



The influence of Antarctic sea ice extremes on large scale atmospheric variability in the Southern Hemisphere

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The response of the extra-tropical Southern Hemisphere atmosphere to extremes of Antarctic sea ice concentration is investigated using a fully-coupled climate model - the NCAR Community Climate System Model-version 3. Average, maximum, and minimum sea ice concentration climatologies were extracted from satellite-observed sea ice concentrations and used to force the model for three 150-year simulations. Initial results for the atmospheric pressure and temperature fields for the summer seasons are discussed. In summer, poleward of 45S, the atmosphere in the minimum case is warmer, deeper and exhibits greater variability than in the control. The differences between the maximum and control cases exhibit a pattern of negative and positive values extending from New Zealand to the south Atlantic. In winter, poleward of 45S the atmosphere is colder, shallower and exhibits less variability than the control in the minimum case. Physical reasons explaining the large scale differences in pressure and temperature, and potential impacts on the different modes of large scale extra-tropical atmospheric variability are discussed.