VORTEX II Operations Center: Bridging the Gap between Research and Operations

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VORTEX 2 – The Big Picture

- Largest field campaign to study tornadoes
- 30-50 vehicles per day
- 100-150 people per day
- 10 May – 13 June 2009 (35 days)
- 1 May – 15 June 2010 (46 days)

VORTEX 2 Operations Center (VOC)

- **Maintain Situational Awareness**
  - **NAWIPS Workstation**
  - **GR2Analyst – "Fully Loaded"**
  - **NOAA HWT EFP & EWP Expertise**
- **Bi-directional Information Conduit between NWS and VORTEX 2 Armada**
  - **NWS Chat**
  - **SASSI**
- **Outreach**
  - **Media Interaction (Media Day & Specific Inquiries)**
  - **Facebook & Twitter**
  - **Student Visits**
  - **Community Presentations**

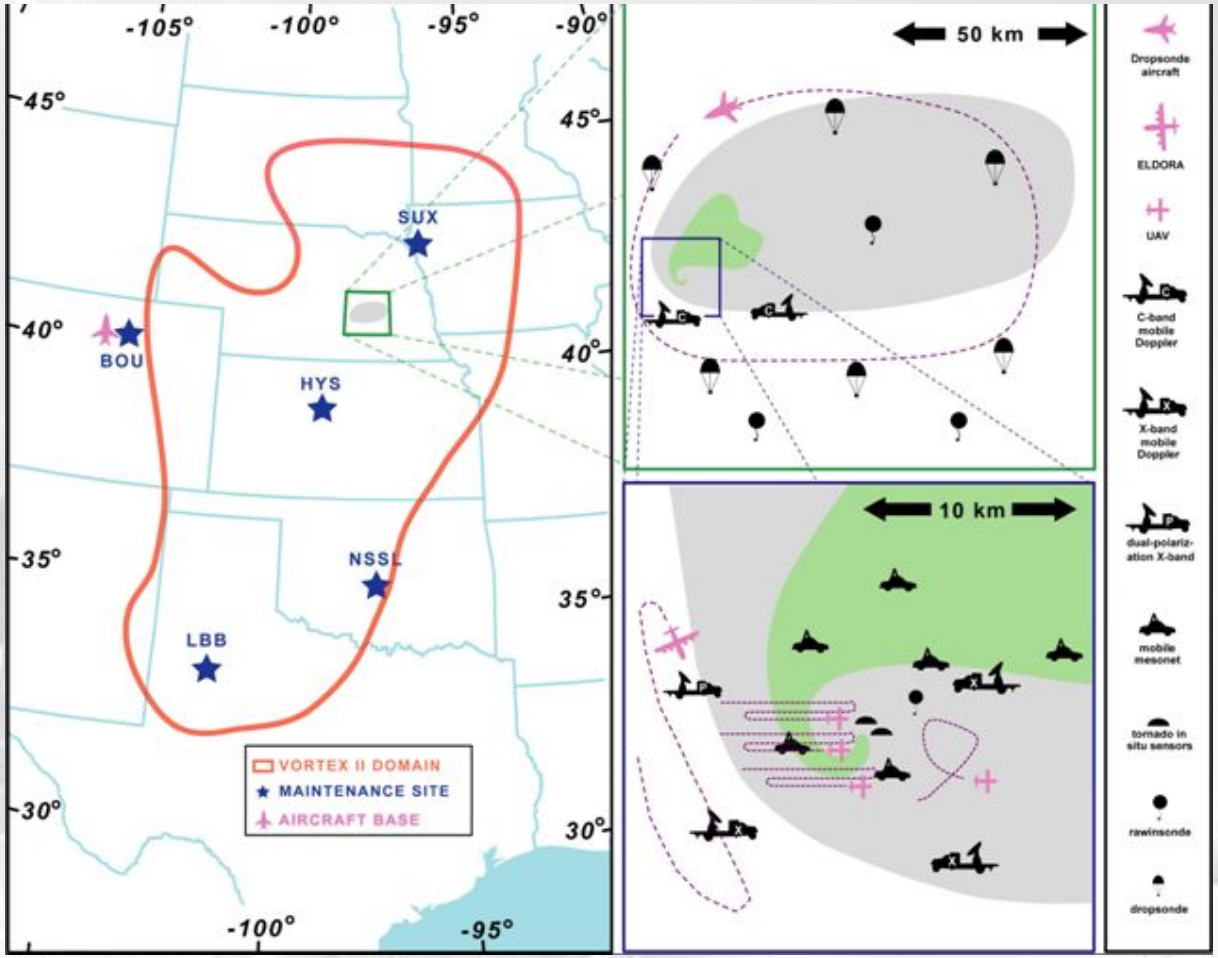
VOC Roles

- **VOC Coordinator/Manager**
  - **Oversaw the VOC Operations**
  - **Maintained VOC Communications/Data Systems**
- **NWS Liaison**
  - **Responsible for all VORTEX 2 Interactions with NWS**
- **Warning Forecasters**
  - **Similar to WFO Warning Forecaster**

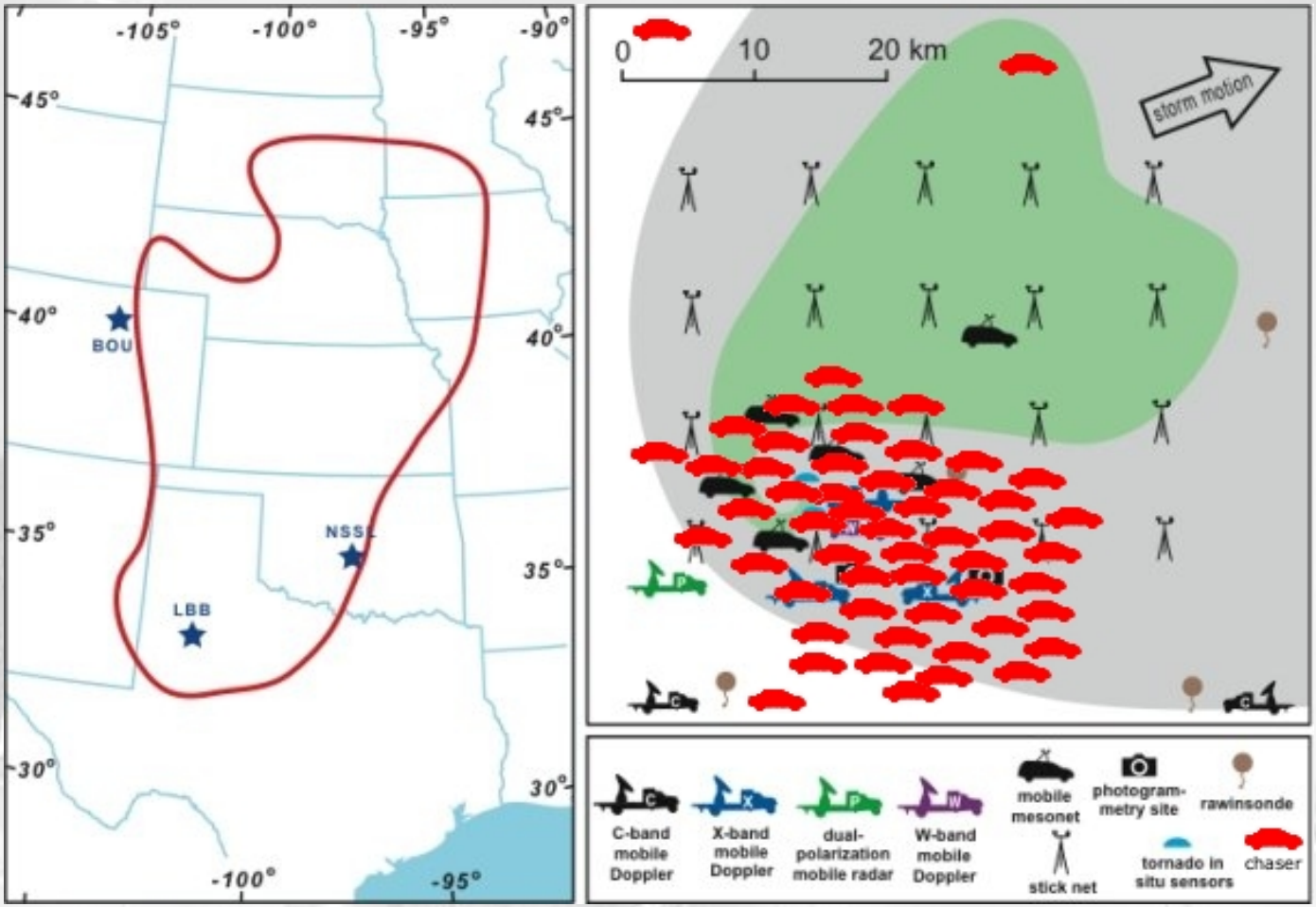
VOC Personnel

- VOC Coordinator/Manager
  - Patrick Marsh (HWT Liaison/Grad Student NSSL/CIMMS/OU)
- NWS Liaisons
  - Jim Purpura (MIC SGX)
  - Steve Cobb (SOO LUB)
  - Mike Hudson (COO CRH)
- Warning Forecasters
  - Mark Britt & Fred Glass (LSX)
  - Chris Sohl & Kevin Brown (OUN)
- A Little of Everything
  - Kevin Scharfenberg (OCWWS)

Idealized Deployment



Reality

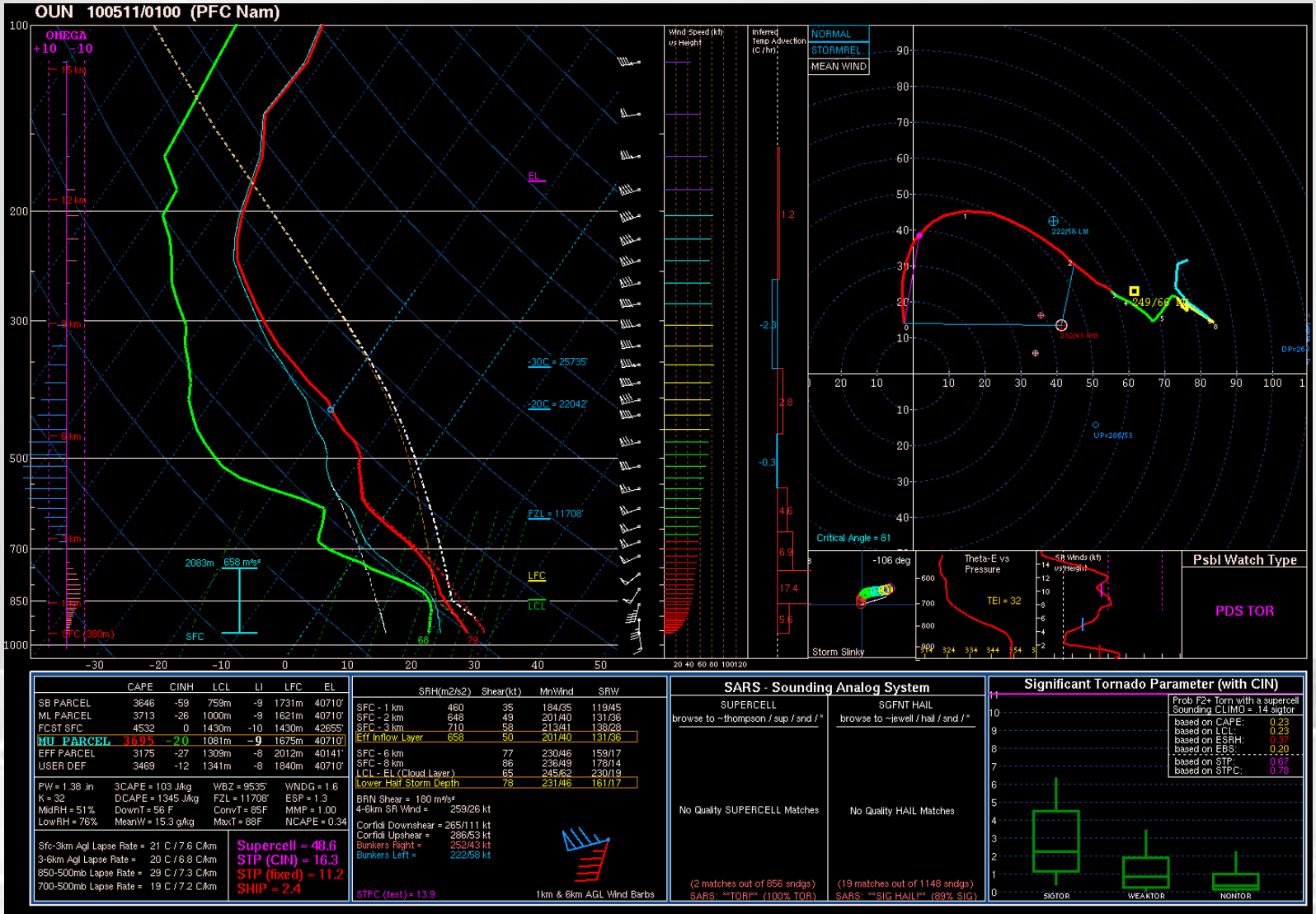

-105°
-100°
-95°
-90°
45°
40°
35°
30°
BOU
NSSL
LBB
0
10
20 km
storm motion
C-band mobile Doppler
X-band mobile Doppler
dual-polarization mobile radar
W-band mobile Doppler
mobile mesonet
photogram-metry site
rawinsonde
stick net
tornado in situ sensors
chaser

The Events Surrounding the 10 May 2010 Central Oklahoma Tornado Outbreak

The Setting:
NOAA Hazardous Weather Testbed (HWT)



Our Story Begins:
(NAM) 01 UTC, 11 May 2010 @ OUN



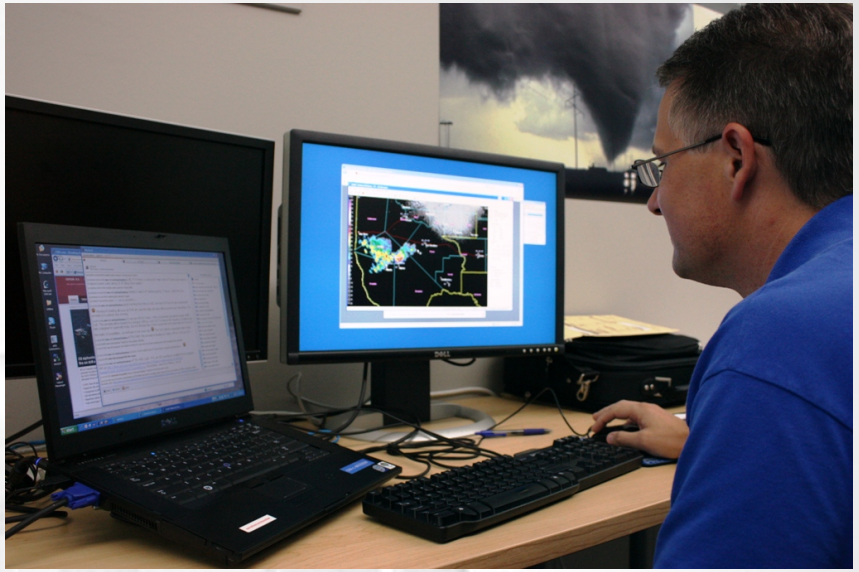
…12-15 UTC, 10 May 2010…
Confidence Increasing in a “Big Event”





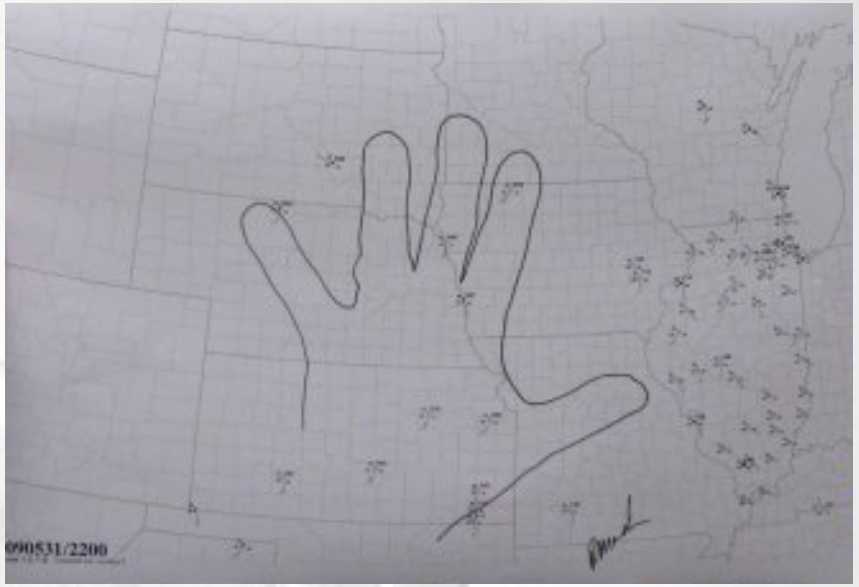
…15-21 UTC, 10 May 2010…
Conference Calls & Armada Positioning



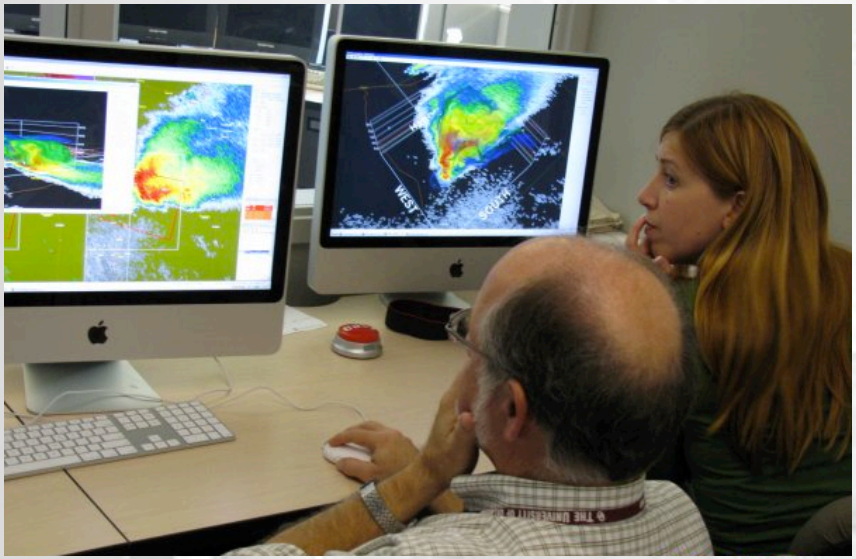


…15-21 UTC, 10 May 2010…
Analysis





…21-22 UTC 10 May 2010…
Initiation





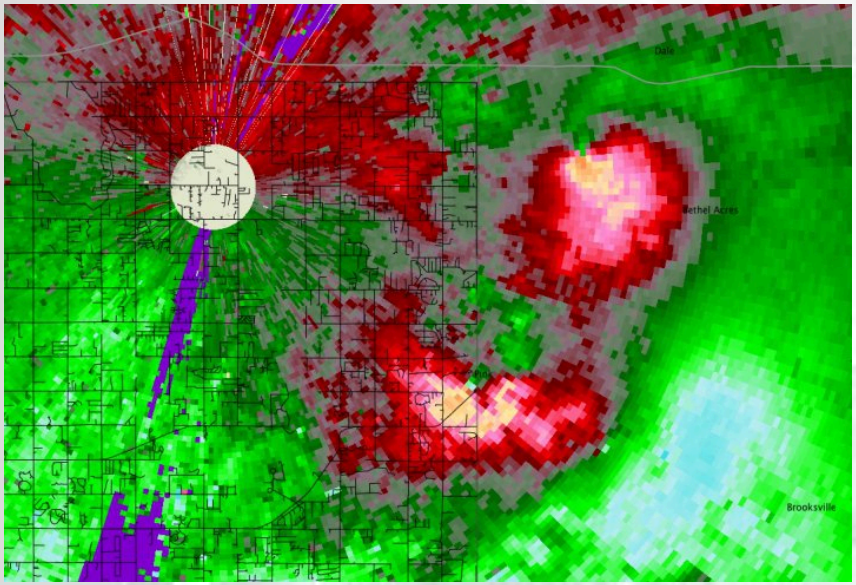
…22-23 UTC 10 May 2010…
Tornado in Norman

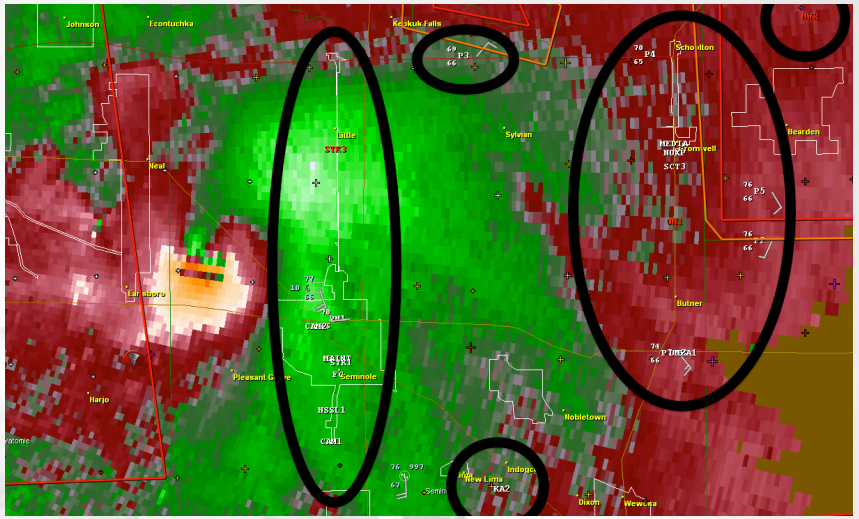




This EF-4 tornado developed just south/southeast of the VOC…
…it was not the only tornado visible from the VOC during V2

…23 UTC, 10 May 2010 – 02 UTC, 11 May 2010…
Norman Tornadoes Target Armada





Two EF-4 tornadoes within miles of each other

Black circles represent locations of V2 Personnel

…11 May 2010…
Damage Surveys & Continued Operations









…12 May 2010…
Press Conferences, Congressional Visits, & Continued Operations





No Weather-Related Injuries of VORTEX 2 Participants During the Experiment



Direct Impact on Warning Operations

NWS Chat Dialogue (00-01 UTC, 19 May 2010)



[00:10:36] <nws-edward.andrade@nwschat.weather.gov/Gaim> How does that storm east of Dumas look to you guys now. We are deciding what to do with our Tornado Warning.

[00:11:20] <nws-steve.cobb@nwschat.weather.gov/Home> Circulation appears to be tightening up again, all probes to the east showing 40+ mph easterly winds. Strong indication of trying to tornado again.

[00:13:17] <nws-steve.cobb@nwschat.weather.gov/Home> Or at least attempting to reorganize low level circulation.

[00:18:50] <nws-steve.cobb@nwschat.weather.gov/Home> ATTN AMA: Baseball hail reported at Morton Elevator Rd and FM 1060 / 718 pm.

[00:20:15] <nws-steve.cobb@nwschat.weather.gov/Home> That is about 11 mi nw of Stinnett.

[00:20:33] <nws-steve.cobb@nwschat.weather.gov/Home> Radar indicating echo top has descended, looks like hail core is on the way down.

[00:20:38] <nws-edward.andrade@nwschat.weather.gov/Gaim> Thanks Steve.

[00:25:22] <nws-steve.cobb@nwschat.weather.gov/Home> FYI HRR takes this storm se across ern Pnhdl into Harmon Co/Childress Co by around 07Z.

[00:30:06] <nws-steve.cobb@nwschat.weather.gov/Home> Probes still reporting 45 mph inflow winds.

[00:35:21] <nws-edward.andrade@nwschat.weather.gov/Gaim> Thanks for the info.

[00:38:43] <nws-steve.cobb@nwschat.weather.gov/Home> ATTN AMA: Golfballs reported 2.5 mi north of 152 on FM1923 / 737pm.

[00:44:22] <nws-steve.cobb@nwschat.weather.gov/Home> ATTN AMA: Cone tornado west of Stinnett / 744 pm.

[00:44:38] <nws-edward.andrade@nwschat.weather.gov/Gaim> how far west of stinnett?

[00:45:20] <nws-steve.cobb@nwschat.weather.gov/Home> About 2.5 mi nw of Stinnett.

[00:45:36] <nws-edward.andrade@nwschat.weather.gov/Gaim> Ok. Much appreciated.

NSSL / NWS Interaction

- **"…[On 19 May 2010, a NSSL Scientist and] I had some long and valuable discussions on topics such as the boundary layer character from clear air radar returns, three dimensional storm structure/evolution, and warning decision making."**

-- Fred Glass, NWS Forecaster (LSX)

Take Away Point

- **I hope the NWS is getting something out of this interaction, I know I am.**

-- Comment from NSSL Researcher

- **I hope NSSL is getting something out of this interaction, I know I am.**

-- Comment from NWS Forecaster

Outreach

Minnesota High School Visit



Naval Academy Students Visit

