Probabilistic Weather – Session Overview

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Session Overview

- Why Talk About Probabilistic Weather Information?
- Today's Topic – "How Humans Deal with Uncertainty"
- Today's Speakers
  - Kim Klockow – Effect of Uncertainty Information and Graphic Design on Decision-Making
  - Gary Pokodner – Probabilistic Information in the Cockpit
  - John Huhn/Brian Campos – Using Probabilistic Forecasts for Strategic Traffic Flow Management
- Fall FPAW Topic – "Research Advances in the Use of Probabilistic Weather Information in ATM Decision-Making"
- Fall Speakers
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“There are some things that you know to be true, and others that you know to be false; yet, despite this extensive knowledge that you have, there remain many things whose truth or falsity is not known to you. We say that you are uncertain about them. You are uncertain, to varying degrees, about everything in the future; much of the past is hidden from you; and there is a lot of the present about which you do not have full information. Uncertainty is everywhere and you cannot escape from it.”

Dennis Lindley, *Understanding Uncertainty* (2006)

Terminology

- “I think,” “likely,” “expect” and “probably” convey unquantified, subjective uncertainty
- “A 30% probability of…” delivers quantified uncertainty that may be subjective or objective
- Confidence is associated with subjective (but calibrated) probability assessments
- These issues have been explored by scientists in great detail, but is this work relevant to ATM decision-makers such as TFM planners, aircraft dispatchers and GA pilots?

Heuristics and Biases

- FAA AWRP-sponsored research has documented that heuristics and biases play a significant role. For example:
  - "Yesterday's forecast stunk, so I don't trust it today"
  - "The HRRR has never lied to me"
  - "It's so humid outside, there must be storms today"
- As long as humans continue to play a critical role in ATM decision-making, we must deal with heuristics and biases

Deterministic Forecasts

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- Often users still claim that they need the "deterministic" forecast
- How do we make sure our users understand that deterministic forecasts indeed have inherent uncertainty in them?
- Are identically rendered 2-hour and 8-hour forecast products actually confusing to the users?

Enough Introduction Already!

- Listen to these presentations and to the presentations in the Fall session and see if these questions/issues are being addressed.
- The decision support tool of the future might be able to process all possible outcomes, but the human decision maker isn't quite ready for that.
- Enjoy the session – we should have 15-20 minutes at the end for Q&A and discussion.