



Simulated ocean changes over the Antarctic continental shelf

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In recent decades thinning of ice streams in the Amundsen Sea sector of West Antarctica has been observed. A likely cause is increased flow of relatively warm Circumpolar Deep Water (CDW) onto the continental shelf, melting the base of the floating portion of the ice streams and causing a dynamic response in the grounded ice sheet. The hypothesised CDW incursion could be due to either natural variability or longer term trends, possibly related to climate warming or ozone depletion. We will investigate whether such features are reproduced by the current generation of computer models. We will present analyses of the CMIP3 coupled atmosphere-ocean models and the higher resolution (1/12th degree) OCCAM ocean model, focussing on oceanic trends over the continental shelf. In particular we will show whether these models exhibit significant warming of continental shelf waters in the Amundsen Sea sector, and if present we will identify whether such changes are indicative of a trend or of internal variability in the models. This work is motivated by the question: "Could coupled atmosphere ocean cryosphere simulations incorporate the processes needed to predict future contributions of the Antarctic Ice Sheet to sea level rise?".