AWIPS-2 in NOAA's Hazardous Weather Testbed: Implementation and Display of Experimental Datasets

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Overview

- **NSSL Experimental Warning Program (EWP) tests/evaluates operational utility of new science, technology, and products**

- **80 new products/datasets implemented in EWP 2012**

- **2012: First year next-generation AWIPS software (AWIPS-2) utilized in operations**

- **AWIPS provides a familiar environment to NWS participants to view current and experimental datasets side-by-side**
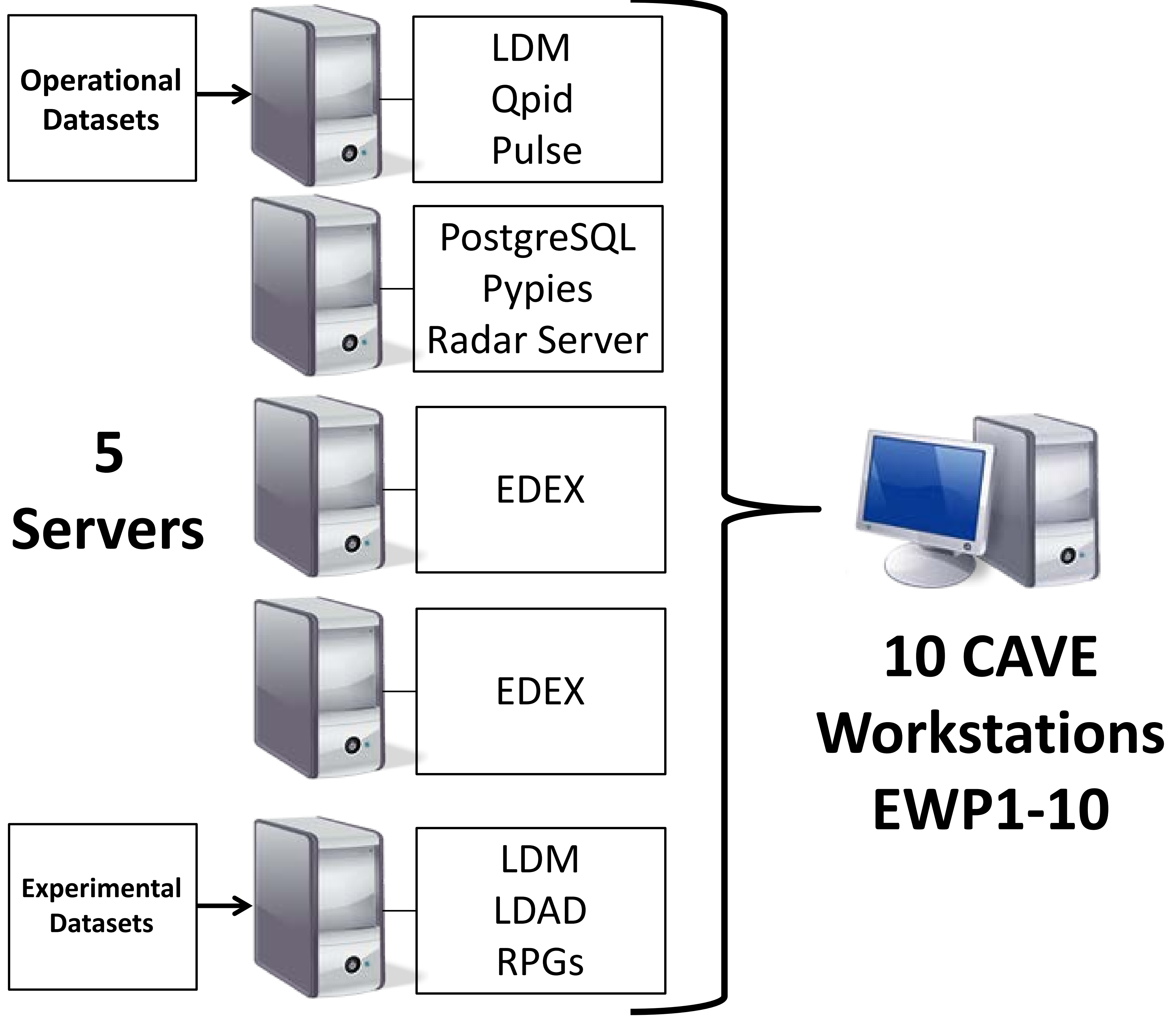
System Features

- **Web mapping interface allows for selection of experimental product domains and radars**
  - 4 static multi-radar/multi-sensor (MR/MS) domains
  - 1 floating MR/MS domain
  - 4 floating 3D variational data assimilation (3DVAR) domains
  - 10 floating Radar Product Generators (RPGs) for Level-III data creation
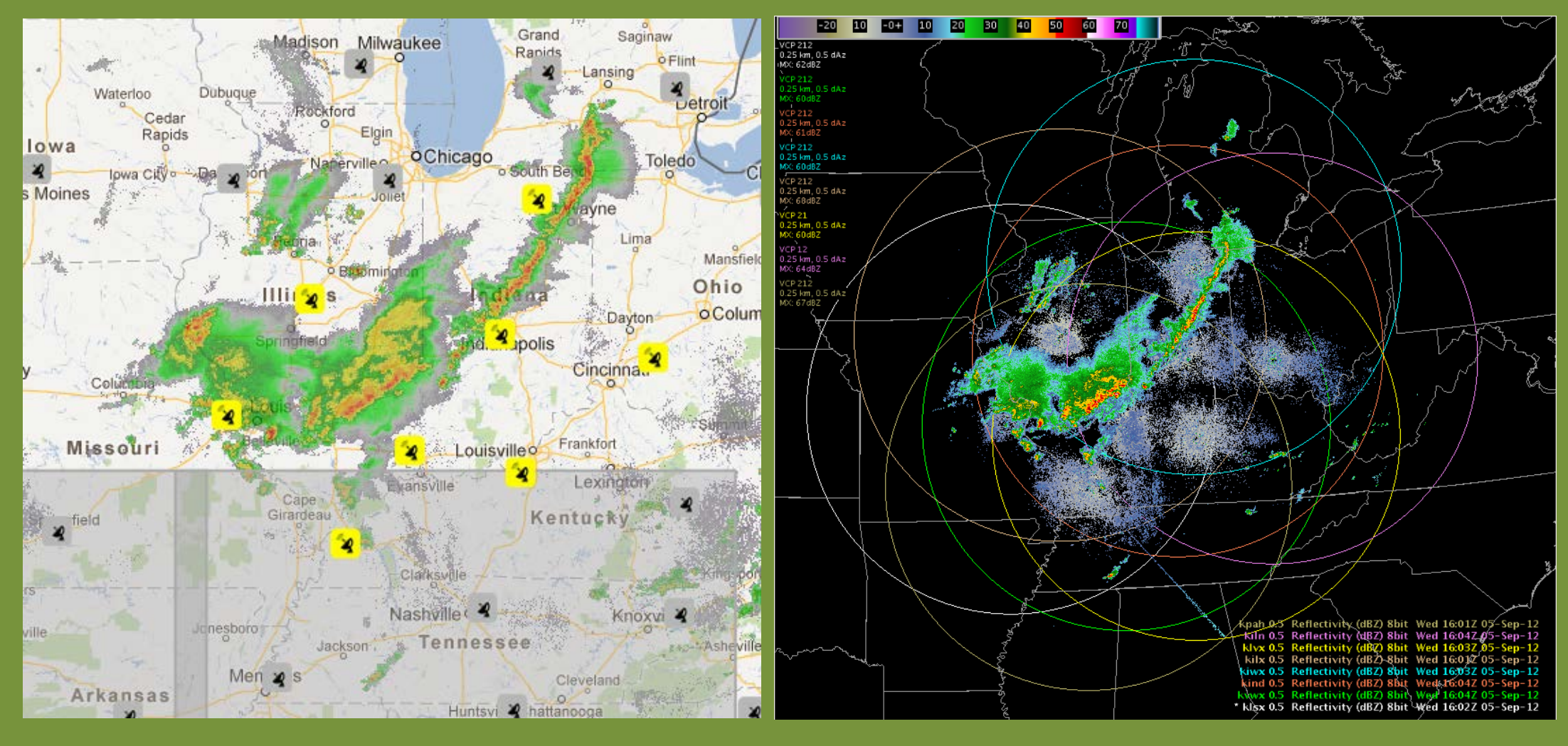
*Web interface for selecting radars (left) and the resulting Level-III data in AWIPS-2 (right)*

- **The flexibility to view and issue warnings using any NWS forecast office's area of responsibility on-the-fly**
  - Allows forecasters to track events through multiple office domains

EWP System Architecture

Operational Datasets → LDM / Qpid / Pulse

PostgreSQL / Pypies / Radar Server

EDEX

EDEX

Experimental Datasets → LDM / LDAD / RPGs

5 Servers

10 CAVE Workstations EWP1-10

CAVE Workstation Specifications

- **2x Intel Xeon Quad-Core 2.4 GHz CPUs**
- **Supermicro X8DTG-QF, Motherboard**
- **24GB DDR3-1333Mhz RAM**
- **Nvidia GeForce GTX580 1536MB DDR5 2DVI/Mini HDMI PCI-Express Video Card**
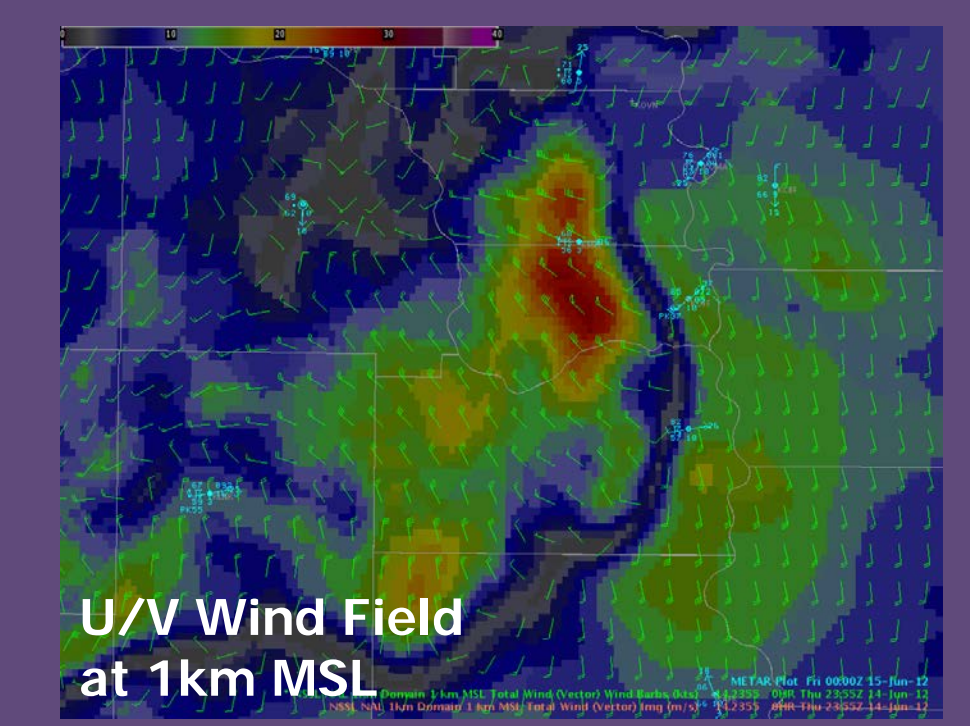- **1.5 TB 7200 RPM SATA Hard Drive**
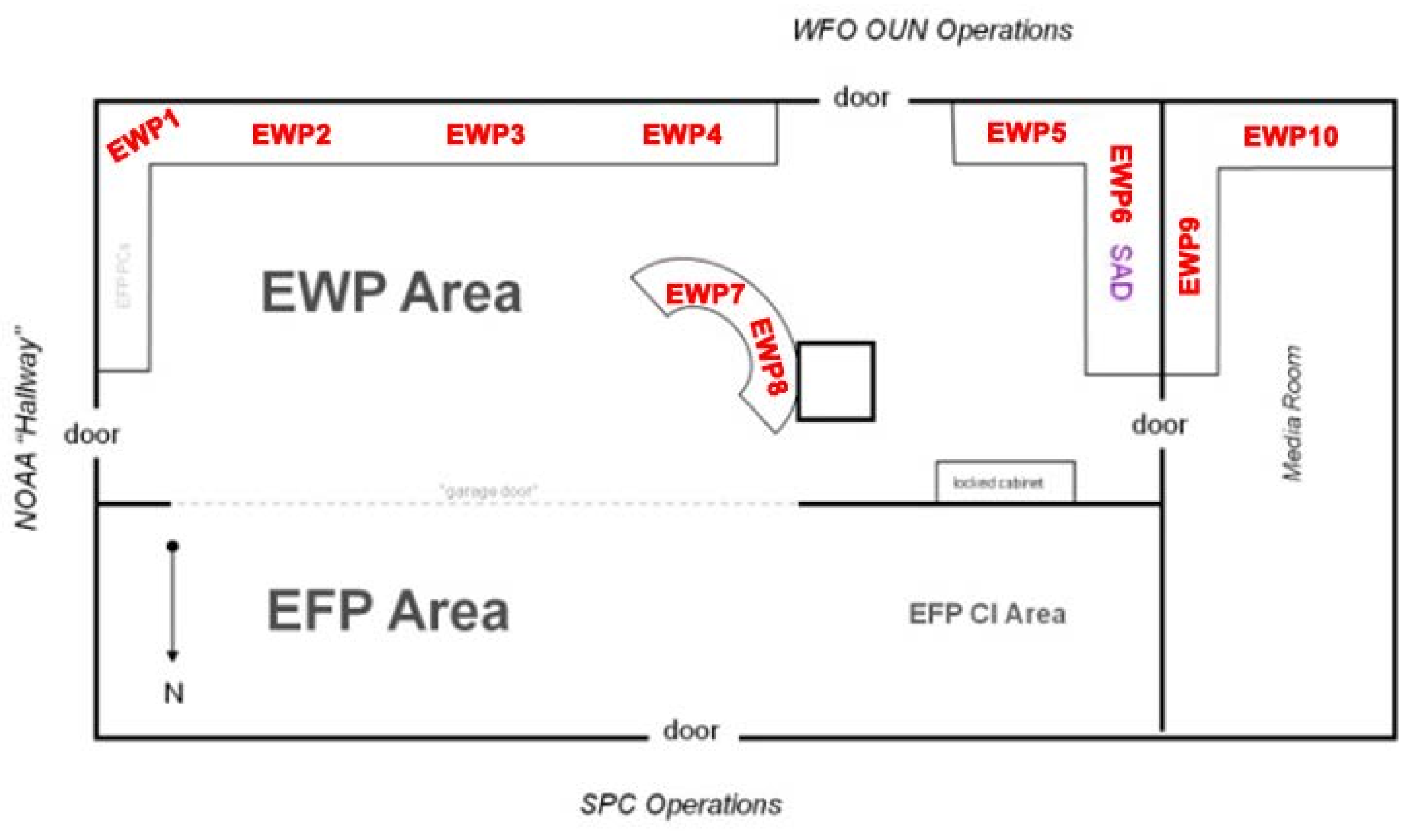
Experimental Products

MR/MS
- Isosurface Reflectivity
- Maximum Expected Size of Hail (MESH)
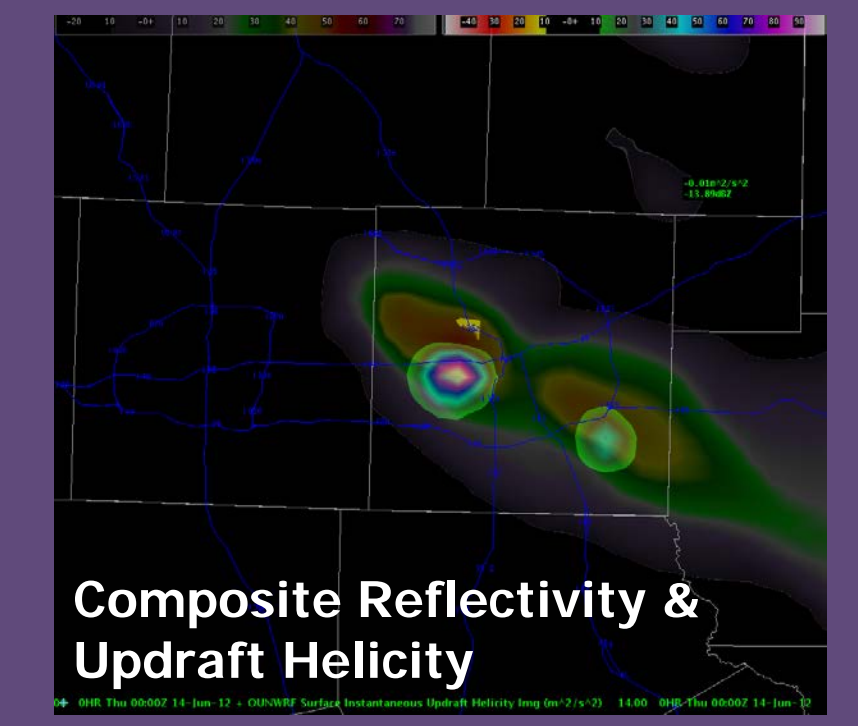- Merged Azimuthal Shear
- Rotation Tracks

MESH & 120 min. MESH Tracks
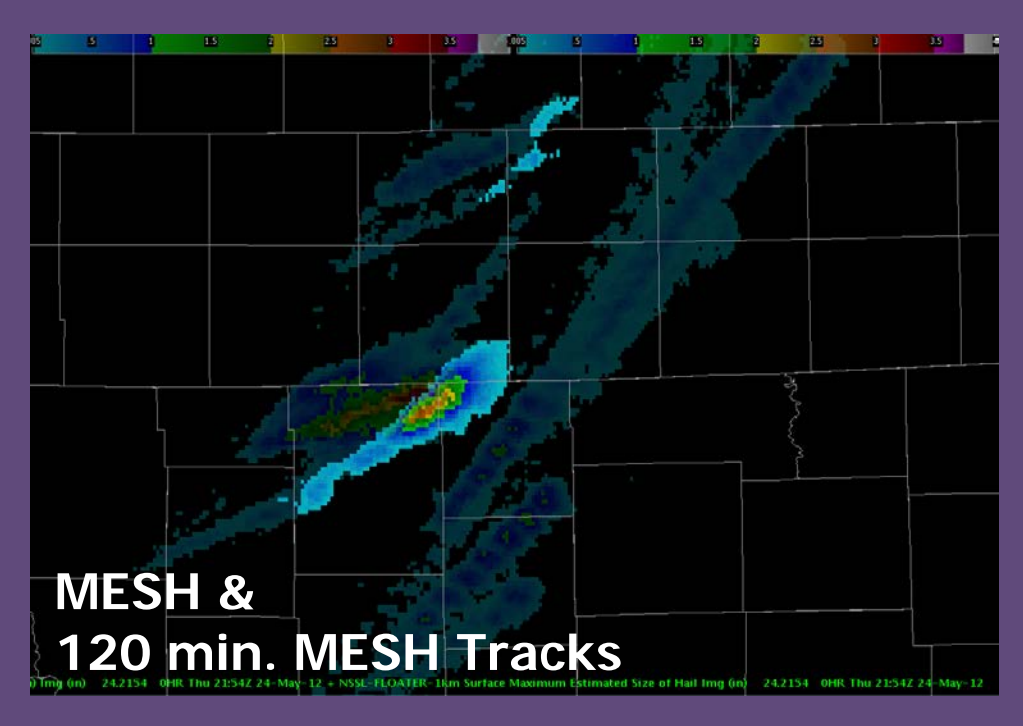
3DVAR
- 3D Wind Fields
- Updraft Strength
- Updraft Helicity
- Divergence
- Vorticity

U/V Wind Field at 1km MSL

OUNWRF
- 1km/Composite Reflectivity
- Maximum (Hourly) Updraft Helicity and Column Hail
- 10m Wind Speed

Composite Reflectivity & Updraft Helicity

### Synthetic GOES-R Datasets
- Convective Products
- Lightning Detection
- Model-Derived Satellite Imagery

Convective Initiation | Convective Nearcasting | Cloud-Top Cooling | RGB Airmass | WRF-Derived Satellite | Geostationary Lightning Mapper
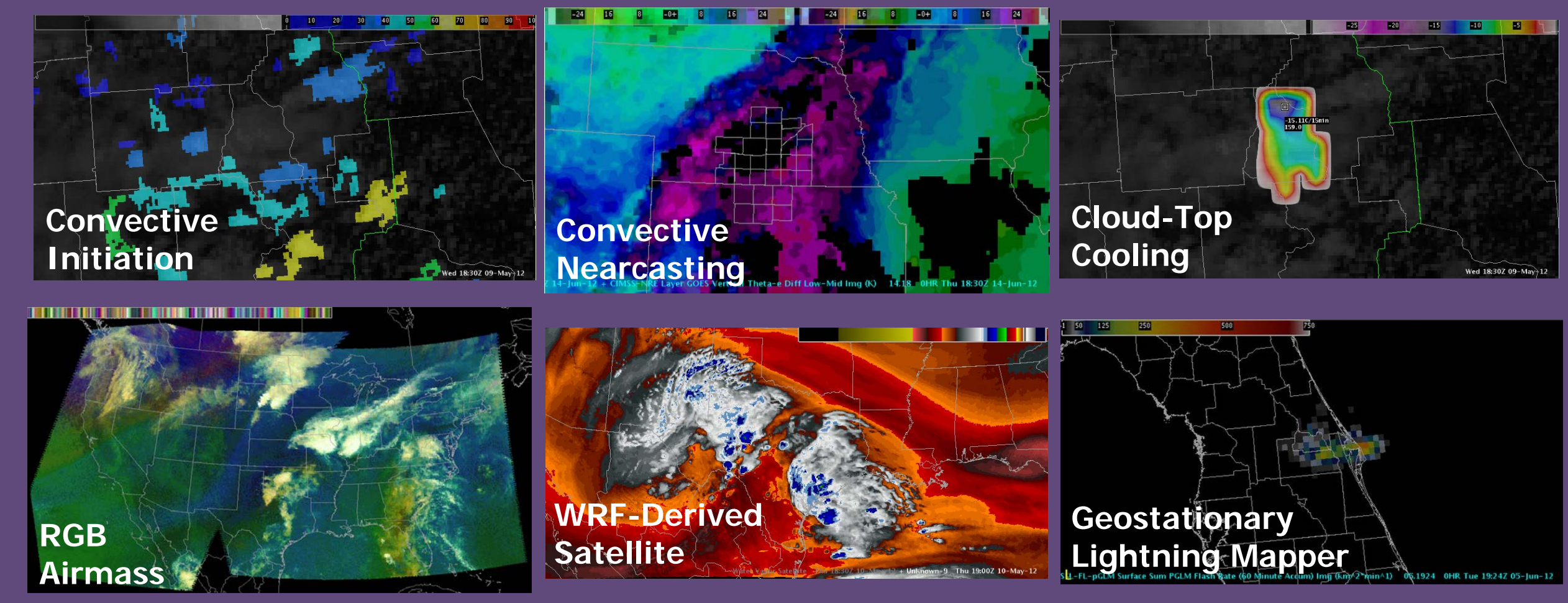
Phased Array Radar Innovative Sensing Experiment (PARISE) 2012

- **Goal?**
  - Evaluate the impact of PAR data on the warning decision making process using AWIPS-2
- **How?**
  - Raw PAR files passed through RPG with output reflectivity, velocity, spectrum width fields archived
  - Two standalone AWIPS-2 installations process and display the data (EWP9 & EWP10)
  - Additional elevation angles and menus added to assist in decoding and forecaster interrogation
  - Archived PAR data played through the system in displaced real-time
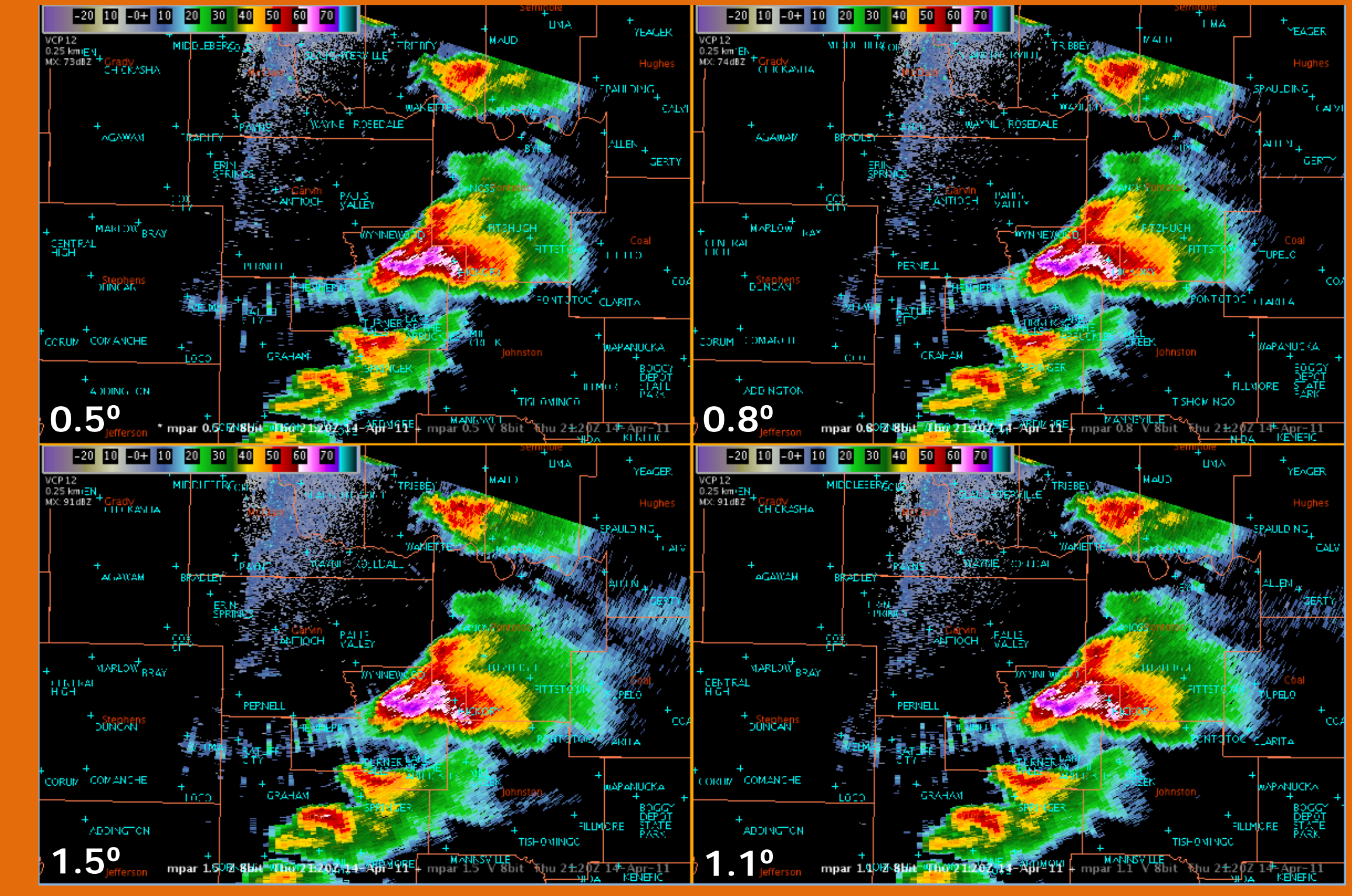
Four-panel display of PAR data from 14 April 2011

The 0.8º and 1.1º elevation angles were added to the AWIPS-2 environment