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Mesoscale Current Fields Observed with a Shipboard Profiling Acoustic Current Meter

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ABSTRACT

Measurements of the near-surface currents obtained with a shipboard profiling acoustic current meter during the POLYMODE Local Dynamics Experiment are discussed. The large-scale spatial structure of the directly measured currents is very similar to that obtained from simultaneous hydrographic observations assuming geostrophic dynamics. The vertical shear of geostrophic currents is half that observed directly, and the two are poorly correlated. Vertical shear is dominated by currents having spatial scales shorter than about 180 km and having no geostrophic signature. Although the shear of the ageostrophic component is clearly evident, estimation of the ageostrophic current is hampered by large experimental uncertainties.

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