

Baltimore/Washington Weather Forecast Office (WFO/LWX) Aviation Users Forum

November 25, 2024



Welcome and Roll Call

Jim Lee, Meteorologist-in-Charge, WFO LWX

Andrew Snyder, Aviation Program Leader, WFO LWX

AGENDA

Purpose and Review Previous Accomplishments

News, Updates, and Year in Review

Winter Weather: Forecasting Challenges and Resources

Feedback Session: Transitioning from VCTS to PROB30

Open Forum

Review New Actions Items and Close

Purpose & Mission



Forum Goals

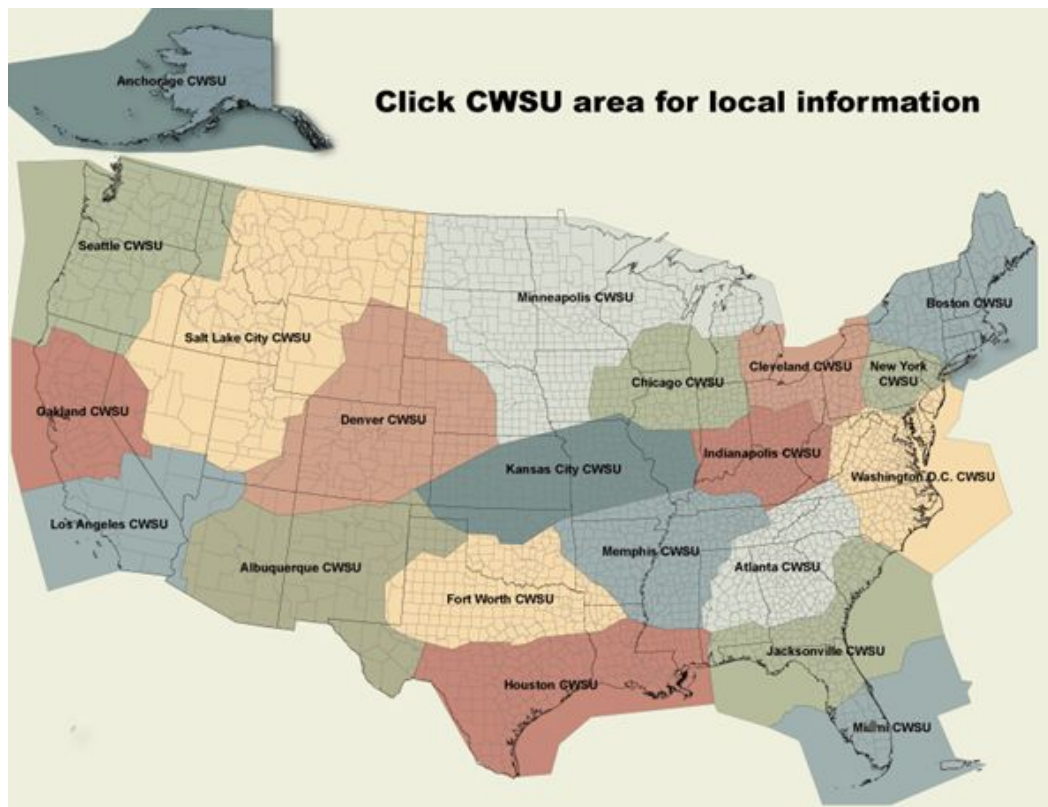
- Enhance communication and strengthen partnerships between the National Weather Service (NWS) and the mid-Atlantic aviation community
- Discuss ways to improve NWS aviation forecast operations and services in the mid-Atlantic
- Identify issues and receive feedback from aviation core customers
- Establish best practices for mid-Atlantic aviation forecasts and services

NWS Mission

- Provide weather, water and climate data, forecasts, warnings, and impact-based decision support services for the protection of life and property and enhancement of the national economy
- Vision: A Weather-Ready Nation. Society is prepared for and responds to weather, water, and climate-dependent events

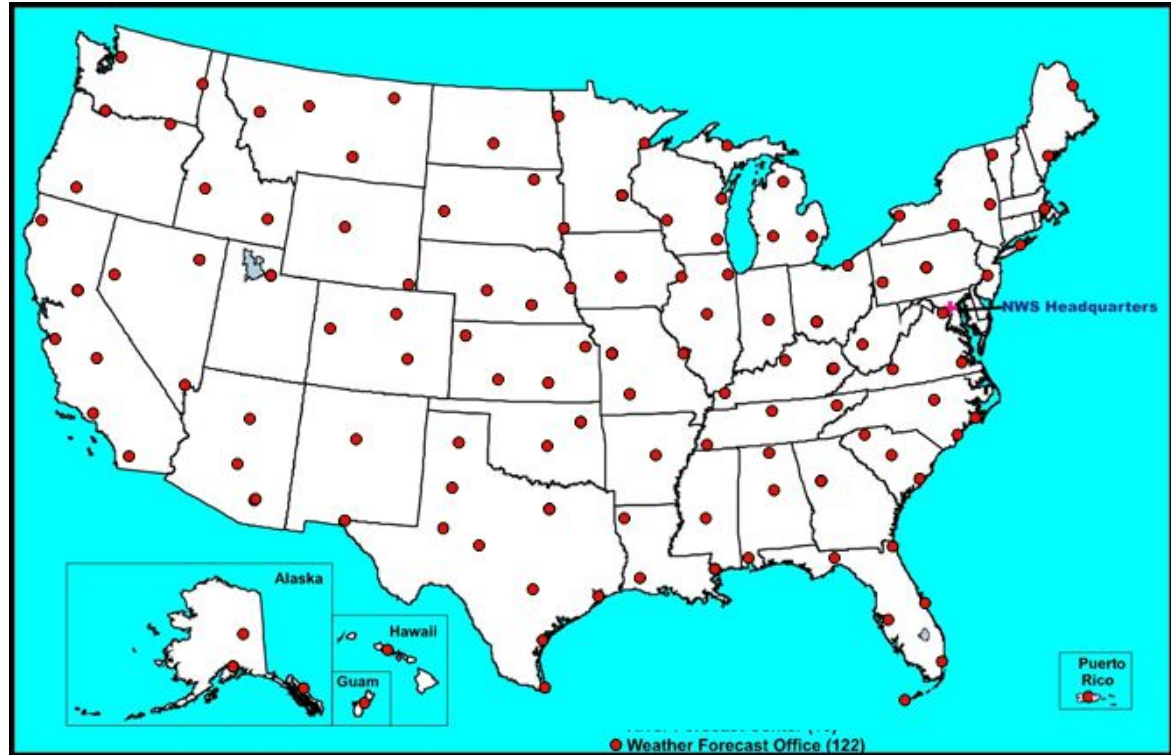
NWS Structure

21 Center Weather Service
Units

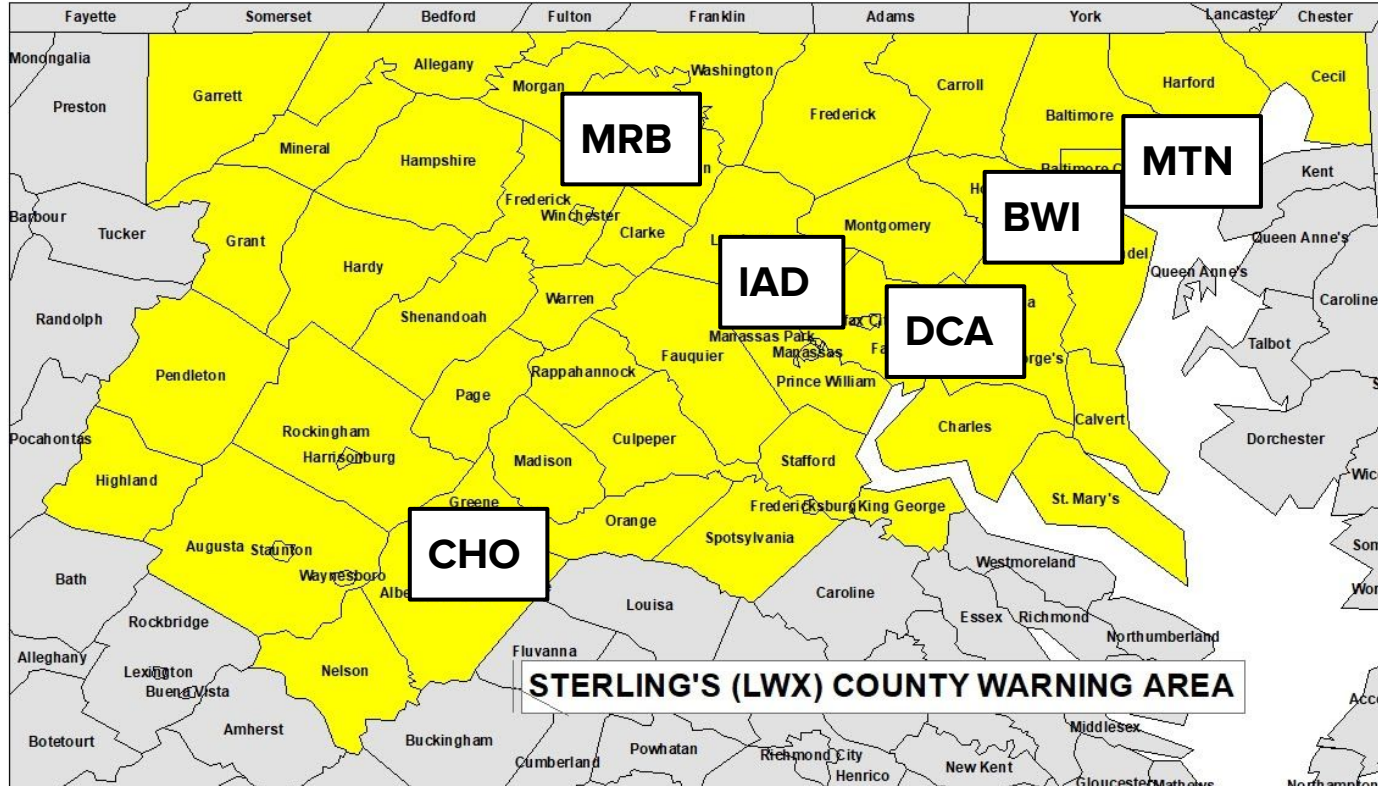


NWS Structure

122 Weather Forecast Offices



Terminal Aerodrome Forecasts



Area Forecast Discussion

- Discussion of conditions within the valid TAF period
 - Basic description of what is driving weather and expected flight conditions
 - Range of possible timing for changes in conditions
 - Confidence level / where the TAF might go wrong
 - Model guidance sources
 - Why TAF was written a certain way
- “Sound bites” of important weather through Day 5
- Updated around 4:00 AM, 10:30 AM, 3:00 PM, 9:30 PM

```
.AVIATION /15Z THURSDAY THROUGH MONDAY/...  
Low pressure south of Long Island this morning will race  
northeastward today away from the terminals. A gusty northwest  
breeze will relax this afternoon and tonight as high pressure  
nudges toward the terminals. The broken stratocumulus deck in  
place to the northwest is much less impressive than originally  
thought, with most terminals observing few or scattered clouds.  
Clouds will move back in later this afternoon and evening as a  
disturbance approaches from the west. However, conditions will  
remain VFR.  
  
High pressure will build over the terminals Friday through  
Saturday with dry conditions and VFR conditions. Light northerly  
winds will turn more southerly Saturday and Saturday night as  
the high shifts offshore and a return flow sets up.  
  
VFR conditions expected Sunday and Monday.  
  
&&
```

Local Aviation Website

<https://www.weather.gov/lwx/aviation>

or Forecasts drop down → Aviation

Aviation Forecast Discussion

Hourly weather details

Hourly TAF details/impacts

At the bottom:

CWSU links

Weather maps

Wind rose data

Other links

NWS Sterling Aviation Page
Weather.gov > Baltimore/Washington > NWS Sterling Aviation Page

Baltimore/Washington
Weather Forecast Office

Current Hazards Current Conditions Radar Forecasts Rivers and Lakes Climate and Past Weather Local Programs

Latest Aviation Discussion:

AVIATION /20Z SUNDAY THROUGH FRIDAY/... VFR and dry conditions expected at the terminals through Tuesday night. Winds will diminish entering into tonight. Winds will gradually turn around to a southerly flow late Monday and continue through Tuesday. VFR conditions under light winds expected Wednesday and Wednesday night. A cold front will move across the terminals on Thursday, turning winds northerly but not bringing much in the way of precipitation as VFR continues. AVIATION...BKF/KLW

This discussion and more can be found in the [Area Forecast Discussion](#).

Aviation Forecasts

The National Weather Service (NWS) Weather Forecast Office (WFO-LWX), in Sterling, VA has responsibility for six Terminal Aerodrome Forecasts or TAFs in Virginia, Maryland and the eastern West Virginia panhandle. Click on each map below to view the latest decoded TAF *Note: maps are not for official aviation use. FAA VFR charts are available [here](#).*

REAGAN NATIONAL (DCA)

TERMINAL FORECAST (DCA)

24 HRS. OF OBSERVATIONS

FAA DETAILS

TABULAR FORECAST

DCA TAF BOARD

DULLES (IAD)

TERMINAL FORECAST (IAD)

ZDC Tower Specific Pages

https://www.weather.gov/zdc/PDWB_sites

(Strategic Planning Aids menu)

Pre-duty weather briefing

Multiple tabs with useful weather information



TAFs Winds Aloft **Hourly Weather** Turbulence Low Level Wind Shear Visibility/Sierra Icing Radar

Hourly Weather Forecast

NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Prototype Weather Threat Matrix

Change Location

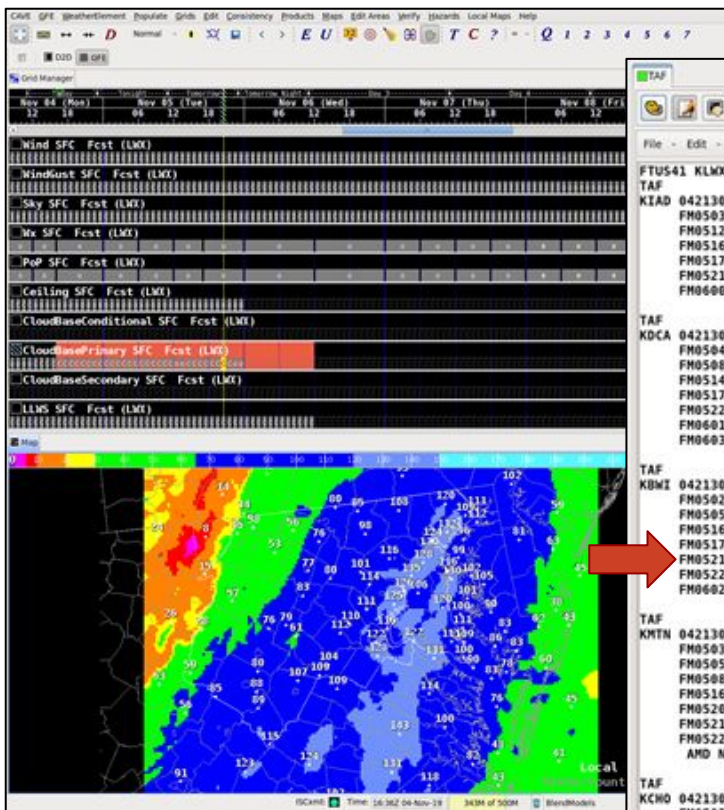
Arlington, VA
High: 43 F / Low: 36 F

	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday			
	Fri 11/22 2PM	Fri 11/22 3PM	Fri 11/22 4PM	Fri 11/22 5PM	Fri 11/22 6PM	Fri 11/22 7PM	Fri 11/22 8PM	Fri 11/22 9PM	Fri 11/22 10PM	Fri 11/22 11PM
Temperature (F)	40	40	40	40	40	40	40	41	41	41
Sky Cover (%)	96	96	97	97	97	96	93	91	90	83

TAF Creation

Digital Aviation Services

- One common digital forecast database
- Formatter code samples database at TAF grid points, creates hourly forecast
- Code deletes lines through a “ranking system”
- Forecaster QC’s/ modifies before transmission



```
TAF
FTUS41 KLMX 042130
TAF
KIAD 042130Z 0500/0606 17006KT P6SM SCT250
FM050300 19005KT P6SM FEW250
FM051200 21004KT P6SM SCT250
FM051600 24004KT P6SM SCT200
FM051700 26005KT P6SM BKN150
FM052100 28005KT P6SM SCT090
FM060000 30006KT P6SM SCT250=

TAF
KCOA 042130Z 0500/0606 17006KT P6SM SCT250
FM050400 19005KT P6SM FEW250
FM050800 VRB03KT P6SM SCT250
FM051400 22005KT P6SM SCT250
FM051700 25005KT P6SM BKN150
FM052200 28005KT P6SM SCT090
FM060100 30006KT P6SM SCT100
FM060300 31007KT P6SM FEW250=

TAF
KBWI 042130Z 0500/0606 16006KT P6SM SCT250
FM050200 18004KT P6SM FEW250
FM050500 21004KT P6SM SCT250
FM051600 24006KT P6SM SCT250
FM051700 26006KT P6SM BKN250
FM052100 28005KT P6SM BKN090
FM052200 28005KT P6SM SCT090
FM060200 30007KT P6SM FEW150=

TAF
KNHT 042130Z 0500/0524 16008KT P6SM FEW250
FM050300 18006KT P6SM FEW250
FM050500 20005KT P6SM SCT250
FM050800 22004KT P6SM SCT250
FM051600 23006KT P6SM BKN250
FM052000 26006KT P6SM BKN250
FM052100 27006KT P6SM BKN100
FM052200 27006KT P6SM SCT100
AMD NOT SKED 02/12=

TAF
KCHO 042130Z 0500/0524 20005KT P6SM FEW250
FM050200 VRB03KT P6SM FEW250
FM051500 23004KT P6SM SCT200
FM051800 25005KT P6SM SCT130
FM051900 25005KT P6SM SCT090=

TAF
KNRB 042130Z 0500/0524 17006KT P6SM SCT250
FM050200 19005KT P6SM SCT250
FM051100 VRB03KT P6SM SCT250
FM051300 VRB03KT P6SM BKN250
FM051600 25004KT P6SM BKN200
FM051800 27005KT P6SM BKN100
FM051900 27005KT P6SM BKN100=

Save Draft Transmit Type: rou Product expires in: 12:00 At: 09:45Z 05-Nov-19
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Review Previous Accomplishments



2023 Meeting / FY24 Accomplishments

- No action items from last year's meeting
- Consider making MTN a full time TAF (remove overnight AMD NOT SKED)
 - Completed (more later)
- Consider adjustment to “baseline recommendations” for how to include thunderstorms in the TAF in coordination with other Eastern Region offices
 - Bigger roll out with updated national directive (more later)

2019 Action Items Still Getting Attention

- Request for TAF consistency from WFO-to-WFO, especially in regard to thunderstorms and use of VCTS
 - Gaining traction nationally with TAF directive update
- Place aviation grids on all ER WFO websites
 - National initiative
 - National Digital Forecast Database still “experimental”
 - weather.gov 2.0 under design

News from the Forecast Office



FY24 TAF Verification (IFR and below)

- * Does not include amendments
- * First 6 hours of TAF

Overall

	POD	FAR	CSI
Goal	0.65	0.38	
Nat'l	0.657	0.359	0.48
ER	0.713	0.345	0.518
LWX	0.775	0.347	0.549

POD = Probability of Detection, higher is better

FAR = False Alarm Ratio, lower is better

CSI = Critical Success Index, higher is better

$$CSI = \frac{1}{1/(1-FAR) + (1/POD) - 1}$$

Goal = National performance metric set as part of Government Performance and Results Act

FY24 TAF Verification (IFR and below)

* Does not include amendments

* First 6 hours of TAF

By Issuance Time

	POD	FAR	CSI
Goal	0.65	0.38	
00Z	0.755	0.426	0.484
06Z	0.75	0.37	0.52
12Z	0.806	0.269	0.621
18Z	0.784	0.342	0.557

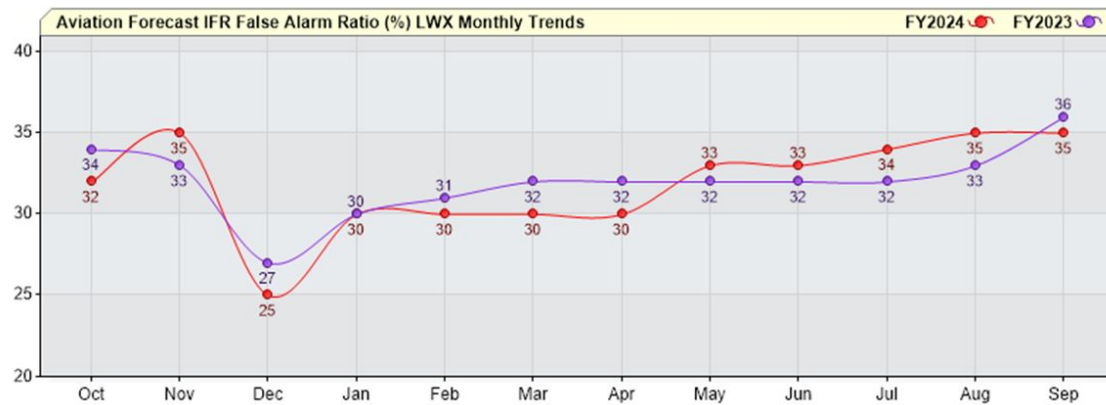
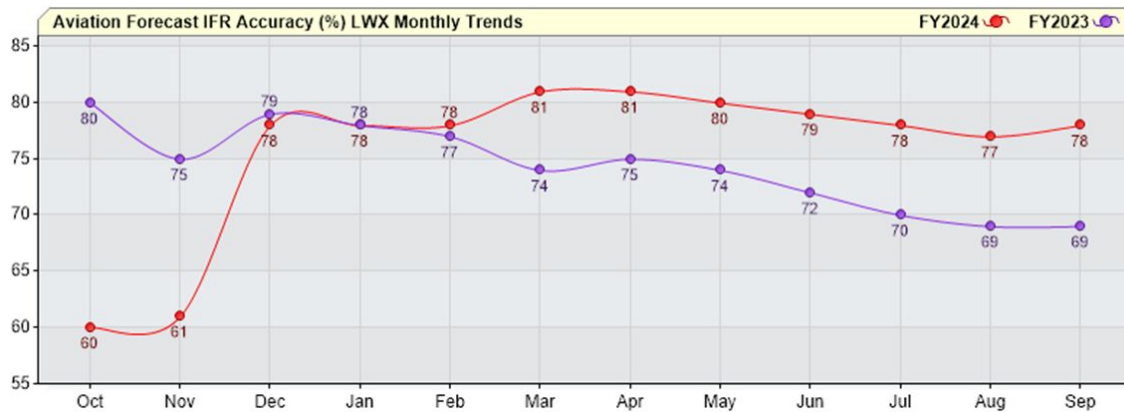
Green is best performer

Orange is worst performer

By Airport

	POD	FAR	CSI
Goal	0.65	0.38	
BWI	0.807	0.329	0.578
CHO	0.743	0.298	0.565
DCA	0.795	0.452	0.48
IAD	0.81	0.324	0.583
MRB	0.731	0.38	0.505
MTN	0.776	0.319	0.569

2024 vs. 2023 Monthly Verification Trends



Annual Verification Trends



- One of, if not the best year from a POD perspective
- Gloomy end to September helped



Thunderstorm Verification

THUNDERSTORM				
OBS\FORECASTS		FORECASTS		POD = 0.168
		YES	NO	
OBS	YES	653	3,233	CSI = 0.129
	NO	1,159	608,589	HSS = 0.226

- “In observation or not”
- Low POD due to VCTS usage?
- Verification at 5 min intervals multiplies error rates
- Random east coast offices: A few had higher POD but also higher FAR

Aviation Goals for FY25

- In coordination with NWS HQ, evaluate and provide feedback on revised TAF formatter and population tools
- Assimilate best practices for operational staff regarding the new directive for PROB30
- Evaluate recently updated DLAC material for possible aviation refresher training

Aviation Outreach

- Tower visits: IAD-February, DCA-November
 - Hope to cycle through remaining TAF airports over next year or so
- Presentation (virtual) to WMO RA IV Aviation Workshop on using a narrative discussion (AFD) to address uncertainty in the TAFs (Nov. 2023)
- Participation in Dulles Users Meetings
- Plans to participate in Leesburg Airshow canceled due to staffing needs for Helene's remnants



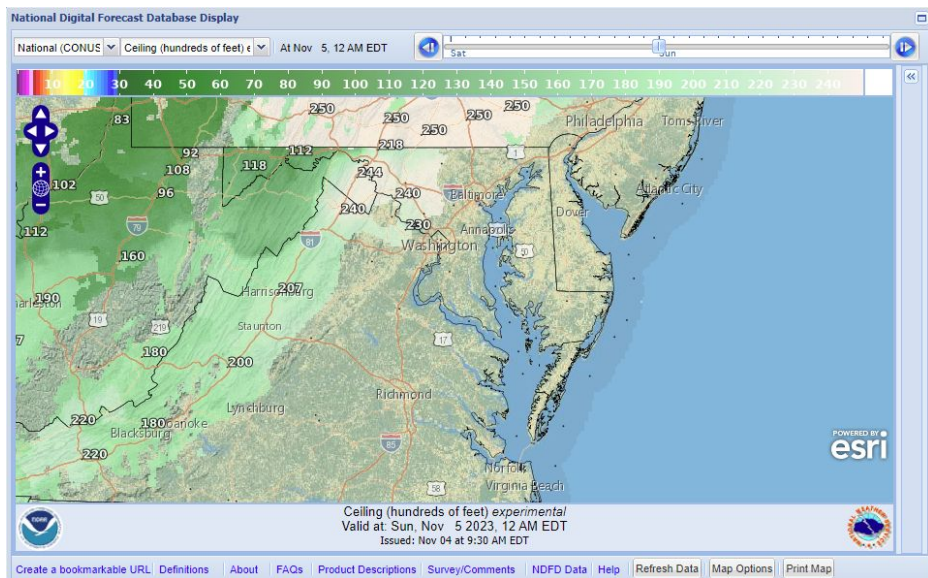
MTN TAF Status

- As of October 2, MTN is “full time”
- Amendments now issued between 02-12Z as needed (in addition to routine 06Z TAF)
- AMD NOT SKED reserved for uncommon situations such as an observational data outage
 - Data has been much more stable over past 2 years
- Positive feedback for this change received by medical and police helicopter pilots who use the airfield overnight



Availability of Gridded Aviation Forecasts

- Still “experimental”
- Working toward consistent requirements from all forecast offices
- Viewable at <https://digital.mdl.nws.noaa.gov/>





SLACK COMMUNICATION - COLLABORATION

On July 12, 2022 NWS signed a contract to use Slack as the next generation of the NWSChat service. Slack will serve as both a forecast collaboration and communication platform, allowing NWS forecasters to discuss and share information with each other and core partners during high impact weather. Became operational August 2023.

What can SLACK do for the NWS:

Security and Compliance

Custom Bots and Automations

External Collaboration

Incident Management

Data Analysis and Visualization

Mobile Access

Documentation and Knowledge Sharing

Notifications and Alerts

Integration with Weather Tools

Real-time Communication - Huddles

Information Sharing

Collaborative Decision-Making

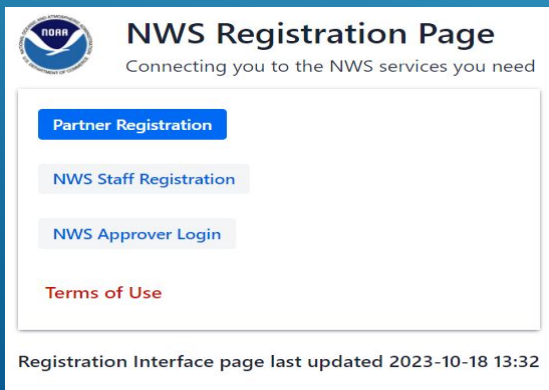



SLACK

Customized channels exist or can be created for all NATIONAL CENTERS/WFO's/CWSU's/RFC's.

Getting started is easy – Need to review a guide for steps on how to register and join us in the new platform.
<https://partnerservices.nws.noaa.gov/registration/>

After review [partner video series](#) (can find link in Slack channel)

A screenshot of the NOAA NWS Registration Page. The page has a white background with a blue header. On the left is the NOAA logo. The main heading is "NWS Registration Page" in bold black text, followed by the subtitle "Connecting you to the NWS services you need". Below this is a white box containing four buttons: "Partner Registration" (highlighted in blue), "NWS Staff Registration", "NWS Approver Login", and "Terms of Use" (in red text). At the bottom of the page, it says "Registration Interface page last updated 2023-10-18 13:32".

 **NWS Registration Page**
Connecting you to the NWS services you need

[Partner Registration](#)

[NWS Staff Registration](#)

[NWS Approver Login](#)

[Terms of Use](#)

Registration Interface page last updated 2023-10-18 13:32



SLACK

Search National Weather Service

NWSChat 2.0

- Unread mentions
- # cwsu-boston
- # cwsu-cleveland
- # cwsu-jacksonville
- # cwsu-memphis
- # cwsu-new-york
- Channels
- # awc_nas_impacts 1
- # announcements-all
- # aviation-weather-center
- # awc-convective-sigmets
- # awc-datafeed
- # awc-nam-chat
- # awc-pireps
- # awc-tcf-collab-chat
- # cwsu-new-york-exercises
- # cwsu-washington**
- # cwsu-washington-bots
- # eastern-region-roc
- # feedback
- # space-weather-prediction-c...
- # tropical-collaboration1
- # tropical-collaboration2
- # welcome
- # wfo-balt-wash-dc
- # wfo-mount-holly-nj
- # wfo...
- Unread mentions
- Add channels

cwsu-washington

+ Add a bookmark

image.png

HIGHLIGHTS
Weak frontal boundaries cross through ZDC with light rain.

ZDC Day 2 Forecast - Valid: 12Z -00Z Thu 10/31/2023
From the 2023-2024 Outlook (Z)

ENROUTE / TERMINAL IMPACTS

NWS - CWSU Washington - Shane Snyder 3:03 PM
PM Briefing Sheet: <https://www.weather.gov/media/zdc/brief/BRIEF.pdf>

Today

NWS - CWSU Washington - Michael Mathews 6:31 AM
AM Wx Brief: <https://www.weather.gov/media/zdc/brief/BRIEF.pdf>

NWS - CWSU Washington - Michael Mathews 9:24 AM
image.png

HIGHLIGHTS
Light snow possible in the WFO area with otherwise VFR conditions.

ZDC Day 2 Forecast - Valid: 12Z -00Z Wed 11/1/2023
From the 2023-2024 Outlook (Z)

ENROUTE / TERMINAL IMPACTS

B I [icons]

Message #cwsu-washington



LOCAL SLACK CHANNELS

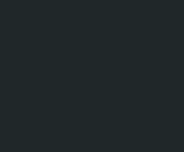


#wfo-balt-wash-dc: Interactive chat for the WFO

#wfo-balt-wash-dc-datafeed: Bot feed for WFO products, including TAFs (not monitored)

#cwsu-washington: Briefing sheets and any interactive messaging

#cwsu-washington-bots: Bot feed of products, including TAFs (not monitored)



Winter Weather Challenges for Aviation

Brian Lasorsa

NWS Baltimore/Washington Science and Operations Officer



Transitioning from VCTS to PROB30

Feedback Session



What's happening

- Directive update allows PROB30 at *any* time during the TAF (instead of after 9 hours)
 - Eliminates conundrum if there is still uncertainty/low chance at hour 9
- Promotes PROB30 and discourages use of VCTS unless weather is truly forecast near the 5-10 mile radius
- Several years ago, TEMPO usage was expanded to be allowed at any time in the TAF
 - Provides communication option for latter part of TAF when prevailing is unsuitable

Why?

- Response to feedback about inconsistent usage of VCTS across NWS and using VCTS well beyond its definition (5-10SM “donut”)
- NWS is increasingly embracing of probabilistic forecasting – this is inline with those goals
- Greater consistency across the agency – updated TAF formatter will not allow local configuration of weather type output*
 - * Not all offices use the formatter, and each forecaster has final discretion on how to write the TAF (which may be influenced by local best practices)

Philosophy - What it has been

- If PROB was ever used in this office (and many others), it was decades ago
 - Historically there was some “movement” to not use it
- Another crutch, stand-alone CB, was outlawed ~15 years ago
- VCTS/VCSH became the default when there was a chance of precipitation (or scattered coverage)

Current Formatter Configuration

Time	Probability of Thunderstorms	
Hour	25-54%	55% +
0-11	VCTS	-TSRA
12-30	None	VCTS

Philosophy - What is changing

- BLUF: PROB30 will replace VC in most cases
- Full roll out in new year (thunderstorm season focused)
 - New grid population tools for better “first guess”
 - New formatter with “locked” wx rules
 - Training on new philosophy
- Forecasters given permission to “test-drive” PROB30 as a tool in their toolbox for convective/mesoscale wintry precipitation this winter

Definition Reminders - PROB30

- Probability of occurrence of a thunderstorm (and associated precipitation) or precipitation event, along with associated weather elements (wind, visibility, and/or sky condition) directly related to the thunderstorm or precipitation event.
 - “Low chance of an impactful event”
 - Not “any time there is >25% POP in the grids”
- PROB30 and TEMPO should describe short duration forecast weather changes and should be used **as sparingly as possible**.



My
interpretation

Definition Reminders - PROB30

- Append to end of prevailing line (can wrap to next line):

```
KDCA 021726Z 0218/0318 30008KT 5SM HZ BKN030 PROB30  
0304/0306 27020G45KT 1SM TSRA OVC012CB
```

- Maximum 6 hour length
- Can't contain VC**, LLWS, or be in the same line as a TEMPO

Definition Reminders - VC

- Area between 5 and 10 SM of the center of the runway complex
- $\geq 50\%$ probability and expected to occur for **more** than one-half of the sub-divided forecast time period
- No duration restriction as it is included in the prevailing group, but best practice to narrow down the time as much as possible

Definition Reminders - TEMPO

- Temporary fluctuations to forecast conditions which are expected to last < 1 hour in each instance
- Have a high percentage (greater than 50%) probability of occurrence
- In the aggregate, cover **less** than half of the indicated period
- Not to exceed 4 hours
- Can't have more than 1 TEMPO per FM group; ideally no more than 1 per TAF

Philosophy Details - Thunderstorms

- PROB30 will essentially replace VCTS when there is a “chance” of thunderstorms (30-50%) or scattered coverage
- VCTS relegated to short range (~0-3 hr) where storms are already on radar or there is high confidence in scattered coverage near the terminal
- Still be judicious with picking times while maintaining consistency with the public and national center forecasts (try to keep PROB30 groups around 4 hours or less; 6 at most - don't double up)

Philosophy Details - Thunderstorms

- TEMPO or prevailing -TSRA for 55% or higher chance (or in a near-term AMD for storms approaching the airport)
 - Consistency with forecast & guidance encouraged; don't need to be "conservative" just because it's near the end of the TAF
 - Try to narrow down window as much as possible
- Don't buffer prevailing groups with PROB30 unless there is a chance for a longer duration event *or* for a second round
- Isolated or low confidence: mention in AFD

Philosophy Details - Winter Weather

- Chance of snow squalls/snow showers
- Chance of “impactful” winter weather that is based on uncertainty
 - Brief snow or freezing rain that may or may not materialize
 - Heavy snow gradient

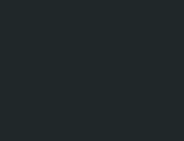


Philosophy Details - Miscellaneous

- Don't buffer prevailing precipitation with PROB30 - still pick the most likely times of occurrence
- Don't use PROB30 for non-impactful weather (e.g., chance of light VFR rain showers that won't affect operations)
- Limit VCSH to near-term situations where the definition is expected to be met
- While PROB30 can be used at any forecast hour, try to transition to Prevailing, TEMPO, or no mention in the first 3-6 hours
- Be proactive with amendments

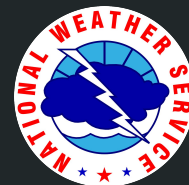
Feedback on PROB30

- CWSU ZDC and WFO Wakefield, VA were in general agreement on this philosophy and will be briefing their offices/partners
- Is this a logical transition or will people be confused?
- Will this impact decision making or have financial ramifications?
- Where could this “go wrong”?
- Is there additional outreach we should do? (distribution of one-pager)



Open Forum

Questions, comments, concerns



Your Feedback for Us

1. Are we meeting your needs with what we are currently doing?
2. How can we improve on our forecasts & services (greater Baltimore/Washington area in particular)?
3. Are there any unmet needs of forecasts and/or services?
4. Do you feel the communication lines between the users and our office leadership are always open?

Review New Action Items



Thank you for attending!

Plan for an annual meeting in late fall/early winter time frame

Contact information:

- Jim Lee, LWX Meteorologist-in-Charge: james.e.lee@noaa.gov
- Rick Winther, ZDC Meteorologist-in-Charge: richard.winther@noaa.gov
- Brian Lasorsa, LWX Science and Operations Officer: brian.lasorsa@noaa.gov
- Andrew Snyder, LWX Aviation Program Leader: andrew.snyder@noaa.gov
- 24/7 operations floor: 571-888-3501

