimori and Suzuki, 2019. M. Yoshimori is a co-author of this paper.

We applied the same method as Yoshimori and Suzuki (2019) to our result. New texts, table and a figure are appended.

3) The HadISST data averaged over 1870-1919 which is more appropriate for comparison to PI.

HadISST sea ice is averaged over 1870-1919 in figures 10, 11, 12 and 13.