NOAA Aviation Forecast Process in the NextGen Era

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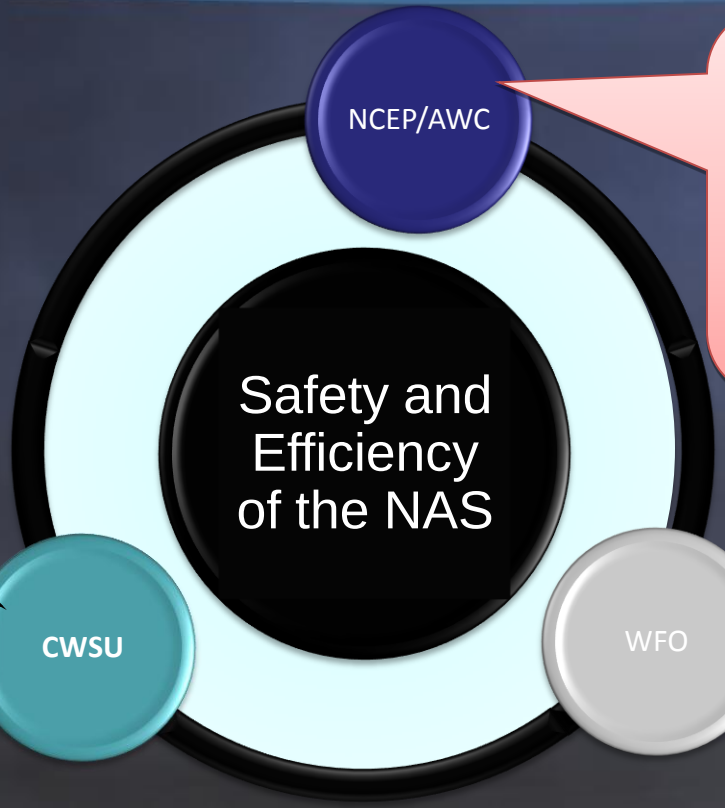
Cyndie Abelman

National Weather Service

Chief, Aviation Services Branch

Current NWS Aviation Services



National Guidance
SIGMETS & AIRMETS
Area Forecasts
Int'l Flight Planning
Volcanic Ash Advisory
CCFP
Collaboration

On-site ARTCC support
Center Weather Advisories
Met Impact Statements
Emergency Planning
Collaboration

Terminal Forecasts
Digital Grid Production
Airport Weather Warnings
Collaboration

The Forecast Process Challenge:

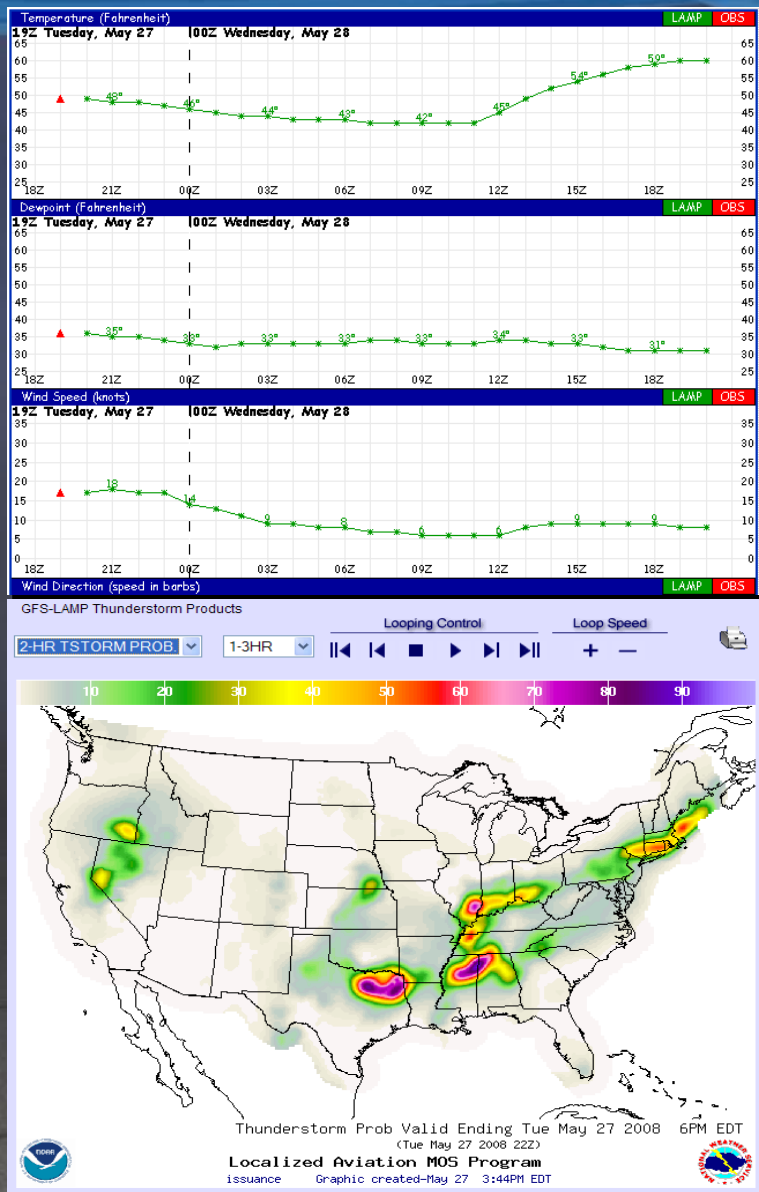
- Current NWS forecast processes not designed to meet the resolution, refresh and latency of emerging NextGen requirements
- Extending digital services in the vertical is critical
  - *NDFD is the NWS "SAS" at the surface today*
  - *Is it realistic to expect forecasters to modify 4-D grids?*
- We must address the consistency issue
  - *FAA demanding better product consistency*
- We must ensure that products and services vital for the GA community continue to be produced or "fall out" of 4-D grids
- We must also ensure ICAO requirements are met

The Forecast Process Challenge:

- NOAA and research partner R&D working to develop Meteorologist-in-the-Loop (MITL) and Meteorologist-over-the-Loop (MOTL) techniques
  - *MITL – add value inside the process, modify gridded output with intuitive GUI*
  - *MOTL – add value before models are run, model output oversight*
- So what are we looking at:

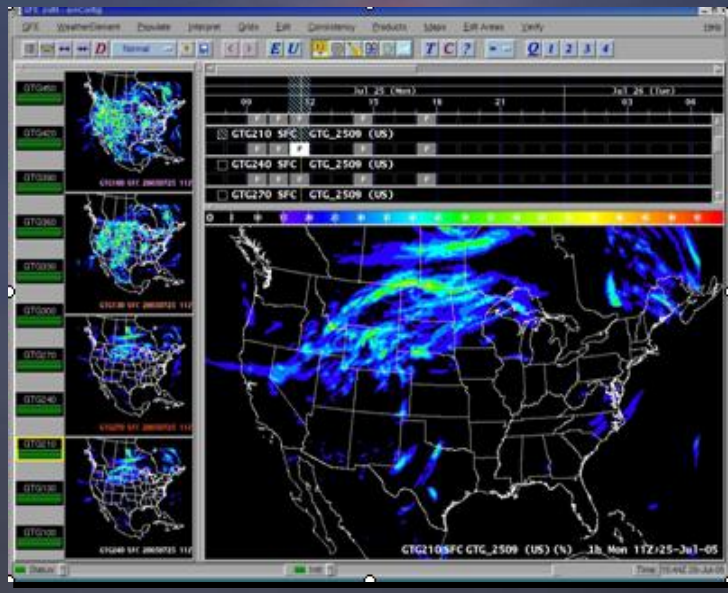
LAMP

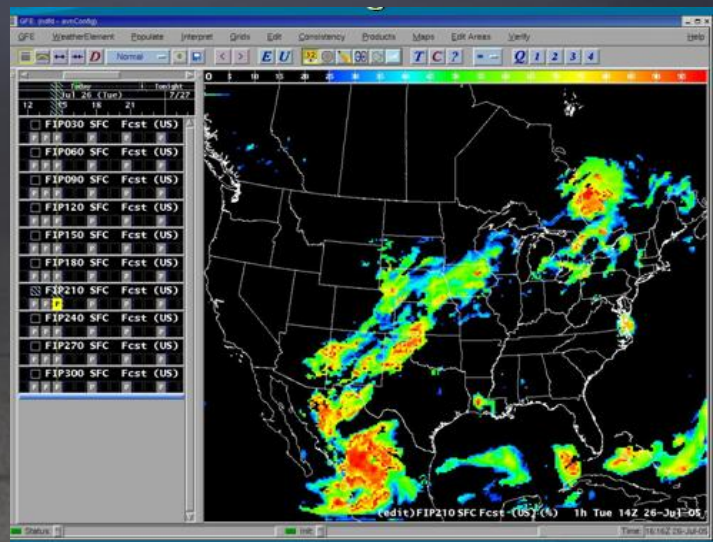
- Hourly updates of GFS MOS data for aviation
- Uses hourly observations (METAR, lightning, and radar data) to update MOS guidance
- Statistically outperforming persistence and MOS during early forecast periods
- Probabilistic output consistent with NextGen probability requirements



IC4D

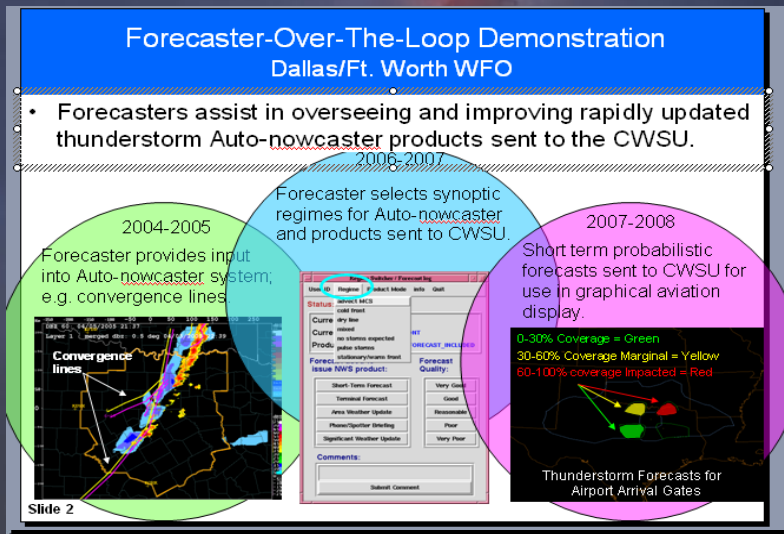
- Interactive Calibration of Aviation Grids in 4 Dimensions (IC4D)
- Aviation weather research community (NCAR) now producing 4-D (x, y, z, t) gridded guidance for parameters such as turbulence and icing (RUC2-based)
- Operational forecasters may be able to add skill to this forecast guidance
- Interacting with a 4-D data set containing multiple parameters presents an operational challenge
- Operational testbeds at Alaska AAWU, NWS Forecast Office in HNL, and soon at AWC

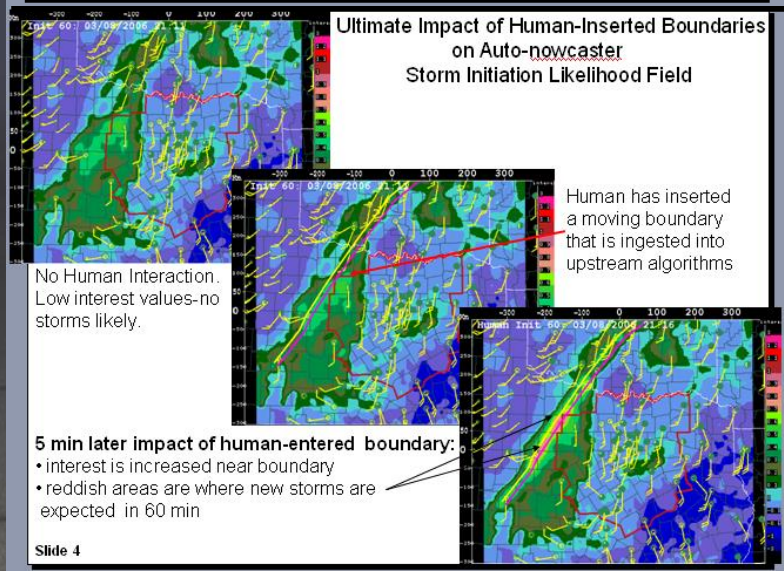




Auto-Nowcaster

- Program to determine the role of the forecaster in providing value-added enhancements to automated, gridded aviation convective products
- Goal is to improve the consistency, reliability, and accuracy of 0-2 hour convective forecast products for automated aviation weather digital products (4-D grids) for the NAS





Next Steps:

- **The NWS has outlined a vision address the forecast process challenge**
- **What will we need?**
  - ***Higher resolution, storm resolving models***
  - ***New situational awareness and decision assistance tools***
  - ***Tools which enable forecasters to determine when, where, and how to add value***
  - ***Improved real-time verification***

Next Steps:

- **We need a holistic solution to address the forecast process:**
  - ***Bigger than aviation, but NextGen requirements are the initial impetus***
  - ***Building an end-to-end approach with coordinated partnerships between NWS HQ, NCEP Centers, Regions, and the Field***
  - ***Science and Technology alone will not solve this challenge***