Abstract Submitted
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Critical Averaging Time for Atmospheric Boundary Layer Fluxes[1] H. HOLMES, M. METZGER, University of Utah — Calculation of heat and momentum fluxes in the Atmospheric Boundary Layer (ABL) requires separating the turbulent signal into mean and fluctuating components. Since the ABL is not statistically stationary, separation of these components depends on the inherent scales of motion in the flow. A new method is presented that utilizes energy spectra and cospectra analyses of raw velocity and temperature signals to select a critical averaging time, t_c, for calculating the unsteady mean components of those signals. The new method is applied to high quality sonic anemometry data acquired at the Surface Layer Turbulence and Environmental Science Test (SLTEST) Facility located in Utah's western desert. Results for the unstable boundary layer show a correlation between t_c and the characteristic time scale based on the ratio of mixed layer depth and convective velocity. Extension of the new method toward selection of a critical averaging time appropriate for the near-neutral boundary layer will also be discussed.

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