

# National Weather Service Des Moines

## Storm Storm Survey

### Bradgate and Rolfe Tornadoes of May 22, 2004

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#### Overview

May 21, 2004 was one of the most active tornado days in Iowa in recent years. In the National Weather Service (NWS), Des Moines, Iowa, County Warning Area (CWA), a total of 8 tornadoes likely occurred (attachment A). The most significant tornado occurred in northeast Pocahontas county near Rolfe (population around 700) and in northwest Humboldt county near Bradgate. The most significant damage was sustained in the town of Bradgate, population around 100, which took a direct hit from the tornado.

#### Survey

On May 22, 2004, the NWS conducted storm damage surveys of the Rolfe and Bradgate area. A ground survey team consisting of Jeff Johnson, Warning and Coordination Meteorologist, Brenda Brock, Meteorologist in Charge and Eric Lenning, Information Technologist for the NWS office in Saint Louis, MO. Chuck Myers, Senior Meteorologist, accompanied KCCI meteorologist John McLaughlin, on an aerial survey of the damage area.

The ground survey team focus was F Scale damage assessment and public relations. The Aerial team focused on the tornado tracks and an overall damage assessment. The NWS thanks KCCI and John McLaughlin for their support in conducting the areal survey.

#### Survey Result

**The aerial survey showed two different tornado tracks. For the record, the Rolfe tornado will be rated F1 and the Bradgate F2 on the Fujita Damage Scale.**

#### Bradgate Area

Tornado damage in Bradgate was very extensive impacting most of the town. Hardly a building was not impacted. Outbuildings, light structures and garages were heavily damaged or destroyed. Two homes were destroyed. Several homes were damaged ranging from minor to extensive. The Survey Team found that the majority of the damage was F1, with a few cases of F2 damage. The F2 damage was to the snapping of very large trees just west of town and the structural damage to two buildings.

## Damage pictures in Bradgate:



Aerial photo of Bradgate looking northeast



Garage, or lightly constructed structure, which suffered collapse (F1).



Looking southeast from the center of town. A garage destroyed in foreground and roof damage in the background. (F1).



Looking east from east side of town. Home with garage destroyed but main home with minor damage (F1).



Looking northeast on northeast side of town. Home with tree down on it (F0).



Looking south at home on the north side of town. Home destroyed with roof gone. Home was “twisted off” foundation resulting in failure (F2).



Looking south from southwest corner of town. Garage destroyed with tree damage. Minor damage to home (F1).

## Damage Pictures in Rolfe:



Aerial from the Rolfe vicinity looking northeast



Looking south from northeast corner of town. Home which suffered complete failure. Note lack of major damage next to home which resulted in F2 rating (F2).

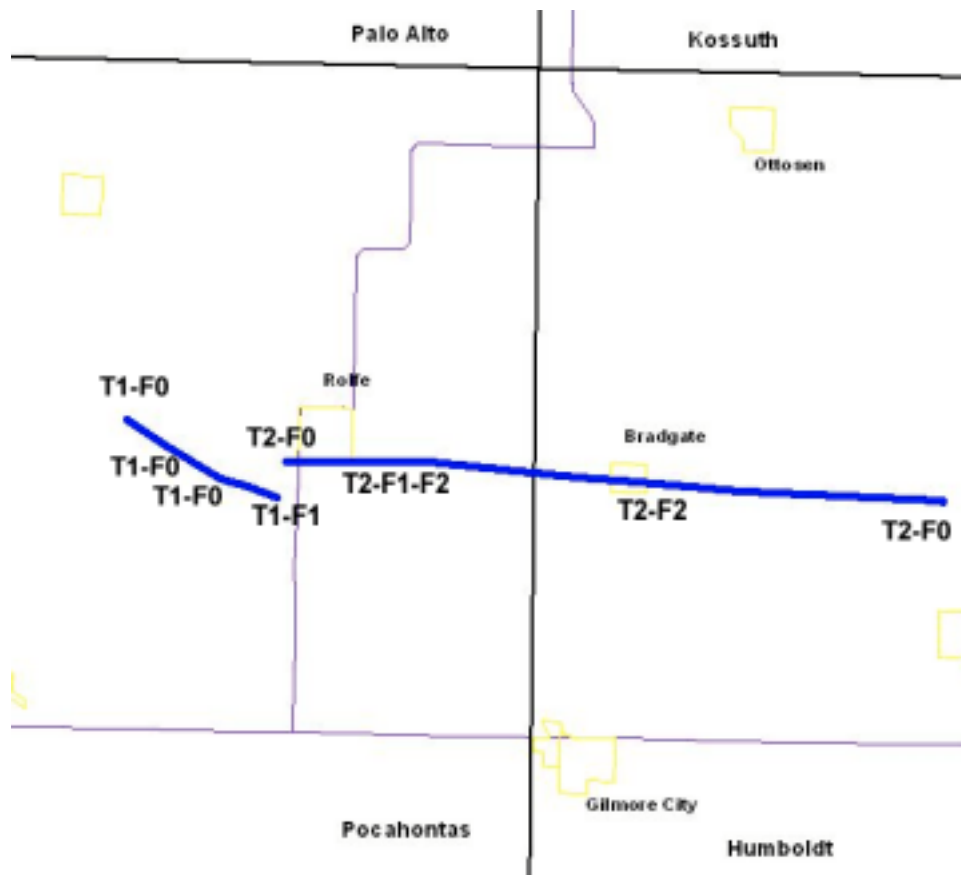


South of town looking south, just east of golf course. Large tree snapped. Tree had some soft tissue or rot (F1).

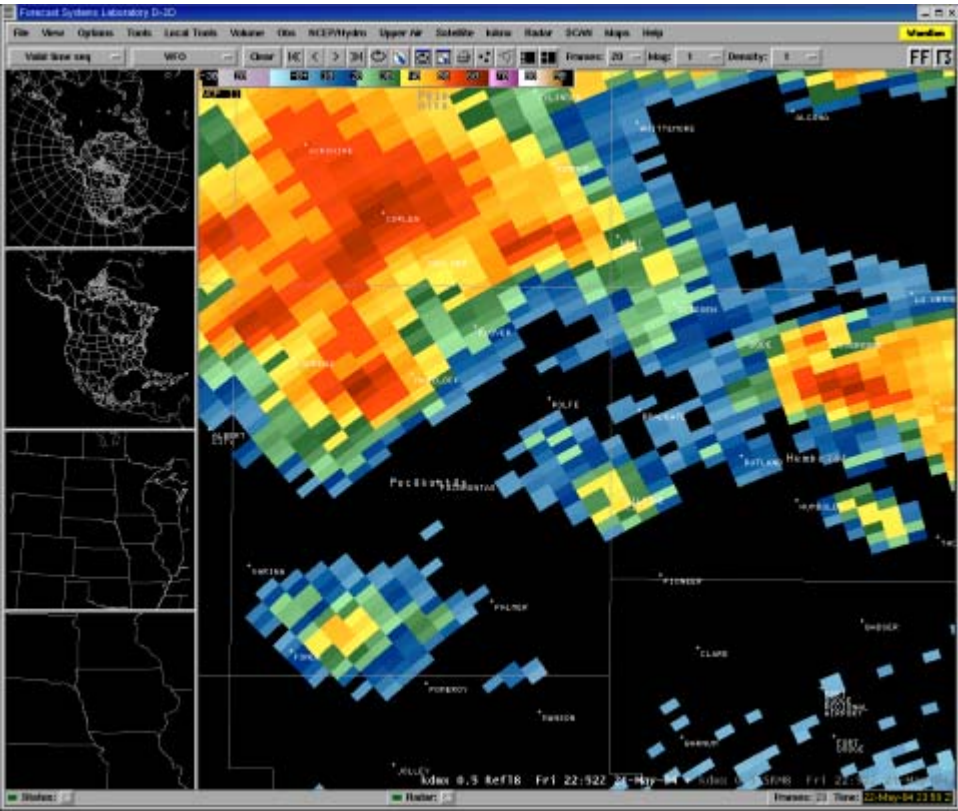
Damage to out buildings and garages noted. Most damage was rated F0 to F1.

Damage was found just west of Bradgate in heavily wooded area. Numerous trees were snapped and a couple of farms were hit with significant damage. The tree damage was F2.

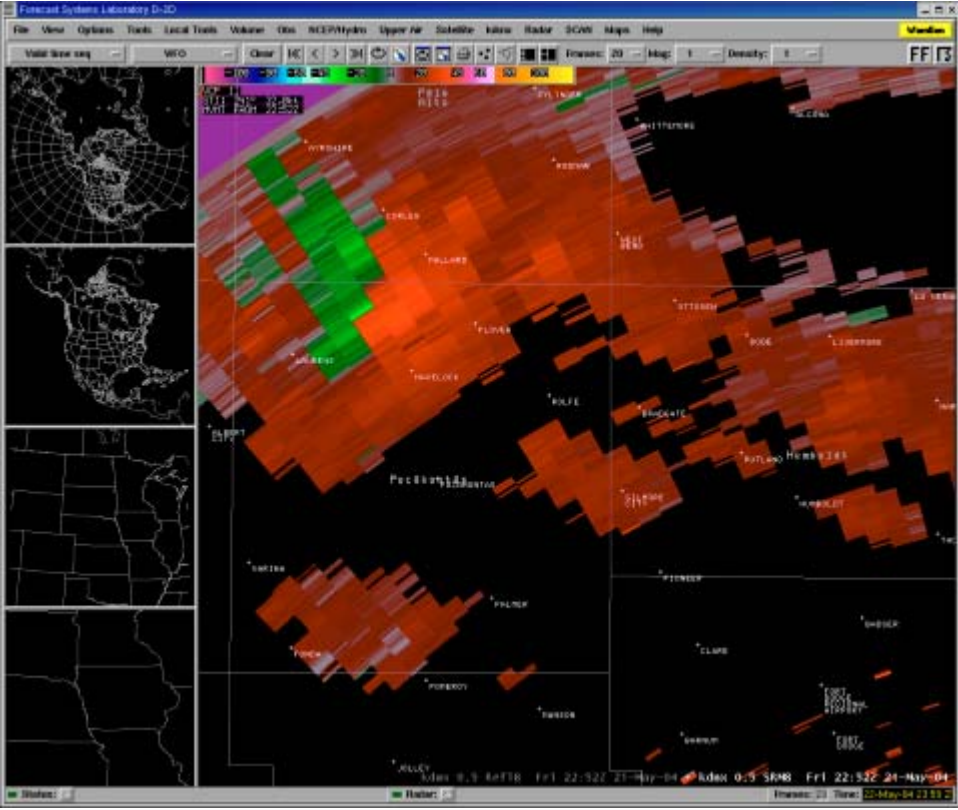
## Aerial Survey Results



# WSR-88D from KDMX: Base Reflectivity and Storm Relative Velocity

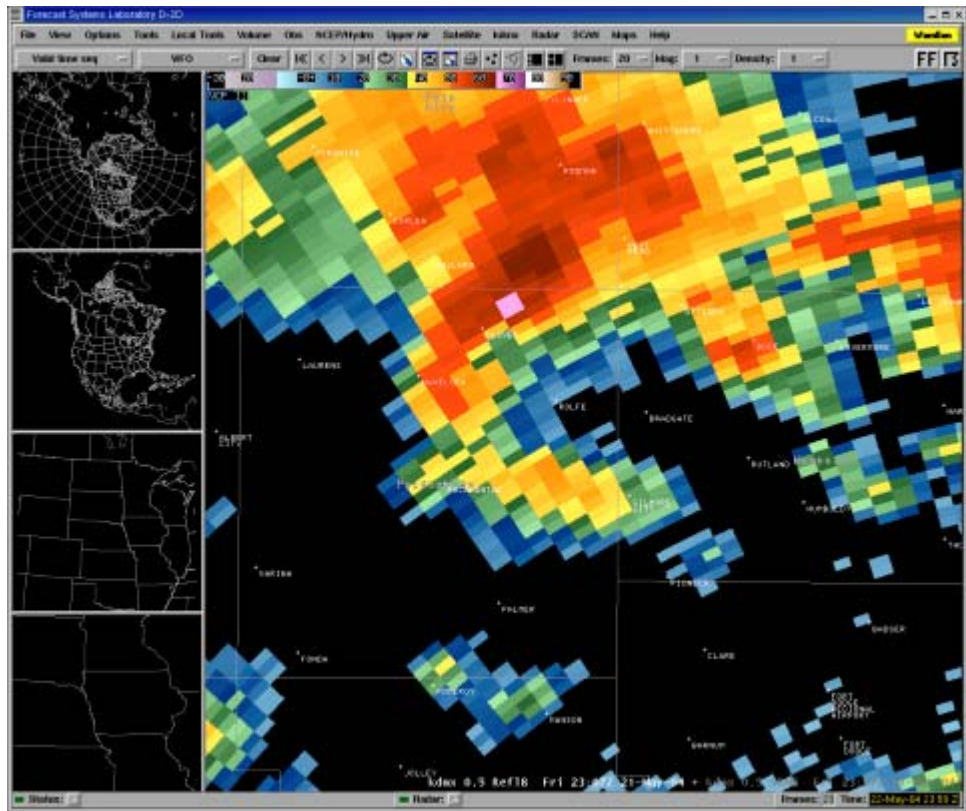


Base Reflectivity from 2252Z – around the time the Tornado Warning was issued for Pocahontas County.

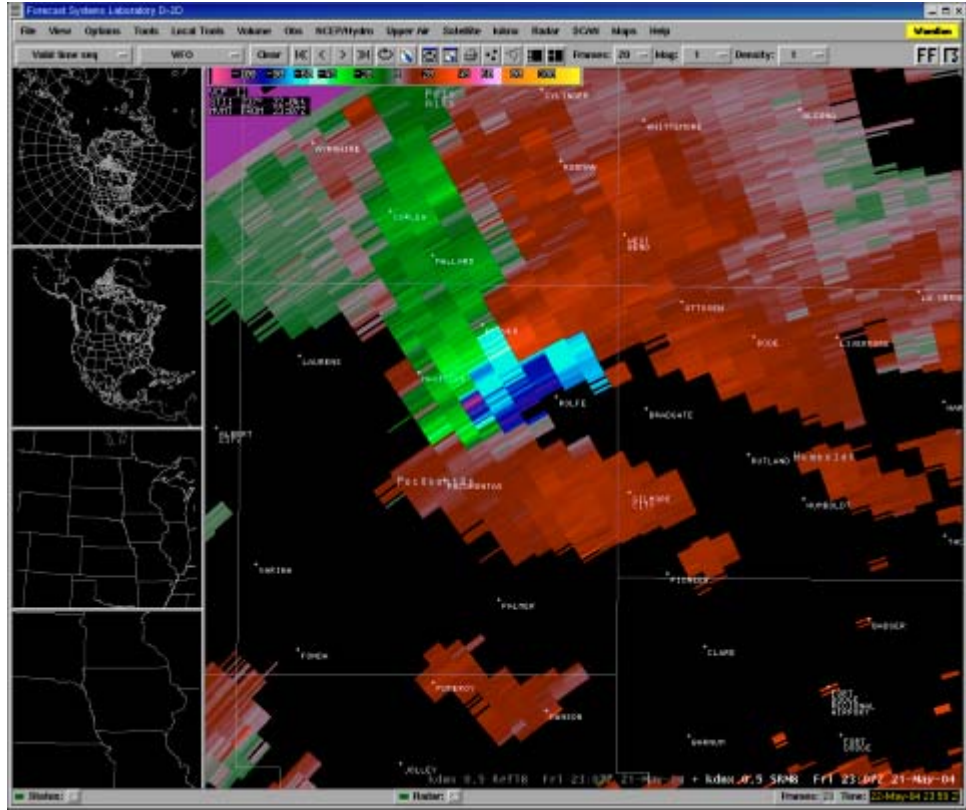


Storm Relative Velocity from 2252Z – around the time the Tornado Warning was issued for Pocahontas County.

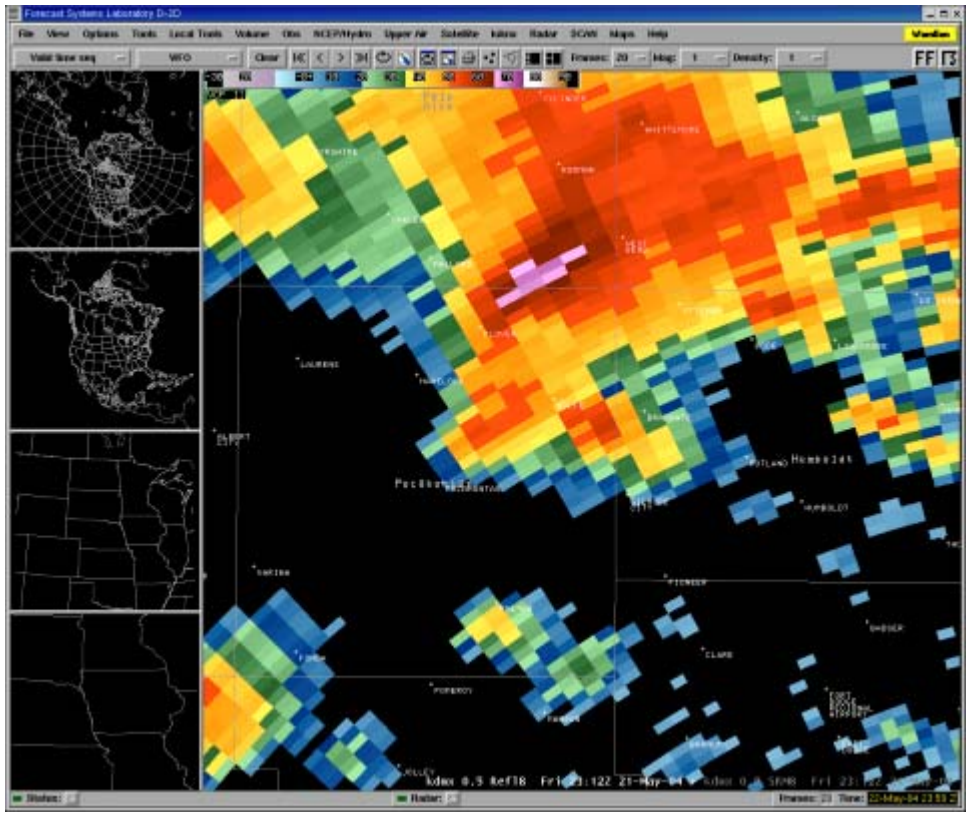




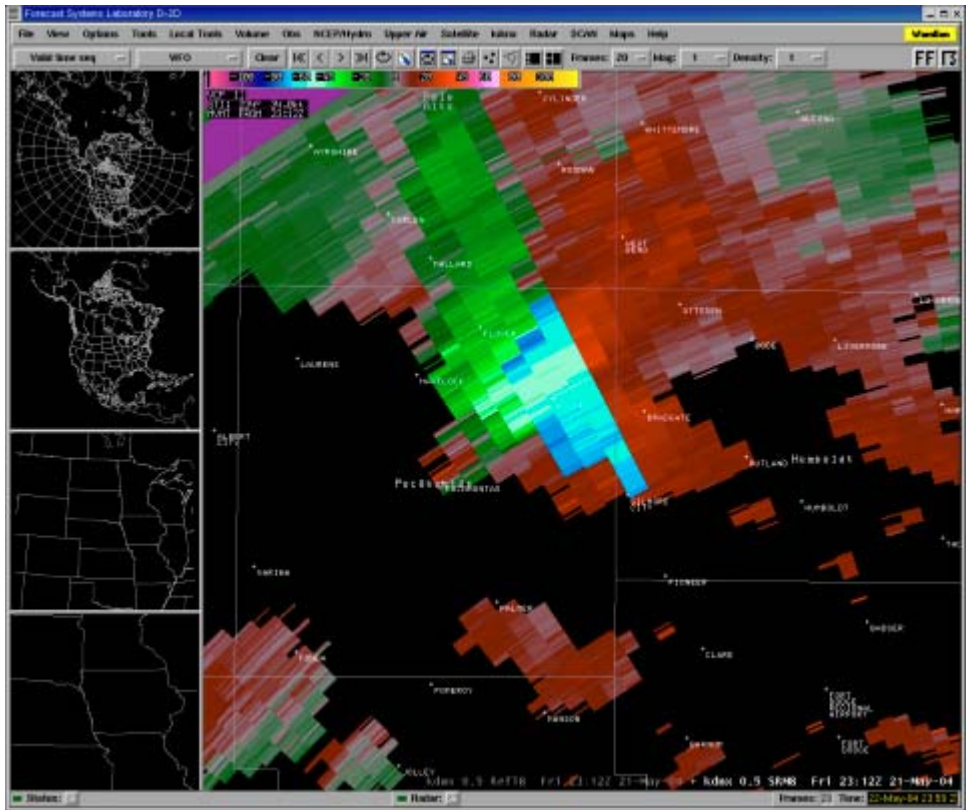
Base Reflectivity from 2307Z



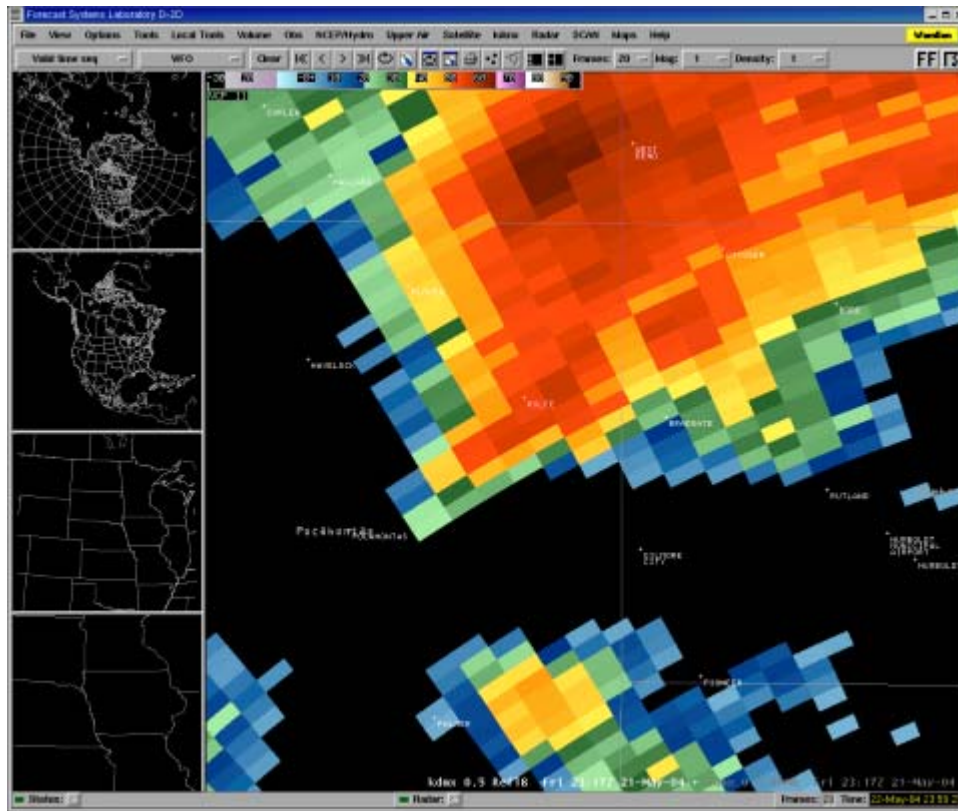
Storm Relative Velocity from 2307Z



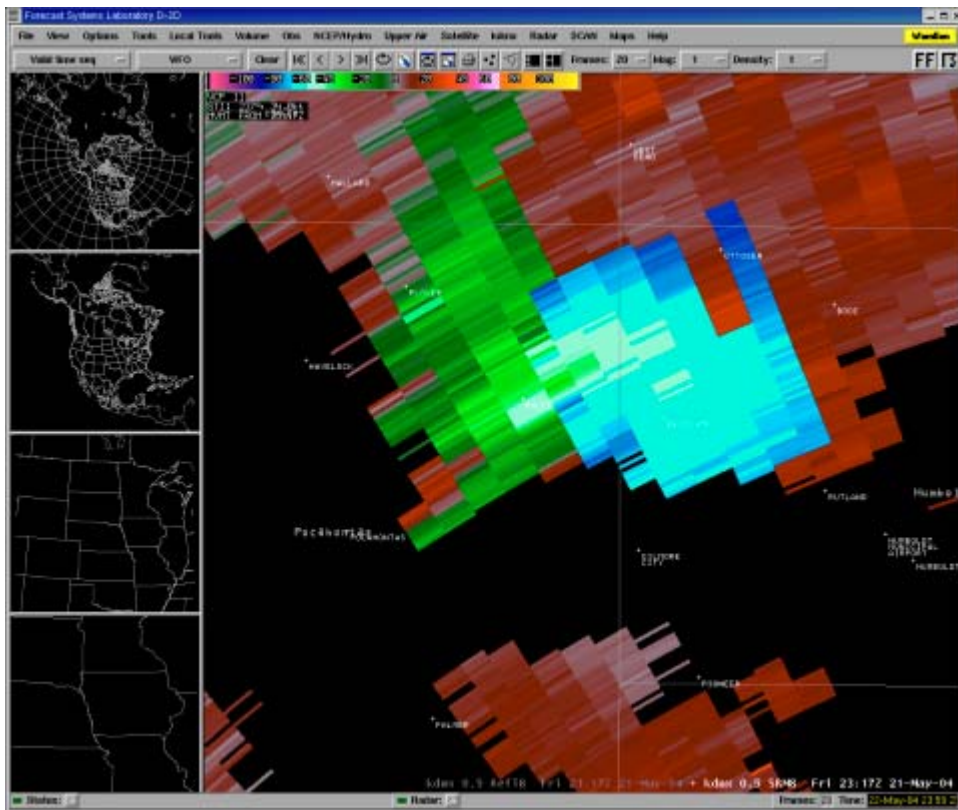
Base Reflectivity from 2312Z



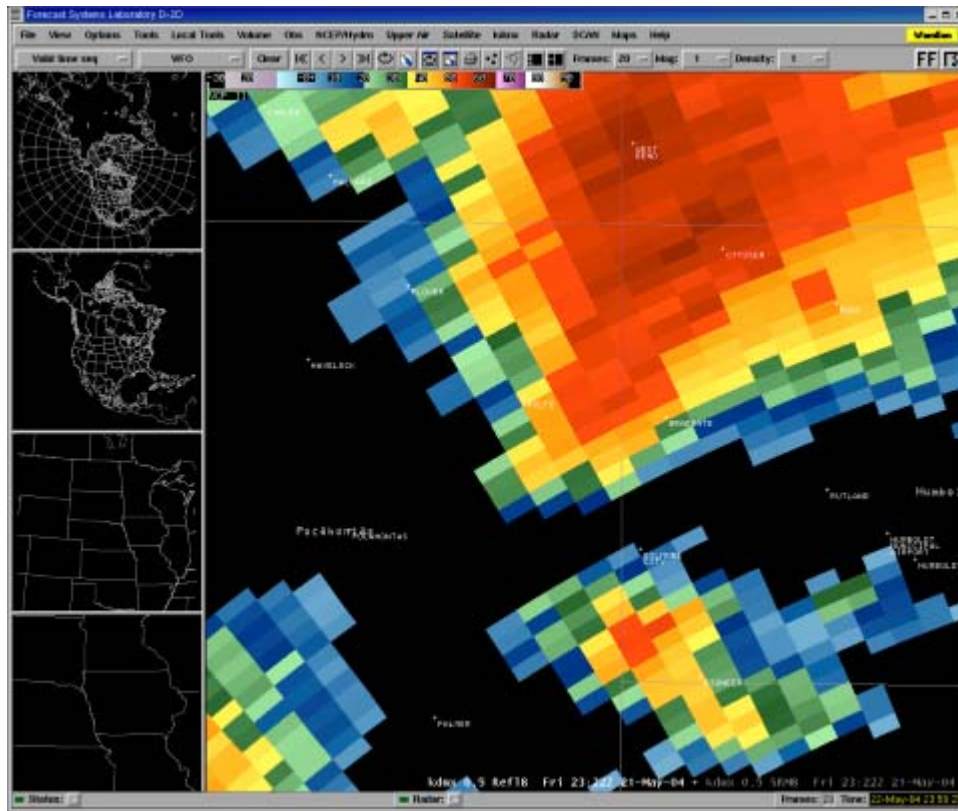
Storm Relative Velocity from 2312Z



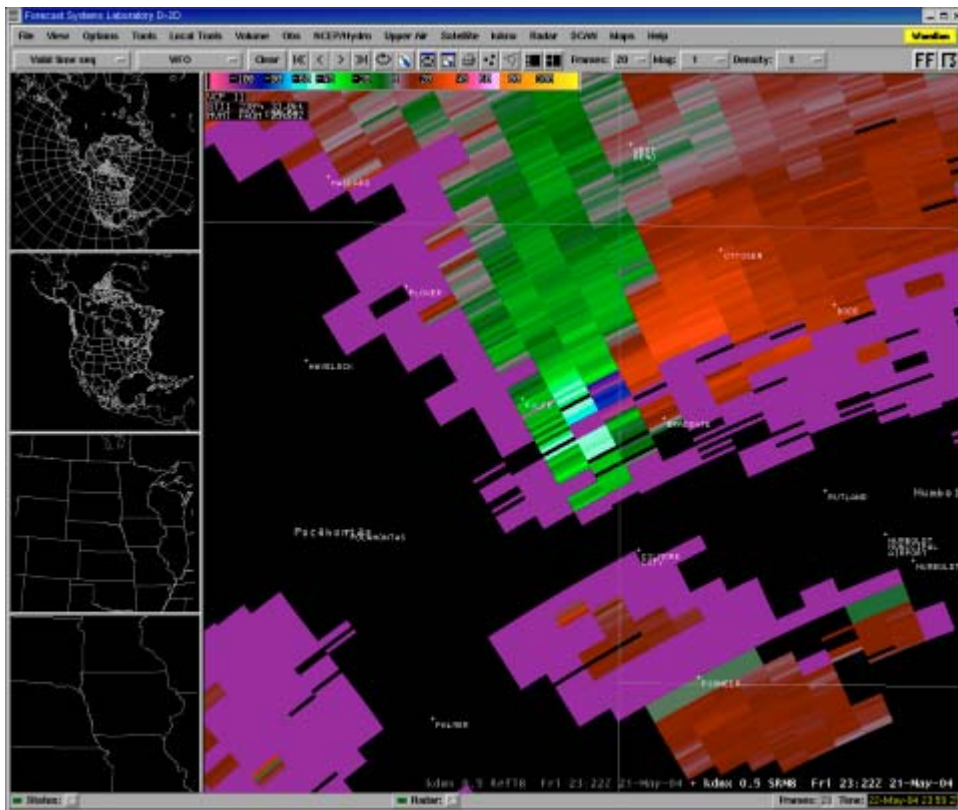
Base Reflectivity from 2317Z



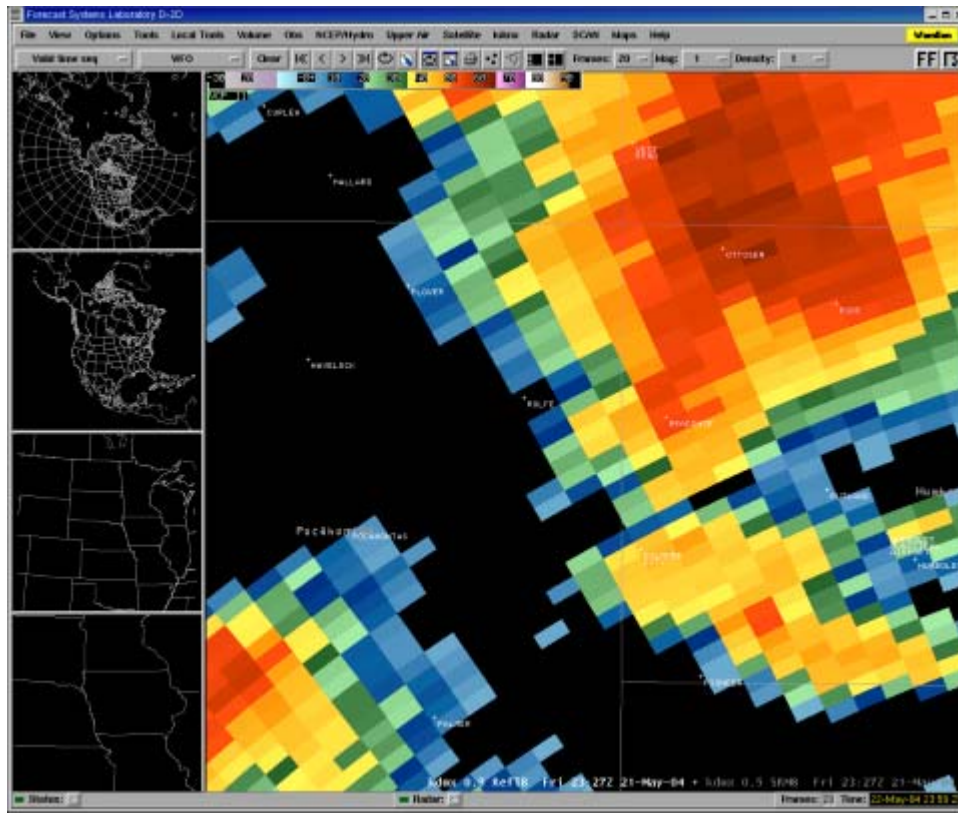
Storm Relative Velocity from 2317Z



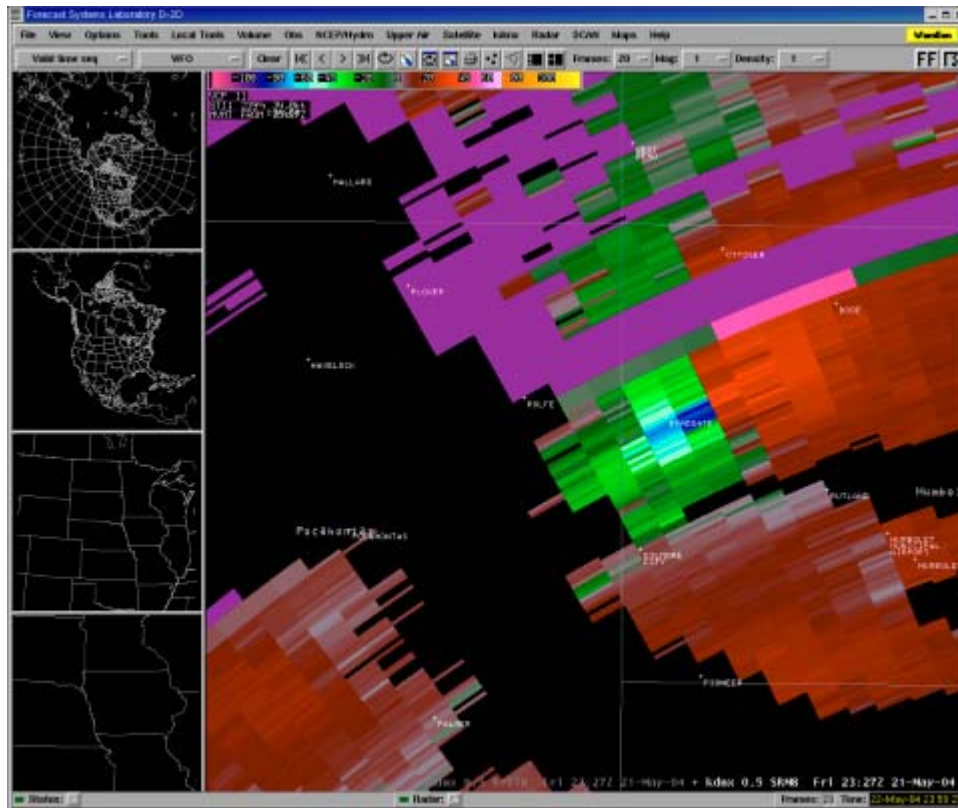
Base Reflectivity for 2322Z



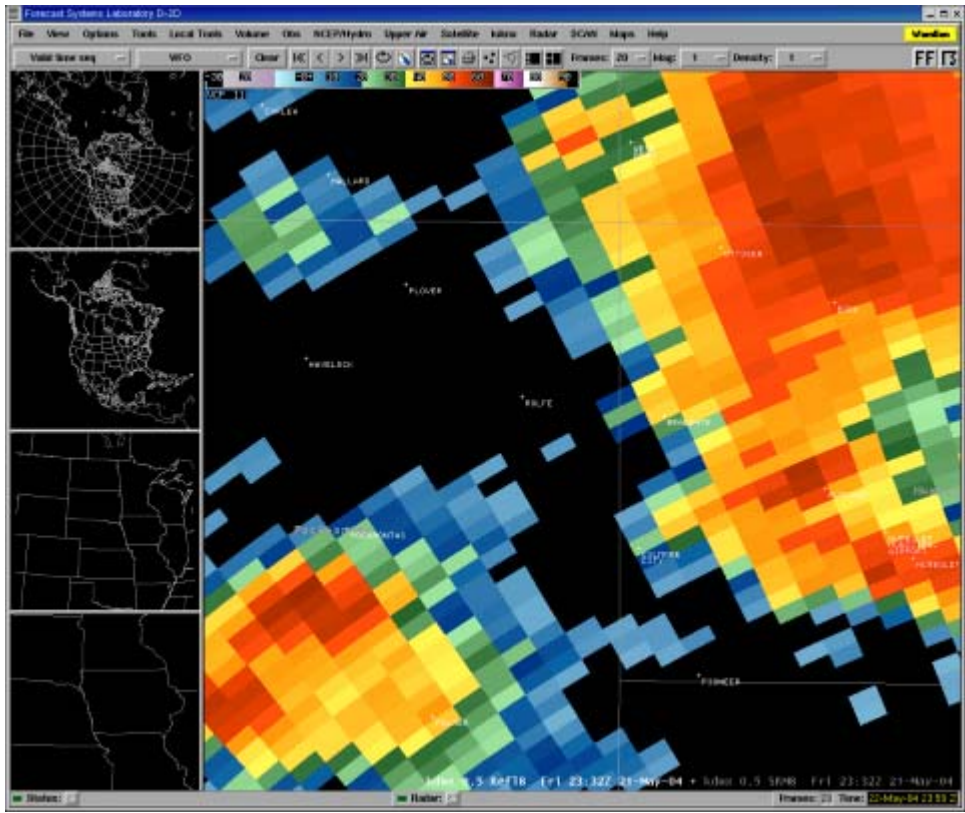
Storm Relative Velocity for 2322Z



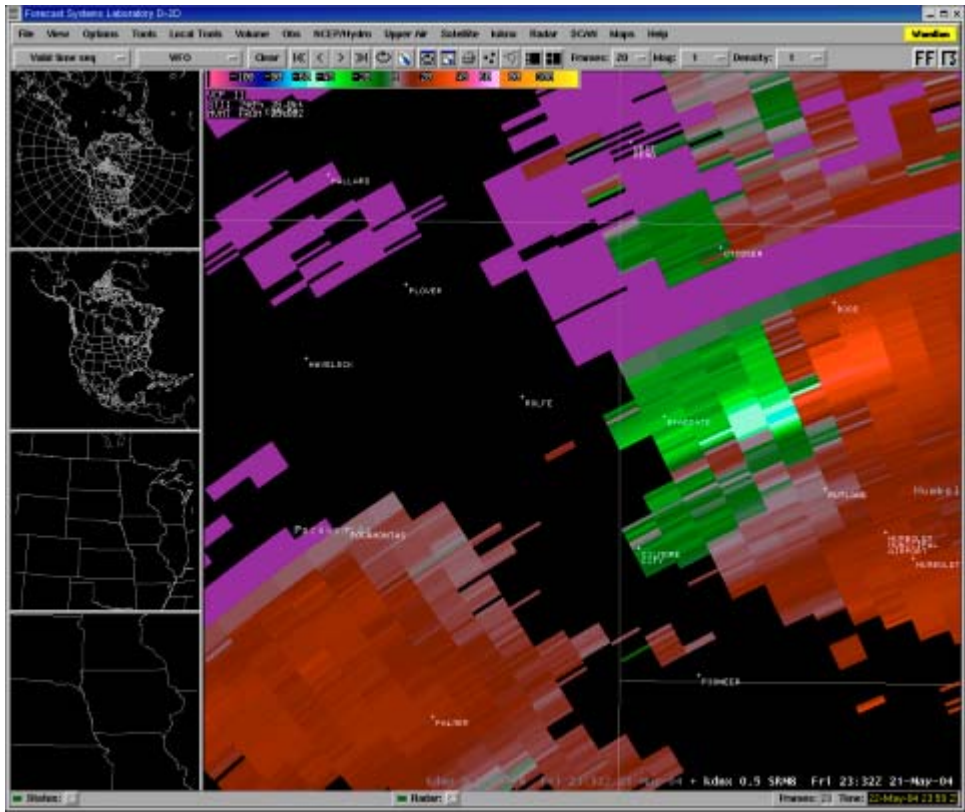
Base Reflectivity for 2327Z



Storm Relative Velocity for 2327Z



Base Reflectivity for 2332Z



Storm Relative Velocity for 2332Z