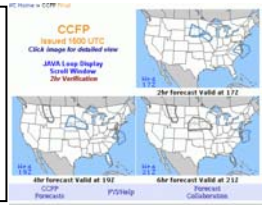
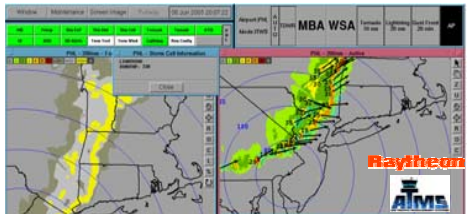
Convective Weather Issues

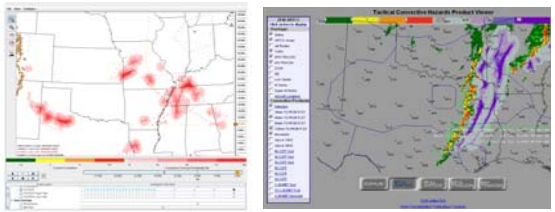
Marilyn Wolfson, Convective PDT lead
Roy Rasmussen, Convective PDT Alternate lead
FPAW meeting, 19 Oct 2006
Orlando

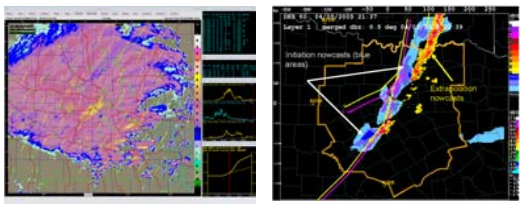
Main issue: Large number of storm products confusing to users

Examples of Aviation Storm Forecasts









- **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**

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

July 11-12 NGATS IOC meeting

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
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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

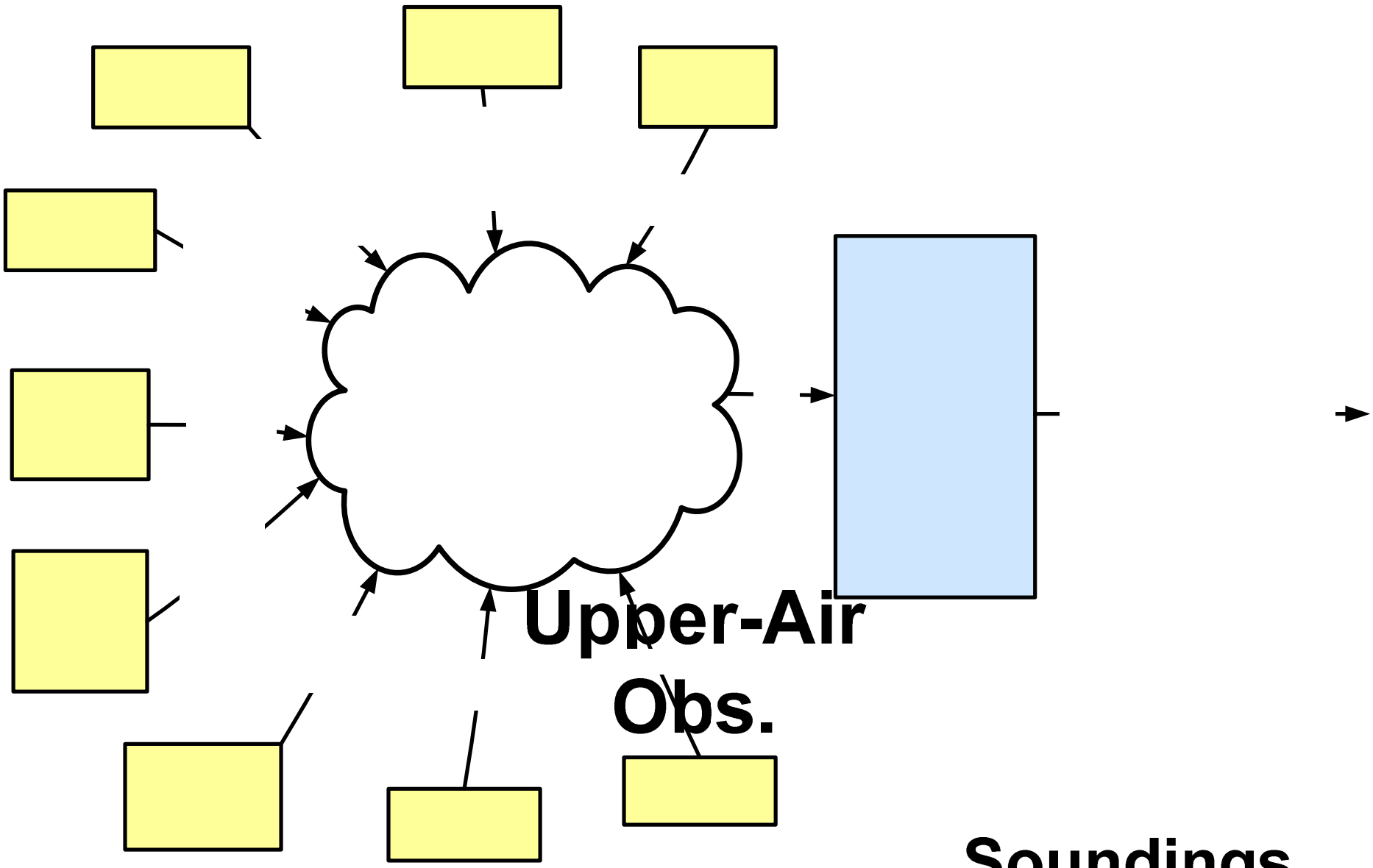
Consolidated Storm Prediction for Aviation (CoSPA)

Preliminary Design Review presented at NBAA on Tuesday, Oct. 17

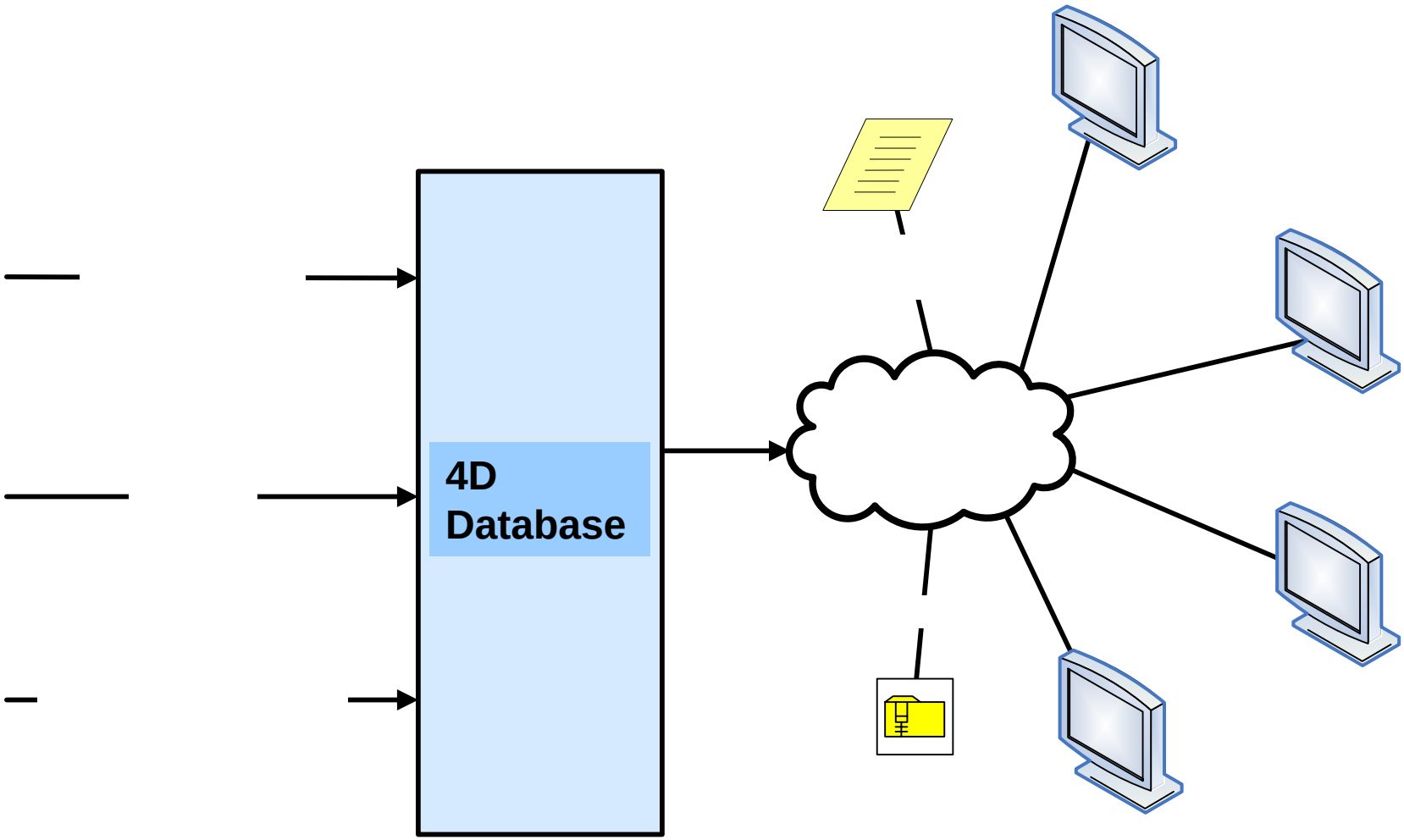
Feedback from meeting:

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

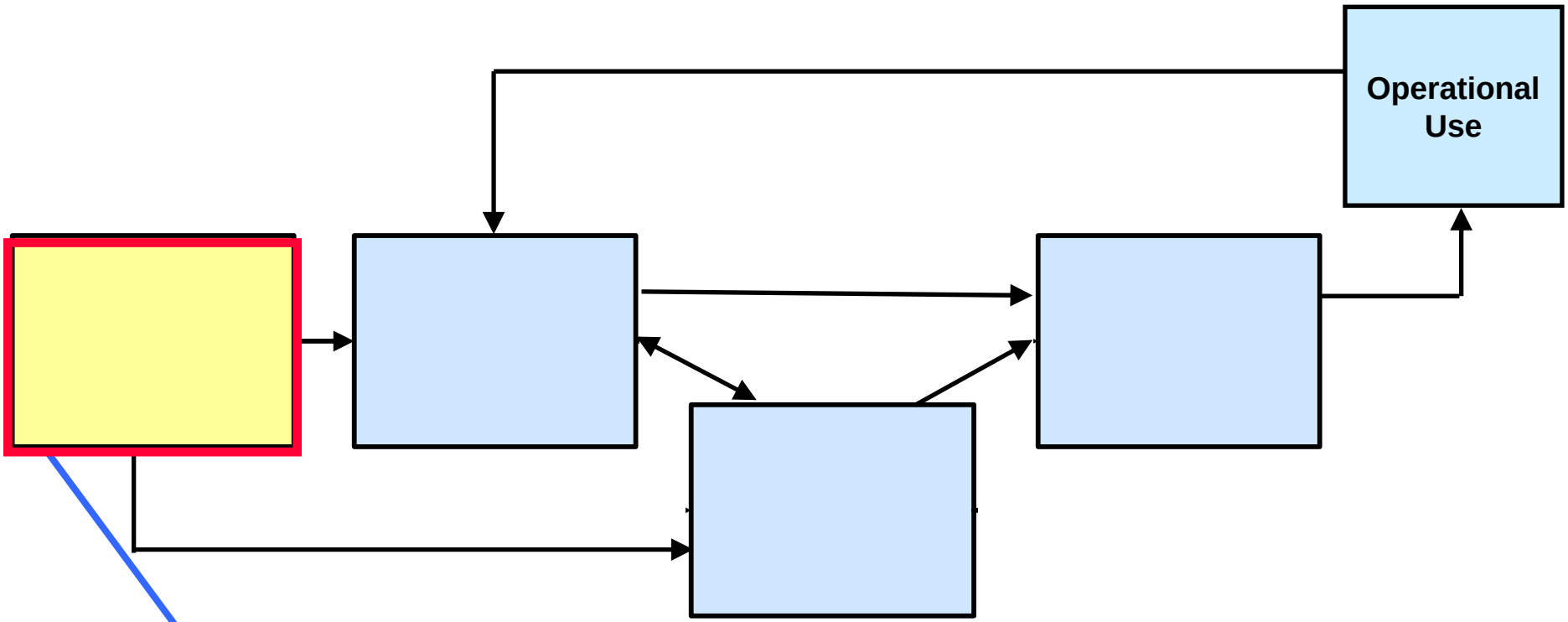
Data Ingest



Product Dissemination via Prototypes of NGATS



Consolidated Forecast Development Process



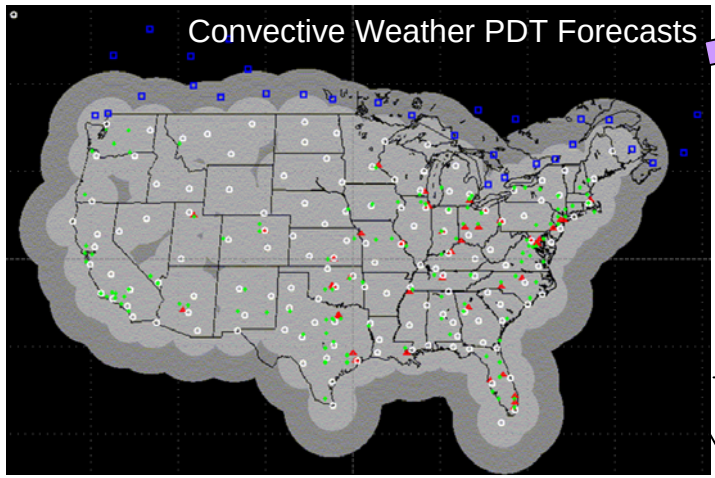
Sensor data (radar, lightning, satellite, observations), numerical forecast guidance and forecaster input are obtained by network enabled operations (e.g., SWIM)

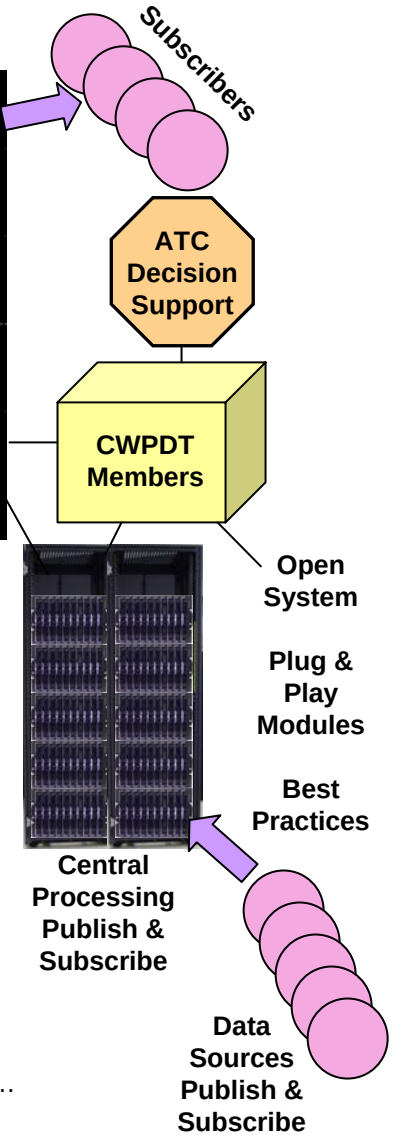
Consolidated Aviation Storm Forecast Effort

Today…

NWS Forecasts	Sigmets
ITWS	WARP
CCFP	ETMS
NCWF	CIWS
ANC	Private Vendors

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