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Cyclonic Eddies in the Eastern Gulf of Mexico

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ABSTRACT

Cold-domed cyclonic eddies juxtaposed to the cyclonic shear side of the Gulf Loop Current are observed in simultaneously obtained hydrographic, current meter mooring, and satellite infrared data. The cyclones are initially observed in the satellite data as cold perturbations on the northern extreme of the current and grow either into a cold tongue or a quasi-stable meander off the Dry Tortugas Florida. Areal shipboard surveys show closed isopleths of temperature and salinity, and surface geostrophic current speeds relative to 1000 db are in excess of 100 cm s^{-1} . The diameter of the cold domes varied from 80 to 120 km. Separation of large anticyclonic rings is always observed to be preceded by cyclonic eddies in the transition zone between Campeche Bank and the West Florida Shelf, but only on the eastern side. Not every cyclonic eddy off Dry Tortugas is associated with the separation of an anticyclonic ring; some are eroded away by the Florida Current, but they have never been observed in 10 years of satellite data to advect eastward through the Straits of Florida.

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