

Dear editor,

We have addressed the following remaining comments of the reviewer:
Line numbers refer to the current/updated version of the ms.

1. Clarification and Justification for Ocean Mixing/Vertical Diffusion Modifications: The explanation for modifications to ocean mixing and vertical diffusion remains insufficiently clarified. Numerous studies indicate that significant changes in ocean mixing are to be expected between glacial and interglacial states due to variations in bathymetry (sea level changes), particularly the exposure of continental shelves, and major changes in ocean stratification. These factors significantly influence the dissipation of internal tides and waves, and thus ocean mixing. This needs to be clearly stated and supported with appropriate references. Additionally, this information should be directly linked to the relevant results (e.g., ocean mixing-tuned outcomes) presented in the paper.

We have modified in line 158

“Especially the background mixing is rather poorly constrained.”

to

“Schmittner et al. (2015) used a combination of a tidal model and an EMIC to investigate the effect of enhanced tides during the glacial and report a change of global mean diapycnal mixing of more than a factor of 3 compared to PI. Since the background mixing is rather poorly constrained and includes in our mixing scheme a variety of processes, e.g. tidal mixing, we investigated the sensitivity to this parameter in the first sub-ensemble.”

In addition we have added at line 261:

“Wunsch (2003) has suggested that the reduced shelf area during LGM lead to stronger tides. Wilmes et al. (2019) applied a tidal model and reports an enhanced energy supply from tides to the internal wave field (1.8 to 3 times higher for LGM than at present, depending on the ice sheet geometries). As we used a time-constant background mixing in our simulations, this effect is not included.”

2. Table 1 - Clarity of Last Column: The information in the last column of Table 1 still appears very obscure. Could you replace the entries in this column with meaningful, human-readable descriptions? Currently, they seem more like file names, which detracts from clarity.

They referred to the synchronous experiments, adding “asy” to make clear that this is the asynchronous spin-up.

We have replaced the condensed, but in our opinion very clear last column of table 1 by a human-readable yet somewhat longish text like e.g. ‘parameters as in synchronous simulation D1.1’. Table A1 was adapted accordingly. These changes have the disadvantage that the table does not fit well on a page anymore...

3. Table 2 - Improved Readability Through Shading: The readability of Table 2 could be greatly enhanced by shading the rows to indicate whether the simulated events occur earlier, later, or (within uncertainties) in alignment with the proxy evidence for similar events. This is the primary message the table aims to convey. Applying light shading (e.g., light red or blue for later or earlier events, respectively, and keeping rows unshaded if within uncertainties) would make the table much

easier to interpret without compromising its readability. For a similar example of how shading can improve table clarity, please refer to <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2022PA004600>.

We did that, but as already pointed out in our previous rebuttal, we do not consider it as an improvement.

Best regards
Uwe Mikolajewicz on behalf of the coauthors