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## The uncertainty in Antarctic sea-level rise projections due to ice dynamics

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Projections of the Antarctic Ice Sheet (AIS) contribution to future global sea-level rise are highly uncertain, partly due to the potential threat of a collapse of the marine sectors of the AIS. However, whether the inherent instability of such sectors is already underway or is still far away from being triggered remains elusive. One reason for ambiguity in results relies on the uncertainty of basal conditions. Whereas high basal friction can potentially prevent a collapse of the marine zones of the AIS, low basal friction can promote such a process. In addition, future sea-level projections from the AIS are generally run from an equilibrated present-day (PD) state tuned to observational data. However, this procedure neglects the thermal memory of the ice sheet. Furthermore, there is no apparent reason for ruling out that the PD may be subject to a natural drift since the onset of the last deglaciation (~20 kyr BP). Here we study the uncertainty in sea-level projections by investigating the response of the AIS to different RCP scenarios for four different basal-dragging laws. For this purpose we use a three-dimensional ice-sheet-shelf model that is spun up from a deglaciation. Model parameters of all friction laws have been optimized to simulate a realistic PD. In addition, we study the response of the AIS to a sudden CO<sub>2</sub> drop to investigate the potential irreversibility of the ice sheet depending on the RCP scenario and friction law.