

## **Diagnosing Understandability Challenges in NOAA Climate Prediction Center's Temperature and Precipitation Outlooks**

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Decision-makers often rely upon information regarding probabilistic climate forecasts in order to understand the uncertainty of future weather and climate conditions. The National Oceanic and Atmospheric Administration's (NOAA's) National Weather Service Climate Prediction Center's (CPC's) produces probabilistic temperature and precipitation forecasts, called climate outlooks, and displays the information on a map-based image. Although the NOAA/NWS/CPC climate outlooks have been evaluated over the past decades, the best methods for visualizing climate uncertainty are an ongoing challenging.

Through focus groups/interviews and an online survey, this project seeks to diagnose understandability challenges with the climate outlooks on time ranges of 6-10 day, 8-14 day, 3-4 week, 1-month, and 3-months. This project focuses on four sectors of users; 1) agriculture, 2) emergency management, 3) energy and 4) water resources. To identify participants for the focus groups/interviews and the survey, we constructed a comprehensive database of target end-users in the four sectors listed above. Together, the focus groups/interviews and survey results provided information regarding the types of decisions, decision-making contexts, uses, and challenges experienced with understanding and interpreting the climate outlooks.

Preliminary results show that there are four main understandability challenges experienced across the outlooks. These can be summarized as 1) confusion that white space outside of the U.S. is a no-data region, 2) lack of background knowledge regarding how categories on the outlooks are defined, 3) issues associated with clarity and clutter on the images, and 4) misunderstanding of aspects related to probability and intensity represented on the graphics. We are collaborating with CPC to modify the climate outlooks given the diagnosis from the baseline survey and interview results. The modifications will subsequently be tested for increased understandability and effectiveness using an online survey.