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Temporal variability of the bottom waters properties in the Vema Channel

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In 2002-2006 monitoring of the strongest flow of Antarctic Bottom water (AABW) through the deep water Vema Channel connecting the Argentine and Brazil basins was carried out six times within the Russian project "Meridian Plus". AABW propagates further to the North Atlantic and in particular to the Subpolar Atlantic. Variations in the properties of AABW influence the properties of deep waters in the North Atlantic. It was found out that the propagation of the lower part of AABW in the Vema Channel occurs in the form of strongly mixed jet (or several jets). One core of the jet is displaced to the eastern part of the channel due to Ekman friction, which agrees with the theory. Usually, the jet is mixed by vertical in the lower 100-150 m. Each year of observations demonstrates that the structure of the jet changes. In different years of observations, the propagation of AABW was observed in the form several jets (1991, 2002, 2006), or the jet was displaced to the maximal depth in the middle of the channel (March 2005). Beginning from the 1970s, a gradual increase in the potential water temperature was observed in the Vema Channel. It was found that the tendency to increasing temperature is absolutely not related to water sampling in different parts of the channel. A slight cooling and freshening of the core of the jet is observed according to the data of the Russian sections in November 2004, March 2005, and November 2006. In October 2005 temperature in the jet increased and reached the level of 2002.