Lagrangian statistics in two-dimensional turbulence MICHAEL RIVERA, ROBERT ECKE, Los Alamos National Laboratory — Using data obtained from a stably stratified shallow layer of fluid, we generate Lagrangian trajectories from which a number of statistical quantities can be calculated. Of particular interest are the Lagrangian structure functions of the velocity difference and the acceleration statistics. We find Kolmogorov like scaling in the Lagrangian structure functions (when plotted using ESS) in the direct enstrophy cascade range, and deviations from Kolmogorov in the inverse energy cascade range. This is somewhat surprising because there is a marked lack of intermittency in the inverse energy range. Intermittency is associated with deviations from Kolmogorov scaling in three-dimensional experiments.

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