

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

November 17, 2022



Welcome and Roll Call

Jim Lee, Meteorologist-in-Charge, WFO LWX

Andrew Snyder, Aviation Program Leader, WFO LWX

AGENDA

Purpose & Review Action Items

Weather Forecast Office Topics

Center Weather Service Unit Topics

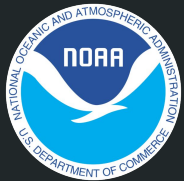
Regional and National Topics

Open Forum & Group Discussions

Review new actions items and close

❖ *A short office tour will be offered for in-person participants*

Purpose & Mission



Forum Goals

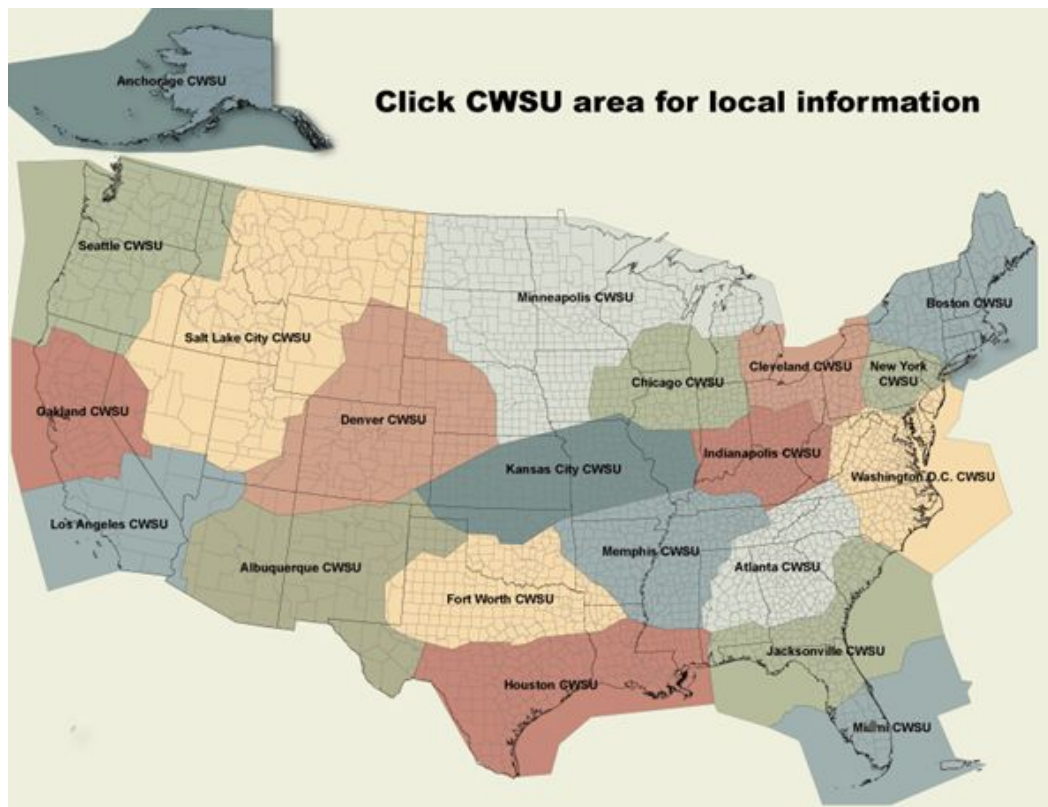
- Enhance communication and strengthen partnerships between the National Weather Service (NWS) and the mid-Atlantic aviation community
- Discuss ways to improve NWS aviation forecast operations and services in the mid-Atlantic
- Identify issues and receive feedback from aviation core customers
- Establish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

NWS Mission

- Provide climate, water, weather forecasts and warnings to protect life and property and the enhancement of the national economy
- Vision: A Weather-Ready Nation. Society is prepared for and responds to weather, water, and climate-dependent events.

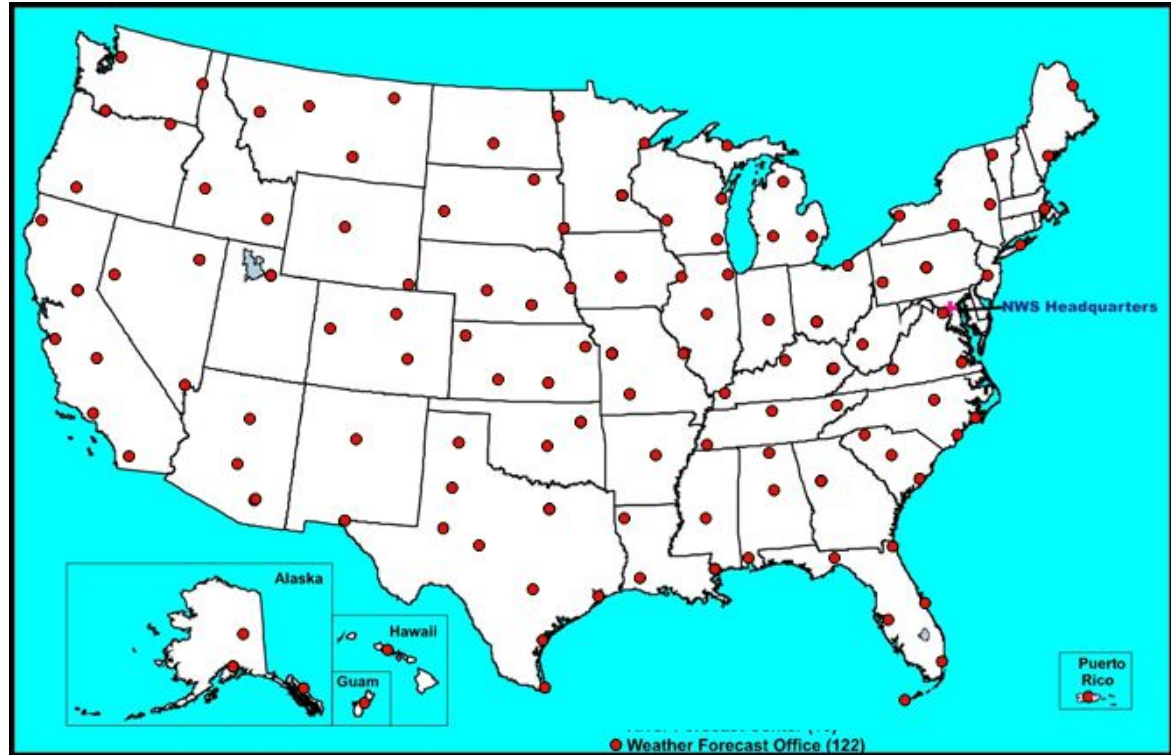
NWS Structure

21 Center Weather Service
Units

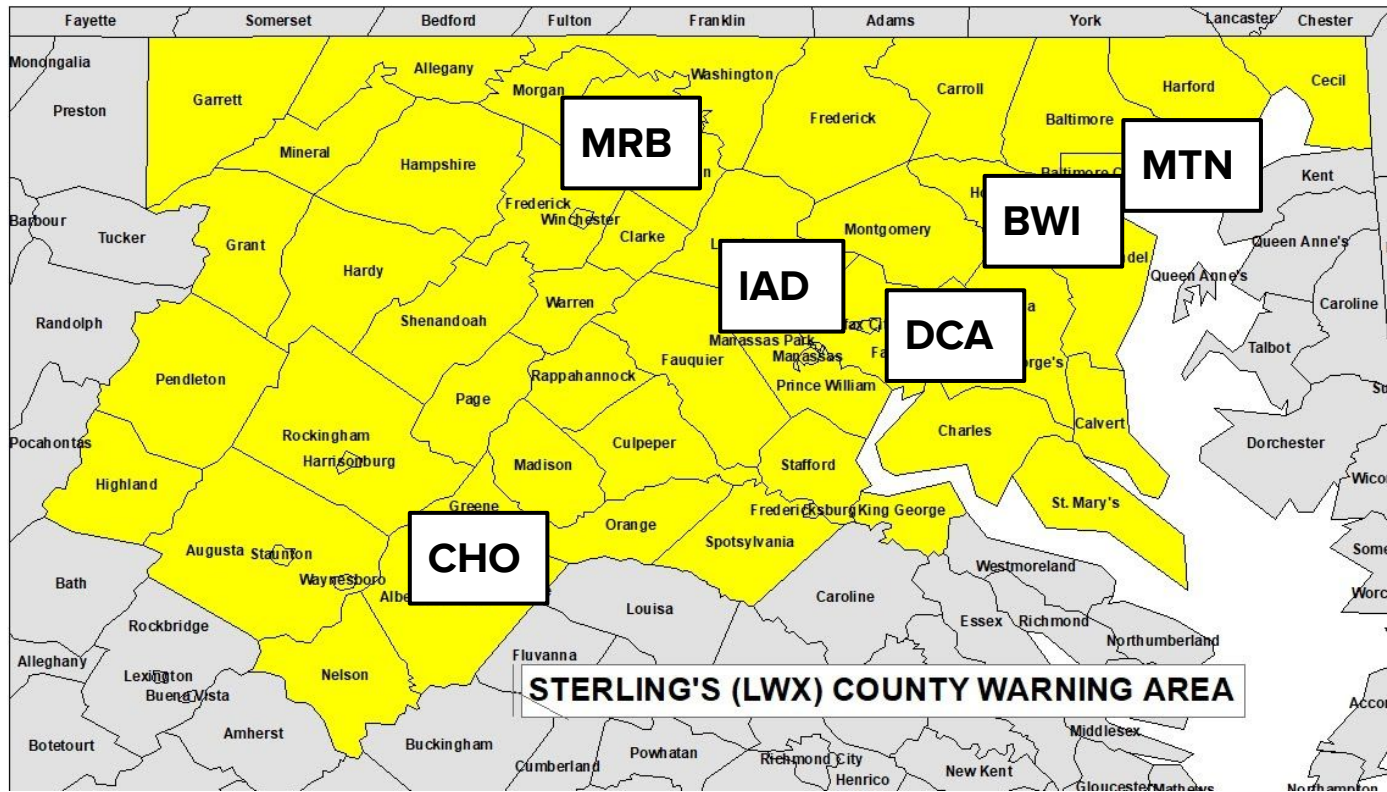


NWS Structure

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.  
  
&&
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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

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](#)

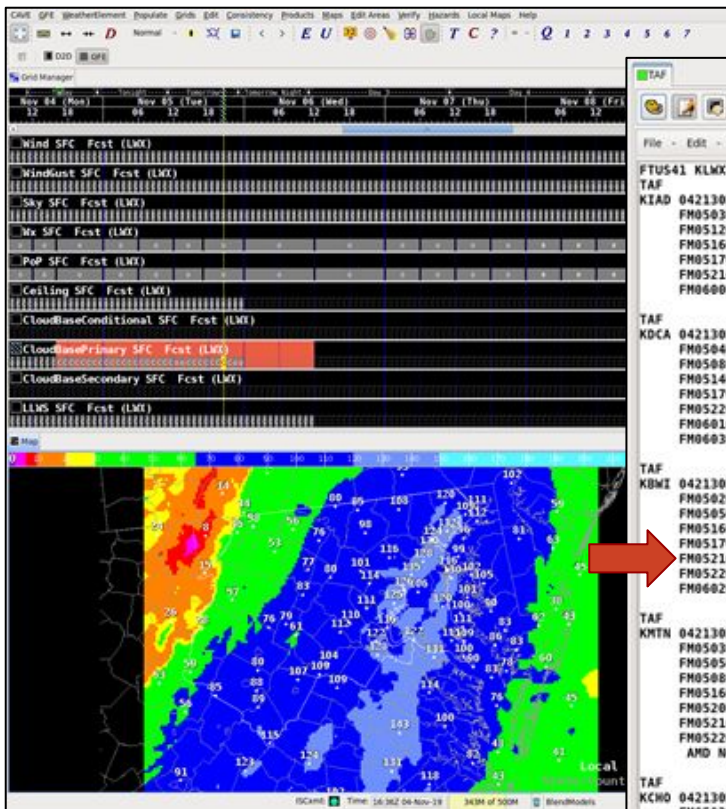
DULLES (IAD)

[TERMINAL FORECAST \(IAD\)](#)

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



The screenshot shows a window titled 'TAF' with a menu bar containing 'File', 'Edit', 'Options', and 'CallToActions'. The main area contains a list of TAF codes for various airports, including FTUS41, KLCX, KIAD, KDCO, KBWI, KNTN, and KCHO. Each entry includes a grid point, time, and a list of forecast codes. A red arrow points from the map in the previous screenshot to the 'KBWI' entry in this list. At the bottom, there are buttons for 'Save Draft', 'Transmit', and a 'Type: rou' dropdown. The status bar indicates 'Product expires in: 12:00' and 'At: 09:45Z 05-Nov-19'.

```
FTUS41 KLCX 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
KDCO 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
KNTN 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
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FM050200 19005KT P6SM SCT250
FM051100 VRB03KT P6SM SCT250
FM051300 VRB03KT P6SM BKN250
FM051600 25004KT P6SM BKN200
FM051800 27005KT P6SM BKN100
FM051900 27005KT P6SM BKN100
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Review Previous Action Items



- Action items from 2021 meeting

- None

- Action items from 2019 meeting receiving current attention

- Request for TAF consistency from WFO-to-WFO, especially in regard to thunderstorms and use of VCTS
- Stress collaboration among AWC, NAMs @ ATCSCC, CWSUs, and WFOs, particularly with thunderstorm forecasting (TCF)
- Produce updated ER WFO/CWSU Aviation Best Practices
- Place aviation grids on all ER WFO websites

Coastal Office
(Eastern Region)
Aviation Meetings

National Initiative

News from the Forecast Office



FY22 TAF Verification (IFR and below)

* Does not include amendments

Overall

	POD	FAR	CSI
Goal	0.65	0.38	
Nat'l	0.624	0.37	0.457
ER	0.673	0.357	0.49
LWX	0.655	0.371	0.472

POD = Probability of Detection, higher is better

FAR = False Alarm Ratio, lower is better

CSI = Critical Success Index, higher is better

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

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

FY20 TAF Verification (IFR and below)

* Does not include amendments

By Issuance Time

	POD	FAR	CSI
Goal	0.65	0.38	
00Z	0.56	0.404	0.406
06Z	0.695	0.386	0.483
12Z	0.67	0.29	0.526
18Z	0.644	0.445	0.425

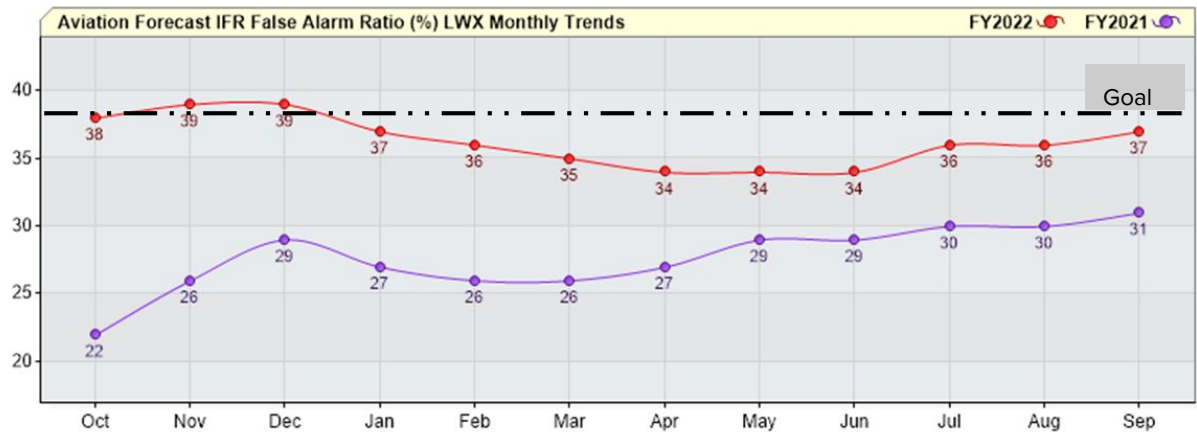
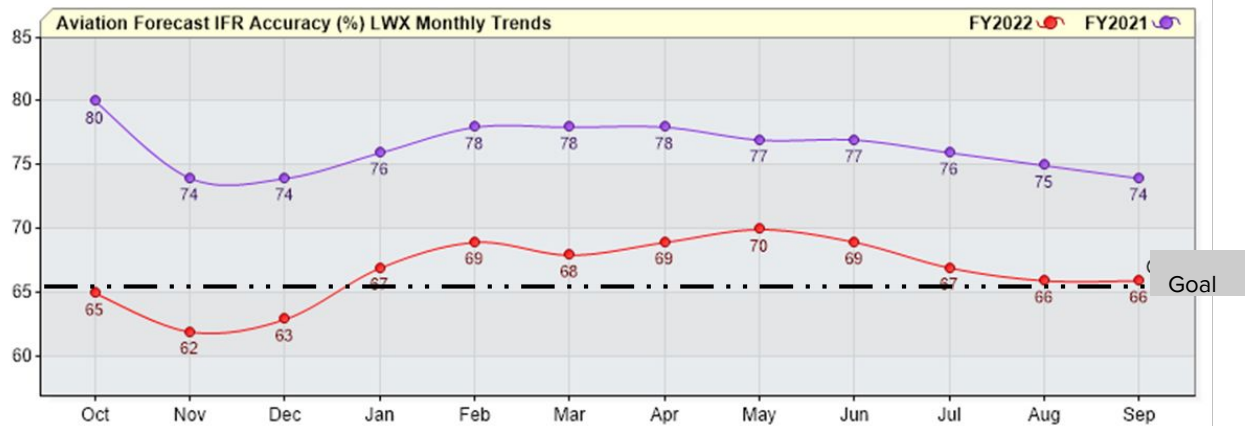
Green is best performer

Orange is worst performer

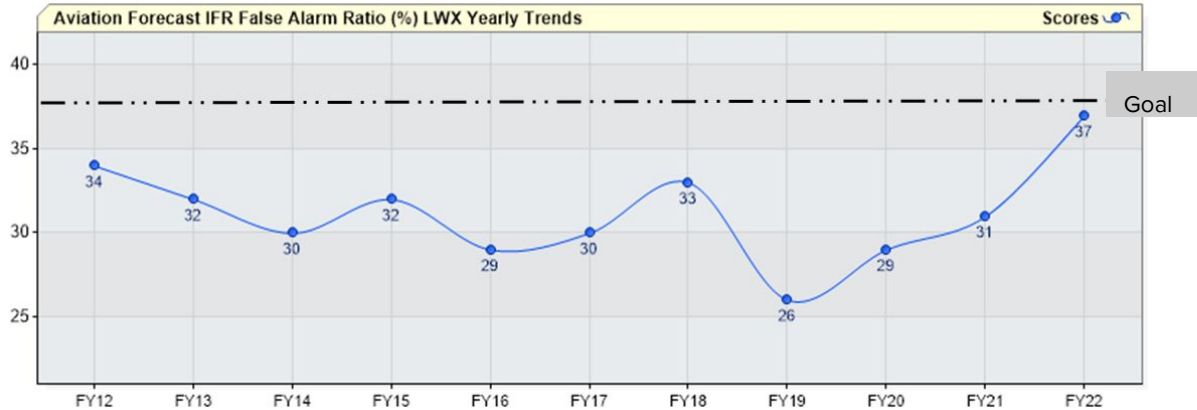
By Airport

	POD	FAR	CSI
Goal	0.65	0.38	
BWI	0.676	0.341	0.501
CHO	0.639	0.377	0.46
DCA	0.607	0.472	0.394
IAD	0.711	0.353	0.512
MRB	0.618	0.398	0.439
MTN	0.67	0.304	0.518

2022 vs. 2021 Monthly Verification Trends



Annual Verification Trends



Status of NWS Baltimore/Washington TAF Service

- KMTN has a long history of being a part-time TAF (tower closes 10PM-6AM)
- Currently we do not issue amendments from 02-12Z (AMD NOT SKED)
- AWOS reports while tower is closed
- So why not make this a full time TAF?
- Need to investigate AWOS comms issues

Aviation Outreach

- Restarting in-person outreach as pandemic restrictions decline
- So far
 - Career fair at Manassas Regional Airport
 - Visit with tower staff at DCA
- Future
 - Visit remaining TAF Towers
 - Visit Potomac TRACON
 - Renew conversations with pilot clubs, Leesburg Air Show, and others who expressed interest a couple years ago
 - Other ideas?

CWSU Topics



Regional and National Topics



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?
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 open 365 days/year?

Convection Exercise



Thunderstorm Forecast Exercises

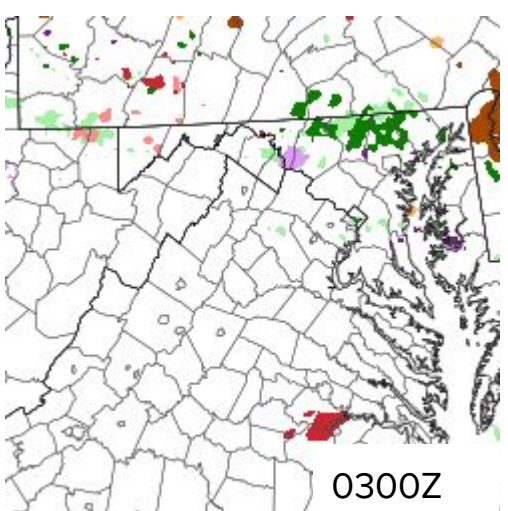
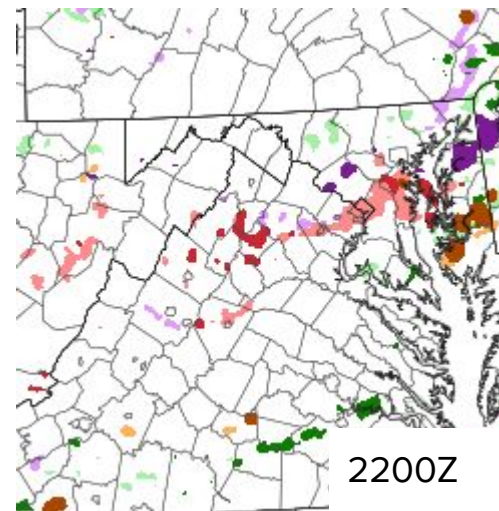
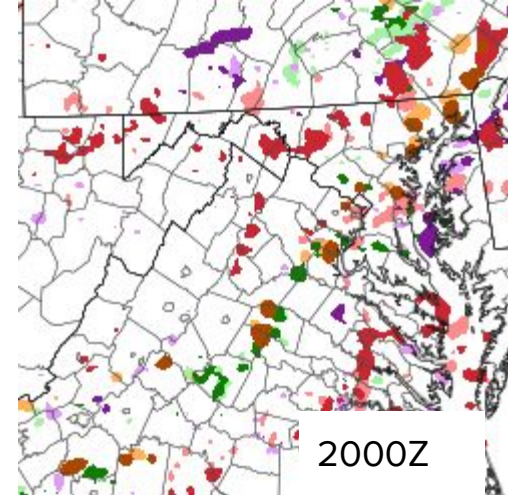
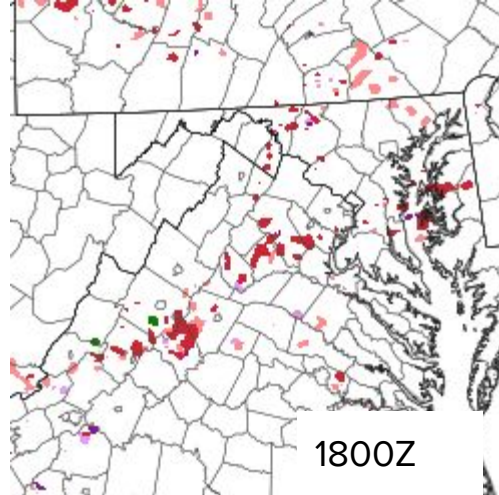
- One of the most-discussed topics at our original 2019 meeting. Some comments over the years:
 - “It’s the wild west” (different philosophies from different NWS offices)
 - Too much VCTS...not compliant with true definition (5-10SM)
 - “I don’t care what is used as long as it’s consistent across the country”
 - Some fuel differently between PROB30 and VCTS
 - “I find PROB30 to be useless” vs “Use PROB30 anywhere in the TAF”
 - [Regardless of how thunderstorms are included].. “it means we’re probably going to have a bad day”

What do you think is the best application in each case?

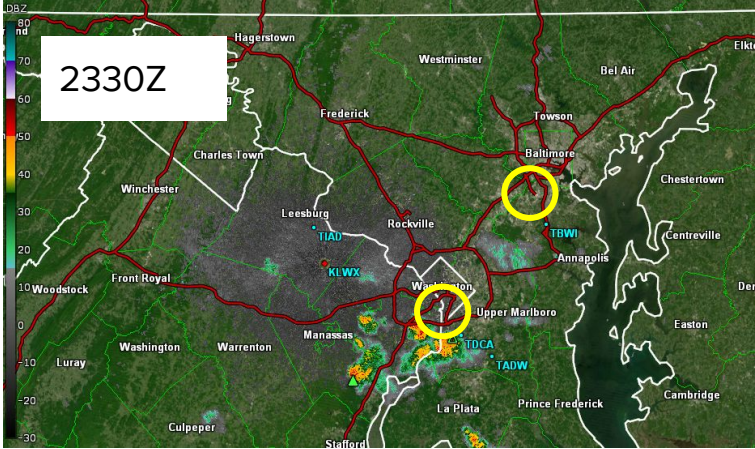
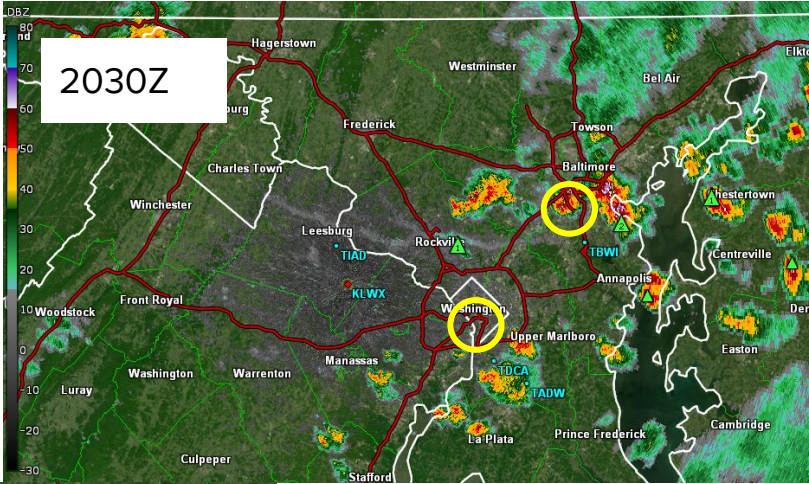
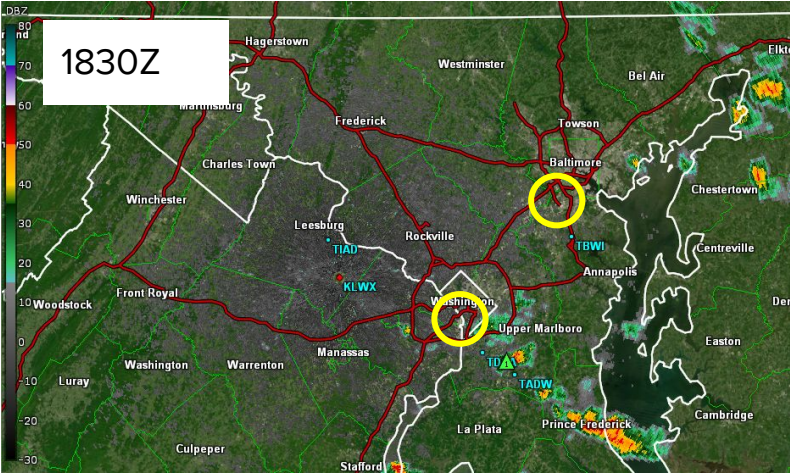
- Make forecast with model data at TAF time, then reality (what would have been the “perfect” forecast?)
- Focus on BWI, DCA, IAD
- Can use any legal TAF option regardless of current policy on its usage
 - No Weather
 - No Thunder (SHRA or VCSH)
 - ~~CB only~~ (oops I went back to 2010)
 - VCTS only
 - SHRA VCTS
 - PROB30 TSRA
 - TEMPO TSRA
 - TSRA

Case 1

- Models: Multiple opportunities for scattered or numerous storms in the area, possibly into the evening
- NWS rain chance: 30-50%
- NWS thunder chance: 30-50%
- SPC severe outlook: SLIGHT (level 2)

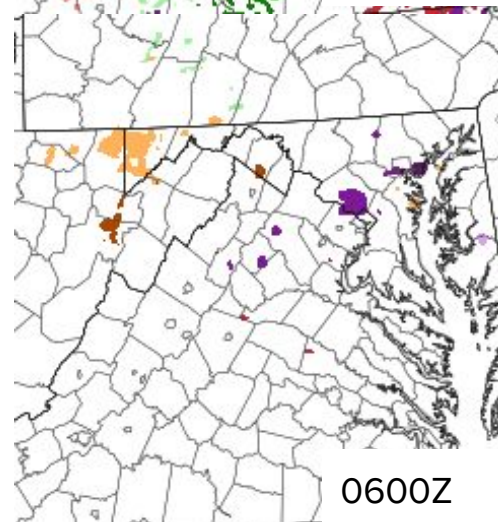
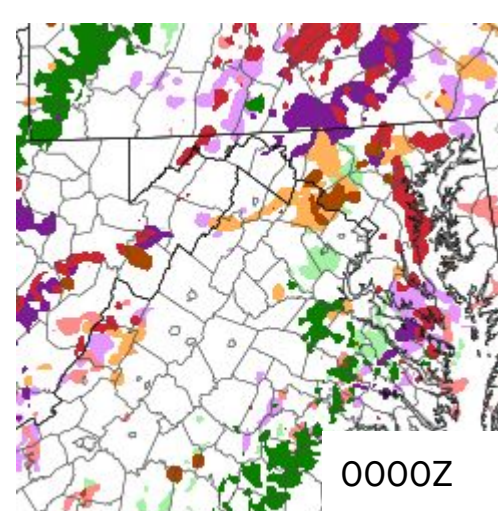
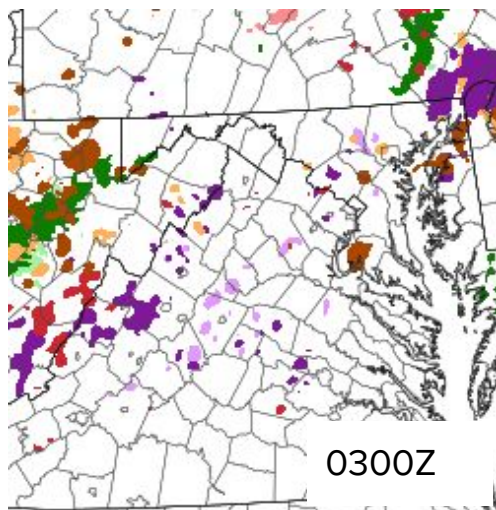
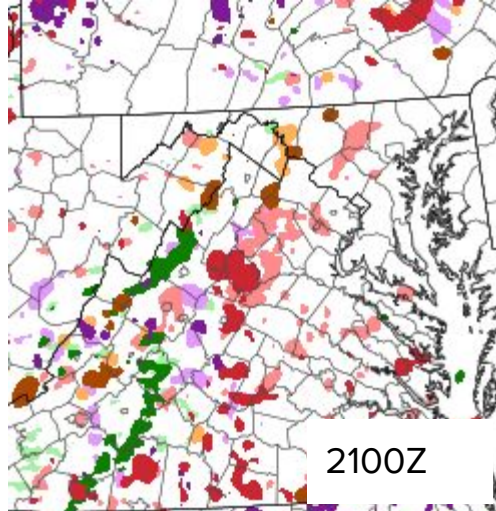


Multiple closely timed rounds of scattered storms nearby 6/29/2019

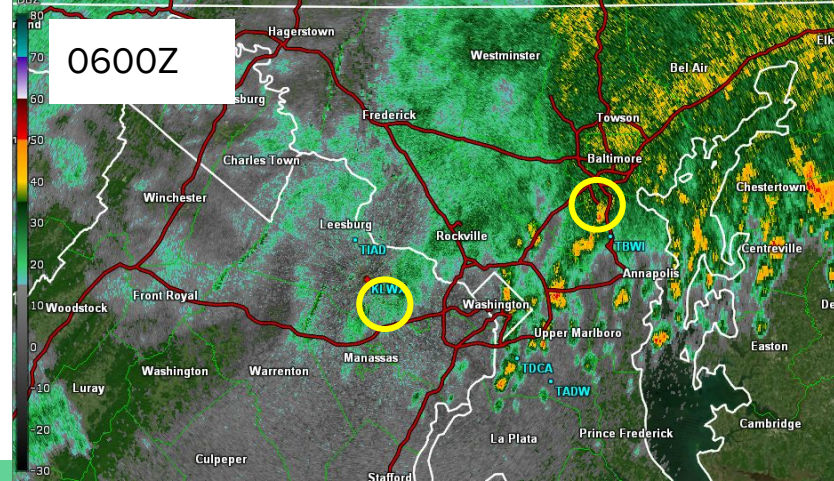
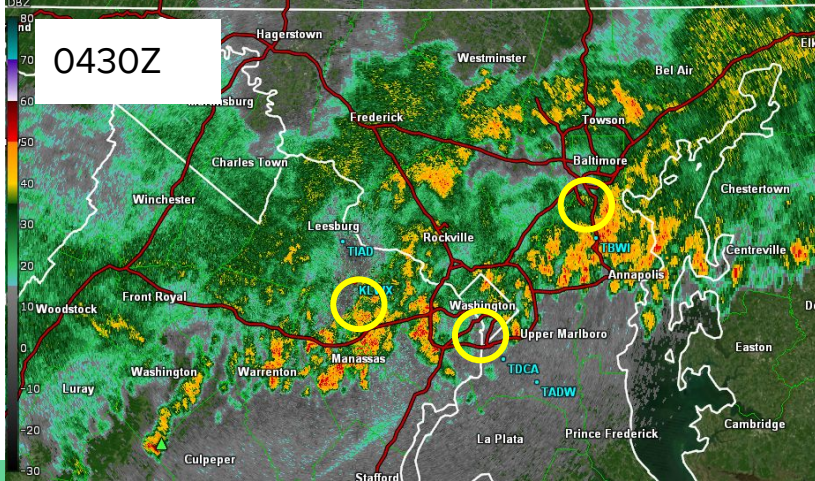
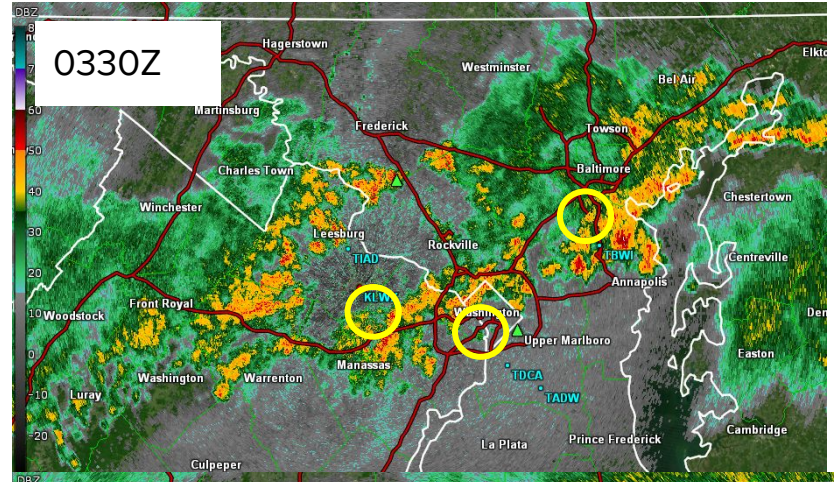
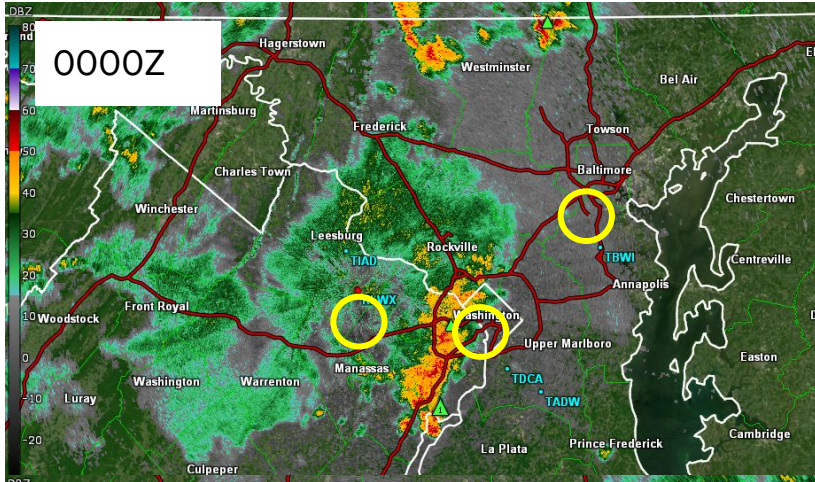


Case 2

- Models: Scattered to numerous storms during the late afternoon to early evening. Dwindling but non-zero chance into the overnight.
- NWS rain chance: 50-70%
- NWS thunder chance: 50-70%
- SPC severe outlook: SLIGHT (level 2)

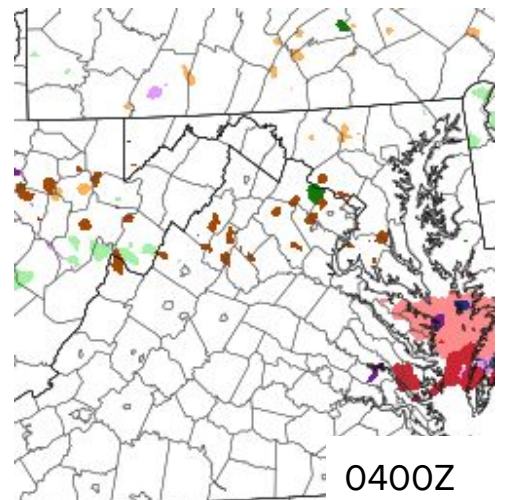
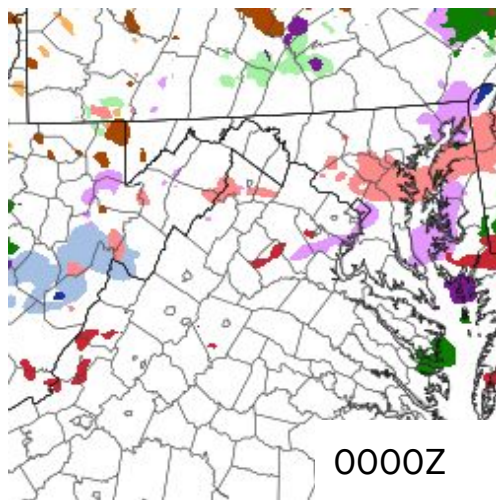
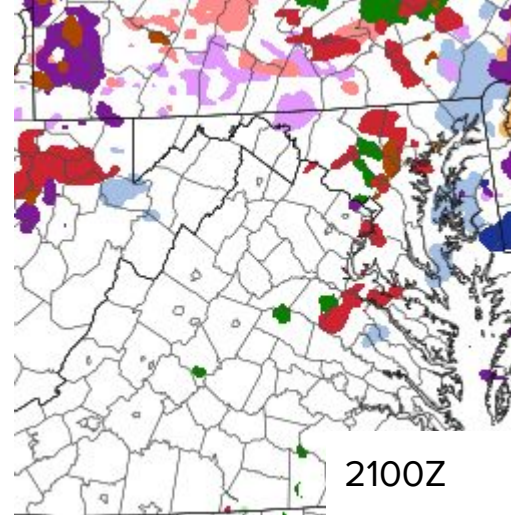
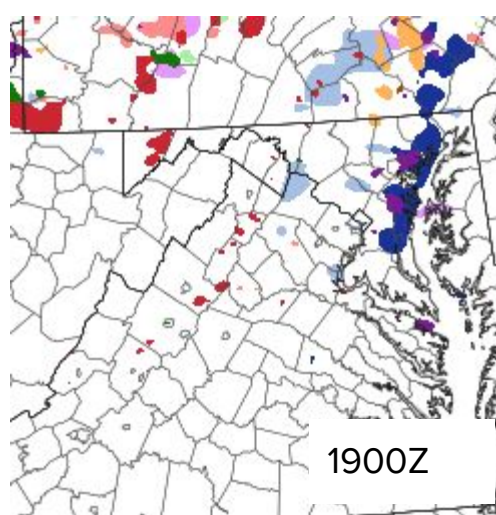


Prolonged period of storms 6/4/2020

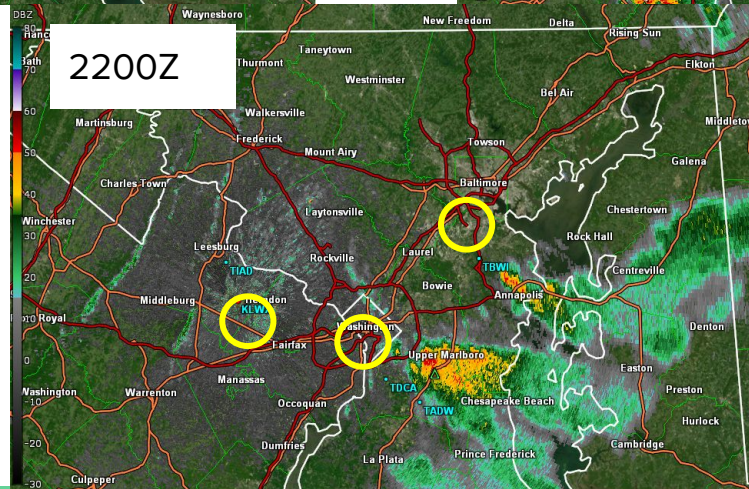
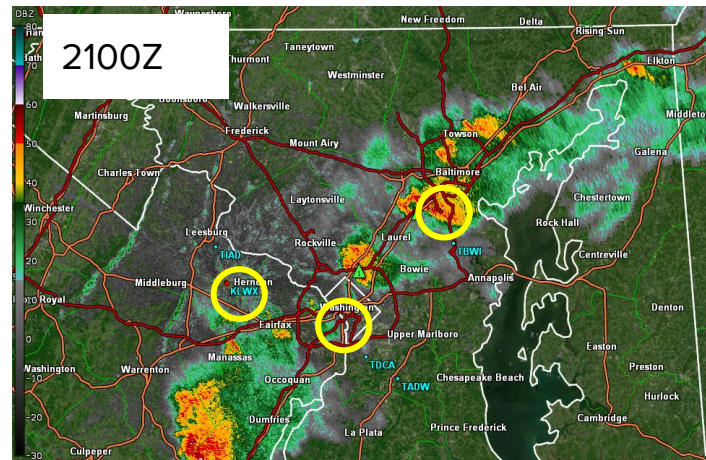
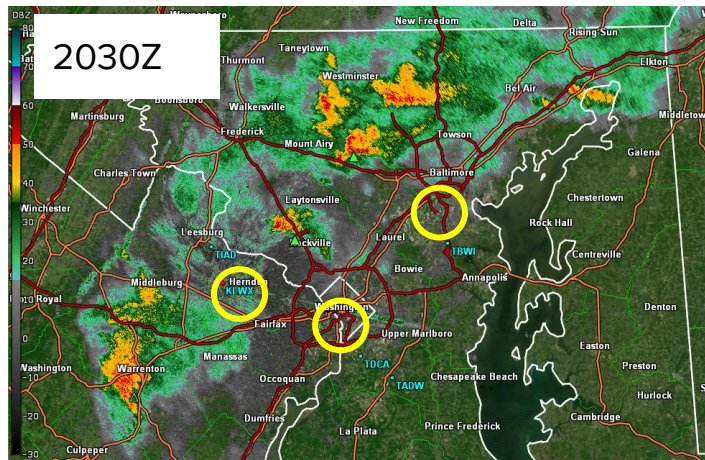


Case 3

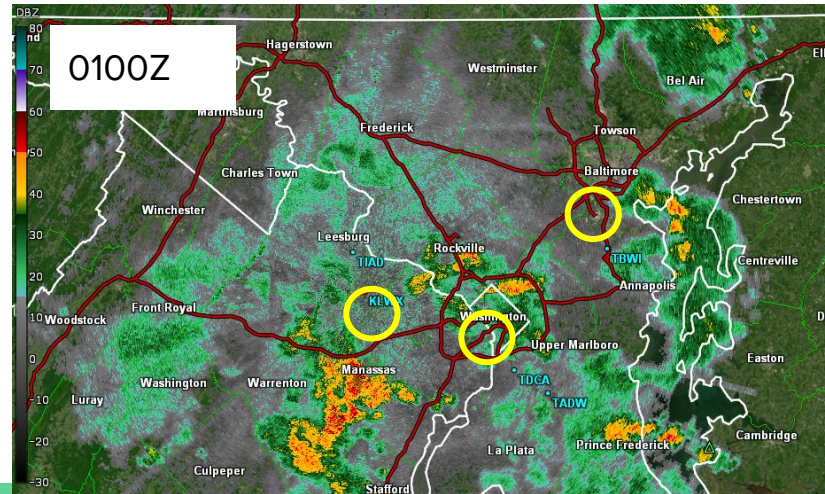
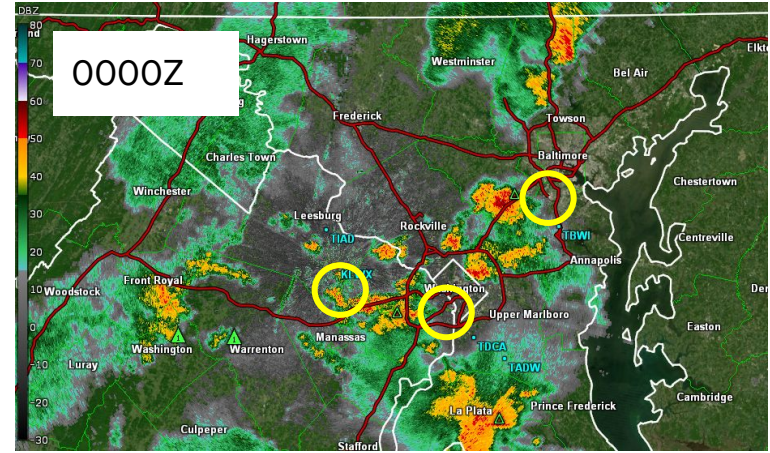
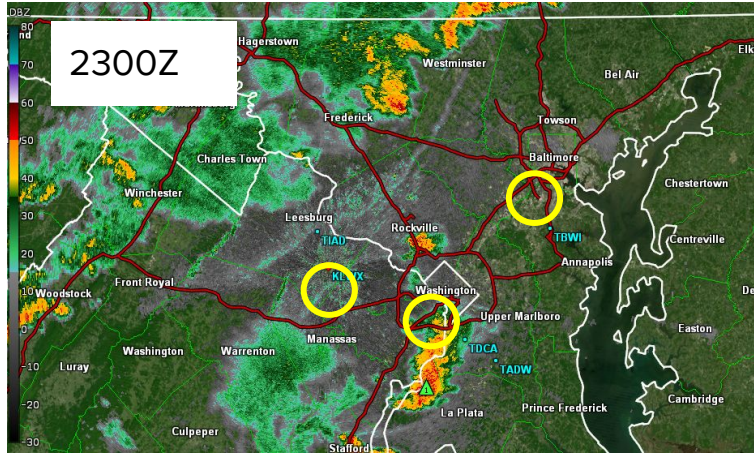
- Models: One or more opportunities for scattered to numerous storms afternoon/evening but disagreement on timing
- NWS rain chance: 60-70%
- NWS thunder chance: 60-70%
- SPC severe outlook: ENHANCED (level 3) for BWI north



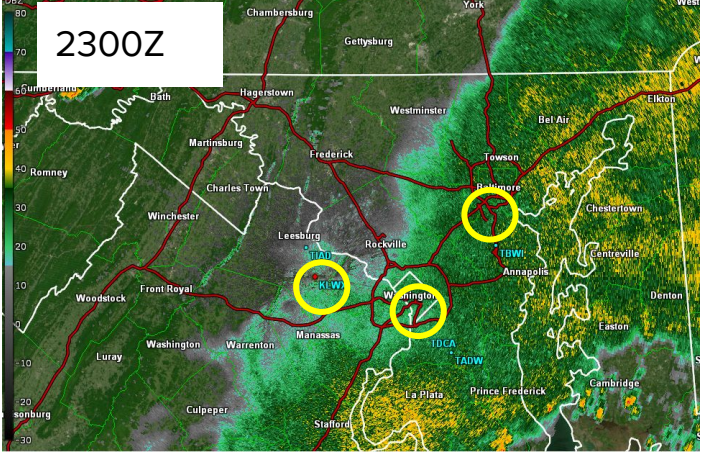
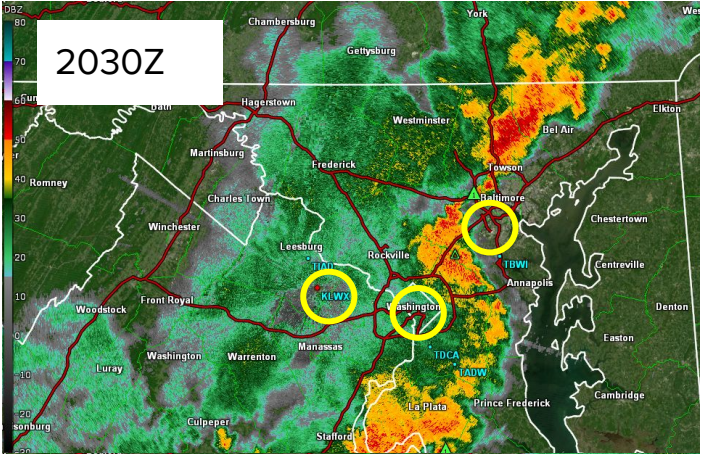
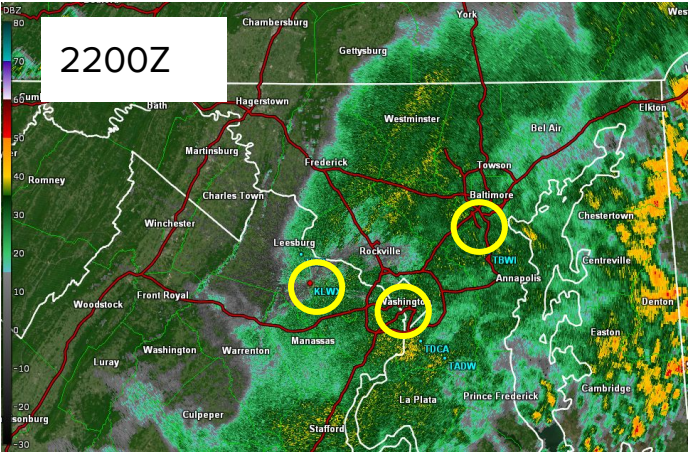
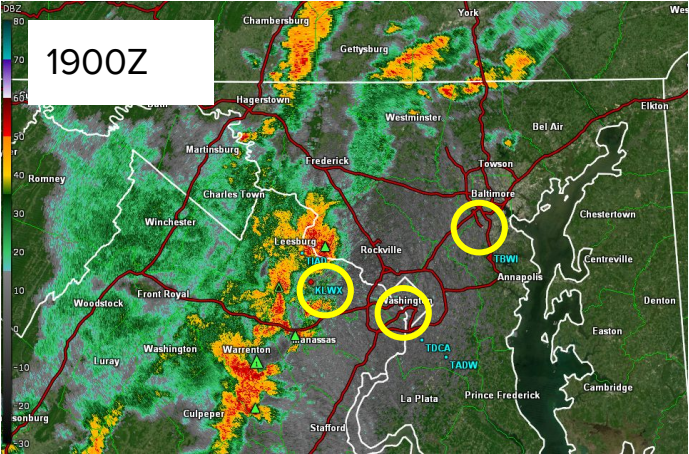
Semi-organized but discontinuous line 7/29/2021



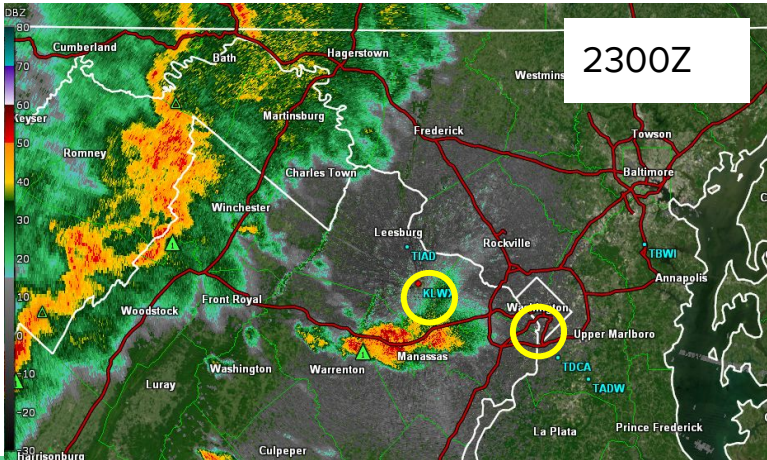
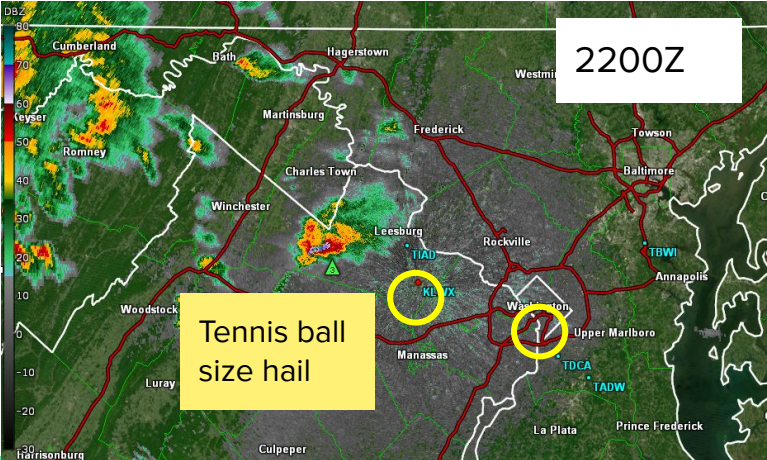
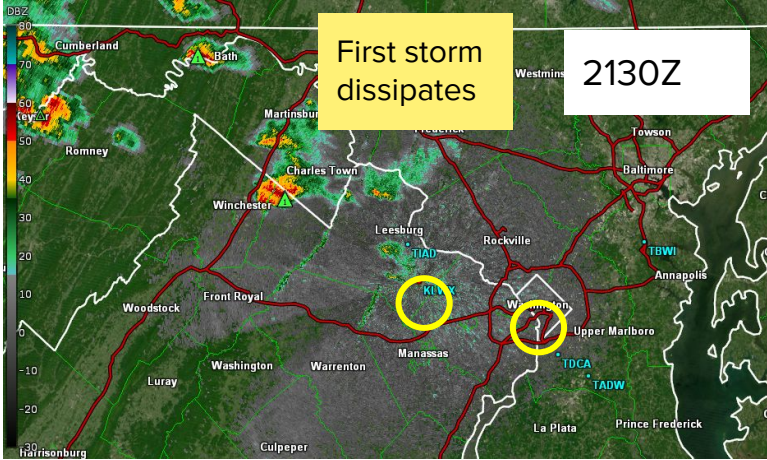
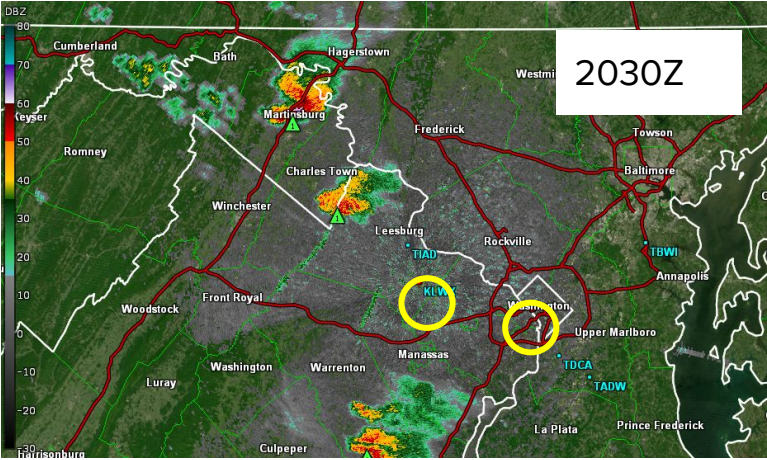
4. Numerous but random storms 7/21/2020



5. Prolonged trailing stratiform 7/22/2020



6. Isolated large storms 6/16/16



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
- Steve Zubrick, LWX Science and Operations Officer: steven.zubrick@noaa.gov
- Andrew Snyder, LWX Aviation Program Leader: andrew.snyder@noaa.gov
- 24/7 operations floor: 571-888-3501

