

Collaborative Aviation Weather Statement Testing and Evaluation

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Operational Bridging

- Concept introduced by the FAA Collaborative Decision Making (CDM) Weather Evaluation Team (WET) in conjunction with the NWS
- Operational Bridging is simply providing decision support by translating weather into aviation impacts
- Phase 1 was getting a National Airspace Meteorologist (NAM) back into the loop at the FAA Air Traffic Control System Command Center (ATCSCC)
 - Initially 2 meteorologists, now 4 with an additional expansion to 6 being discussed
- Phase 2 was to document decision support/operational bridging in a product and leverage additional AWC resources
 - Start with convective impacts to en route and terminal operations

Initial Aviation Weather Statement

- NAMs in command center would provide additional information in aviation context about TAFs and Collaborative Convective Forecast Product issued by AWC for national traffic management initiatives (TMIs)
 - CCFP and TAFs are both limited in scope for optimal decision support and need additional interpretation
 - CCFP is bound by minimum areal extent (3000 sq mi) and minimum convective coverage (25%).
 - Isolated storm in SE PA can disrupt air traffic significantly and not be forecasted by CCFP
- Aviation Weather Statement- capture important impacts in the NAS
 - Convection only tests during Summer 2013 for select dates
 - Collaboration with NAM and command center only (no other direct collaboration with meteorologists from CWSUs or AWC)
 - On occasion the AWS would not be issued as it was simply too much work for a NAM to handle on busy convective days

Example AWS

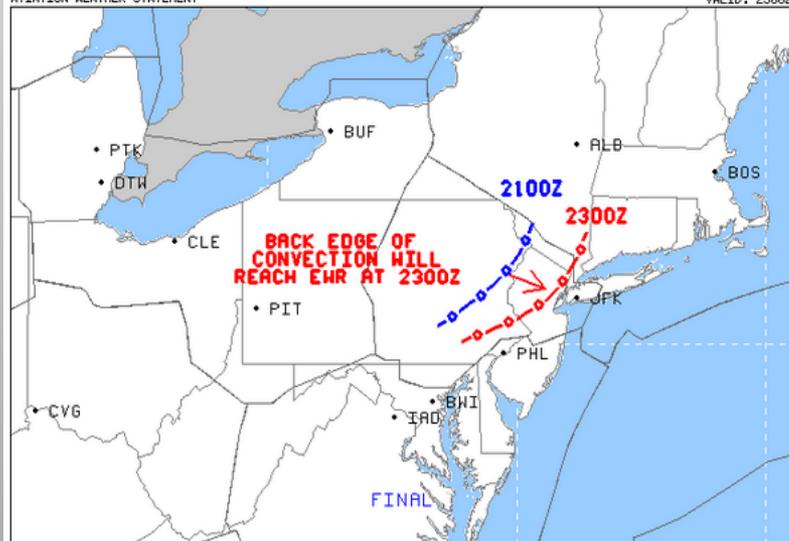
Aviation Weather Statement

NOTE: The Operational Bridging Demonstration and Aviation Weather Statement (AWS) will run from June 3 - Aug 30, 2013. During the month of May, intermittent AWS may appear on this page in preparation for the full demonstration, as convective events occur.

Number 0135 issued at 2013/08/09 2110UTC

AVIATION WEATHER STATEMENT

VALID: 2300Z



AVIATION WEATHER CENTER (NOAA/NWS/NCEP)

ISSUED: 2118 UTC FRI 9 AUG 2013

AVIATION WEATHER STATEMENT 0135

NWS AVIATION WEATHER CENTER KANSAS CITY MO

2110 UTC FRI 09 AUG 2013

VALID TIME...2300Z

NAS ELEMENTS EFFECTED...N90

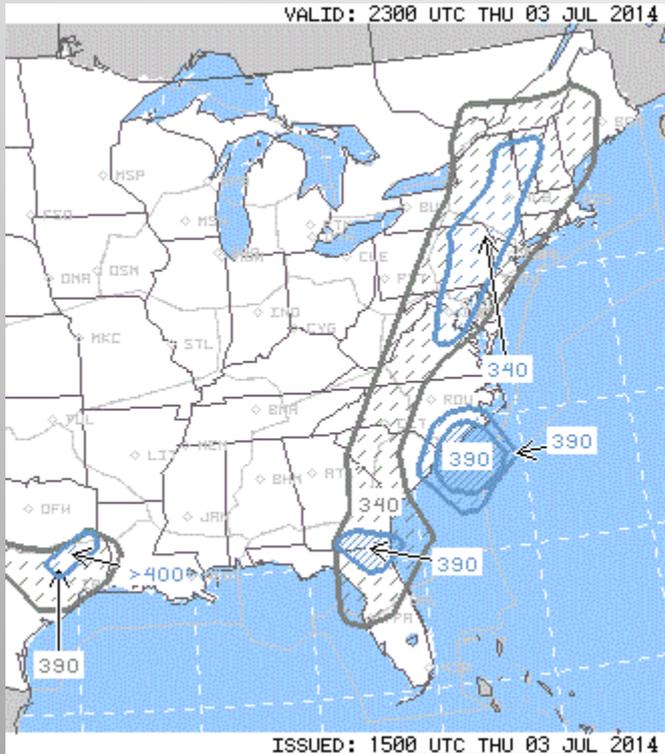
CONSTRAINTS... THE BACK EDGE OF A BROKEN LINE OF CONVECTION WILL REACH EWR AT AROUND 2300Z. THE CONVECTION WILL BEGIN TO WEAKEN AROUND THAT TIME AS WELL.

Over the 2013 season the initial drawing and text guidelines were shaped by NAMs at command center, some have made it to the final version of the CAWS

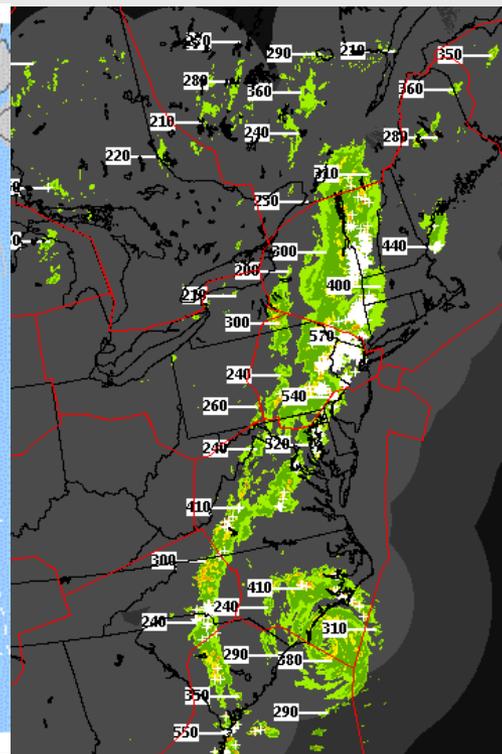
Evolution to CAWS

- Due to the NAMs not having enough time to issue the AWS routinely there was a proposal from the FAA to support the convective AWS 24x7
 - No additional resources could be allocated
 - Need to repurpose AWC forecasters to produce a new collaborative product with CWSUs and industry → Collaborative Aviation Weather Statement
 - Need to automate routine guidance
 - Collaborative Convective Forecast Product became the CDM Convective Forecast Planning guidance (automated routine guidance)
- WET formalized the convective CAWS framework
 - Initial triggers, terminology, and drawing rules were documented
 - Collaboration always mentioned but never defined or tested

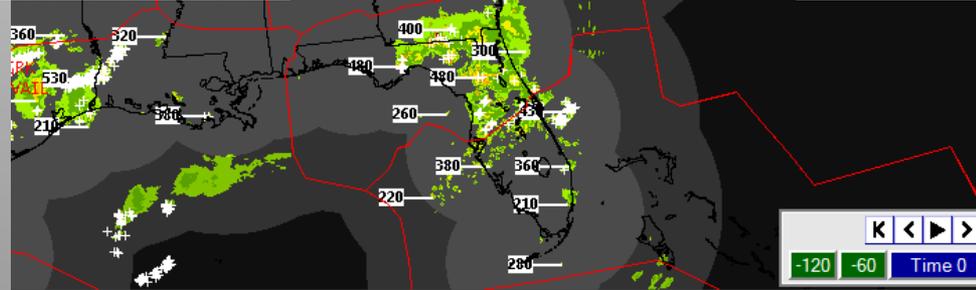
Example New CCFP



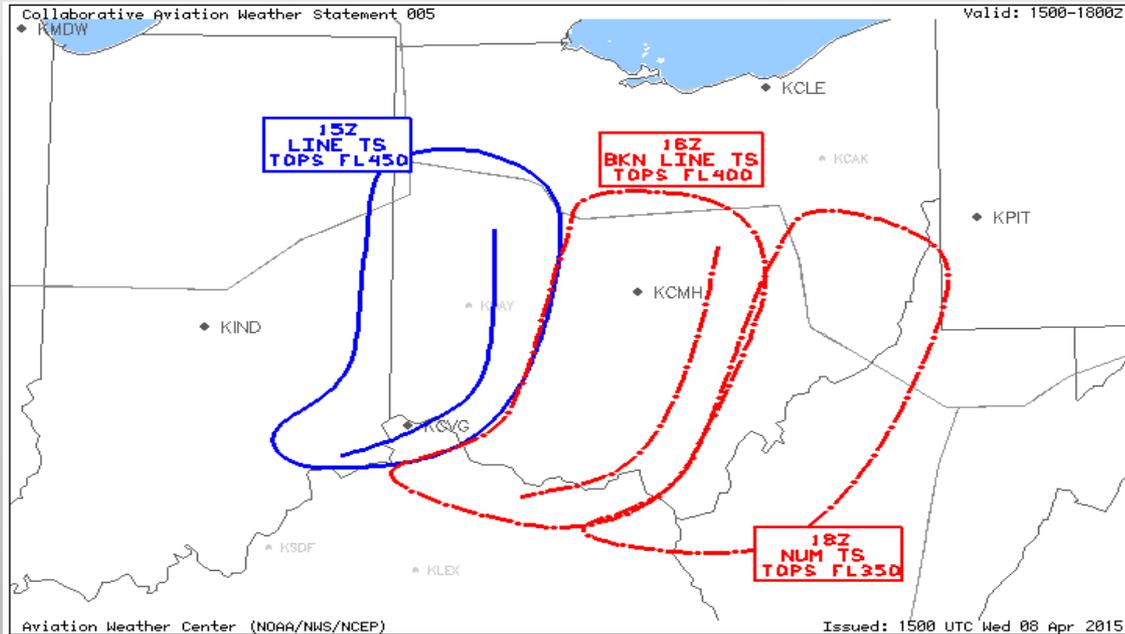
Automated
CCFP



Forecaster
CCFP



Example CAWS



Collaborative Aviation Weather Statement 005
NWS Aviation Weather Center Kansas City MO
1500 UTC Wed 08 Apr 2015

Weather: Thunderstorms
Valid: 1500-1800Z

ARTCCs affected: ZAU, ZID, ZOB
Terminals affected:

SUMMARY: Line TS expected over eastern IN/southern OH/northern KY/western WV thru 18Z.

DISCUSSION: Line TS, with tops FL450, over eastern IN/western OH, expected to move east/southeast. By 18Z numerous TS, with tops FL350, expected to be over southeastern OH/western WV/northeastern KY.

BOUNDING BOX: 41.85,-86.10 38.10,-86.84 37.64,-80.78 41.10,-79.80 41.85,-86.10

2014 Summer Experiment

- Need to Test Collaboration Between AWC Operational Bridging Meteorologists and others
 - Set up CAWS production desk in the main testbed and a Traffic Flow Management/NAM desk in the 'old' testbed
 - Workstations were designed to mimic production and remote CWSU/NAM workstations
 - NWS Chat was the selected collaboration tool
 - Need to support more than 50 participants at once securely
 - Used a couple live days and a couple of canned days for the week long experiment to test collaboration
 - Participants included WFO/CWSU/airline meteorologists
 - Lack of drawing capability led to the development of a prelim graphic for awareness

Chat Observations

- The testbed was not an ideal setup
 - Multiple users were on desk so it did clutter the process test although with a lot of participants gathered a lot of feedback
- There were several notes of it being difficult to keep up with chat and keep situational awareness on busy days
 - May need to consider options for additional staff on busy convective days in late summer
 - Dynamic Staffing
 - How large of a problem is this?
 - Leverage regional expertise from CWSU
 - Leverage experience from airline meteorologists
 - Focus on most impactful weather first
- Need for rules in the chat
- AWC would be given ultimate decision making (51% vote) to keep chat timely and focused
- Need for a whiteboard/groupboard drawing capability

NWS Chat Example

https://nwschat.weather.gov/live/

Most Visited Getting Started Home - Virtual Lab AWCPORTAL Controll... FAA KSN-Convection Employee Personal Pa... CoSPA Web Display

NWSChat Live

Map Panel

Map Valid: 10:10 AM Tools Opacity



Layers Control

- Base Layer
 - Blank
 - Google Street
- Satellite
 - GOES Water
 - GOES West
 - GOES East
 - GOES Visible
 - GOES IR

Help All Chats avn_wx_testbed awc_nas_impacts

Clear Room Log Print Log View As HTML Hide NWSBot Mute Sounds A A

Message

(8:16 AM) NWS-NAM-michael.eckert: finally...latest hrrr seems to have a good hndi on the situ..

(8:18 AM) OB-NWS-AWC-ingrid.greenwall: Agreed. Looks like it caught on

(8:22 AM) nws-mark.burger: HRRR keeps the stuff going through the day...may very well happen if it stays around long enough to root into the boundary layer.

(8:37 AM) NWS-NAM-michael.eckert: Mark...I like your idea of the more sm cells staying alive into the late mrrng/afnt and they track ewd and hook up with the outflow fm the MCS pushg into OH vly

(8:41 AM) nws-mark.burger: Mike...definitely something to watch...lots of sfc based instability to take advantage of once minimal capping is removed...check out SGF 12Z sounding.

(9:03 AM) nwszmp-bill.gough: So..when do we CAWS the MO storms? TMU says our area will feel the effects of this soon.

(9:05 AM) NWS-NAM-michael.eckert: I think we might be able to combine the OH vly to MO storms...vsbl satl showg lots of cu formg as the outflow plows into the rather stable airmass...but this wl change quickly with some heatg.

(9:05 AM) NWS-NAM-michael.eckert: sig n/s routes impacted fm the upr midwest/midwest/grt lks to fl

(9:17 AM) nwsbot: Storm Prediction Center issues [Mesoscale Discussion #227](#) [watch probability: 80%] ([View text](#))

(9:24 AM) NWS-NAM-michael.eckert: Ingrid...I think we should consider a new CAWS for the Ohio cnvctn...it's going to outrun our current fcst by 16Z. Should be CMH-just S CVG by 16Z. also mgt consider bldg sw into the OH vly and then into MO along outflow bndry...but the MO actvty seems to pulse up/down randomly and not causing impact at this time. Diane (ZID) what your take? Mark...what about the MO

52 people in room

- AALUSA-GaryDockan
- ATCSCC-NAM-brandon.s
- aviation-bill.thull
- aviation-george.a.tabeck
- aviation-timothy.r.smith
- AWCCSIG-karen.eagle
- Delta-daniel.e.ciminelli
- faa-kevin.l.johnston
- fdx-met-ashley.werho
- fdx-met-erik.proseus
- fdx-met-jeff.woodard
- fdx-met-kory.gempler
- fdx-met-trevor.k.hansen
- MSC-HDQ-Gilles-Ratte
- nws-awc-benjamin.schw
- NWS-AWC-Clinton.Wallac
- NWS-AWC-james.roets
- nws-brian.hirsch
- nws-brian.seeley
- nws-charles.hays
- NWS-CWSU-ZLA-CM
- nws-dianeZID
- nws-doua.bovette

Preparing CAWS Training Material

- Intense 2 week initial training session in Feb 2015 for AWC Operational Bridging Meteorologists
 - First week:
 - Introduction to the product and goals
 - Introduction to traffic flow management decisions at the ATCSCC
 - Introduction to the NAM responsibilities
 - Full hands on experience with the production tools
 - Chatroom training
 - Second week:
 - Real-time demonstration with current weather and full chat tests with NAMs, CWSUs, and airlines
 - Canned scenarios with internal tests on collaboration

Timeliness Training: CAWS Production Steps

1. Identify a region of concern via collaboration with NAM/FAA end-users
2. Discuss meteorological situation including timing, mode, echo tops, etc
3. AWC OB Meteorologist creates a preliminary graphic and discussion and sends it
4. Further discussion in chat about placement of graphics in prelim and discussion text
5. After prelim approved issue the final CAWS
6. NAM sends an FAA advisory out
 - Process ideally takes only 20-30 minutes

Best Practices for Chat

- Gather impacts from CWSUs and NAMs
 - Some convection may not be impactful to operations (especially in regions with less dense traffic)
- Feel free to discuss weather situation with jargon, but final CAWS should be specific to agreed terminology only
- Focus on one problem at a time, AWC needs to manage the chat
- Different colors for different regions of concern
- Try and limit prelims, exercise 51% vote when necessary
- Participants in the chatroom should conform to a specific handle format so we know who is being represented
 - Still a work in progress

Leverage NWSbot

Goal: Reduce workload in any way possible for CAWS production

- NWSbot now provides a link to any prelim or final that is issued. No need for the forecaster to cut and paste links into chat
- After user feedback: SPC watches, mesoscale discussions and day 1 and 2 outlooks are also issued automatically

Groupboard Exploration

- Groupboard for CCFP was supported at AWC level for our own products: Should a drawing capability be an NWS-wide consideration?
- Human Factors Study
 - Does editing graphics take away from meteorological discussion?
 - How much information does the end-user get from observing the conversation vice seeing the end product?
 - What is the best way to integrate chat and drawing capability?

CCFP Groupboard Example

The screenshot displays a CCFP Groupboard interface. On the left, a map of the Eastern United States is shown with the text "OF SEASON" overlaid in a large, pixelated font. A red circle highlights a region in the Midwest, and a blue circle highlights a region in the Northeast. The text "Low Covg" is written in red over the red circle. A mouse cursor points to a label "AWC-Forecaster" near the blue circle. The chat window on the right shows 10 other users connected and a list of messages:

There are 10 other users connected.

- <AWC-Forecaster> 16:49:33Z - Hello everyone
- <ZME> 16:49:48Z - Hello
- <ZFW> 16:50:36Z - Test
- <ZNY> 16:51:30Z - Hi Ryan...here at ZNY I could "not" log in from IE but was able to in Firefox
- <ZNY> 16:52:49Z - Ryan...it is version 8.0.6001.18702

The user list on the right includes: ALL, AWC-Forecast, ZHU, ZAU, ZID1, ZFW, ZME, ZBW, ZMP, ZNY, ZID, and ZME1. At the bottom, there is a "Click here to chat" button and a text input field.

Conclusions

- Testing collaboration during summer experiment was critical in shaping training material for chat and CAWS as a whole
- Need to explore best drawing capability
 - National level effort?
- Continue to gather feedback during the 2015 operational demonstration
 - Human factors studies with FAA AWDE on decision support delivery not just product development/meteorology