

Comment on cp-2022-2

Lorraine Lisiecki (Referee)

Referee comment on "Stratigraphic templates for ice core records of the past 1.5 Myr" by Eric W. Wolff et al., Clim. Past Discuss., <https://doi.org/10.5194/cp-2022-2-RC2>, 2022

This manuscript's goal is to provide recommendations for how best to develop age models for new ice cores that are anticipated to retrieve ice from 0.8-1.5 Myr ago. As significant resources are being invested to retrieve this ice, the thoughtful advance planning for the creation of these age models is commendable. In proposing specific age modeling strategies, the manuscript also generates useful hypotheses about the types of climate responses that are expected to be found in the new ice cores. This manuscript is well written and appropriately aimed at a relatively broad paleoclimate audience. I recommend publication after minor revision. My suggestions for revision are below:

- Most importantly, it would be useful for the introduction to be more explicit about the practical goals for dating the new ice. Although the manuscript currently introduces the motivation to compare pre-MPT and post-MPT climate responses, it would be useful to list a couple specific hypotheses to be tested that will require good age models and how precise the age models will need to be to evaluate these hypotheses. For example, how well do ages need to be constrained to evaluate shifts in orbital-scale spectral power across the MPT? Do the authors also hope to be able to evaluate leads and lags in the climate system? If so, how will the proposed alignments to sediment core records affect the ability to measure the relative timing of different climate responses?
- At the end of the manuscript, it would be useful to propose some criteria that might be used to evaluate the success or uncertainty of the proposed age models.
- Line 75: Please clarify that Prob-Stack (Ahn et al., 2017) does not have its own age model. Because Prob-Stack uses the LR04 stack as its initial alignment target, it has implicitly inherited the LR04 age model and, thus, has at least as much age uncertainty as the LR04 stack.
- Line 108: This sentence is unclear. What exactly is "higher" at Dome Fuji?
- Lines 151-153: Please describe the characteristics of the deep water temperature signal from 450-550 ka that are also found in some of the older sections of the 1123 signal. Are there specific ways to identify in advance which parts of the 1123 signal may be problematic for alignment?