



More on the vertical heat flux in the central Gulf of Mexico.

A. Badan, D. Rivas, J. Ochoa, J. Sheinbaum and J. Candela.

Oceanografía Física, CICESE, Apdo. Postal 2732, Ensenada, México (abadan@cicese.mx /ph.: +52 646 1

Observational results of the connecting flows between the Caribbean Sea and the Gulf of Mexico show that the deep waters in the Gulf of Mexico beneath the 700 m depth of the Florida sill can be divided into two layers. The very deep layer below 1300 m exchanges no net amount of water, but loses heat (~ 212 GW) to the Caribbean Sea. A second, intermediate, layer from about 700 m to 1300 m depth gains heat (~ 3080 GW) from the Caribbean, also without net mass gain or loss. The balance requires the excess heat gained into the intermediate layer to be pumped into the upper layers of the Gulf (above 700 m) by means of a countergradient eddy heat flux. Independent moored measurements in the central Gulf of Mexico suggest that such an upward eddy diffusion does indeed occur at intermediate levels, and may be driven by interactions of the Loop Current eddies prevalent in the upper layer.