

# Steve Kozak – Meteorologist Cleveland Center Weather Service Unit



# CWSU History

- 4 Apr 1977: Southern Airways flight 242 crashed northern GA
- Poor pre-flight wx information and lack of understanding of onboard wx radar, ended up flying into intense part of TS
- Both engines failed due to hail
- 63 of 85 on board and 9 on the ground died
- NTSB recommendation to have timely dissemination of severe weather to ATC
- April 1978 FAA had 3 NWS mets in 13 ARTCC locations
- August 1981 FAA added a 4<sup>th</sup> met and expanded to all 21 ARTCCs
- Currently 7 mets at ATCSCC in Warrenton VA





# CWSU Objective (IDSS)

- Mission is to provide accurate and dependable weather information to FAA customers, both in-house (ARTCC) and offsite (TRACONs, Towers, etc.), contributing to the safest and most efficient use of the NAS
- Clear, Concise, and Consistent (3 C's) in-person, phone, and web-based briefings
- Dissemination of local products
- Dissemination of national NWS and MSC products
- Focus is on the current shift (8-12 hrs)



Cleveland Center  
Oberlin, OH

# DAL Flight 1889

## 7 Aug 2015



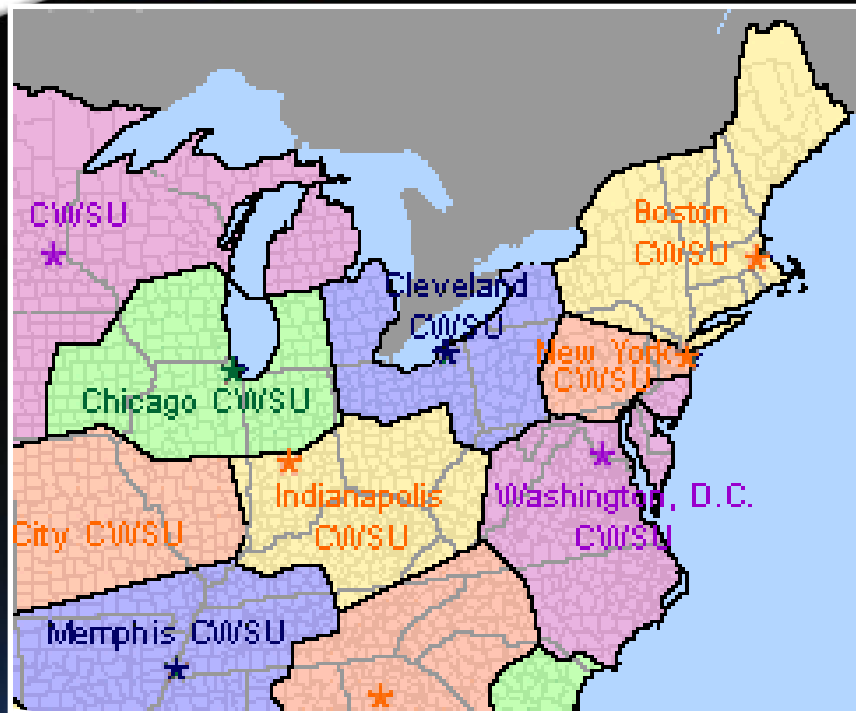


# Cleveland Center Airspace (ZOB)

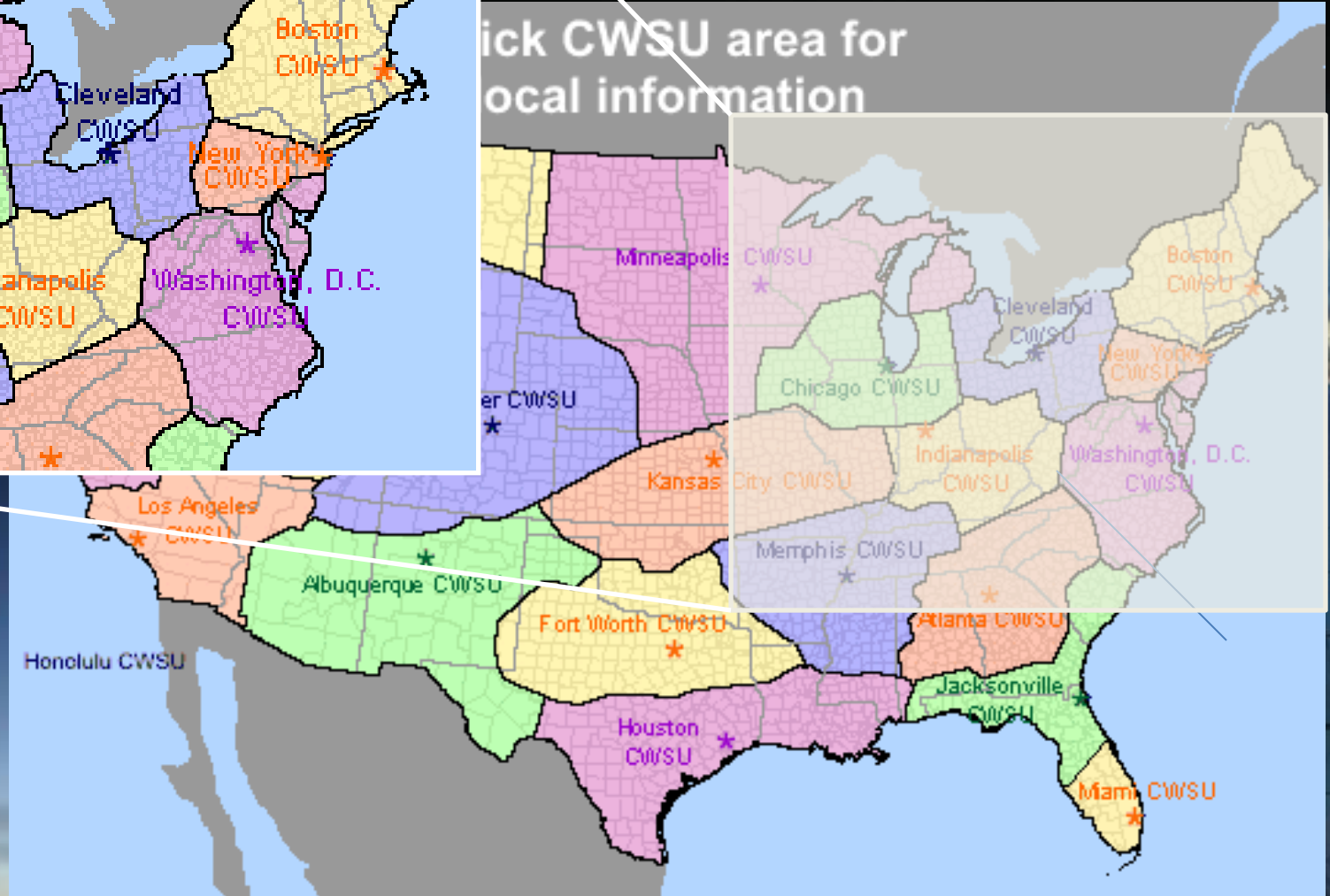


Hours Of Operation  
0600-2130 Local

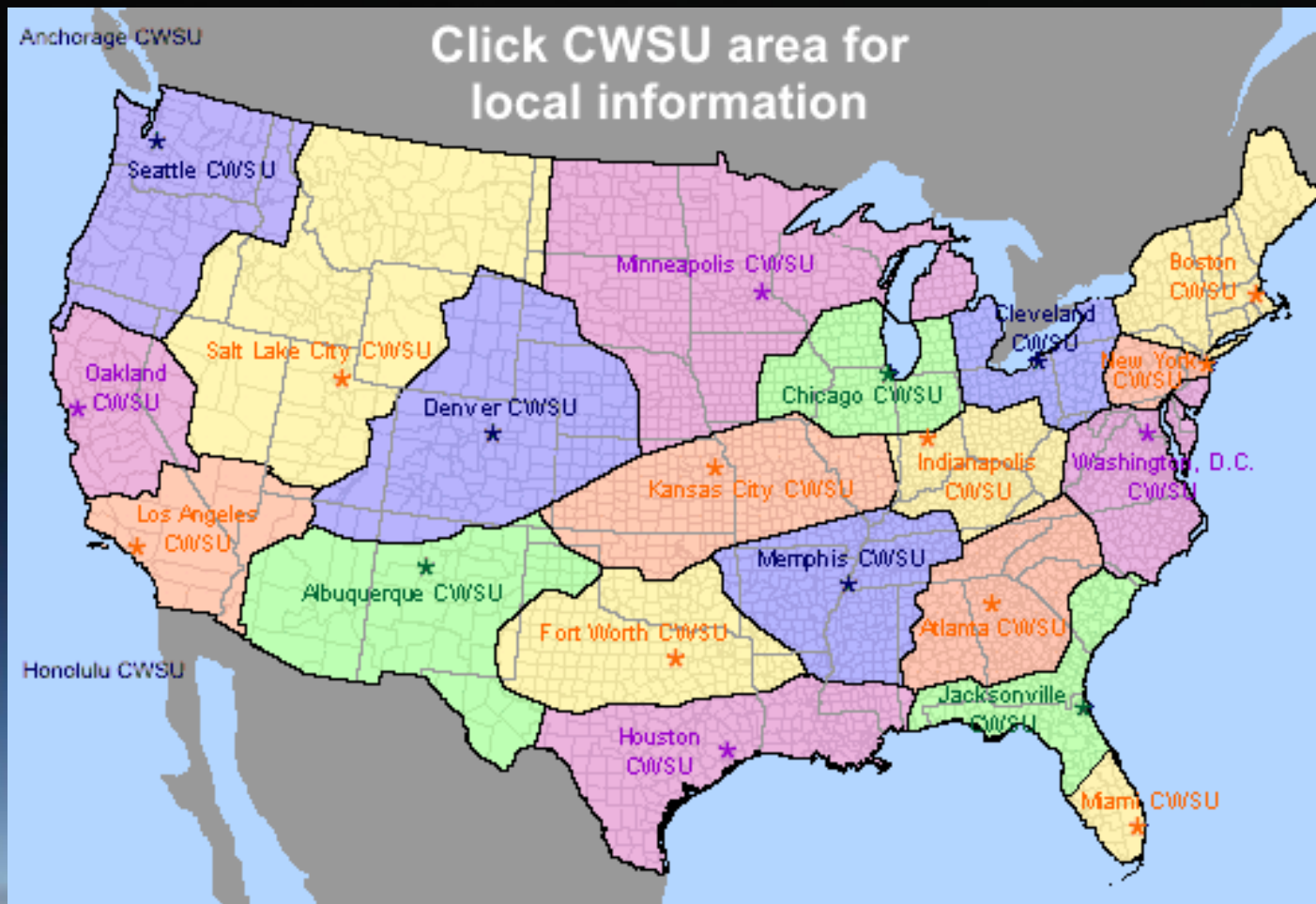
# Focus Chicago to East Coast



Click CWSU area for  
local information



# CWSUs Across the US

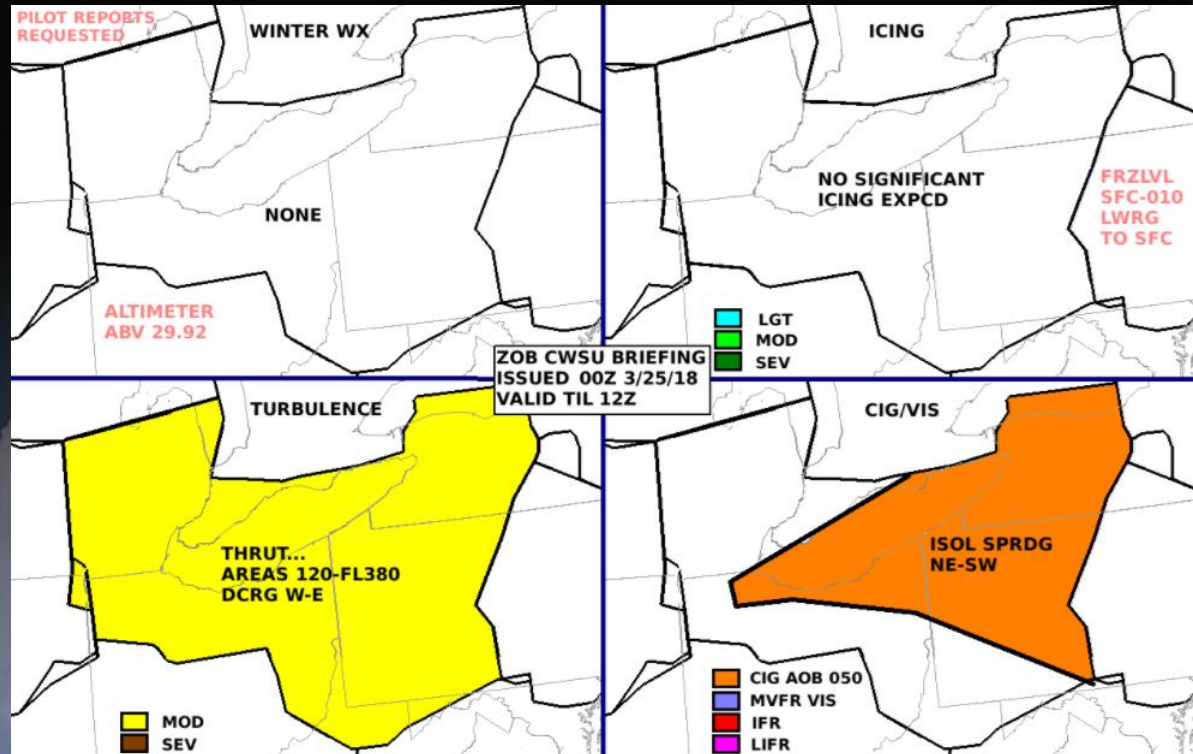


<http://www.nws.noaa.gov/aviation/pages/CWSU/CWSU.php>



# What We Forecast

- Thunderstorms
- Turbulence
- LLWS
- Strong Sfc Winds
- Icing
- Cig 050 or less
- Visibility 5SM or less
- Low altimeter setting (29.92 inHg or less)
- Crosswind and compression for DTW, PIT, CLE
- Fast echoes 40KT or more
- Winter Wx.. SN/PL accums, 1 inch per hour or more SN rates





# What We Forecast

## TREND

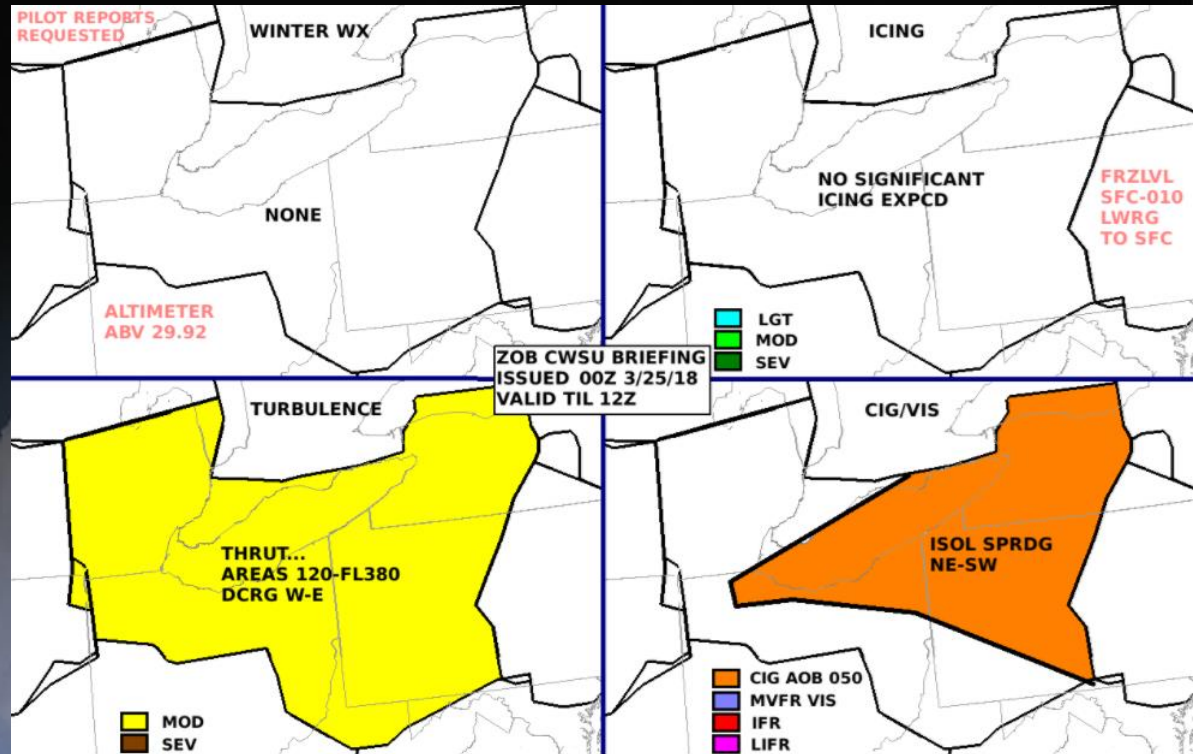
- Start
- Stop
- Increasing
- Decreasing

## COVERAGE

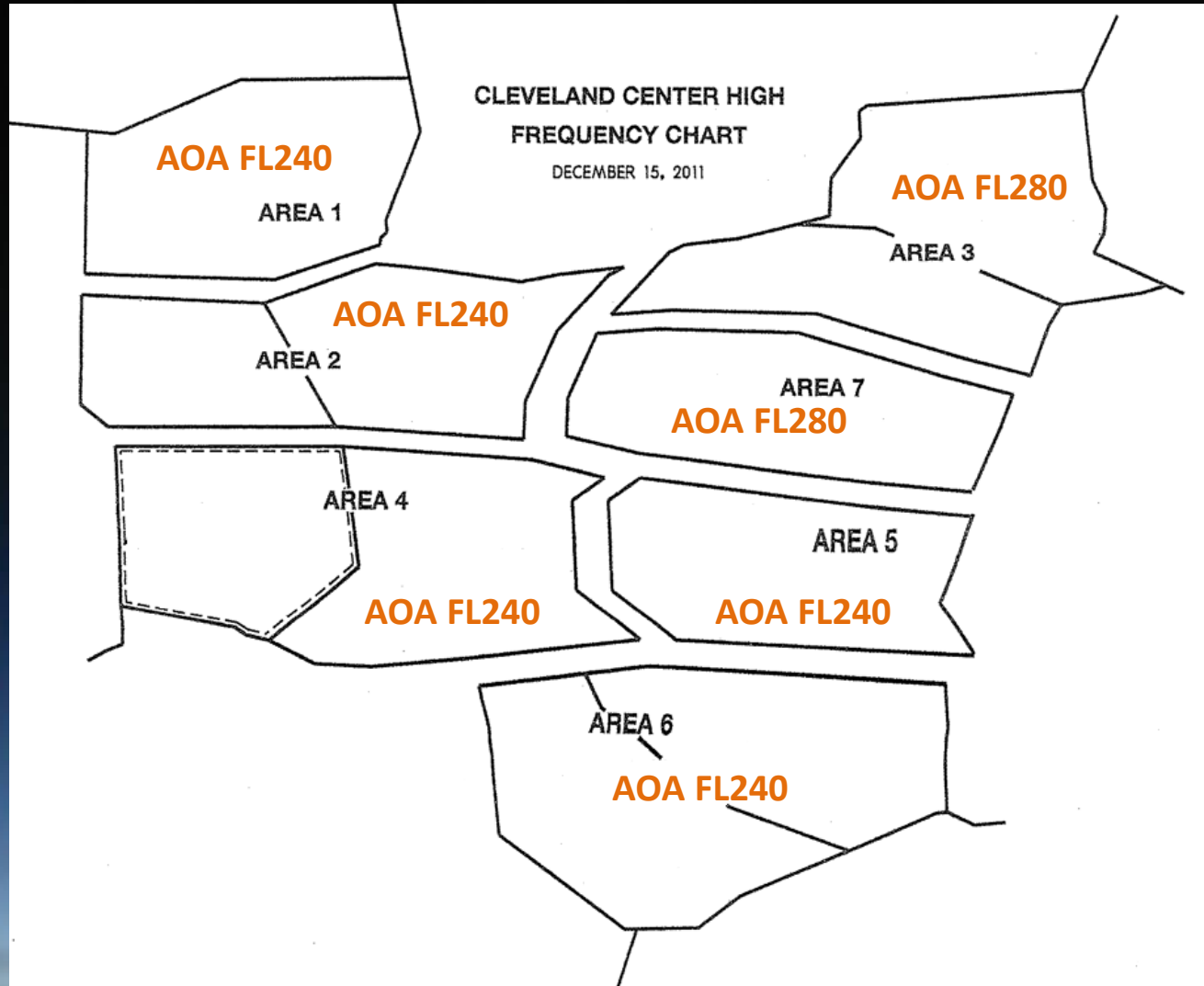
- Altitude
- ISOL, SCT, BKN, NMRS, LN

## MOVEMENT

- Direction TO/excp FROM for TS



# High Sectors

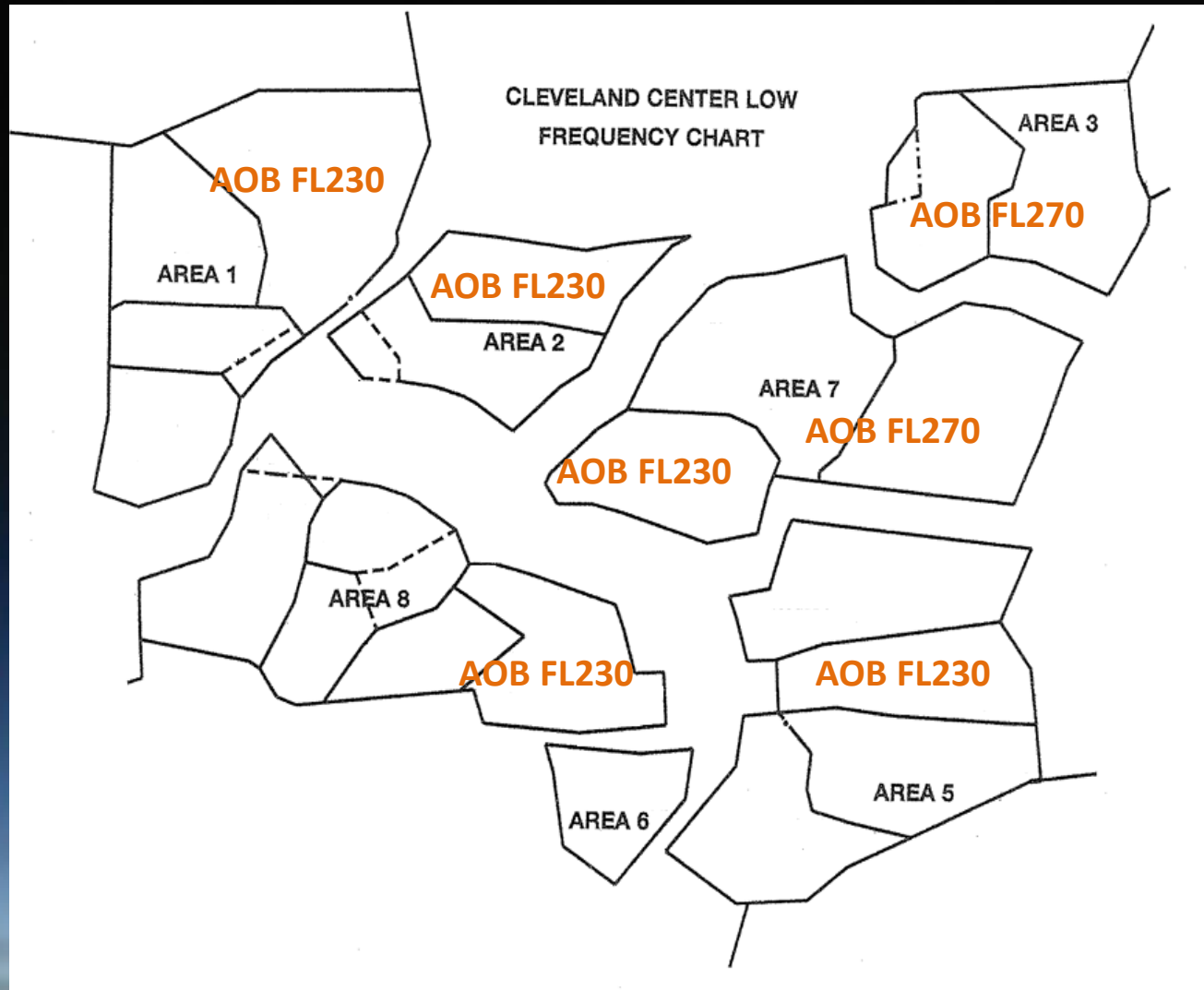


- Thunderstorms
- Turbulence
- Icing
- Fast echoes 40KT or more





# Low Sectors



- All of the above!



# Seasonal Variation

## ***SUMMER...Mesoscale or smaller***

- Thunderstorms (convection)
  - Imply Severe or greater Turbulence
  - Severe Icing
  - LLWS
  - IFR or lower
- Radiation Fog
  - Late-night & early AM





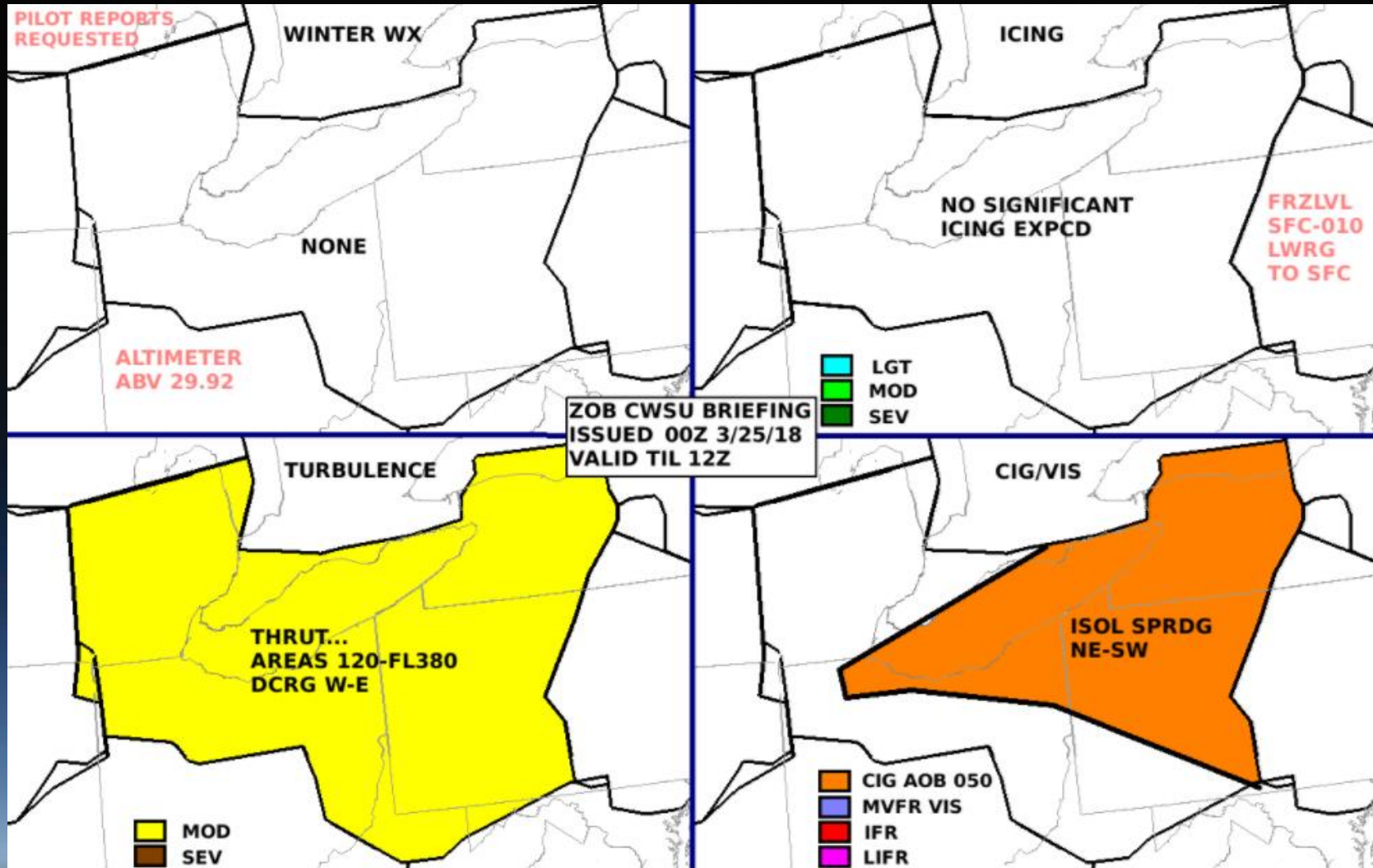
# Seasonal Variation

## ***WINTER...Synoptic Scale***

- Icing
  - Changes in freezing level, multiple layers
- Turbulence
  - Stronger low- and high-level jet streams, stronger surface winds associated with intense low pressure systems
- LLWS
- Low CIG and VIS
- Low altimeter setting  
(29.92 inHg or less)
- SN/PL accums
- 1" per hour or more snow rates



# Briefing Sheet (Local ZOB Product)





# Confidence

- FAA client wants a yes/no answer but rarely that simple
- Important to convey level of confidence
- High/Medium/Low on timing, location, and coverage of a condition
- Verbal (most important) and graphical depictions
- Probabilistic forecasts are NOT desired

# PIREPS

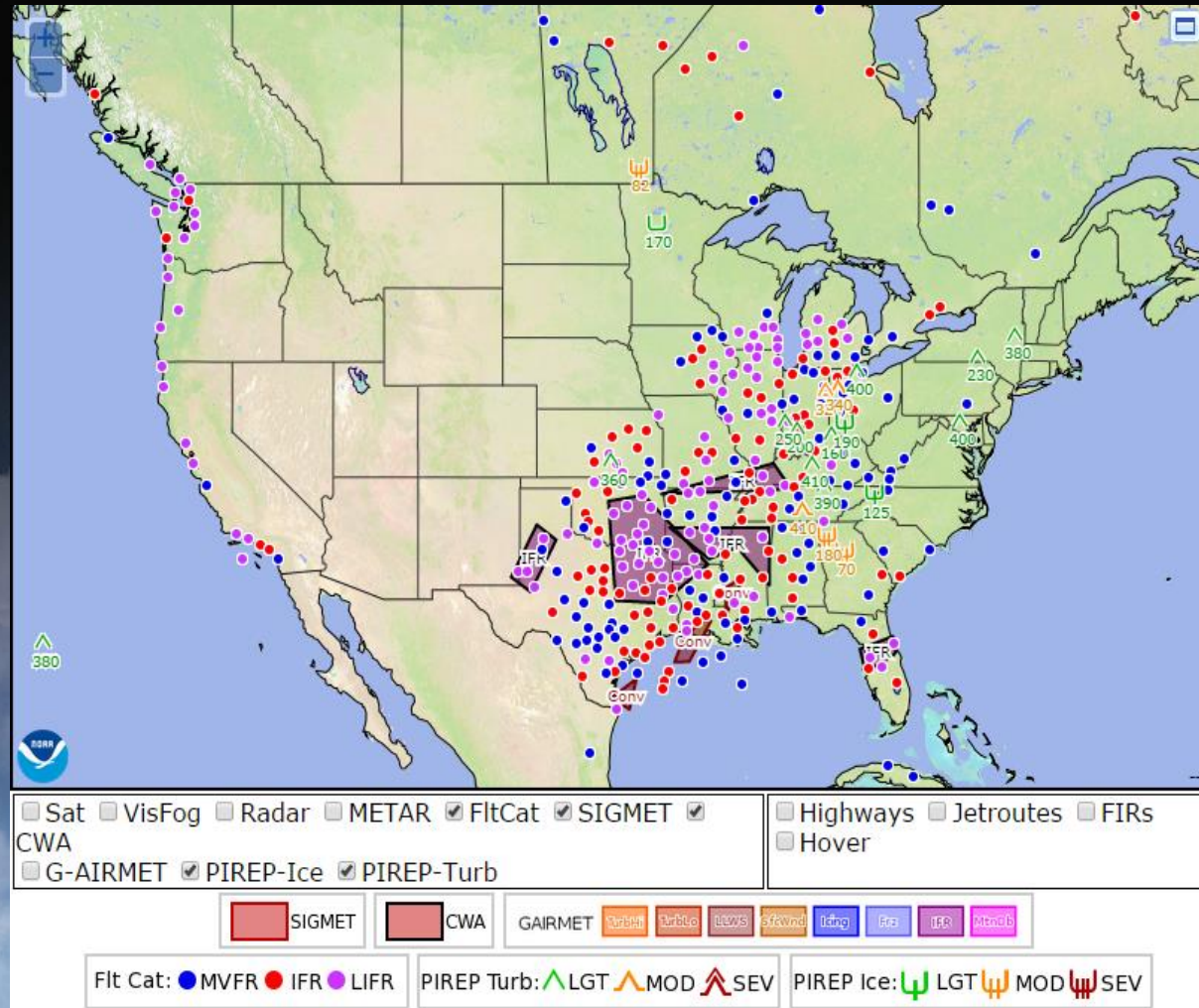
Icing

Turbulence

LLWS

IFR

Can help ease  
lack of confidence



Coveted for verification and forecast amendments



# SIGMET (AWC Products)

- SIGMET advises of weather applying to all aircraft
  - Severe Icing
  - Severe or Extreme Turbulence
  - Dust and/or sand storms lowering vis to less than 3SM
  - Volcanic Ash
  - Affecting an area at least 3000 sq miles, 4-6 hrs out
- Convective SIGMET TS expcd to occur for 30 min or more
  - Area 3000+ sq miles covering 40%+ of that area
  - Line 60+ NM covering 40%+ of that line
  - Regular issuance hourly at +55 min, valid up to 2 hrs
  - Special issuance for sfc winds 50+knots, hail at the sfc  $\frac{3}{4}$ " + in diameter, or tornadoes

# AIRMET (AWC Products)

- Advises of weather applying to all aircraft that does not meet SIGMET criteria
- Affecting an area at least 3000 sq miles, issued for 6 hour periods starting 0245Z with amendments as necessary
- 3 types identified by phonetic letter
  - SIERRA: IFR or Mtn Obscuration. Cig <1000 ft and/or vis <3SM affecting >50% of the area.
  - TANGO: Mod Turbulence or Sfc winds >30 KT
  - ZULU: Moderate Icing or Frzlvs

# MIS and CWA (National CWSU Products)

Meteorological Impact Statement – Routinely issued forecast and briefing product for flow control and flight operations planning

- valid up to 12 hours after issuance time

Center Weather Advisory – An aviation weather warning for conditions approaching SIGMET criteria

- primarily used by air crews to anticipate and avoid adverse weather
- valid for up to two hours



## Center Weather Advisory

CWSU: ZME [Memphis]

Ends: 2015-03-10T16:35:00Z

Hazard: IFR

ZME1 CWA 101435

ZME CWA 103 VALID UNTIL 101635

FROM 25SW PXV-30NW BNA-IGB-MEM-50N MLU-30W RZC-25SW PXV

AREA LIFR CONDS. CIGS AOB 005 AND VIS LCLLY AOB 1SM -RA BR. CONDS

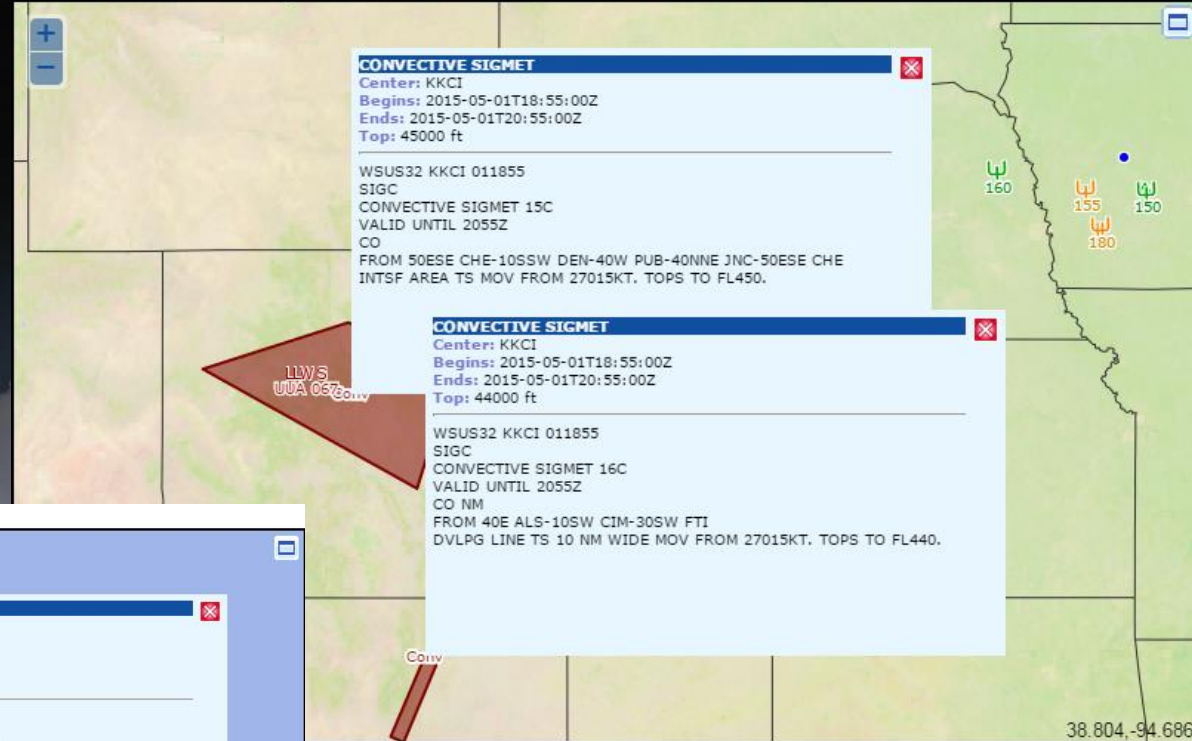
EXPD TO IMPR MANY LOCATIONS BY 1630Z.



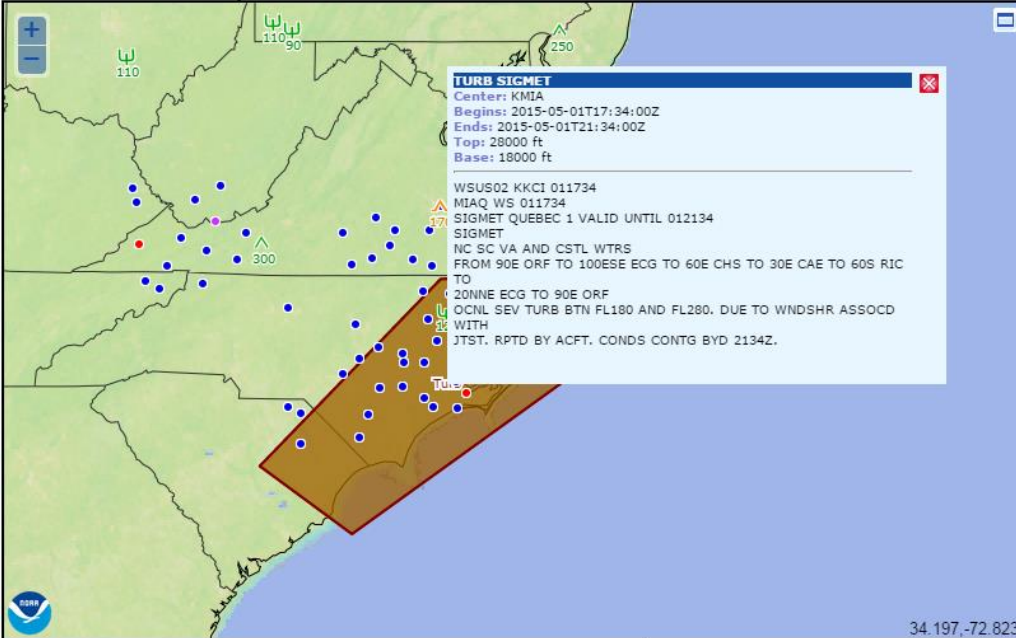
# The AWC and the CWSU

## CWA, SIGMET and AIRMET Coordination

Valid at 1942 UTC 1 May 2015



Valid at 1942 UTC 1 May 2015

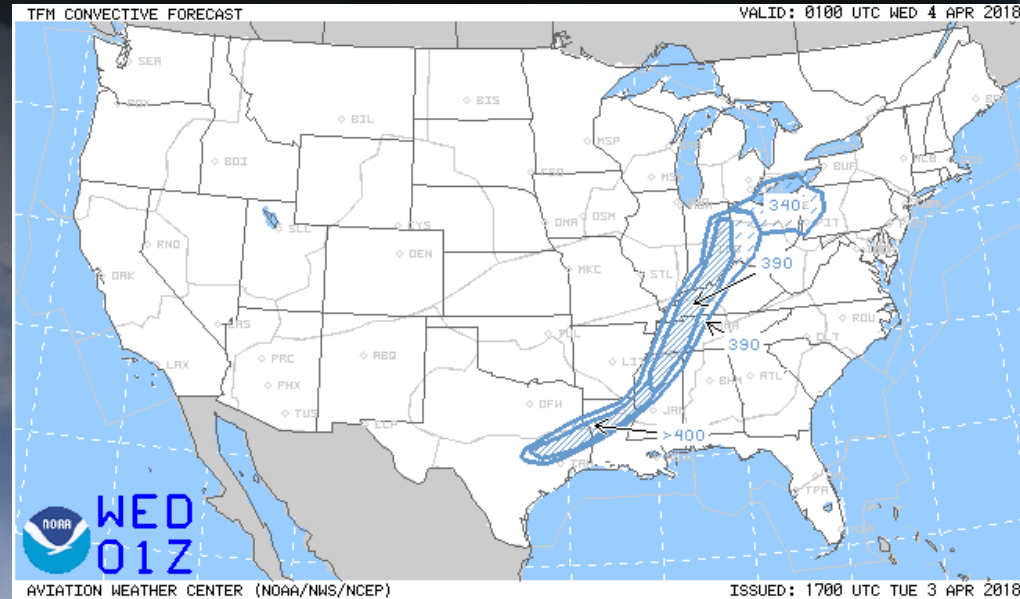
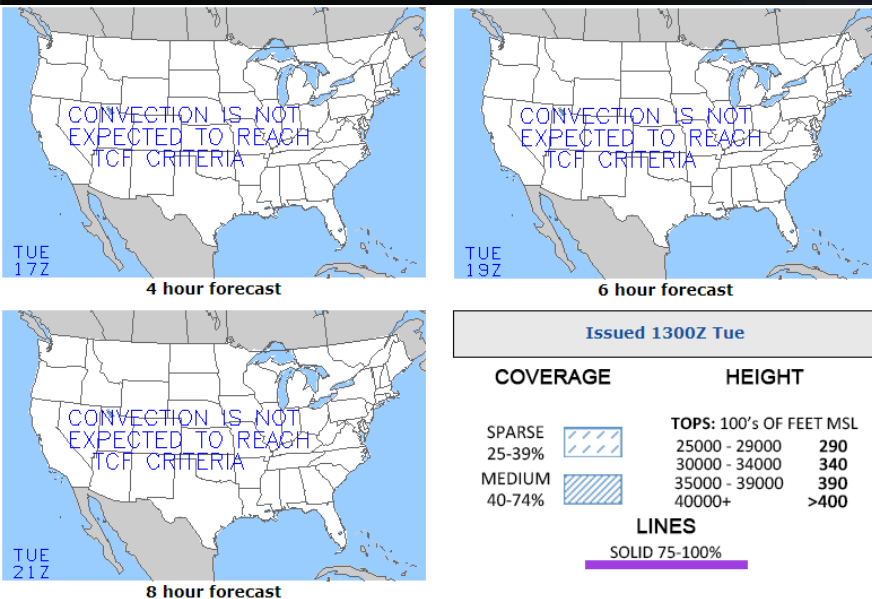


Product  
Consistency

# The AWC and the CWSU

## TFM Convective Forecast (TCF)

[www.aviationweather.gov/tcf](http://www.aviationweather.gov/tcf)



Computer Generated Nov-Feb

Forecaster Coordination Mar-Oct Including MSC

### COVERAGE

### HEIGHT

SPARSE  
25-39%  
MEDIUM  
40-74%

TOPS: 100's OF FEET MSL  
25000 - 29000 290  
30000 - 34000 340  
35000 - 39000 390  
40000+ >400

### LINES

SOLID 75-100%



# WFOs and the CWSU

## TAF Coordination (not just with CLE)

### NWS Cleveland Center Weather Service Unit

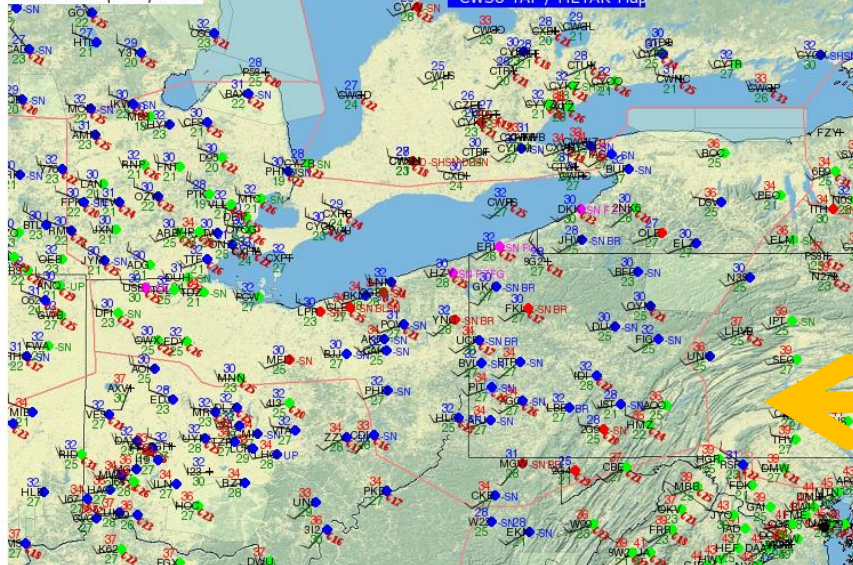
[Weather.gov](#) > Cleveland CWSU

#### Cleveland CWSU

Center Weather Service Unit

[Current Hazards](#) [Current Conditions](#) [Radar](#) [Forecasts](#) [Strategic Planning Aids](#) [Tactical Planning Aids](#) [Additional Info](#)

1453Z Tue Apr 17, 2018



FLIGHT CATEGORY RULES				
SYMBOL	CAT	CIG (ft agl)	Boolean	VIS (miles)
●	UFR	<500	and/or	<1
●	IFR	500 to <1000	and/or	1 to <3
●	MVFR	1000 to 3000	and/or	3 to 5
●	VFR	>3000	and	>5
+	VFR and/or no CIG reported			

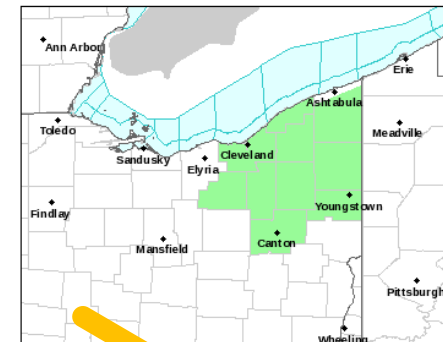
METAR Data Key	
Wind barb	
Temp (F)	Ceiling
Airport ID	Altitude
Dewpt (F)	Weather
VFR/MVFR/IFR/UFR	Gusts

### NWS Forecast Office Cleveland, OH

[Weather.gov](#) > Cleveland, OH

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[www.weather.gov/zob/](http://www.weather.gov/zob/)

[www.weather.gov/cle/](http://www.weather.gov/cle/)



# Summary of CWSU Operations

- 21 CWSUs all co-located within ARTCC facilities
- Includes Cleveland Center (ZOB) airspace, which contains portion of Toronto Centre
- Provide the most up-to-date weather information to FAA customers mainly onsite but some offsite
- Coordination efforts for consistency with surrounding CWSUs, AWC, Command Center, WFOs, and MSC
- Outreach to FAA facilities, and training to controllers

# Questions?

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