

The University of Louisiana at Monroe's Polarimetric Doppler Radar: Teaching, Research, and Operations



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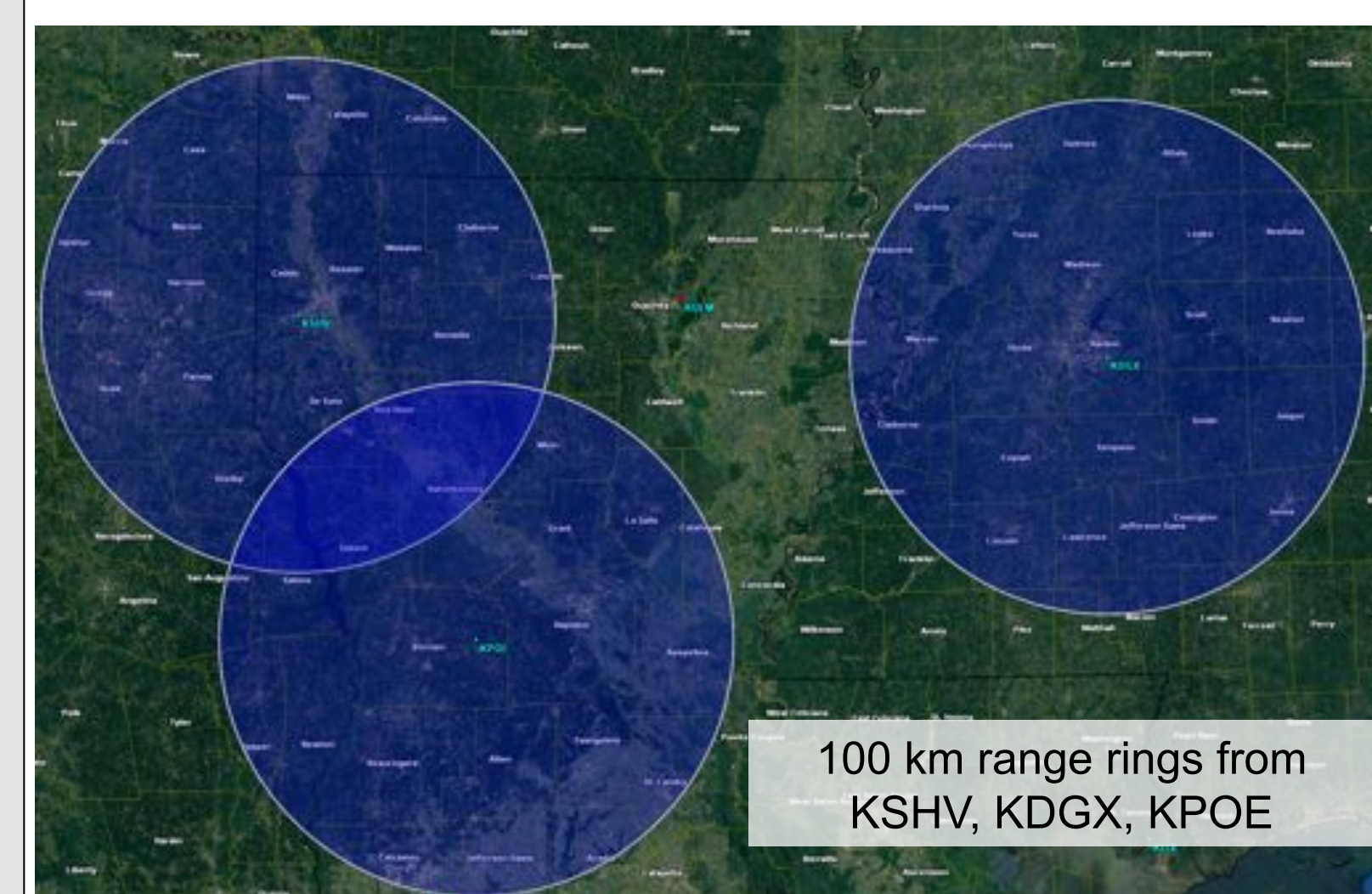
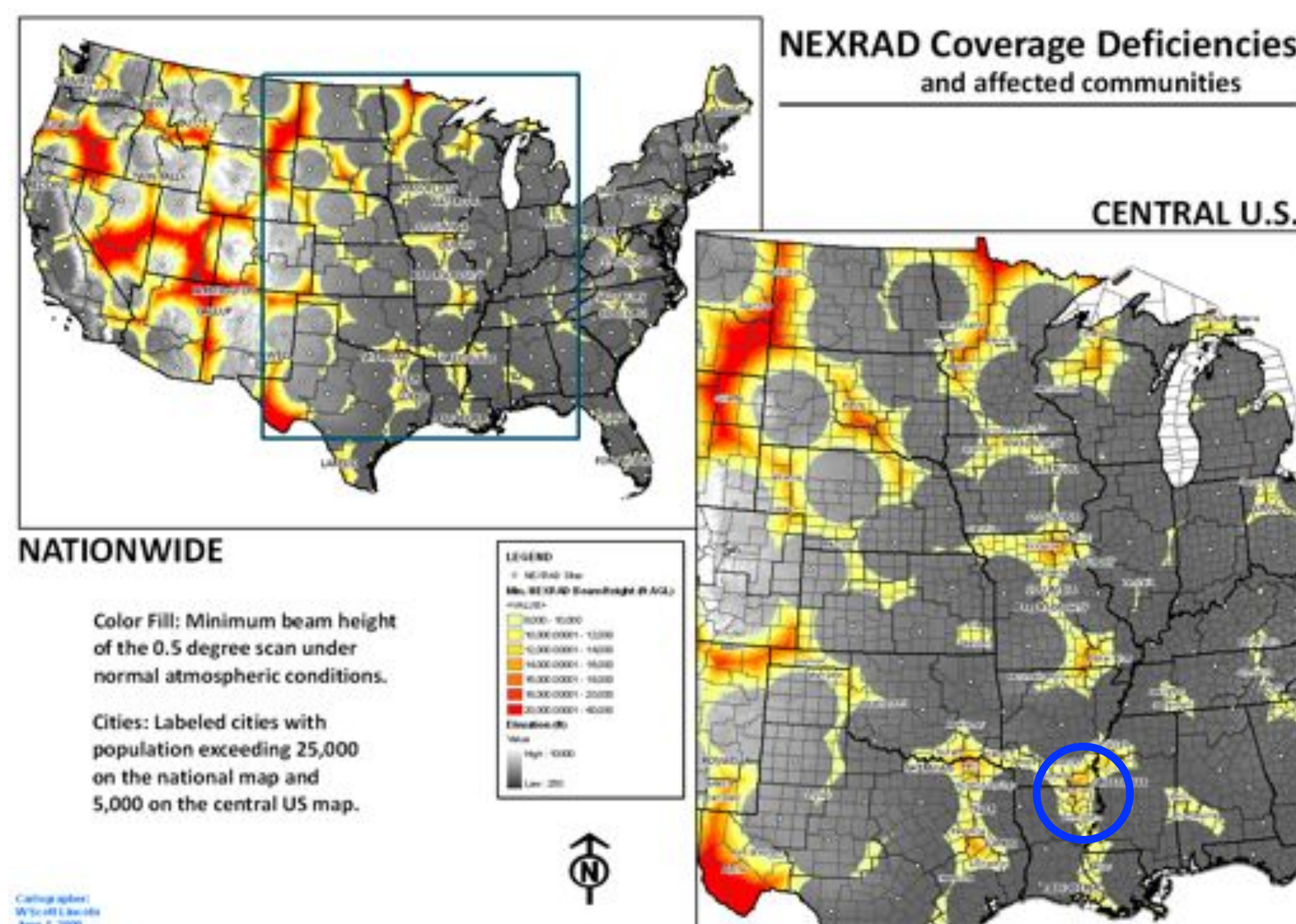
1. Introduction

Through a partnership between university, state government, & the private sector, the University of Louisiana at Monroe (ULM) has acquired a S-band polarimetric Doppler radar, scheduled to be operational by early 2016.

The radar system, supplied by Enterprise Electronics Corporation (EEC), is fully funded by a \$3 million grant awarded to ULM through the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP).

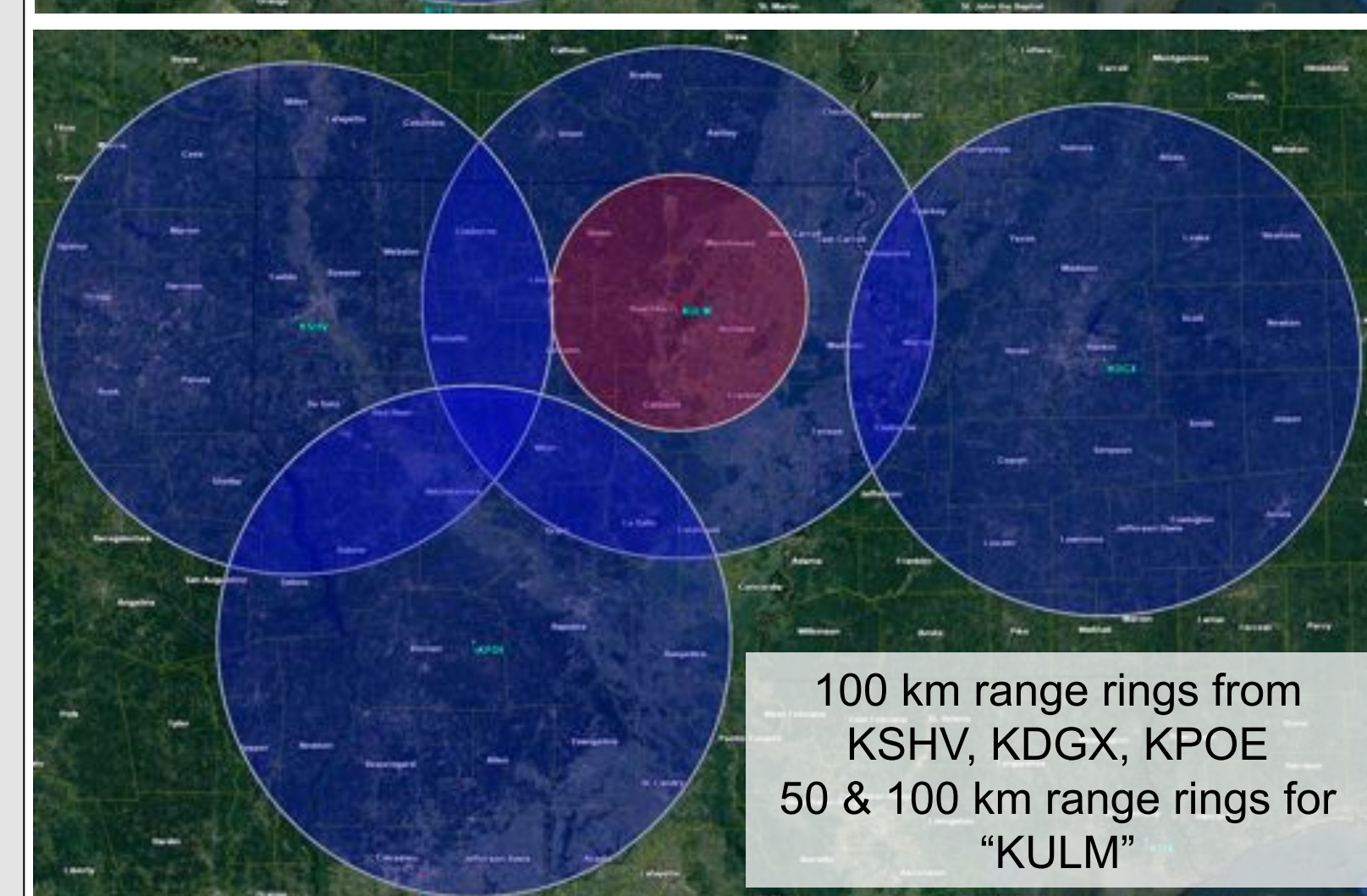
2. NEXRAD Gap Filler

At its site near the Monroe Regional Airport, the ULM radar will fill a low-level NEXRAD coverage deficiency in northeast Louisiana and southeast Arkansas. This region, prone to high impact weather events, has a population near 500k.



Assuming standard refraction & 0.5° elevation angle, minimum beam height @:

- 50 km ≈ 600 m AGL (2000 ft)
- 100 km ≈ 1500 m AGL (5000 ft)



3. Specifications

	EEC DWSR-8501S SIDPOL	WSR-88D
Transmitter Type	Magnetron	Klystron
Frequency (Wavelength)	2.7 – 2.9 GHz (10 cm @ 2.7 GHz)	2.7 – 3.0 GHz (operates at 10.71 cm)
Transmitter Power	850 kW (peak power)	750 kW (peak power)
Pulse Width	0.8 – 4.0 μs	1.57 & 4.57 μs
Antenna Diameter	8.5 m (28 ft)	8.5 m (28 ft)
Beamwidth	0.95°	1°
Gate Spacing	≤ 250 m	250 m

The ULM radar is considered "88D equivalent"

Standard (Z, VR, SW), polarimetric (ZDR, ϕdp, KDP, ρhv), & additional radar derived products available

4. Teaching, Research, & Operations

Teaching:

- ULM is primarily an undergraduate teaching university
- Only atmospheric science or meteorology program in LA
- Radar will support two courses in radar met
- Basic undergrad radar met course begins Spring 2016; advance radar met in development
- 5 radar operating & analysis workstations added to atmospheric science teaching laboratory
- Junior & senior students will gain radar operating experience as part of coursework

Research:

- Enhance research capability of Atmospheric Science department
- Research will include: northeast Louisiana rainfall mapping, severe weather, winter weather
- Leverage radar for additional research equipment (e.g., radiometer, disdrometers, etc.)

Operations:

- 24/7 operations
- Adaptable scan strategies (full volumes, sectors, rapid low-level updates, RHIs, etc.) but largely mimic NWS scanning
- low-level surveillance scan only on "non-weather" days
- Live data available to NWS and local Ems (others?)
- NWS request specific scan strategy

5. Radar Build



Radar groundbreaking on May 6, 2015



ULM radar antenna testing at EEC's facility



65-ft tower construction began Sept. 1, 2015



Tower complete and radome construction began Sept. 11, 2015

Current Timeline:

- Late Sept: antenna installed & radome complete
- Early Oct: additional radar components installed
- Oct. 26: official site testing begins
- Nov-Dec: various ULM operations and maintenance training
- Jan 2016: radar begins 24/7 operations

6. Outstanding Questions

- Official start of radar operations
- Final operations plan
- Data transport to interested parties (e.g., NWS)
- Inclusion in MRMS
- Media and other community partnerships

7. Acknowledgements

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