1032-76-27 **Robert E Ecke*** (ecke@lanl.gov), Center for Nonlinear Studies, MS-B258, Los Alamos National Laboratory, Los Alamos, NM 87545, and **Michael K Rivera** (mkrivera@lanl.gov), MPA-10, MS K764, Los Alamos National Laboratory, Los Alamos, NM 87545. *Lagrangian measurements of Quasi-Two-Dimensional Turbulence.*

We present experimental measurements of a quasi-two-dimensional system consisting of a thin layer of salt water that floats on an immiscible buffer layer of electrolyte fluid. A regular array of magnets underneath the fluid combined with an applied electric current allows the fluid to be driven at a fairly precise injection scale. The forcing yields ranges of turbulent transfer where energy flows to spatial scales larger than the injection scale and enstrophy (mean-square vorticity) is transferred to smaller scales. Although the range of scales is not sufficiently long to have inertial transfer that is unaffected by injection or dissipation, the mechanisms for energy transfer to large scales is consistent with numerical and theoretical predictions. Here we present Lagrangian measurements of single-point and two-point dispersion, energy and enstrophy spectra, structure functions of velocity and vorticity, and correlation functions of velocity and acceleration. (Received July 13, 2007)