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Glacial-interglacial variability using a low-complexity, physically based model

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Pleistocene glacial-interglacial variability is still under debate, as the many hypotheses proposed are subject to the models used and assumptions made. The longer time scales involved in glacial cycles make it difficult to use comprehensive climate models because of its large computational cost. In this context, conceptual models are built to mimic complex processes in a simpler and more computationally efficient way. Here we present a conceptual climate-ice sheet model that aims to represent the state-of-the-art physical processes affecting glacial-interglacial variability. Our model was constructed using linear equations that explicitly represent ice-sheet modeling approaches. Preliminary results are consistent with Late Pleistocene variability and point to the existence of nonlinearities related to both ice dynamics and ice aging that determine the timing and shape of deglaciations.