SPC

STORM PREDICTION CENTER

National Weather Center
University of Oklahoma

The SPC team at the University of Oklahoma's Cooperative Institute serves as the research and development arm of the National Weather Service's Storm Prediction Center. CIWRO-developed products and methods are created collaboratively with and specifically for the SPC to address operational needs. Products to enhance the forecasting of severe weather threats up to eight days in advance are developed and maintained by CIWRO scientists. These innovations are fully integrated in SPC operations and guide NWS forecasters nationwide.

Additionally, the SPC team coordinates, facilitates, and executes experiments within NOAA's Hazardous Weather Testbed. These experiments test highly innovative products and technologies like artificial intelligence to assess their potential application for severe weather forecasting. Experiment results and feedback are shared with public, private, and international communities.

INITIAL SUPPORT FOR FIRST RESPONDERS

Severe and fire weather forecasts often trigger preparedness actions in local communities, cause schools to close, and emergency services to increase staffing. CIWRO scientists are working closely with SPC forecasters to develop models and tools that use an ensemble of statistical simulations to estimate the most likely and worst-case impacts from a predicted severe or fire weather event. These tools will help forecasters provide more specific information about the timing and severity of threats to communities and infrastructure so that local governments, businesses, and emergency services are better prepared to respond before, during and after the storm.

16
CIWRO-developed tools transitioned into SPC operations since 2021

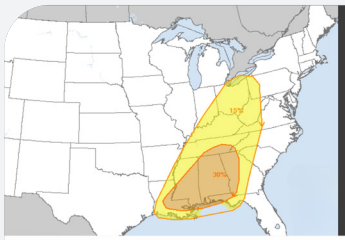
25,000+
lines of operational code developed and maintained by CIWRO

168
training hours of CIWRO-produced content since 2021

7
Hazardous Weather Testbeds conducted since 2021

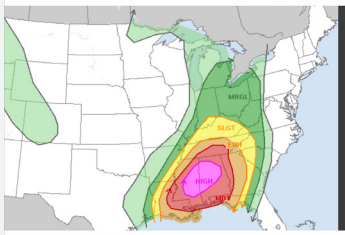
FORECAST GUIDANCE

CIWRO scientists develop and maintain dozens of specialized tools that aid Storm Prediction Center forecasters in the creation of severe and fire weather outlooks. These products – created with a combination of statistical analysis and artificial intelligence – provide forecasters with an automated estimate of when and where the greatest severe and fire weather threats may be over the next 48 to 72 hours. SPC forecasters frequently use this guidance to help focus their attention and streamline their workflows during the forecast process, and these tools have been shown to significantly increase the skill of the operational severe weather outlooks. CIWRO currently maintains forecast guidance related to tornadoes, hail, straight-line winds, lightning, and wildfire spread. Development is constantly ongoing to improve and expand upon these capabilities.



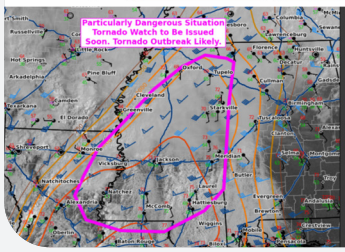
48+ HOURS — EXTENDED OUTLOOKS

CIWRO innovations help SPC forecasters identify severe weather potential up to 8 days in advance



24 HOURS — DAY 1 OUTLOOK

CIWRO tools help SPC forecasters fine-tune outlooks and identify the greatest severe weather threats



1-6 HOURS — WATCHES AND DISCUSSION

SPC forecasters issue severe thunderstorm and tornado watches to notify the public of hazards

The UNIVERSITY of OKLAHOMA