



## **Variability of the Atlantic Water properties and heat content in the West Spitsbergen Current during summers 2000 - 2005**

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Data from synoptic observations of the Atlantic Water (AW) domain conducted in summers 2000 - 2005 were used to describe the AW column structure in the region between northern Norway and the Fram Strait. CTD, vessel mounted ADCP and lowered ADCP data were collected during cruises of Institute of Oceanology Polish Academy of Sciences vessel R. V. "Oceania" in the Barents, Norwegian and Greenland Seas. Significant year-to-year differences in the AW properties, heat content and transport pathway has been observed. Changes of the thermohaline structure caused considerable variability of baroclinic currents pattern and heat transport. In some years prevailing AW westward recirculation was observed, other characterize high northward volume and heat transport through the Fram Strait. Both, salinity and temperature fields show systematic increasing of AW inflow. Also thickness of AW increases, but this parameter depends mostly on mesoscale activity, because anomalies move northward as large (up to 300 km diameter) anticyclonic eddies. During summers with positive temperature anomaly in Fram Strait region, the ice extend was shifted northward, in cold summers, ice margin was moved southward. In 2004 and 2005, significant warming, increasing of thickness and heat content of the AW layer were observed. Year 2004 was considered as very warm. In summer 2005, AW downstream of Fram Strait was even warmer, heat content larger, baroclinic currents much faster. Large warm core eddies were transported unusual big amount of heat northward. Mean velocity of salinity anomaly signal propagation was higher than 3,5 cm/s. Our data show, that observed high temperature anomaly should already pass Fram Strait and in 2006 increasing heat transport into the Arctic Ocean will take place.