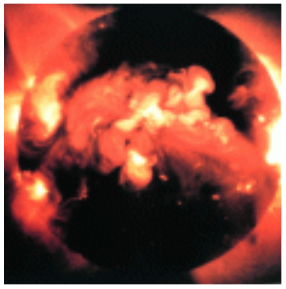
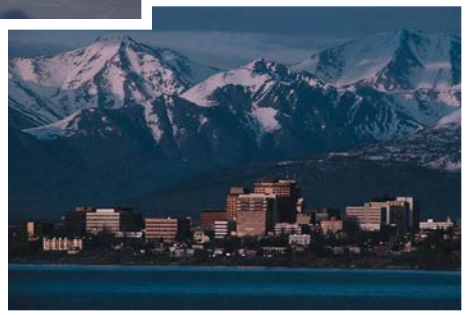
Enhancing Digital Services

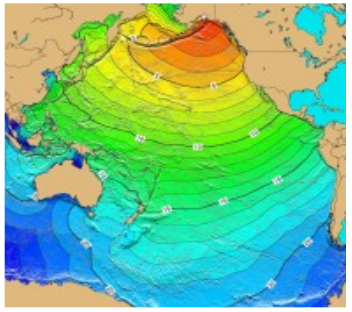
Changing Weather – Changing Forecasts

- Aviation
- Climate
- Fire Weather
- Marine Weather and Sea Ice
- Public Forecasts and Warnings
- Rivers/Hydrology
- Space Weather
- Tsunami
- Volcanic Ash








Cammye Sims-Uskievich

Enhanced Digital Services Roadmap

- Enhanced Short Term Forecasting
  - Detailed hourly grids – updated at a minimum every 3 hours
- Digital Aviation Services
  - Adding aviation elements to the National Digital Forecast Database (NDFD)

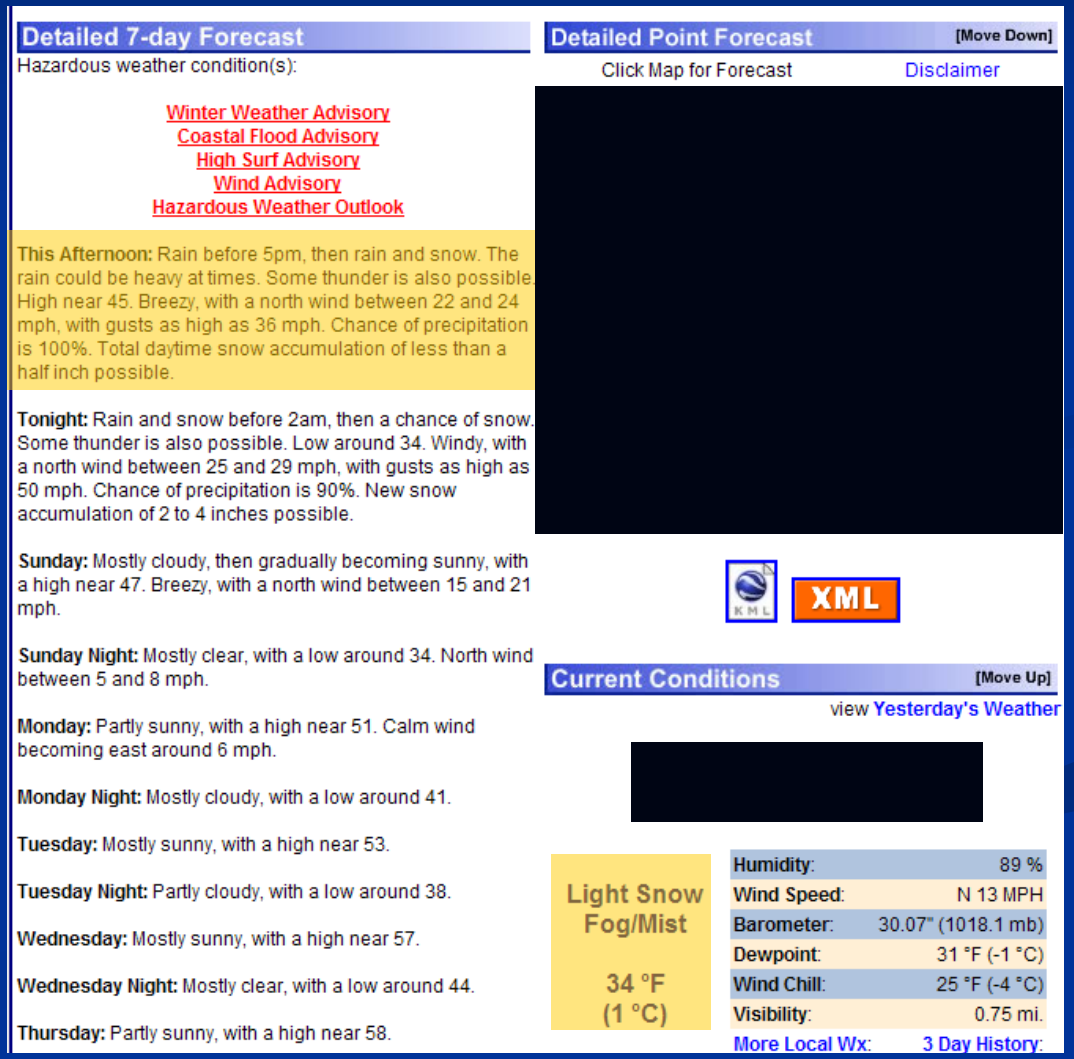
The Enhanced Short-Term Concept

- Keep the forecast "fresh"
- Focus on *"high impact"* weather events – to support Decision Support Services
- Be as definitive and detailed as possible within the next 36 hours
  - Detailed hourly grids are a must – updated as needed or at a minimum every 3 hours
  - Tight gradients
- Collaborate meteorology!

Why Enhanced Short-Term?

- Forecast should be representative at T=0!

Update was issued less than one hour ago!



Detailed 7-day Forecast

Hazardous weather condition(s):

Winter Weather Advisory
Coastal Flood Advisory
High Surf Advisory
Wind Advisory
Hazardous Weather Outlook

This Afternoon: Rain before 5pm, then rain and snow. The rain could be heavy at times. Some thunder is also possible. High near 45. Breezy, with a north wind between 22 and 24 mph, with gusts as high as 36 mph. Chance of precipitation is 100%. Total daytime snow accumulation of less than a half inch possible.

Tonight: Rain and snow before 2am, then a chance of snow. Some thunder is also possible. Low around 34. Windy, with a north wind between 25 and 29 mph, with gusts as high as 50 mph. Chance of precipitation is 90%. New snow accumulation of 2 to 4 inches possible.

Sunday: Mostly cloudy, then gradually becoming sunny, with a high near 47. Breezy, with a north wind between 15 and 21 mph.

Sunday Night: Mostly clear, with a low around 34. North wind between 5 and 8 mph.

Monday: Partly sunny, with a high near 51. Calm wind becoming east around 6 mph.

Monday Night: Mostly cloudy, with a low around 41.

Tuesday: Mostly sunny, with a high near 53.

Tuesday Night: Partly cloudy, with a low around 38.

Wednesday: Mostly sunny, with a high near 57.

Wednesday Night: Mostly clear, with a low around 44.

Thursday: Partly sunny, with a high near 58.

Detailed Point Forecast [Move Down]

Click Map for Forecast Disclaimer

XML

Current Conditions [Move Up]

view Yesterday's Weather

Light Snow
Fog/Mist

34 °F
(1 °C)

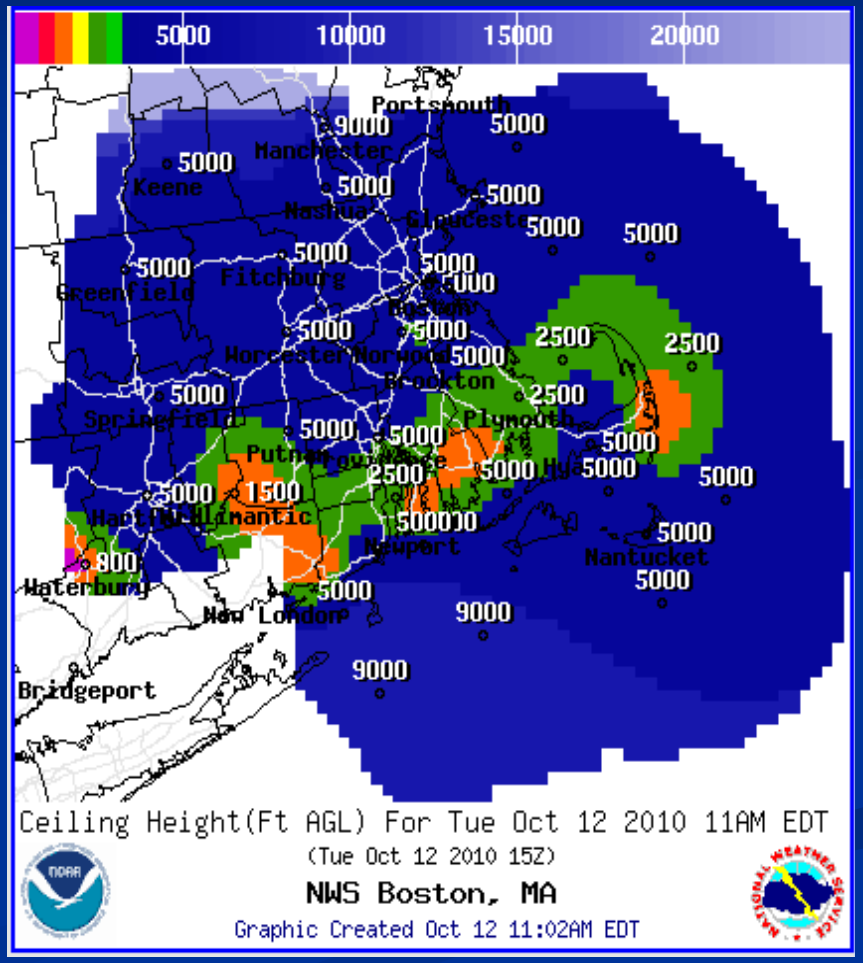
Humidity:	89 %
Wind Speed:	N 13 MPH
Barometer:	30.07" (1018.1 mb)
Dewpoint:	31 °F (-1 °C)
Wind Chill:	25 °F (-4 °C)
Visibility:	0.75 mi.
More Local Wx:	3 Day History:

Digital Aviation Services

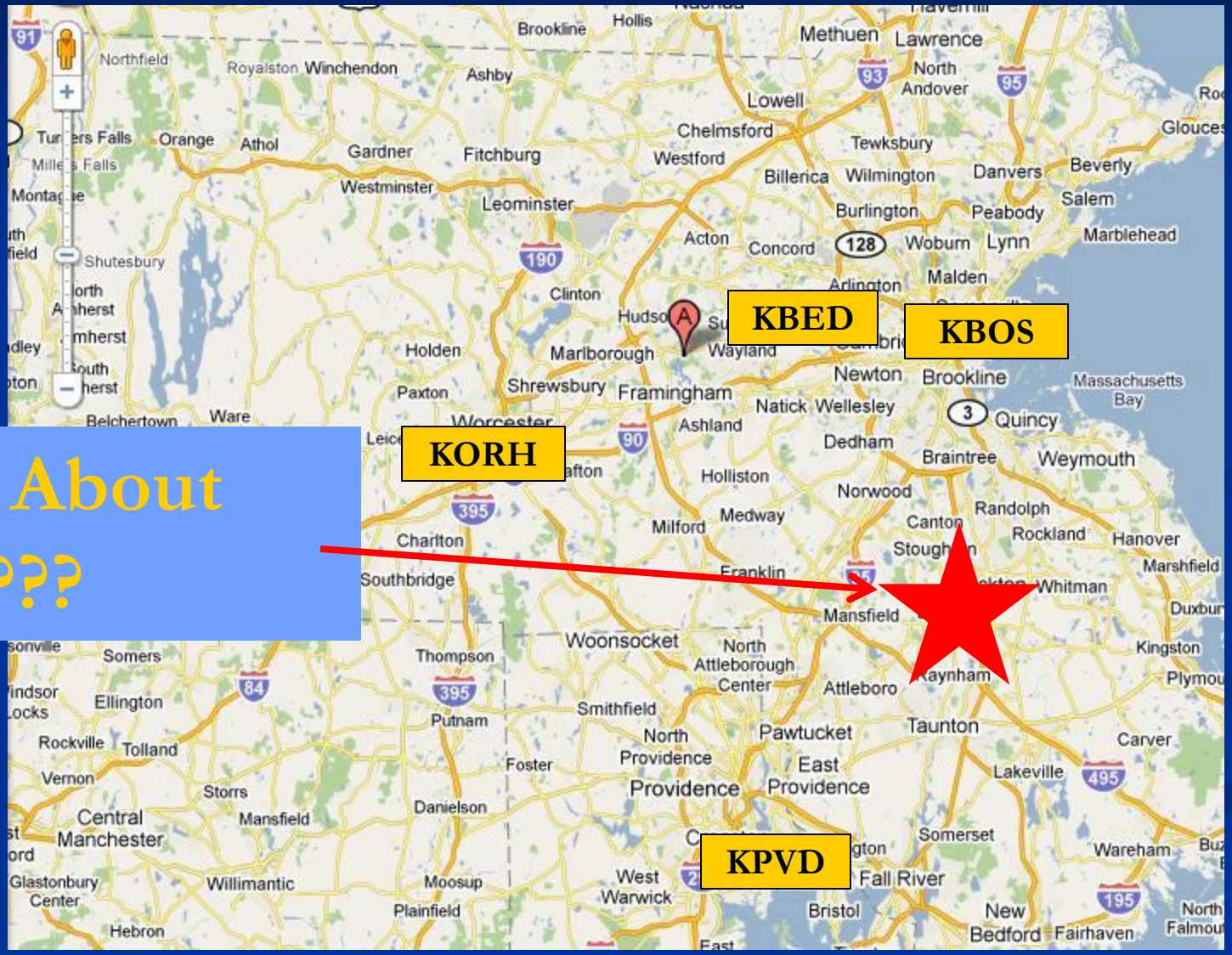
- There is a demand for this information!

What are Digital Aviation Services

- Adding aviation elements to the National Digital Forecast Database (NDFD)
  - Provide hourly graphical forecasts of ceiling and visibility out to 36 hours
- TAFs are generated from the database with little to no post-editing

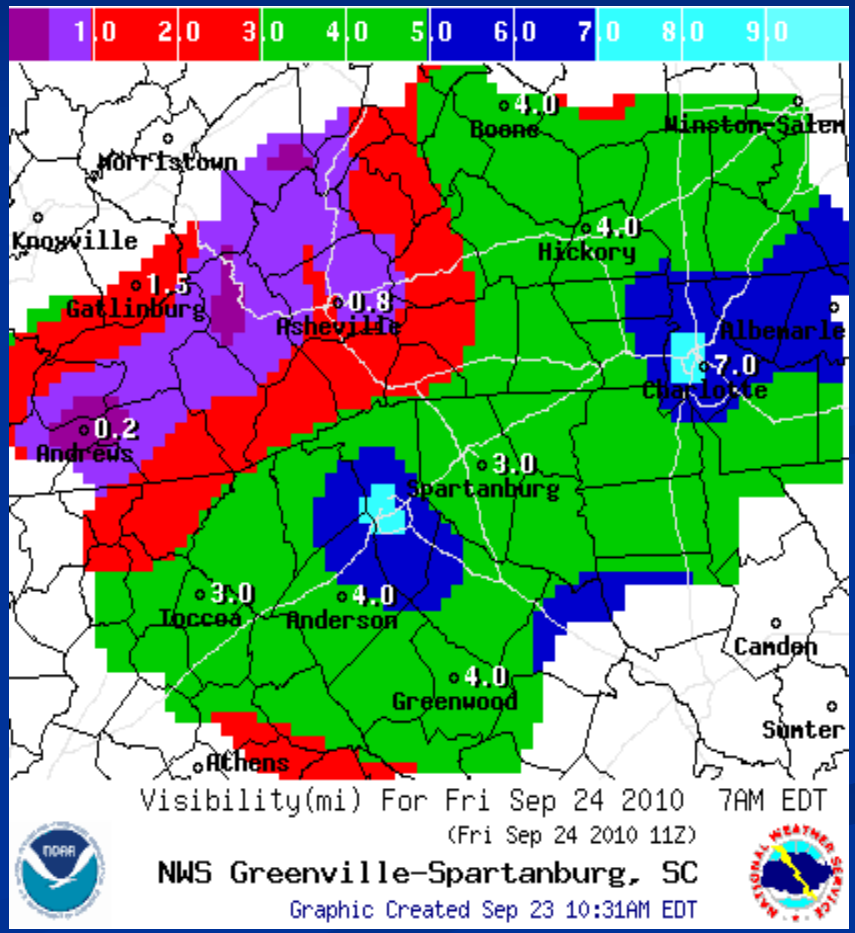


A Change in Thinking



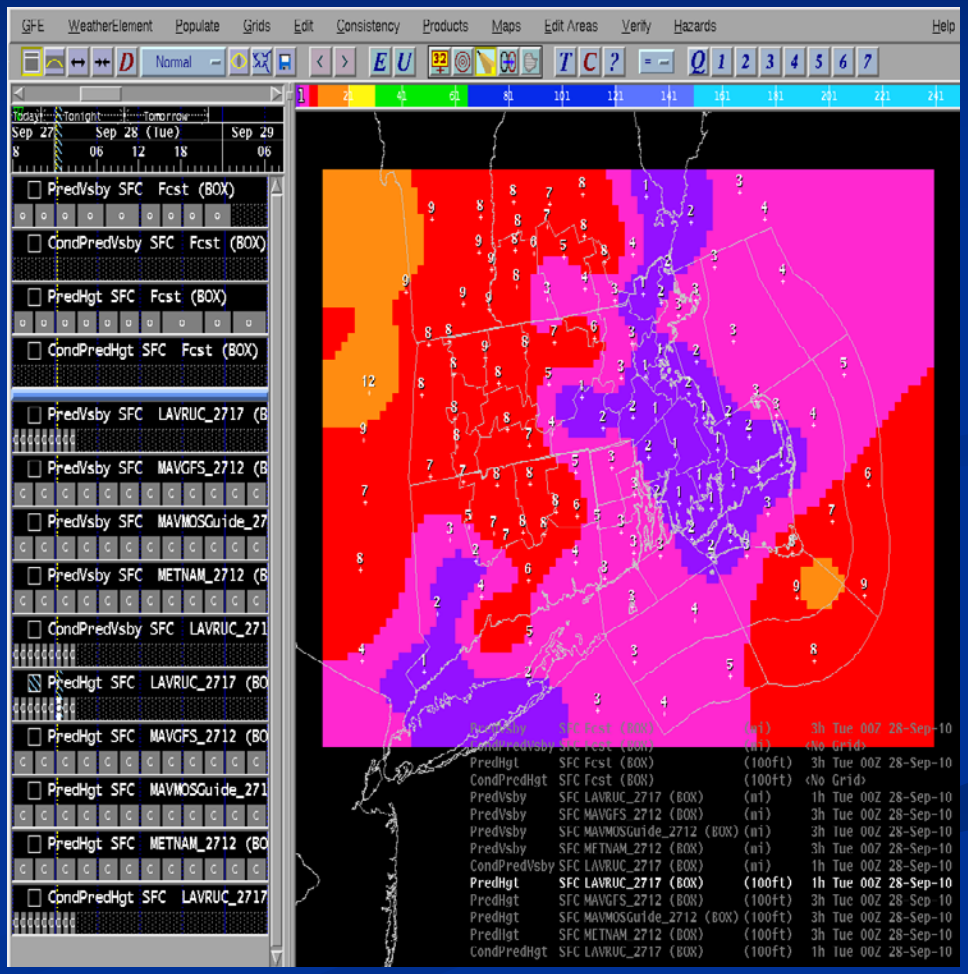
Why Digital Aviation Services?

- Moves toward the NextGen requirements:
  - Digital ceiling and visibility
    - Build a national ceiling and visibility grid to be used by AWC
  - Consistent aviation forecasts, the Single Authoritative Source (SAS) for Ceiling and Visibility
- Important guidance tool for medical services, search and rescue, and General Aviation
- Improves NWS forecast consistency with aviation forecasts and beyond

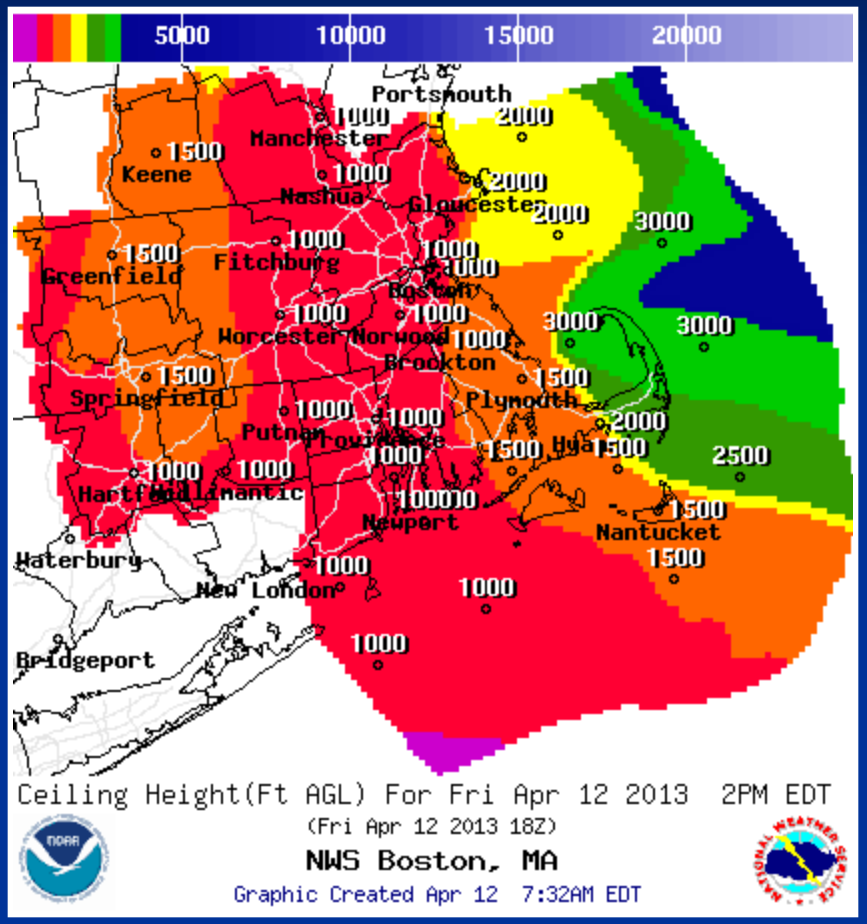


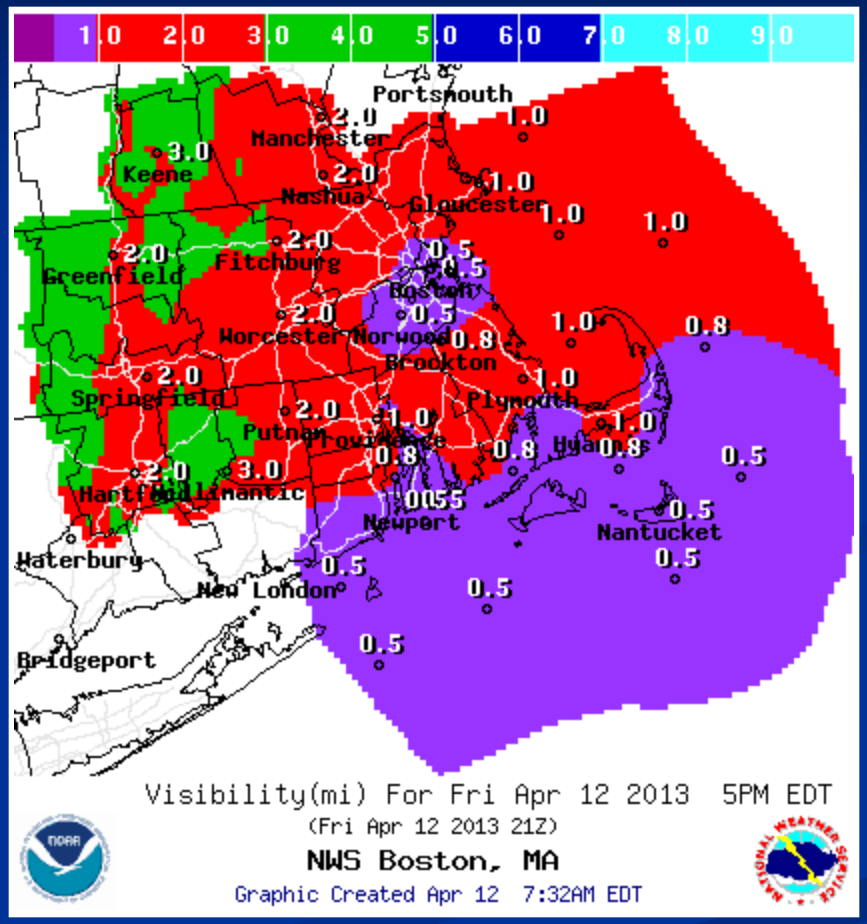
Who is Producing Aviation Grids

- Participating NWS Forecast Offices are producing experimental digital forecasts of ceiling and visibility
  - Boston, MA
  - Jackson, KY
  - Caribou, ME
  - Charleston, WV
  - Greenville-Spartanburg, SC
  - Sterling, VA
  - Atlanta, GA
- TAFs are generated from the grids, with forecaster oversight



Hourly Graphical Forecasts





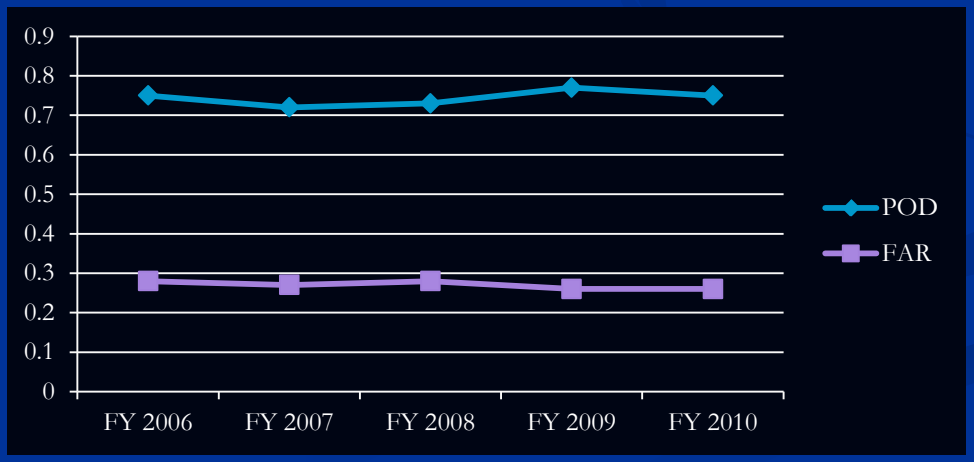
A benefit for aviation!

Operations Assessment

- **Customers noticing a difference**
  - Increased consistency between TAFs and other products
  - More frequent and proactive updates
  - Forecast information available for any point in forecast domain
  - Users can take the gridded database and create their own forecast products and displays
  - *"We have clearly noticed improved TAF performance and improved consistency in all public forecast products in the Boston area since NWS has been producing TAFs from the ceiling and visibility grids."* - Rick Curtis, Chief Meteorologist, Southwest Airlines

TAF Verification using Digital Aviation Services

- No notable decrease in scores since beginning digital aviation services…some have improved
- Overall - fairly steady and in the right direction
- No significant decrease in quality
- Best scores are in most recent years



Progress to Date

- Enhanced Short-Term Forecasting:
  - All Eastern Region Offices Implemented in April 2011
  - 34 Central Region began in April 2013, the remaining 4 offices delayed implementation due to AWIPS II
  - Southern and Western Region offices in initial phase
- Digital Aviation Services:
  - 7 Offices are producing digital aviation services; 5 in Eastern Region, 1 in Central Region, and 1 in Southern Region
  - Additional offices are planning to come on board very soon!
  - 3 Western Region offices in initial phase
- National Centers:
  - Alaska Aviation Weather Unit using IC4D

Verification Projects – FY13/14

- **Lead time to onset and cessation of thunderstorms within 75nm of FAA Core Airports and Jet Routes**
- **Real time verification for the following elements:**
  - Ceiling Heights, Ceiling Categories, and Visibility
  - Temperature, Dew Point Temperature, Sky Cover
  - Wind: Speed, Direction, and Gusts
  - High Wind Warning, Relative Humidity

Proposed Schedule and Milestones DRAFT

Milestone	Description
Wind Grids	Grid Updated every 1-3 hours at ALL CONUS WFOs
Wind Gust Grids	Grid Updated every 1-3 hours at ALL CONUS WFOs
Temperature	Grid Updated every 1-3 hours at ALL CONUS WFOs
Dew Point Temperature	Grid Updated every 1-3 hours at ALL CONUS WFOs
Weather	Grid Updated every 1-3 hours at ALL CONUS WFOs
Probability of Precipitation	Grid Updated every 1-3 hours at ALL CONUS WFOs
Sky	Grid Updated every 1-3 hours at ALL CONUS WFOs
Snow Amount	Grid Updated every 1-3 hours at ALL CONUS WFOs
Visibility Grid	Develop Prototype Visibility Grids to test at NWS Coastal Offices
	Release more robust Prototype Visibility Grids at additional (select) WFOs to test
	All WFOs Producing Visibility Grids and updating every 1-3 hours
Ceiling Grid	Develop Prototype Ceiling Grids to test at designated test sites (Golden Triangle)
	Release more robust Prototype Ceiling Grids at additional (select) WFOs to test
	All WFOs Producing Ceiling Grids and updating every 1-3 hours

Proposed Schedule and Milestones DRAFT

Convection Grid	Develop Prototype Convective Grid
	Determine if Convective Grid is viable, if so, release to additional test sites
	If test is successful, ALL offices producing Convection Grids
Low Level Wind Shear Grid	Develop Prototype LLWS Grids at designated test sites (Golden Triangle)
	Release more robust Prototype LLWS Grids at additional (select) WFOs to test
	All WFOs Producing LLWS Grids and updating every 1-3 hours
Icing Grid	Prototype Icing Grids at AWC, AAWU, HNL
	Release more robust Prototype Icing Grids to test at MWOs
	All MWOs Producing Icing Grids
Turbulence Grid	Prototype Turbulence Grids at AAWU, AWC, HNL
	Release more robust Prototype Turbulence Grids to test at MWOs
	All MWOs Producing Turbulence Grids
Volcanic Ash Grid	Prototype Volcanic Ash Grids at the VAACs
	Release more robust Prototype Turbulence Grids to test at the VAACs
	All VAACs Producing Volcanic Ash Grids

Current and Future Initiatives

- Coordinate the national requirements for Enhanced Digital Services
- Assess new guidance tools e.g. - Gridded LAMP, and high resolution numerical model output
- Enhance verification for the future
- AAWU/AWC to produce the Area Forecast from national Ceiling and Visibility grids using IC4D (or similar tool)