



**Federal Aviation
Administration**

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**

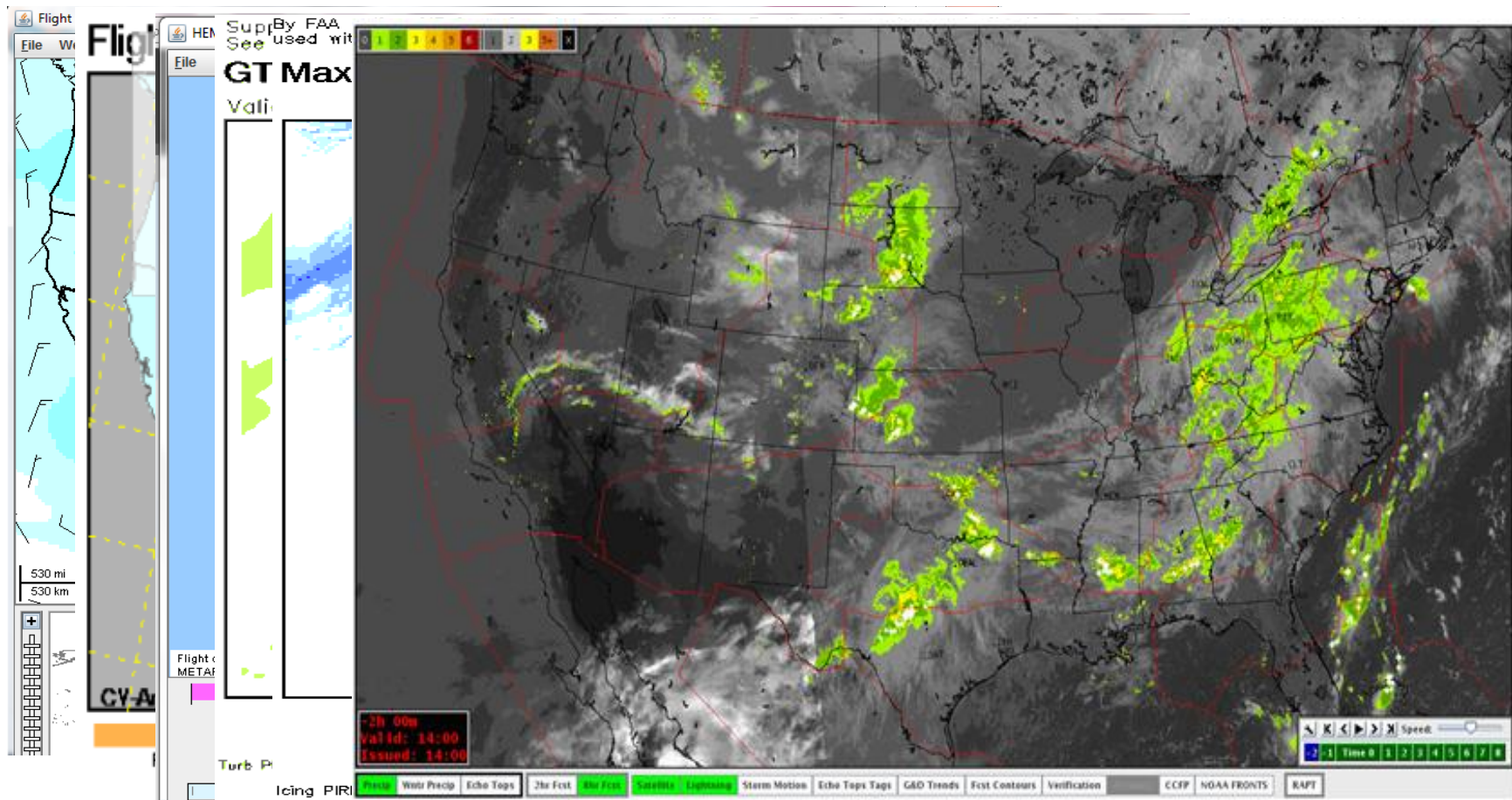


AWRP Successes

- **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, ESRL)
 - 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?



AWRP Direction

- **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



AWRP Direction

- **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



AWRP Direction

- **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

