TEMPERATURE AND SALINITY VARIATIONS OF CANARY BASIN WATERS OVER THE LAST NINE YEARS

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The evaluation of long-term changes in the world ocean is an important question to understand the present state of climate and diagnose its course. Variations in the atmospheric forcings in the regions of water mass formation would cause signatures in temperature and salinity fields which could be detected along their pathways. Observations in the North Atlantic Ocean from transoceanic sections to smaller scales support an evident variability of the water column. The purpose of this work is to present and analize the changes in temperture and salinity ocurred in the eastern boundary of the subtropical North Atlantic gyre by comparing two hydrographic sections carried out at 29º 10'N in 1997 and 2006. The largest statistically significant warming and salinification on isobars have ocurred between 1500 and 2500 db, with maximum rates 0.29 ºC and 0.047 psu per decade, respectively. Following the analysis of Bindoff and McDougall (1994), isobaric changes are descomposed into a component due to the vertical displacement of the isopycnal surfaces and a component due to variations of temperature and salinity along isopycnals, both associated with different processses. Examination of water mass properties on isopycnals shows a remarkable increase in temperature and salinity in the near-surface from 100 to 240 db. Below (from 240 to 660 db), the changes in NACW are toward a cooler and fresher θ/S relationship by over 0.23 ºC and 0.065 psu. Inverse methods have been applied for interpreting the observed changes. Near-surface waters are characterized by pure warming process although pure heave plays also a significant role. However, the core of NACW can mostly be explained by a surface freshening in the source region. Isobaric change at 1500-2500 db is mainly due to downward displacement of the isopycnals.

N. Bindoff and T.J. McDougall, 1994: Diagnosing Climate Change and Ocean Ventilation Using Hydrographic Data. *J. Phys. Oceanogr.*, 24, 1137-1152.