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**WEATHER MODIFICATION, INC.**  
 ATMOSPHERIC RESOURCES MANAGEMENT TECHNOLOGIES  
 FOR THE 21ST CENTURY

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**BAMEX**  
**BOW ECHO AND MESOSCALE CONVECTIVE VORTEX EXPERIMENT**

**Background**

WMI provided the Lear 35A as a dropsonde platform for the "Bow Echo and Mesoscale Convective Vortex Experiment" (BAMEX). The aircraft was based in the St. Louis area, at the Mid America Airport in Belleville, Illinois.

**Related Links**

- [BAMEX Homepage](#)
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The objective of this research program was to "provide high quality, time-resolved thermodynamic data within and near Mesoscale Convective Systems, to be used to improve the understanding of sustained severe wind events associated with deep moist convection." Meaning, they studied very large thunderstorm complexes so as to better understand the wind patterns around them, which can help the NWS better issue warnings about high-wind events. The Lear dropped sounding packages around the perimeter of the storms, from 40-45,000 ft altitude, that will relay GPS location, temperature, humidity, and wind data back to the scientists.

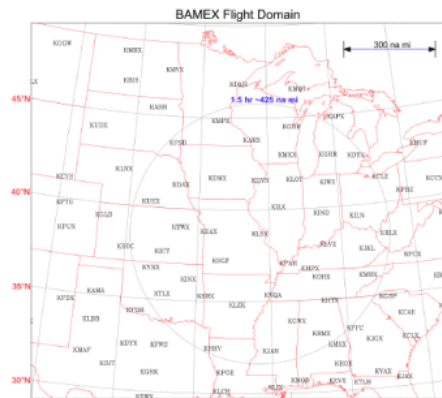
**Project Summary**

BAMEX investigated bow echoes, principally those which produce damaging surface winds and last at least 4 hours and larger convective systems which produce long lived mesoscale convective vortices (MCVs). The main objectives regarding bow echoes are to understand and improve prediction of the mesoscale and cell-scale processes that produce severe winds. For MCV producing systems the objectives are to understand MCV formation within MCSs, the role of MCVs in initiating and modulating convection, the feedback of convection onto MCV intensity, and to improve the overall predictability of the vortex-convection coupled system.

**Scientific Objectives of BAMEX:**

1. Improve predictability of bow echo disturbances, especially those producing severe weather (damaging winds / non-supercell tornadoes).
2. Improve predictability of secondary convection generated by mesoscale vortices.
3. Document and understand factors contributing to the development of horizontal circulations with long-lived convective systems.
4. Improve 6-24 hour Quantitative Precipitation Forecasts (QPF).

**Project Area**



**Project Information**

**Project Period:**  
 May 20 - July 6, 2003

- Project Equipment:**
- » WMI Lear35A equipped with dropsondes
  - » NRL P-3 equipped with dual Doppler radar capability
  - » NOAA P-3 equipped with dual Doppler radar capability
  - » 3 mobile ground-based atmospheric sounding facilities (GBOS)

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North Dakota  
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