



Atmospheric Overturning Events Derived from T-Rex and Slow Ascent Rate Radiosondes

B Balsley and L Kantha

CIRES, University of Colorado, Boulder, CO, USA, balsley@cires.colorado.edu

We present preliminary results on atmospheric overturning events deduced from both T-REX and Slow Ascent-rate Meter-scale Sampling (SAMS) radiosondes. While most of the results were obtained using the fairly high resolution (~ 5 m) sondes launched during T-Rex, additional results are presented using the newly developed SAMS sondes that can achieve 1-2 m resolution but under slightly more restricted conditions. Overturning events are extracted from the sonde data by re-ordering the measured potential temperature profile to produce a monotonic statically stable profile. The vertical displacement needed to produce a stable profile for each event (Thorpe scale) ranges from a few hundred meters down to the minimum resolution of the measurements (the balloon rise rate divided by the sampling rate). Preliminary results suggest that, when the vertical resolution of the measurements is sufficiently small, overturning events are seen to be ubiquitous features throughout the atmosphere, from the surface up to at least the lower stratosphere.