Study of inter-ocean exchange in the polar area of the Southern Ocean.

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The main tasks of the project.
1) to quantify interocean transport of the Antarctic Circumpolar (ACC) and Agulhas Current;
2) study of Antarctic Intermediate Water (AAIW) formation;
3) monitoring of the Agulhas eddies;
4) interocean circulation modeling;
5) atmosphere-ocean energy flux measurements;
6) CO₂ measurements to elucidate a green gas effect in the Southern Ocean;
7) launching PROVOR floats to study Southern Ocean circulation, this floats is going to be the first Russian contribution to ARGO project;
8) measurement of chlorophyll concentration in the upper layer for verification of the satellite data;
9) estimation of biological productivity in the Southern Ocean;

Background. Variability of the ACC transport and related transport of the Agulhas Current is thought to define the rate of intermediate and bottom water formation and climate variability at a wide temporal range.

The results expected.
1) ACC volume heat and salt transport calculation;
2) estimation of Agulhas eddy transport to the Atlantic ocean;
3) verification and improvement of the global ocean models using our results;
4) CO₂ budget estimation in the Southern Ocean;
5) study of the biological productivity in the Southern Ocean;

The approaches and methods proposed to fulfill the tasks - WOCE-CLIVAR SR1 and SR2 sections on board of the R/V «Akademik Ioffe» and «Akademik Sergey Vavilov» during October-December (March-April) 2004-2007 ; analysis of historical data and modeling.