



Salinity increase and warming in the southern Adriatic between 2002-2006 as evidenced from a deep-sea mooring site

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The southern Adriatic Sea is considered a major site of deep water formation and the origin of the semi-closed thermohaline cell in the Eastern Mediterranean. The dynamics of the area is dominated by the presence of a quasi-permanent cyclonic gyre that intensifies in the winter season creating the conditions for the production of dense and oxygenated waters. Continuous measurements are essential to assess the interannual variability of the thermohaline circulation, water masses properties, transports and biochemical contents. Within the framework of different (EU and National) projects a site is maintained in the centre of the Southern Adriatic Pit monitoring continuously physical and geochemical parameters at different levels.

Two periods concerning the pre-convection to the post-convection phases are studied for the years 2002-2003 and 2006-2007 considering data coming from CTD's positioned at 5 different levels (348m, 540m, 742m, 998m, 1101m). The comparison of these two time series shows that upper layer is influenced by a marked increase in temperature and in minor degree in salinity. A clear "jump" in density between the first and the second study period is found, due to the increase in salinity in the intermediate/deep. This change of thermohaline properties of the water column indicates the inflow of different water mass in the 400-800m layer. Contrary to what is seen

in the upper layer, the major change in salinity is found in the deep layers (below 1000m), where difference in salinity reach about 0.1 with no increase in temperature. This prominent salinity increase of $\sim 0.035/\text{year}$ over the 2003-2006/07 period bring a significant density increase. Nevertheless, this trend cannot be extrapolated to a decade, but indicates changes in Adriatic and Eastern Mediterranean circulation during this period of study. A similar situation was observed in the western Mediterranean Sea where an increase in salinity of $\sim 0.05/\text{year}$ over the Jan 2003-Oct 2005 (Schroder et al., 2006, Salat et al., 2006, Lopez-Jurado et al., 2005, Millot et al. 2006).