

How to Optimize the Use of VCTS in the TAF

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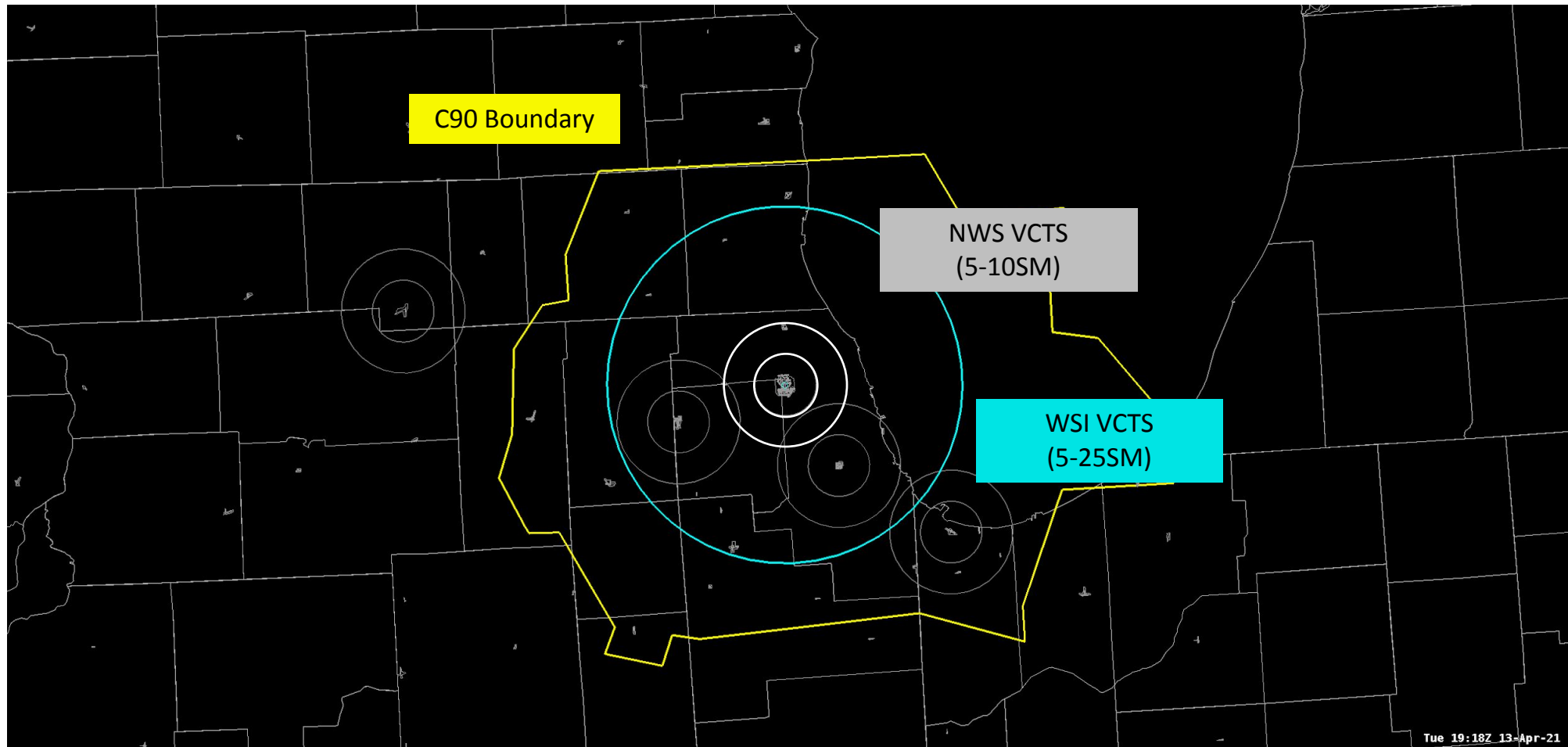
NWS Vicinity Definition

VC is confusing to the FAA. NWS, private forecasting companies, airlines, etc all use it differently. As such, we will follow the directive [NWS Directive 10-813 1.2.6.4](#) which states:

In the United States, vicinity is defined as a donut-shaped area between **5SM and 10SM** from the center of the airport's runway complex. NWS TAFs include prevailing condition forecasts of fog, showers, and thunderstorms* in the airport's vicinity (**GTE 50% probability and expected to occur for more than ½ of the sub-divided forecast time period**) in the significant weather section of the TAF.

For our purposes we're going to consider convection is the same as thunderstorms

VCTS: NWS versus WSI



What does this mean for TAF writing?

- Will convection be 5-10 miles from the airport?
- Do you have $\geq 50\%$ confidence in occurrence?
- A dry TAF does not mean a 0% chance of convection
- Use the aviation AFD or call to help communicate $< 50\%$
- VCTS can also identify high topped convection (work around for CB)

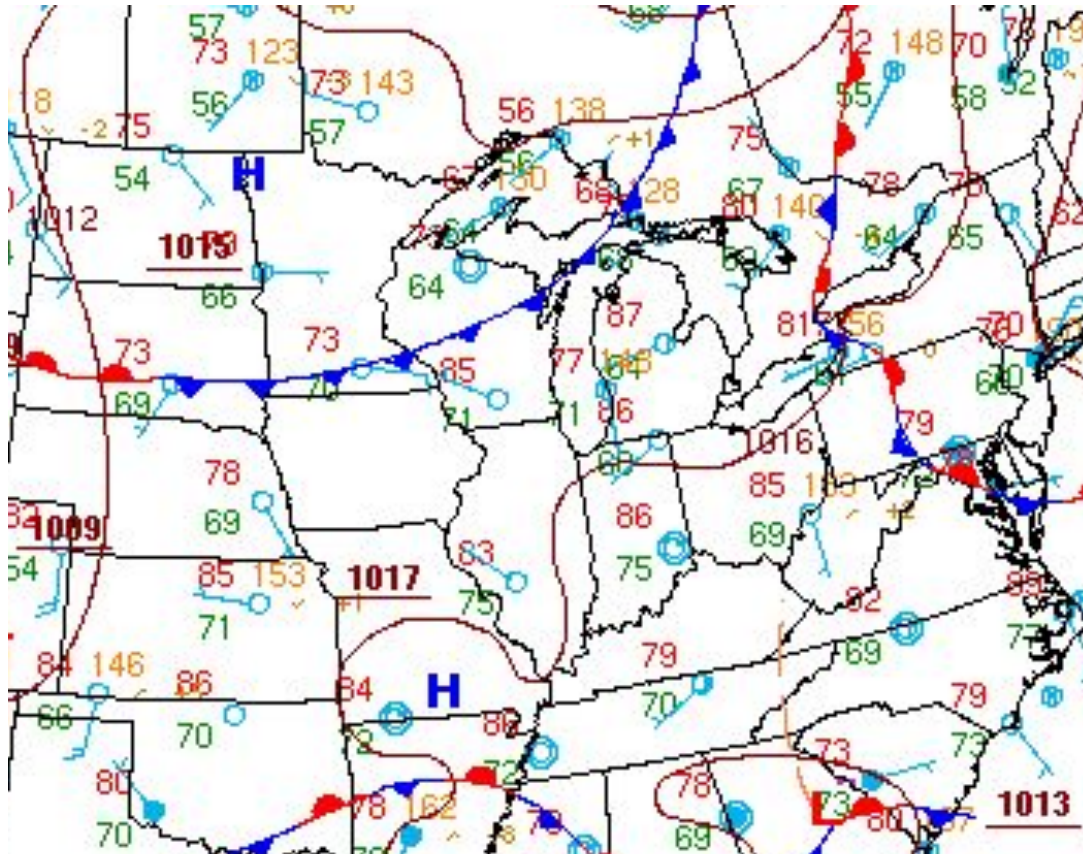
Consider the Environment!

- What do you think?
 - No clear forcing, ample CAPE
 - Clear linear forcing, ample CAPE
 - No clear forcing, limited CAPE
- Don't "pad" TS timing with VCTS
- Timing and confidence will change as the weather develops, and that's okay!

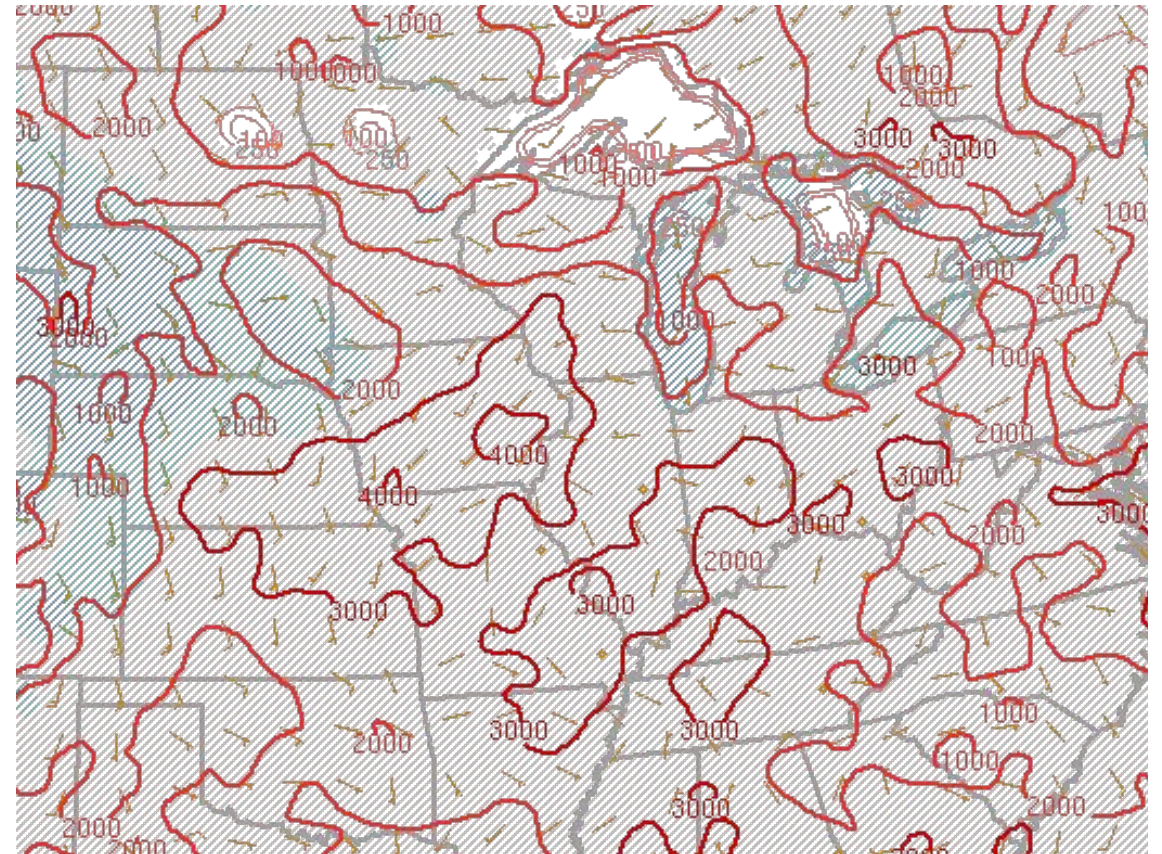
JULY 7, 2020

Good use of VCTS and TAF progression based on confidence

Subtle Forcing, High CAPE



17Z



July 7 00Z-12Z TAF Progression

00Z: PROB30 0718/0722 VRB15G30KT 4SM -TSRA BKN030CB

06Z: PROB30 0719/0722 VRB15G30KT 4SM TSRA BKN050CB

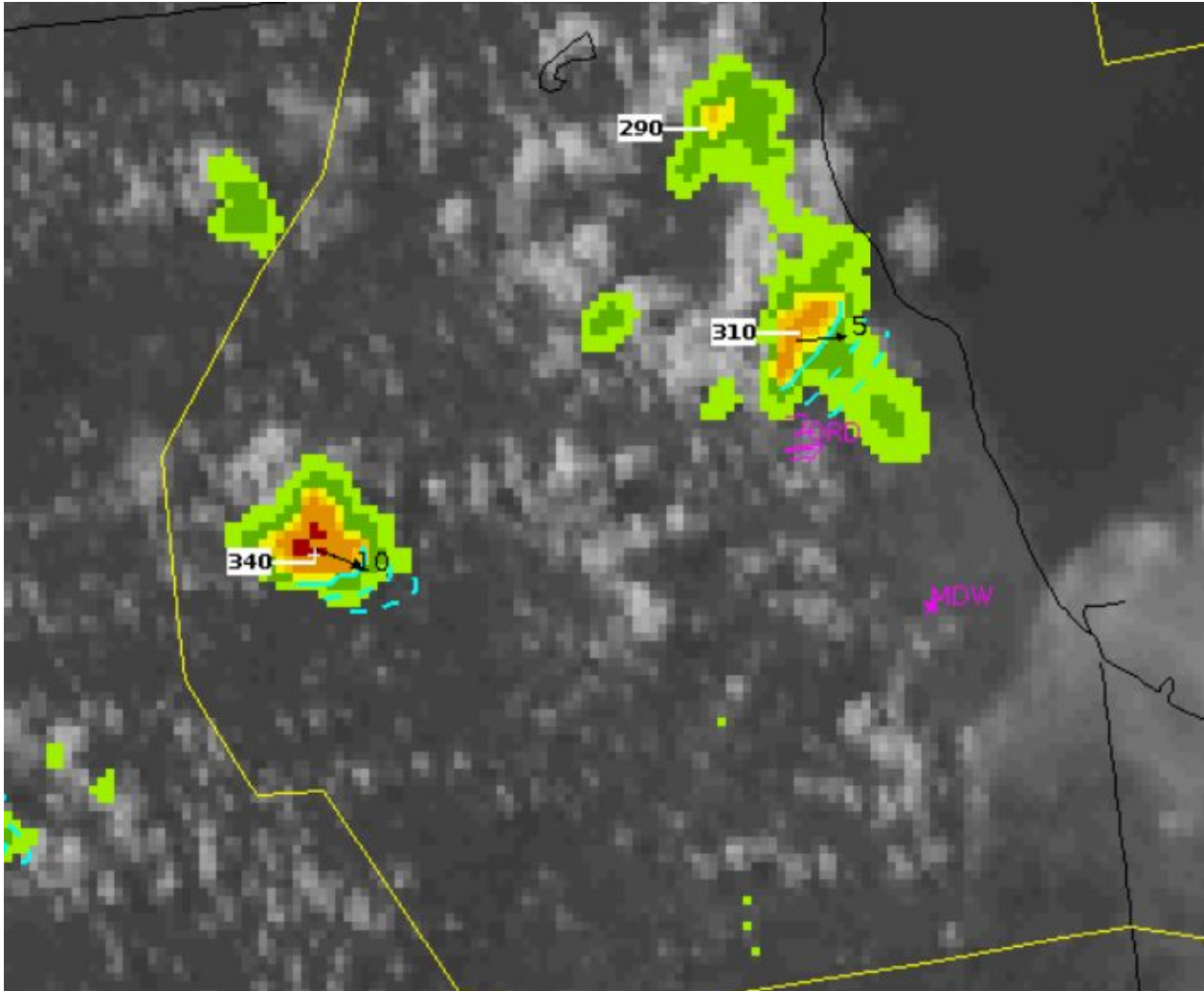
PROB30 0722/0724 VRB15G30KT 4SM TSRA BKN050CB

12Z: FM072000 07008KT P6SM VCTS SCT060CB

July 7 12Z AFD

SHRA/TSRA could develop during the early afternoon near the lake breeze, as early as 19z, and probably later in the afternoon farther inland, including DPA and RFD. Opted for VCTS mention for ORD, MDW, and GYY and maintained PROB30s for DPA and RFD for now. Variable and briefly gusty winds are a decent bet if storms occur close by even if a TS doesn't directly impact the terminal area.

July 7 21Z

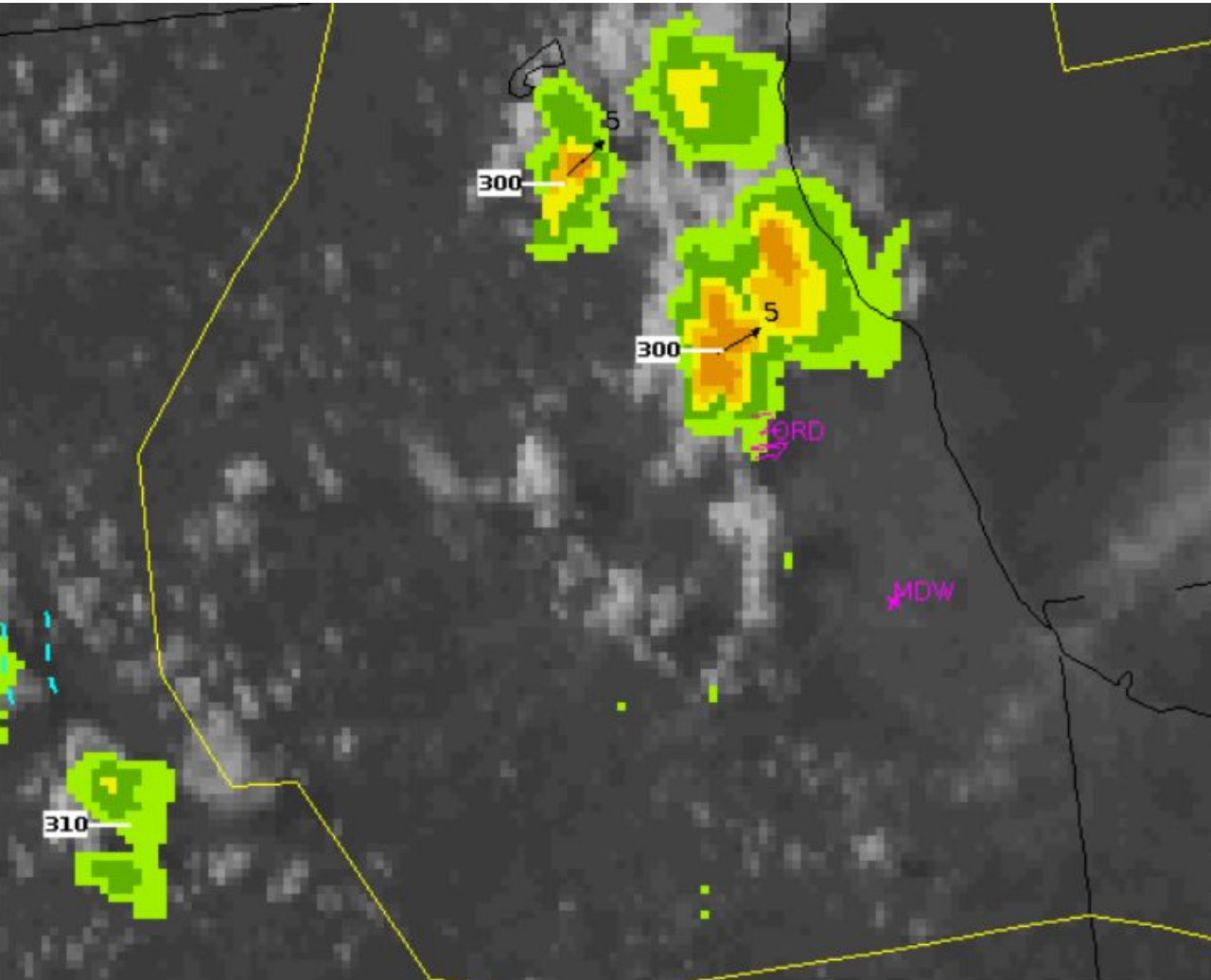


KORD 072101Z 0721/0824 10011KT P6SM **VCTS**
SCT060CB

FM072300 VRB05KT P6SM FEW050 SCT250

FM081900 08008KT P6SM SCT050=

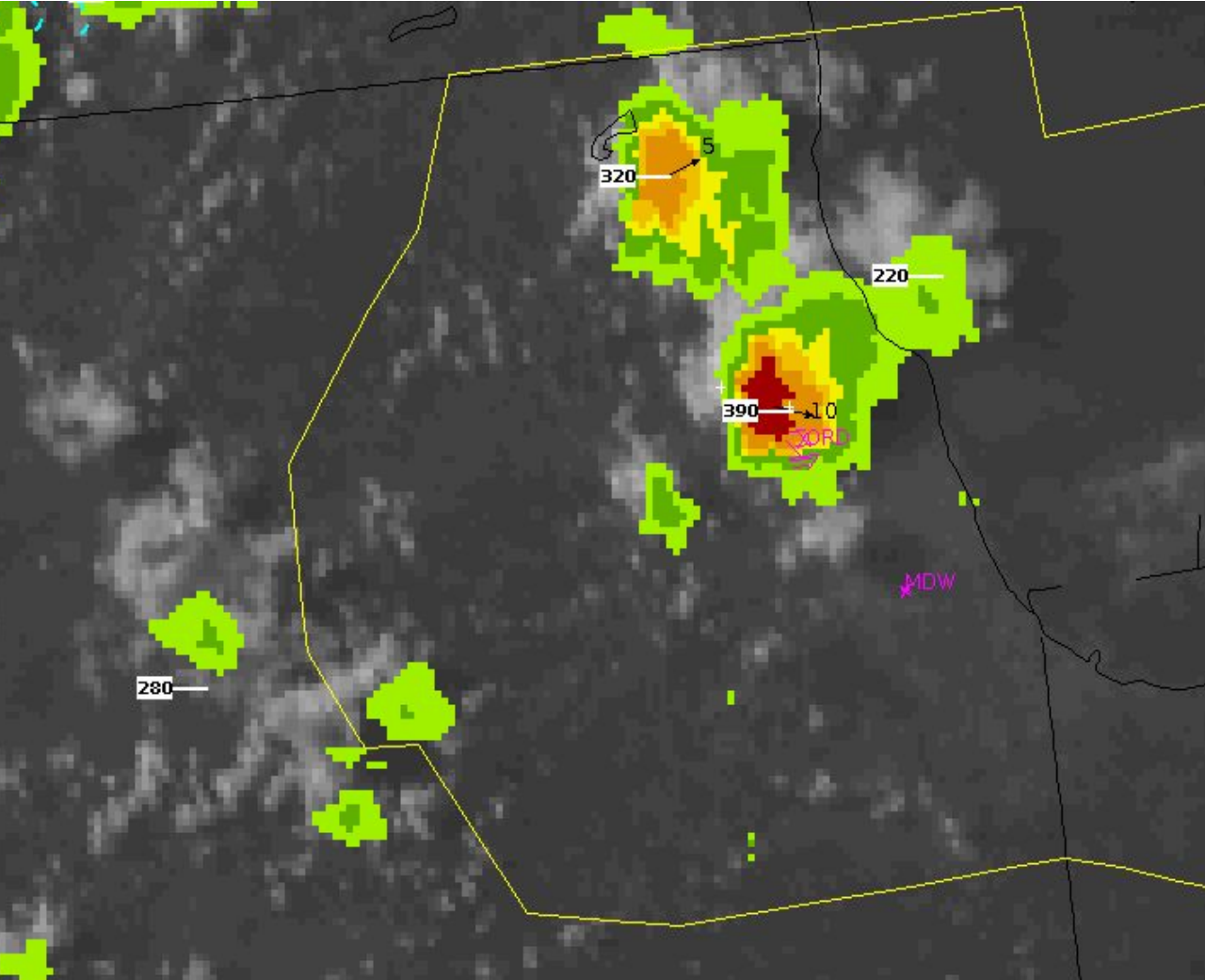
July 7 22Z



KORD 072248Z 0723/0824 10011KT P6SM VCTS
SCT060CB

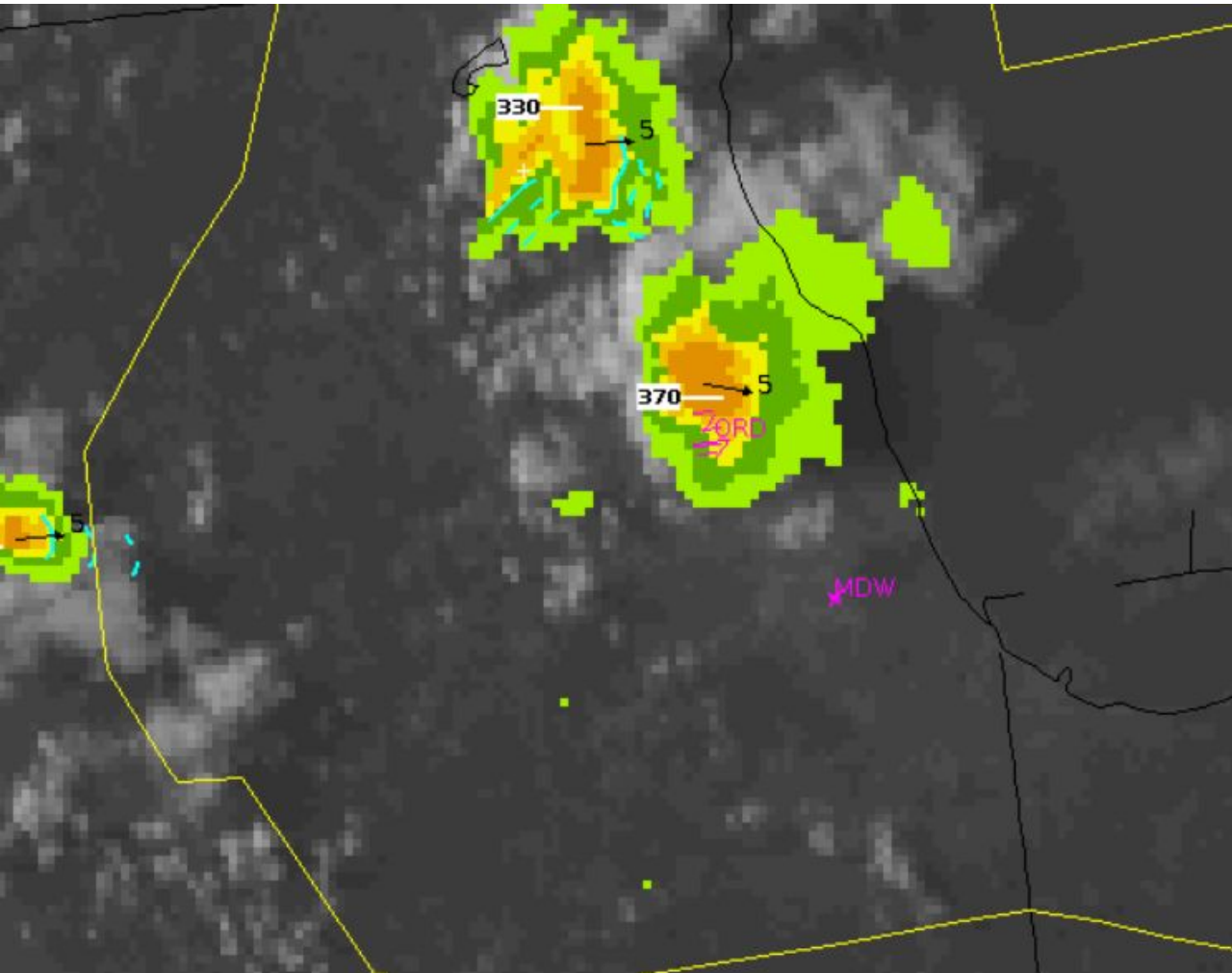
TEMPO 0723/0724 36010G20KT 4SM -TSRA

July 7 2236Z



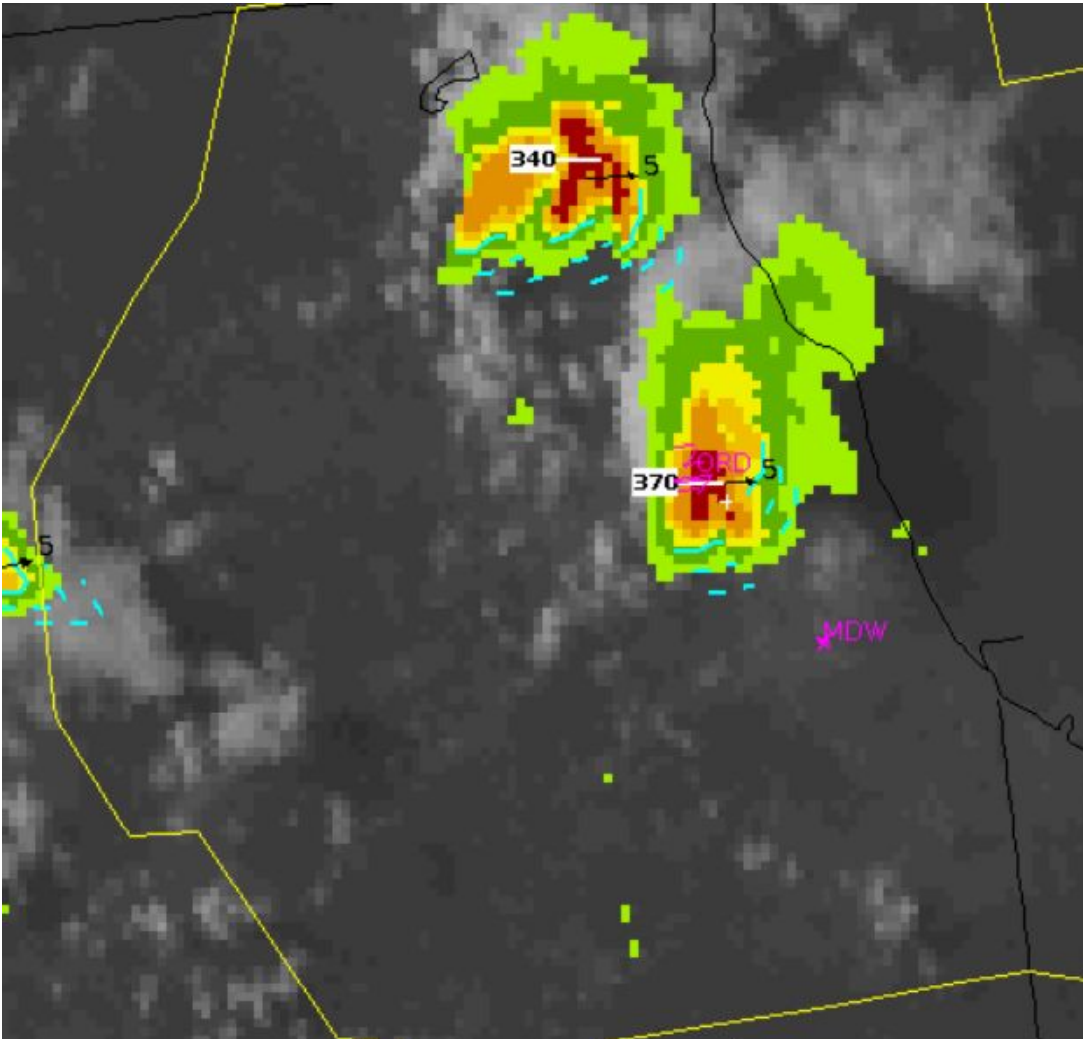
First brief mention of TS at ORD
2236Z-2240Z

July 7 2251Z



Outflow moves through ORD
01013G22KT

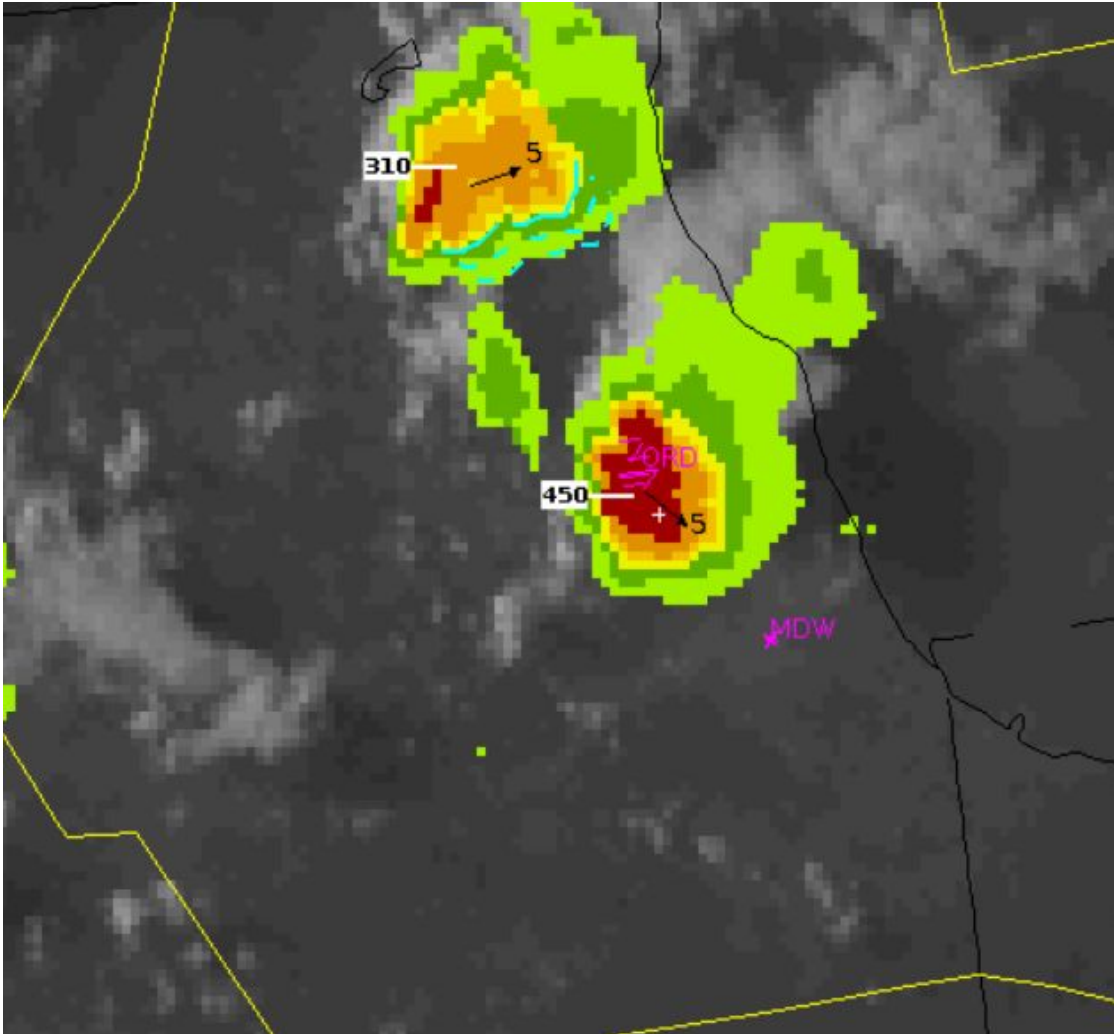
July 7 2300Z



Storm forms right over ORD on outflow within 10 minutes. Planes still landing

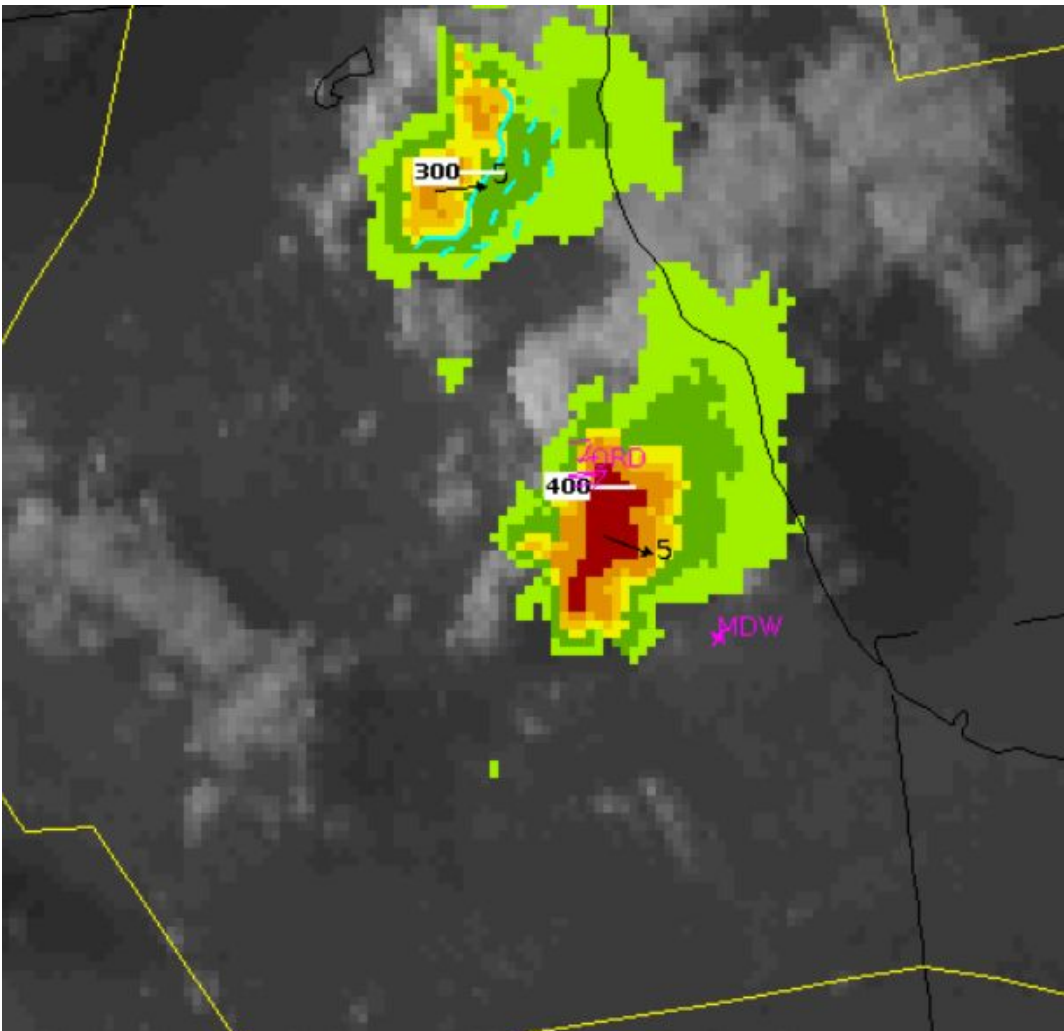
KORD 072302Z 02018G23KT 10SM
-TSRA

July 7 2315Z



KORD 072315Z 06035G52KT 2
1/2SM R10L/1400VP6000FT +TSRA

July 8 00Z TAFs



KORD 072336Z 0800/0906 04010KT P6SM **VCTS**
FEW050CB SCT250

FM080200 35010KT P6SM FEW050 SCT250

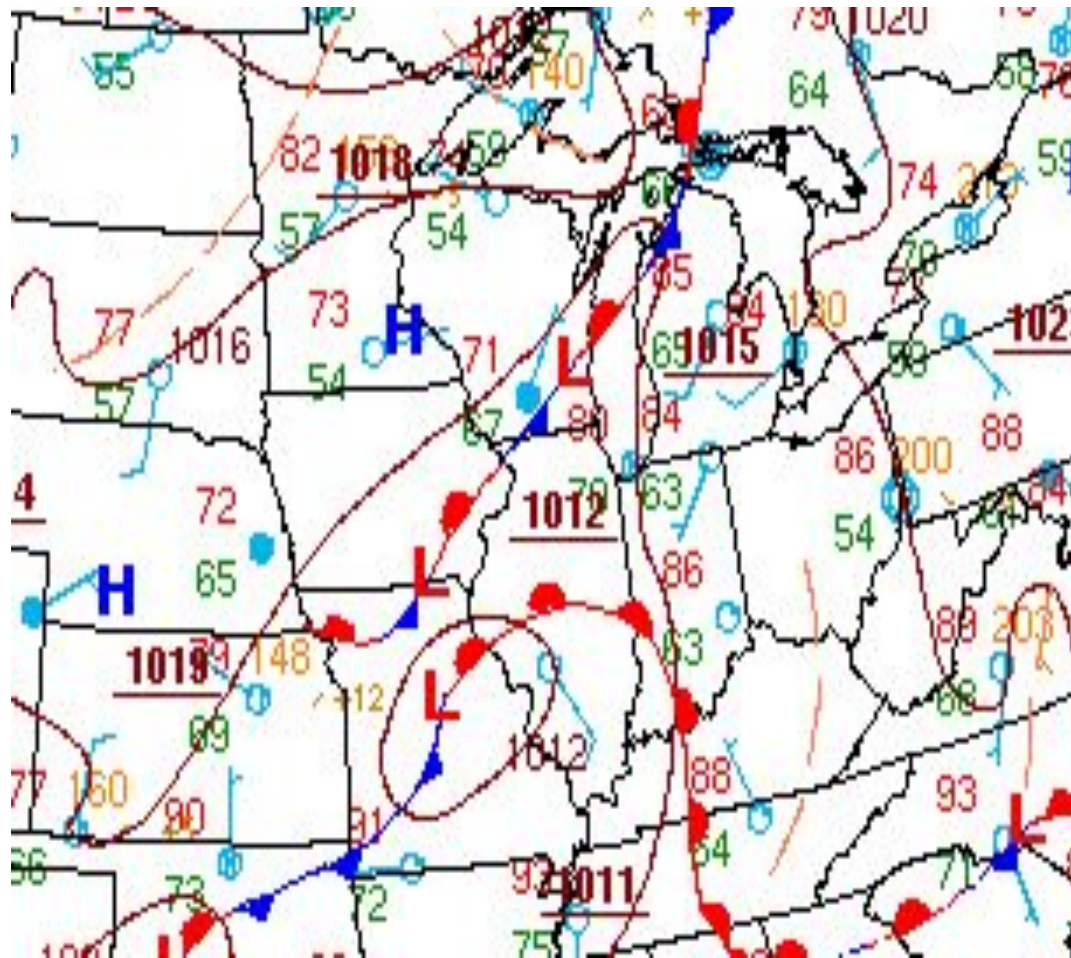
Recap

- Expected scattered storms with more possible along the lake breeze, but not a solid line
- TAFs and communication reflected confidence and coverage throughout the event
- As storms evolved and threat was evident, amended to add a TEMPO with gusty winds
- FAA understood threats, but storm forming over ORD caused unexpected holding

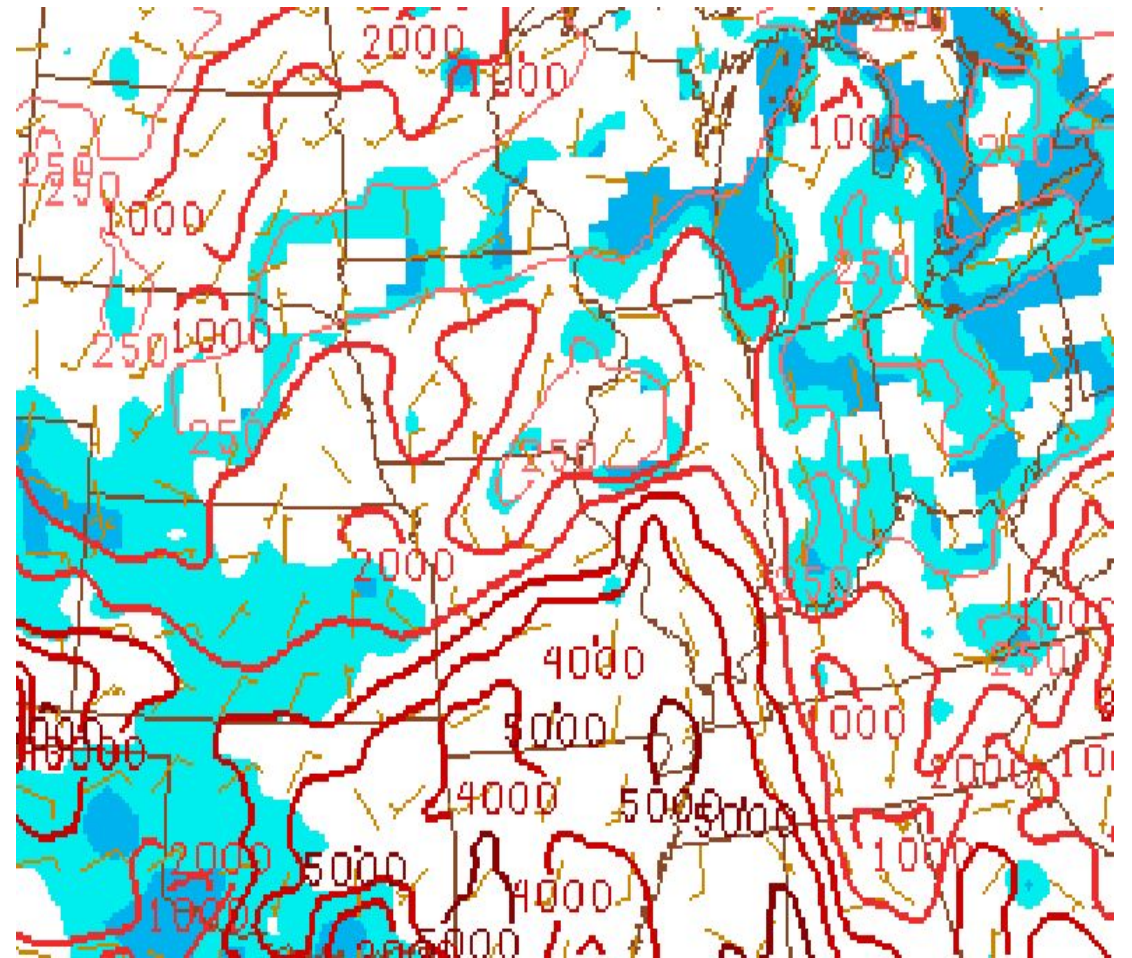
JULY 15, 2020

No TS reported, but convective tops impacted ops

Ample Forcing, Relatively Low CAPE



21z



July 15 00Z-21Z TAF Progression

00Z: PROB30 1600/1604 1 1/2SM +TSRA BKN015CB OVC020

12Z: FM152100 16010KT P6SM -SHRA VCTS BKN050CB

FM152300 03010KT 4SM SHRA VCTS SCT015CB OVC025

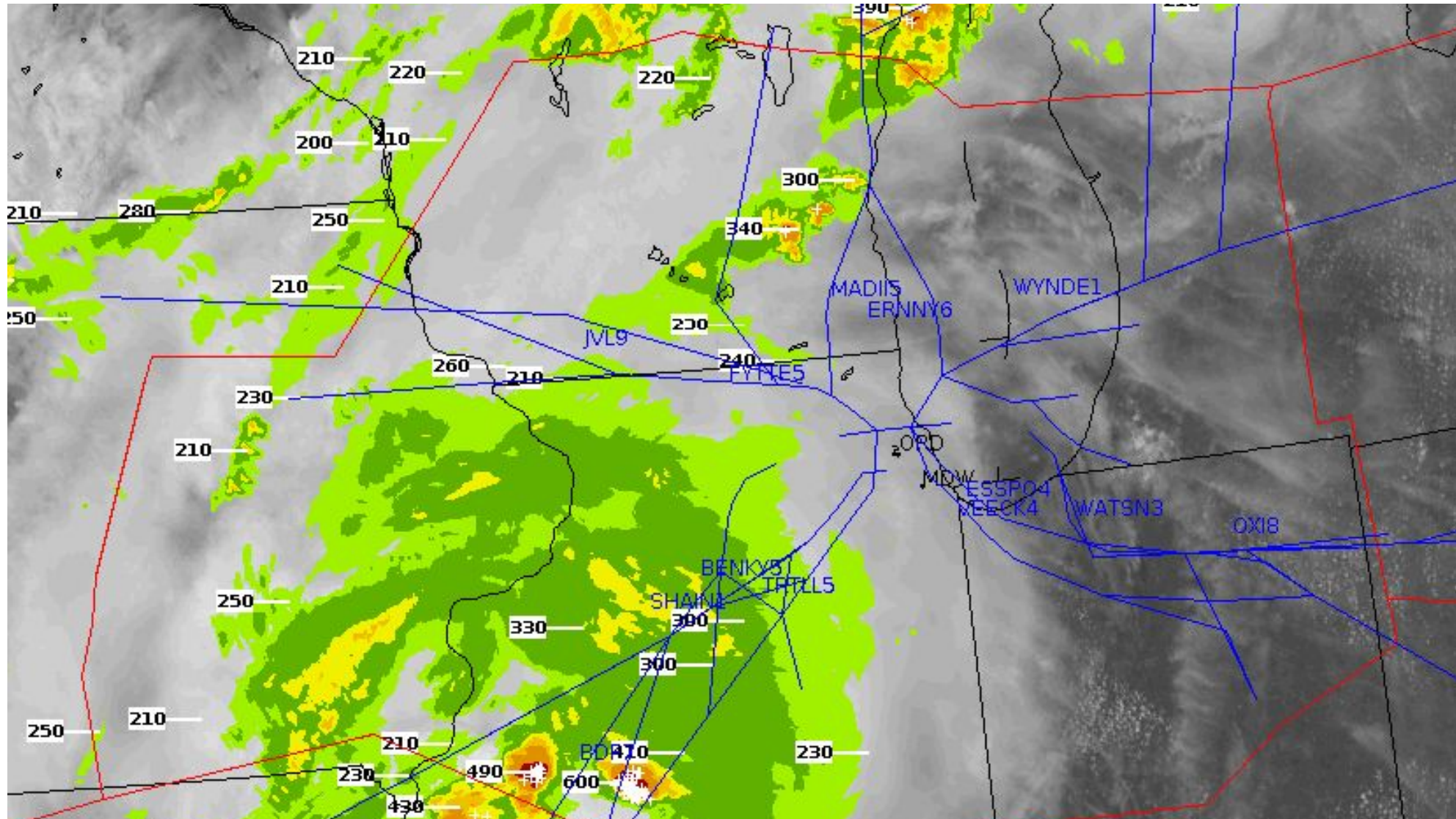
TEMPO 1600/1603 2SM TSRA BKN015CB OVC020

21Z: 152103Z 1521/1624 18009KT 6SM -RA VCTS BKN040CB

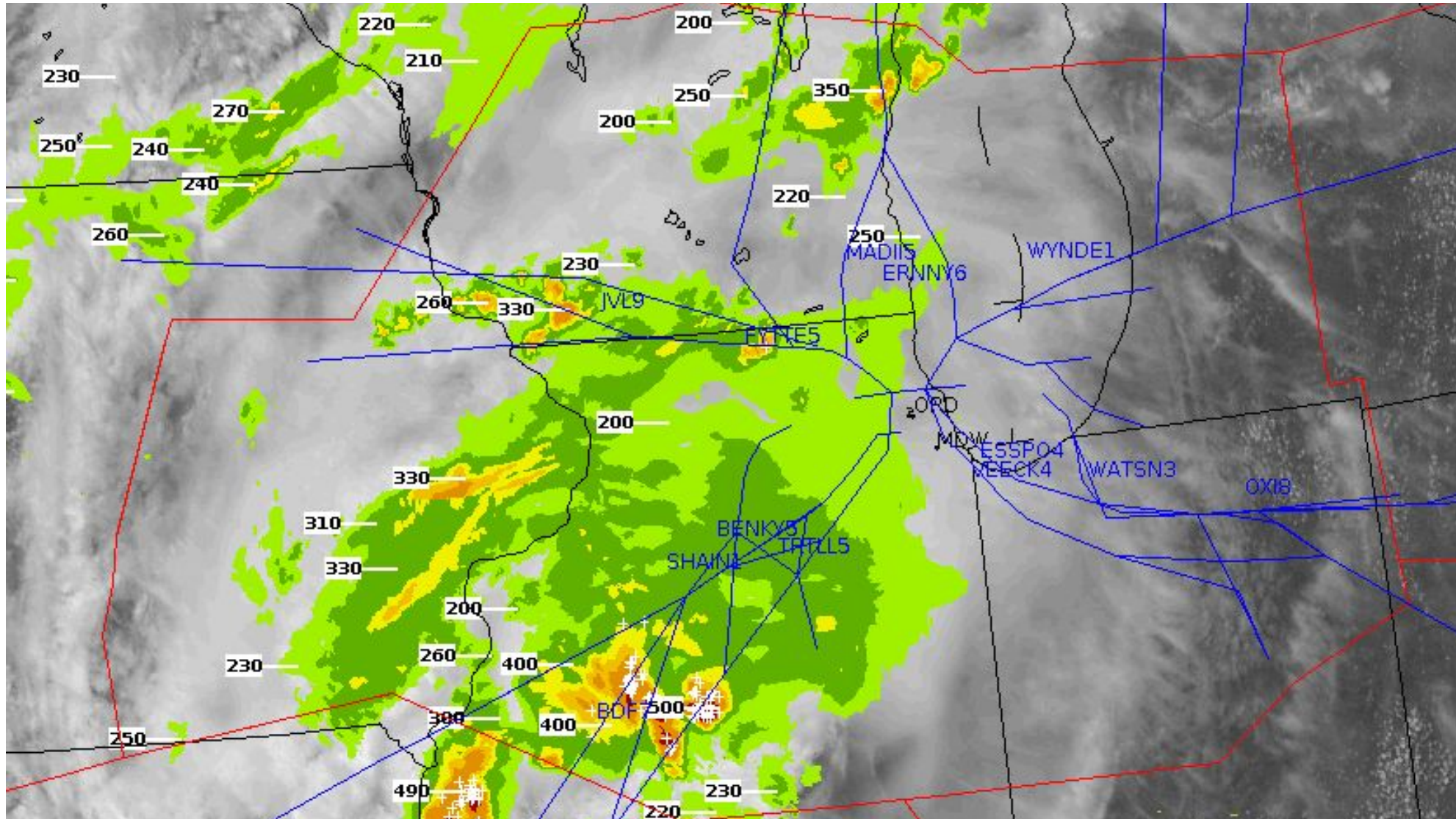
FM160000 03010KT 4SM SHRA VCTS SCT025CB OVC040

TEMPO 1600/1603 2SM TSRA OVC020CB

18Z radar (ORD Arrival routes in blue)



19Z radar (ORD Arrival routes in blue)



ZAU Operational Concerns

- TMU needed to communicate an arrival and departure plan through the convection by 20Z. TAF and TCF helped communicate convective impacts.
- Reminder: TCF reflects convective tops, not lightning

19Z



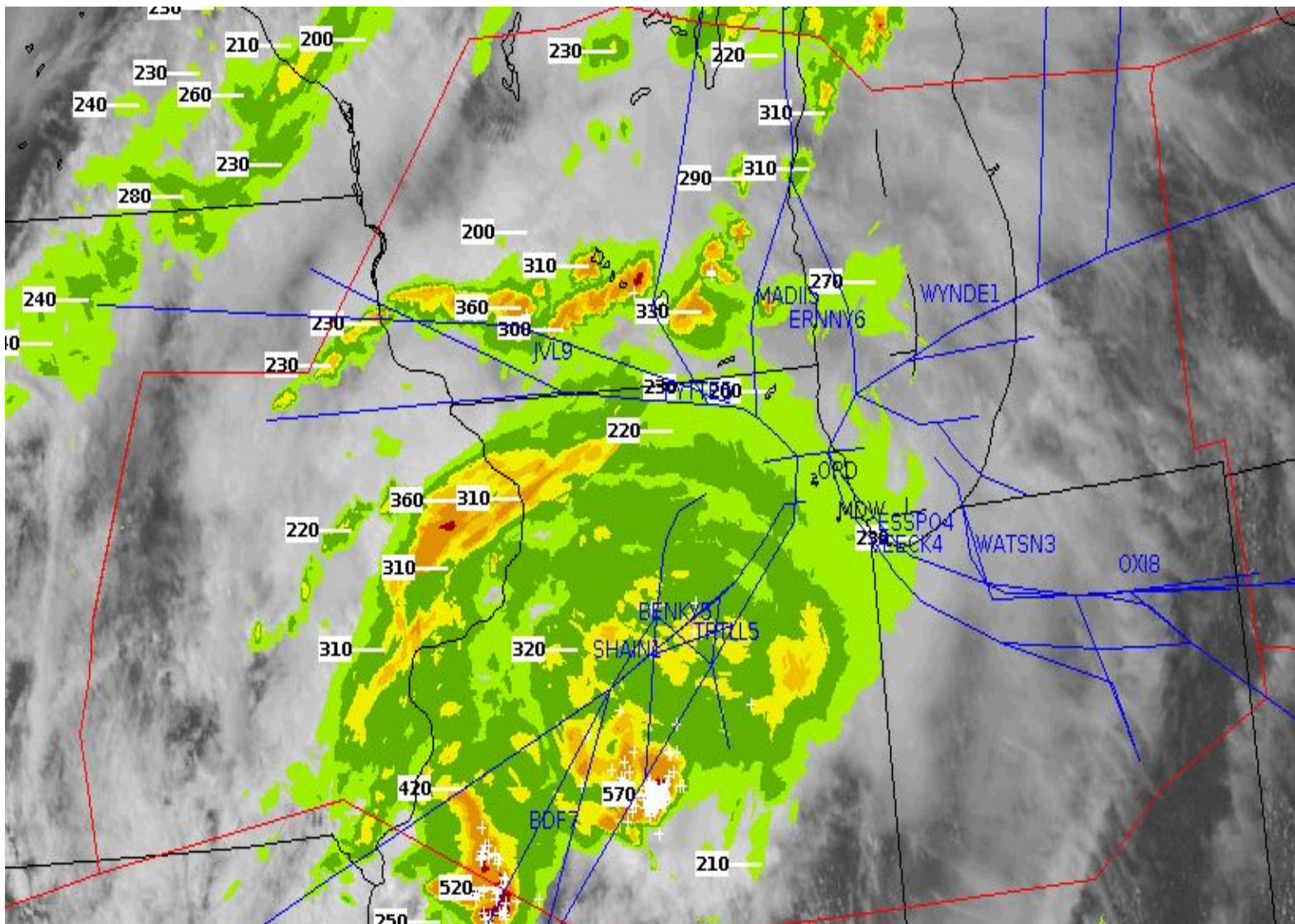
21Z



23Z



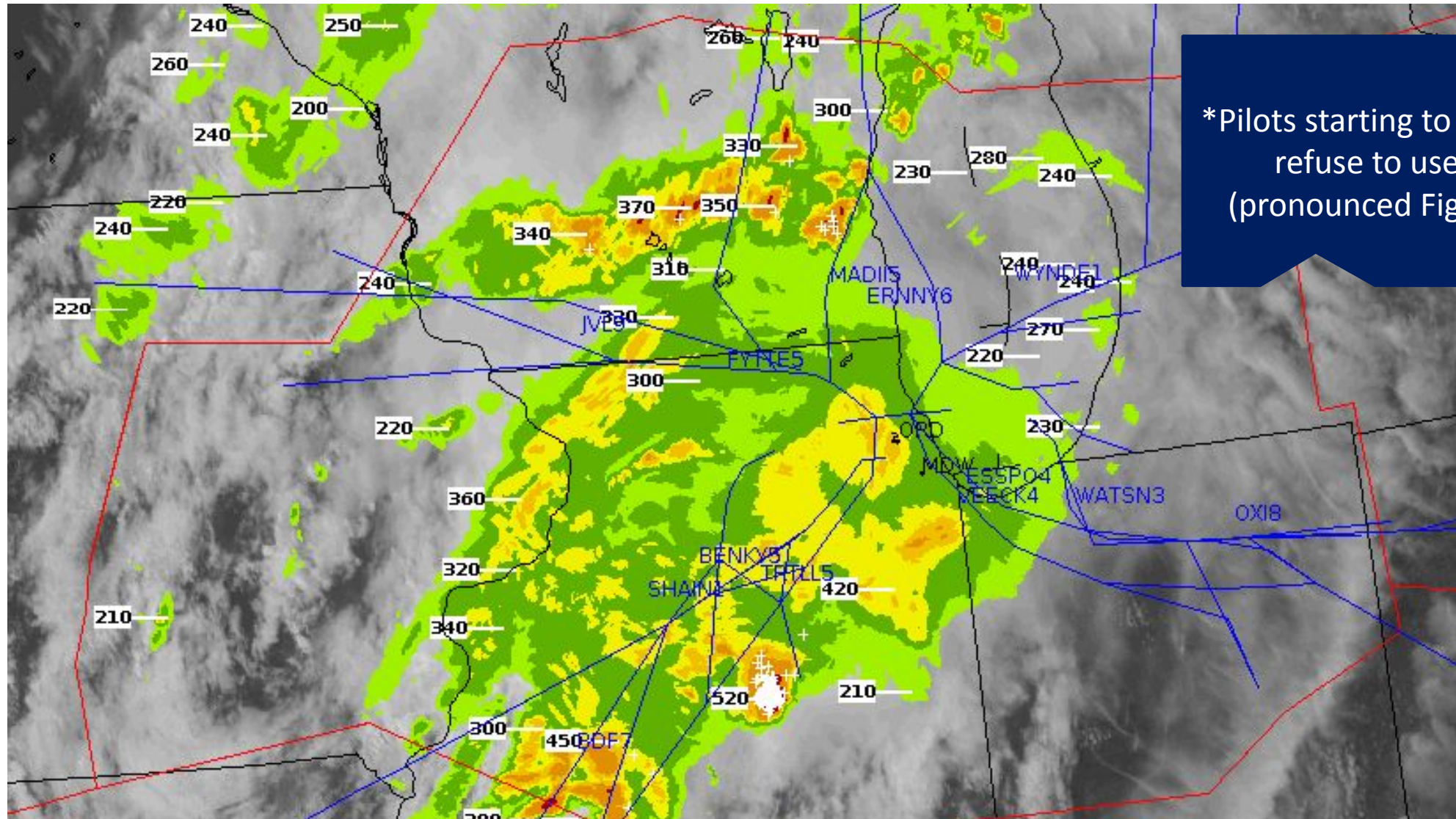
20Z radar (ORD Arrival routes in blue)



KORD 152103Z 1521/1624
18009KT 6SM -RA VCTS
BKN040CB

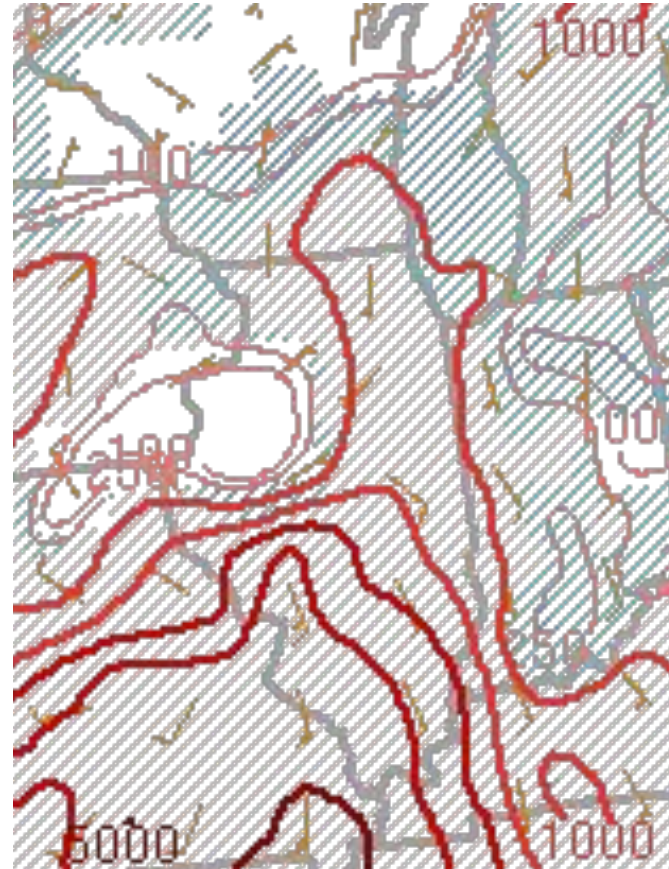
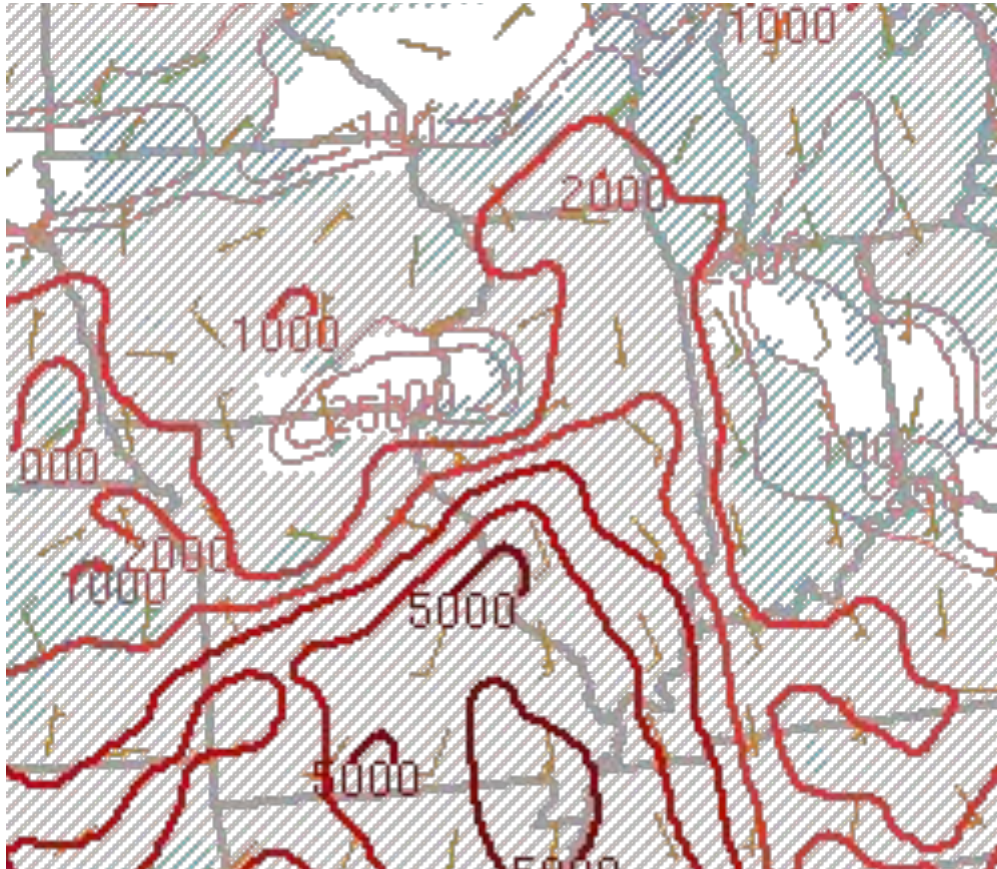
TCF influence
Still lacking confidence
in if TS will be reported
at ORD
Cloud tops are FL300+
Reflectivity is
increasing
Decent CAPE remained
over central Illinois

21Z radar (ORD Arrival routes in blue)

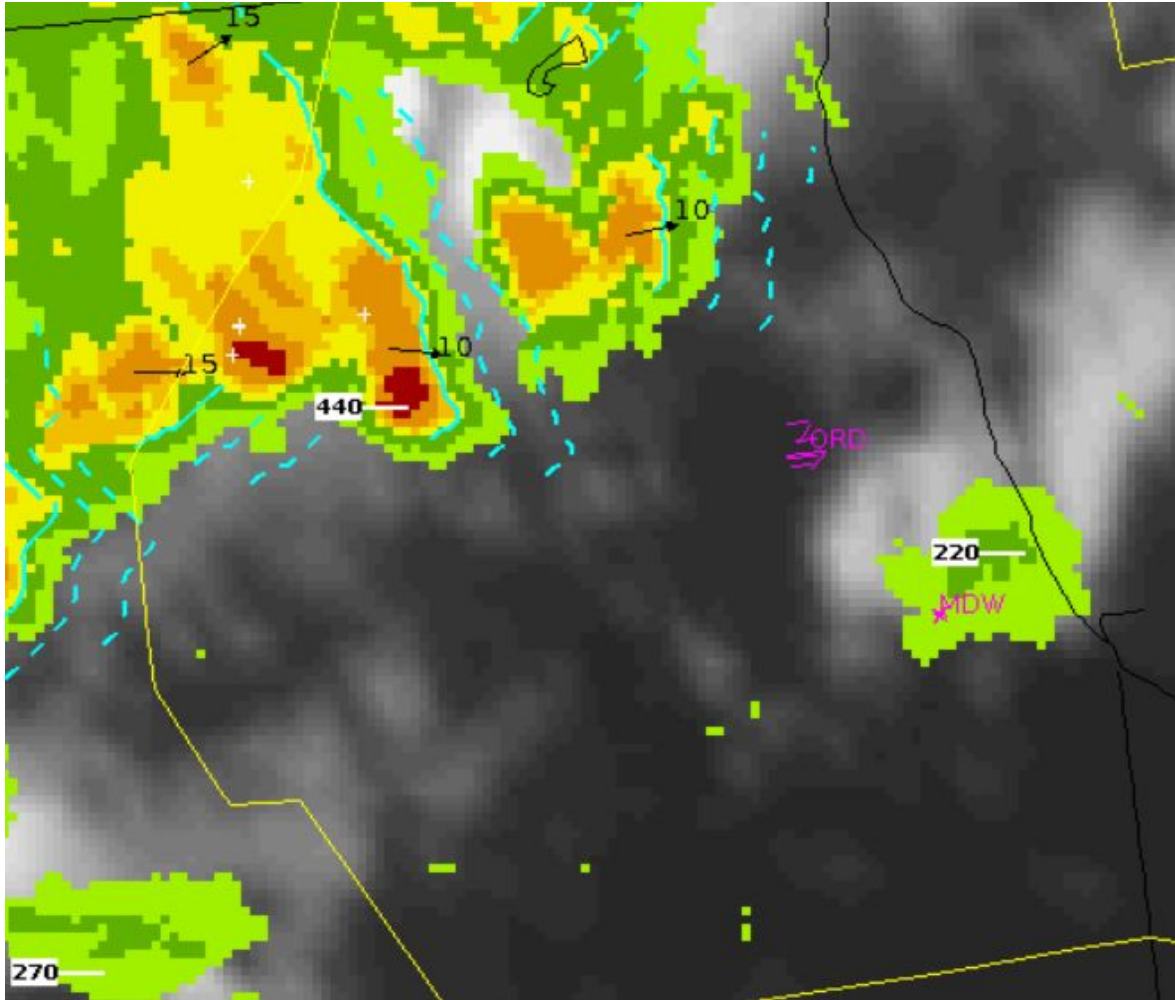


*Pilots starting to deviate and refuse to use FYTTE (pronounced Fight) arrival

20z and 21z CAPE



00Z TAFs



KORD 152330Z 1600/1706
05009KT 6SM -RA **VCTS**
SCT025CB OVC040

TEMPO 1600/1603 3SM
RA OVC020

Results - ORD METARS

- KORD 152051Z 19009KT 10SM -RA FEW040 FEW070 BKN120 OVC150
- KORD 152151Z 21004KT 7SM -RA SCT060 BKN110 OVC150 26/23
- KORD 152251Z 14006KT 8SM -RA FEW050 OVC110 25/22
- KORD 152351Z 30003KT 9SM -RA FEW020 OVC095 24/20
- No TS or VCTS was reported at ORD

Recap

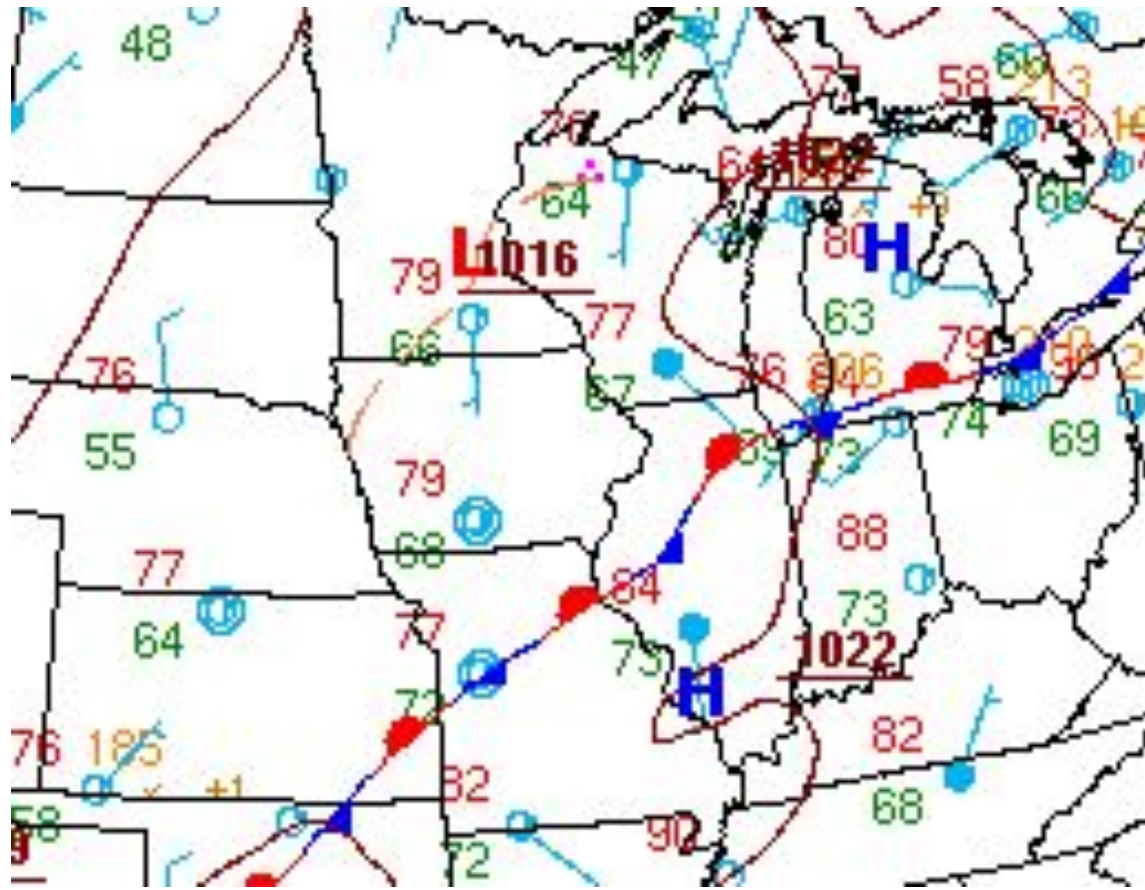
- Used conditions, trends, and ZAU ops to influence TAF decisions
- No delays, holding, or extra spacing between planes needed because we communicated the hazards using VCTS
- VCTS and TEMPO TS was used well in this case

JUNE 28, 2021

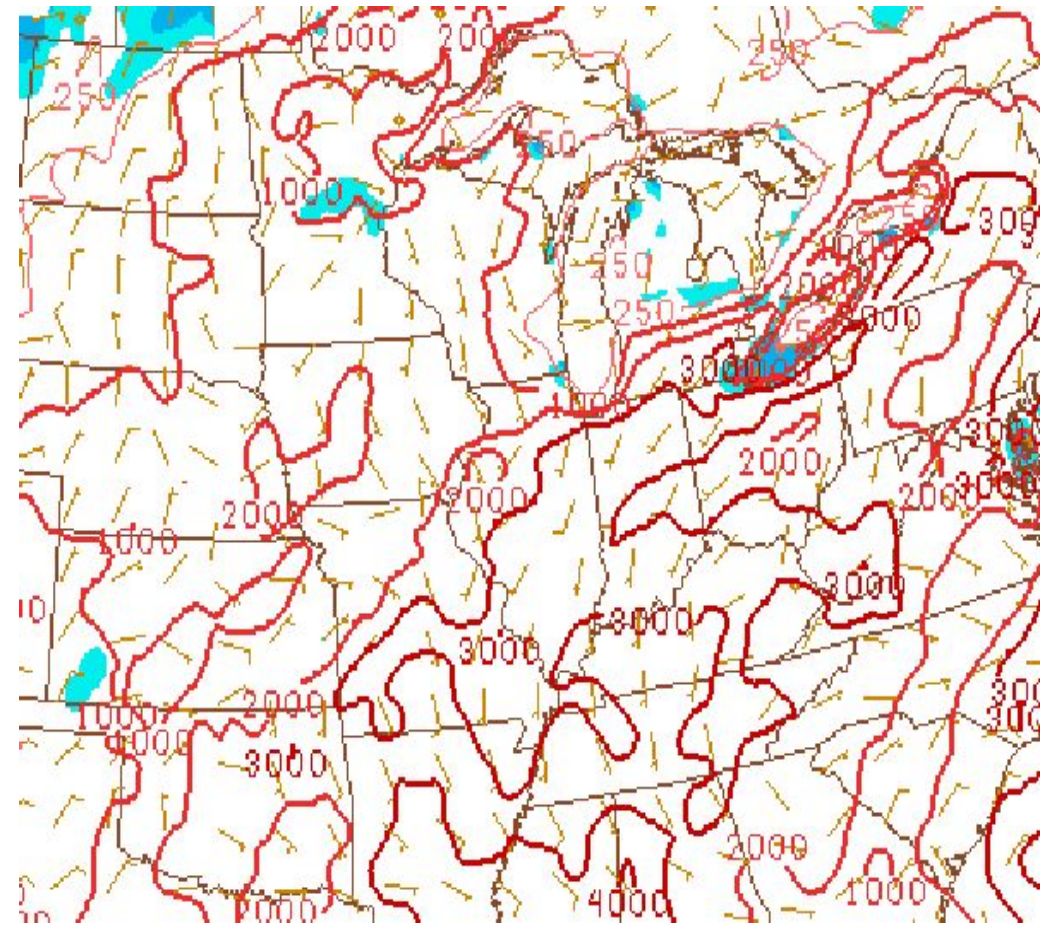
Extended period of VCTS for frequent forecasted rounds of TS



Ample Forcing & Decent CAPE



18z



June 28, 2021 12z ORD TAF

KORD 281120Z 2812/2918 09005KT P6SM VCSH SCT008 OVC012

FM281500 10007KT 6SM -SHRA BKN020

TEMPO 2815/2818 3SM SHRA BKN015

FM281800 15008KT P6SM VCTS BKN030CB

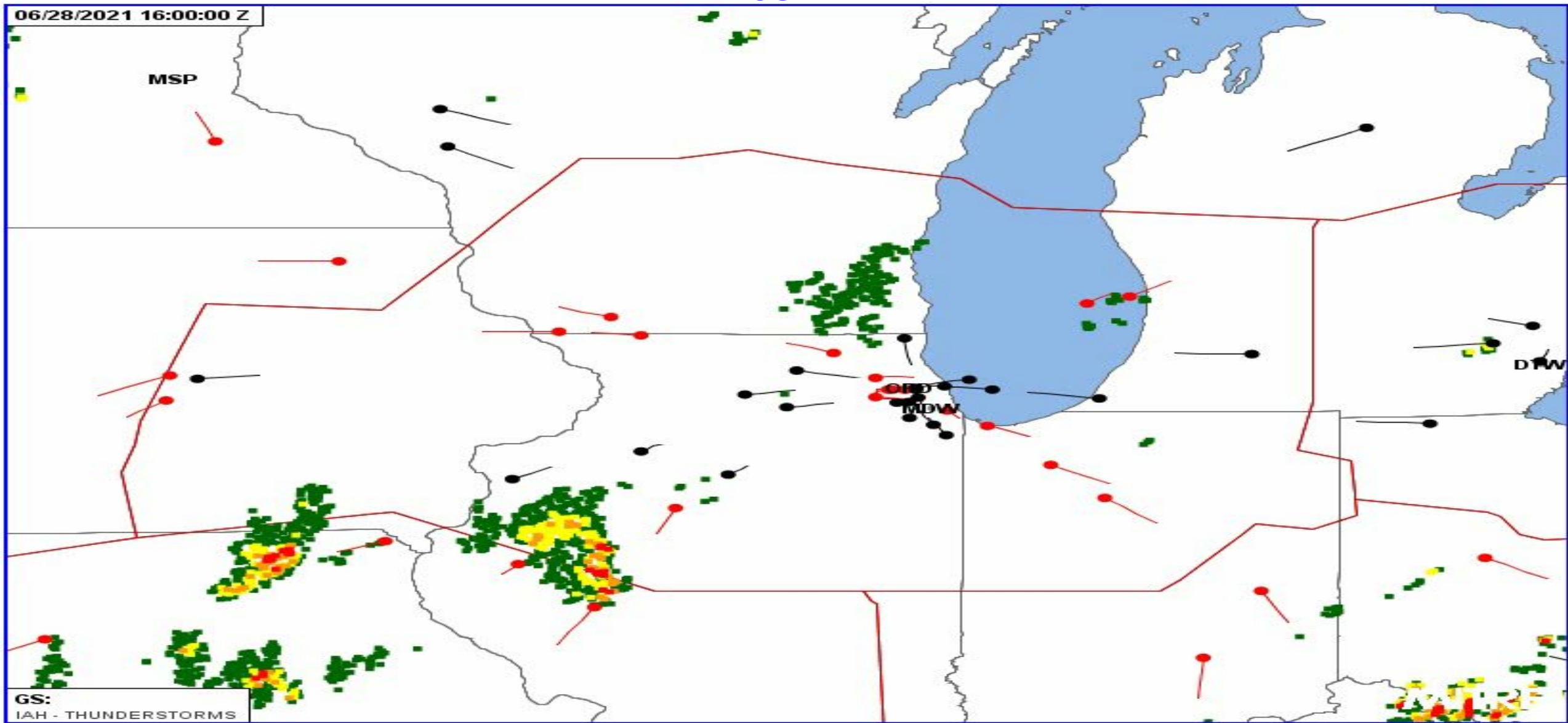
TEMPO 2819/2823 2SM TSRA BKN020CB

FM290100 17005KT P6SM SCT025 BKN070

June 28, 2021 12Z AFD

- While some weak instability will build in aloft and could result in isolated TSRA later this morning, the **greatest TSRA potential will likely be associated with diurnal warming** and thus focused from mid-day through this afternoon.

03z



KORD Observations

KORD 281751Z 02003KT 10SM BKN027 OVC034 25/21 A3013 RMK AO2
SLP199 T02500206 10250 20194 50001

KORD 281829Z 00000KT 10SM FEW027 BKN033 BKN080 BKN250 27/21
A3011 RMK AO2 **CB DSNT SW** T02670211

KORD 281851Z 32003KT 10SM **SCT038CB** SCT100 BKN250 28/22 A3011
RMK AO2 **LTG DSNT SW** SLP192 **CB SE-S MOV NE CB DSNT S-SW**

KORD 28**1938Z** 35003KT 10SM **VCTS** -RA FEW024 SCT060 BKN110 OVC250
25/22 A3011 RMK AO2 LTG DSNT S-W RAB19 P0000 T02500217



Recap

TAF reflected ample CAPE and lingering forcing, but VCTS started a little early and lasted too long

Ground delay program implemented for ORD at 2025z

A lull in the convective activity at ORD from 22z-24z

Summary

- Consistency is key
- Consider forcing and confidence
- A dry TAF does not mean 0% of storms
- Communication is your friend
- Amend the TAF as confidence changes

ACKNOWLEDGEMENTS

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QUESTIONS?

