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Large scale circulation from 30-80°E along the Antarctic coastline

A. Klocker (1,2,3), A. Meijers (1,2,3), N. Bindoff (1,2,3), G. Williams (1), S. Marsland (1), S. Aoki (4), Y. Iijima (5)

(1) Antarctic Climate & Ecosystems CRC, (2) CSIRO Marine and Atmospheric Research, (3) University of Tasmania, (4) Institute for Low Temperature Science, (5) Graduate School of Environmental Science

The Baseline Research Oceanography Krill and Environment (BROKE-West) survey was conducted over January 10th-February 25th of 2006, covering the CCAMLR Area 58.4.2. The oceanographic survey consisted of 6 meridional Conductivity Temperature Depth (CTD) transects from 62°S to the Antarctic coastal shelf, with a zonal CTD transect across the northern limit of the survey region at 62°S. Most of the 119 full depth CTD stations occupied in the survey domain also include ship mounted Acoustic Doppler Current Profiler (ADCP) and a lowered ADCP, thus obtaining full column velocity profiles across the region. We examine the properties of the upper and lower Circumpolar Deep Water (CDW) and Antarctic Bottom Water (AABW) water masses and discuss their spatial variability. Temperature, salinity, O2 and velocity profiles along sections are used to differentiate water masses, determine frontal locations and track water mass changes across the domain. We establish circulation regimes relating to the presence within the survey region of the strong Antarctic Slope Front Current (SFC), the eastern limb of the Weddell Gyre, and the intrusion from the north of the southern limb of the ACC. Initial results indicate the presence of westward flowing AABW undercutting the eastward flowing ACC. The mass transport of the region is estimated using geostrophic currents from CTD data with bottom referenced velocities from the LADCP.