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### NON-COMPETITIVE DIVISION

#### More Certain Decisions from Less Certainty? Certainly!

For decades, the way you received weather information came from a lot of numbers. How hot is it going to be? 100 degrees. How much rain will we get? Half an inch. These are what we call, 'deterministic' forecasts. A single number that represents a forecaster's prediction of future weather. While these values are precise and increasingly accurate as the science of meteorology improves, alone they do not encompass the full scope of possibilities. That forecast of 100 degrees isn't a 100% certainty. It's actually more like 20%, but it's the highest probability of all the possibilities. Does that change your perspective as a decision maker?

In hazardous weather situations, decision makers often wait to hear forecasts reaching key thresholds (e.g. 40 mph winds, 32 F, etc.). While this approach makes for a simple go/no-go decision point, a deterministic forecast can imply certainty in the forecast that isn't there, misleading or misinforming the decisions that need to be made. Recent advancements in forecasting methods from the National Weather Service (NWS) now enables us to evolve our messaging from a deterministic paradigm to a probabilistic approach. We are now able to provide a spectrum of possible impact scenarios and the probability for them to occur, enabling a quicker and more informed response. This talk will highlight how we are evolving our support

for emergency manager partners and how this enables better informed decisions.

**Presentation Theme:** Applications of probabilistic weather forecasting and the lessons learned from communicating hazards to emergency managers in a probabilistic paradigm.

**Collaborators, Advisor(s) and Department(s) that assisted with this research:** National Weather Service Western Region