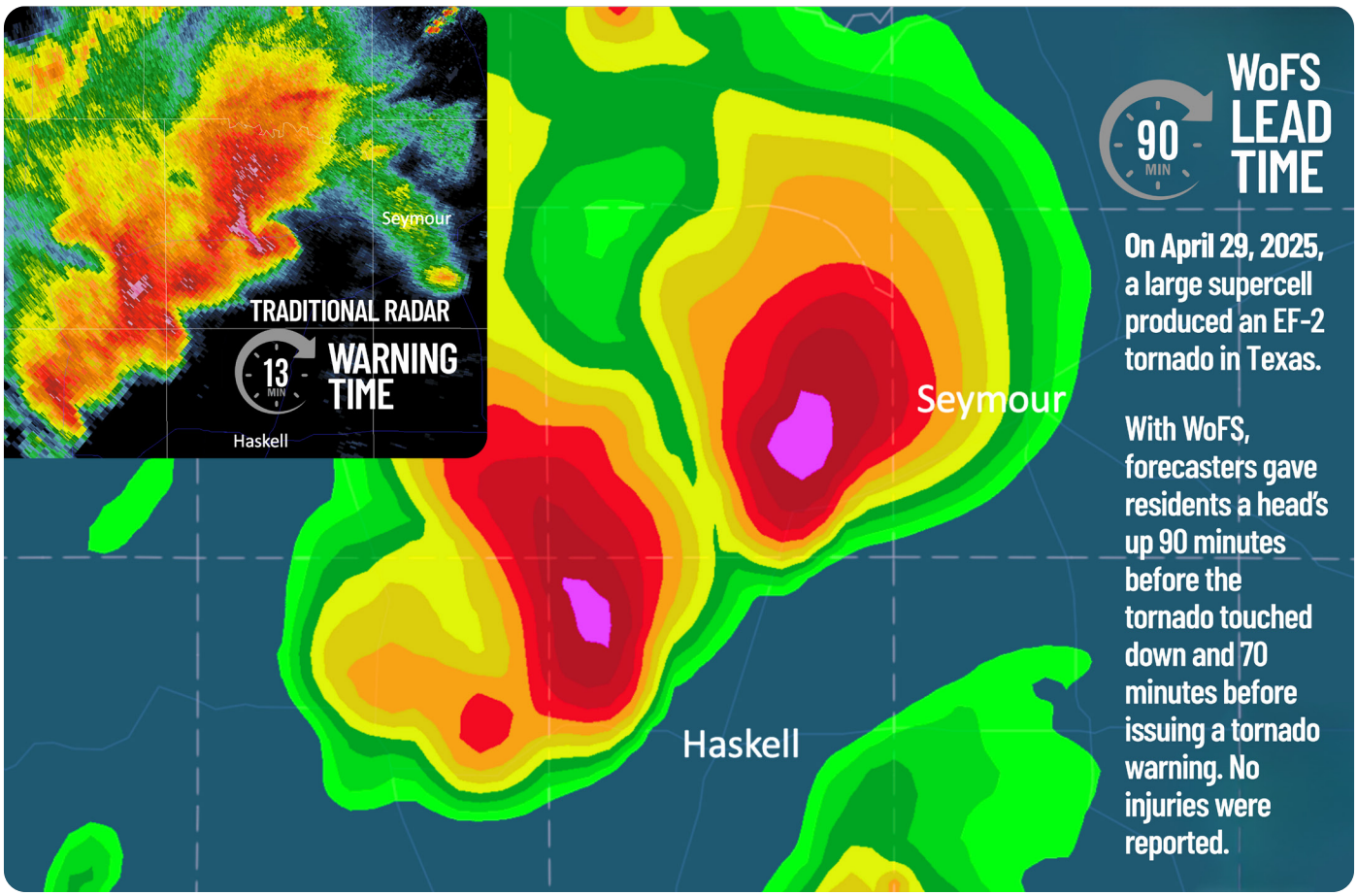
WoFS

WARN ON FORECAST SYSTEM

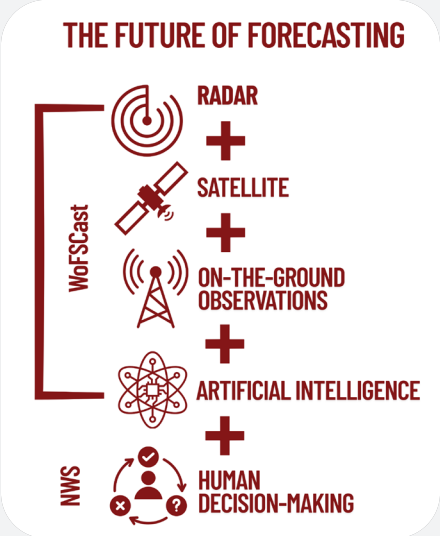
National Weather Center
University of Oklahoma



The Warn on Forecast System is a high-resolution, fast-updating weather model designed to provide earlier watches and warnings for high-impact weather, such as tornadoes, hail, damaging winds, and heavy rainfall. Unlike traditional approaches that detect storms already underway, WoFS predicts which storms will become severe, potentially hours in advance. This proactive approach marks a significant shift in how the public prepares for hazardous weather.

The accuracy and speed of WoFS have been demonstrated numerous times over the past several years, with the most recent examples being the April 29 tornado in Texas (above) and a month before, the EF-3 that struck Carter County, Missouri, leaving a 50-mile path of destruction on March 14.

In Carter County, WoFS predicted a strong chance of a long-track tornado. In response, National Weather Service forecasters in Paducah alerted emergency officials at 7:40 p.m., more than 2 hours before touch down. A Special Weather Statement issued at 8:34 p.m. allowed officials to activate sirens and warn the public much earlier than with radar alone.



MAXIMIZING TIME WITH TECHNOLOGY

WoFSCast is an artificial intelligence system developed to emulate the WoFS. Building upon the groundbreaking WoFS model that combines radar, satellite, and on-the-ground observations, WoFSCast can generate forecasts much faster with less computing power.

By providing more expedient and reliable forecasts, WoFSCast can enhance the ability of meteorologists to issue timely warnings for severe weather events like tornadoes and hailstorms. This advancement has the potential to improve public safety by allowing more time for preparations and responses to impending storms and its hazards.

Gold Medal awarded from U.S. Dept. of Commerce

40 students employed since 2021

79 journal articles published since 2021

154 conference presentations since 2021

NOAA Research Outstanding Scientific Paper Award

PREDICTING WILDFIRES

WoFS-Smoke predicts how fires might spread over the next few hours. This fire-focused version tracks changing winds, humidity and temperature to give emergency managers advanced notice of dangerous fire behavior — such as rapid growth, flare-ups, or shifts in direction. This system will be critical during extreme wildfire events, offering life-saving lead time for evacuations and resource planning. Researchers are exploring ways to connect weather and fire models, aiming to improve safety and decision-making in rapidly evolving wildfire situations.

WoFS represents a promising pathways to saving lives and reducing severe weather losses in the United States. By predicting, not just detecting, hazardous weather events, it marks a leap forward in how society anticipates and responds to the atmosphere's most dangerous phenomena.

The UNIVERSITY of OKLAHOMA