

**Conventional and Isentropic Analysis of a Cold-Season Heavy
Rainfall Episode Associated with Elevated Convection**

Scott M. Rochette

Department of the Earth Sciences
State University of New York, College at Brockport
350 New Campus Drive
Brockport, NY 14420-2936

During the evening of 13 November 1993 thunderstorms developed over southeastern Missouri, over the cool air to the north of a quasi-stationary surface boundary. Storms continued into the early morning hours of the next day, resulting in up to 100 mm of rainfall over portions of the state. Analyses of conventional stability parameters reveal a very moist lower atmosphere (an obvious necessity for excessive precipitation) but a *stable* boundary layer, which strengthens the argument that the storms resulted from the release of elevated convective instability. Analyses on constant-pressure surfaces show strong low-level forcing, possibly coupled to an upper-level jet. Plan-view and cross-sectional isentropic analyses reveal strong low-level moisture transport and upward vertical motion over the region of interest, priming the large-scale environment for the development of heavy rainfall. These also illustrate the utility of the isentropic perspective for the assessment of convective development potential, given the appropriate cautionary knowledge that isentropic surfaces can be modified dramatically by convection.