

**SCIENTIFIC RESEARCH PLANS AND OBJECTIVES:
PRIORITY OF CASES
DATASETS REQUIRED**

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LEVELS OF COLLABORATION:






1. MINIMUM: PH.D./M. S. WORK FOR STUDENT SOLELY AND IS FIRST AUTHOR;

POSSIBLE CO-AUTHORS – ADVISOR, COMMITTEE MEMBERS, OPERATORS AND/OR SUPPLIERS OF INSTRUMENT.

2. IN BETWEEN: STUDENT WORK IS PART OF LARGER, OVERALL STUDY; CO-AUTHORS AS IN 1, WITH STUDENT BEFORE OTHERS ON STUDENT'S COMMITTEE.

3. MAXIMUM: WORK IS SMALL PART OF WORK DONE BY SOMEONE ELSE; POSSIBLE CO-AUTHORS AS IN 1, BUT LESS LIKELY ADVISOR OR STUDENT'S COMMITTEE IS/ARE CO-AUTHORS

Table. Highlights of Year 1 of VORTEX-2

Date (2009)	X-Pol	W-band	MWR-05XP	Description
8 May	X	X	X	Test; supercell in S Cen OK
12 May	X	NA	X	gust front, multicell in TX Panhandle
13 May	X	NA	X	HP supercell in Cen OK
15 May	X	X	X	squall line in N Cen OK
19 May	X	X	X	multicell, microbursts in NE
20 May	X	X	X	supercell in NE
22 May	X	X	NA	multicells in NE and SD
23 May	X	X	X	multicell line in NE
25 May	X	NA	X	strong multicell in W OK
 26 May	X	NA	X	multicell, supercell with anticyclone, gust front, in N Cen TX
29 May	X	X-	X	multicell in NE
31 May	X	X-	X	multicell in IA
1 June	NA	X-	X	multicells in NE
4 June	X	X-	X	supercell/multicell line in WY
1  5 June	X	X-	X	complete life cycle of tornado in supercell, in WY; supercell in W NE
6 June	X	X-	X	supercells in NE
 7 June	X	X-	X	supercell, very large hail, in NW MO
 9 June	X	X-	X	supercell in SW KS
10 June	X	X-	X	multicells in SW KS/SE CO
 11 June	NA	NA	X	HP supercell in SE CO
13 June	X	X-	X	supercell in TX Panhandle
14 June	NA	NA	NA	supercell in TX Panhandle

1. SINGLE DOPPLER ANALYSIS OF TORNADIC SUPERCELL ON 5 JUNE 2009 USING MWR-05XP DATA; POSSIBLE USE OF RAPID-DOW DATA

MIKE FRENCH (WITH OTHER MWR-05XP DATA FROM 2008)

- OBJECTIVES: WHERE VORTEX BEGINS AND HOW IT IS ADVECTED/PROPAGATES UPWARD OR DOWNWARD
- NULL CASES ON 5 (LATE), 6, 7, 9, AND 11 JUNE

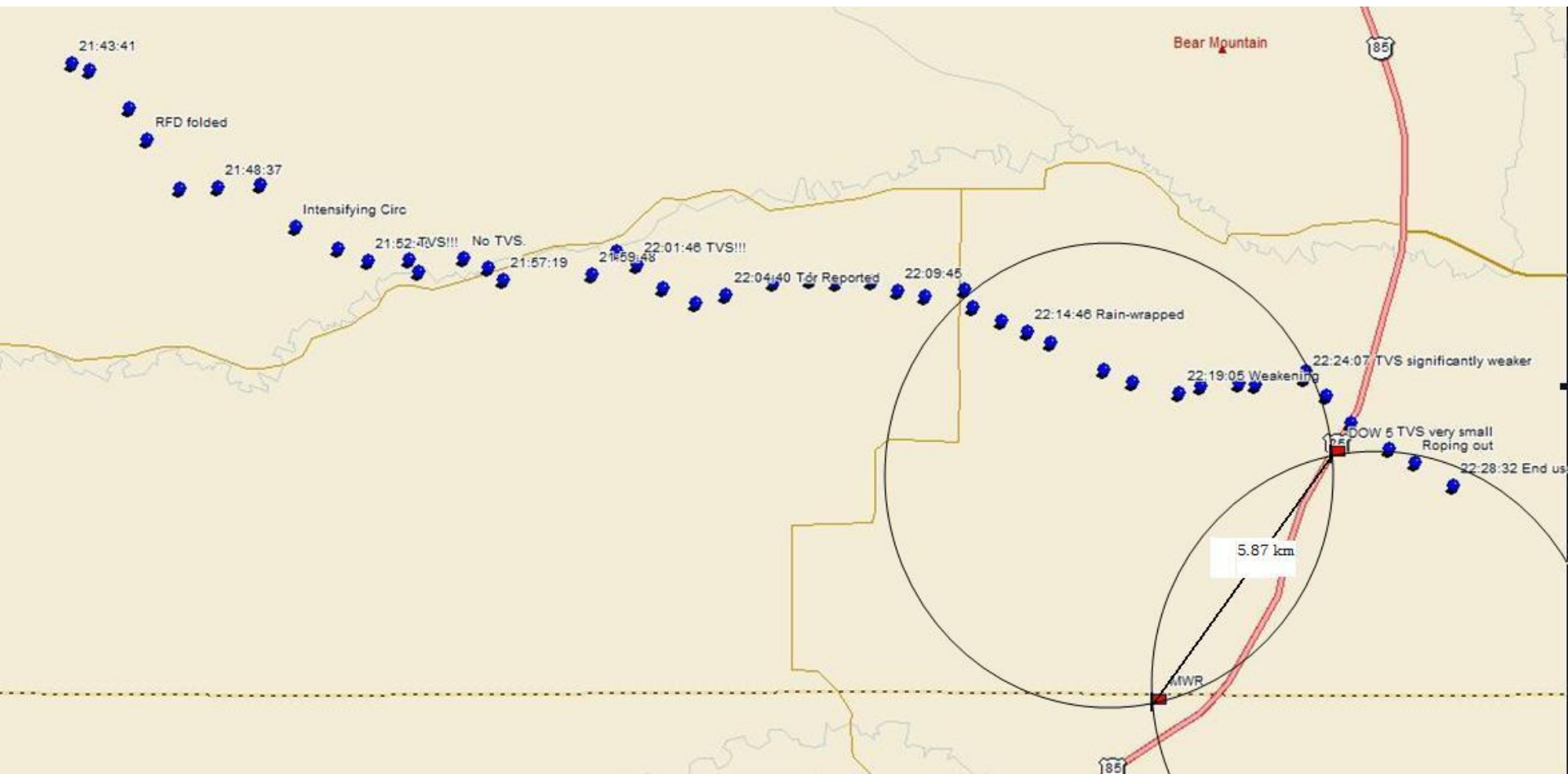
2. DUAL-RAPID-DOPPLER ANALYSIS WITH DATA FROM MWR-05XP AND RAPID-DOW: JANA HOUSER WILL DO ANALYSIS

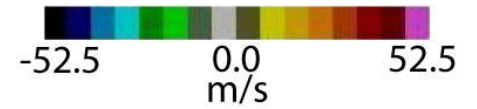
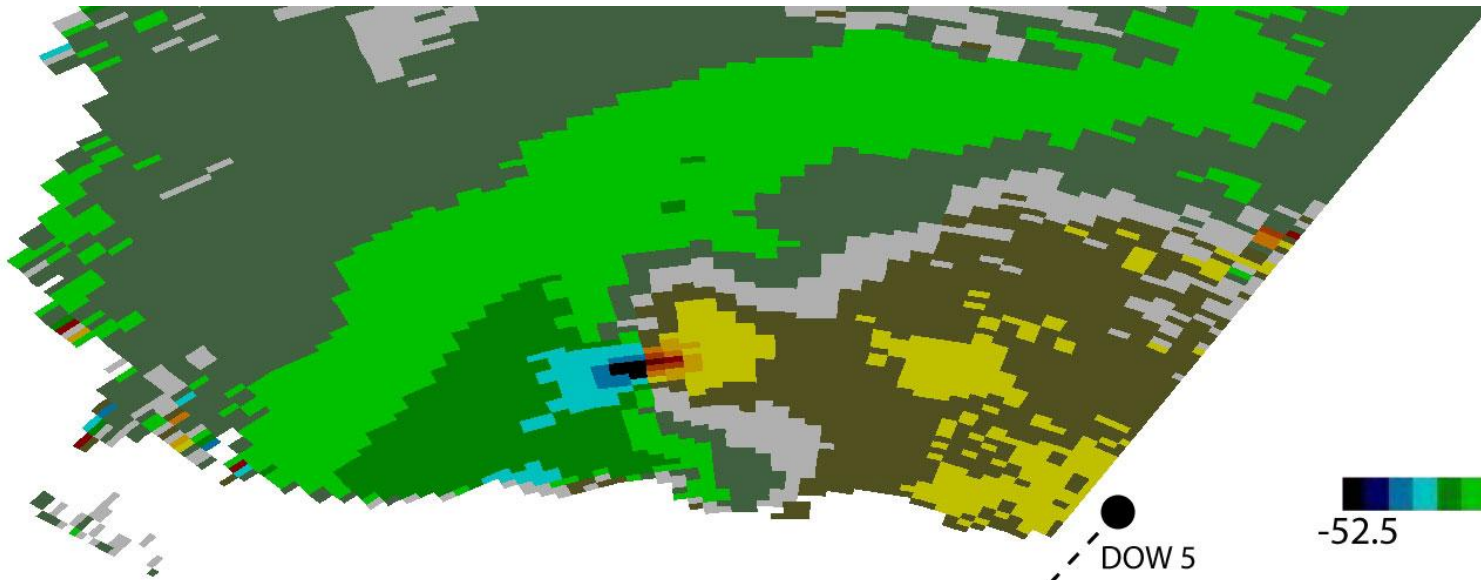
- RAPID-DOW DATA PROVIDED BY JOSH/CSWR

OBJECTIVE: FIRST, MORE TECHNIQUE THAN SCIENCE

- CAN IT BE DONE?
- DIFFERENCES IN SCAN STRATEGIES
- DIFFERENCES IN INSTRUMENT RESOLUTION
- HELP PLAN FUTURE EXPERIMENTS

GBVTD ANALYSIS WITH WEN-CHAU LEE; TILT W/HEIGHT PROBLEMS?





MWR-05XP VR
5 June 2009
2217:11 UTC

DOW 5

~ 5.85 km

Goshen County

Laramie County

MWR-05XP

3. POLARIMETRIC ANALYSIS OF DATA FROM ALL SUPERCELLS: UMASS-X-POL (AND NOXP ?); JEFF SNYDER, ESPEC. 5 (AND LATE), 7 JUNE WHEN THERE WAS LARGE HAIL; 6, 9 JUNE; POSSIBLE DUAL-DOPPLER ANALYSIS, ON 7 JUNE

OBJECTIVES: RELATIONSHIP BETWEEN POLARIMETRIC VARIABLES AND THEIR EVOLUTION AND TORNADOGENESIS; PHYSICAL MEANING OF POLARIMETRIC VARIABLE ANALYSES

- NEED DSD MEASUREMENTS (KATJA, GLEN)
- SNYDER ET AL.(2010, *J. ATMOS. OCEAN. TECH.*) ATTENUATION CORRECTION SCHEMES AND HYDROMETEOR CLASSIFICATION SCHEME, $T > 0^{\circ} \text{C}$

4. DUAL-DOPPLER ANALYSIS OF DEMISE OF SUPERCELL ON 9 JUNE 2009; UMASS X-POL, NOXP, AND MWR-05XP

OBJECTIVES: “MODE OF DISSIPATION: DOWNSCALE TRANSITION” (BLUESTEIN 2008, MWR)?

- MAY BE DONE BY STUDENT ELSEWHERE
- NEED SFC THERMODYNAMIC DATA.

4. DUAL-DOPPLER ANALYSIS OF 5 JUNE 2009 TORNADIC SUPERCELL: COLLABORATORS - DOWs, NOXP, MWR-05XP

- ANALYSES PROBABLY NOT DONE BY STUDENTS AT OU UNLESS DATA FROM MWR-05XP ARE INVOLVED; BLUESTEIN IS INTERESTED IN COLLABORATING EVEN WHEN ANALYSES ARE DONE ELSEWHERE
- OBJECTIVES: UNDERSTANDING OF TORNADO-GENESIS AND ROLE OF RFD, VORTICITY BUDGET
- ALSO NEED SFC THERMODYNAMIC DATA

5. ANTICYCLONIC HOOK ON 26 MAY 2009 DUAL-DOPPLER ANALYSES USING DATA FROM UMASS X-POL, NOXP, DOWs

- OBJECTIVES: DEVELOPMENT OF ANTICYCLONIC VORTICES ALOFT AND AT SFC
- MAY BE DONE BY STUDENT ELSEWHERE

6. GUST FRONT ON 26 MAY 2009

SINGLE-DOPPLER ANALYSIS USING MWR-05XP
DATA

OTHER STUDENT?

- SHORT-TIME SCALE BEHAVIOR OF GUST
FRONT

7. ANALYSIS OF REFLECTIVITY AND WIND AT TOP OF STORM USING MWR-05XP; WITH SATELLITE PEOPLE (MARTIN SETVAK, DANIEL LINDSEY

JANA HOUSER OR OTHER STUDENT

- OBJECTIVES: HOW ARE PENETRATING/ COLLAPSING UPDRAFTS RELATED TO TORNADOGENESIS, IF AT ALL
- NOT TOO MANY CASES IN WHICH STORM TOP WAS SAMPLED BY MWR-05XP

8. EnKF EXPERIMENTS WITH RAPID-SCAN DATA, ESPECIALLY ON 5 JUNE 2009 (TO 20° EVERY 6 – 7 s)

ROBIN TANAMACHI (POST DOC?), DAVID DOWELL, LOU WICKER, ANOTHER STUDENT?

- OBJECTIVES: STUDY STORM DYNAMICS USING RETRIEVED VARIABLES SUCH AS THERMODYNAMIC AND VERTICAL VELOCITY
- EnKF EXPERIMENTS WITH OTHER RAPID-SCAN DATASETS