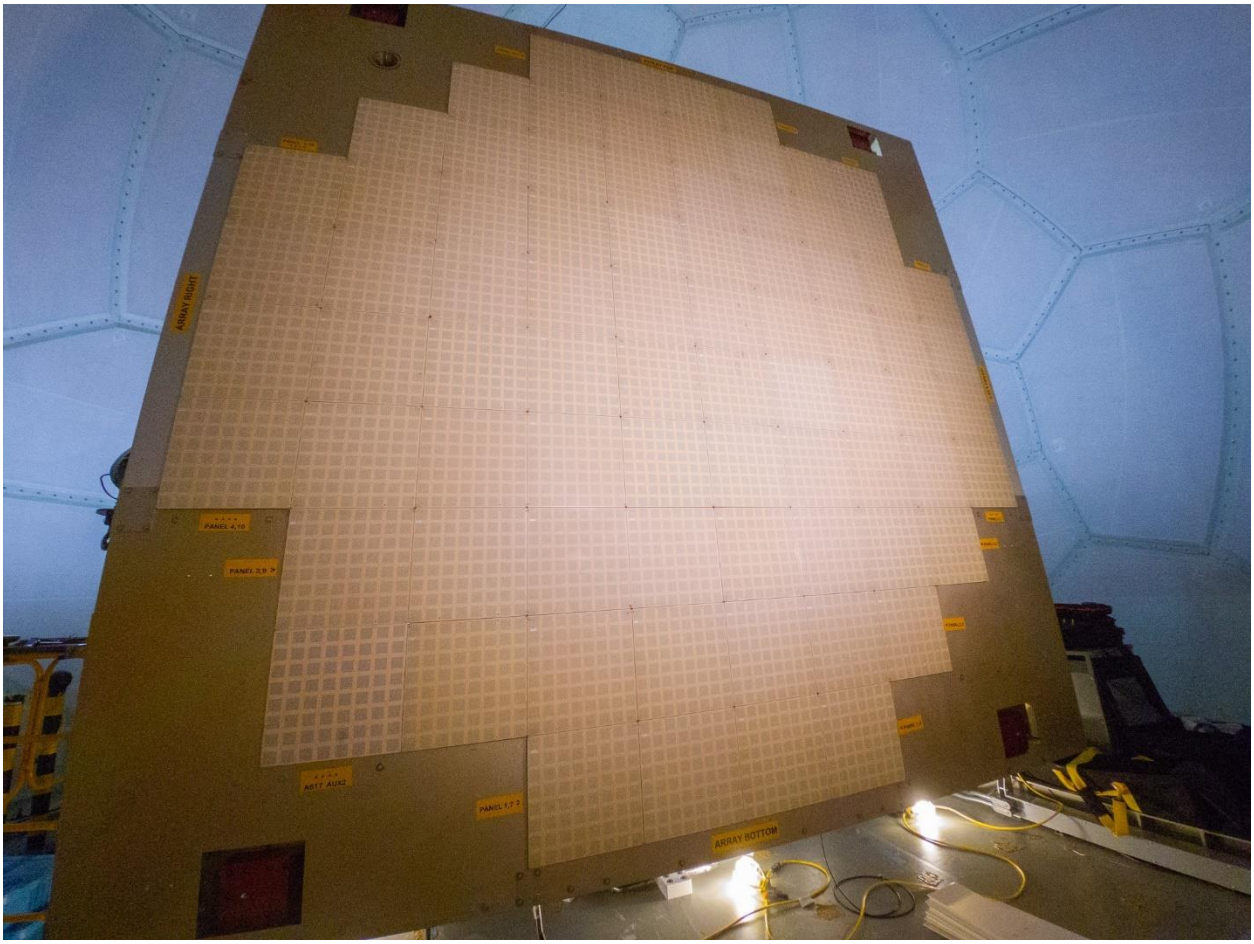
Phased Array Radar and Meteorological Studies

Using data from the dual-polarization KOUN WSR-88D radar and the new Advanced Technology Demonstrator (ATD) – the first ever dual-polarization, phased-array weather radar antenna to operate at S-band frequencies – CIMMS scientists in the Phased Array Radar and Meteorological Studies Team (PAMST) conduct research to evaluate how rapidly- and adaptively- scanned, dual-polarization radar observations advance our understanding of severe storm structure and evolution, better detect severe weather trends, capture rapid transitions in storm type and threats, and improve the performance of hydrologic models. They are also investigating how rapidly- and adaptively-scanned radar data might be used to improve existing radar algorithms and working to understand the optimal tradeoff between update rate, spatial sampling, and data quality for each unique severe weather hazard. That information, in turn, is used to provide feedback to the engineering team as they work to develop a Concept of Operations that will include more advanced scanning strategies in the future.

Ultimately, the goal of all of work conducted by the team is to evaluate the benefits provided by dual-polarization, phased-array radars to the operational meteorology community. The advantages of rapid-scan radar data to forecast and warning operations is therefore also evaluated through frequent interactions with Emergency Managers and National Weather Service forecasters. For example, through a multi-year project referred to as the Phased Array Radar Innovative Sensing Experiment (PARISE), PAMST scientists worked closely with operational forecasters who traveled to the National Weather Center from NWS offices across the country to evaluate the benefits of rapid-scan radar data and products in a real-time, operational setting. In the future, this work will include a collaboration with scientists in the NSSL Forecast Research and Development Division (FRDD) and Warning Research and Development Division (WRDD) to evaluate how rapidly- and adaptively- scanned radar observations can best be integrated into future forecast and warning paradigms that are likely to include advanced numerical models and probabilistic warnings for severe weather hazards.

For further information please contact Dr. Terry Schuur (schuur@ou.edu)

Team Members
Jami Boettcher
Don Burgess
Dr. Erica Griffin
Charles Kuster
Dr. Terry Schuur
Dr. Yixin “Berry” Wen


ARRAY RIGHT
PANEL 4,10
PANEL 3,9
ACTT AUX2
PANEL 1,7
ARRAY BOTTOM