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# Modelling the Antarctic Ice Sheet for the last 420kyr

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Proxy data reveal that in the last glacial-interglacial cycles the Antarctic Ice Sheet (AIS) has experienced changes of its ice volume contributing to past sea-level variations. The AIS is nowadays the largest ice sheet in the world and potentially the largest contributor to a future long term sea-level rise. Because it suffers no significant ablation, it loses mass via basal melting and calving, driven by oceanic forcing. Therefore understanding ice-ocean interactions is crucial to study its past and future. In particular the West Antarctic Ice Sheet (WAIS) is specially sensitive to changes in oceanic temperatures since it rests in its major part below sea level. It also contains the two largest ice shelves of the world, the Ross Ice Shelf and the Filchner-Ronne Ice Shelf whose collapse is believed could accelerate inland ice flow, due to the loss of their buttressing effect, and enhance sea-level rise. The aim of this work is to simulate the AIS for the last 420kyr under varying orbital forcing using a hybrid ice sheet-ice shelf model. In particular, we will analyze the effect of past oceanic temperatures by including a parametrization for the basal melting of the ice shelves and grounding line dependent on observations and oceanic temperature anomalies. These experiments will shed light into the mechanisms involved in the interactions between ocean and cryosphere relevant for the assessment of the AIS stability in the future.