Convective Weather Issues

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FPAW meeting, 19 Oct 2006
Orlando
Main issue: Large number of storm products confusing to users

- Need single aviation storm forecast
  - Provide one framework for terminal, enroute and eventually oceanic
  - Use for NGATS 2012-2025
  - Improve accuracy of convective forecasts faster
    - Use best technology from multiple organizations in one system

- Improve ability to translate storm forecasts into ATC impact forecasts
  - Route impacts
  - Capacity loss
  - Usable airspace

- Provide forecast uncertainty information
  - Needed to determine true risk of ATC impact

Examples of Aviation Storm Forecasts

CoSPA Preliminary Design Review  Convective Weather PDT
Consolidated Storm Prediction for Aviation (CoSPA)

Preliminary Design Review presented at NBAA on Tuesday, Oct. 17
Purpose of the meeting:

Present the Preliminary Design of CoSPA to the community for feedback and comment
Initial Capability 2012
Scientific developments required

(F) Consolidated Storm forecast system
unified
deterministic and probabilistic
CONUS to local scale (Global in 2025)
satisfy user needs (FAA, DOD, Etc.)
utilize capabilities of entire convective community
integrates models, statistical techniques, fuzzy techniques, and human input
determine role for human input in forecast process
When:

Need a system ready for NGATS 2012 IOC (at least in an operational demonstration).
Key Features of System

– Due to the inherent difficulty of making 6 hour storm forecasts, the proposed system should be easily upgradeable as research progresses

– Forecasts should be output to an easily accessible database at a high update rate and forecast frequency in order for users to easily access and tailor the forecast for specific user needs
Consolidated Storm Prediction for Aviation (CoSPA)

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Feedback from meeting:

1. Need to fit into network enabled infrastructure planned by the FAA and JPDO.
2. 4D database main output of system
3. Coverage global by 2025
Product Dissemination via Prototypes of NGATS
Sensor data (radar, lightning, satellite, observations), numerical forecast guidance and forecaster input are obtained by network enabled operations (e.g., SWIM)
## Consolidated Aviation Storm Forecast Effort

### Today...

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### By 2012...

- **Conus radar coverage**
  - 1 km resolution, 5 min update
  - Precip, Echo Tops, TBD...
- **Animated Forecast Loops**
  - 0-2 hr (5 min interval)
  - 2-6 hr (15-30 min interval)
- **Forecast Products (all 0-6 hr)**
  - Deterministic Forecasts
    - Precip, Echo Tops, Route Impacts, TBD...
    - Used in summer and winter
  - Probability Forecasts
    - Convection, Snow, Sector Capacity, TBD...
  - Surface Fronts

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**Subscribers**

- ATC Decision Support
- CWPDT Members

**Data Sources**

- Central Processing Publish & Subscribe
- Open System
- Plug & Play Modules

**Best Practices**

- Central Processing Publish & Subscribe
- Open System
- Plug & Play Modules