Geophysical Research Abstracts
Vol. 15, EGU2013-10171, 2013
EGU General Assembly 2013

Features of the hydrological and hydrochemical structure of the Antarctic shelf and slope waters

Ksenia Artamonova and Vyacheslav Maslennikov
Russian Federation (ksusha-b@mail.ru)

The region «Antarctic shelf – continental slope» plays an important role in the water's and ice's regimes formation not only of the Southern, but also the World ocean. The coldest and densest water mass of the World ocean (AABW) is formed here and exercises a significant influence on the World ocean global structure and circulation. However this process is observed not in all areas of the Antarctic continental slope, therefore the water structure data of this region, including hydrological and hydrochemical parameters is important for understanding of the Southern ocean regime and its influence on the climate.
The main objective of present work is to consider the hydrological and hydrochemical structure of waters above the shelf and the slope in the different parts of Antarctic by results of four surveys data led in summer season (January-February) 2006, 2008, 2010 and 2012 on RV "Academic Fedorov". The difficult processes above the Antarctic slope, the most dynamically active part of the ocean, is not still studied very much. These surveys were enough rarely in the World Practice. Distribution of the hydrological parameters and hydrochemical elements (dissolved oxygen, silicate, phosphates, nitrates) in the water masses of the Commonwealth and Amundsen seas, and the West Antarctic Peninsula coast was analyzed. Significant differences in the structures of the shelf and slope waters of the East Antarctic (Commonwealth sea) and the West Antarctic (Amundsen sea and Antarctic peninsula area) were observed. It was shown that the local cold, salt and dense water mass formed in the shelf area of the Commonwealth sea which then moved down along the slope and reached the bottom. This local shelf water mass was defined by higher content of dissolved oxygen and lower contents of biogenic elements in the bottom layer along the slope compared with the Circumpolar Deep Water (CDW) characteristics. Distribution of the hydrological and hydrochemical characteristics in the Amundsen sea showed that in the shelf area the CDW was occupied all deep layer till bottom and the local shelf water mass formation was not possible here.