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## Impact of ice sheet – ocean interactions on the Southern Ocean using fully coupled models over a circumpolar domain

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From at least 1979 up until 2016, the surface of the Southern Ocean cooled down, leading to a small Antarctic sea ice extent increase, which is in stark contrast with the Arctic Ocean. The attribution of the origin of these robust observations is still very uncertain. Among other phenomena, the direct, two-way interactions between the Southern Ocean and the Antarctic ice sheet, through basal melting of its numerous and large ice-shelf cavities, have been suggested as a potentially important contributor of this cooling. In order to address this question, we perform multidecadal coupled ice sheet – ocean numerical simulations relying on f.ETISH-v1.7 and NEMO3.6-LIM3 for simulating the Antarctic ice sheet and Southern Ocean (including sea ice), respectively. This presentation is twofold. First, we present the technical aspects of the coupling infrastructure (e.g. workflow and exchanged information in between models). Second, we investigate the ice sheet – ocean feedbacks on the Southern Ocean, their interactions, and the roles of the related physical mechanisms on the ocean surface cooling.