

ARGO FLOATS REVEAL LONG ROSSBY WAVES IN THE TROPICAL ATLANTIC

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Argo float data (float trajectories and temperature profiles) collected near 1000 m depth in the tropical Atlantic Ocean from 1 Nov. 2003 to 31 Aug. 2005 are analyzed using the Optimal Spectral Decomposition (OSD). Temporal varying velocity and temperature at mid-depth show propagation of long baroclinic Rossby waves and indicate systematical deformations of the Subtropical Gyre due to the long Rossby waves induced by wind and Kelvin waves in eastern part of the North Atlantic.

We used the reconstructed currents with the spatial resolution equaled to 2° to identify wave-like perturbations observed in the currents and temperature, to specify them as baroclinic Rossby waves with lengths longer than 500 km, to estimate wave propagation features, and to understand how Rossby waves affect Subtropical Gyre and water pathways in the North Atlantic. Explicit observation evidences of a wave teleconnection between the tropical variability and mid-latitude currents and temperature are presented.