



The response of the Yucatan Current to the passage of Hurricane Wilma.

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At the end of October 2005 the Mexican Caribbean region suffered the passage of Hurricane Wilma with devastating effects for the northeastern part of the Yucatan Peninsula. Wilma is the most intensive Atlantic basin hurricane on record reporting a historical central pressure low of 882 mb at the time of peak intensity. In its trajectory through the region Wilma interacted with the Yucatan Current, one of the most intensive boundary currents in the World at these latitudes. The presence of an array of nine current meter moorings and three pressure subsurface sensors distributed along the Mexican Caribbean coast, along with simultaneous altimetry and meteorological information for the region lends a unique ensemble of observations to analyze the response of the Yucatan Current to the passage of Wilma. On the 22nd of October when Wilma was passing over the Island of Cozumel, the current along the Cozumel Channel reversed for about 15 hours to depths of more than 100m and, 50 km away from shore, quasi-diurnal oscillations were excited at depths of 1000m lasting for 8 days after the passage. Oscillations of the flow, both at the surface and close to the bottom, are also observed around Banco Chinchorro 200 km southwest of Cozumel Island. Ten days after the passage and lasting more than 40 days, an intense southerly surface to bottom flow is established in Chinchorro. This latter circulation pattern is found to be related to the presence of a cyclonic meso-scale eddy around Chinchorro which intensified by direct vorticity transfer from Wilma to the Ocean.