egusphere-2025-171

Response to reviewers, round 2

Dear Professor Heywood,

Thank you for giving us the opportunity to make minor revisions to our manuscript titled:
'The Historical Representation and Near Future (2050) Projections of the Coral Sea
Current System in CMIP6 HighResMIP' for publication in *Ocean Science*.
We have carefully gone through the paper and revised the wording where necessary.
We appreciate the time you and the reviewers have spent evaluating the manuscript,
and we feel the work has benefited greatly from your efforts. Please find below our
detailed responses to the reviewers comments. The reviewers comments are in blue,
our responses are in black.

Thank you for considering our work.
Best wishes,
Dr Jodie Schlaefer
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Reviewer 1:

Comments on revision 1 of "The Historical Representation and Near Future (2050) Projections of the Coral Sea Current System in CMIP6 HighResMPI"
The revised paper is much improved. I am sorry that there is no explanation of the cooling at 400m but that is a minor point. Some of the writing is still clumsy, verbose etc. I have listed some points below but this side of the paper is best handled at the copyeditor
stage.

Thank you for taking the time to re-read the manuscript, and for highlighting where the writing needed clarification.

An explanation of the cooling at 400 m was provided in the discussion, section 6.3.

Line 34. utilised -> used.

Revised as suggested (line 34).

Line 35. 'captured' -> and found that these successfully represented...

Revised as suggested (line 35).

Line 37. 'warming signal'. This construct is used a lot later in the paper but always seems clumsy. What you really mean is 'the maximum depth affected by the surface warming'. Maybe there is a better way of saying this.

Revised as suggested (line 38).

Line 39. 'with future global warming'. Not needed.

Removed as suggested (line 39).

Line 66. Figure 1. As this is a key figure readers skimming through the paper will find it useful to have the full names of NVJ, NCJ and SCJ, as with the other currents.

Revised as suggested.

Line 77. 'in the context of' - bureaucrat!

Revised as suggested.

Line 90. 'El Nino is no longer'. El Nino has not changed, its people's belief that has changed.

Revised as suggested.

Line 96-98. The blocking effects of the islands is not a mesoscale process, although the scale of blocking and the mesoscale processes may be similar.

Revised as suggested.

Line 112' 'The global degrees warming' Clumsy.

"We campare ... to ... to ..". Usually one compares one thing 'with' another.

Revised as suggested.

Line 113 'contextualise' - bureaucrat!

Revised as suggested.

Line 135. 'The degrees warming' !

Revised as suggested.

Line 136. ... used to quantify global warming - not global warming anomalies.

Revised as suggested.

Line 144 'averaged' Averaged over time?

'visualisation' -> plotted.

Revised as suggested.

Line 156. 'degrees of warming'!! Increase in temperature?

Revised as suggested.

Line 178. 'Drift in the heat budget'. In science a budget usually refers to an equation with inputs and outputs. You could say 'The net effect of changes in the heat budget was determined...

Revised as suggested.

Line 181. This rewriting of an equation in words is clumsy. The reader should know what an integral sign looks like.

Revised as suggested.

Line 185. 'stable through time'. Misuse of the word stable - none of the models are expected to give infinite temperatures. What you are really comparing is the apparent long term change with the noise. In two cases the ratio is small and could be zero. In the other it is obviously non-zero.

Revised as suggested.

Line 194. 'Notably'. Not needed.

Revised as suggested.

Line 198. 'accounting for' clumsy.

Revised as suggested.

Line 208. Multiplication signs are not usually used in equations unless indicating a vector cross product.

Revised as suggested

Line 209. Again the equation does not need specifying words, only the variables need to be defined.

Revised as suggested.

We have added the paper references as suggested.

We have provided details of the functions we used, as well the parameterisations we used.

Revised as suggested.

Projected is used here as CMIP6 are projections, and section 5 focuses on what the HighResMIP models project for the future period.

Revised as suggested.