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# A global ensemble-based comparison of the last two glacial inceptions with LCice 2.0

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What determines the character of glacial inceptions? Does the spatio-temporal pattern of ice nucleation and expansion vary much between Late Pleistocene glacial inceptions? According to various benthic del18O stacks, the MIS 7 interglacial was the most anomalous in character of the last 4 interglacials. Key differences include a weaker interglacial state and an initial fast inception interrupted by a return to a similar and extended interglacial state. These anomalies of MIS 7 along with temporal proximity arguably make the last two glacial inceptions the best test case for addressing our opening questions. As part of a larger project to generate and analyze a data-constrained ensemble of fully coupled ice/climate transient simulations for the last two complete glacial cycles, herein we present initial results comparing the last two glacial inceptions (MIS 7 and 5d). We are using a new version of the fully coupled ice/climate model LCice. LCice now simulates all 4 paleo ice sheet complexes with hybrid shallow-shelf and shallow-ice physics. It has already been shown to capture northern hemispheric ice sheet growth and subsequent retreat consistent with inferences from global mean sea level proxies (Bahadory et al, 2019). Orbital and greenhouse gas changes are the only external forcings applied to the model. A 300 member ensemble probes parametric uncertainties in both the 3D Glacial Systems Model and LoveClim (Atmosphere/Ocean/Vegetation) components of LCice. Our presentation will compare the evolution and relative phasing of all 4 paleo ice sheets, and associated changes in the rest of the modelled climate system.