



# NWS IMPACT-BASED WEATHER SUPPORT TO ATCSCC AND THE NAS



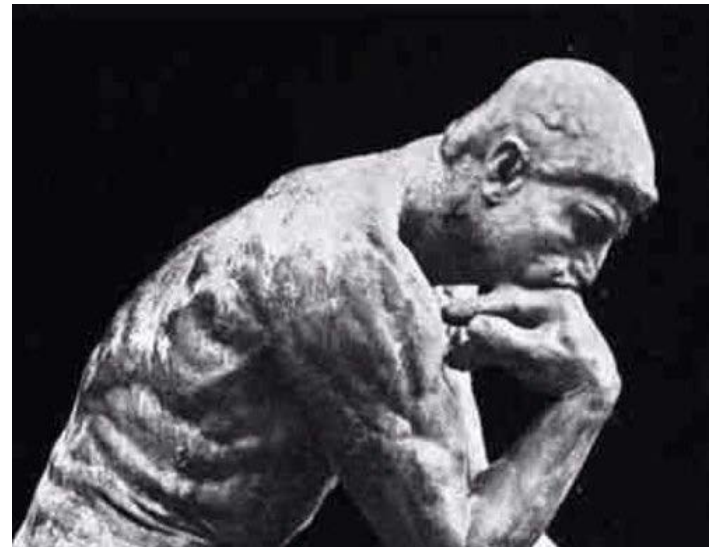
**Frank Brody**  
Meteorologist in Charge  
National Weather Service  
National Aviation Meteorologists  
FAA/ATCSCC, Warrenton, VA  
*November 18, 2015*  
*FPAW/NBAA*



# Agenda

- Some Philosophy & Karma
- NWS Support to ATCSCC and NAS
- The 4 C's...
- Summary

# Some Weather Support “Philosophy”





**“Forecasts possess no intrinsic value. They acquire value through their ability to influence the decisions made by users of the forecasts.”**

**- Allan Murphy, NCAR, 1993**



**“Weather is intertwined with nearly every decision we make.”**

**- Bryan Beck, FAA / ATCSCC National Operations Manager (NOM)**



# ATCSCC Weather Unit



**Joe Carr**

**Mike Eckert**

**Frank Brody**

**Brandon  
Smith**

**Dan  
Kremnitzer**

*NWS/NCEP/AWC/NAM*



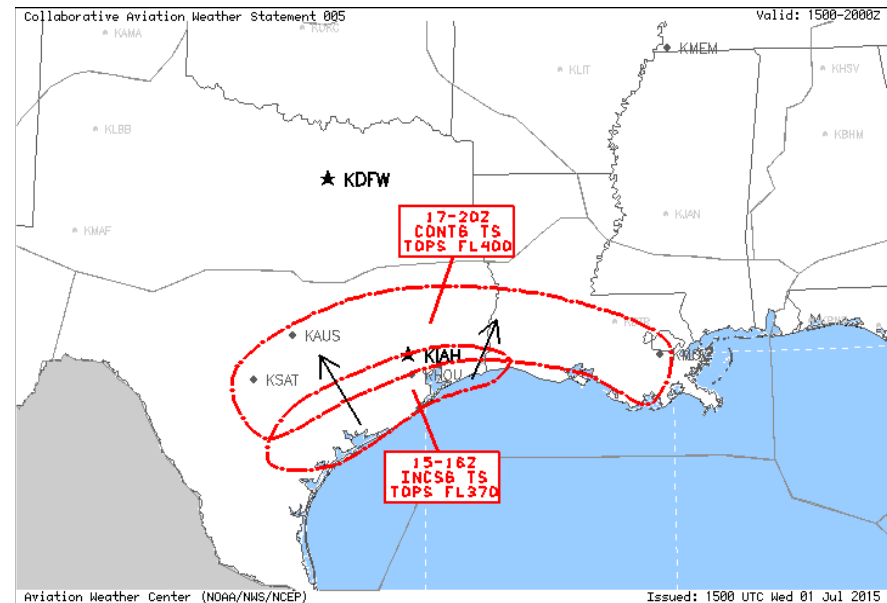
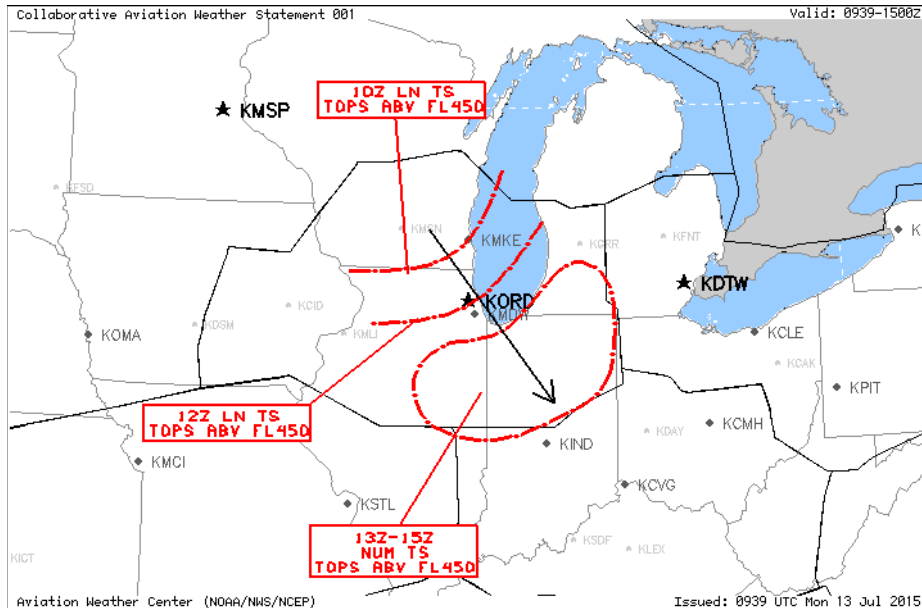
# NWS SUPPORT TO ATCSCC

- Goal → Paint a *cohesive national weather picture* to *Command Center*
- *Goal* → Improve safety, efficiency, and decision making
- NWS meteorologists *fully integrated* into NAS decision-making
- Decision support:
  - *real-time assessments and briefings of current & forecast weather*
  - *planning outlooks out to 4+ days*
  - *participation in post-event reviews and debriefings*



# NWS SUPPORT TO ATCSCC

- NAMs coordinate / collaborate with NWS CWSUs, WFOs, National Centers, and on some occasions with Airline meteorologists
- NAMs provide meteorological and national TMI insight for CAWS (Collaborated Aviation Weather Statement)







# NWS SUPPORT TO ATCSCC

- NWS dedicated weather decision support to ATCSCC
- Four NWS meteorologists (**N**ational **A**viation **M**eteorologists)
- One FAA weather specialist
- Two additional NWS meteorologists planned for 2016
- Organizationally: NWS / NCEP Aviation Weather Center (AWC)



*NWS/NCEP/AWC/NAM*



# NAM Mission

## The 4 C's....



# NAM Mission

## ➤ Coordination





# NAM Mission and Mantra

- **Coordination**
- **Collaboration**





# NAM Mission

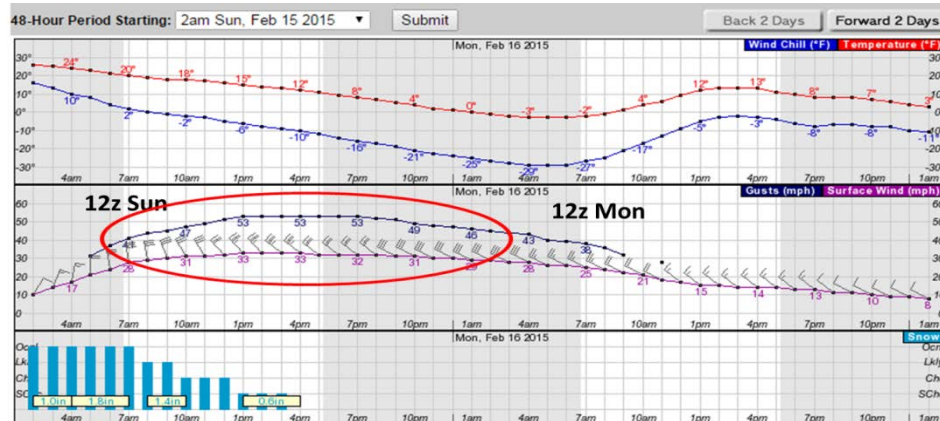
- **Coordination**
- **Collaboration**
- **Consistency**





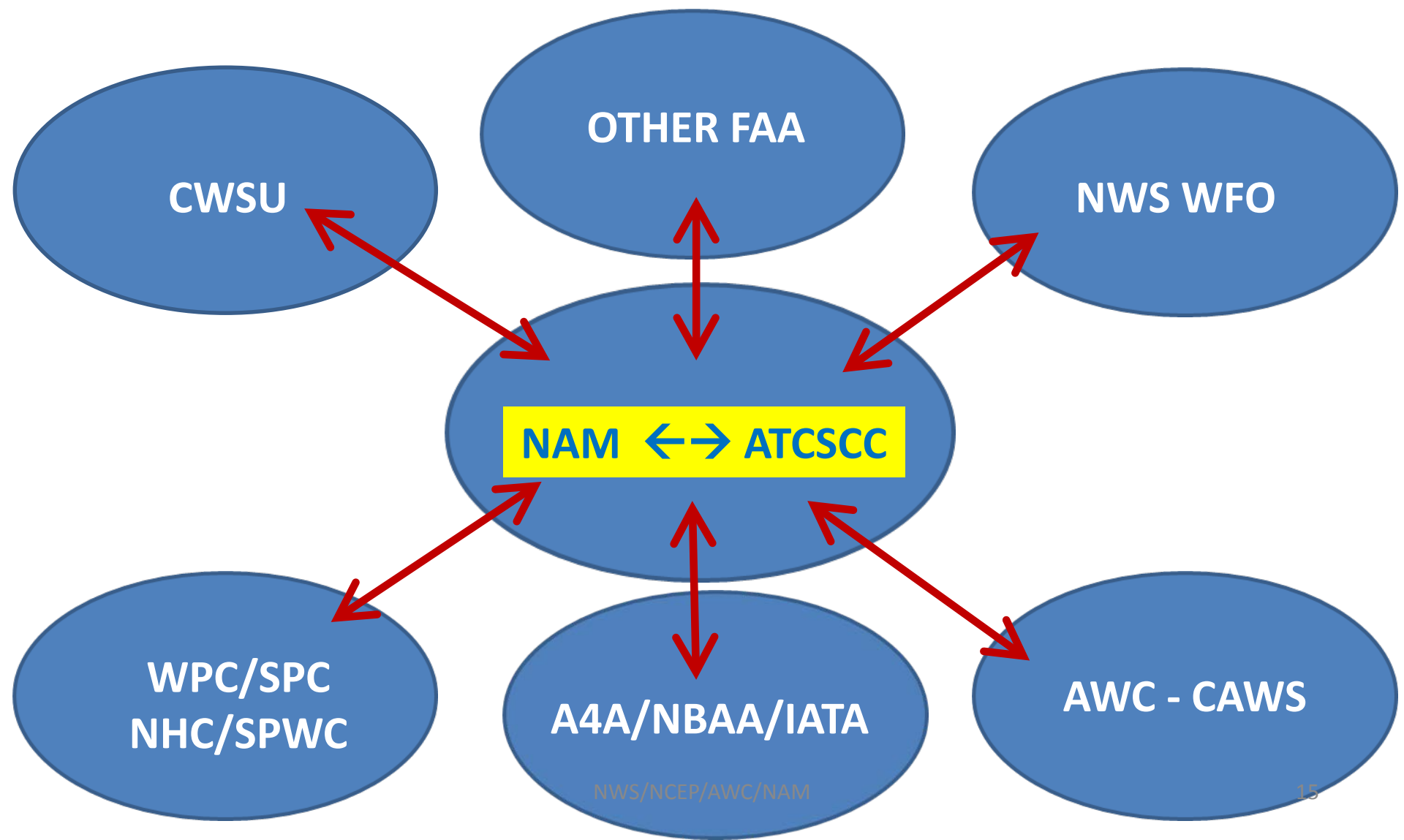
# NAM Mission

- Coordination
- Collaboration
- Consistency
- Customization





# Coordination / Collaboration





# CONSISTENCY

## Core 29 TAF Updates – every 2 hours

**September 3, 2014**

**13Z**

BOS/NY METRO NSW

PHL/DC METRO NSW

CLT FM031700 17004KT P6SM VCSH BKN060

TEMPO 0318/0322 VRB10G20KT 6SM TSRA BKN040CB

FM032200 16005KT P6SM BKN060

PROB30 0322/0403 4SM TSRA BKN040CB

ATL FM031800 26007KT P6SM BKN045

TEMPO 0318/0322 VRB12G24KT 4SM -TSRA BKN040CB

FM032200 VRB12G24KT 5SM TSRA BKN040CB

MCO FM031700 12009KT P6SM VCTS SCT050CBSCT250

TEMPO 0318/0321 4SM TSRA SCT035CB BKN080 BKN250

TPA M031800 27007KT P6SM VCTS SCT050CBBKN250

MIA/FLL FM031400 10012KT P6SM VCTS SCT030CBBKN060

DTW/ORD/MDW/MEM NSW

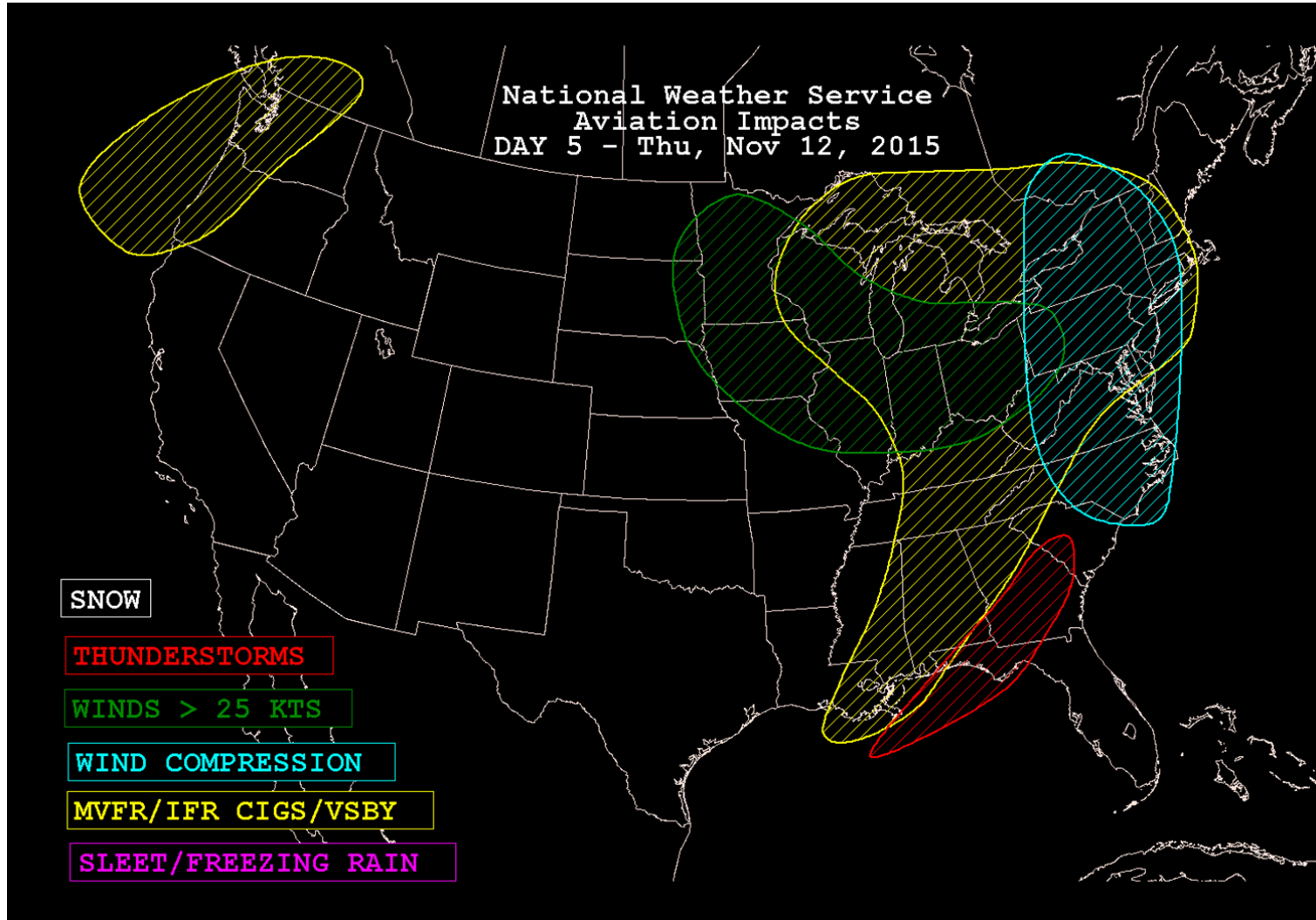




# CUSTOMIZATION

FAA National System Review – NWS/NAM Weather Outlook

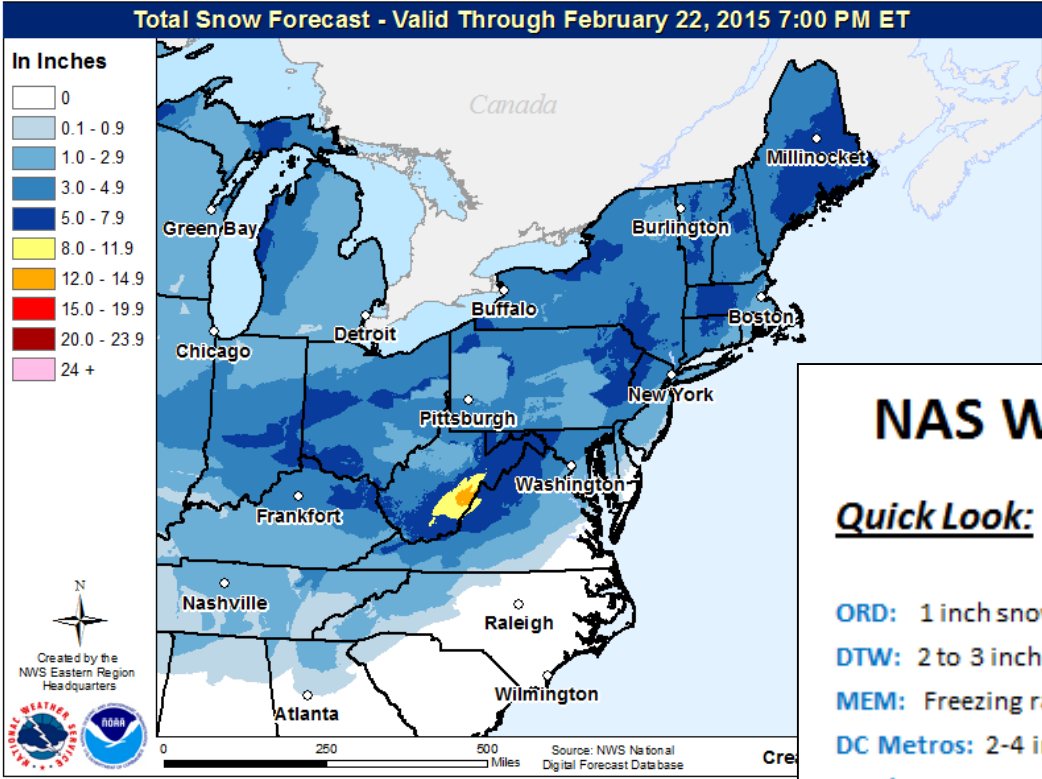
→ *Graphic customized for ATCCSCC managers and planners*





# CUSTOMIZATION

## NAS Weather Impacts – Winter Storm



### NAS Weather Impacts Fri/Sat/Sun

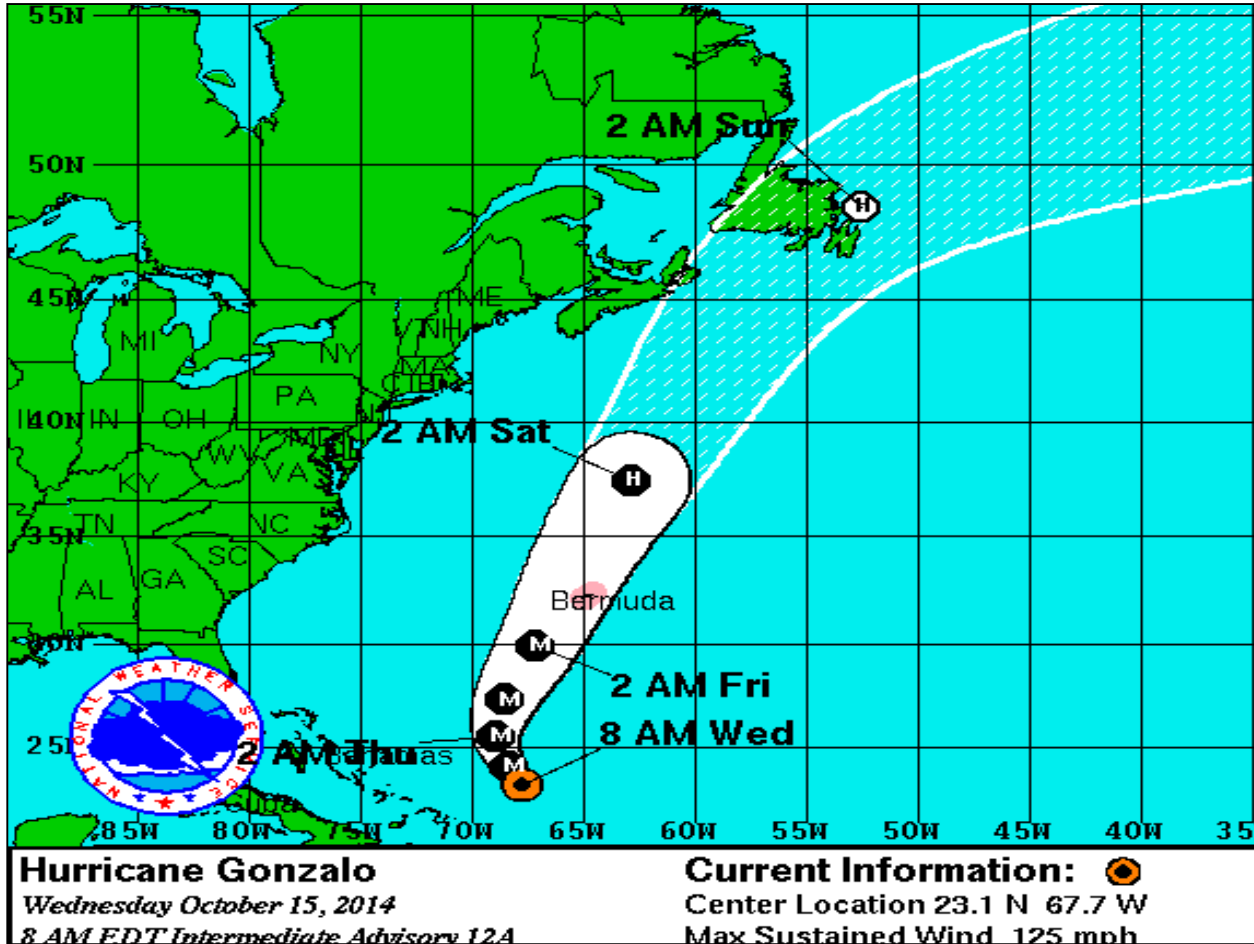
**Quick Look:**

- ORD:** 1 inch snow -- Fri into Sat a.m.
- DTW:** 2 to 3 inches snow -- Fri night/Sat
- MEM:** Freezing rain/sleet → rain -- Fri /Fri night
- DC Metros:** 2-4 inches snow → sleet/freezing rain → rain -- Sat/Sun
- PHL/N90** – 1-3 inches Snow → freezing rain/sleet → rain/snow –Late Sat/Sun  
Possible compression
- BOS** -- 2-3 inches snow → mix with freezing rain/sleet – Sat night/Sun
- SKI COUNTRY** – Heavy snow -- Fri eve/Sat/ Sun



# CUSTOMIZATION- Before

## NHC Hurricane Gonzalo Update – 8 AM EDT October 15, 2014

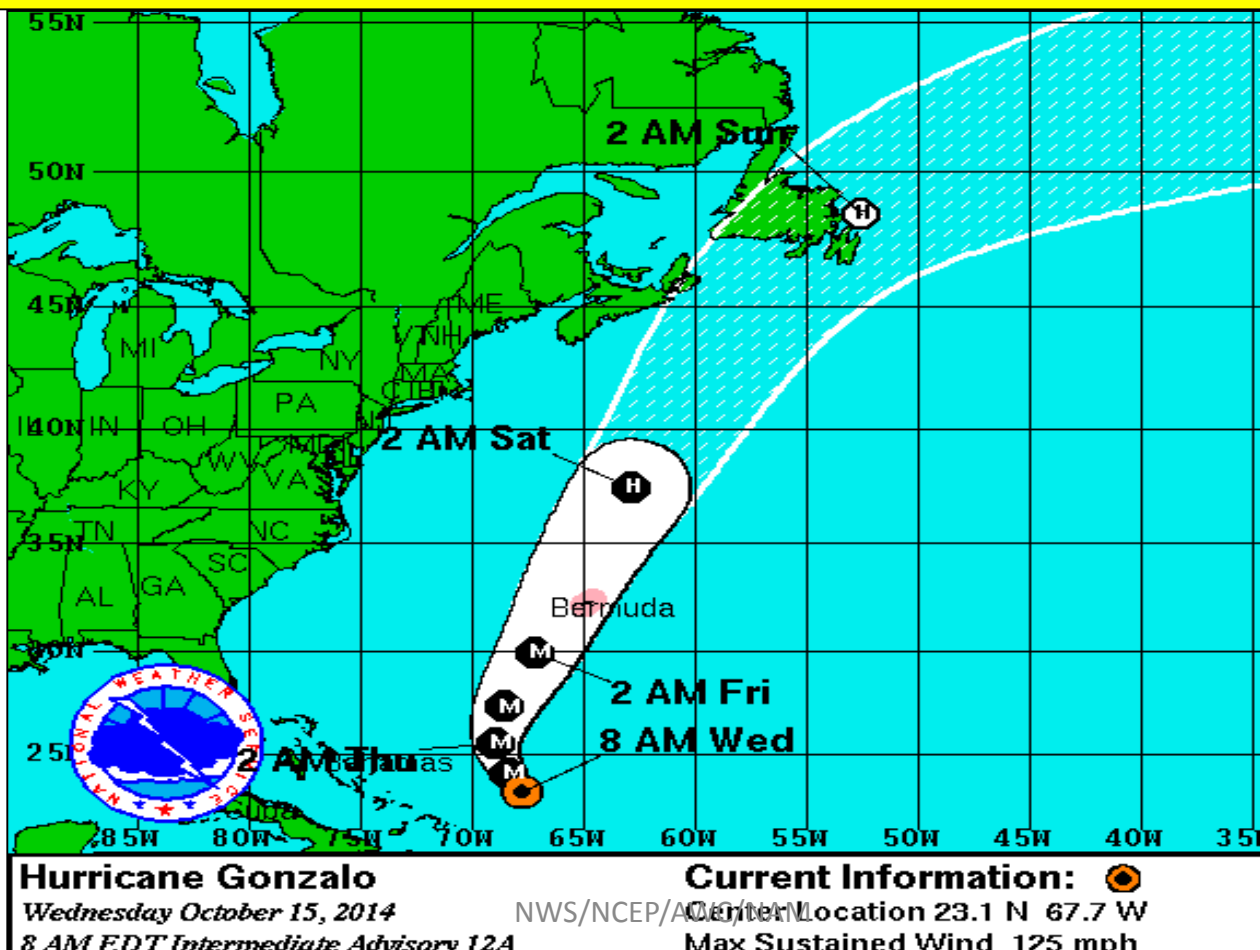




# CUSTOMIZATION - After

NHC Hurricane Gonzalo Update – 8 AM EDT October 15, 2014

- *Category 3 hurricane...forecast to strengthen to category 4.*
- *NHC forecast track takes category 3 hurricane over or near Bermuda on Friday.*
- *High confidence in forecast track due to unusually good agreement between computer forecast models*





# NAM Daily Products & Briefings

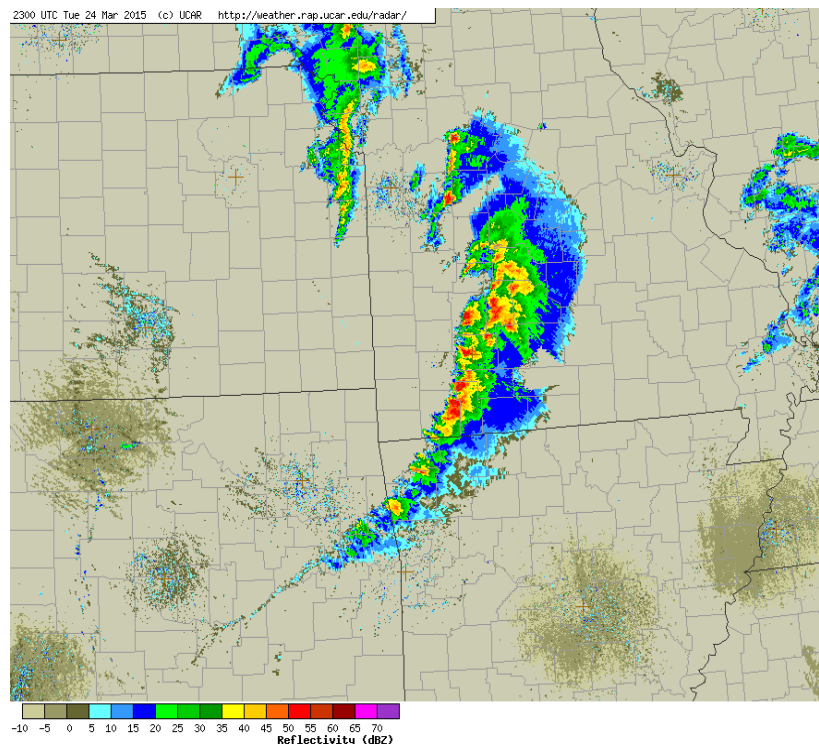
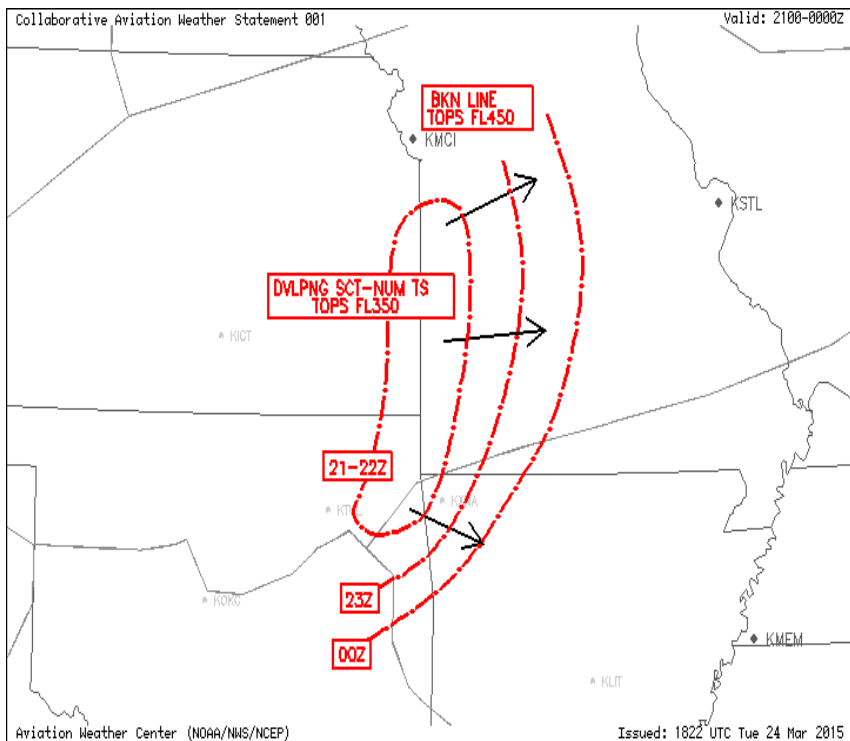


- **Customized TAF Updates:** 05, 07, 09, 11, 13, 15, 17, 19, 21 (L)
- **CAWS Collaboration** – *Event-driven*
- **NWS HQ Standup Briefing** – 0745 local
- **ATCSCC Standup Briefing** – 0800 and 1600 Local
- ***Ad-hoc ATCSCC briefings: 15 to 20 times per day***
- **NAS Day-1 Convective Outlook** - 0830 (*started in 2015*)
- **FAA NAS NSR (Day 2-4+ Outlook)** – 1000 Local
- **FAA HQ (High Impacts only)** –1030 Local
- **NWS WFO/CWSU NY Metro/PHL Coordination** – twice per day
- **Space Weather (SWPC) & Volcanic Ash** -- as needed
- **Ad-hoc Telcons/NWS Chat** for coordination/collaboration



# CAWS – March 24, 2015

- ATCSCC re-route decisions were based on CAWS001
- Positive feedback by FAA/ATCSCC in real-time on 3/24/15

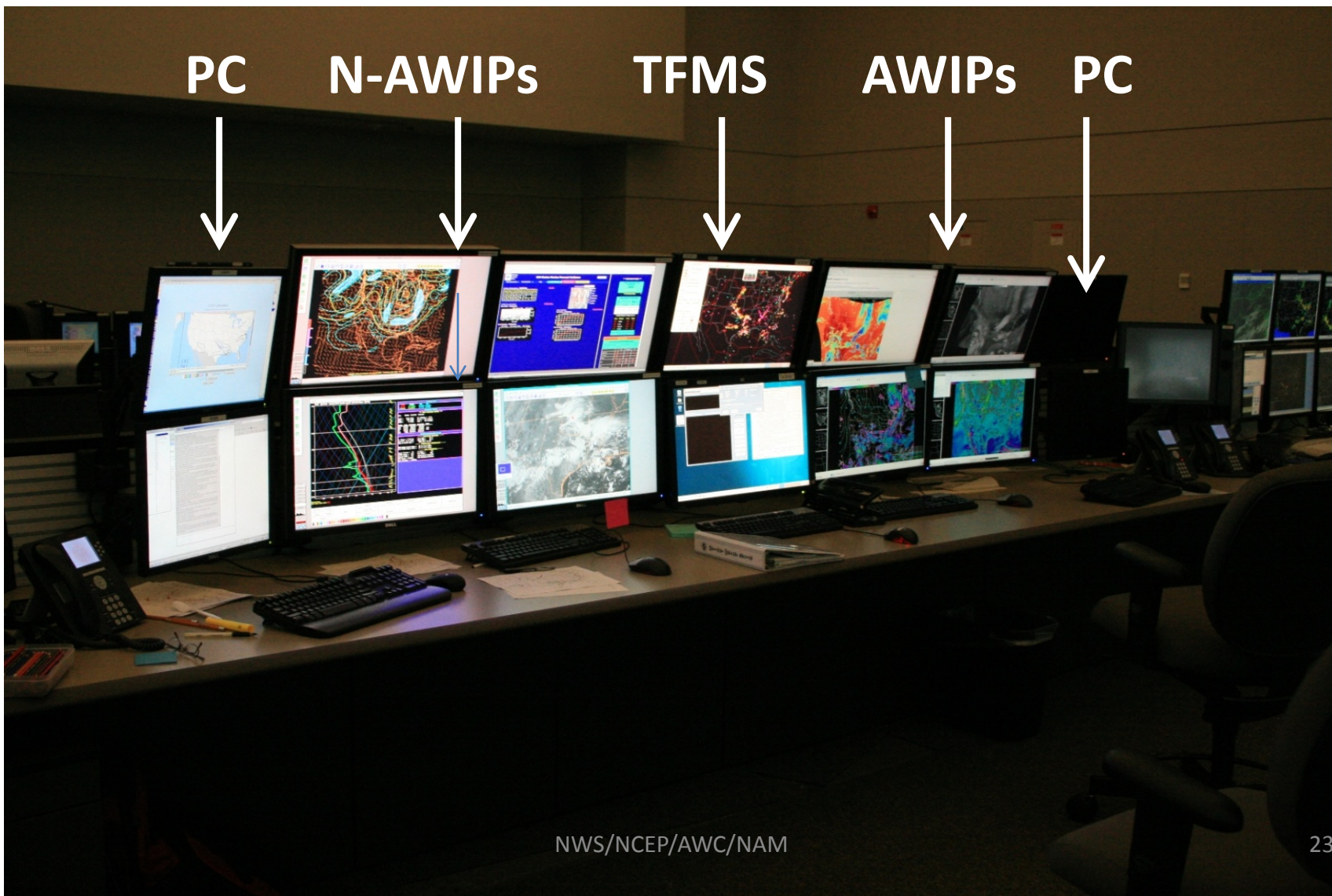


*CAWS 001 issued 1800Z 3/24/15  
Valid 2100Z - 0000Z*

*Radar Image: 2300Z 3/24/15*



# NWS/NAM "Wall of Weather"





# Summary

- National Weather Service NAMs provide key weather decision support to ATCSCC and the National Air Space
- Meteorological expertise is fully integrated with ATFM decision makers







# Summary



## The Critical 4 C's:

- **Coordination**
- **Collaboration**
- **Consistency**
- **Customization**

# Questions?





# NWS/NCEP/AWC/NAM

Contact Info:

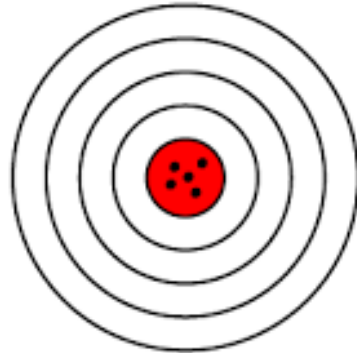
[awc.nam@noaa.gov](mailto:awc.nam@noaa.gov)

[frank.brody@noaa.gov](mailto:frank.brody@noaa.gov)

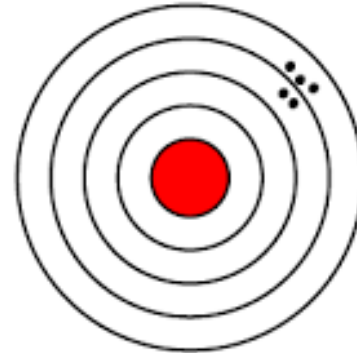
540-422-4511

# ***Extras / Backup***

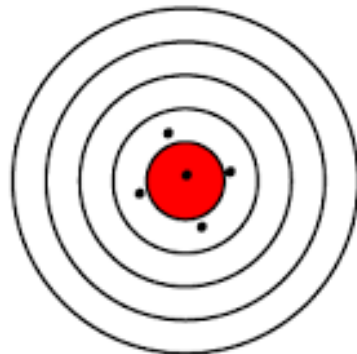
# Accuracy and Consistency



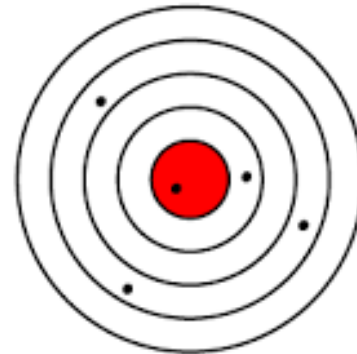
Accurate & Consistent



Not Accurate  
but Consistent

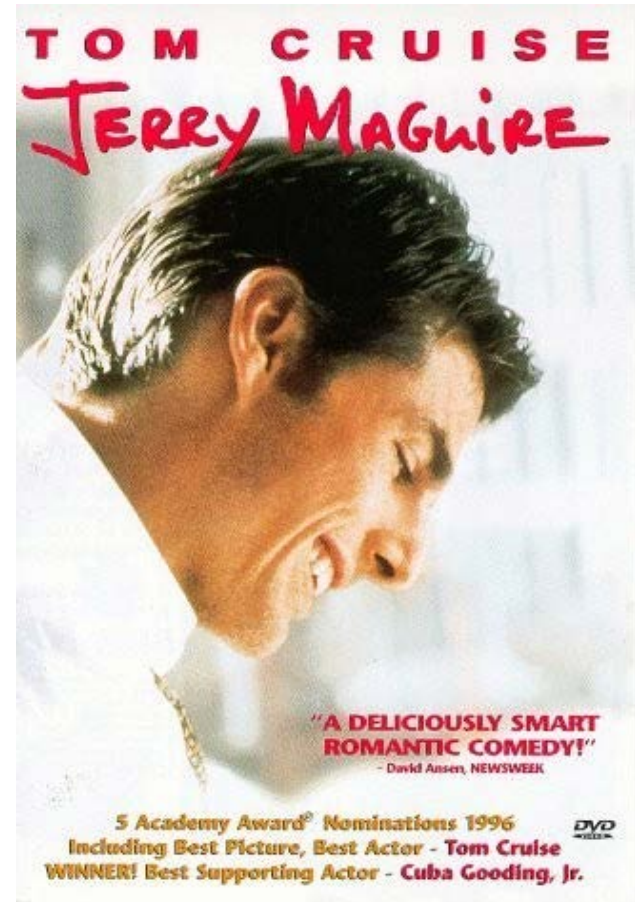


Accurate but  
Not Consistent



Not Accurate &  
Not Consistent

# “Show Me The Money... \$\$”



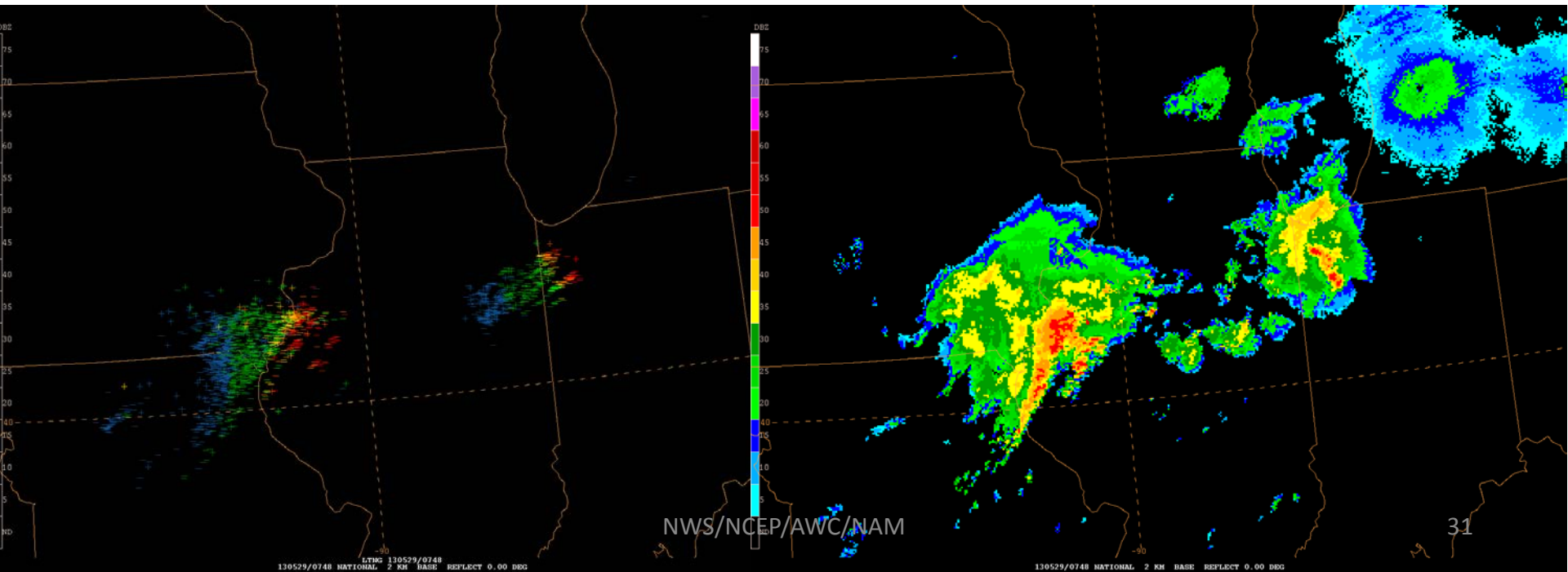


# Accurate Forecast Saves \$\$

## *A Case Study*



- Thunderstorms southwest of Chicago
- WILL IT REACH THE TERMINAL?
- ORD TRACON/TOWER **ASKS FOR GROUND DELAY PROGRAM**

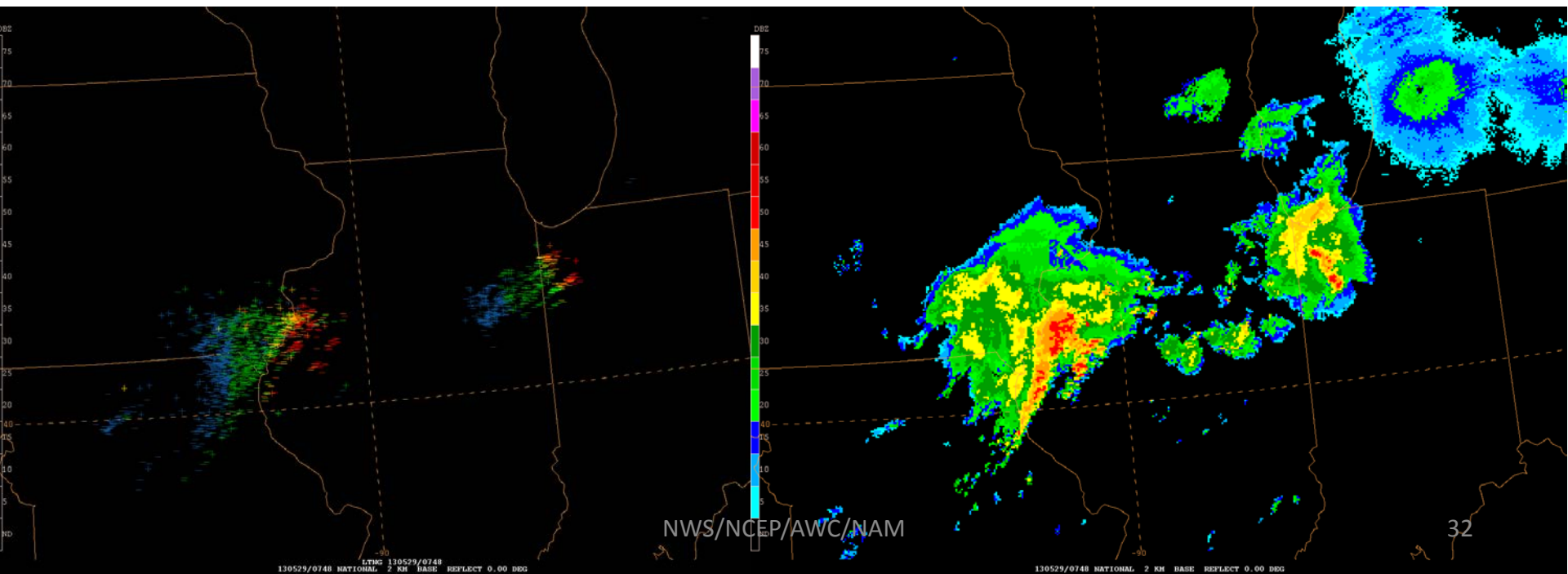




# Accurate Forecast Saves \$\$



- Thunderstorms southwest of Chicago
- WILL IT REACH THE TERMINAL?
- ORD TRACON/TOWER ASKS FOR GROUND DELAY PROGRAM
- Program length = 2 hours
- #Flights affected = 154
- #Passengers affected = **~15,400**
- Average Delay (per flight) = 21 min
- Total Delay in NAS = 3,200 min or **53.3 hours**







# Accurate Forecast Saves \$\$

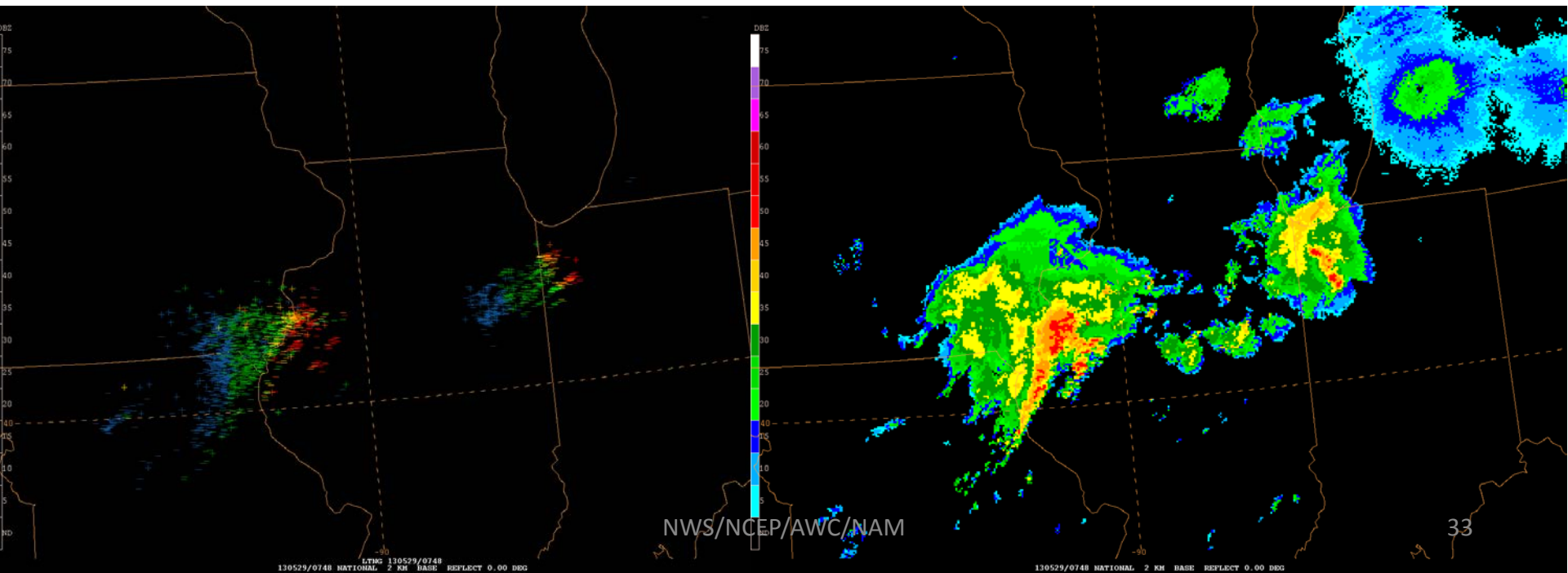


→ NAM briefed NO thunderstorm impacts to ORD/MDW

→ \$\$ Savings -- **\$4,690 per hour cost of delay**

→ **53.3 hours X \$4690 per hour =**

**SAVINGS:  
\$250,000**



# Typical Day

(all times UTC)

## Scheduled:

- TAF Updates - 09, 11, 13, 15, 17, 19, 21, 23 & 01
- 5-Day Terminal Outlook - 0930
- Day 1-8 Impact Graphics - 1030
- NY/PHL TAF Coordination - 1040 & 1640
- Aviation Previous Day Weather Graphic - 1100
- NWS HQ Standup - 1145 local
- ATCSCC Standup - 1200 & 2000
- NAS Day-1 Convective Outlook - 1245
- FAA NAS System Review (Day 2-4+ Outlook) - 1400
- FAA HQ (High Impacts as needed) -1430

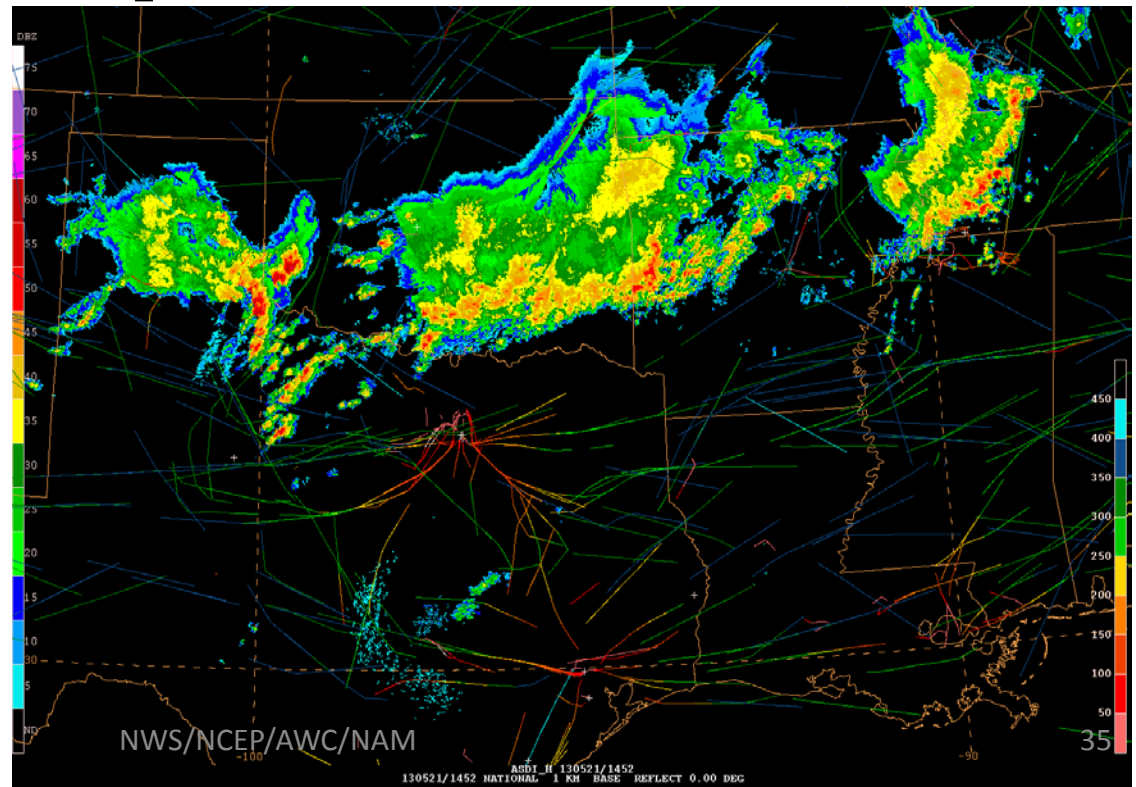
## As Needed:

- CAWS Collaboration
- SWPC & VAAC
- Ad-hoc ATCSCC Briefings/Telcons/chats – 15+ each day
- Holiday Outlooks, Special Events, Tropical...

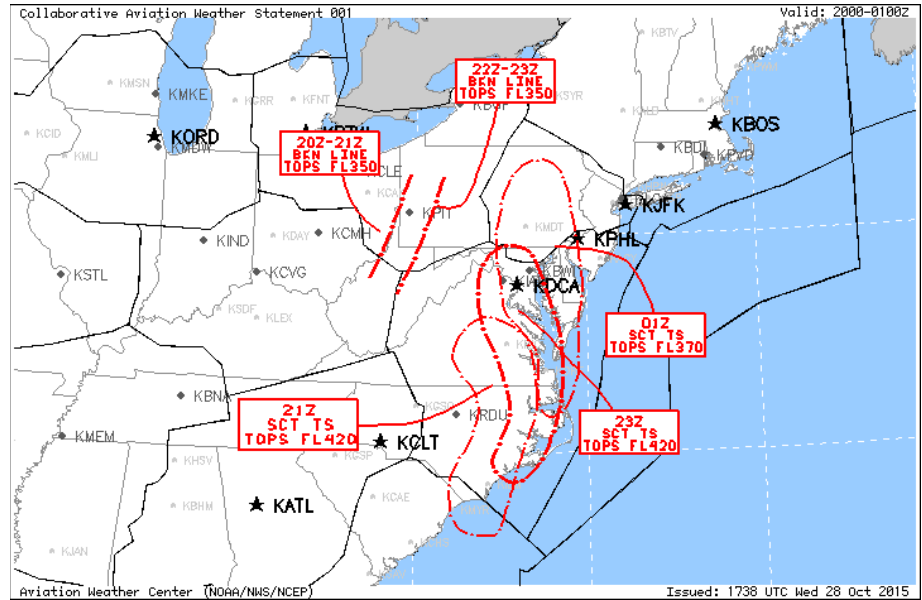
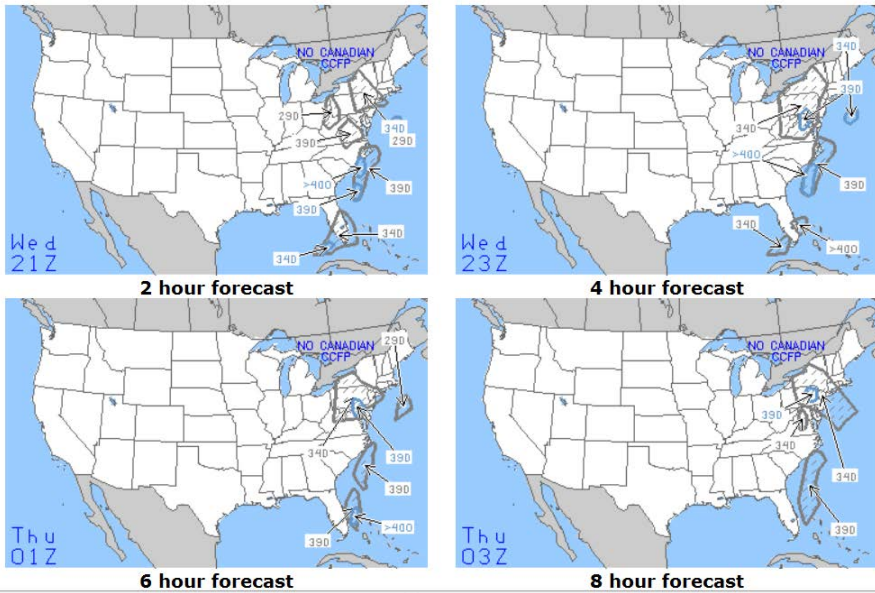


# Most IDSS is:

- ➔ Terminal (Airport) Impacts
  - ➔ Arrival/Departure Gates
  - ➔ Weather at Airport
  - ➔ Ground Stop (GS)
  - ➔ Ground Delay Program (GDP)
- ➔ Enroute (Cruising) Impacts
  - ➔ Route blockage



# CCFP AND CAWS



# CCFP: Computer-generated Convective Forecast Product



- Computer-generated convective forecast
- Displays convective coverage and echo tops
- Forecasts valid for **2, 4, 6, 8** hour projections
- Produced every 2 hours: 24 x 7 x 365
  
- Posted to [www.aviationweather.gov](http://www.aviationweather.gov) and FAA TSD
- Posted 45 minutes prior to each Planning Telecon (exception: 2 hour not on TSD)
  
- **CCFP model inputs:** \*
  - Last 3 versions of HRRR
  - High-Resolution ARW
  - SREF

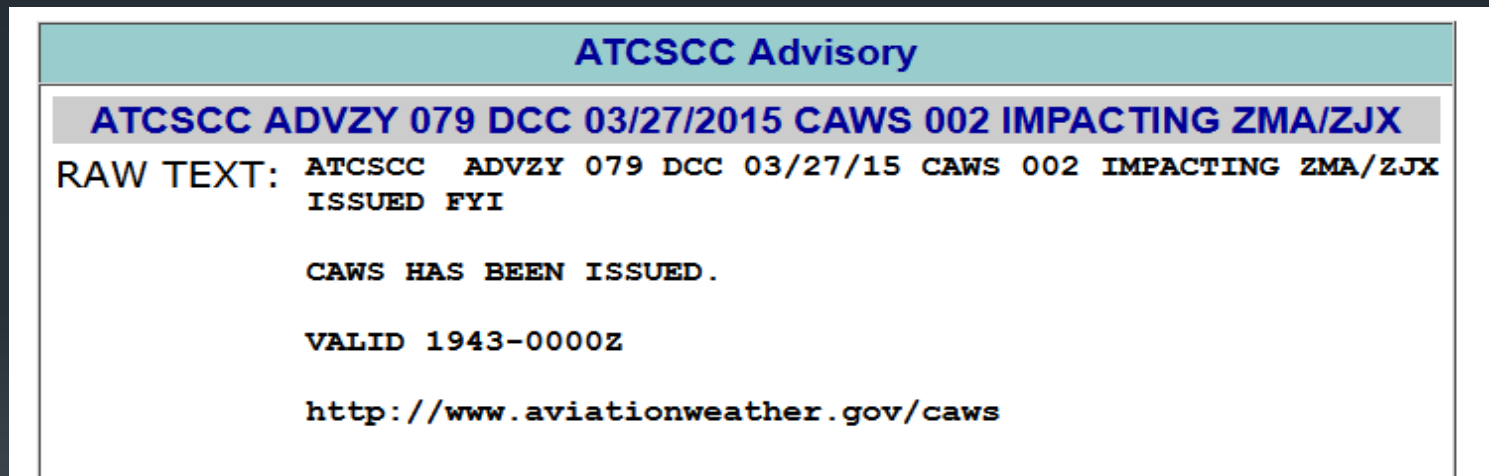
\* SREF upgraded late October, 2015; HRRR upgrade planned for March/April 2016

# CAWS

- Collaborative Aviation Weather Statement (CAWS)
- Event driven (non-scheduled) advisory for US CONUS airspace began 3 Mar 2015
- Contains both a graphical picture and text discussion of impacted region
- Issuance: event driven with as much lead time as possible – ideally 2 to 6 hours
- Issued for **Thunderstorms**
- *CAWS & CCFP together will be used by TFM to support TMI decision making strategies*

# CAWS Dissemination

- Posted on the Aviation Weather Center website: [www.aviationweather.gov/caws](http://www.aviationweather.gov/caws)
- NWS Telecommunications Gateway
- Command Center Advisory:



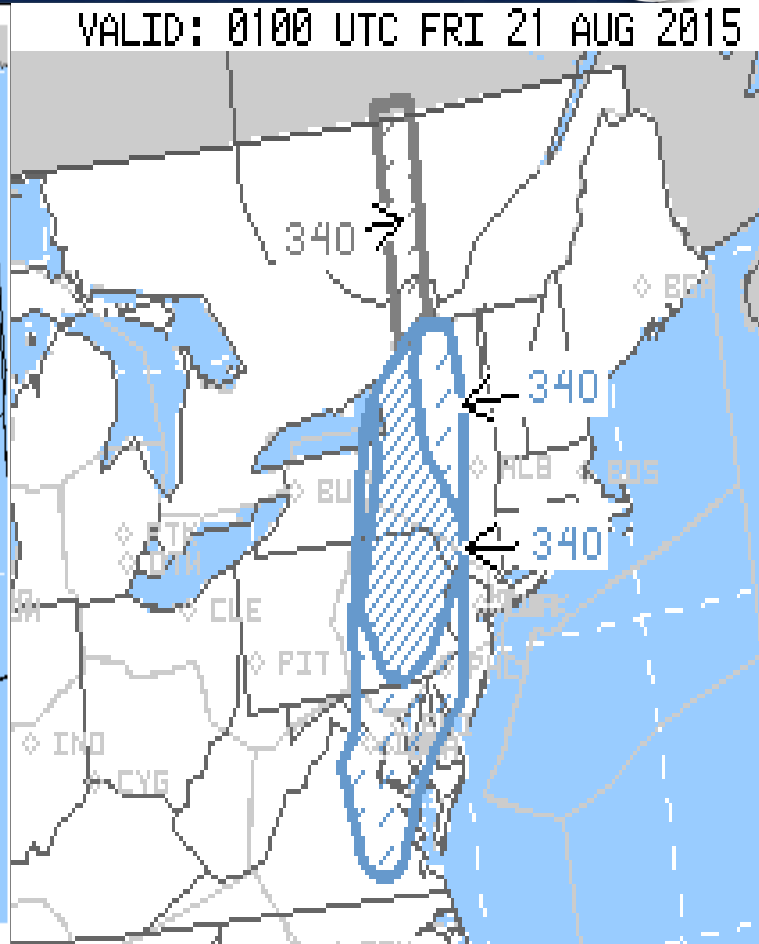
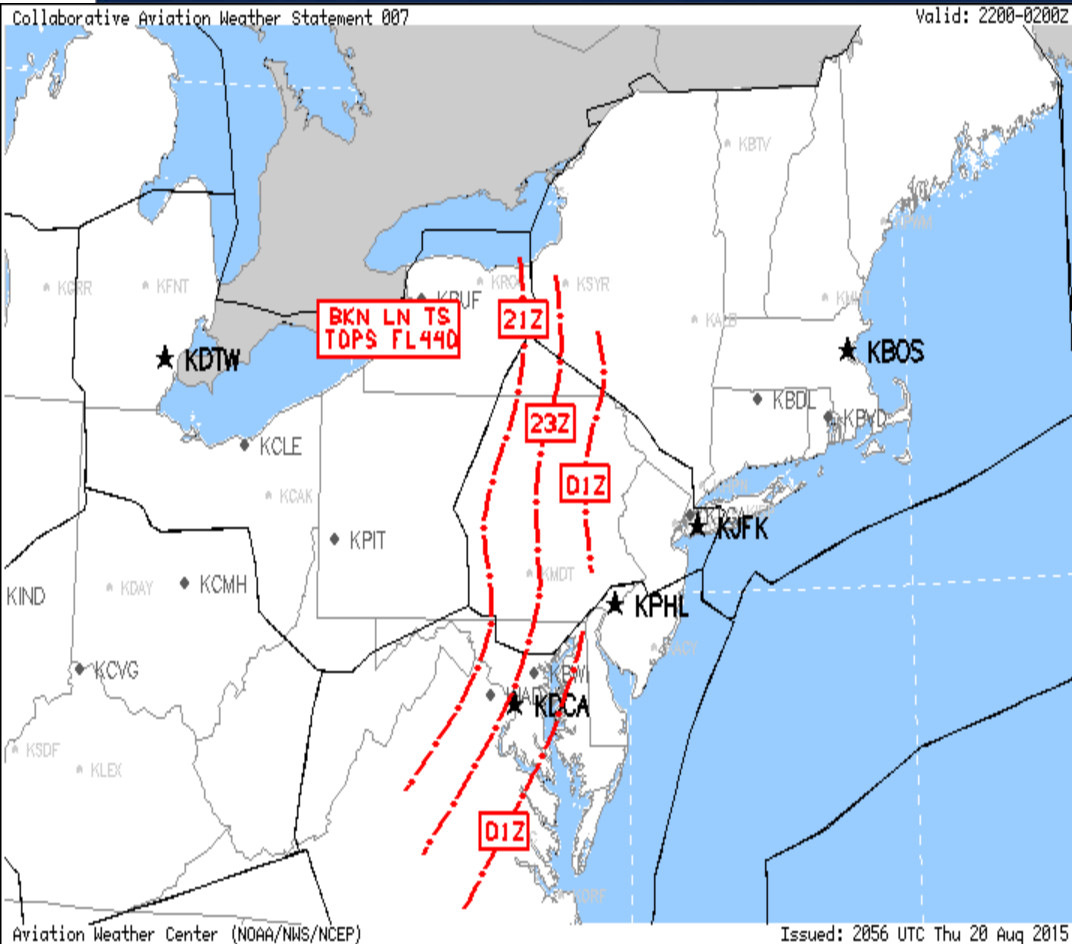
The image shows a screenshot of an ATCSCC Advisory message. The header is "ATCSCC Advisory" in blue text on a light blue background. Below the header, the message text is displayed in a monospaced font. The first line is "ATCSCC ADVZY 079 DCC 03/27/2015 CAWS 002 IMPACTING ZMA/ZJX" in blue text on a grey background. The second line is "RAW TEXT: ATCSCC ADVZY 079 DCC 03/27/15 CAWS 002 IMPACTING ZMA/ZJX" in black text. The third line is "ISSUED FYI" in black text. The fourth line is "CAWS HAS BEEN ISSUED." in black text. The fifth line is "VALID 1943-0000Z" in black text. The sixth line is "http://www.aviationweather.gov/caws" in black text.

```
ATCSCC Advisory
ATCSCC ADVZY 079 DCC 03/27/2015 CAWS 002 IMPACTING ZMA/ZJX
RAW TEXT: ATCSCC ADVZY 079 DCC 03/27/15 CAWS 002 IMPACTING ZMA/ZJX
ISSUED FYI
CAWS HAS BEEN ISSUED.
VALID 1943-0000Z
http://www.aviationweather.gov/caws
```

- Command Center planner will reference active CAWS during SPT

# CAWS/CCFP Example

## 08/20/2015



**2056Z CAWS**  
**Valid Through 01Z**

**21Z CCFP**  
**Valid 01Z**



# NWS Meteogram – Time Series for BOS

Issued 7am Fri 2/13/15

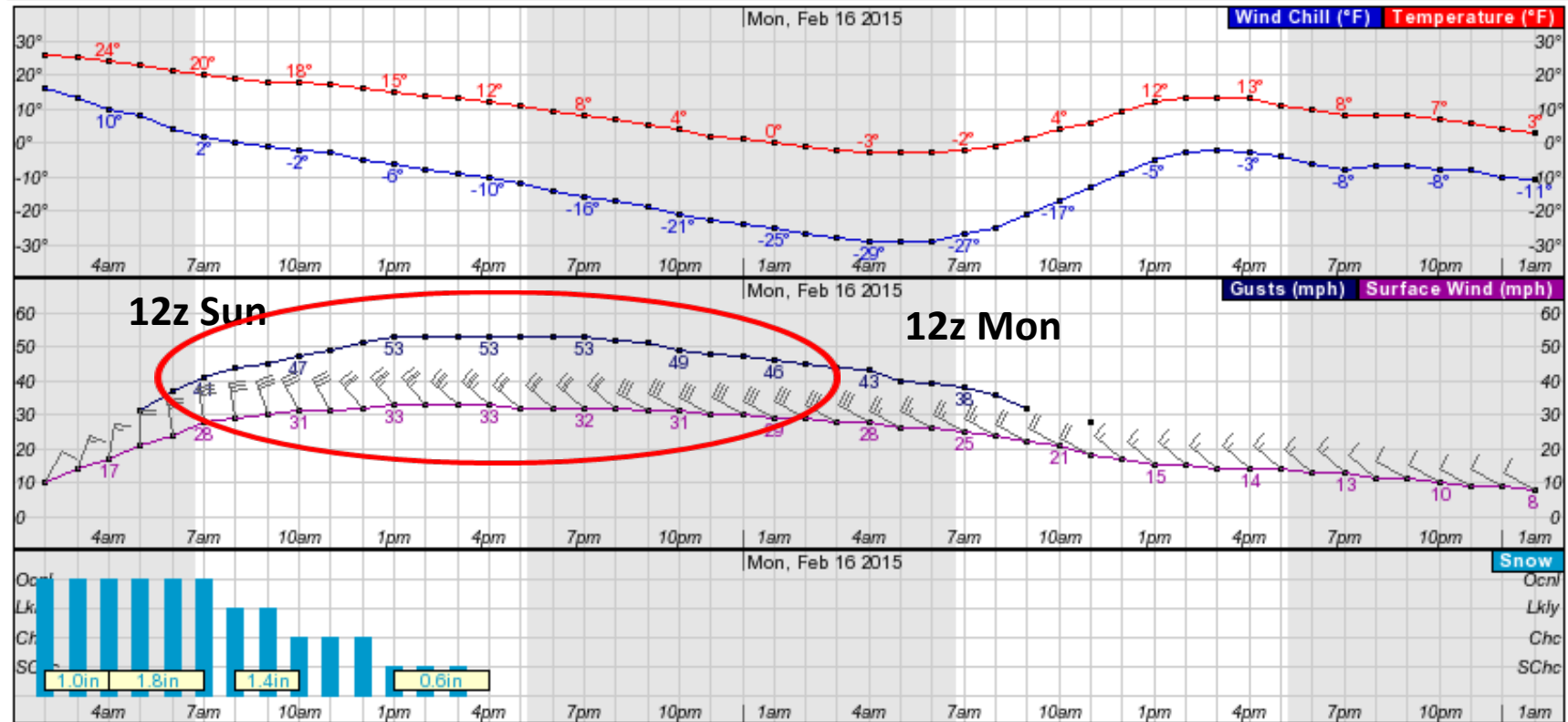
Valid through 7pm Sun 2/15

48-Hour Period Starting: 2am Sun, Feb 15 2015

Submit

Back 2 Days

Forward 2 Days





# Key Aviation Weather Websites



# AWC TFM Portal

## Aviation Weather Testbed

Aviation Weather Center

Home News Organization Search  Go

Experiments Products Projects Weather Summaries Links

### Traffic Flow Management Portal

Planning and Forecasting

<a href="#">2-8hr CCFP</a>	<a href="#">0-8hr CoSPA</a>	<a href="#">Day 1 Outlook</a>	<a href="#">ECFP</a>	<a href="#">Gálvez-Davison Index</a>	<a href="#">SREF</a>	<a href="#">SREF Plumes</a>
<a href="#">HRRR</a>	<a href="#">LAMP</a>	<a href="#">3 Day Outlook</a>	<a href="#">International Enroute Weather</a>	<a href="#">Domestic Enroute Weather</a>	<a href="#">INSITE</a>	<a href="#">SPC Mesoanalysis</a>
<a href="#">NCEP MAG</a>	<a href="#">Experimental NSSL WRF</a>	<a href="#">SSEO</a>	<a href="#">NCAR Ensemble</a>	<a href="#">National Hurricane Center</a>	<a href="#">Central Pacific Hurricane Center</a>	<a href="#">Joint Typhoon Warning Center</a>
<a href="#">VAAC Products</a>						

Tactical

<a href="#">Collaborative Aviation Weather Statement</a>	<a href="#">Terminal Dashboard</a>	<a href="#">Winter Dashboard</a>	<a href="#">TRACON Forecasts</a>	<a href="#">Major TAFs</a>	<a href="#">Major METARs + TAFs</a>	<a href="#">METARS</a>
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# AWC Web Pages

*NWS/NCEP/AWC/NAM*

The screenshot shows a web browser window with the URL [www.aviationweather.gov/adds](http://www.aviationweather.gov/adds). The browser's address bar includes navigation icons (back, forward, search, home) and a search field. Below the address bar is a toolbar with various utility icons and links such as "Most Visited", "noaa email", "gmail", "TFM", "CAWS", "CWIS: awc m2Yaw\$YBX", "WxBell fbrody awcnam", "TT Models", "WWD !!wwd!!", and "webTA 01!".

The main content area features the NOAA National Weather Service logo on the left and the text "AVIATION WEATHER CENTER" in large, bold letters. Below this, a navigation menu is displayed with the following items: "Local Forecast" (with a "Go" button), "HOME", "ADVISORIES", "FORECASTS", "OBSERVATIONS", "TOOLS", "NEWS", "SEARCH", "ABOUT", and "USER".

A prominent blue banner reads "ADDs - Aviation Digital Data Service". Below this banner is a grid of 14 buttons, each representing a different data service:



Home	Turbulence	Icing	Convection	Wind/Temps	Prog Charts	Java Tools
METARs	Ceil&Vis	TAFs	PIREPs	SIGMETs	Satellite	Radar



# AWC Web Pages

## *NWS/NCEP/AW*

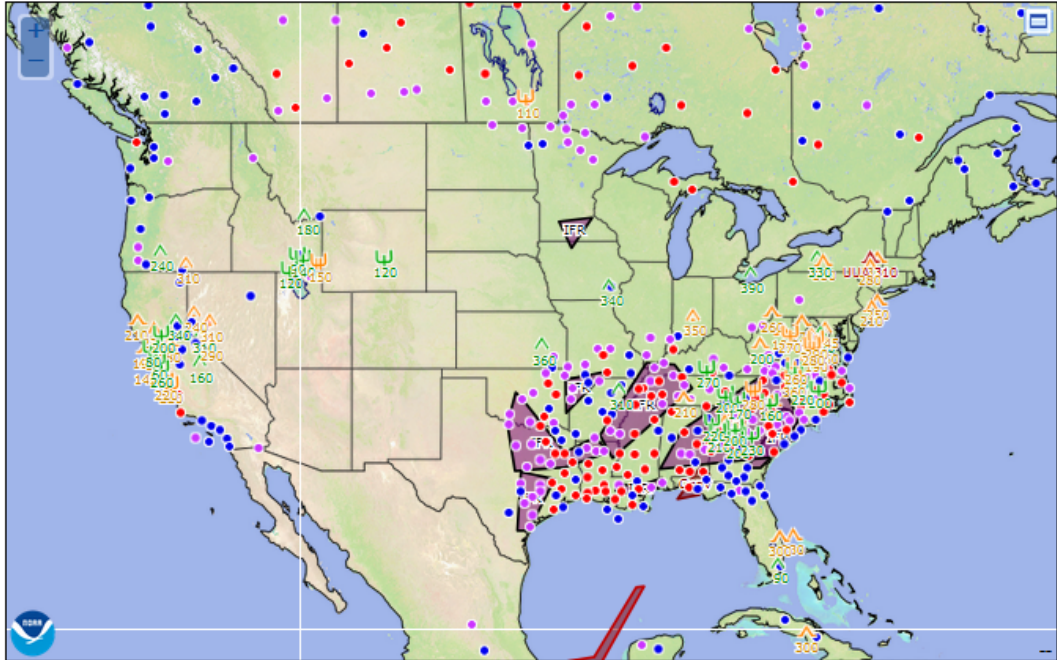
## *C/NAM*

  **AVIATION WEATHER CENTER**  
NOAA NATIONAL WEATHER SERVICE

Local Forecast  HOME ADVISORIES FORECASTS OBSERVATIONS TOOLS NEWS SEARCH ABOUT USER

### Aviation Weather Overview INFO

Valid at 1514 UTC 2 Nov 2015



Sat  VisFog  Radar  METAR  FltCat  SIGMET  Highways  Jetroutes  FIRs

G-AIRMETs



# Key Aviation Weather Websites

## **NWS Aviation Weather Center:**

[www.aviationweather.gov](http://www.aviationweather.gov)

[www.aviationweather.gov/adds](http://www.aviationweather.gov/adds)

[www.aviationweather.gov/caws](http://www.aviationweather.gov/caws)

## **AWC TFM Portal:**

<http://testbed.aviationweather.gov/page/public?name=TFM Portal>

-- Or -- search on: ***AWC TFM Portal***