Abstract Submitted
for the DFD05 Meeting of
The American Physical Society

**Aircraft Boundary-layer Measurements in the Gulf of Tehuantepec** CARL FRIEHE, DJAMAL KHELIF, University of California at Irvine, W.K. MELVILLE, Scripps Inst of Oceanography — Airborne flux, meteorological, and wave measurements were made from the NSF/NCAR EC130Q aircraft in the Gulf of Tehuantepec under strong boundary-layer gap winds up to 25 m/sec at 33 m height. Statistics of flux estimates were obtained from multiple 33-m tracks flown under reasonably stationary and homogeneous conditions. Flux divergence was obtained from stack patterns flown at various distances from shore. Tracks flown at 33 m between the stacks provided the pressure gradient and advection terms in the momentum balance. Near shore, flux divergence was important and approximately balanced by the pressure gradient and advective terms; off-shore (400 km), divergence was small and again approximately in balance with the other two terms. Data from dropsondes and the Scanning Aerosol Backscatter LIDAR (SABL) revealed that the internal boundary layer initially thins off-shore as the gap wind field spreads horizontally, and then thickens due to turbulent mixing and possible hydraulic effects. Supported by NSF Division of Ocean Sciences.

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Date submitted: 11 Aug 2005 Electronic form version 1.4