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Improving Warning Decision Support for Convective Storm Events in the Eastern United States

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PROGRESS REPORT
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Our research seeks to advance our understanding of convective storms in the eastern U.S. Warning skill is likely hampered in this region for a number of reasons. In the eastern U.S., storm environments are frequently only marginal for tornado formation or other forms of severe weather. Moreover, severe weather commonly is associated with quasilinear convective systems (QLCSs), and relatively little research attention has been devoted to predicting the most dangerous threat (e.g., tornadoes versus damaging straight-line winds) from the characteristics of the QLCS environment. Storms also commonly occur over complex terrain in the eastern U.S., and the effects of complex terrain on storms are poorly understood. Our research also is geared toward developing better uses of dual-polarization radar data from the WSR-88D network, specifically, for improving tornado warnings in nonsupercell storms.

The three principal objectives of our research are

- to assess warning skill and develop improved discriminators for tornadic versus non-tornadic supercells and QLCSs in the eastern U.S.;
- to improve our understanding of the effects of the complex eastern U.S. terrain on convective storms;
- to improve conceptual models for nonsupercell tornadogenesis using information from the dual-polarization WSR-88D radar network.

No new research was conducted during the past three months, and no graduate students, PIs, or travel were supported by the grant during this period either. PI Kumjian and his graduate student, Scott Loeffler, had a journal article in review at the *Journal of Weather and Forecasting* ("Quantifying the separation of enhanced ZDR and KDP regions in nonsupercell tornadic storms"), and the page charges for this paper were paid during the period that this report covers.