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Summertime Coastal Currents in the Northeastern Gulf of Mexico

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ABSTRACT

Observations of currents and temperature at a mooring on the 18 m isobath, 30 km south of the Florida shoreline, are discussed for the 31-day period 15 August–15 September 1978. Tidal currents, having average amplitudes of ~ 10 cm s^{-1} , account for 85% of the observed kinetic energy. Low-frequency currents with maximum speeds of ~ 10 cm s^{-1} appear to be at least partly driven by local wind-stress events of magnitude ~ 0.2 dyn cm^{-2} . Frictional effects give rise to a veering with depth (in the Ekman sense) of both the low-frequency flow and the energetic, counterclockwise-rotating twice-daily tidal currents. Propagation of both the tidal signal and low-frequency coastal sea-level fluctuations (amplitudes < 5 cm) is westward through the study area.

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