

Earth Syst. Dynam. Discuss., community comment CC1  
<https://doi.org/10.5194/esd-2021-2-CC1>, 2021  
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## **The model has been tuned to the late Pleistocene variability. Why not to the early Pleistocene?**

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Community comment on "Reduced-complexity model for the impact of anthropogenic CO<sub>2</sub> emissions on future glacial cycles" by Stefanie Talento and Andrey Ganopolski, Earth Syst. Dynam. Discuss., <https://doi.org/10.5194/esd-2021-2-CC1>, 2021

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It is well recognized that the ice-age history is the history of large ice sheets' mass balance that in turn is an outcome of a delicate interplay between astronomical forcing and climate system positive and negative feedbacks. The changing balance between positive and negative feedbacks over the Pleistocene defines mid-Pleistocene transition (MPT) from about 40 kyr lower-amplitude variability of the early Pleistocene to longer-period (~100 kyr) and higher-amplitude variability of the late Pleistocene.

In the current study, the authors employ a reduced complexity model; therefore, naturally, the explicit calculations of all feedbacks involved are not expected. Instead, the authors have tuned their model to the late Pleistocene variability with a hope that the best choice of their tuning parameters now adequately represent the balance between positive and negative feedbacks and the model may be taken for the future predictions with a great deal of credibility.

This approach may be questionable. It is not unlikely that the landscape of future positive and negative feedbacks (especially for increased CO<sub>2</sub> concentration) will be more analogous to the early Pleistocene climate and a renaissance of ice-ages (if any) may be rather of the early-Pleistocene type with a dominant period of 40 kyr and smaller amplitudes – not 100-kyr variability as this study suggests. Or it may be "MPT of the future" when glaciation variability (period and amplitude) may change in concert with the CO<sub>2</sub> level.

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