



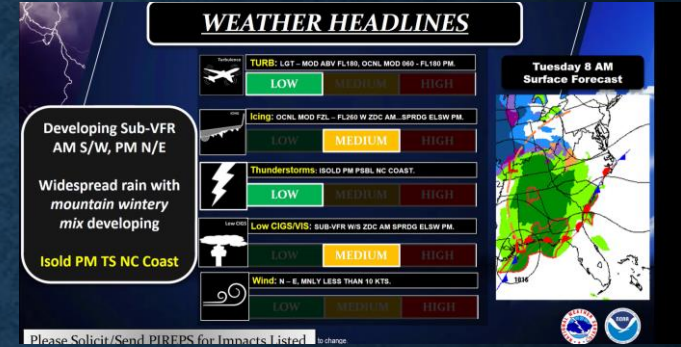
**HISTORY OF CONVECTIVE FORECAST TO
ENHANCE DECISION SUPPORT SERVICES
(DSS) AT THE
CENTER WEATHER SERVICE UNIT**

Rick Winther

National Weather Service CWSU ZDC



CHANGES/IMPROVEMENTS LAST 20 YEARS



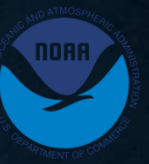
CWSU DSS CHANGES

Before 2005

- Single Person Forecast →
- Legacy Text →
- (low resolution) Deterministic Forecast models →

NOW

- Local/National Collaborated Forecast.
- Graphics.
- Probabilities/Impacts (SREF)



KEY DATES

- 2005 – NWS Comet course “The Impact of Weather on Air Traffic Management”.
- 2006 – Discontinued the Transcribed Weather Broadcast (TWEB forecast). Route and local vicinity forecast.

063 TWEB 220820 KCLE-KDTW. ALL HGTS AGL EXC TOPS. 3-4SM -SN BR CIGS OVC020 AREAS 1SM -SN BLSN CIGS OVC010...16Z 5SM BR CIGS BKN-OVC030 LCL 2SM -SN CIGS BKN-OVC010.

- 2012 – Return of NWS Meteorologist to the Command Center.
- 2013 to present – Planning Telecons, PERTI (day2 plan, excute, review, train and improve), CWSU Strategic Graphical Planning Aids, PDWB.



CWSU PRODUCTS IN 2005



1. MIS – Meteorological Impact Statement
2. CWA – Center Weather Advisory

Note - From 2005-2010 FAA started to integrate NWS weather data into the FAA Systems.





THE METEOROLOGICAL IMPACT STATEMENT (MIS)

The MIS is a brief non-technical discussion of meteorological events causing or expecting to cause a hazard and impact to the safe flow of air traffic. The MIS is limited to not exceed a 48 hour valid period.

EXAMPLE:

ZBW MIS 03 VALID 302100-311200 ...FOR ATC PLANNING PURPOSES ONLY... A COLD FRONT IS BECMG STNR FROM WRN PA TO SRN NJ WITH A MOIST NE LOWLVL FLOW PRODUCING AREAS OF LOW CLOUDS AND FOG. AS THE COLDER AIR DEEPENS AREAS OF ICING ARE FCST TO DVLPG OVER ZBW E BGR-CMK LINE...LGT OCNL MOD RIME ICE DVLPG 00Z-03Z BTN 020 AND 080

NOTE: Most CWSU's are now using this product for notification when the office will be in backup mode.



THE CWA



A CWA IS A NON-ROUTINE PRODUCT THAT IS ISSUED FOR HAZARDOUS WEATHER WHEN THERE IS NO EXISTING AWC ADVISORY IN EFFECT. A CWA MAY ALSO BE ISSUED TO SUPPLEMENT AN ADVISORY THAT HAS ALREADY BEEN ISSUED BY AWC.

ISSUED FOR:

THUNDERSTORMS, MOD OR GREATER ICE/TURB, LIFR CONDS, LLWS, FREEZING PRECIP, SFC WINDS > 30 KTS

EXAMPLE OF TURBULENCE / LLWS:

ZDC CWA 232100

ZDC CWA 203 VALID UNTIL 232300

FROM RIC-SBY-ORF-RIC

AREA OCNL MOD ISOL SEV TURB BLW 060 AND LLWS. CONDS ENDING BY 23Z.



ZDC SWAP STATEMENT - 2013

SWAP Statement:

The purpose of the SWAP Statement is to provide a concise thunderstorm forecast to STMC and TMU so they can plan for SWAP accordingly. Includes thunderstorm locations, coverage, impacts (top 3-5 terminals, top 5 J/Q Routes, major departure/arrival fixes, etc.), as well as tops and movement. The SWAP Statement is issued once per day, by 1030L, April through October. If convection is ongoing at the start of a day shift or is going to start in the morning, a SWAP statement can be issued earlier.

SWAP STATEMENT: SEVERE WEATHER AVOIDANCE PLANS ARE *[possible, probable, expected]* FOR THE ZDC AIRSPACE.

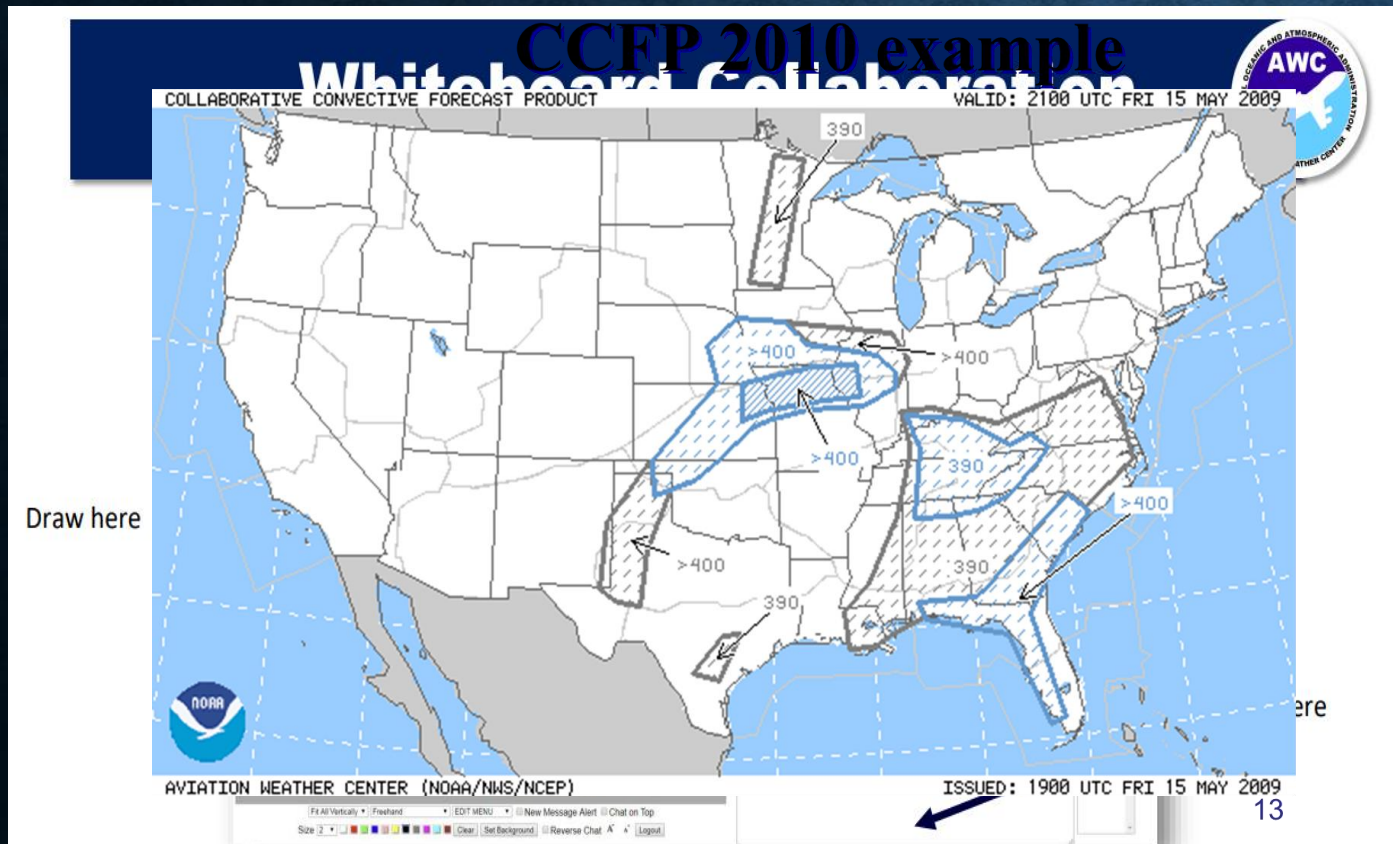
LOCATION AND START TIME: *[THE FOLLOWING ROUTES/FIXES/AREAS WILL BE IMPACTED AT]*.

FORECAST TOPS AND MOVEMENT: *[tops fl350-fl400 move ne 30 kts]*.



THE NATIONAL COLLABORATED PRODUCTS – 2010 - CCFP

Collaborative Convective Forecast Product



The Collaborative Convective Forecast Product (CCFP) is a strategic forecast of convection to provide decision support to air traffic managers in their quest to manage traffic in the National Airspace System (NAS).

2/4/6 hour snap shots

Sparse (Low) 25-39% (hatching)

Medium 40-74% (lines)

High 75-100% (solid fill)

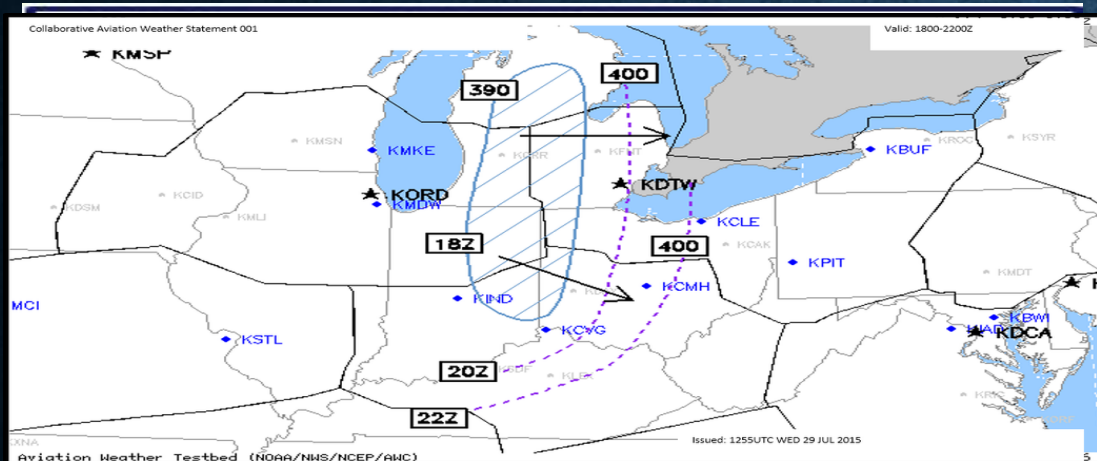
Important note

For med or high coverage, confidence is **blue (high)**



THE NATIONAL COLLABORATED PRODUCTS – 2015 - CAWS

Collaborative Aviation Weather Statement



Collaborative Aviation Weather Statement 001
 NWS Aviation Weather Center Kansas City MO
 1255 UTC Thu 29 Jul 2015

Summary - Coverage/confidence too low

SUMMARY: Area high confidence thunderstorms over western NY/northwestern PA/eastern-southern OH/northern KY and eastern PA/DC/MD/northwestern VA/eastern PA at 19Z and 21Z.

DISCUSSION: Area high confidence-low coverage thunderstorms over western NY/northwestern PA/eastern-southern OH/northern KY and eastern PA/DC/MD/northwestern VA/eastern WV at 19Z and 21Z, with tops FL390.

Operations Note - CCFP areas that are not displayed in the CAWS graphic for the valid times posted are deemed to be accurate unless otherwise stated.

BOUNDING BOX: 45.45,-90.45 34.24,-89.79 34.33,-71.21 45.18,-71.11 45.45,-90.45

New product: Collaborative Aviation Weather Statement (CAWS) starting Mar 2015

- Event-driven – timed and focused on areas of potential air traffic impact (enroute and/or terminal)
- More timely forecast and flexible format than 2-hourly CCFP
- National Weather Service and Industry meteorologists will collaborate on CAWS 24-7 unlike limited CCFP collaboration in the past

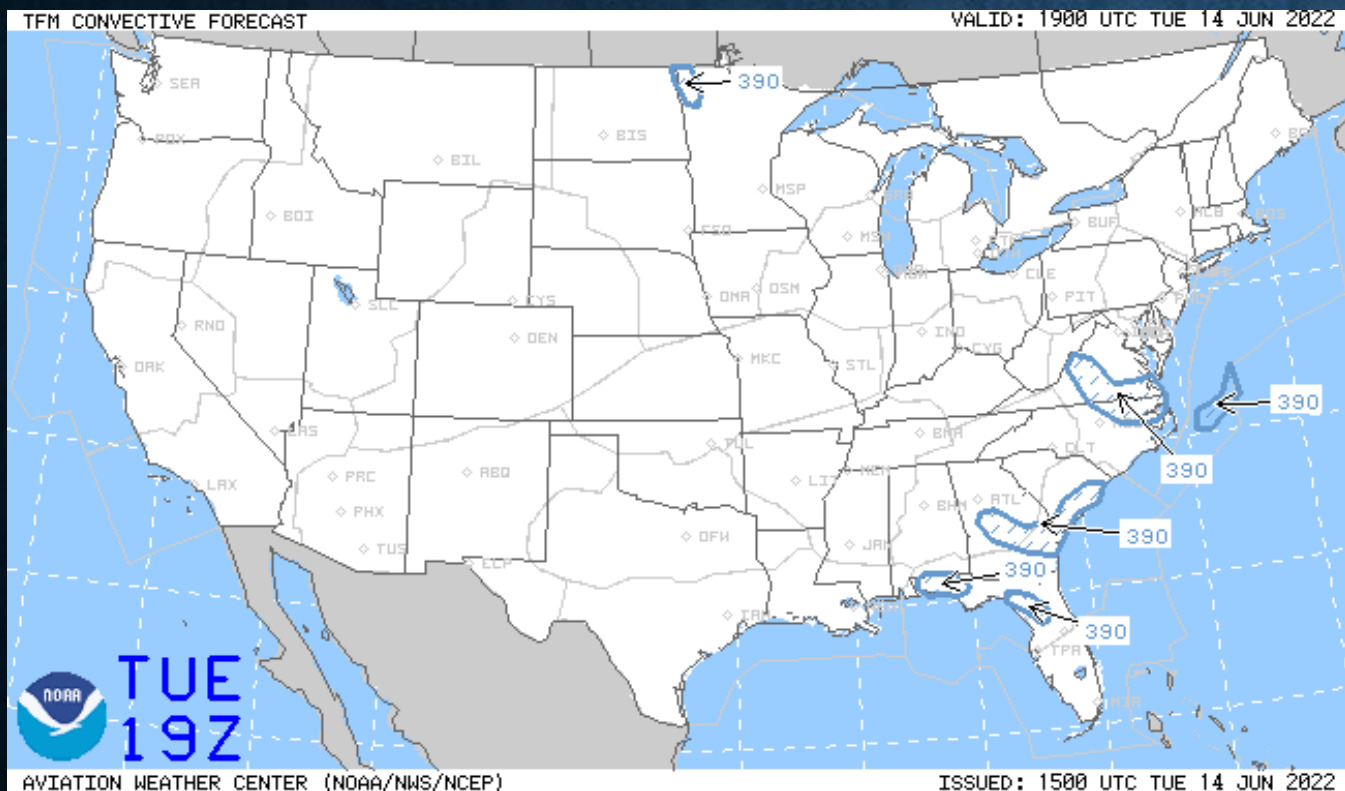
FINDINGS:

Overall the CAWS process does not adequately support the TFM decision making process. This is due to:
 Difficulty interpreting differences between CAWS and CCFP. Lack of integration on the TSD.




THE NATIONAL COLLABORATED PRODUCTS – 2017 - TCF



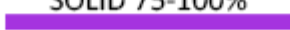
Traffic Flow Management Convective Forecast



2018 TCF



- Issued 24x7, every 2 hrs
- Forecast for 4-6-8 hours
- High Confidence areas only
- Does NOT account for lightning
- Available on web, TSD and NOAAPort

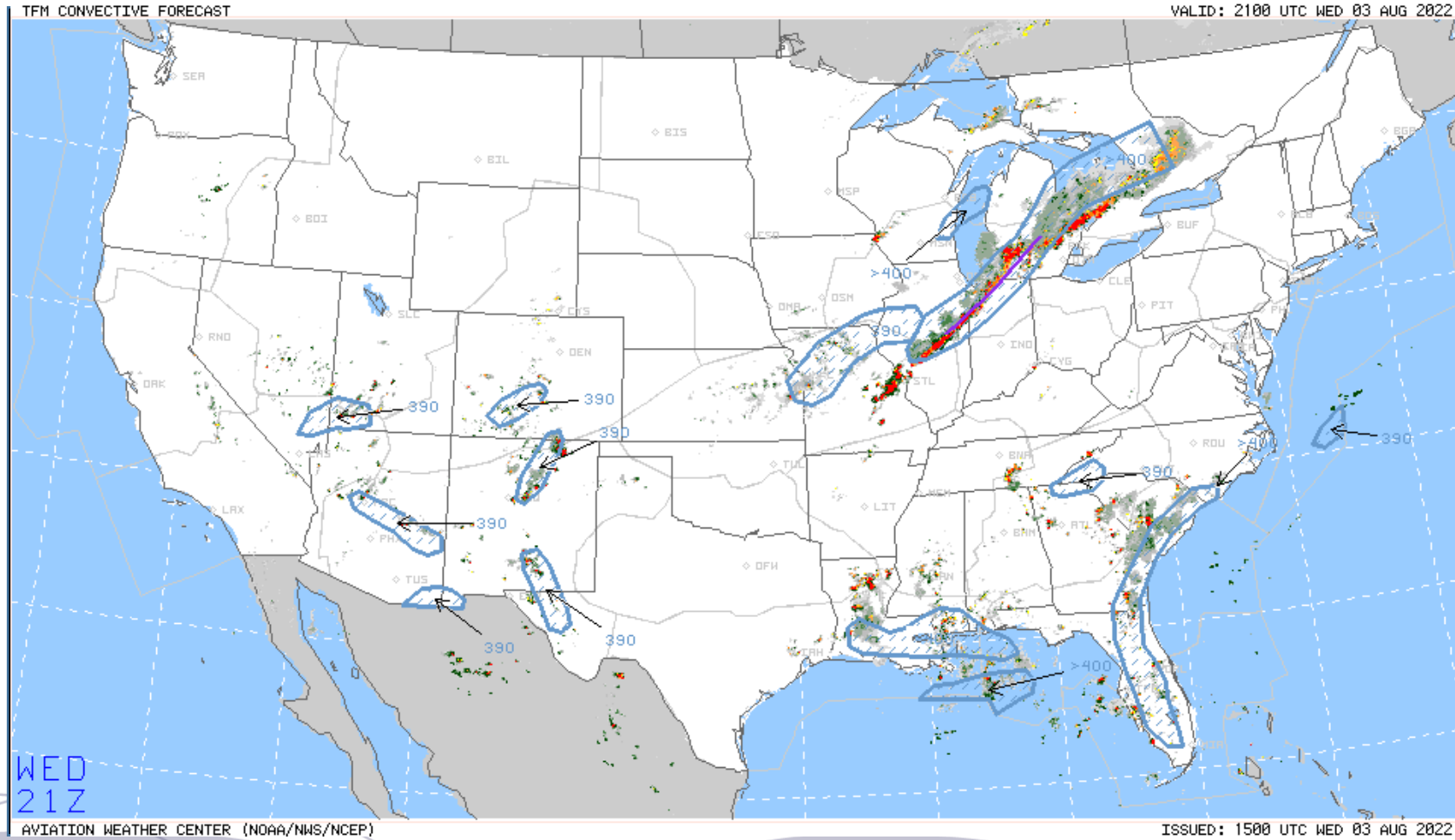
COVERAGE		HEIGHT	
SPARSE		TOPS: 100's OF FEET MSL	
25-39%		25000 - 29000	290
		30000 - 34000	340
MEDIUM		35000 - 39000	390
40-74%		40000+	>400
LINES			
			
SOLID 75-100%			

Main TCF site:

<https://www.AviationWeather.gov/tcf>

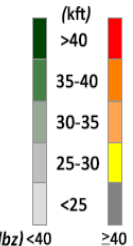


Wed Aug 3, 2022



- **Verified Well**
 - ZOB/ZAU/ZKC (Solid line spot on)
 - ZDV (CO)
 - ZAB (Nrn NM)
- **Verified Close**
 - ZIX (SC/GA)
 - ZHU/ZJX (Gulf)
 - ZKC (MO)
 - ZAB (Srn NM/SW TX, AZ)
 - ZLA/ZLC (NV/UT)
- **Over-forecast**
 - ZNY (Offshore)
 - ZTL (NC/GA)
 - ZJX/ZMA (FL)
 - ZMP/ZAU (WI, Lake MI)
 - ZAU (Wrn IL)
 - ZHU (LA)
 - ZAB (Srn AZ/NM)
- **Missed**
 - ZTL/ZJX (SC/GA)
 - ZTL/ZME Border (TN/AL/GA)
 - ZMA (Ern Gulf)
 - ZMP/ZAU (IA/WI)
 - ZKC (MO...Medium)
 - ZHU/ZFW/ZME (Nrn LA)

VERIFICATION



<https://www.aviationweather.gov/tcf/help>



Federal Aviation Administration


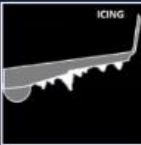





PRE-DUTY WEATHER BRIEFING - 2017



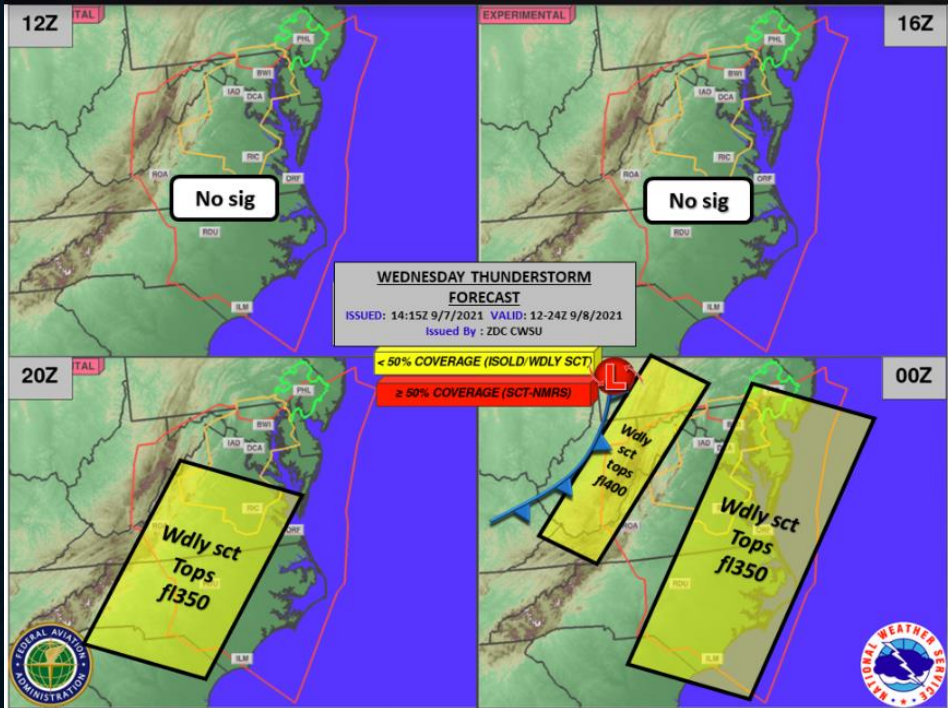
- Recording is 1-3 min long.
- 3 per day (6 AM, 12:30 PM, 8:30 PM).
- We use Camtasia software.
- After the recording is complete we upload to be Viewed by all Towers / Tracon / Center In ZDC airspace.



	Turbulence TURB: OUTSD SHRA/TS: LGT TO MOD BLW FL180 NRN / WRN ZDC.	LOW	MEDIUM	HIGH
	Icing: OUTSD SHRA/TS: LGT TO MOD FZL - FL260. FZL 120 - 140.	LOW	MEDIUM	HIGH
	Thunderstorms: ISOLD...MV N 40 KTS, TOPS FL350 - 400. SOME SEVERE WITH G 40 - 60 KTS & BRIEF TORNADO PSBL, MNLY FM CHO - EZF SOUTH.	LOW	MEDIUM	HIGH
	Low CIGS Low CIGS/VIS: WDSPRD MVFR WITH AREAS IFR. LCL LIFR, MNLY MNTS AND W OF DC.	LOW	MEDIUM	HIGH
	Wind: E - S 5 TO 15 KTS WITH GUSTS 20 - 28 KTS AFTN. AREAS LLWS WRN / NRN ZDC. COMPRESSION DCA.	LOW	MEDIUM	HIGH



ZDC "DAY2" CONVECTIVE FORECAST - 2016-2022



HIGHLIGHTS

Remains of TS Nicole will track north across eastern TN/KY into WV. Warm front will track north across Northern ZDC in the morning. FEW TS DVLPG S ZDC TRACK N AND WEAKEN.

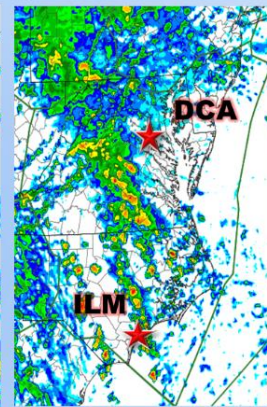
ZDC Day 2 Forecast - Valid: 12Z-00Z FRI 11/11/2022

Created by ZDC CWSU: 11/10/2022 1350Z

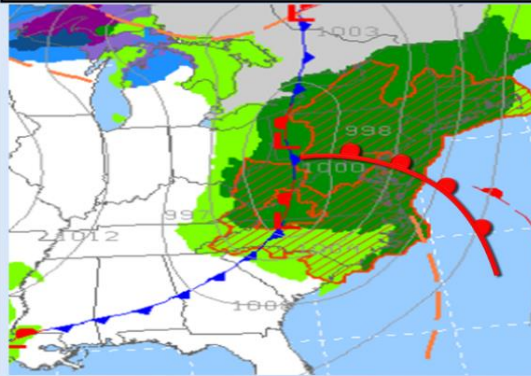
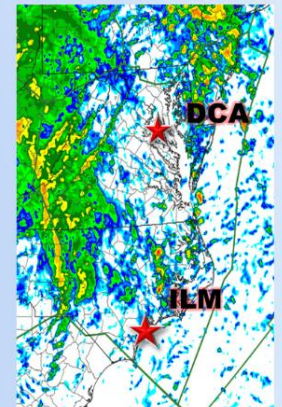
12Z Forecast Radar



17Z Forecast Radar



23Z Forecast Radar



ENROUTE / TERMINAL IMPACTS

Wind: S-SE 10-25 KT...FEW G35 KT IN SHOWERS.

SLIGHT MEDIUM HIGH

Icing: LGT-MOD ICE N ZDC 100-FL230.

SLIGHT MEDIUM HIGH

CIGS/VIS: AREAS OF MVFR/IFR CIGS.

SLIGHT MEDIUM HIGH

LLWS: LLWS N ZDC WS020/17040KT.

SLIGHT MEDIUM HIGH

TURB: LGT-MOD BLW FL400...ISOL SEV BLW 080

SLIGHT MEDIUM HIGH

Thunderstorms: WDLY SCT TS S ZDC.

SLIGHT MEDIUM HIGH



OTHER PLANNING AIDS DEVELOPED IN THE LAST 5 YEARS

IDGF

Northeast Corridor International Departure Gate Planning Forecast
Forecast valid times
 Issued at: 1545Z FRI 11 NOV 2022 Start: 1800Z FRI 11 NOV 2022
 Next Update: Scheduled for Spring 2023 End: 0300Z SAT 12 NOV 2022

Gate	18Z-21Z	21Z-00Z	00Z-03Z
LBSTA	N	N	N
CELTk	N	N	N
GREKI/MERIT	N	L	P
BETTE/HAPIE/SHIPP	N	N	P
GAYEL	P	L	P
DIXIE/DITCH	N	P	P
SWANN/PALEO	L	L	P

Core Airport	18Z-21Z	21Z-00Z	00Z-03Z
BOS	N	N	P
NY Metros	P	L	P
PHL	N	L	P
DC Metros	L	L	P

Thunderstorm Probability/Restrictions		
NONE (N)	0-24%	No restrictions
POSSIBLE (P)	25-54%	Limited restrictions
LIKELY (L)	55-74%	Restrictions likely
EXPECTED (E)	75-100%	Restrictions expected

Routine issuances will resume in the Spring of 2023.

Discussion: The remnants of Tropical Cyclone Nicole will move over the northeast this afternoon and evening producing scattered embedded thunderstorms mainly across the Mid-Atlantic into southern ZBW. Impacts to jet routes and fixes across southern New York and New England are possible mainly after 19z. Max tops FL350. MOV FM 24045.

The NAS Efficiency has improved due to efforts of the NWS and Partners
 Safer Skies

DC GATE FORECAST

KDCA Gate Forecast TFM Home Gate Home
 0045 UTC Sat 12 Nov 2022

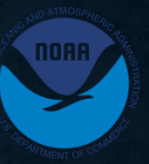
Weather Overlays Options

Region	01Z	02Z	03Z
NORTH	01Z	02Z	03Z
	04Z	05Z	06Z
	07Z	08Z	09Z
WEST	01Z	02Z	03Z
	04Z	05Z	06Z
	07Z	08Z	09Z
EAST	01Z	02Z	03Z
	04Z	05Z	06Z
	07Z	08Z	09Z
SOUTH	01Z	02Z	03Z
	04Z	05Z	06Z
	07Z	08Z	09Z

dbZ 5 15 25 35 45 55 65 GAIRMET TurbHi TurbLo LLWS SfcWind Icing Frz IFR MtnObs

A three tiered approach to the display is used:

- Green - no significant weather
- Yellow - some significant weather that might affect some portions of the gate
- Red - significant weather that could affect large portions of the gate



OTHER LINKS

ZDC CWSU SITE:

<http://www.weather.gov/zdc/>

Briefing Sheet:

<http://www.weather.gov/media/zdc/brief/BRIEF.pdf>

DAY2 ZDC Thunderstorm/Winter Forecast:

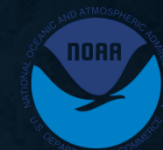
http://www.weather.gov/images/zdc/DAY2_IMPACTS.png

Sterling WFO Forecast Office:

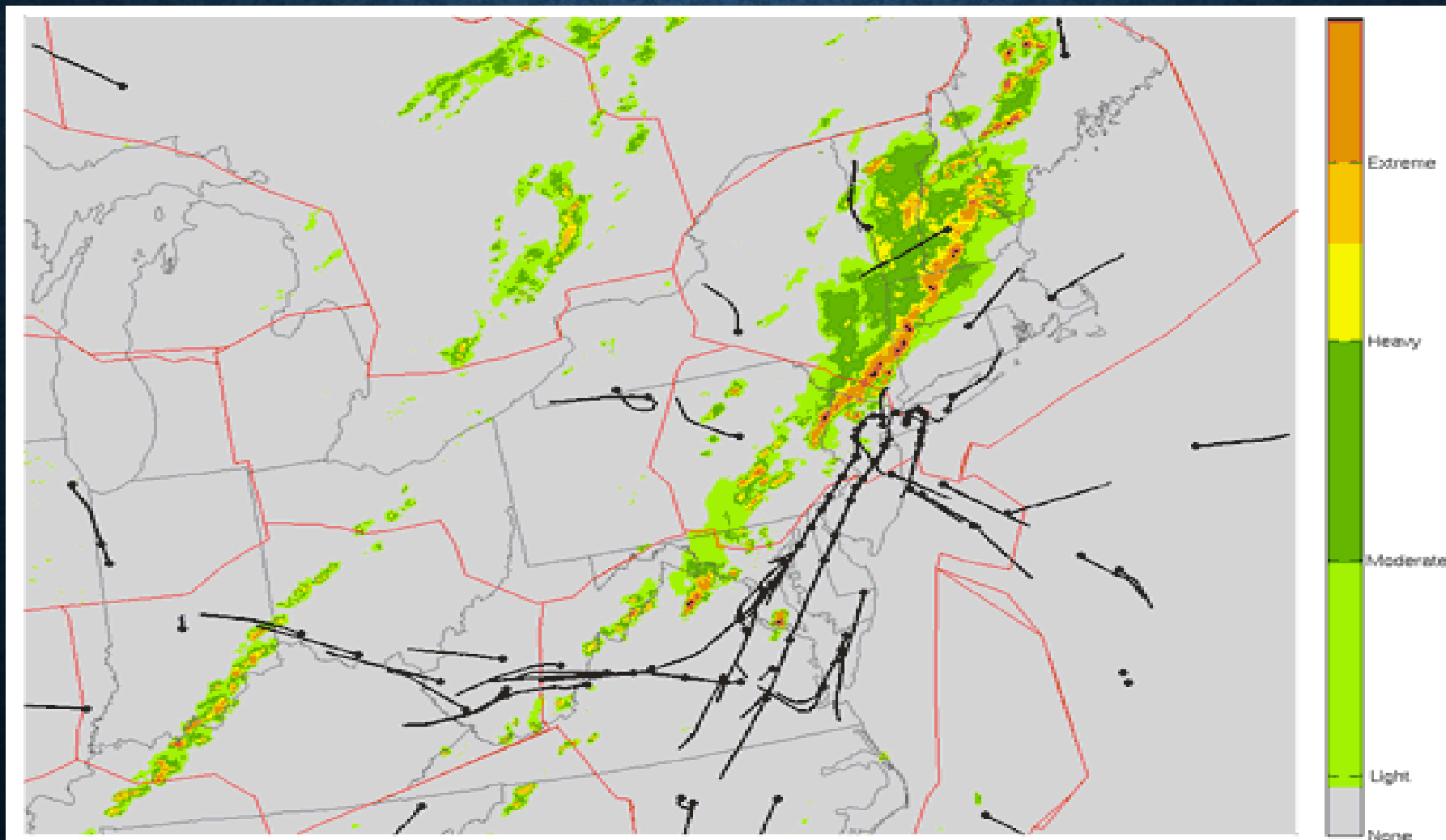
<http://www.weather.gov/lwx/>

Aviation Weather Center:

<http://www.aviationweather.gov/>



QUESTIONS



BONUS MATERIAL



SWAP ADVISORY

SWAP ADVISORY site:

<https://www.fly.faa.gov/adv/advAdvisoryForm.jsp>

112	DCC	05/01/17	ATCSCC ADVZY 112 DCC 05/01/2017 VOLCANIC ACTIVITY BULLETIN - KLYUCHEVSKOY 300260	05/01/17 15:02
111	DCC	05/01/17	DC_METRO_SWAP_IMPLEMENTATION_PLAN_FYI	05/01/17 14:48
110	TEB/ZNY	05/01/17	CDM GROUND DELAY PROGRAM CNX	05/01/17 14:36



ATCSCC ADVZY 111 DCC 05/01/2017 DC_METRO_SWAP_IMPLEMENTATION_PLAN_FYI

RAW TEXT: EVENT TIME: 01/1800 - 02/0400
DC METRO SWAP IMPLEMENTATION PLAN_FYI

THIS ADVISORY IS FOR PLANNING PURPOSES ONLY. CUSTOMERS ARE ENCOURAGED TO FILE NORMAL ROUTINGS AND ANTICIPATE THE SPECIFIED ALTERNATE ROUTES.

SWAP STATEMENT:

SEVERE WEATHER AVOIDANCE PLANS ARE EXPECTED FOR THE ZDC AIRSPACE. .

THUNDERSTORM LINE SEGMENTS WILL DEVELOP AND MOVE INTO FAR W ZDC AFTER 18Z AS WIDELY SCATTERED THUNDERSTORMS DEVELOP A LITTLE FARTHER E OVER THE WESTERN VA MOUNTAINS. THE THUNDERSTORM LINE SEGMENTS AND A FEW CLUSTERS AHEAD OF THE LINE SEGMENTS WILL CONTINUE TO MOVE E ACROSS ZDC THROUGH 06Z AS INDIVIDUAL THUNDERSTORMS MOVE E-NE 35-55 KTS. TOPS WILL GENERALLY REACH FL370-490, BUT A FEW STORMS MAY BE SEVERE WITH LARGE HAIL, ERRATIC SURFACE WIND GUSTS OVER 50 KTS AND TOPS ABOVE FL490. SIGNIFICANT IMPACTS TO THE DC METROS ARE MOST LIKELY 23-03Z.

PLANNED ALTERNATE DEPARTURE ROUTES:

CDRS FOR BUFFR, JERES, OTTO, RAMAY, MOL, GVE AND COLIN MAY BE UTILIZED AS ROUTES ARE IMPACTED. DC/NY/PHL METRO DEPARTURES FILED VIA J75, J6 AND J48 MAY BE SWAPPED OR STOPPED AFTER 1900Z.

PLANNED ALTERNATE ARRIVAL ROUTES:

FLIGHTS INTO THE DC METRO AREA MAY BE SWAPPED BETWEEN ZOB AND ZID AS ROUTES ARE IMPACTED. DC/NY/PHL METRO ARRIVALS MAY EXPERIENCE HOLDING DUE WEATHER ON THE ARRIVAL.

FUEL ADVISORY:

AIRCRAFT CAPPING AT OR BELOW 100 IS POSSIBLE FOR DESTINATIONS OUT TO 100 MILES FROM THE OTTO, RAMAY, MOL AND GVE DEPARTURE POINTS AND MAY INCLUDE CAPPING PLAYBOOKS IN THIS AREA.

HOTLINE ACTIVATION: EXPECTED AFTER 1800Z.
(540) 359-3200 PIN: 2779
011448-020400
17/05/01 14:48 DCCOPS.lxstn28



PRE-DUTY WEATHER BRIEFING

ZDC CWSU SITE: (Issued at 6 AM, 12:30 PM, 8:30 pm)

<https://www.weather.gov/zdc/>

NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

HOME FORECAST PAST WEATHER SAFETY INFORMATION EDUCATION NEWS SEARCH

Local forecast by "City, st" or ZIP code
Enter location ... Location Help

News Headlines
• LATEST GOES EAST IMAGES

NWS Washington Center Weather Service Unit
Weather.gov > Washington CWSU

Current Hazards Current Conditions Radar Forecasts Strategic Planning Aids Tactical Planning Aids Additional Info

1452Z Tue May 01, 2018 **CWSU METAR Map**

Pre-Duty Weather Briefing

Thank you for visiting a National Oceanic and Atmospheric Administration (NOAA) website. The link you have selected will take you to a non-U.S. Government website for additional information.

NOAA is not responsible for the content of any linked website not operated by NOAA. This link is provided solely for your information and convenience, and does not imply any endorsement by NOAA or the U.S. Department of Commerce of the linked website or any information, products, or services contained therein.

You will be redirected to: <https://player.vimeo.com/video/222563961?loop=1&autoplay=1&portrait=0>



PRE-DUTY WEATHER BRIEFING (PDWB)




<https://player.vimeo.com/video/347845635?loop=1&autoplay=1&portrait=0>



ZDC CWSU
Pre-Duty Briefing

10/31/2019 12:21 PM

Intended for use by air traffic control personnel only. All current and forecast information is subject to change.





PRE-DUTY WEATHER BRIEFING

