Configuration and sea level contribution from the Antarctic Ice Sheet during the Last Interglacial

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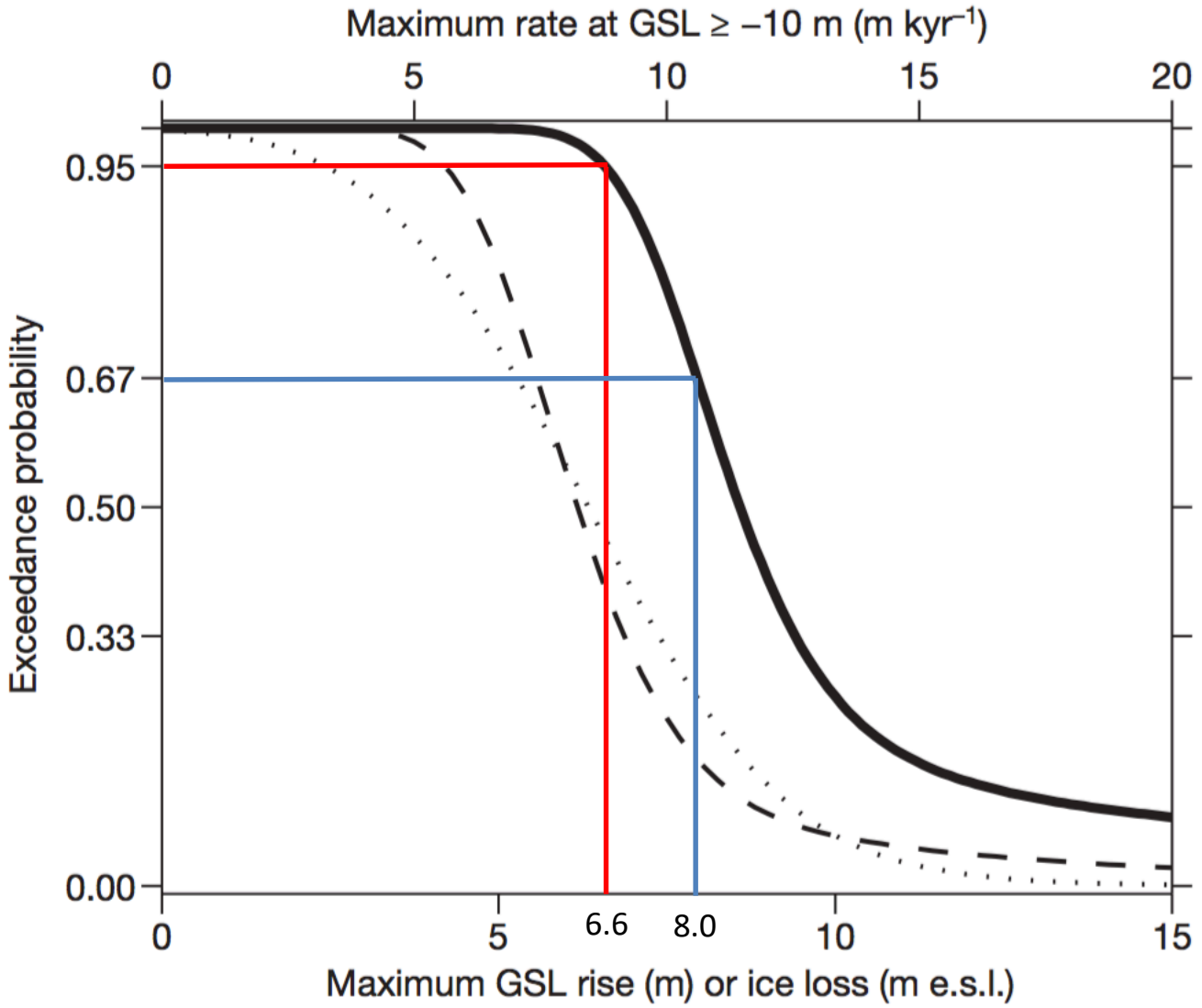
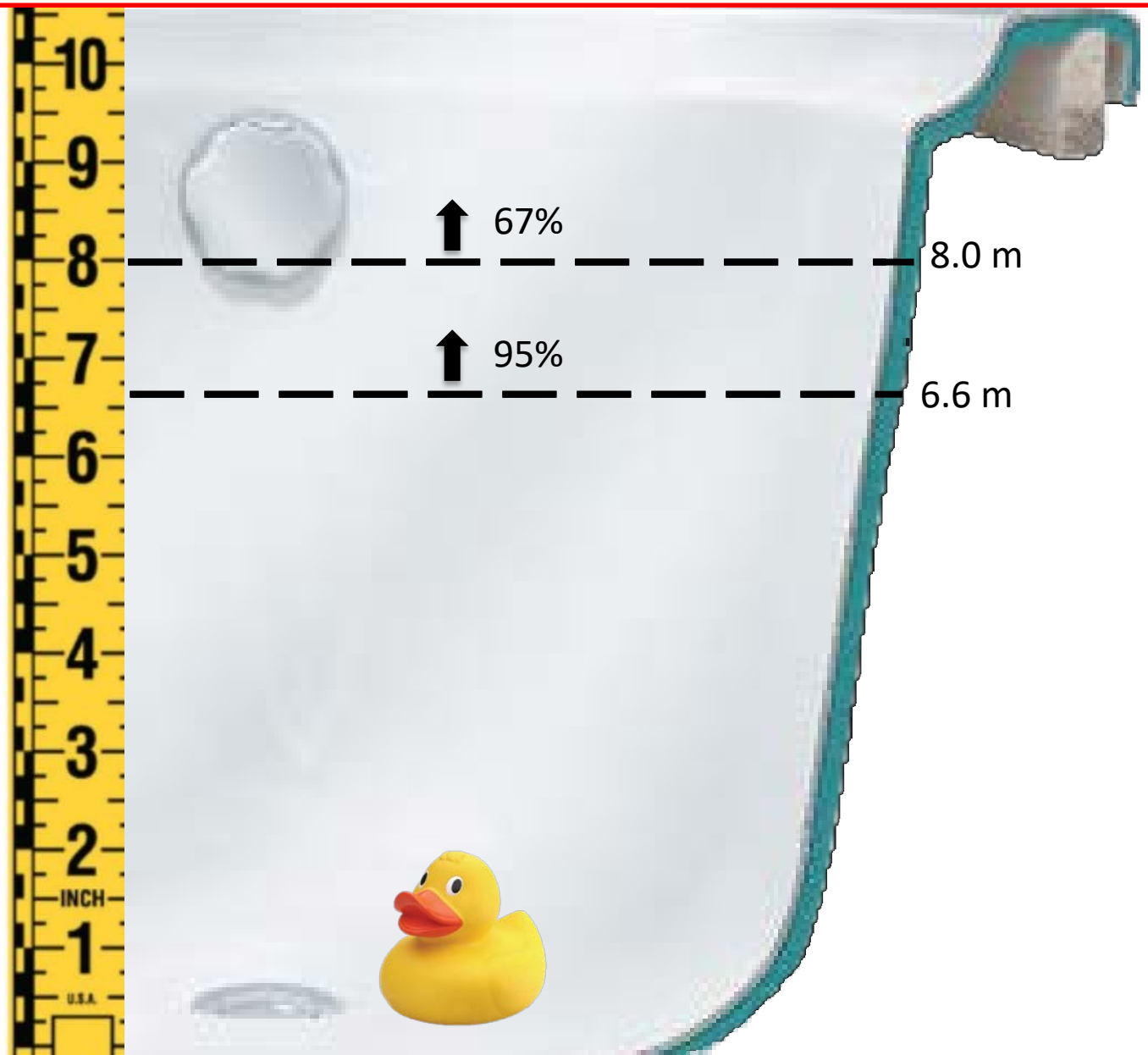
Data suggests higher global sea level during the Last Interglacial



Adapted from Kopp et al. 2009

Contributions to Last Interglacial sea level

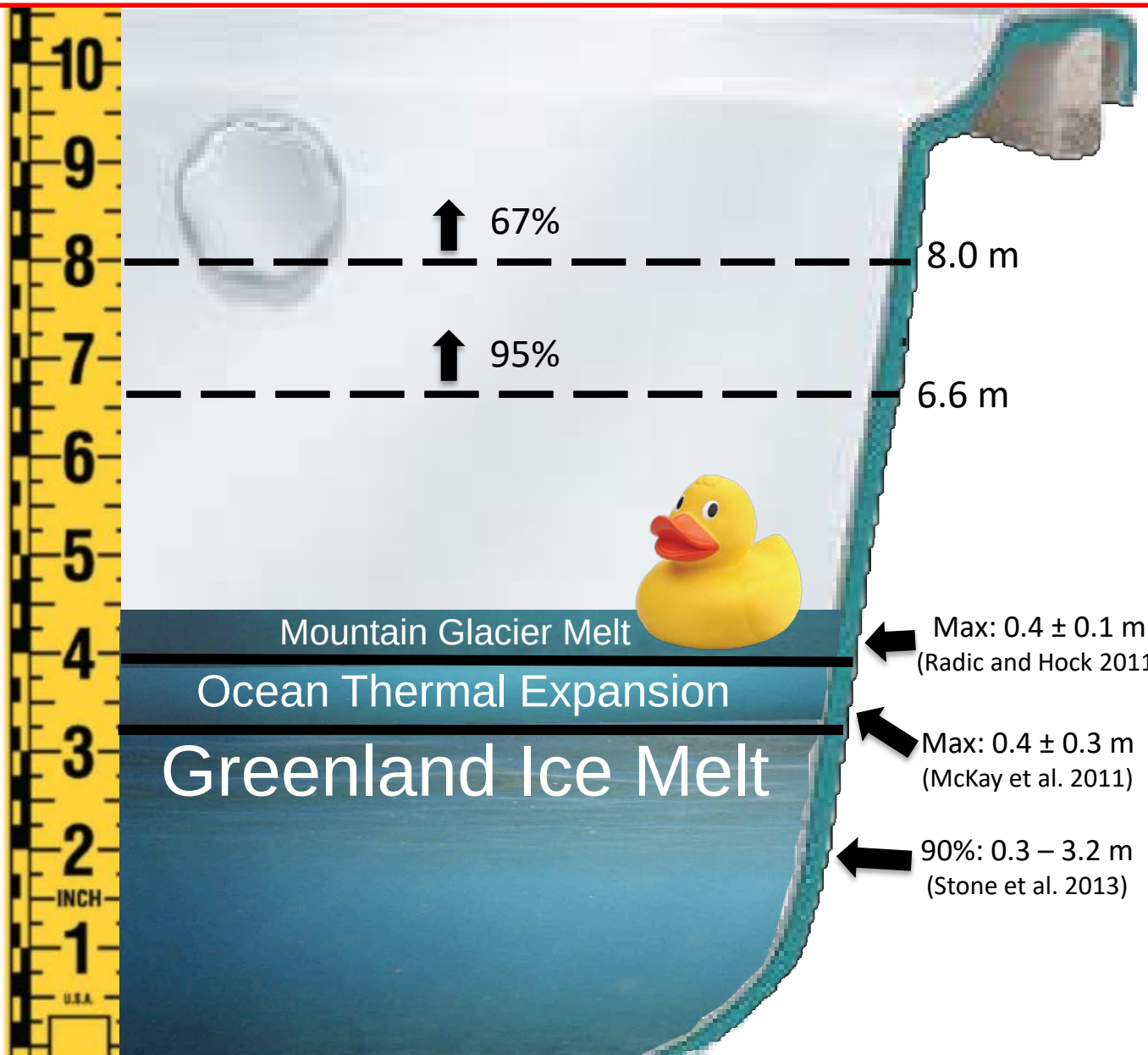


LIG Sea Level

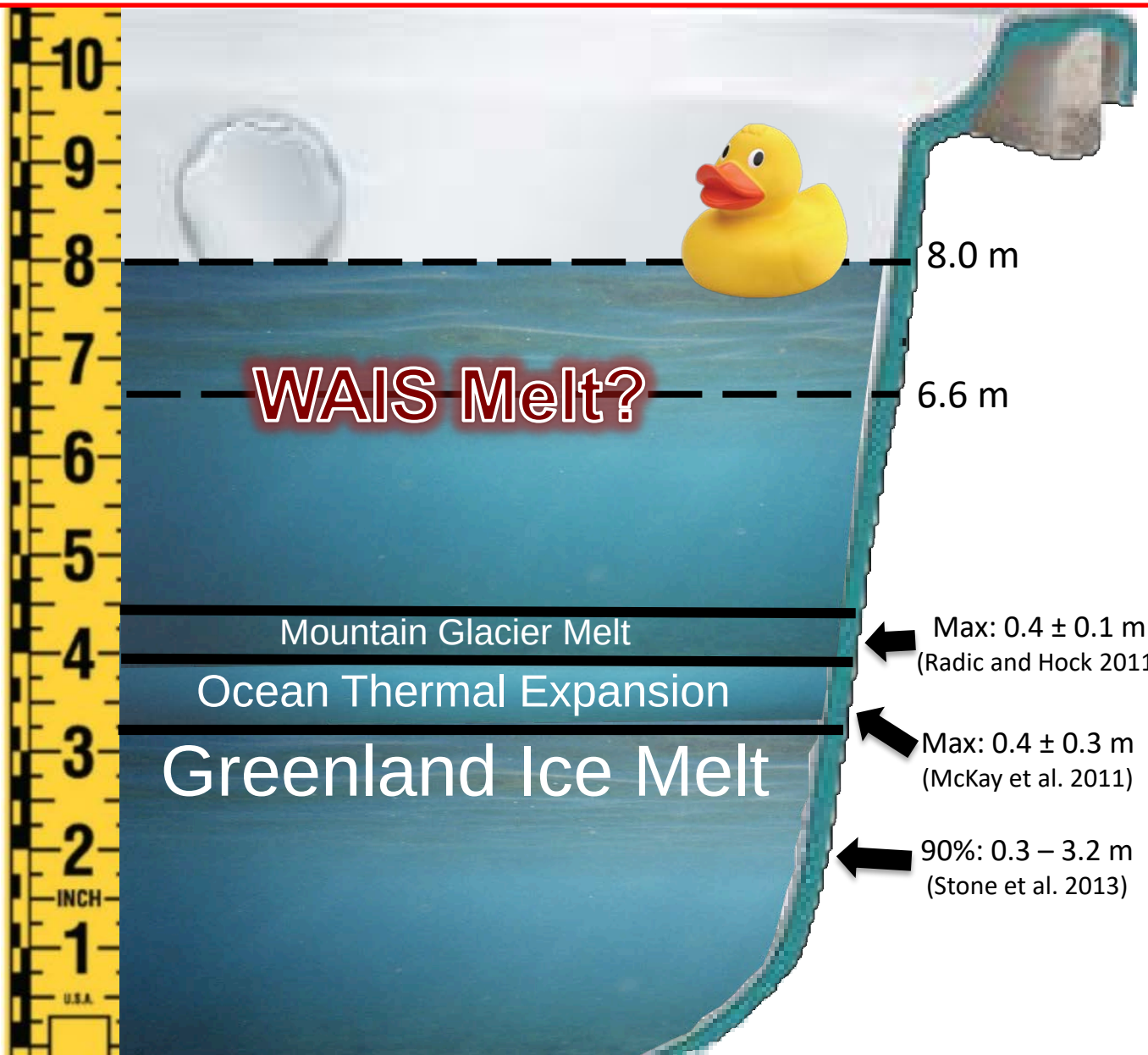
Kopp et al. 2009

Modern sea level = 0

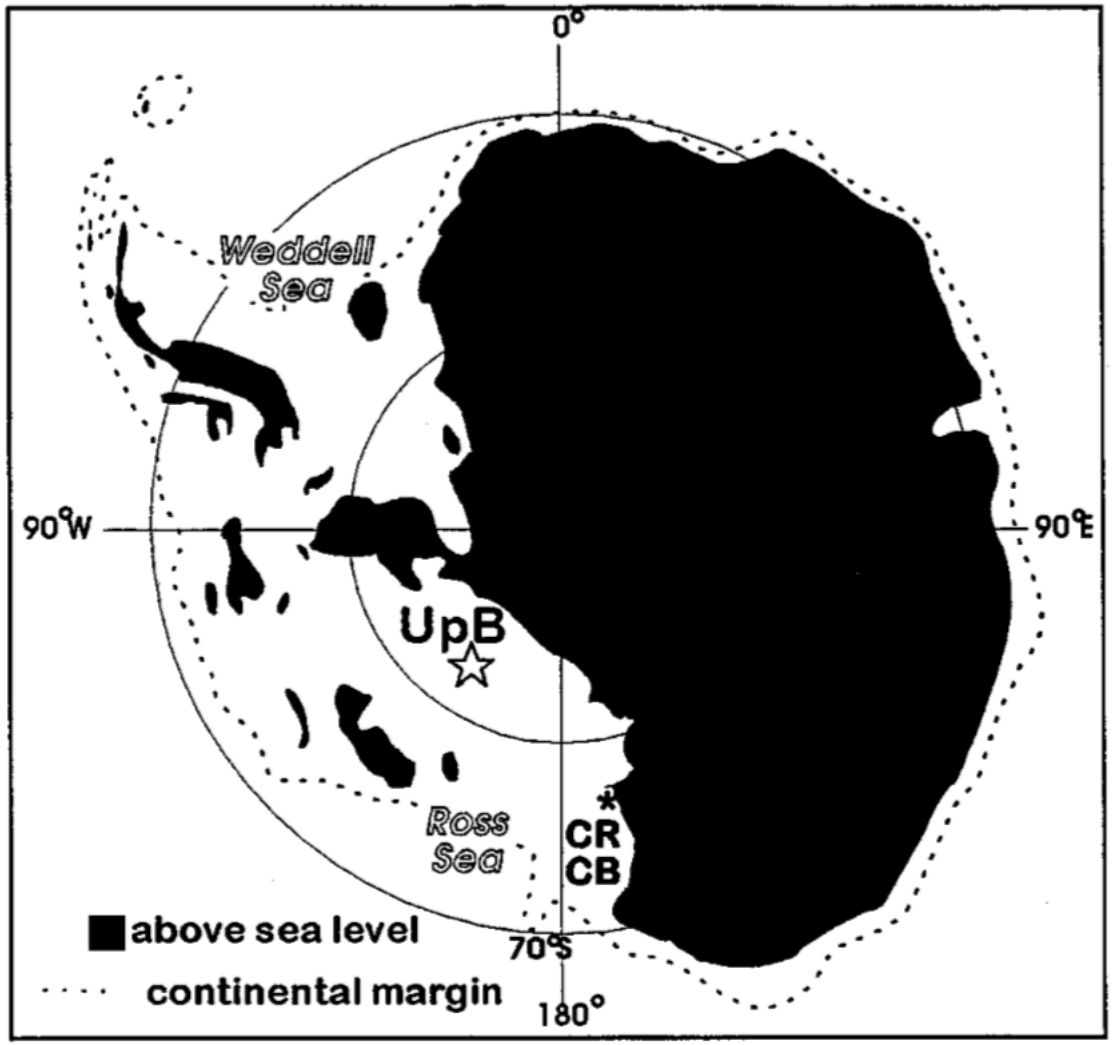
Contributions to Last Interglacial sea level



Contributions to Last Interglacial sea level

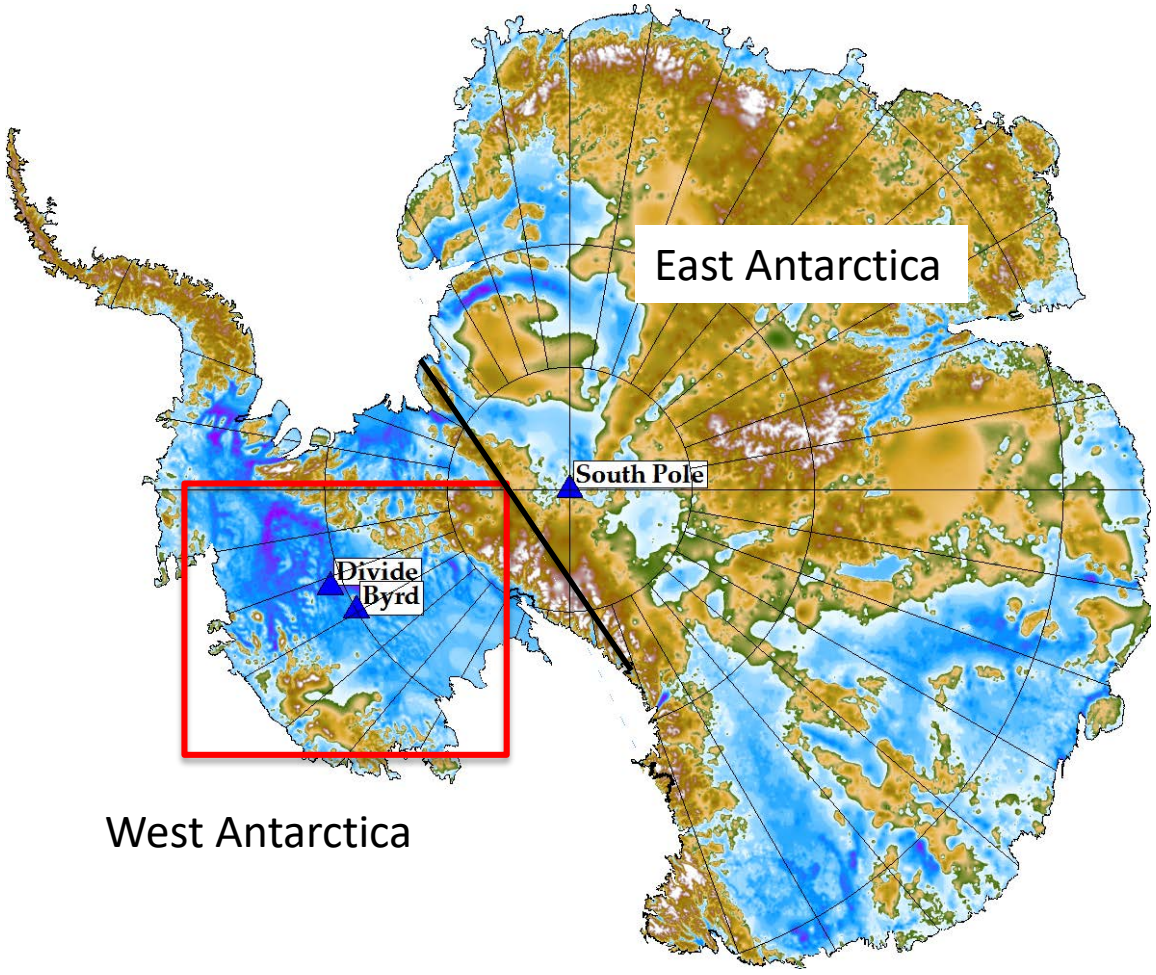


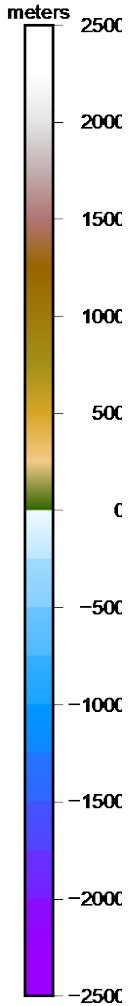
Evidence of WAIS retreat during the past 750ka



Scherer et al. 1998

WAIS is a marine ice sheet with inland-sloping bed



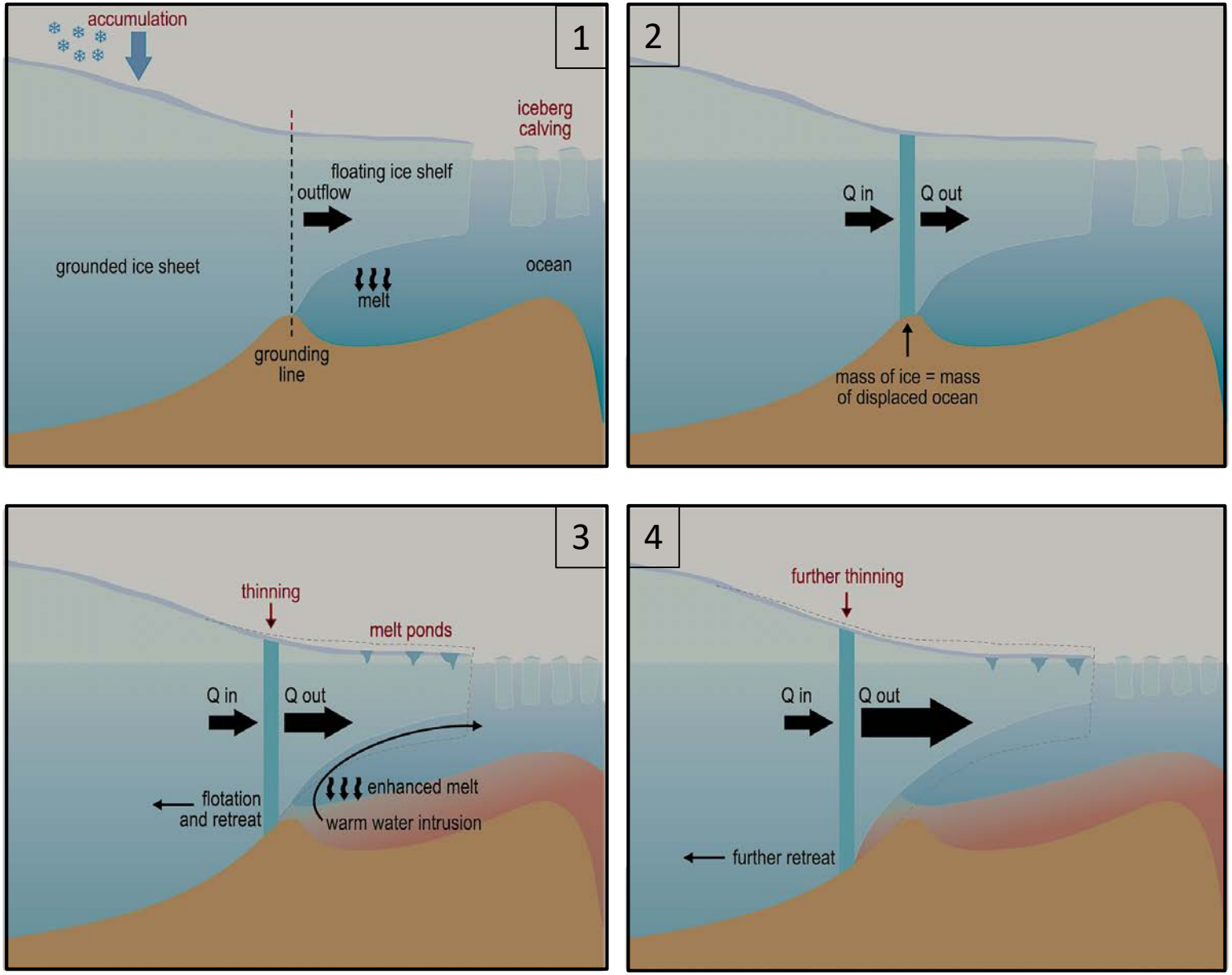


Above sea level

Below sea level

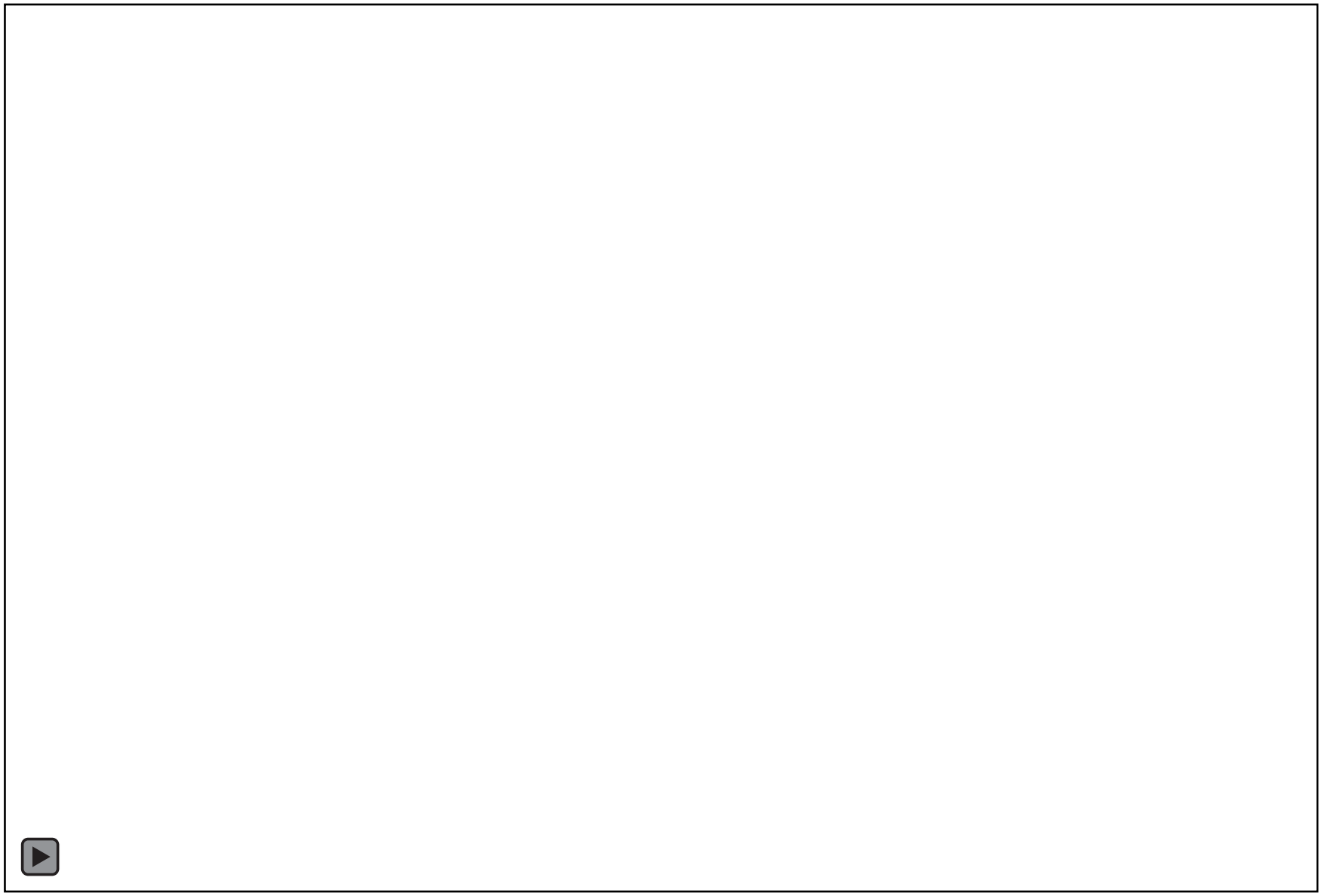
Bedmap2

Marine ice sheets on inland-sloping beds are prone to retreat

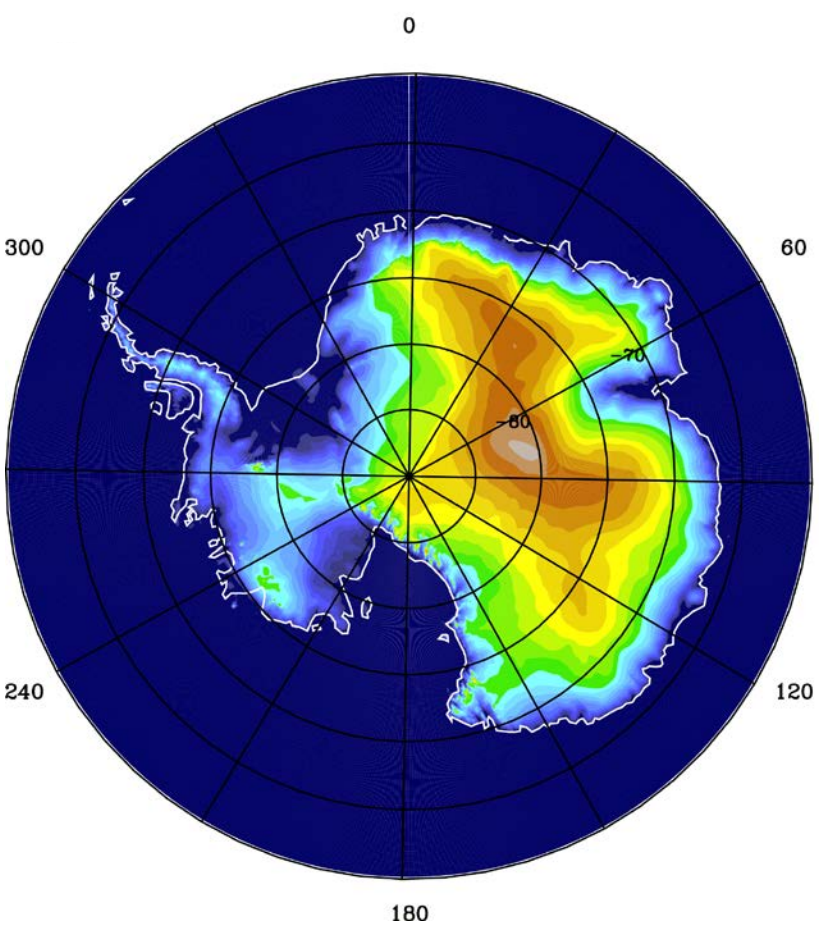


IPCC AR5

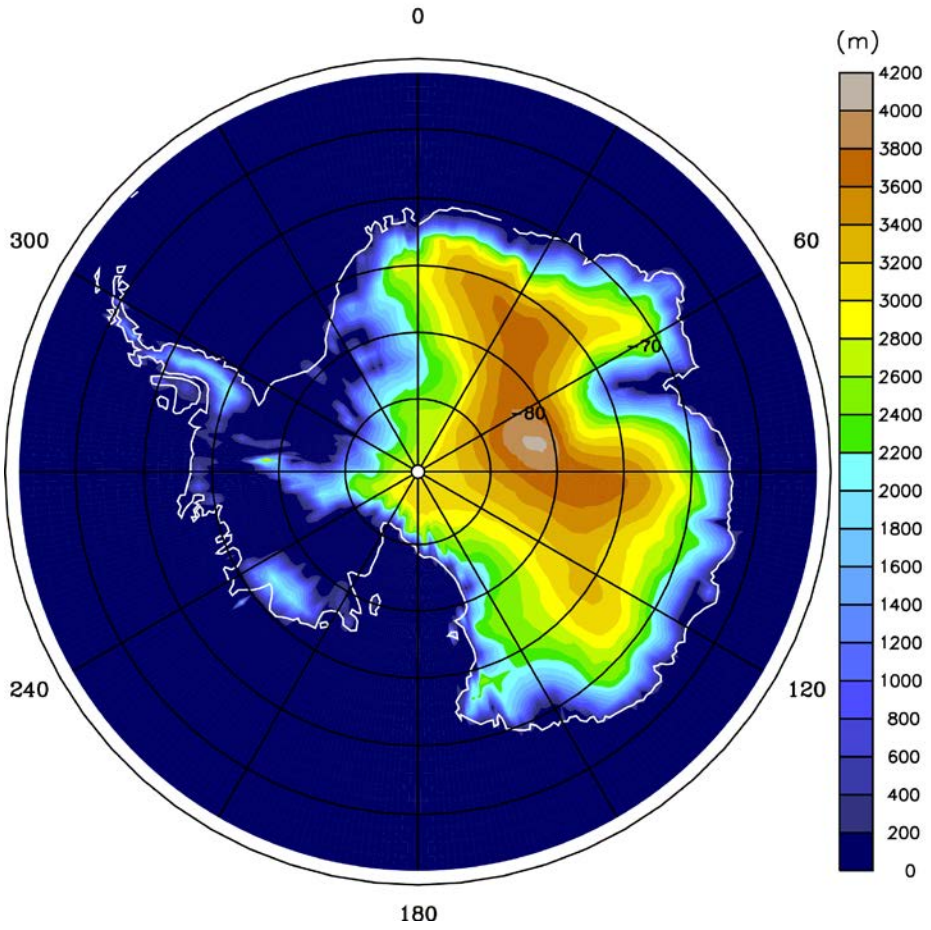
Inducing ice sheet reconfiguration using BISICLES model



Widespread retreat of the WAIS results

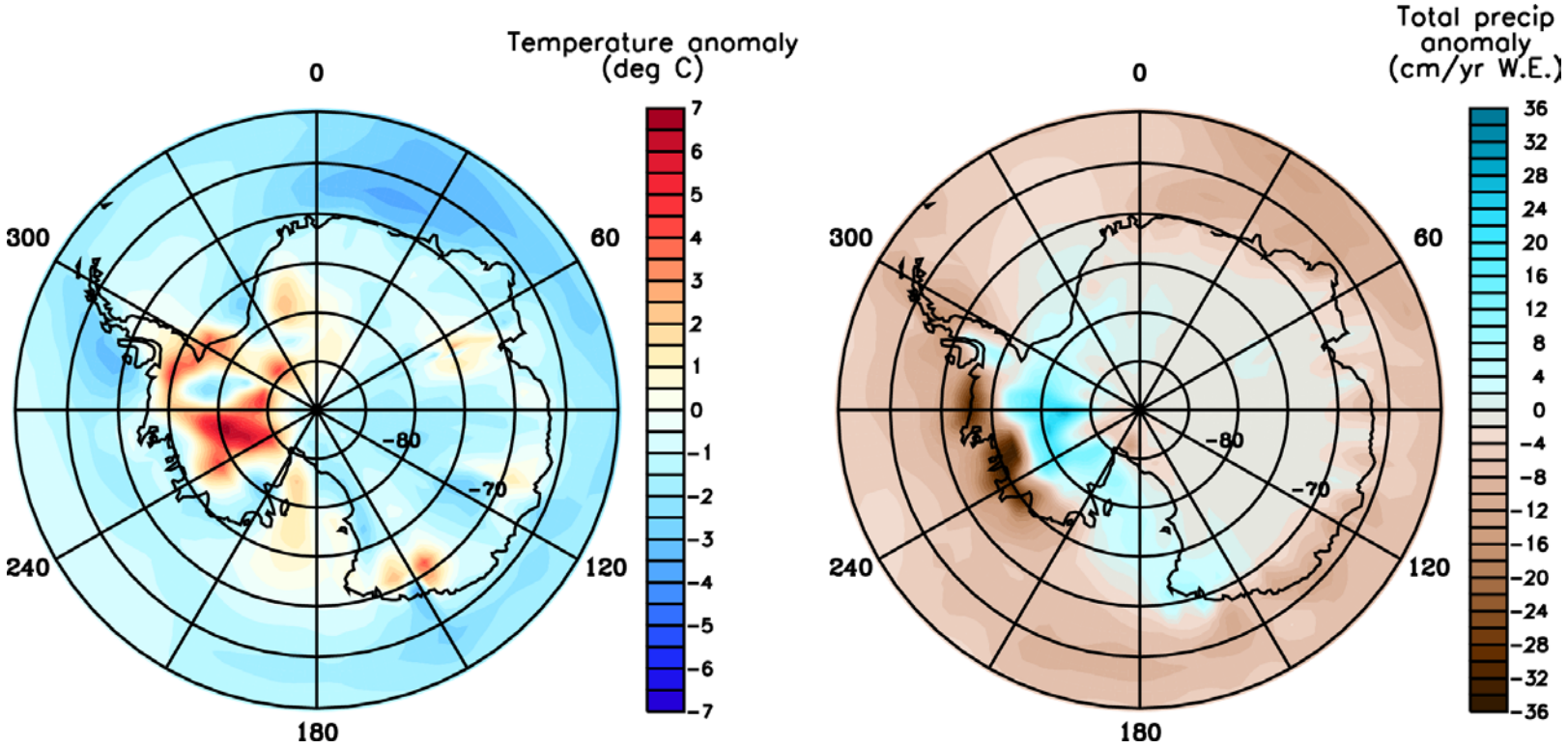


Modern

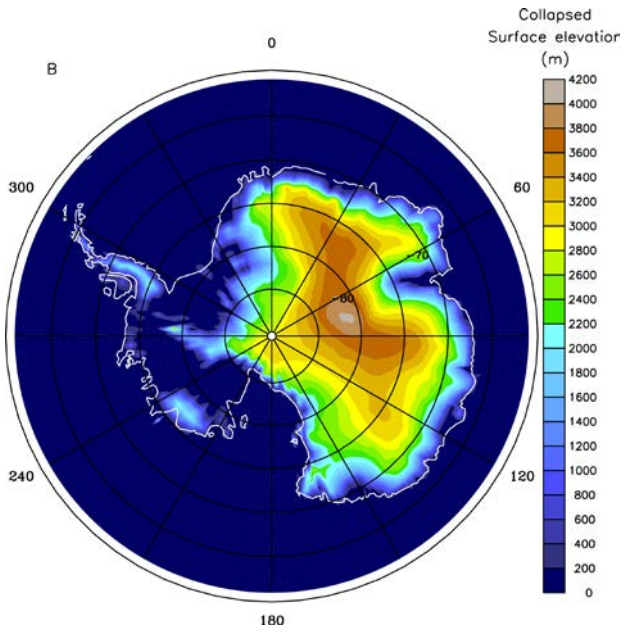


Retreated

Estimate surface mass balance for new ice sheet configuration



What is effect of uncertain ocean forcing on LIG ice sheet?



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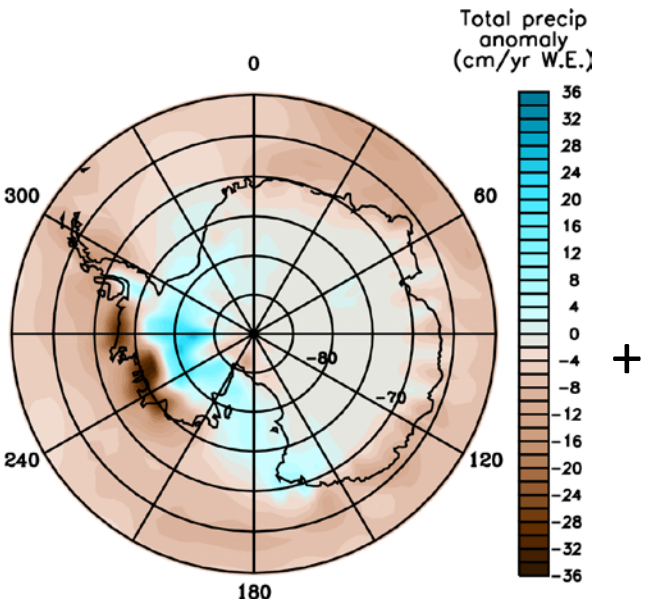

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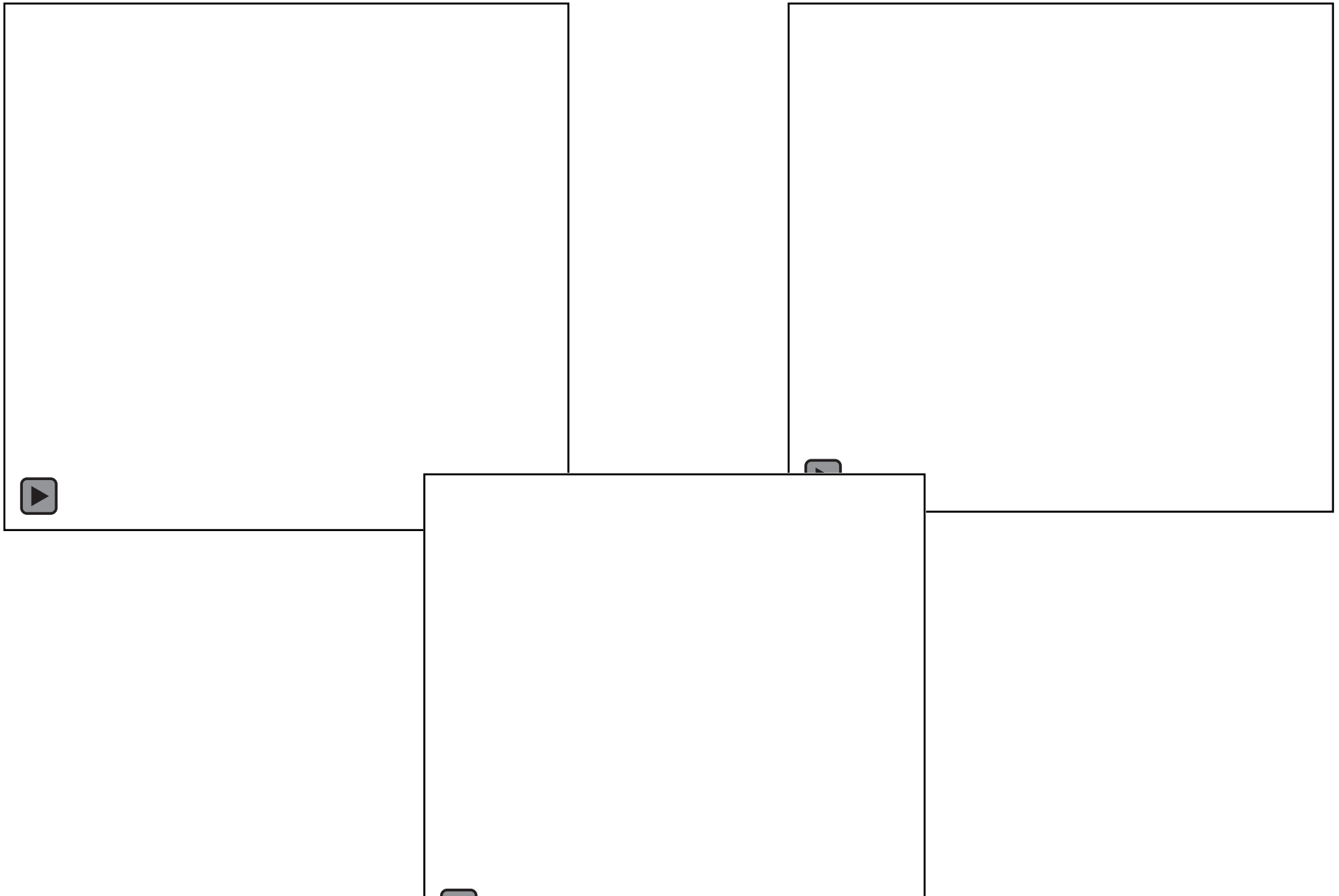
Experiments:

20 m/a

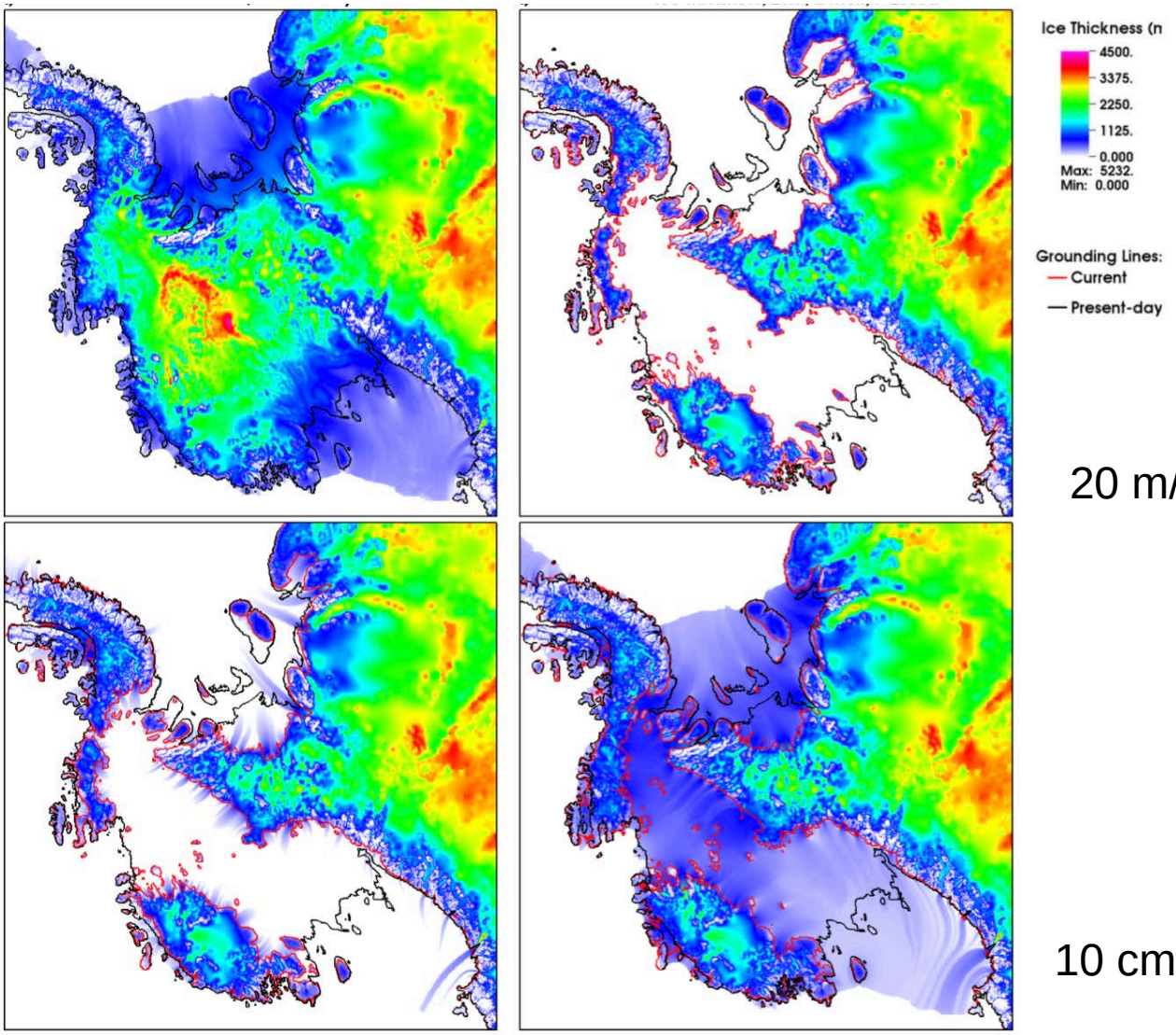
1 m/a

10 cm/a

Range of subshelf melt rates applied to all of AIS



Ice thickness for each experiment



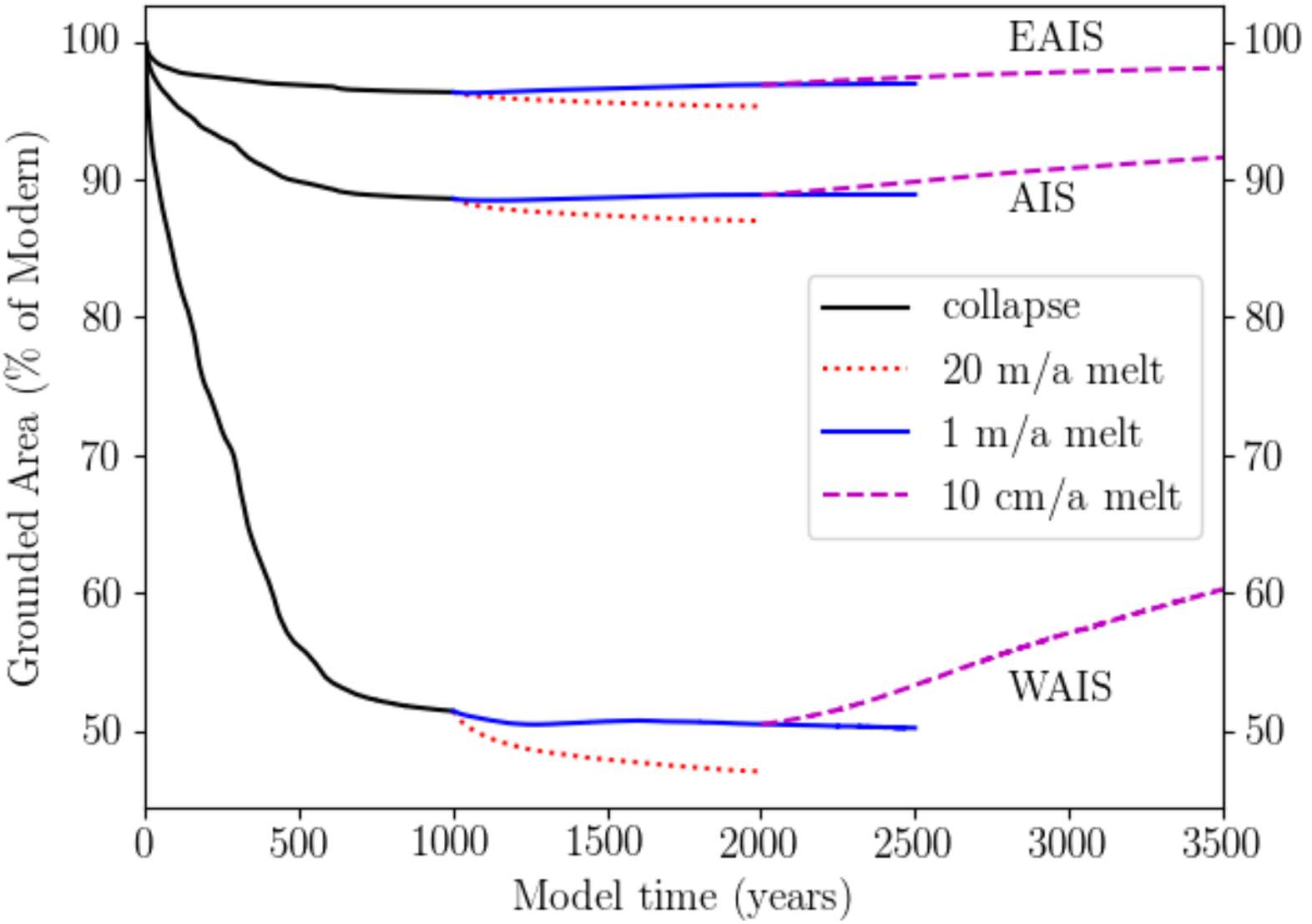
Modern

20 m/a

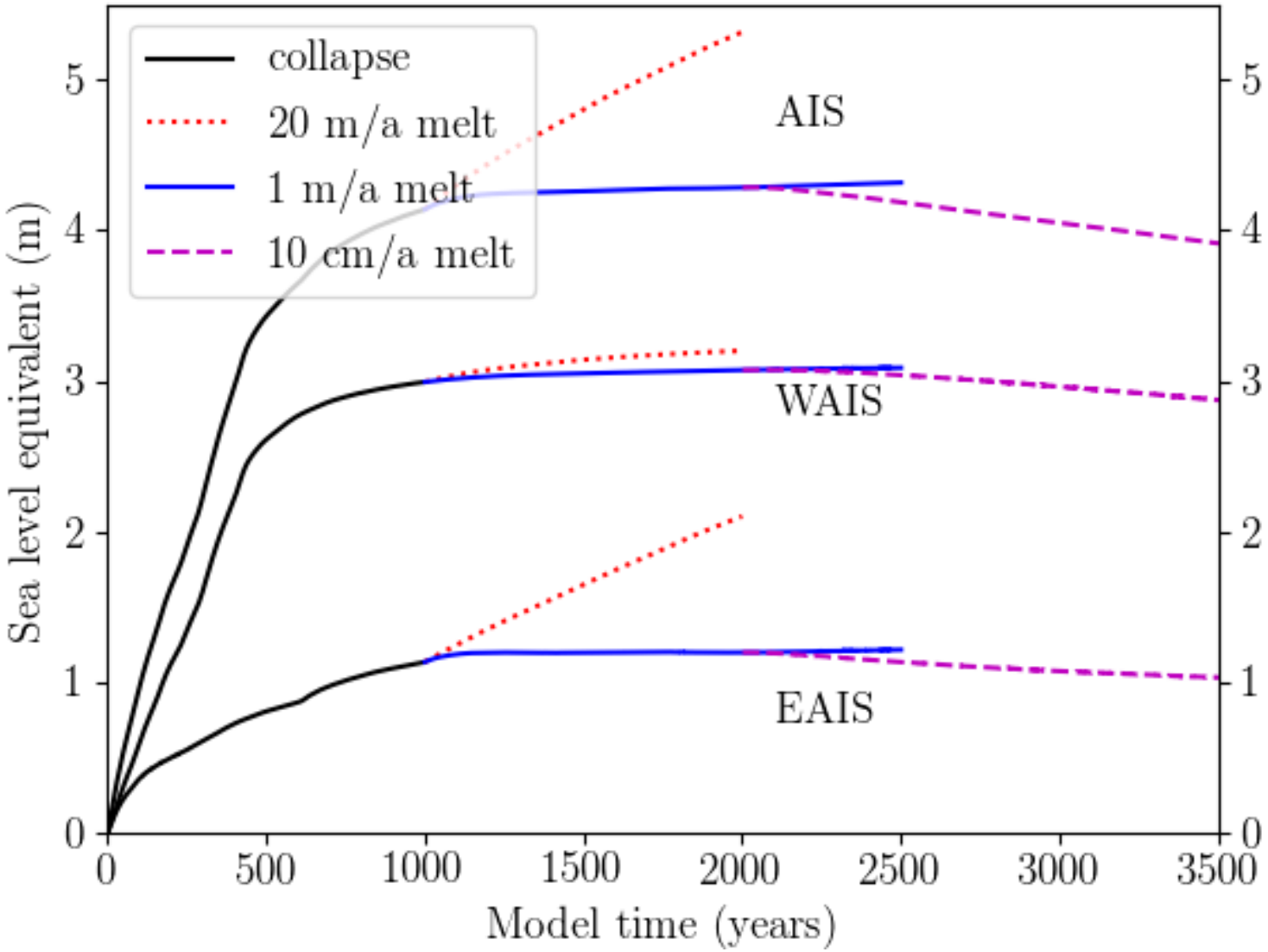
1 m/a

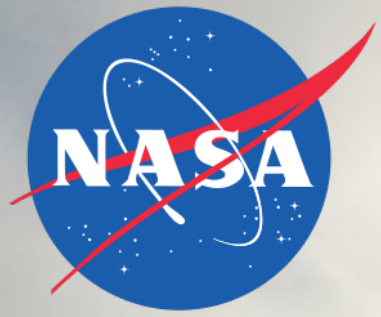
10 cm/a

Grounded area of the AIS



Sea level equivalent from ice mass loss





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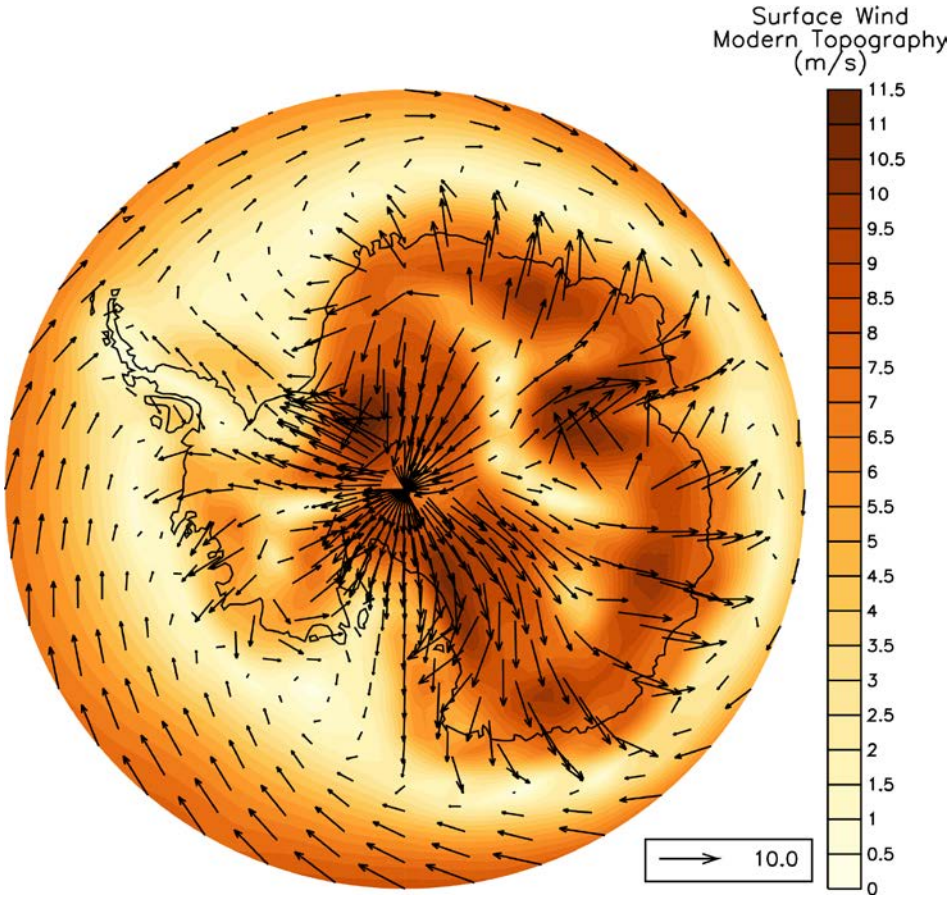
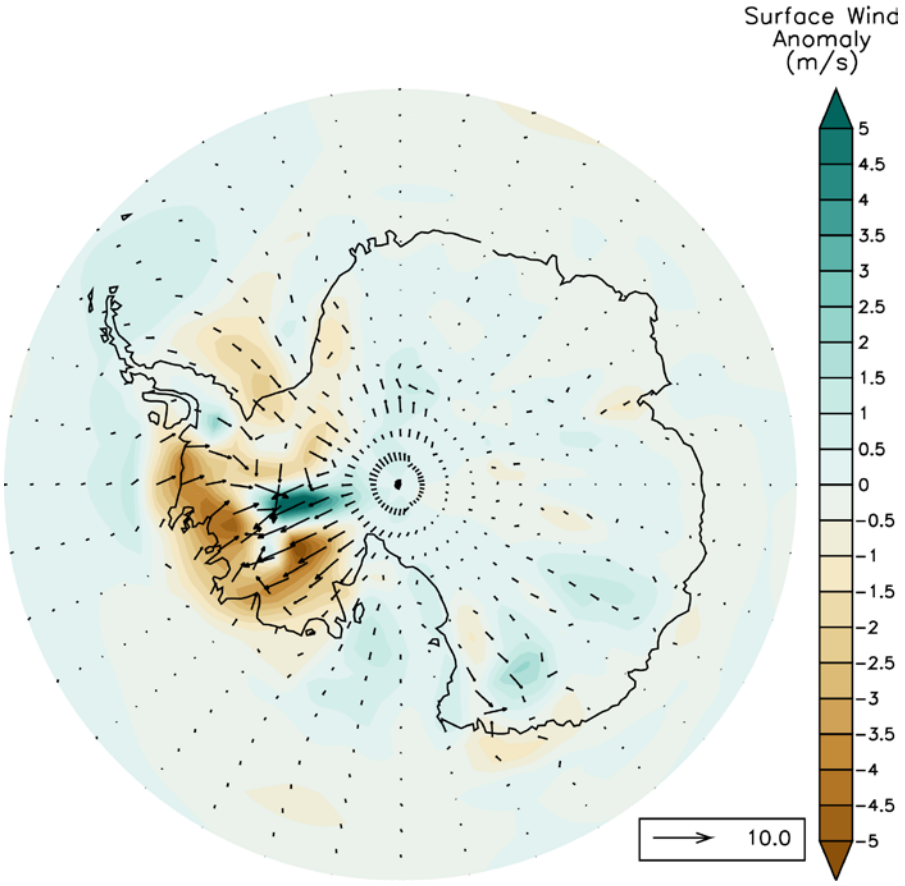
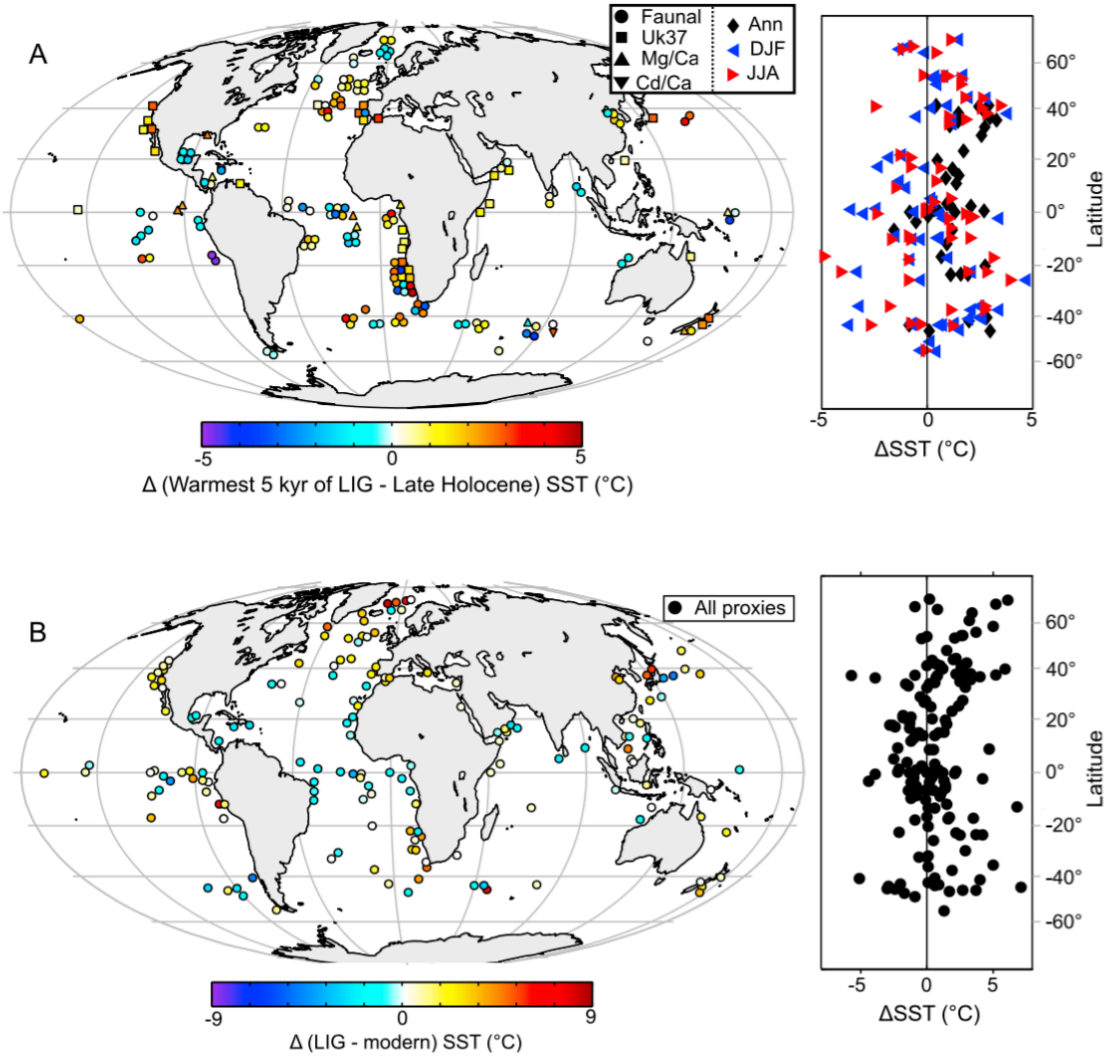
Major ice sheet retreat alters circulation





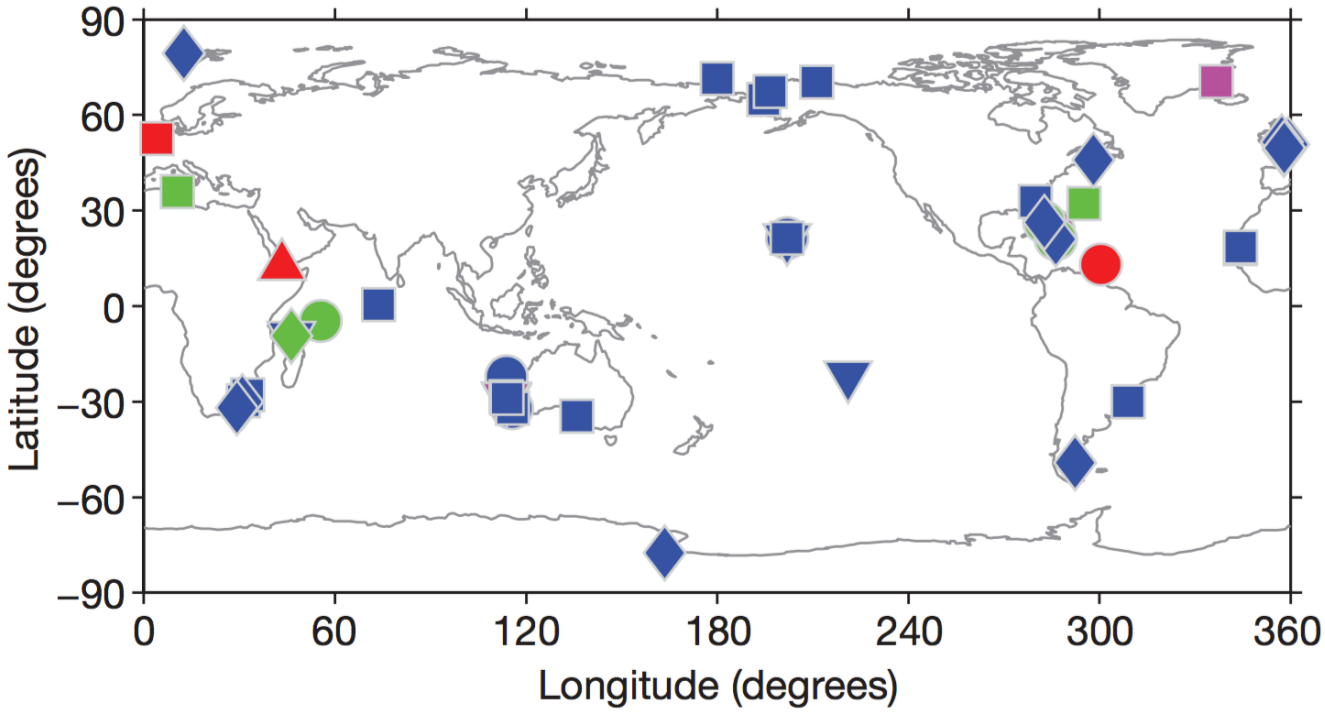
Proxies used to determine LIG ocean expansion



McKay et al. 2011

Figure 1. Maps of global ΔSST values in (a) our database, where symbols indicate proxy type (see legend) and (b) the synthesis of *Turney and Jones* [2010]. Note that in both maps, the locations of the symbols were adjusted slightly for visibility. To the right of each map, ΔSST values are plotted by latitude. For our database (Figure 1a), records interpreted to reflect annual, austral summer, and boreal summer temperatures are shown with different symbols.

Proxies used to determine LIG sea level



Kopp et al. 2009

Figure 1 | Sites with at least one sea level observation in our database. The symbol shapes reflect the nature of the indicators (upward triangles, isotopic; circles, reef terraces; downward triangles, coral biofacies; squares, sedimentary facies and non-coral biofacies; diamonds, erosional). The colours reflect the number of observations at a site (blue, 1; green, 2; magenta, 3; red, 4 or more).