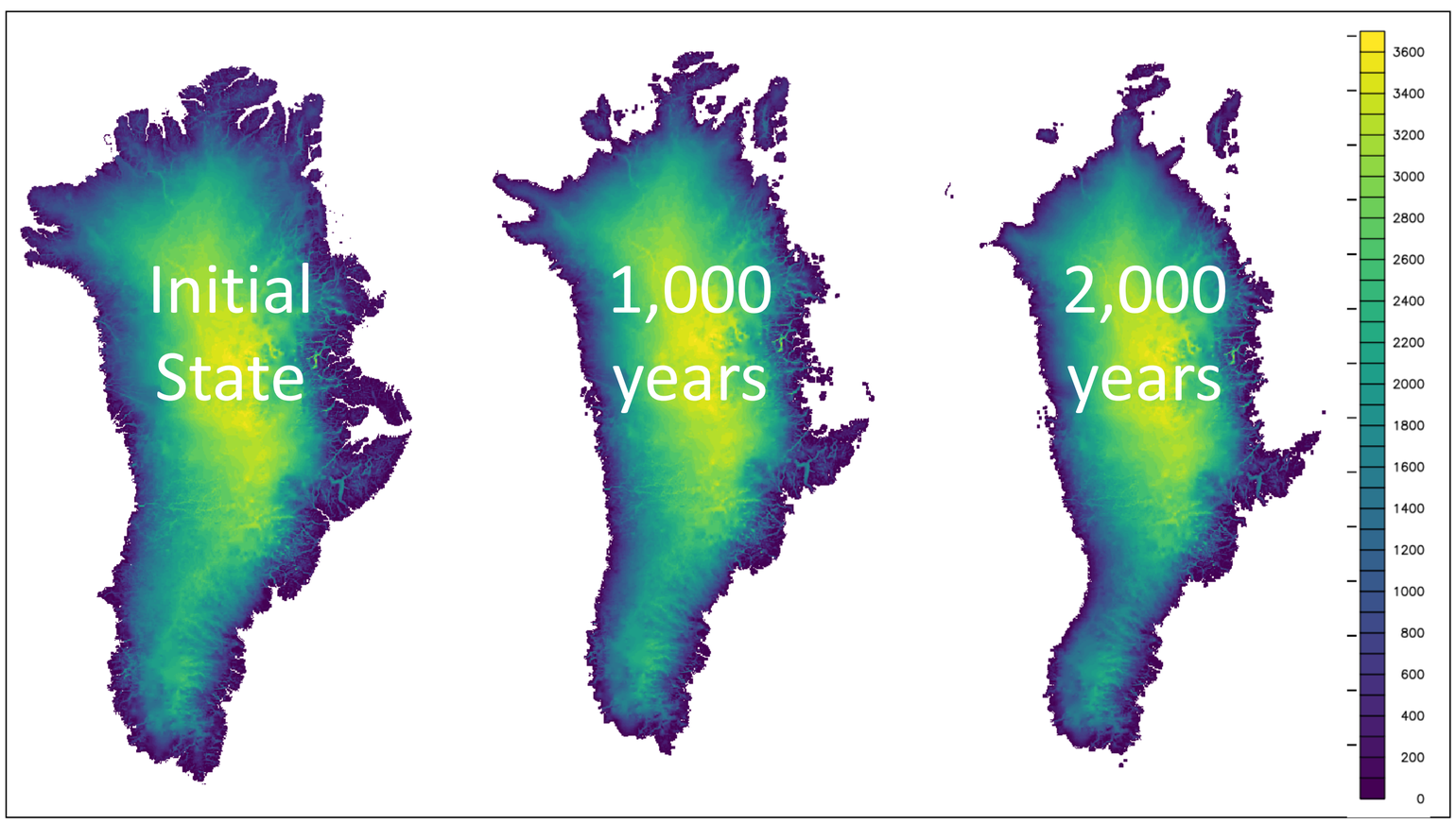
Past Greenland Ice Sheet Retreat

Photos of Greenland ice sheet outlet glaciers (taken in 2016, not during the Last Interglacial).
Left: East Greenland, flying with NASA's Operation IceBridge. Right: West Greenland near Kangerlussuaq.



Simulated ice thickness (m) over 2,000 years with orbital parameters, greenhouse gas concentrations, and vegetation distribution from 127,000 years ago (hottest part of the Last Interglacial). The ice loss shown is ~2 m sea level equivalent.

By studying past climates, we can better understand important processes and relevant behavior for a warming future.

The Last Interglacial period (~129,000 - 116,000 years ago) experienced a warmer climate and a global mean sea level that reached ~6-9m higher than present due to the orbital configuration of the Earth.

The Greenland ice sheet likely retreated to less than its current extent, but how much it contributed to sea level rise remains an open question, with previous estimates from ~2-6m.

We are working on a long transient CESM simulation of the Last Interglacial, using a dynamic Greenland ice sheet model coupled with global ocean, atmosphere, land, and sea ice components.

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