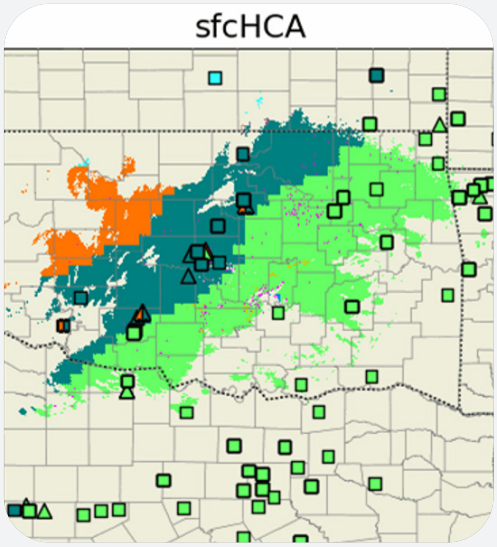
NEXRAD

WSR-88D WEATHER RADAR

National Weather Center
University of Oklahoma

The Cooperative Institute for Severe and High-Impact Weather Research and Operations keeps the United States' weather radar network at the cutting edge so it can deliver the most accurate, timely information to protect lives and property. The Weather Surveillance Radar – 1988 Doppler (WSR-88D), also known as NEXRAD, has served as the backbone of the National Weather Service's severe weather detection and warning system for over 25 years. Through ongoing research and innovation, including recent upgrades like dual-polarization, CIWRO scientists continue to improve how these radars detect rain, hail, snow, tornadoes, and other severe weather hazards.

CIWRO's work enhances radar data quality, develops advanced ways to estimate rainfall and identify dangerous weather, and creates new algorithms that turn radar data into reliable information for forecasters and emergency managers. By extending the usefulness of the existing radar network and paving the way for future capabilities, CIWRO's research helps communities stay safer during high-impact weather.



OBSERVATIONS FUEL INNOVATION

By studying how rain and snowstorms behave in different seasons, CIWRO researchers turn new insights into practical tools for forecasters. Scientists analyze detailed radar observations to better understand what polarimetric radar reveals about severe weather. This knowledge feeds directly into new radar algorithms that help the National Weather Service detect hazards faster and more accurately. For example, the new surface precipitation type algorithm (sfcHCA) combines radar data with models of falling particles, helping forecasters know exactly what's reaching the ground.

43 journal articles published

80+ conference presentations given

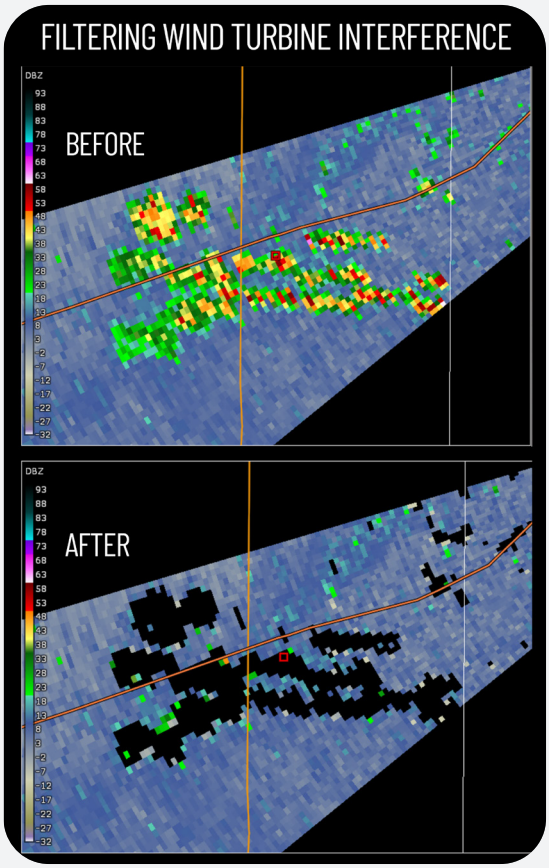
3 book chapters contributed

7 technology transfers completed

AMS Radar STAC Award

REDUCING WIND TURBINE IMPACTS

As wind energy expands across the nation, spinning turbines can interfere with weather radar signals, creating contamination called wind turbine clutter. This makes it harder for National Weather Service forecasters to detect storms accurately and for automated systems to estimate rain or spot tornadoes. CIWRO's advanced signal-processing techniques filter out wind turbine clutter while preserving weather signals. Unlike basic methods that discard bad data, the approach cleans the signal without losing important weather information. Finding fast, effective solutions is vital because traditional filters struggle with the signals from moving turbine blades. CIWRO's work helps wind farms and radar coexist so the NEXRAD network can continue to be a trusted source for timely, reliable weather warnings.



The UNIVERSITY of OKLAHOMA