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### **MOBILE DOPPLER RADAR SYSTEMS FOR SEVERE WEATHER AND ATMOSPHERIC BOUNDARY LAYER STUDIES**

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**en salle Joël Noilhan**

#### Résumé :

Over the past several years, the University of Massachusetts has developed and operated mobile Doppler radars for severe weather research. One is a W-band (95 GHz) Doppler radar that is used for fine-scale observations of tornadic features. It features a very narrow (0.18 degree) beam width. The other is a dual-polarized X-band Doppler radar used for coarser scale observations and polarimetric measurements for scatterer identification and precipitation estimation.

In 2007 the latter radar system observed the EF5 tornado that devastated Greensburg, KS. While both systems were operated during the VORTEX2 field experiments held during the spring of 2009 and 2010. Selected tornadic observations are illustrated.

UMass is also presently developing a dual-polarized, X-band phased-array radar. One of the intended applications of this system is to investigate the simultaneous measurement of tangential winds (orthogonal to the radar beam) via Spaced-Antenna (SA) techniques. The ability to obtain tangential winds via SA in addition to the radial winds available via Doppler could simplify measurement of vector wind fields obtained currently via dual-Doppler techniques and could present some interest for model data assimilation. The measurement concept and preliminary results are outlined.

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