Aviation Weather Research Program (AWRP) Direction

Presented to: FPAW Meeting
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Overview

• AWRP success and progress
• Where is AWRP headed
  – Weather Integration
    • Short and mid term research opportunities
  – Inter-agency collaboration
  – Research Evolution Plans
  – Other weather research areas (Space Wx, Winter Wx, Volcanic Ash)
• Aviation Weather Demonstration and Evaluation (AWDE) services
• A more detailed look at our Convective Weather Project plan
• Challenges Ahead
AWRP Successes

• AWRP continues to sponsor important weather research to improve and enhance the safety, capacity and efficiency of the NAS:
  – Sponsorship of CoSPA (MIT-LL, ESRL, NCAR)
  – Sponsorship of cutting edge icing, turbulence, C&V, and QA research (NCAR, ERSL)
  – Collaboration with NWS to improve ADDS, Experimental ADDS (NCAR), and HEMS
  – Sponsorship of critical modeling enhancements from the RUC to the WRF-RR to the HRRR (ESRL)
Some AWRP Sponsored Initiatives:
AWRP Direction

• AWRP has been focused on “state of the science” research
• Though successful for years, is it time to change direction?
  – Are we moving at a pace faster than we can put science into operations?
  – Can we put together business cases that justify science enhancements?
  – Are we doing duplicative work with other agencies?
  – With NWS tasked to build and populate the 4-D Weather Data Cube, will some of this research transition to them?
The Aviation Weather Division believes *gradual* change is indeed in order to stay relevant in the NextGen era:

- R&D more focused on the integration of weather information into decision-making
- Explore opportunities to address near and mid term research opportunities on the path to full NextGen solutions
- Improved collaboration with other agencies to maximize available budgets, make smarter business cases, and avoid duplicative research
- Improved documentation and process planning
AWRP Direction

• Exploring Integration Opportunities:
  – Looking for opportunities to integrate weather into today’s TFM tools
    • IDRP, CACR
  – Integration into the tools, concepts of the future:
    • TBFM, STBO
  – Developing additional Weather Avoidance Fields that translate weather into impact
Improved inter-agency collaboration:

- Beginning work with NWS on select collaborative research plans to consider if/how our state of the science forecasts can be modified/improved by the human forecaster
  - Deriving legacy products (that aren’t going away anytime soon!) be derived from these collaborative efforts (SIGMETs, AIRMETs, gridded fields, etc…)
  - Ceiling and Visibility Grids is the initial test case
- Supporting previously funded NASA initiatives
  - Oceanic convection
  - Convective initiation from satellite imagery
Research Evolution Plans (REPs)

- Analysis of internal research coordination process indicated that we need to do a better job of selecting, prioritizing, and managing research projects for impacting phenomena.
- The REP will describe an appropriate research strategy for a given impacting wx phenomena, leading to the eventual delivery of a capability that meets the NextGen weather vision.
- The REP will give a strategic-level “storyline” that calls out and aligns annual research project planning for a given phenomena.
- Initial REP development will begin this fall and will include C&V, Icing, Turbulence, and Convection.
- REPs will be completed in the next 9-18 months, and available to all upon completion.
Aviation Weather Demonstration and Evaluation (AWDE) services

- Service provided and staffed by Aviation Weather Division team at FAA Tech Center in Atlantic City, managed by Tom Carty
  - Perform technical demonstrations and evaluations to meet Aviation Weather Division needs
    - Identification, cost estimation, planning and conduct
    - Elicit customer support through planning and coordination
    - SMEs available in human factors, meteorology, engineering, and more…
    - Ability to access, archive, and retrieve weather data
    - Flexible laboratory environment adjacent to other NextGen labs and specialty services
FY12 Convective Weather Project Plan

• AWRP convective weather research has been focused solely on CoSPA.

• While CoSPA will still be improved upon, other convective research is necessary:
  – Better definition and understanding of uncertainty information in convective forecasts
  – Oceanic Convective weather forecasts
  – Lightning impacts to terminal operations
  – HRRR improvements
  – Convective initiation studies
  – Model derived CCFP first guess fields
Challenges Ahead

• The NextGen slide to the right
  – Many AWRP science initiatives focused research on IOC and MOC dates that have moved

• The FAA’s internal reorganization

• Quantification of benefits
  – Metrics
  – Measuring the value add of human in/over the loop
  – Product baselines

• Getting new research in front of the user (the prototype?)

• Sustained funding
  – Smart business cases
  – Inter-agency collaboration
  – Ensure no mixing the “color” of money
The Aviation Weather Research Team

• **AWRP Program Manager – Warren Fellner**
  – Research Transition and SME – Tom MacPhail
  – Convection – Jenny Colavito
  – Turbulence – Tammy Farrar
  – Icing – Dino Rivito
  – C&V – Jim Hartman
  – QA – Cynthia Grazynski
  – AWDE – Starr McGettigan
  – AWRT – Victor Passetti

• **WTIC Program – Gary Pokodner**
  – Lead Engineer – Eldridge Frazier
  – Human Factors Psychologist – Ian Johnson