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On evidence of the bottom water formation in the Prydz Bay

A. Klepikov and N. Antipov

Arctic and Antarctic Research Institute, St. Petersburg, Russia (klep@aari.nw.ru / Fax: +7 812-3522688)

Main objective of the oceanographic studies during last Russian Antarctic Expeditions was to investigate the structure of the Antarctic Slope Front and water masses in the Prydz Bay. 170 CTD stations were made from r/v «Akademik Fedorov» in the period 1997 - 2006. During the last three years the processes at the continental slope were investigated in the region to the west of Prydz Bay. CTD soundings were made with the spatial resolution of $\sim$ 3 miles at the meridional sections. All sections begin on the shelf near the shelf break, cross the continental slope and reach the deep ocean area. Data show Ice Shelf Water (ISW) with temperature below see surface freezing temperature ($\sim$ –1.9° C) occupied 100 – 700 m thick bottom layer near the Amery Ice Shelf front. This water goes to the north along western border of Amery Depression and then flows down the continental slope in the region to the west of Prydz Channel ($\sim$ 72° E). Descent of dense water masses along continental slope was not found in the region to the east of 72° E. Data demonstrate that Low Salinity Shelf Water is typical for the Prydz Bay. However, High Salinity Shelf Water (HSSW) which is important for bottom water formation was found at section 66° E in January 2005. The origin of this HSSW is not determined. Descending water in the region to the west of Prydz Channel results in deep water ventilation and bottom water formation. Prydz Bay Bottom Water (PBBW) with the potential temperature –0.65° C, salinity 34.61‰, oxygen 6 ml/l, silicate 108 mM/l, phosphate 2.26 mM/l is found in the region between 64° and 72° E at the depth 1300 – 2000 m. The thickness of PBBW layer over the continental slope is 50 – 200 m. Antarctic bottom water found here at the deeper layers with typical potential temperature –0.2° C, salinity 34.66‰, oxygen 5.5 ml/l, silicate 128 mM/l, phosphate 2.36 mM/l is considered as Weddell Sea Bottom Water.