

Systematic Differences Between Eulerian and Surface Drifter Statistics in the Gulf of Mexico

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Lagrangian instruments are frequently deployed throughout the global ocean to estimate regional oceanic statistics. Previous work paired with observations suggests that drifters tend to collect in convergent regions. This prevents drifters from sampling the entire velocity field, and may lead to biased statistics. Modeling work has confirmed that structure functions calculated with synthetic surface drifters are systematically different from Eulerian counterparts at scale separations below 10km in the Gulf of Mexico.

In this study, we use a series of surface drifter launches as well as X-Band radar in a comparable location to the modeling study to test for the presence of these biases in observations. We compare structure functions from coincident Lagrangian (drifter) and Eulerian (radar) data, and investigate whether differences are related to the local divergence and vorticity.