

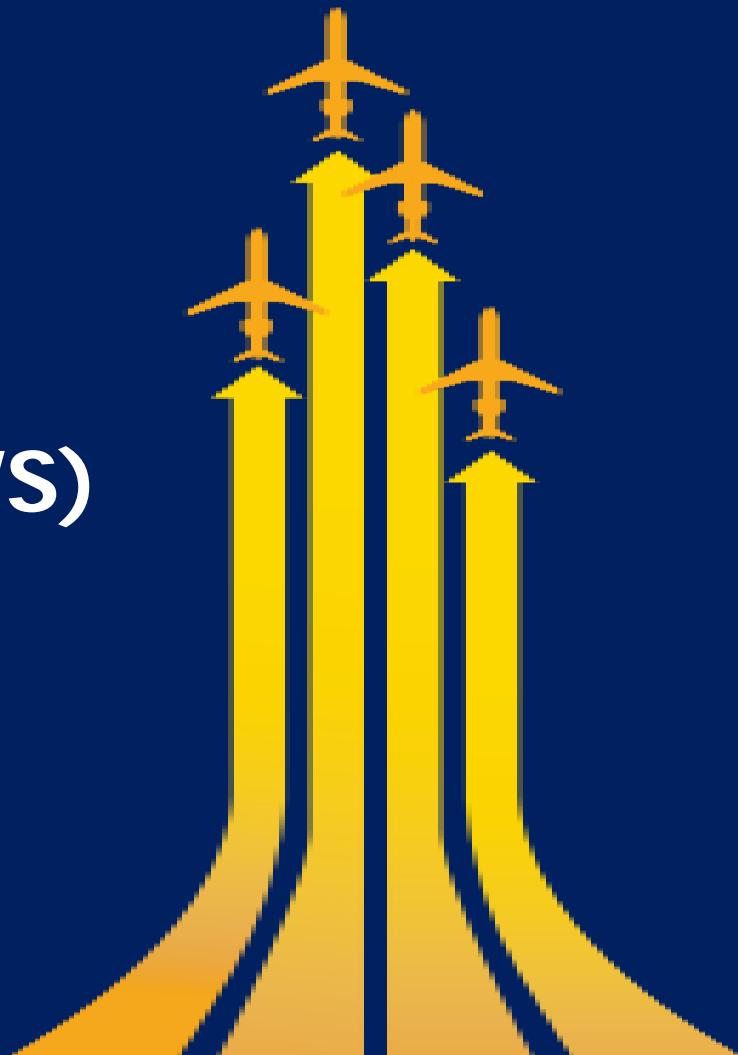
**2015 Friends and Partners of  
Aviation (FPAW)**

# **Collaborative Aviation Weather Statement (CAWS)**

**Presenter: Kevin Johnston AJR-12**



**FAA  
Air Traffic Organization**



# CAWS

## *Agenda*

- Background
- Feedback from 2015 Operational Demonstration
- Path Forward

# CAWS

## *Background-Conceptual Plan to evolve the CCFP*

- Operational Bridging; OB is a set of weather forecasting processes with communication and engagement protocols between meteorologists and Traffic Flow Management (TFM) decision makers
- Focuses NAS weather forecast collaboration resources on events with highest potential for traffic disruption
- “Bridges” strategic and tactical time domains
- Supports CAWS product generation towards “Event Driven”, non-scheduled critical weather forecast information
- Goal: to issue CAWS at an optimal lead time for TFM decisions

# CAWS

## *Background: CCFP Changes*

- Evolution from “Human-In-The-Loop” (HITL) to an automated forecast
  - Leverages computer forecast models to draw polygons similar to forecaster drawn polygons
  - Issued year round (Started 1 November 2014)
  - 2, 4, 6, and 8 hour forecasts on web; 4, 6, 8 hour forecasts on TFM System/Traffic Situational Display
  - Issued every 2 hours at bottom of the hour prior to the Strategic Planning Call

# CAWS

## *Background: CAWS Concept*

- Product of the OB process
- Event-driven (non-scheduled) advisory for US CONUS airspace
- Issued for Thunderstorms
- Textual and graphical forecast disseminated to alert on thunderstorms exceeding thresholds critical to air traffic operations.
- Collaboration towards CAWS production led by Aviation Weather Center; NWS and Industry meteorologists collaborating
- Notification of CAWS via Command Center Advisory

Original plan was for a 2016 implementation

# CAWS

## *Background: Why CAWS?*

- Reconcile multiple, often conflicting forecasts
- Accelerate delivery of high-confidence forecast information to support timely TFM decisions
- Alignment with NextGen towards Single Authoritative Source
- Human Over The Loop (HOTL) assessment of automated forecasts
- CCFP & CAWS used together by TFM to support Traffic Management Initiative (TMI) decision making strategies

# CAWS

## *Background: 2015 Operational Demonstration*

- Learning experience for producers and users
- Formal evaluation and assessment determined operational value and refined requirements
- Feedback needed to improve operational value

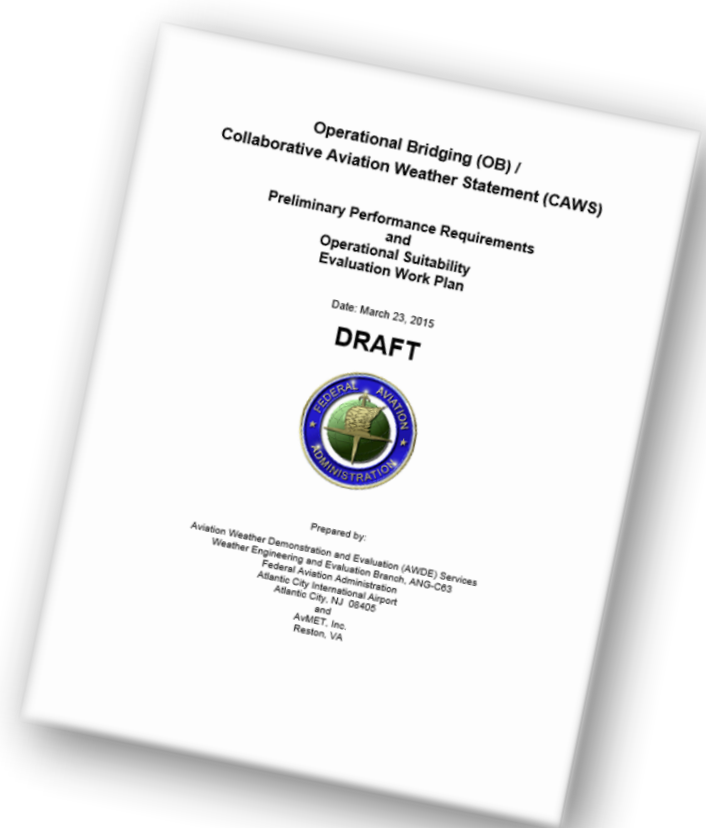
# CAWS

## *Feedback*

### Live field observations

April – September 2015

- Observe collaboration processes, notification, and dissemination protocols
- Objectively evaluate, validate, and define CAWS product performance requirements
- Evaluate usability, effectiveness, and areas of potential improvement for OB and CAWS
- Obtain feedback from TFM decision makers regarding perceived utility of OB and CAWS
- Document issues and lessons learned





# CAWS

## *Feedback-Producers*

- Chat room is useful but need white board for collaboration
- Constant collaboration of non-scheduled product is difficult; adding a scheduled component would help
- Need more airline participation in weather collaboration
- Need rules of engagement; standardization of “impacts” and what needs to be forecast
- Clarification of CWSU role for requesting CAWS issuance
- Ability to provide amendments
- Improve lead-times
- More consistency and need for quality control and metrics
- Move CAWS production to ATCSCC—NAMs with 51% vote

# CAWS

## *Feedback-Users*

- Improved communication between weather and TMU
- Sometimes adds definition to CCFP
- Need to sharpen focus and improve lead times
- Need to improve depictions of location, coverage and evolution
- Key Terminology needs to be standardized
- CAWS Graphic sometimes complex/hard to understand
- Add amendments to show evolution of forecasts

# CAWS

## *Feedback-Users*

- Need to add to TSD, ability to see both CCFP and CAWS
- Need a common collaborated product back
- Improve Auto-CCFP
- Provide forecast of weather significant enough to impact NAS, not NAS impacts
- Clearer definition for role of CCFP and CAWS

# CAWS

## *Path Forward for 2016*

- CCFP will continue to be automated and available 24/7, 45 minutes prior to SPC. It will incorporate planned NWS upgrades of models in spring 2016
- CAWS concept maturity and evaluation will continue in 2016 with another Operational Demonstration (March-October)

# CAWS

## *Path Forward for 2016*

- CAWS issued only when forecast different than CCFP and there is weather significant enough to impact the NAS
  - More scheduled-based in synch with CCFP issuance and Operations Plan published after Strategic Planning Call
  - Thresholds being defined now for coverage, confidence, tops, etc and this information will be available for training by January 2016
  - Delivered via the web: [www.aviationweather.gov/caws](http://www.aviationweather.gov/caws)
- CCFP & CAWS used together by TFM to support TMI decision making strategies

# BACK-UP

# Case Days

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*The Good and the Bad*

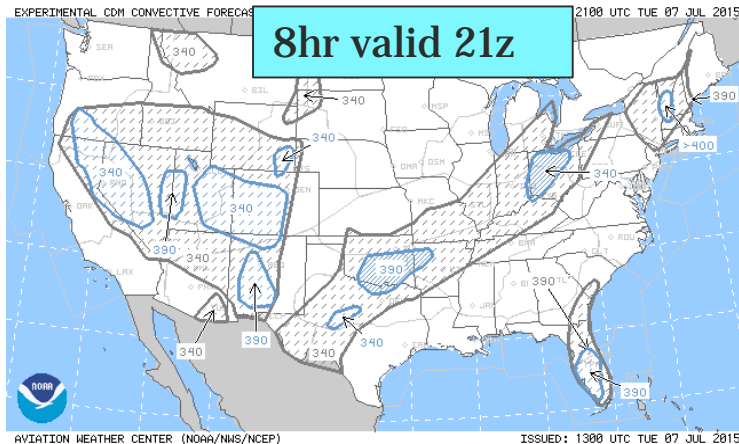
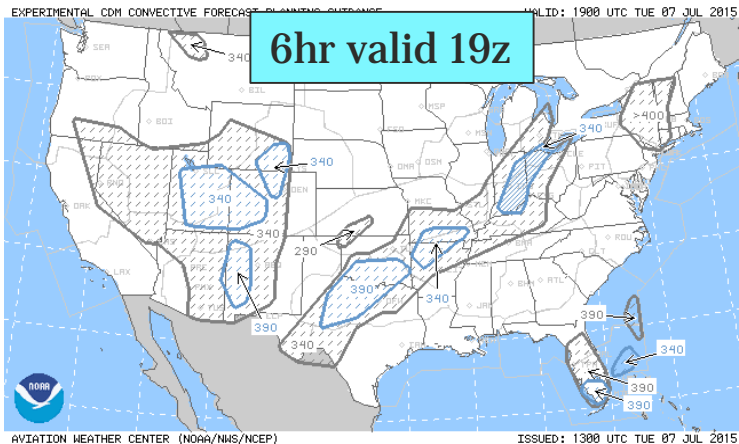
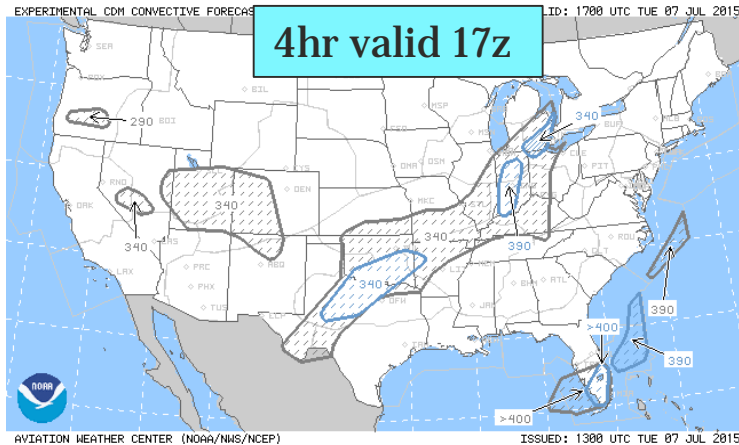
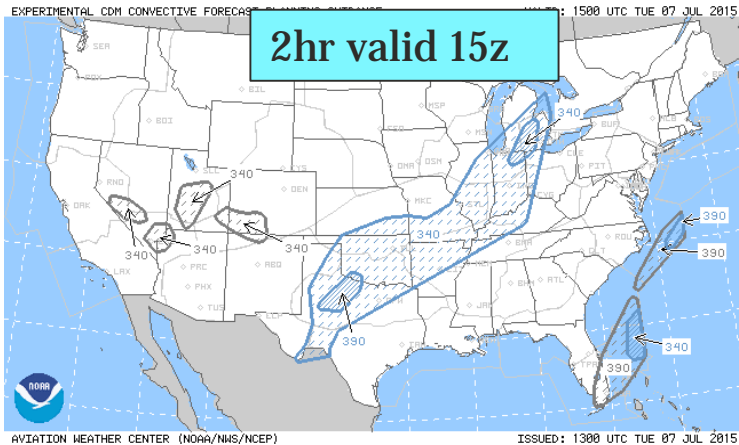


# JULY 7<sup>TH</sup> (TUESDAY) OVERVIEW

- **CAWS Issuances:**
  - 15 Preliminary
  - 8 Finals
  - 0 Corrections
  - 5 Cancellations
- **AFP A05 & A08 issued 1600z valid 1700z-0259z**
- **Ground Delay Programs**
  - EWR, 1400 for 1500Z – Ceiling & Visibility (no use of the overflow runway)
  - JFK, 1540 for 1600Z – TSTMs
  - LGA, 1540 for 1600Z – TSTMs
- **Ground Stops**
  - JFK; 1730 1830z – Visibility
  - LGA, 2245 2345z for TSTMs
- **Total NAS Delay, 1942**
- **2 Diverts (JFK)**



# 13Z CCFP RUN (AVAIL AT 1230Z)

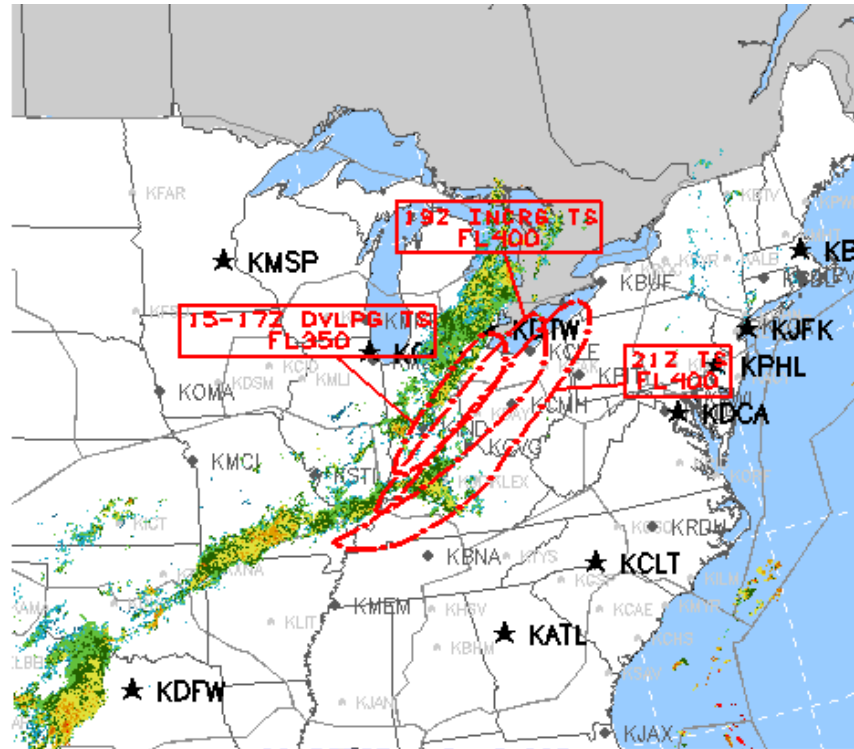


# CAWS 003 ISSUED 1416Z VALID 15-2100Z

*Preliminary CAWS issued at 1346z*

**SUMMARY:** Increasing TS expected over eastern Great Lakes and OH Valley through 21Z.

**DISCUSSION:** TS expected to redevelop and intensify over eastern IN-northwestern OH-southeastern MI and expand east-southeastward by 21Z. Numerous TS expected from central ZOB-northwestern ZID-northeastern ZME by 21Z. Tops initially will be around FL350 increasing to around FL400 with max tops FL450 by 21Z. Additional CAWS expected in this area.

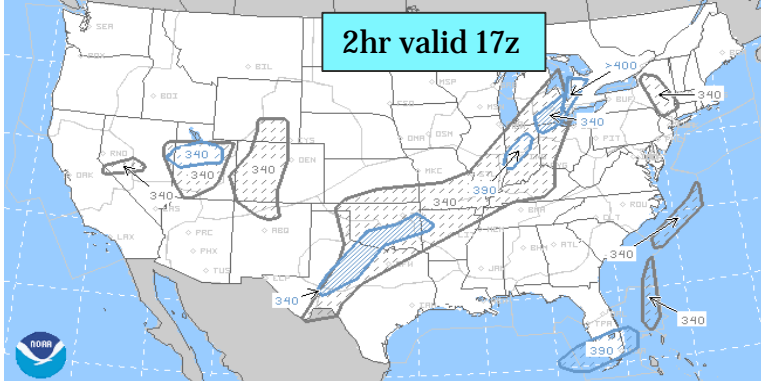


20150707 - CAWS 003

Issued: 2015-07-07 14:16 Valid: 1500-2100Z  
18 dBZ Echo Tops Valid 2015-07-07 15:00

# 15Z CCFP RUN (AVAIL AT 1430Z)

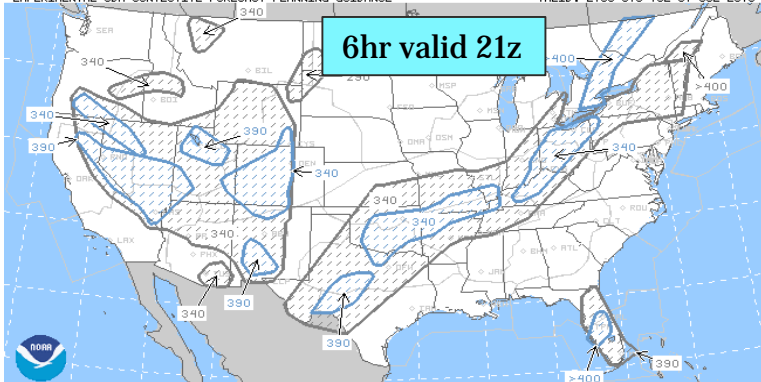
EXPERIMENTAL CDM CONVECTIVE FORECAST PLANNING GUIDANCE VALID: 1700 UTC TUE 07 JUL 2015



2hr valid 17z

AVIATION WEATHER CENTER (NOAA/NWS/NCEP) ISSUED: 1500 UTC TUE 07 JUL 2015

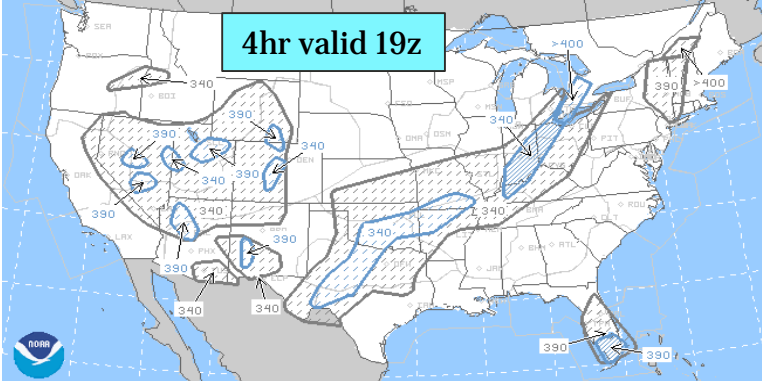
EXPERIMENTAL CDM CONVECTIVE FORECAST PLANNING GUIDANCE VALID: 2100 UTC TUE 07 JUL 2015



6hr valid 21z

AVIATION WEATHER CENTER (NOAA/NWS/NCEP) ISSUED: 1500 UTC TUE 07 JUL 2015

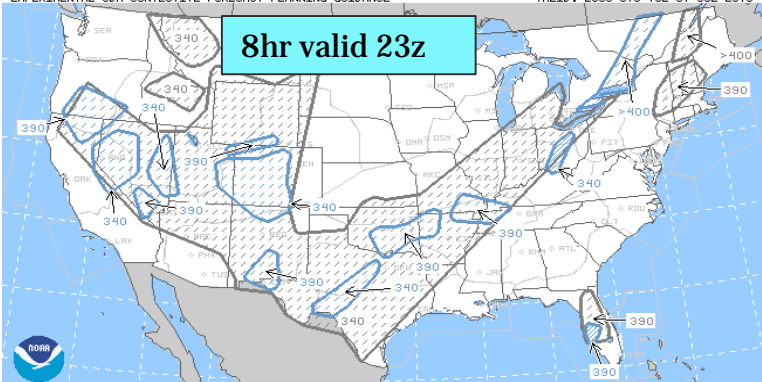
EXPERIMENTAL CDM CONVECTIVE FORECAST PLANNING GUIDANCE VALID: 1900 UTC TUE 07 JUL 2015



4hr valid 19z

AVIATION WEATHER CENTER (NOAA/NWS/NCEP) ISSUED: 1500 UTC TUE 07 JUL 2015

EXPERIMENTAL CDM CONVECTIVE FORECAST PLANNING GUIDANCE VALID: 2300 UTC TUE 07 JUL 2015



8hr valid 23z

AVIATION WEATHER CENTER (NOAA/NWS/NCEP) ISSUED: 1500 UTC TUE 07 JUL 2015

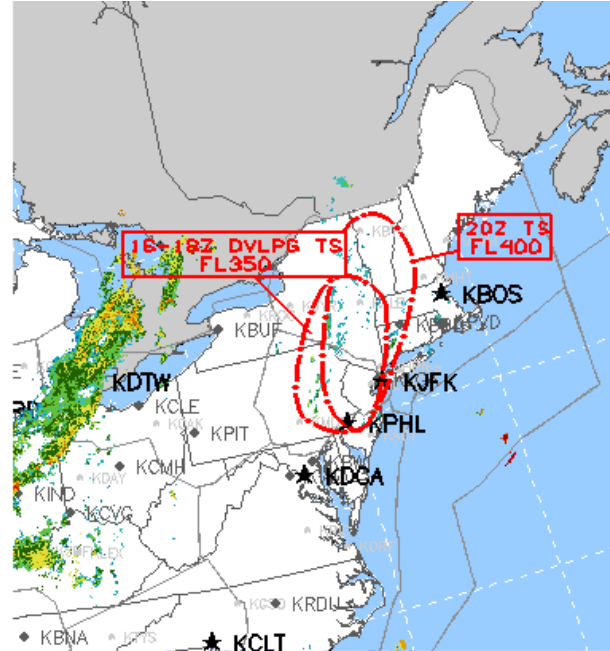
# CAWS 004 ISSUED 1454Z, VALID 16-2000Z

**Preliminary CAWS issued at 1434z**

**SUMMARY:** Probable...developing TS northeastern ZNY-western ZBW after 16Z

**DISCUSSION:** SCT TS developing over eastern PA-northern NJ-eastern NY will spread northeastward into western New England by 20Z. Activity will impact New York terminals and areas northwestward. Coverage should remain SCT. Tops generally FL350-400. Additional CAWS not anticipated.

**15Z CCFP has a reasonable depiction of this activity. This CAWS highlights area with slightly higher confidence and coverage.**



20150707 - CAWS 004  
Issued: 2015-07-07 14:54 Valid: 1600-2000Z  
18 dBZ Echo Tops Valid 2015-07-07 16:00

# JULY 20<sup>TH</sup> (MONDAY) OVERVIEW

## *CAWS Issuances:*

*22 Preliminary*

*5 Finals*

*1 Corrections*

*0 Cancellations*

- **433 Total NAS Delays,**
- *Only TMI for TSTMs was a Ground Stop for **IND***

## *Ops Plan:*

*16z- TERMINAL CONSTRAINTS: BOS/NY METROS/PHL/DC METROS/CLT/ATL-TSTMS*

*18z- TERMINAL CONSTRAINTS: BOS/NY METROS/PHL/DC METROS/CLT/ATL-TSTMS*

*20z- TERMINAL CONSTRAINTS: BOS/NY METROS/PHL/DC METROS/CLT/ATL-TSTMS*

## *1730z TAF:*

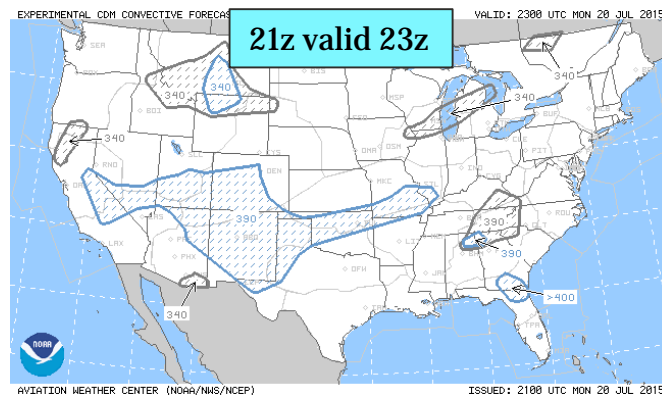
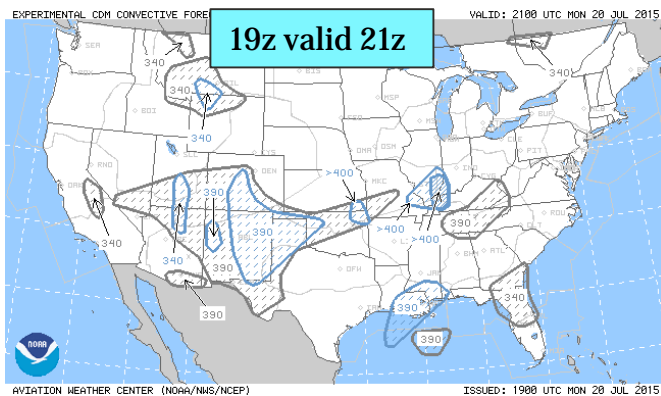
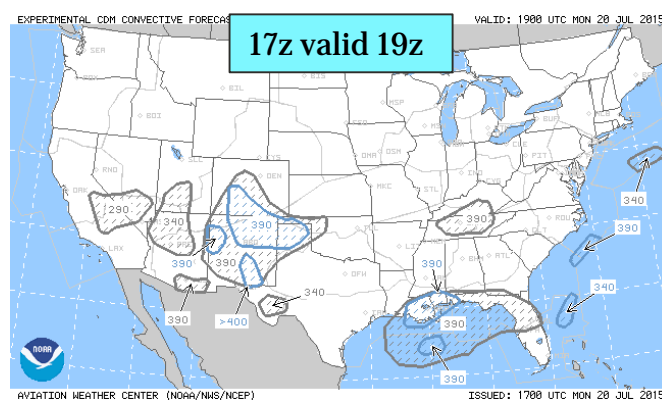
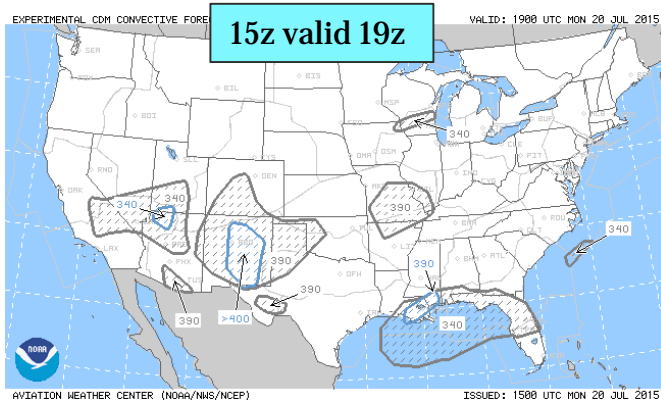
*BWI VCTS from 0000z*

*CLT TEMPO 22-0200z TSRA*

*DCA VCTS from 0000z*

*IAD VCTS from 0000z*

# CCFP VARIOUS RUNS



# CAWS 003 issued 1803z valid 18-2300z

**Preliminary CAWS issued at 1752z**

**ARTCCs affected:** ZBW, ZDC, ZNY,  
ZTL

**Terminals affected:** KBOS, KBWI,  
KCLT, KDCA, KEWR, KIAD, KJFK,  
KLGA, KPHL

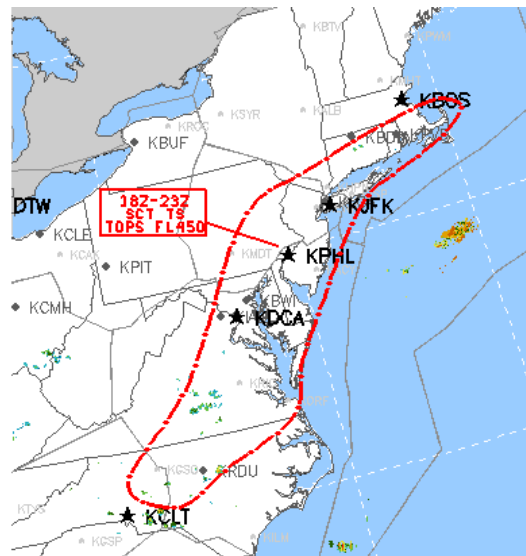
**SUMMARY:** Scattered TS are expected from central NC northeastward thru central NJ to southeastern MA thru 23Z.

**DISCUSSION:** Scattered TS from central NC northeastward thru central NJ to southeastern MA, with tops FL450, are expected to move slowly eastward/southeastward thru 23Z.

**17Z CCFP does not capture any TS activity for this region.**

Another CAWS is not probable after this CAWS expires.

*(CAWS 003 was not cancelled)*



20150720 - CAWS 003

Issued: 2015-07-20 18:03 Valid: 1803-2300Z  
18 dBZ Echo Tops Valid 2015-07-20 18:00

# JULY 23<sup>RD</sup> (THURSDAY) OVERVIEW

- **CAWS Issuances:**

- 14 Preliminary

- 3 Finals

- 0 Corrections

- 1 Cancellations

- **Total NAS Delay 1069**

- **ATL Diversions: 29**

- **ATL Ground Stop 1800-1923Z (TSTMS)**

- **ATL 1730z TAF: TEMPO 2318/2321 VRB20G35KT 4SM TSRA BR BKN025CB**



# OPS PLANS

## *12z Ops Plan*

TERMINAL CONSTRAINTS: *ATL/CLT-TSRA*

EN ROUTE CONSTRAINTS: *ZWY/ZDC/ZTL/ZJX/ZMA/ZME/ZKC-TSTMS*

## *14z Ops plan*

CONVECTIVE ACTIVITY IS FORECAST TO INCREASE IN THE SOUTHEAST; ARRIVAL ROUTES FOR *ATL* COULD BE REQUIRED

**ROUTES:** AFTER 1400-*ATL* ARRIVAL ROUTES POSSIBLE

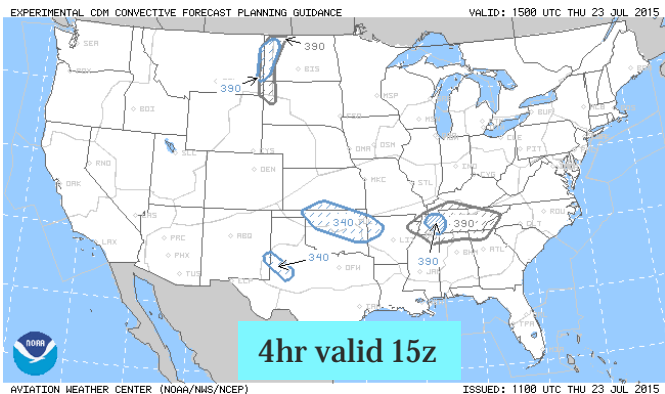
## *16z Ops plan*

THUNDERSTORMS FORECAST TO AFFECT *ATL ARRIVALS* AFTER 1700Z AND *CLT* AFTER 1800Z; REFERENCE ADDED FOR POSSIBLE TRAFFIC MANAGEMENT INITIATIVES.

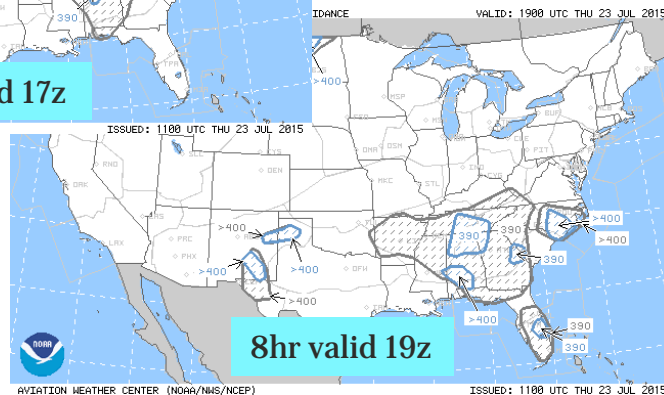
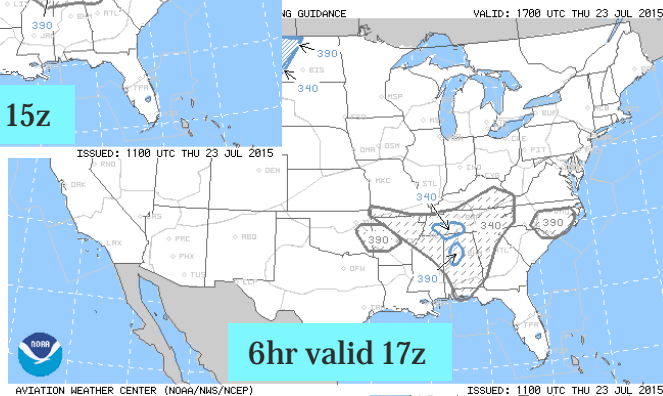
AFTER 1600    -*ATL* ARRIVAL ROUTES POSSIBLE

AFTER 1700    -*ATL* GROUND STOP POSSIBLE, 1800 *CLT*

# 11Z CCFP and TAF issuance

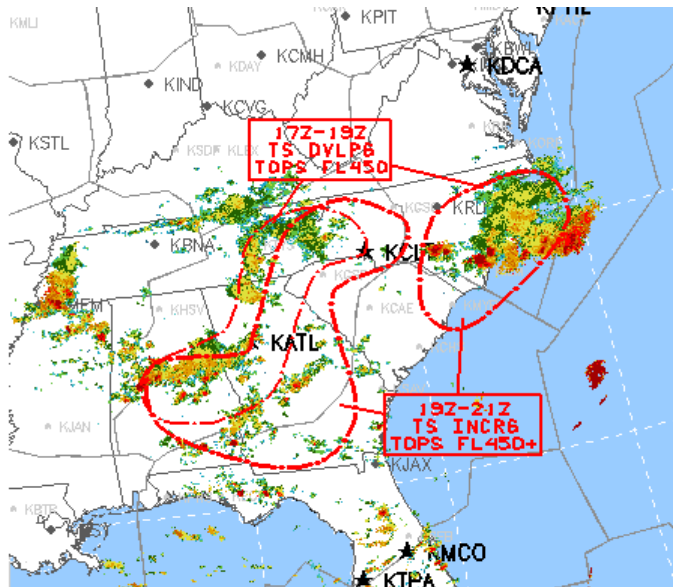


**231120Z** 2312/2418 28006KT P6SM BKN150  
FM231400 29010G15KT P6SM VCSH SCT035 BKN150  
FM231700 28010G15KT P6SM VCSH BKN040  
**TEMPO 2317/2321 VRB20G35KT 4SM TSRA BR BKN035CB**  
FM240200 27006KT P6SM VCSH BKN050  
FM240500 27005KT P6SM BKN250  
FM241400 30006KT P6SM SCT035

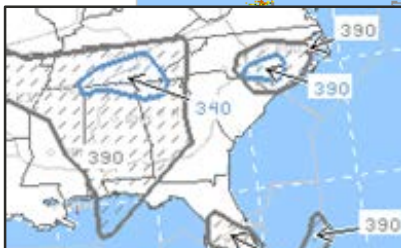


# CAWS 001 ISSUED 1402Z VALID 17-21Z

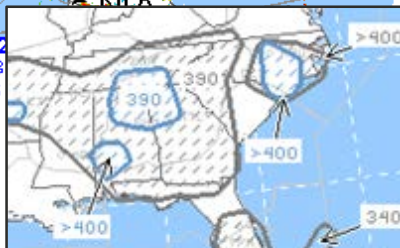
**Preliminary CAWS issued at 1333z**



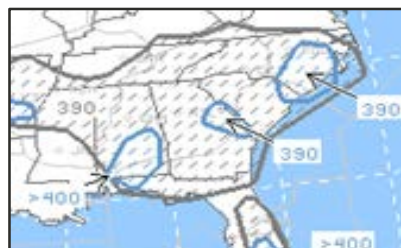
**SUMMARY:** Scattered TS Impacts across Gulf States with probable terminal impacts for KATL and KCLT  
**DISCUSSION:** Scattered TS Impacts across Gulf States with probable terminal impacts for KATL and KCLT  
**17Z-19Z** Developing area scattered TS Tops FL450 with probable terminal impacts by 18Z for KATL and 19Z for KCLT.  
**19Z-21Z** Scattered increasing with occasional numerous TS and Tops FL450+  
13Z run of the CCFP looked decent but CAWS provided for better timing.



4hr CCFP 13z valid 17z



6hr CCFP 13z valid 19z



8hr CCFP 13z valid 21z

# CAWS

## *Path Forward for 2016*

- Develop and publish guidance for use of CCFP and CAWS
- Identify and refine CAWS key elements (thresholds)
- Update CAWS ConOps and Performance Requirements—send to NWS
- Update training based on revised ConOps and requirements document
- Establish Quality Control/metrics
- Provide stronger program management support for overall effort—especially during Ops Demo