

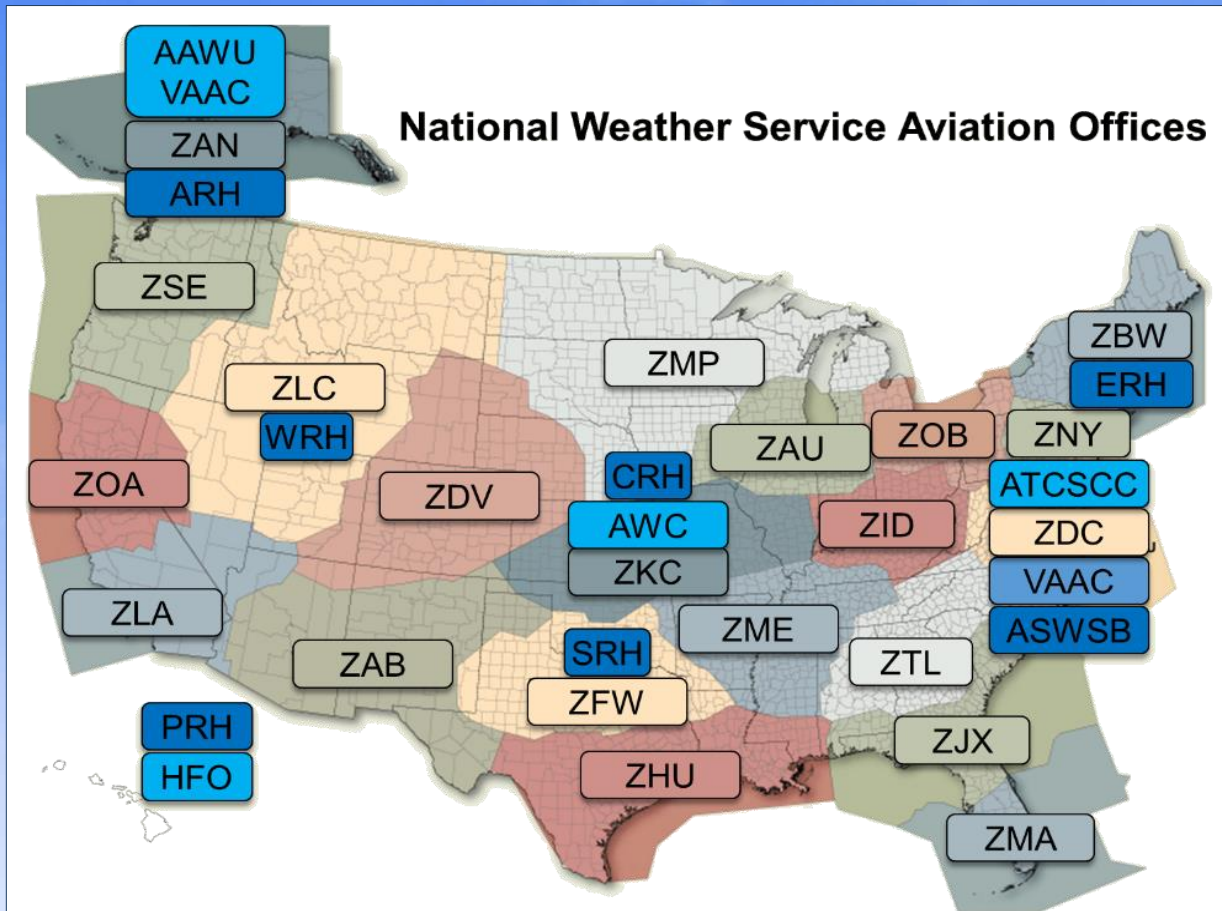


Impact-Based Decision Support Services for the National Airspace System:

A Case Study of Two High-Impact Thunderstorm Events on Traffic Flow Management

Kyle Struckmann, Michael Eckert, David Bieger
NWS/NCEP/AWC – National Aviation Meteorologist

NWS Support to FAA



- NWS Meteorologists provide Impact-Based Decision Support Services (IDSS) at the FAA Command Center (ATCSCC) as well as the 21 Air Route Traffic Control Centers (ARTCCs)
- NWS meteorologists at the ATCSCC are called National Aviation Meteorologists (NAM)



NAM Support at the Command Center

Top 30 Airport Terminals

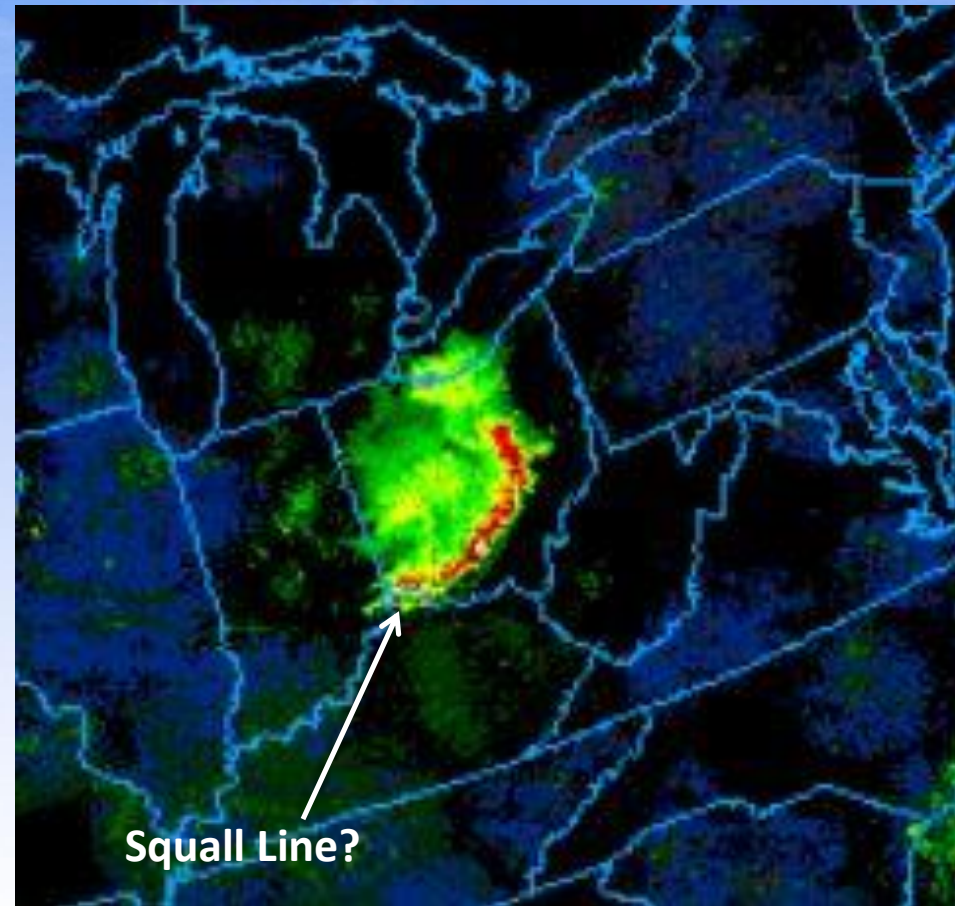
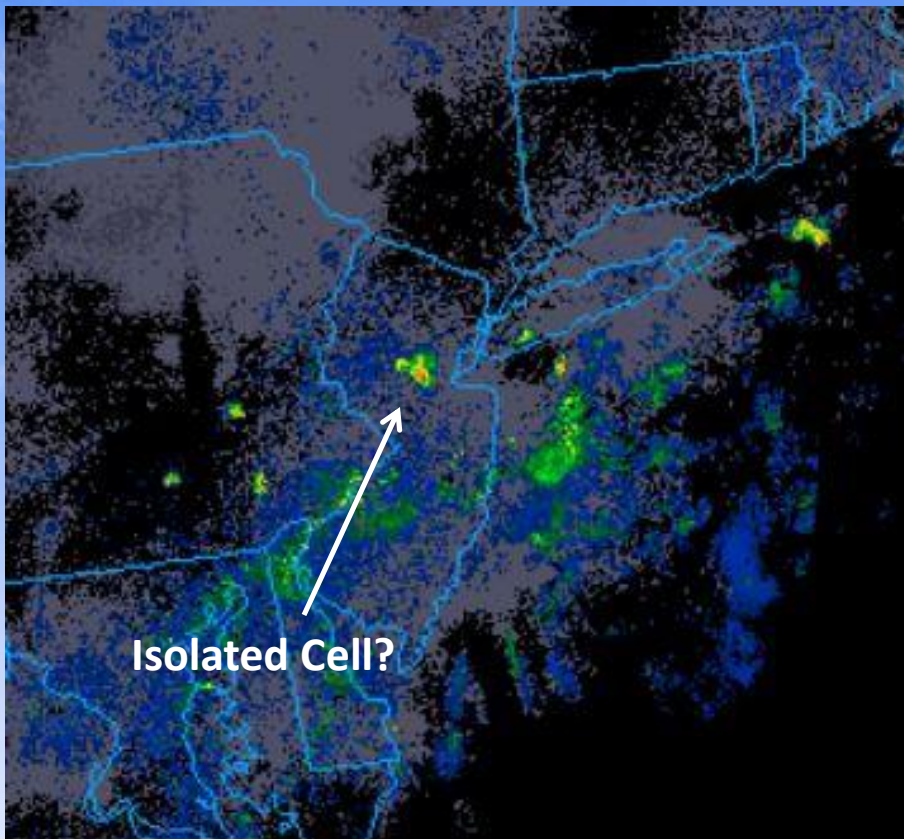
- Traffic Management Initiatives (TMI) such as Ground Delay Programs (GDP), Ground Stops (GDP).
- Most often caused by low ceilings, visibilities, thunderstorms, etc.

En-Route

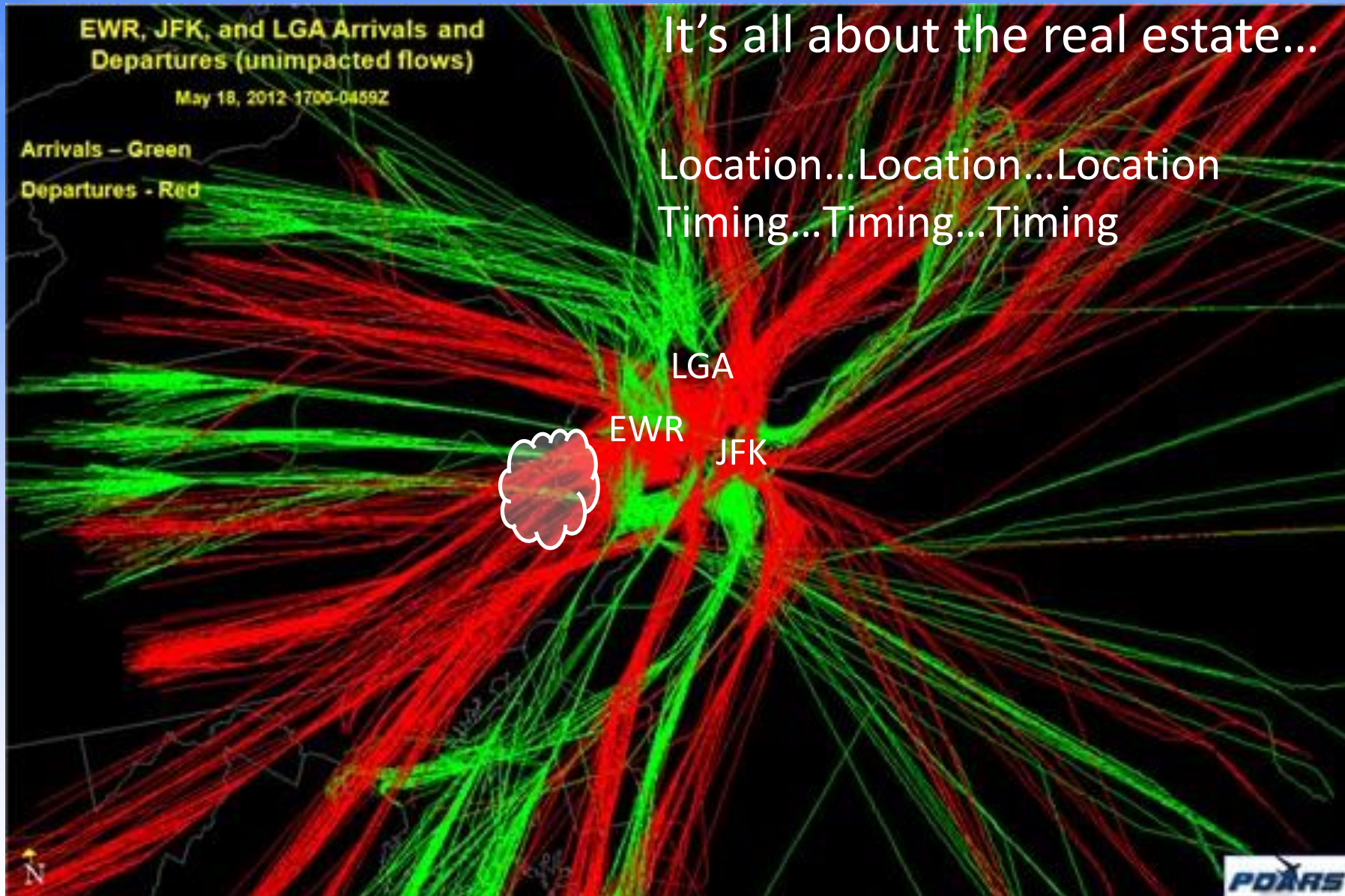
- Routing air traffic across the 21 FAA ARTCC's.
- Affected by thunderstorms, turbulence, icing, etc.



Where is the bigger “aviation” impact?



NY Airspace is most congested in the NAS

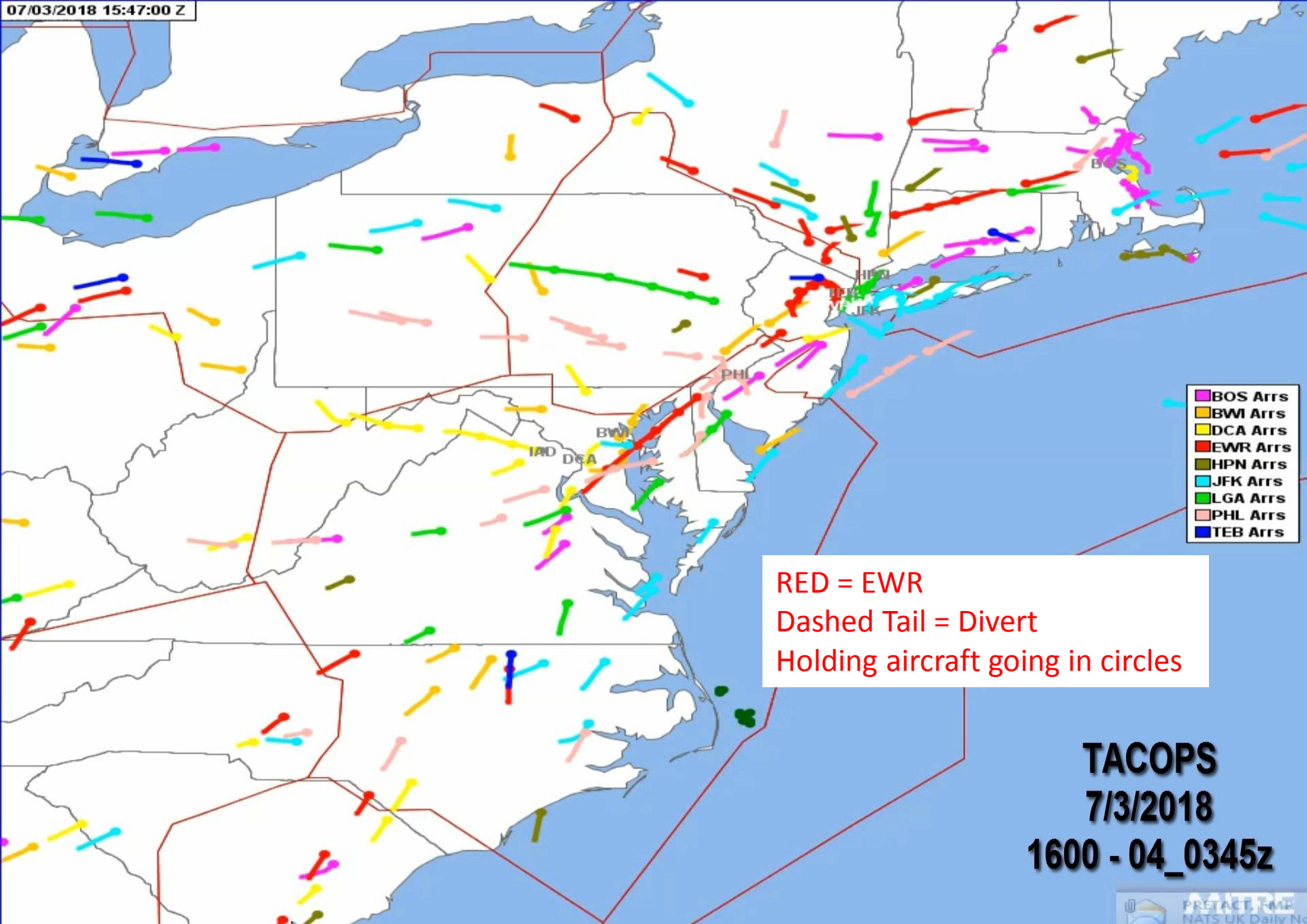




July 3, 2018 – Isolated TS EWR

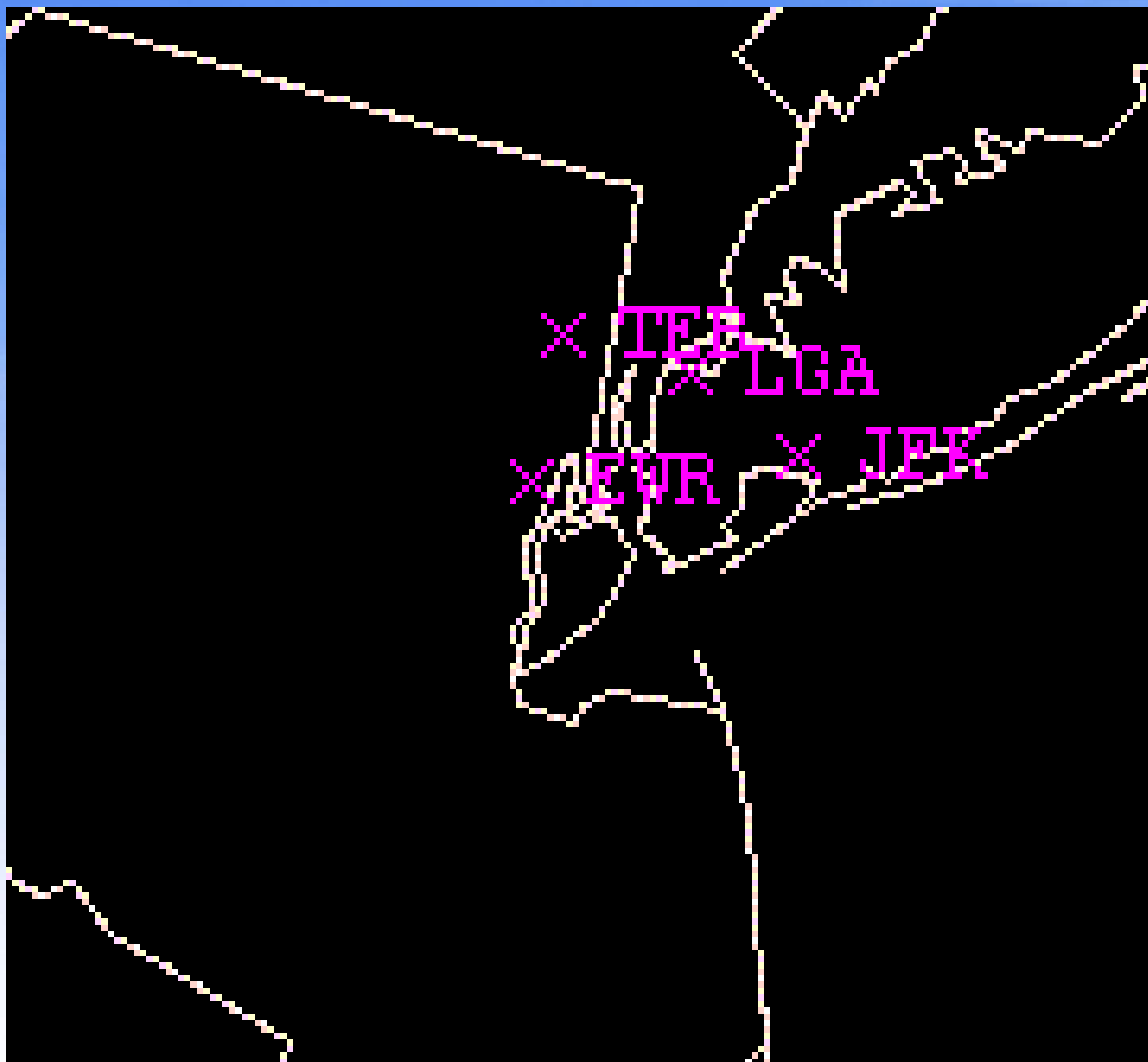
- 1600z – GDP for Volume
- 1635z – Convection develops near EWR
- 1730z – Holding in ZDC, ZNY & ZOB
- 1745z – Diverts in ZDC, ZNY & ZOB – 79 Diversions
 - A Diversion costs ~ \$8,000.00*
 - Total Diversion cost ~ \$632,000*
- 2000z – Ground Stop for Thunderstorms. GDP amended to lower rate
- 2100z – Diverts start recovering

* Airlines for America estimates





July 3, 2018 – Isolated TS - EWR



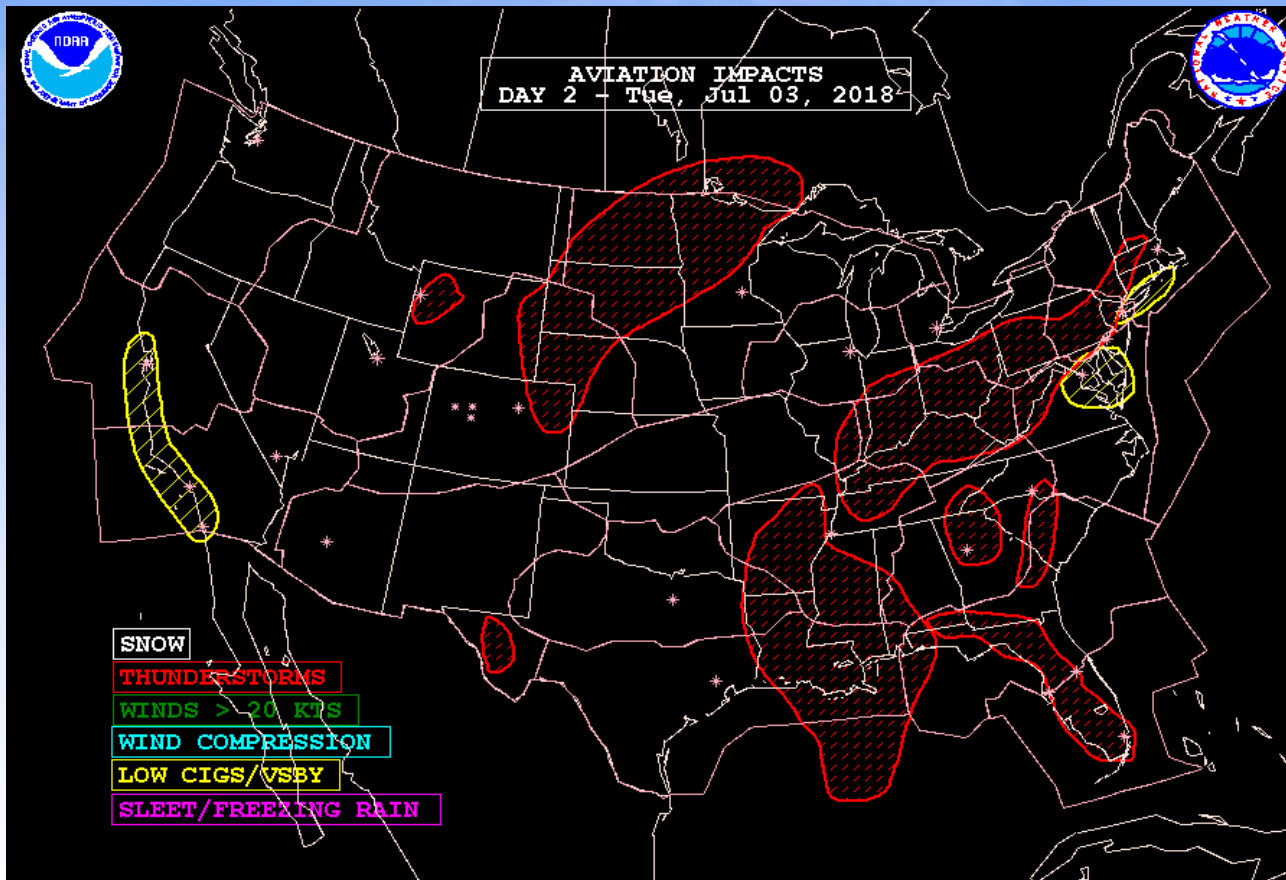


Decision Support Services

Day Before:

Thunderstorm potential briefed to FAA Leadership and airlines through:

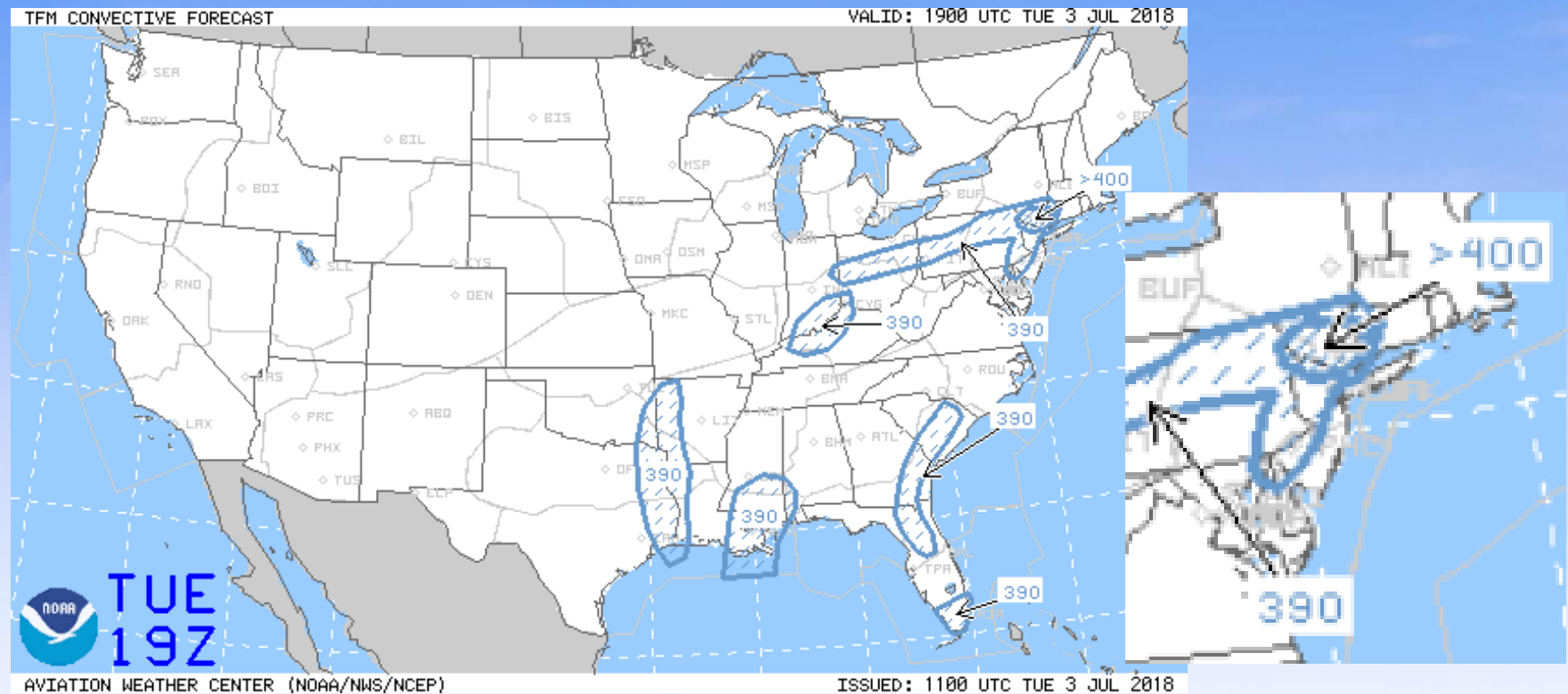
- Morning National Systems Review, and
- PERTI (Plan, Execute Review, Train, Improve) planning webinar.





Decision Support Services

11Z July 3: +8-hour TFM Convective Forecast (TCF) indicates medium coverage:





Decision Support Services

TAF Briefings:

- Provided to FAA Command Center terminal specialists and supervisors every 2 hours.
- Initially briefed potential at 09Z. Continued through the day.

09Z **TUE 7/3/18**

BOS FM032200 19005KT P6SM **VCTS BKN050CB**
FM040200 22004KT P6SM VCSH BKN050

EWR 15004KT P6SM FEW250 ...**TEMPO** 0310/0312 6SM BR
FM031600 15007KT P6SM SCT050
PROB30 0318/0324 5SM **TSRA BKN040CB** ...**LGA** *PROB30* 5SM *TSRA* *aft* 19Z

JFK 20004KT 6SM BR BKN004 ...**TEMPO** 0310/0313 2SM BR
FM031400 18006KT 6SM HZ SCT015 ...**TEMPO** 0314/0315 BKN007
FM031600 17010KT P6SM SCT050

13Z **TUE 7/3/18**

BOS FM031800 21008KT P6SM VCSH SCT050
FM032200 21012KT P6SM **VCTS BKN050CB**

EWR FM031600 15007KT P6SM **VCTS SCT050CB** ...VCTS end 01Z
PROB30 0321/0324 5SM TS BKN030CB

LGA/JFK FM031700 16008KT P6SM **VCTS SCT050CB** ...VCTS til 01Z
PROB30 0321/0324 5SM TS BKN030CB



Decision Support Services

Use of NAM Forecast Briefings:

- PERTI develops a timetable of potential Traffic Management Initiatives with critical decision windows for the following day.
- FAA En-route Specialists publish alternate routes several hours in advance.
 - * Helps FAA Air Route Traffic Control Centers prepare for changes in demand/traffic flow.
 - * Airlines prepare for adjusted fuel, possible crew scheduling impacts, etc.
- FAA Terminal Specialists monitor weather conditions/forecast in relation to airport demand.
 - * Potential for Ground Stops and Ground Delay Programs at affected airports.



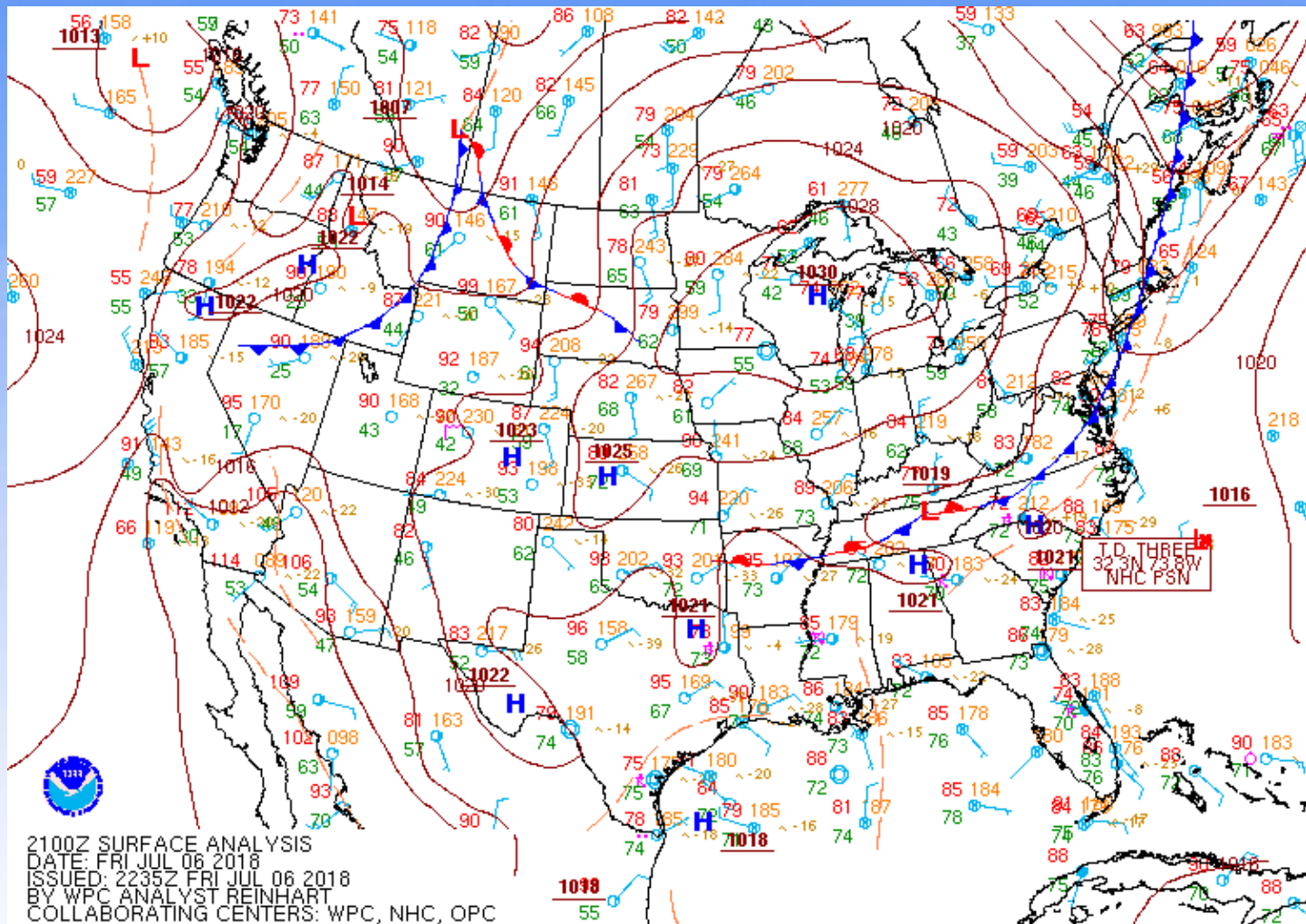
En-Route

July 6, 2018

- Widespread scattered thunderstorm event East Coast to North Texas.

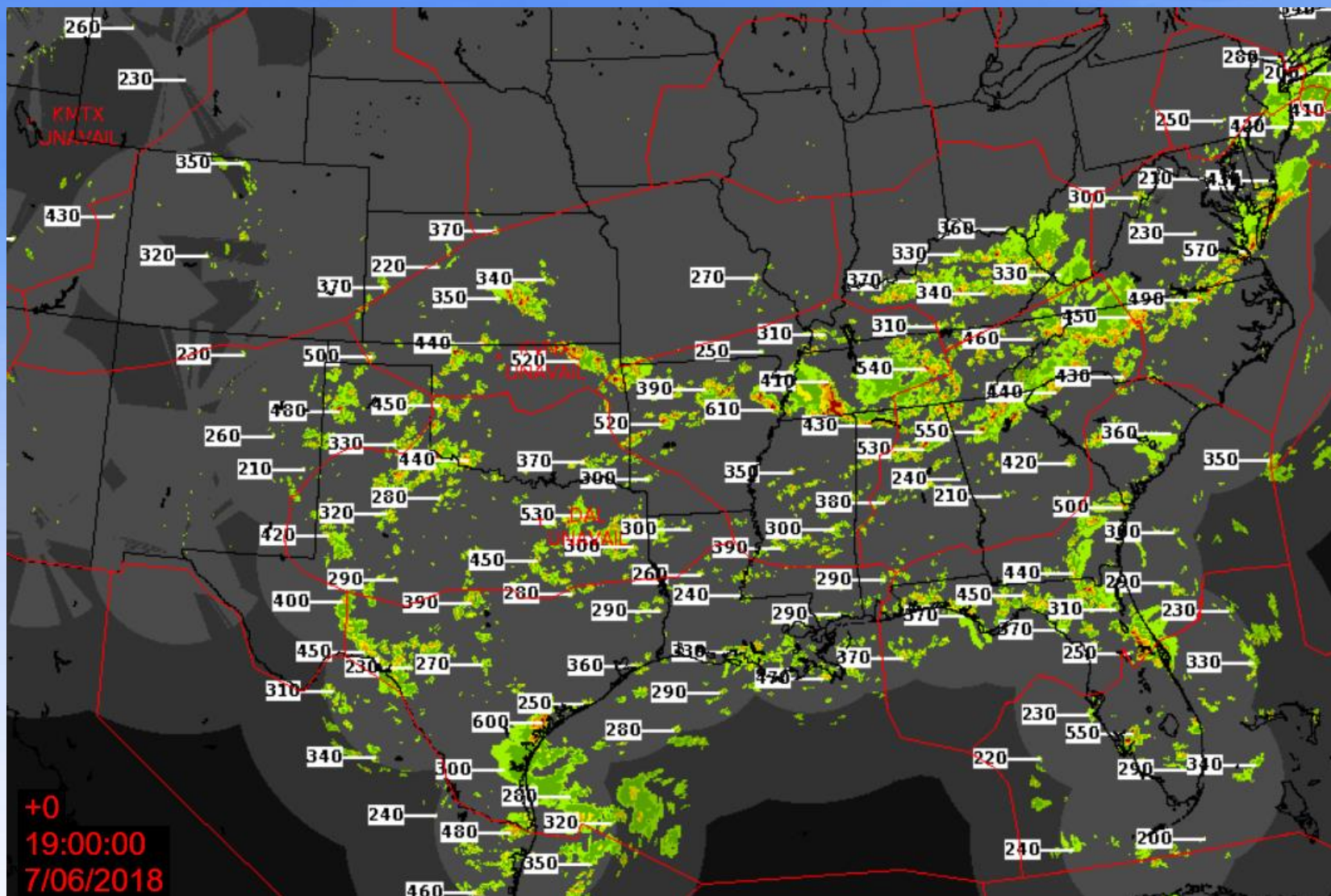
Weather Prediction Center

Surface Analysis 21Z





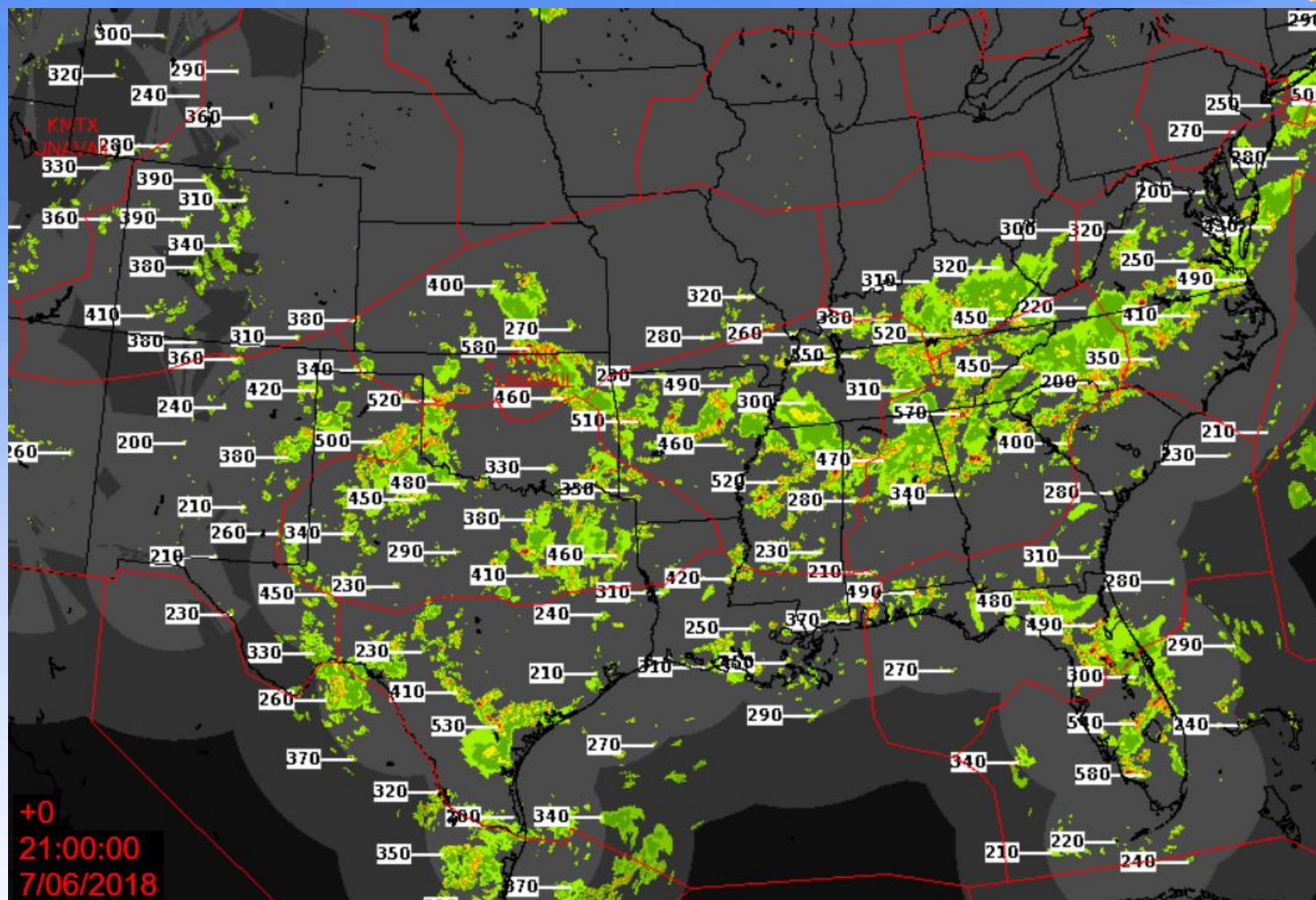
1900Z July 6



Source: MIT/COSPA



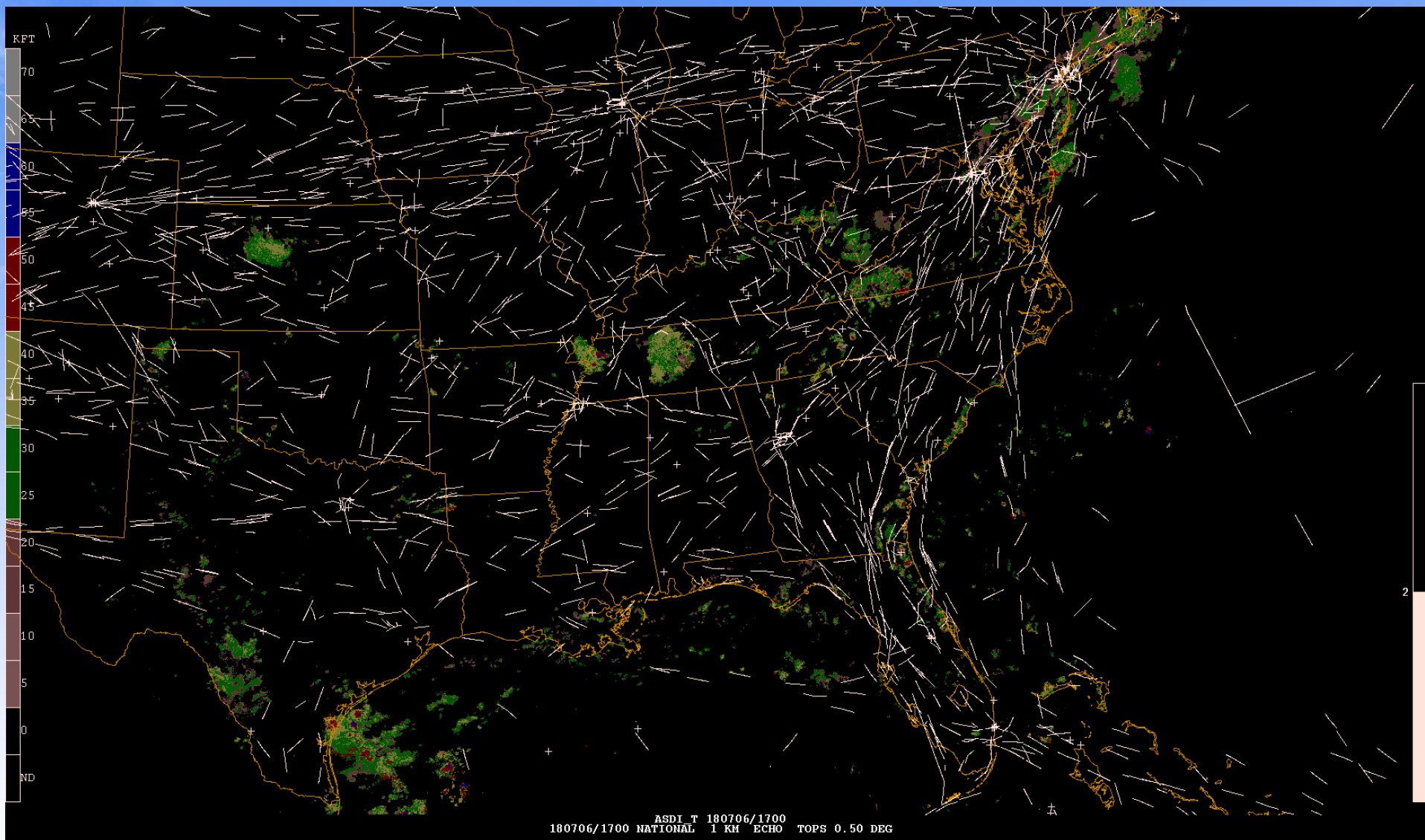
2100Z July 6



Source: MIT/COSPA



July 6, 2018 – En-route TS



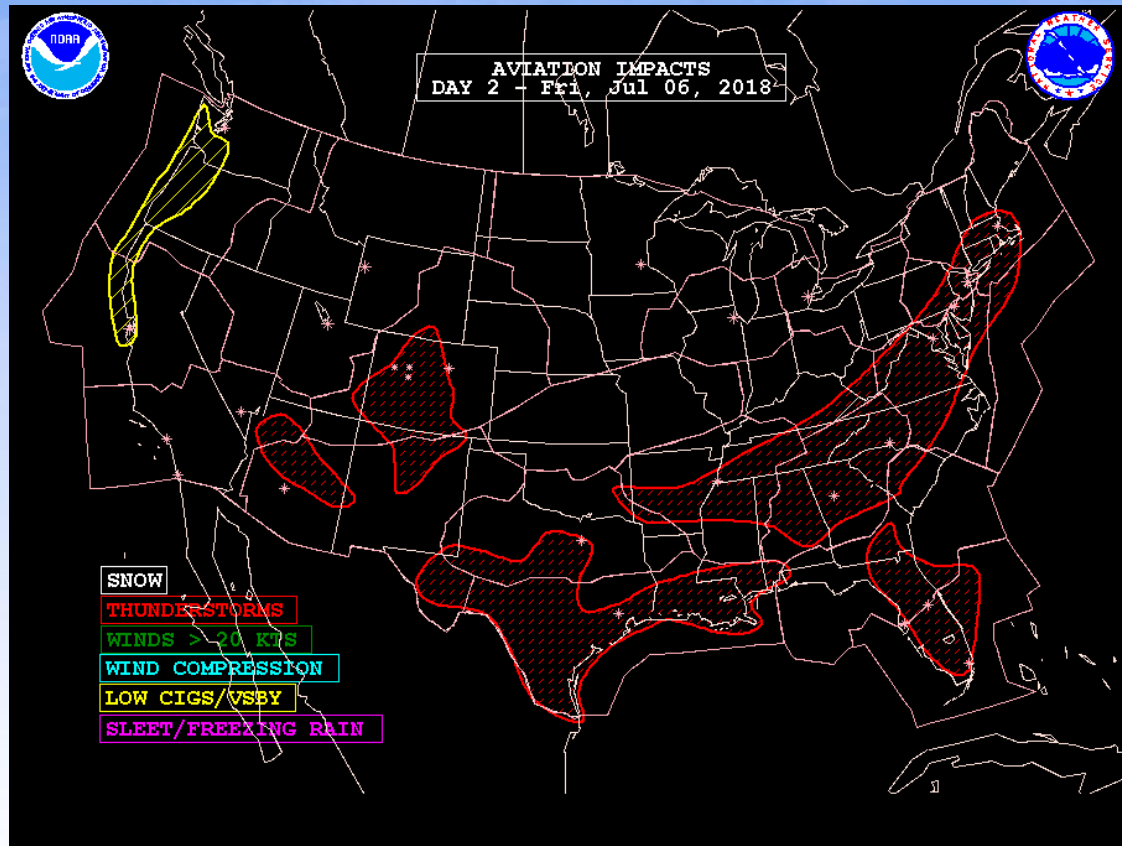


Decision Support Services

Day Before:

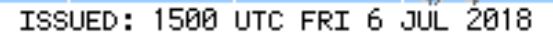
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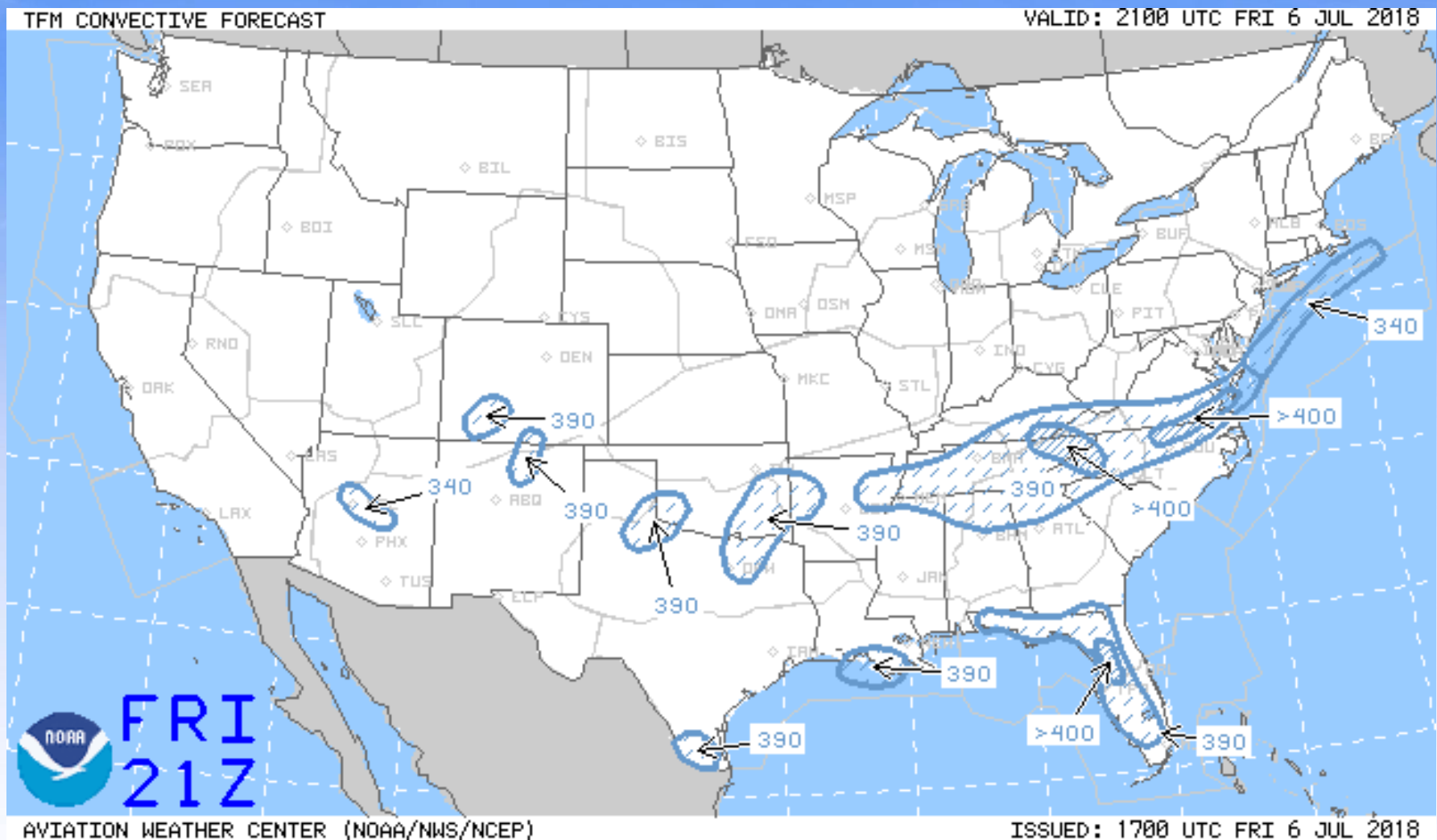
15Z July 6: 4-hour TFM Convective Forecast (TCF):





Decision Support Services

17Z July 6: 4-hour TFM Convective Forecast (TCF):





Acknowledgements

- FAA Command Center: Quality Control
- Amanda Terborg: Aviation Weather Center Developmental Meteorologist
- Lincoln Labs: Massachusetts Institute of Technology