

Location and timing of Circumpolar Deep Water intrusions onto the Amundsen Sea continental shelf, simulated with an isopycnic coordinate ocean model

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Using an isopycnic coordinate ocean model coupled with a sea ice model, we have simulated the circulation in the Amundsen Sea sector of Antarctica over the period 1980 to 2005. The model is forced with daily sea surface temperatures and sea level pressures taken from the NCEP reanalyses. We focus on the flow of Circumpolar Deep Water (CDW) onto the continental shelf. Our results show that CDW intrusions occur at specific locations and at specific times of year. Variability in the strength of the inflows gives rise to interannual changes in the heat content of the waters on shelf and beneath the ice shelves. Preliminary analyses suggest that the seasonal input of CDW is related to changes in the position and depth of a low pressure trough, located close to the shelf break. We show that interannual variability in the behaviour of this pressure trough could be the source of the observed changes in the ice shelves of the Amundsen Sea.