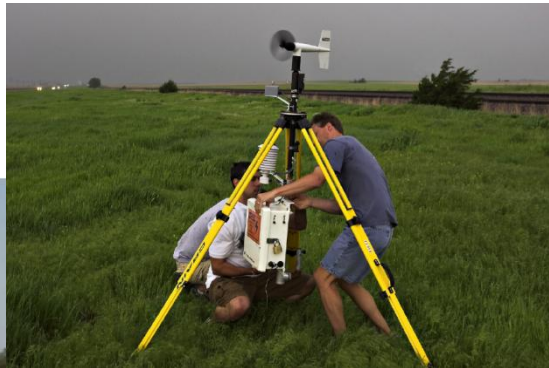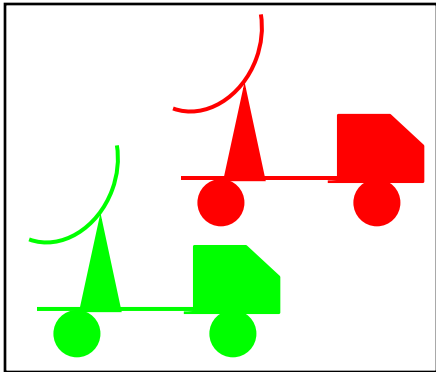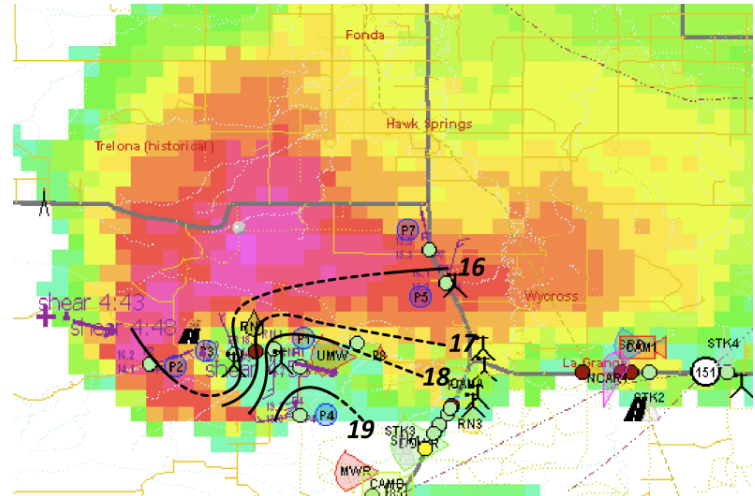# VORTEX2 Research Plans: Investigation of Storm-Scale Baroclinity Using Fine-Scale Observations and Numerical Models

Chris Weiss and David Dowell
VORTEX2 Workshop, 11 Nov 2009


2204 UTC (t-1 min)

Markowski and Richardson

Task 1: Select Priority Cases, Document Baroclinic Zones

Datasets required:

- StickNet and mobile mesonet

- Mobile multiple-Doppler radar
  - horizontal wind syntheses, lowest level only

Tools needed:

- Software for displaying graphical metadata

- Multiple-Doppler wind-synthesis software

- Software for overlaying obs and generating subjective analyses
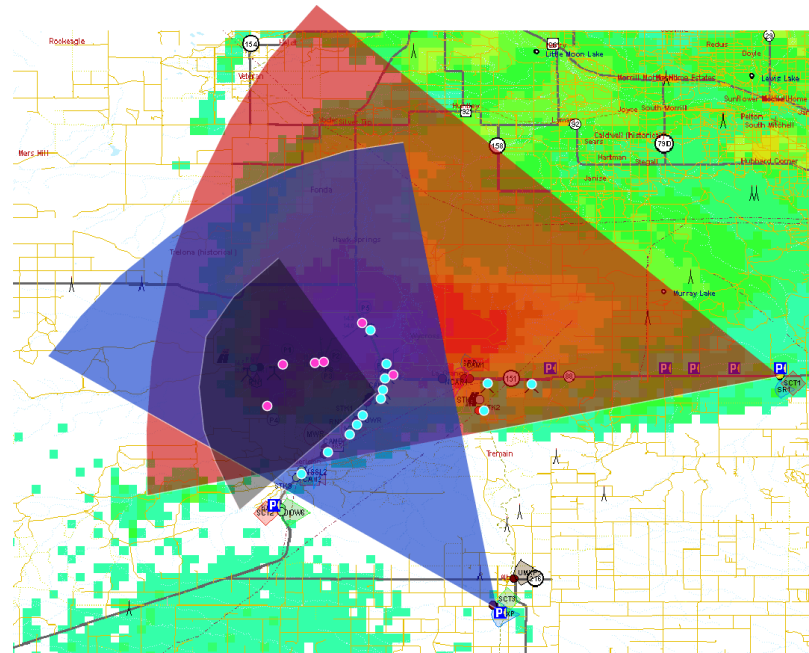
Task 2: Analyze Baroclinic Zones and Low-Level Trajectories in Detail

Topics:

- Nature and relevance of *left-flank* low-level baroclinic zones
- Assessment of cold-pool prediction in numerical models
- Interactions: storm and storm , storm and boundary

Datasets:
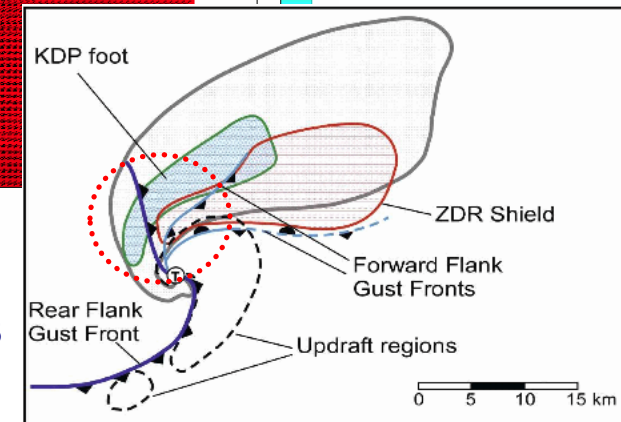
- StickNet
- Mobile mesonet
- Mobile multiple-Doppler radar
- WSR-88D
- MGAUS

Beck 2009

Romine et al. 2008

Techniques:

- Multiple-Doppler wind synthesis and temperature retrieval
- Ensemble-based data assimilation and forecasting
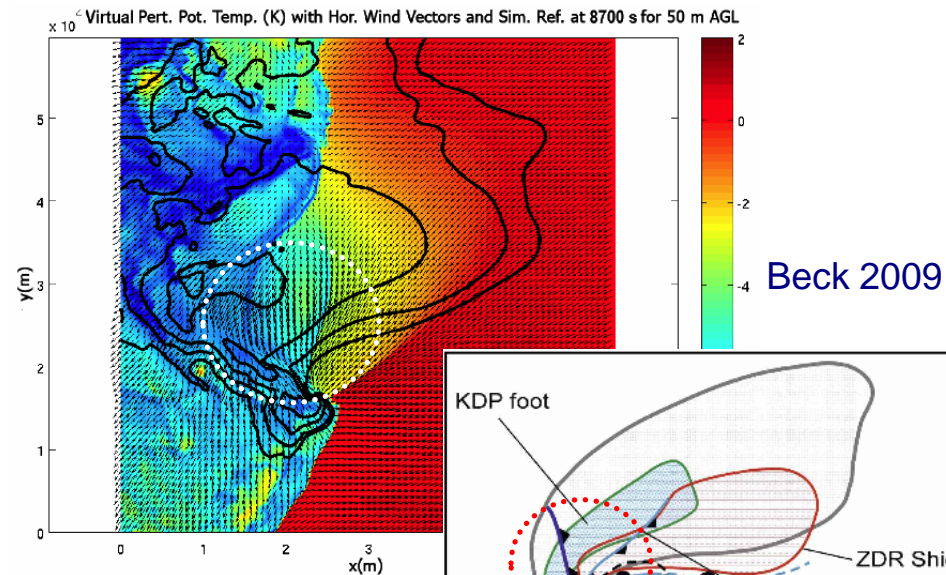
Preliminary Priority Cases

Date	Location	Number of Probes
15 May 2009	NW OK	24
19 May 2009	Lorenzo, NE	9
20 May 2009	Alliance, NE	3
23 May 2009	Paxton, NE	12
27 May 2009	Forestburg, TX	8
29 May 2009	Rose, NE	24
4 June 2009	Burns, WY Cheyenne, WY	3 11
5 June 2009	Lagrange, WY Dalton, NE	24 → TTUKa diagnosis of Lagrange][? 12
6 June 2009	Thedford, NE	9
7 June 2009	Oregon, MO	22
9 June 2009	Greensburg, KS	19
10 June 2009	Big Bow, KS	5
11 June 2009	La Junta, CO	22
13 June 2009	Panhandle, TX	14

Opportunities for Collaboration

Combined analysis of near-surface datasets:

- StickNet
- Mobile mesonet
- Mobile multiple-Doppler radar

Tool and technique development:

- Radar-data objective analysis
- Ensemble-based storm-scale data assimilation and forecasting
  - *Working group on this topic?*

Publications

- Overview of storm-scale surface baroclinity in VORTEX2 supercells