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**An Estimate of Carbon Sequestration via Antarctic Intermediate Water Formation in the Austral Winter of 2005**

Brendan Carter, Andrew Dickson, Lynne Talley, Rana Fine, Teresa Chereskin, James Holte

Antarctic Intermediate Water (AAIW) represents a significant portion of the world's sub-thermocline water. Its turnover on several hundred instead of several thousand year timescales raises the possibility that the formation of this water mass functions as a climate feedback acting more rapidly than traditional deep water formation via entrainment of carbon dioxide and other greenhouse-active species. A recently completed (October 2006) research cruise to a site of suspected AAIW formation was conducted to characterize the water properties present during this water mass' formation. This area (the region contained by 62°S, 105°W and 45°S, 75°W) was extensively sampled by CTD and XCTD casts, and bottle samples were collected for oxygen, total carbon, alkalinity, nutrients, and CFCs. The alkalinity and total carbon data collected will allow for a complete characterization of the carbon system for this newly-formed AAIW. Using existing estimates of AAIW formation rates and bulk-AAIW carbon system parameters, it is possible to arrive at an estimate for carbon flux into this reservoir. Improving upon these estimates would require improving knowledge of the rates of AAIW formation. To this end there is a second research cruise departing in the Austral Summer to collect physical oceanographic data upon the deep-mixed layer capping that is thought to be the final stage in AAIW formation.

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