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Behaviour of present day ice sheet in a 4 x CO2 climate simulation using a fully coupled climate/ice-sheet model

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Significant interactions between ice sheets and climate occurred during glacial times and also at the beginning of deglaciation periods. In the future, when the warming signal will be high enough, a similar situation could be observed. To investigate climate changes occurring when the present-day ice sheets (Greenland and Antarctica) may start to melt, we use a climate model of intermediate complexity (CLIMBER) fully coupled to ice-sheet models that describe the evolution of the geometry of both northern and southern ice sheets (GREMLINS and GRISLI, respectively). This new tool has already been shown to reproduce glacial transitions at different time scales (inception, deglaciation and Heinrich events). In the present study, our aim is to investigate in a 4xCO2 stabilization experiment what is the response of the ice sheets in terms of melting and freshwater input to the oceans.