

Dear editor,

Please find our reply to the editor report and reviewers below.

Dear Suning Hou and co-authors,

I am happy to accept your paper subject to technical corrections.

Thank you very much for your help and acceptance of our manuscript. We also would like to thank both reviewers once more for their efforts and understanding.

While both reviews still would have preferred to see some more details discussion on the Pleistocene variability, and I also think it would have been a valuable addition, they also accept your argument that this will be the focus in a separate paper. I will strongly encourage you to follow up on this for your next paper.

Indeed, we also find the Pleistocene interval interesting and deserve a discussion in greater details. However, this manuscript is really about the long-term SST gradient change in the Southern Ocean, relevant to the Neogene climatic transitions and ocean heat transport. We will definitely draft a separate paper on the Pleistocene part.

Reviewer 1 add some suggestions for clarifications that I would like you to address before final acceptance.

We have replaced 'SST_{TEX}' with 'SST_{TEX86}', 'SST_{UK37}' with 'SST_{UK'37}'. We also use subscript numbers in C₃₇ and C₃₈ alkenones throughout the manuscript.

Best regards,
Björg Risebrobakken
Editor, Climate of the Past

Best regards,
Suning Hou and on behalf of co-authors