RECENT OBSERVATIONS OF THUNDERSTORM ELECTRIFICATION ON THE HIGH PLAINS

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ABSTRACT

Coordinated observations from meteorological radars, lightning mapping systems, airborne and balloon-borne instruments, and a mobile meso-network of instrumented automobiles were obtained during the spring-summer of 2000 in the eastern Colorado/western Kansas High Plains during the Severe Thunderstorm Electrification and Precipitation Study (STEPS). Several severe storms, as well as many non-severe storms, were studied during the 8-week project. The focus of the project was to correlate electrical behavior with other storm characteristics, such as storm microphysics, updraft intensity, and size. Most thunderstorms produce predominantly cloud-to-ground lightning that lowers negative charge to ground, with only a small percentage of lightning events lowering positive charge. It has been observed that many severe storms in the study region produce anomalously high percentages of positive lightning. During our field study, we observed both severe and non-severe storms producing predominantly positive cloud-to-ground lightning, so it appears that predominant polarity may depend on other factors in addition to storm severity.