



Interannual variability of mass transport in the Canary region from LADCP data

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The variability of the Canary Current is a widely studied topic regarding its role as eastern boundary of the North Atlantic Subtropical Gyre. The Canary region provides indeed an interesting study area in terms of estimating variability scales of the Subtropical Gyre as well as the water masses dynamics. RAPROCAN (RADial PROfunda de CANarias – Canary deep hydrographic section) is a project based on the reaching of these goals through the obtaining of hydrographic measures during cruises taking place approximately along 29°N, to the North of the Canary Archipelago, twice a year since 2006. The full depth sampling carried out allows the study of temperature and salinity distribution and the calculation of mass transports across the section. The transport estimates are compared to those obtained from previous measurements and estimates in the region. Therefore, transports and their variability through the last decade are quantified. The most significant advance made to previous works is the use of LADCP (Lowered Acoustic Doppler Current Profiler) data informing the initial geostrophic calculations. Thus, corrections are applied to each geostrophic profile considering the reference velocity obtained from LADCP data. ADCP-referenced transport estimates are obtained, providing a successful comparison between the velocity fields obtained from the hydrographic measures. While this work shows the interannual variability observed in winter since 1997, preliminary results confirm previous hypotheses about the magnitude of the Canary Current. Those results including LADCP data also provide new aspects in the circulation distribution across the Canary Archipelago. Also moored current meter data were taken into account in the up close study of the Current through the Lanzarote Passage. Interesting conclusions were drawn that certify the usefulness of LADCP data in referencing geostrophic calculations, while corroborating the results obtained through this methodology. Hence, this work permits the quantification of mass fluxes across the section as well as the study of the water masses located in the Canary Basin and the further analysis of the Subtropical Gyre variability with regards to its significance in the circulation and dynamics concerning the North Atlantic Ocean.