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

November 17, 2025

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
- National Aviation Meteorologists: Impact-Based Decision Support Services for the National Airspace System
- PROB30 Review, Case Events, and Feedback Discussion
- 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

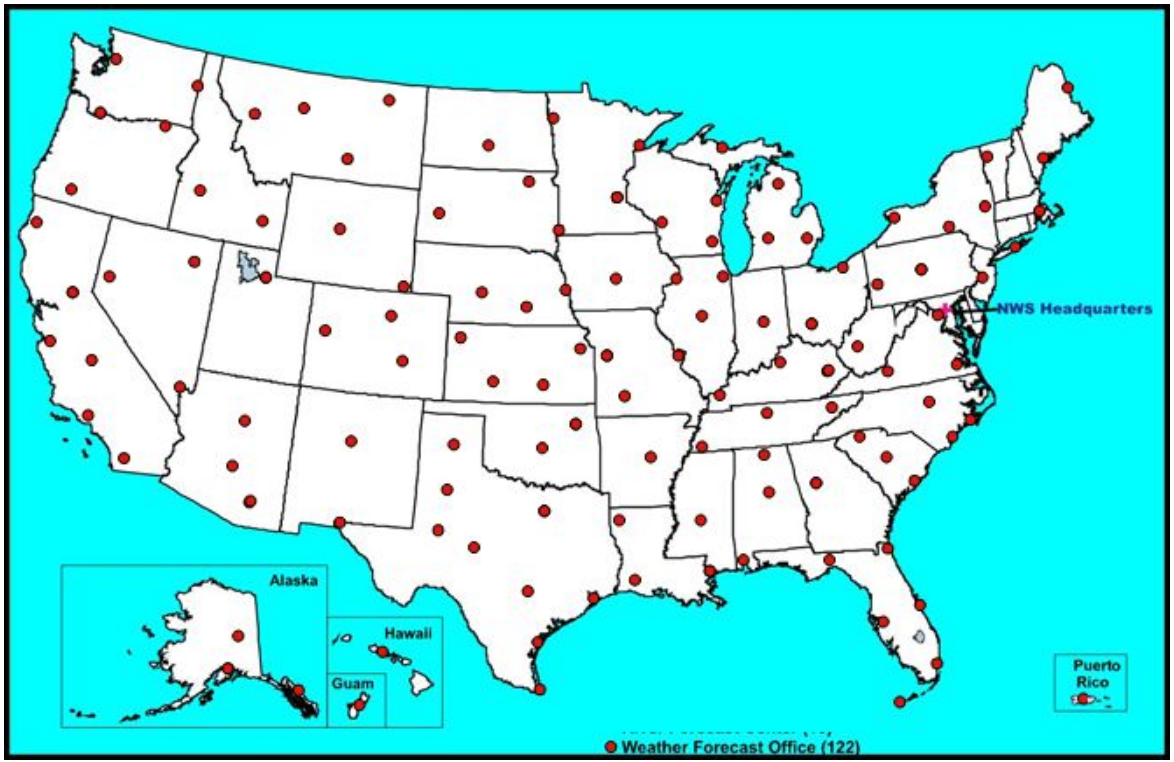
NWS Mission

- 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

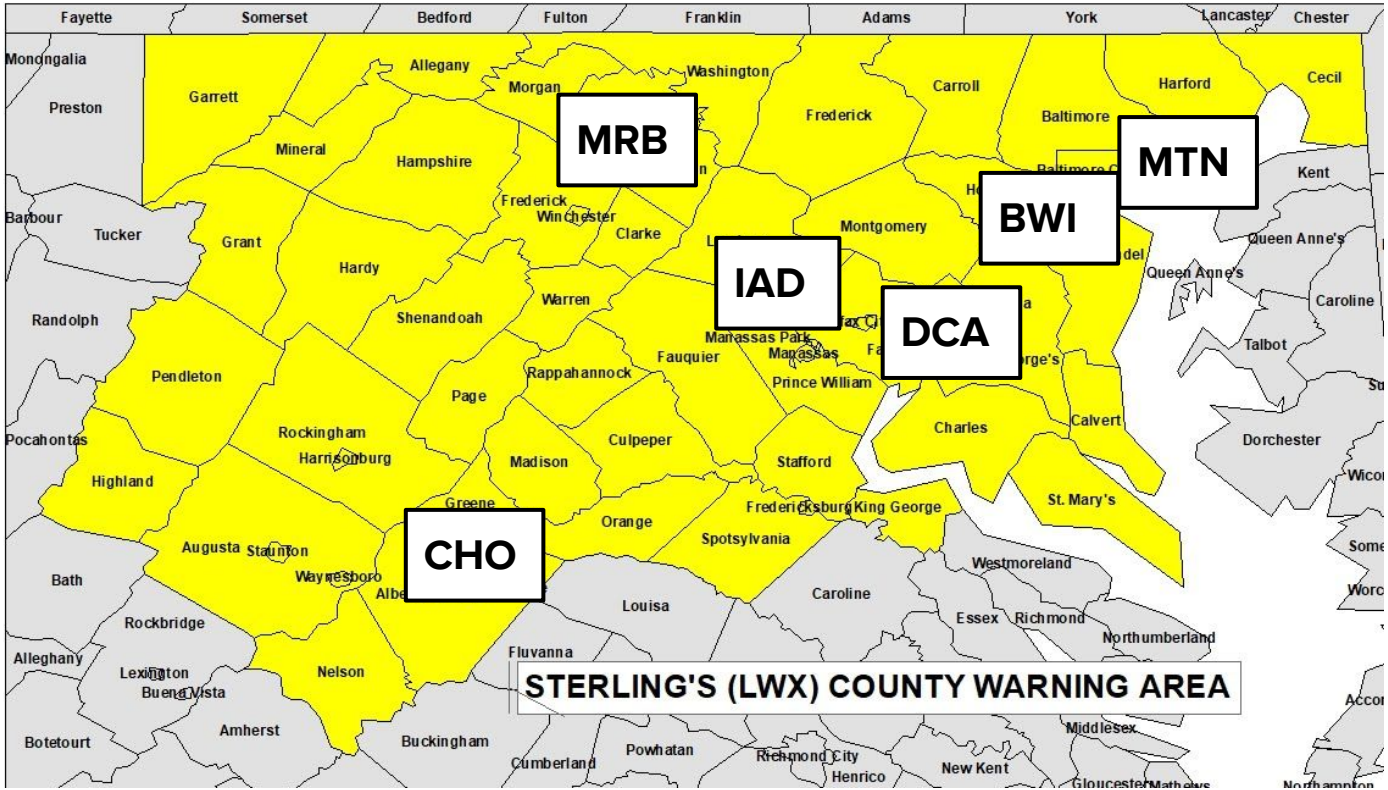
- Vision: A Weather-Ready Nation. Society is prepared for and responds to weather, water, and climate-dependent events

NWS Structure

122 Weather Forecast Offices

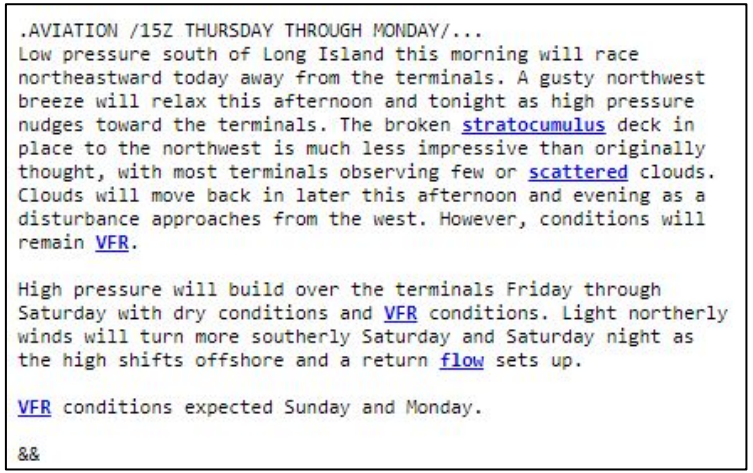


Terminal Aerodrome Forecasts



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.

&&
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Local Aviation Website

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

or Forecasts drop down → Aviation

Aviation Forecast Discussion

Hourly weather details

Hourly TAF details/impacts

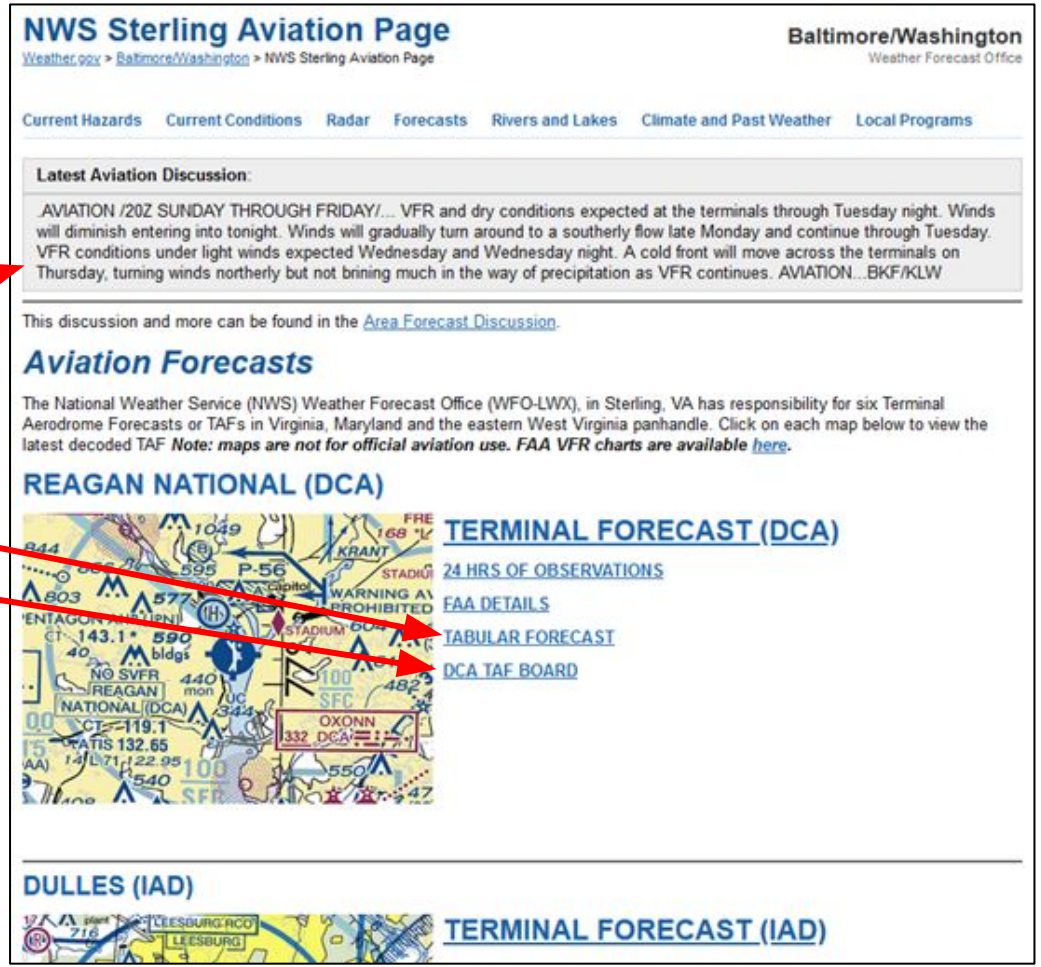
At the bottom:

CWSU links

Weather maps

Wind rose data

Other links

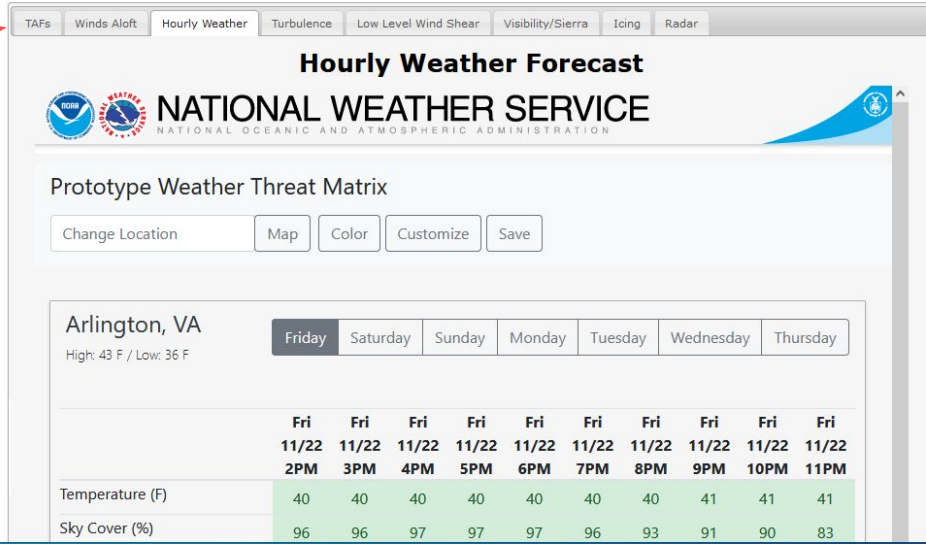


ZDC Tower Specific Pages

https://www.weather.gov/zdc/PDWB_sites
(Strategic Planning Aids menu)

Pre-duty weather briefing

Multiple tabs with useful weather information



Review Previous Accomplishments

2024 Meeting / FY25 Accomplishments

- Assimilate best practices for operations staff regarding the new directive for PROB30
  - One pager sent to all aviation contacts
  - Implementation March 1
  - Case Study review follows
- In addition to the annual aviation drill, staff completed a recently updated module on low level wind shear and turbulence
- Software evaluation to improve aviation forecast population and TAF first-guess generation

News from the Forecast Office

FY25 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	0.646	0.371	0.468
ER	0.702	0.349	0.51
LWX	0.739	0.344	0.533

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

FY25 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	0.684	0.307	0.525
06Z	0.751	0.333	0.546
12Z	0.761	0.342	0.545
18Z	0.75	0.407	0.495

Green is best performer
Orange is worst performer

By Airport

	POD	FAR	CSI
Goal	0.65	0.38	
BWI	0.755	0.333	0.549
CHO	0.713	0.335	0.524
DCA	0.748	0.378	0.514
IAD	0.792	0.35	0.555
MRB	0.718	0.346	0.52
MTN	0.722	0.327	0.535

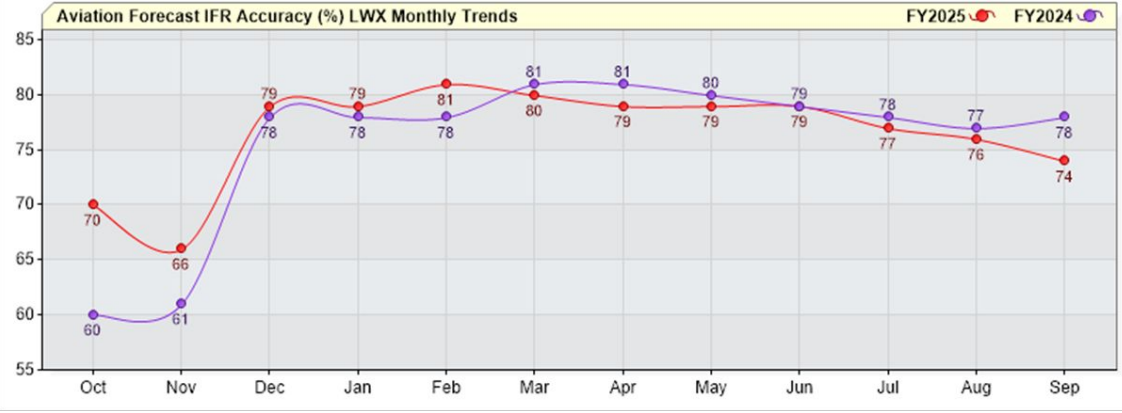
LWX vs. LAMP Model - FY 25 By Airport

	LWX FAR	LAMP FAR	% improvement (via CSI)
BWI	0.333	0.361	-4.14
CHO	0.335	0.333	-4.8
DCA	0.378	0.454	4.17
IAD	0.35	0.385	-0.69
MRB	0.346	0.397	1.32
MTN	0.327	0.372	-2.01

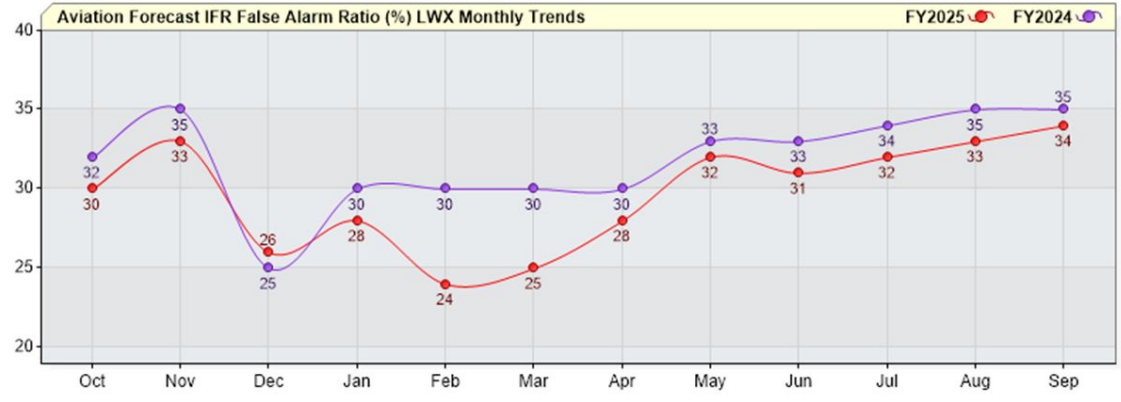
- We had a similar or lower FAR for **all** sites compared to the LAMP.
- The LAMP failed to meet GPRA FAR at **3** sites…and it doesn't even forecast thunderstorm visibilities! Correcting this bias helped us make GPRA FAR!
- LAMP high FAR bias evident at DCA. Our awareness allows us to improve these forecasts.
- The reason we "lose" to the LAMP is usually because of POD. But we usually have a lot more cushion to sacrifice a little POD if it means cutting down FAR.
- What's the balance? Is there a way to accomplish it without the POD sacrifice?

2025 vs. 2024 Monthly Verification Trends

POD



FAR



Annual Verification Trends

POD

FAR

- This year on par with history
- Since our scores often mirror guidance, it seems something happened with FAR in 2022. At least we are trending in the right direction since then.

Thunderstorm Verification

2024

THUNDERSTORM

OBS\FORECASTS		FORECASTS		
		YES	NO	POD = 0.168
OBS	YES	653	3,233	FAR = 0.640
	NO	1,159	608,589	CSI = 0.129
				HSS = 0.226

2025

THUNDERSTORM

OBS\FORECASTS		FORECASTS		
		YES	NO	POD = 0.547
OBS	YES	2,915	2,413	FAR = 0.729
	NO	7,845	583,711	CSI = 0.221
				HSS = 0.355

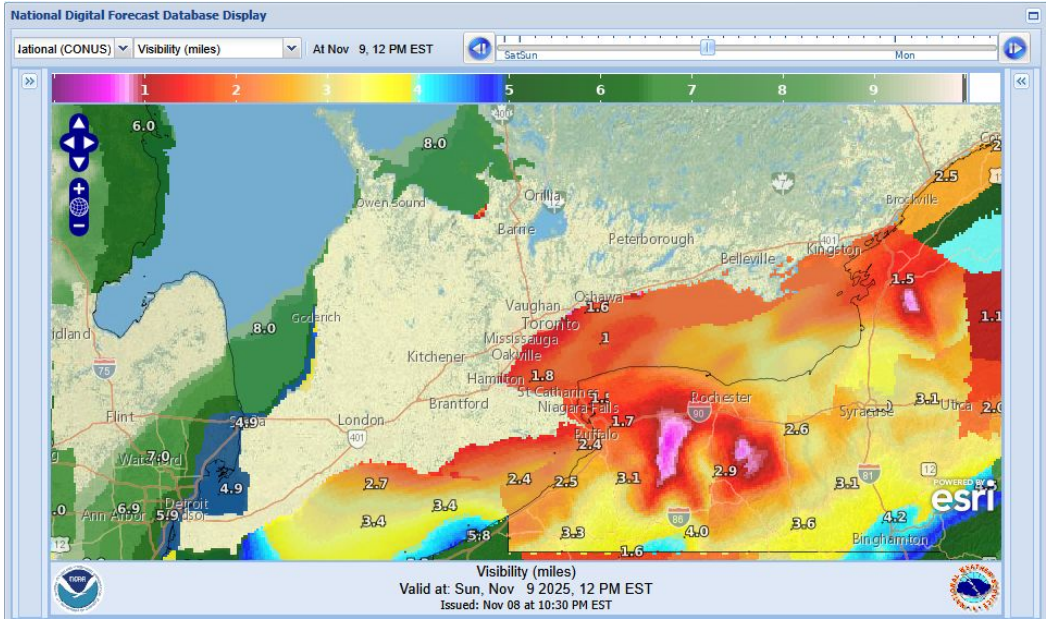
- “In observation or not”
- As suspected, changing from VCTS to PROB30 affected this verification
- Would have to look at this over many years to see if there’s anything useful to derive since the verification process at 5 min intervals multiplies error rates

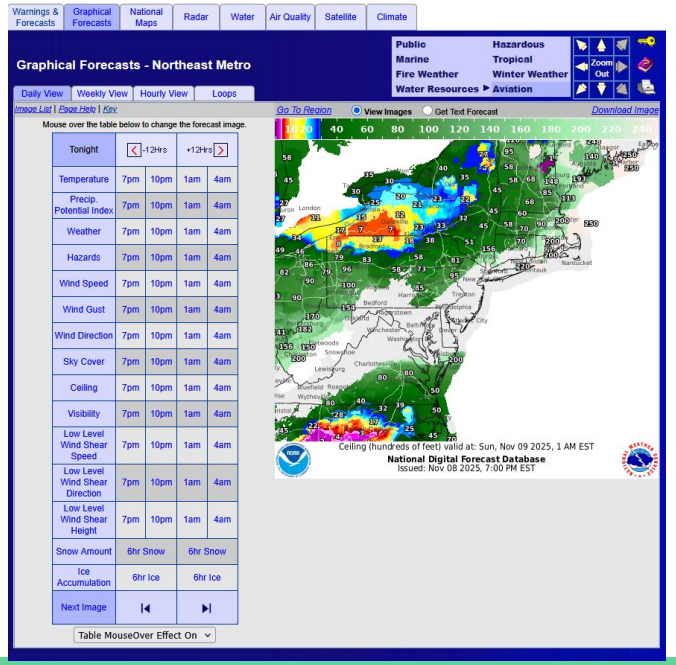
Aviation Goals for FY26

- Winter/convective pre-season hands-on training exercises focusing on local policy and software knobology
  - More on snow squall exercise later
- Have staff members attend tower (or TRACON) visits and present findings to staff
- Develop space weather section for internal reference site
- Recommend staff take “Space Weather Basics 3rd Edition” if they have not already

Availability of Gridded Aviation Forecasts

- Now “official” products
- Viewable at https://digital.weather.gov/, by clicking the NDFD maps from the forecast pages and switching to the aviation menu, or GRIB/XML download



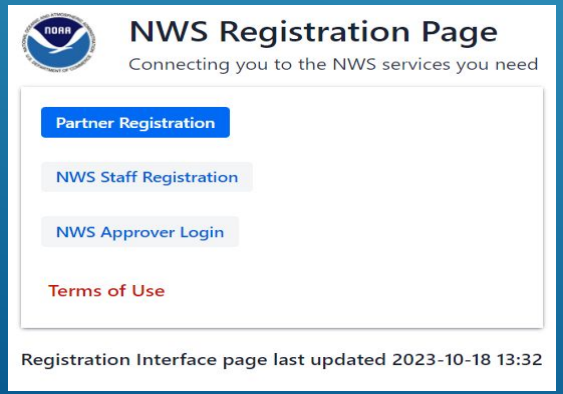


SLACK

Customized channels exists 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)



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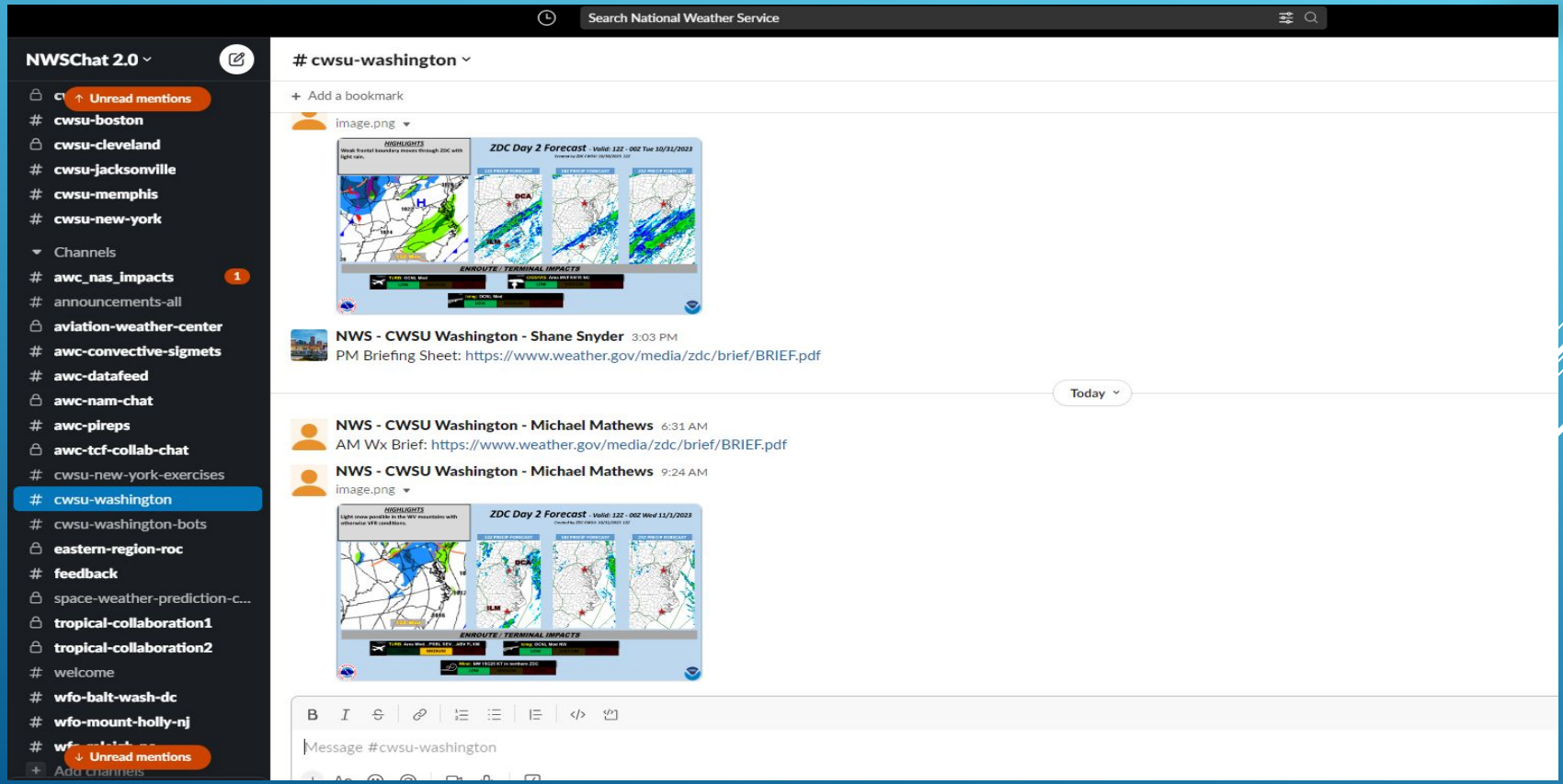

Search National Weather Service
NWSChat 2.0
cwsu-washington
Add a bookmark
Unread mentions
cwsu-boston
cwsu-cleveland
cwsu-jacksonville
cwsu-memphis
cwsu-new-york
Channels
awc_nas_impacts
announcements-all
aviation-weather-center
awc-convective-sigmets
awc-datafeed
awc-nam-chat
awc-pireps
awc-tcf-collab-chat
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
Unread mentions
Add channels
image.png
ZDC Day 2 Forecast
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
ZDC Day 2 Forecast
ENROUTE / TERMINAL IMPACTS
Message #cwsu-washington

LOCAL SLACK CHANNELS

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

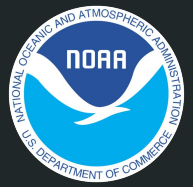
#wfo-balt-wash-dc-datafeed: Bot feed for WFO products, including TAFs (not monitored)

#cwsu-washington: Briefing sheets and any interactive messaging

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

Impact-Based Decision Support Services for the National Airspace System

Ken Widelski
National Aviation Meteorologist



VCTS to PROB30 Review

What happened

- Directive update allows PROB30 at *any* time during the TAF (instead of after 9 hours)
  - Eliminates conundrum if there is still uncertainty/low chance within first 9 hours

- 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

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”

My interpretation

- PROB30 and TEMPO should describe short duration forecast weather changes and should be used as sparingly as possible.

Definition Reminders - PROB30

- Will now be indented on following line in similar format to TEMPOs:

```
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
- ≥ 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 essentially replaced 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 use back to back)

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

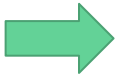
Interactive Exercise:
PROB30 and TAF Communication

How would a user interpret the TAF without context of other meteorological information?

Case 1 - Afternoon Thunderstorm Potential

Issued 06Z

```
TAF
KDCA 030520Z 0306/0412 19004KT P6SM SCT250
 FM031200 21008KT P6SM SCT080
 FM031500 21011G21KT P6SM SCT090
 FM032100 19010G19KT P6SM BKN090
  PROB30 0321/0402 4SM TSRA OVC025CB
 FM040200 18005KT 6SM -SHRA SCT020 BKN090
 FM040500 18005KT 6SM -SHRA SCT015 BKN035
 FM040900 17006KT 6SM -SHRA SCT011 OVC027
 FM041100 16006KT 5SM -SHRA SCT007 OVC011=
```



Issued 18Z

```
TAF
KDCA 031726Z 0318/0424 17009KT P6SM BKN100
 FM032100 19011G20KT P6SM BKN050
  TEMPO 0322/0402 4SM -TSRA OVC025CB
 FM040200 18005KT 6SM -SHRA SCT020 BKN090
 FM040500 18005KT 6SM -SHRA SCT015 BKN035
 FM041100 16006KT 5SM -SHRA SCT007 OVC011=
```

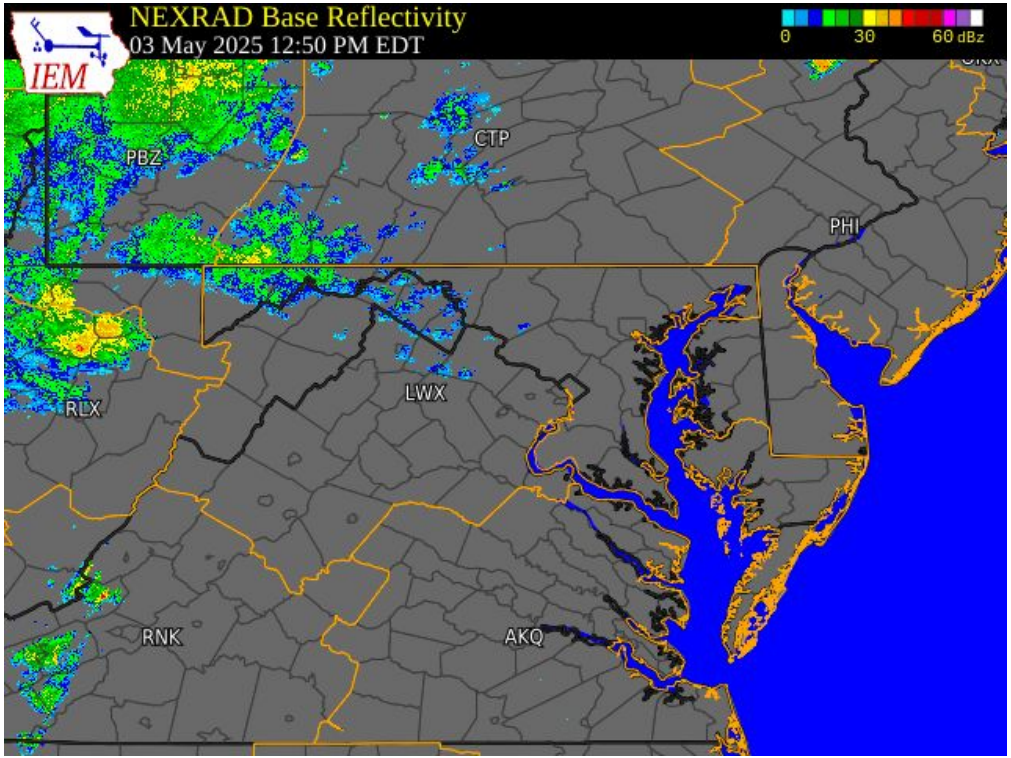
(IAD/BWI similar)

What would your expectation be?

Case 1 (May 3, 2025) - What happened?

- BWI: 2SM -TSRA at 2323Z, additional -SHRA at 03Z
- IAD: TS nearby 19Z, 2130Z, 2330-01Z, 04Z follow by rain
- DCA: No -TSRA until 0330Z

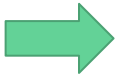
Multiple rounds/modes of storms. Some other options for doing this, but tough to communicate.



Case 2 - Afternoon Thunderstorm Potential

Issued 06Z

```
TAF
KDCA 160532Z 1606/1712 18006KT P6SM OVC050
 FM160800 00000KT 3SM BR BKN025
 FM161200 00000KT 3SM SHRA OVC025
  PROB30 1612/1614 -TSRA OVC045CB
 FM161500 21003KT P6SM BKN040
 FM161800 24007KT 6SM -SHRA SCT035 BKN050
  PROB30 1618/1623 -TSRA OVC035CB
 FM170200 20003KT P6SM SCT100=
```



Issued 18Z

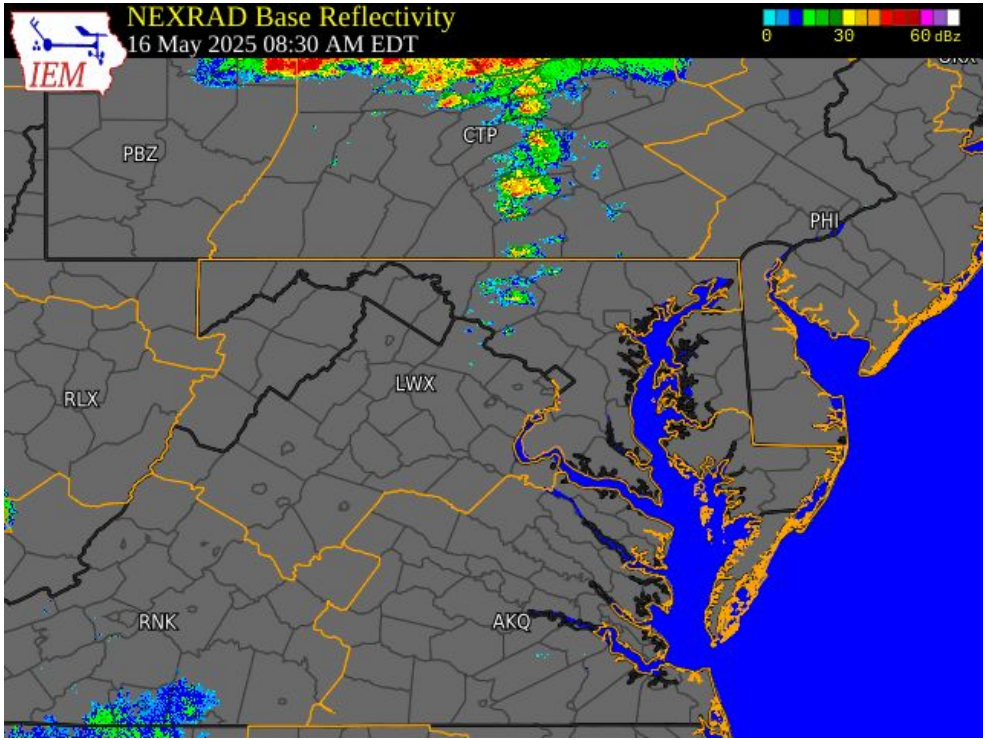
```
TAF
KDCA 161726Z 1618/1724 24007KT P6SM SCT040
  PROB30 1621/1624 3SM TSRA BKN040CB
 FM170000 20003KT P6SM SCT050
 FM170600 22006KT P6SM BKN050 WS020/23040KT
  PROB30 1706/1709 3SM  TSRA BKN035CB
 FM170900 22007KT P6SM BKN210 WS020/23040KT
 FM171300 22007KT P6SM BKN190
 FM171600 23012G23KT P6SM FEW130=
```

What would your expectation be?

Case 2 (May 16, 2025) - What happened?

- BWI -SHRA at 14Z part of line that becomes severe in NJ
- Metros widespread strong-severe TS around 20-23Z, DCA had 60 kt gust

PROB30 may have been due to “chance” TS in guidance. Probably held on too long given SPC SLGT and decent CAM agreement.



Case 3 - Non-Diurnal Thunderstorm Potential

Issued 06Z

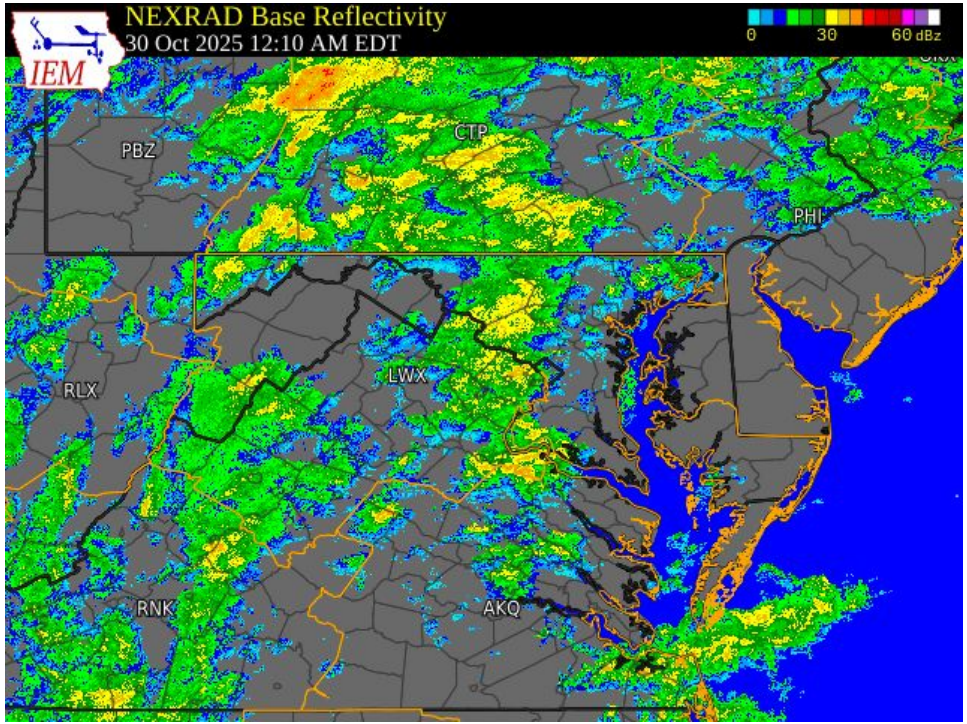
```
TAF
KDCA 300534Z 3006/3112 02012G20KT 3SM -RA OVC008
  FM301000 11015G24KT 4SM SHRA OVC007
    PROB30 3010/3015 TSRA OVC007CB
  FM301500 16011G21KT 6SM -SHRA SCT007 OVC014
  FM301800 19011G21KT P6SM SCT013 BKN040
  FM302200 23009KT P6SM FEW060 SCT250
  FM310600 26012G22KT P6SM FEW060=
```

What would your expectation be?

Case 3 (October 30, 2025) - What happened?

- DCA: thunder reported 0729Z, 1201Z
- BWI: no thunder
- IAD: thunder reported 1123Z

- TAF written to target convective line which had the most potential of producing gusty winds/lightning. Ended up being faster than progged.
- A few rogue lightning strikes occurred in overnight activity. Not unexpected but low enough chance to avoid long duration of TS in TAF.



Case 4 - Snow Showers

06Z TAF written in workshop exercise

```
TAF
KMRB 280539Z 2806/2906 32010G20KT P6SM BKN050
     FM281400 32018G32KT P6SM BKN050
          TEMPO 2819/2821 32024G43KT 1/2 SM SN
          SCT010 BKN050
     FM290000 30015G25KT P6SM SCT050=
```

Actual 12Z TAF (2022, pre-PROB30)

```
TAF
KMRB 281127Z 2812/2912 31015G25KT P6SM VCSH BKN050
 FM281800 31020G35KT P6SM VCSH BKN050
 FM290000 30015G25KT P6SM SCT050
 FM290600 32008G16KT P6SM FEW250=
```

(06Z TAF had no mention)

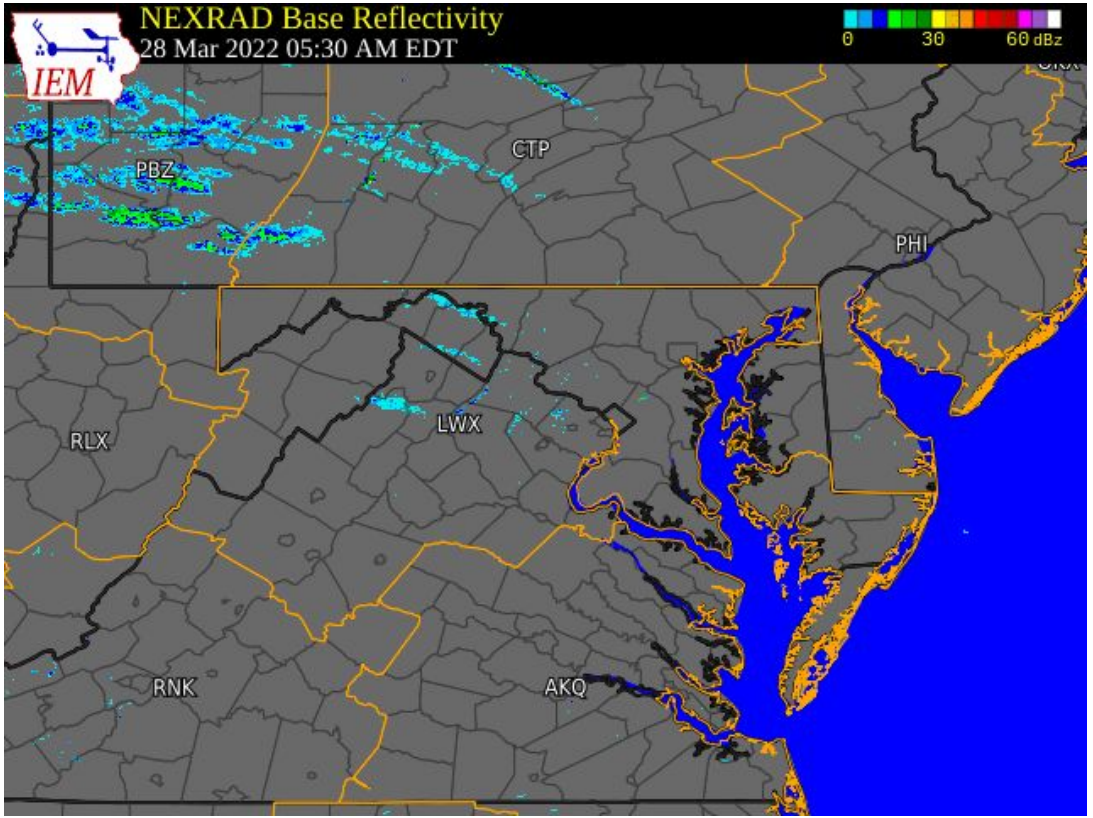
What is the main difference between between these two styles?

Or if it was PROB30 vs. TEMPO?

Case 4 (March 28, 2022) - What happened?

- Snow streamers (including Snow Squall Warning) north of airport 12-16Z
- Flurries at airport in 16Z and 17Z hours
- 1 3/4SM -SN at 1957Z

The training TAF worked out well specifically for the airport, but should it convey the all-day threat?

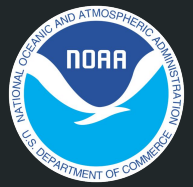


PROB30 Wrap-Up

- Any other feedback or comments on our transition to PROB30?

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
- ZDC Meteorologist-in-Charge: (vacant)
- 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