

The authors thank the reviewers and editors for beneficial and helpful suggestions for this manuscript. We have carefully revised the manuscript according to the suggestions. According to the comments, the revision in manuscript have been made in **red**.

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1. We have changed “the thermodynamic effect” to “**due to the thermodynamic effect**” in line 42.
2. We have changed “a more important role” to “**a more important role than the thermodynamic effect**” in line 44.
3. We have changed “PmE (precipitation minus evaporation)” to “**precipitation minus evaporation (PmE)**” in line 45.
4. We have changed “rainfall” to “**precipitation**” in line 62.
5. We have changed “focus” to “**focused**” in line 63.
6. We have added “**the**” in line 63, 248, 250, and 252.
7. We have moved the sentences “In PlioMIP2 models, the boundary conditions have been updated using the new version of the U.S. Geological Survey PRISM4 dataset (Dowsett et al., 2016; Haywood et al., 2016), including soils, lakes, land ice cover, vegetation, topography, and bathymetry. The CO2 level for mid-Pliocene and PI simulations are set at 400ppmv and 280ppmv, respectively” to the section2.
8. We have changed “SPCZ’s southern part in the tropical southern Pacific.” to “**the southern part of the SPCZ in the tropical southern Pacific**” in line 210.
9. We have changed “increase” to “increased” in line 221.
10. We have changed “hydrology” to “**hydrological changes**” in line 244.
11. We have changed “impacting” to “**adding uncertainties to**” in line 257.
12. We have changed “reduce” and “increase” to “**reduced**” and “**increased**”, respectively, in line 310.
13. We have changed “cooling” to “**lower**” in line 366.