



## **Structure and variability of the intermediate and deep waters in the Romanche Fracture Zone and the Vema Channel**

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The research was carried out in two key regions, which determine the spreading of the Antarctic Bottom Water (AABW): the Romanche Fracture Zone (RFZ) connecting the deep western and eastern basins of the Atlantic Ocean and the Vema Channel between the Brazil and Argentine basins. Structure and variability of the water flow in the RFZ were being investigated on the basis of historical data (starting in 1901), French "Romanche" projects (1991-1992) and recent R/V "Akademik Ioffe" cruise within the framework of the Russian "Meridian-Plus" project (October 2005). Previous data (1990s) and the repeated measurements of 2002-2005 that have been completed onboard the R/V "Akademik Vavilov" and "Akademik Ioffe" were used for the analysis in the Vema Channel. The transport of the AABW through the RFZ and further to the north was limited by the Kane Gap and this water remained in the Sierra Leone and Guinea basins, the latter confirmed the concept of McCartney et al. (1992). Temperature and salinity increased in the AABW core by 0.034 C and 0.001-0.002 psu from 1991 to 2005. Warming of the North Atlantic Deep Water (NADW) by 0.01 C and salinity increase by 0.004 psu in the core of NADW were observed in its salinity maximum. In 2005, the core of the Antarctic Intermediate Water was less determinable than in the previous years. The flow in the Vema Channel was vertically homogenous but horizontally stratified. The densest and coldest core of the flow was usually displaced to the eastern slope of the Channel. The most intensive transport was observed in 2002. The temperature of the current increased northward. Slight cooling of the AABW core was observed in 2004, while in 2005 the temperature increased and reached the level recorded in 2002.