

**WEDDELL SEA WARMING TRENDS AS SEEN FROM THE OCEAN COMPONENT OF THE NCAR-CCSM**

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An ocean only simulation of the Coupled Climate Model (CCSM) forced by NCEP/NCAR winds and fluxes are examined in order to evaluate the temporal variability, warming trends, as well as the processes responsible for the changes observed in the Weddell Sea. So far, most of the research concerned with the warming of the oceans has focused on the upper 1000m. What happens to the deep ocean in particular remains a challenge. Temperature and Salinity evolution through the 43 years of model simulation are examined along a transect roughly equivalent to the WOCE section SR4 which connects Kapp Norvegia and Joinville Island. The focus is on changes in the dense waters both at the inflow and outflow regions of the Weddell Sea. The preliminary results here show that the minimum temperature for the 1000-5000m layer is slowly increasing linearly (0.001383/year) from 1957 to 2000. The overall increase in deep temperature is approximately 0.1deg. This trend is the same for both outflow and inflow regions, which brings up the question of ocean dynamics versus ocean-ice-atmosphere exchanges. Besides the warming a latitudinal displacement (towards the equator) is also noted. The trend is comparable with that of the temperature. The basic hydrography for the Weddell sea is examined with the simulated temperature and salinity profiles for each decade showing indeed a warming (freshening) trend and the latitudinal displacement of the deep water. The observed cooling in the 1970's (Weddell Polynia) and in the late 1990's (re-

occurrence of the Polynia) is well registered in the model simulation which emphasizes the importance of understanding the role of sea-ice in climate change models. Furthermore, through regional evaluations such as this one, tendencies and biases can be determined in order not only to improve more complex models but also to address their predictive potential.