

Graphical Forecasts for Aviation (GFA)



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Area Forecast Product



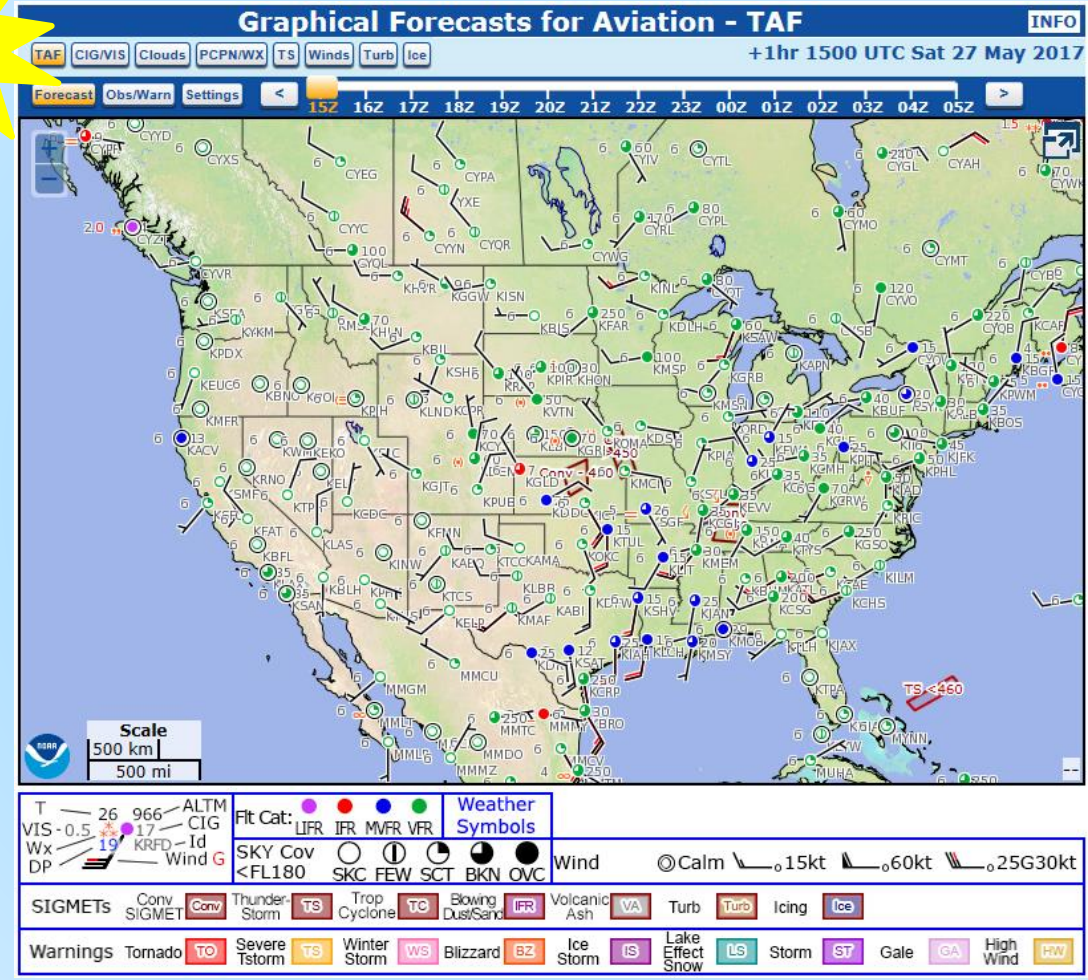
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FAUS45 KKCI 300245
FA5W
SLCC FA 300245
SYNOPSIS AND VFR CLDS/WX
SYNOPSIS VALID UNTIL 302100
CLDS/WX VALID UNTIL 301500...OTLK VALID 301500-302100
ID MT WY NV UT CO AZ NM
.
SEE AIRMET SIERRA FOR IFR CONDS AND MTN OBSCN.
TS IMPLY SEV OR GTR TURB SEV ICE LLWS AND IFR CONDS.
NON MSL HGTS DENOTED BY AGL OR CIG.
.
SYNOPSIS...ALF..UPR LVL TROF WRN PTNS WA OR-NRN CA AND ADJACEN
CSTL WTRS WILL MOV SLOLY EWD THRU PD DAMPEN OVR NRN PTN AND
NRN SIERRAS DURG OTLK. OTRW..HI PRES CNTRL ROCKIES-SWRN US WILL
DMNT RMNDR THRU OTLK. WSW FLOW NW PTN..WLY FLOW NE PTN..W
SW PTN..WNW FLOW SW PTN. SPC..CDFPT NE PTN WILL CAUSE WSW CNTRL
MT DURG OTLK. SINR PNT ERN PTNS WY ON THRU PL
.
ID
NRN...SKC. OTLK...VFR.
CNTRL MTNS...SCT110-150. BECMG 0609 FEW-SCT150 OCNL SKC.
OTLK...VFR.
SWRN...SCT150. BECMG 0609 SCT120-140 OCNL SKC. OTLK...VFR.
SERN...SCT-BKN130-150. KYRD FL260. ISOL -TSRA/-SHRA. CB TOP FL400.
BECMG 0609 SCT150 SCT CI. OTLK...VFR.
.
MT
CONTDWD WWD...SKC. OTLK...VFR.
SWRN MTNS...SCT120-140 BKN CI. ISOL -TSRA/-SHRA. CB TOP FL400.
BECMG 0608 SCT150. ISOL -SHRA. OTLK...VFR.
ERN SLOPES OF CONTDWD...SCT100-120 SCT CI. ISOL -TSRA/-SHRA. CB
TOP FL380. BECMG 0709 SCT090 SCT140 OCNL SKC NRN PTN.
OTLK...VFR.
CNTRL...SCT100 SCT CI. ISOL -TSRA/-SHRA. CB TOP FL380. BECMG
0608 FEW-SCT120. OTLK...VFR.
ERN...SCT080-100 SCT CI. ISOL -TSRA/-SHRA. CB TOP FL380. BECMG
0507 SCT100-120. OTLK...VFR.
.
WY
MTNS AND WEST...SCT130-150 BKN CI. WDLY SCT -TSRA/-SHRA. CB OTP
FL400. BECMG 0608 SCT150 BKN CI. ISOL -SHRA. OTLK...VFR.
ERN PLAINS-FOOTHILLS...SCT120-140. ISOL -TSRA/-SHRA. CB TOP
FL380. BECMG 0507 SCT100 BKN CI. OTLK...VFR.
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NV
NWRN...SCT150 OCNL SCT CI. BECMG 0608 SKC OCNL SCT CI.
OTLK...VFR.
    
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Retired

NEW

Oct 2017



Legacy Area Forecast



Aviation Area Forecast Facts

- ✈ Text product that encompassed large time frame broad brushed phenomena
- ✈ Didn't allow for seeing trends
- ✈ Issued 3 times a day.
- ✈ Had a character limit, could take 2-3 hours to complete.
- ✈ This format had been used for over 50 years!

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NV
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Why the Change?



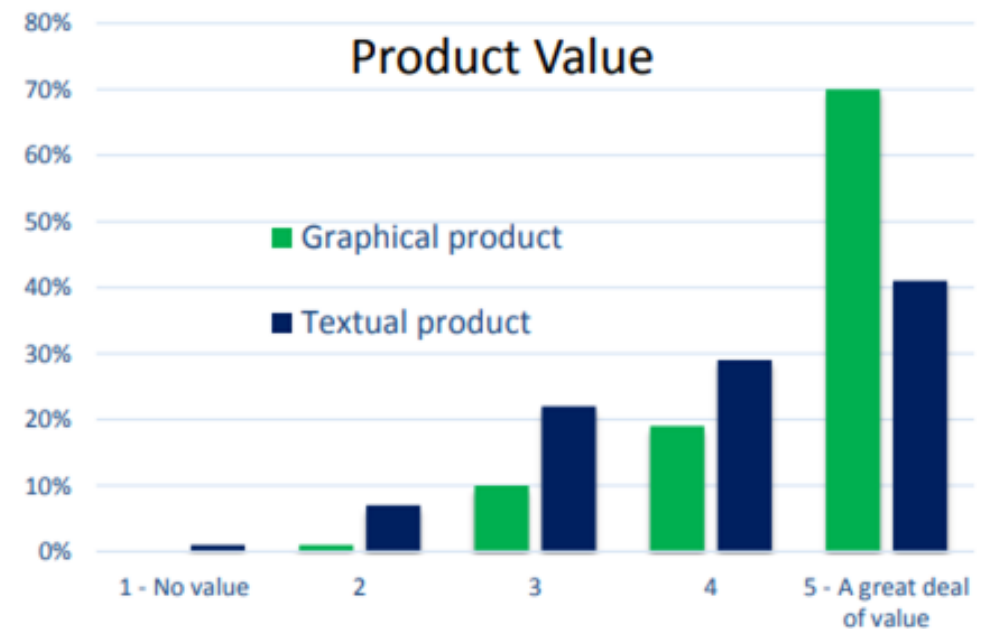
➔ May 2015: FAA submits a request to the NWS to cease production of the FA

➔ Contingent on graphics of the same meteorological information.

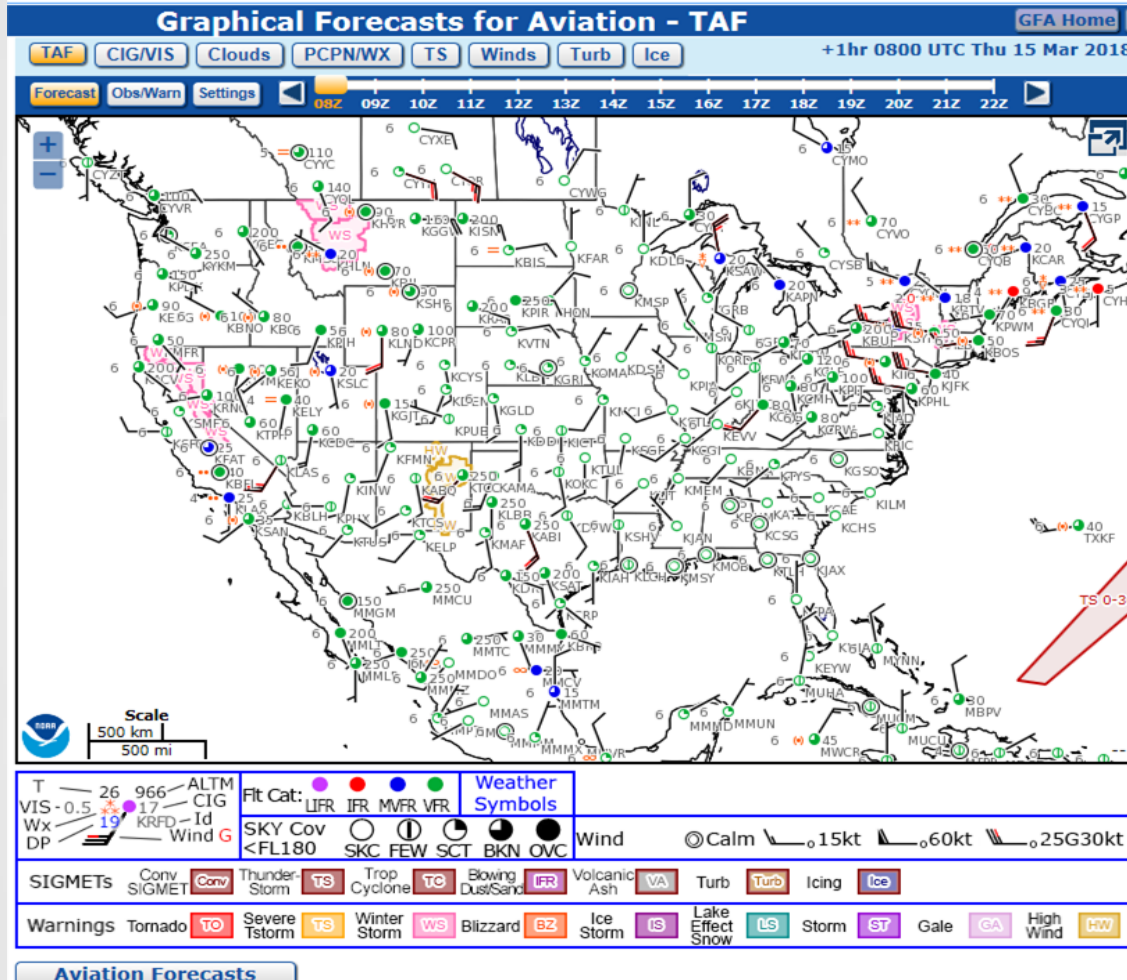
➔ Move towards more modern way for pilots to get their weather information.

➔ Pilots highly desire graphical product

➔ Allow AWC forecasters to focus efforts on operational benefits to aviation end users.



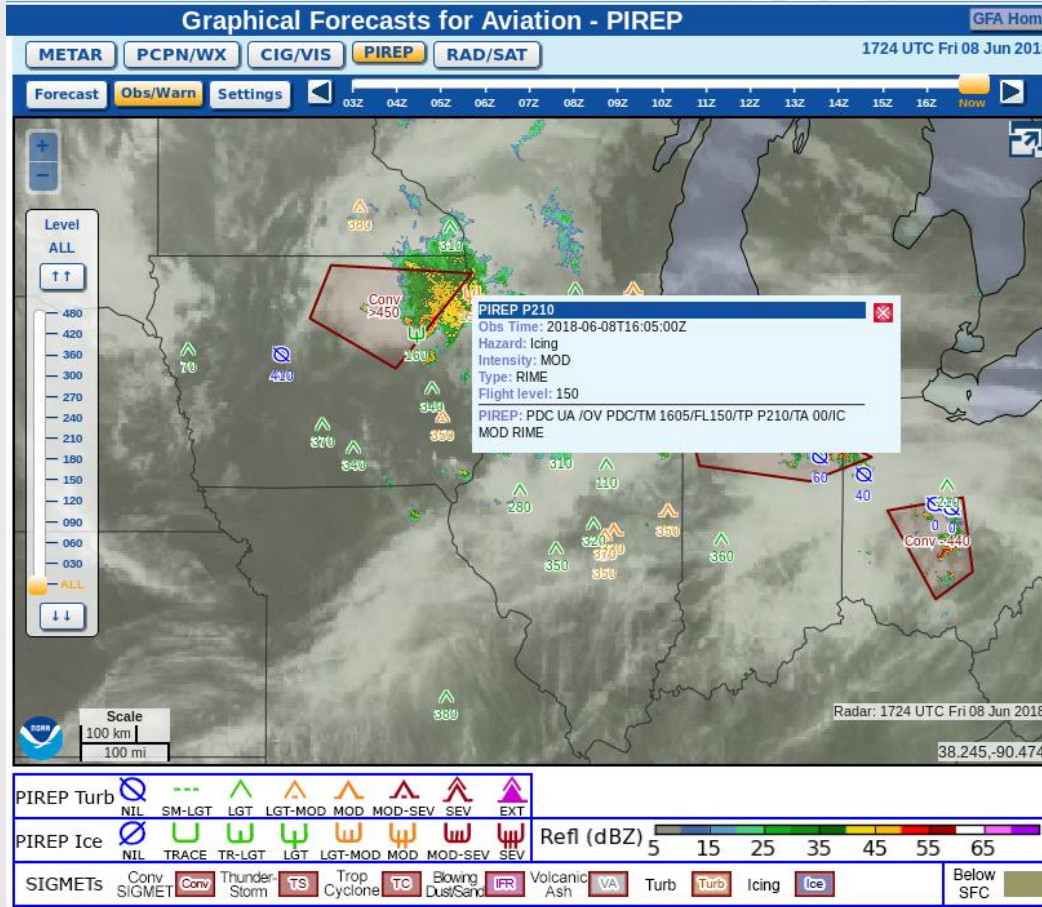
Graphical Forecast for Aviation(GFA)



Aviationweather.gov/gfa

- Multiple weather displays on one domain.
- Data overlaid on high-resolution basemaps.
- Forecast section with up to +15 hour data.
- Obs/Warn section with previous data, -14 hours to current.
- Based on core partner feedback and collaboration.
- Additional weather elements available than in the text FA.

GFA Data



Observations & Warning Products

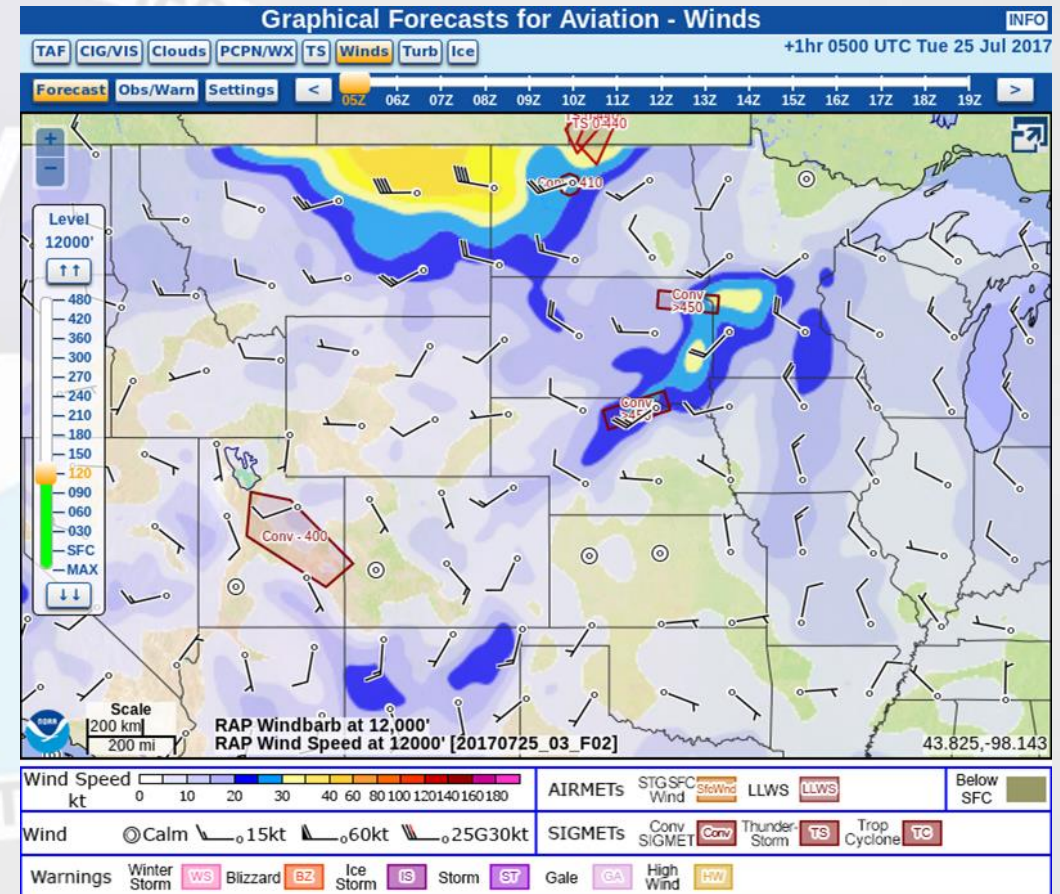
- METAR.
- Precipitation and weather
- Ceiling, Visibility, Flight Category
- PIREPs levels up to FL480
- Radar and Satellite
- SIGMETS

GFA Data



Forecast Products

- ✈ TAFs
- ✈ Ceiling and Visibility
- ✈ Weather / Thunderstorms (NDFD)
- ✈ Winds
 - Contoured areas for wind speed
 - clickable wind barbs
 - levels from Sfc to FL480, Max
- ✈ Turbulence
 - From GTG grids (Graphical Turb Guidance)
 - Levels from Sfc to FL480
 - Hi = maximum above 18K
 - Lo = maximum below 18K
- ✈ Icing
 - From FIP grids
 - Levels from Sfc to FL480, Max

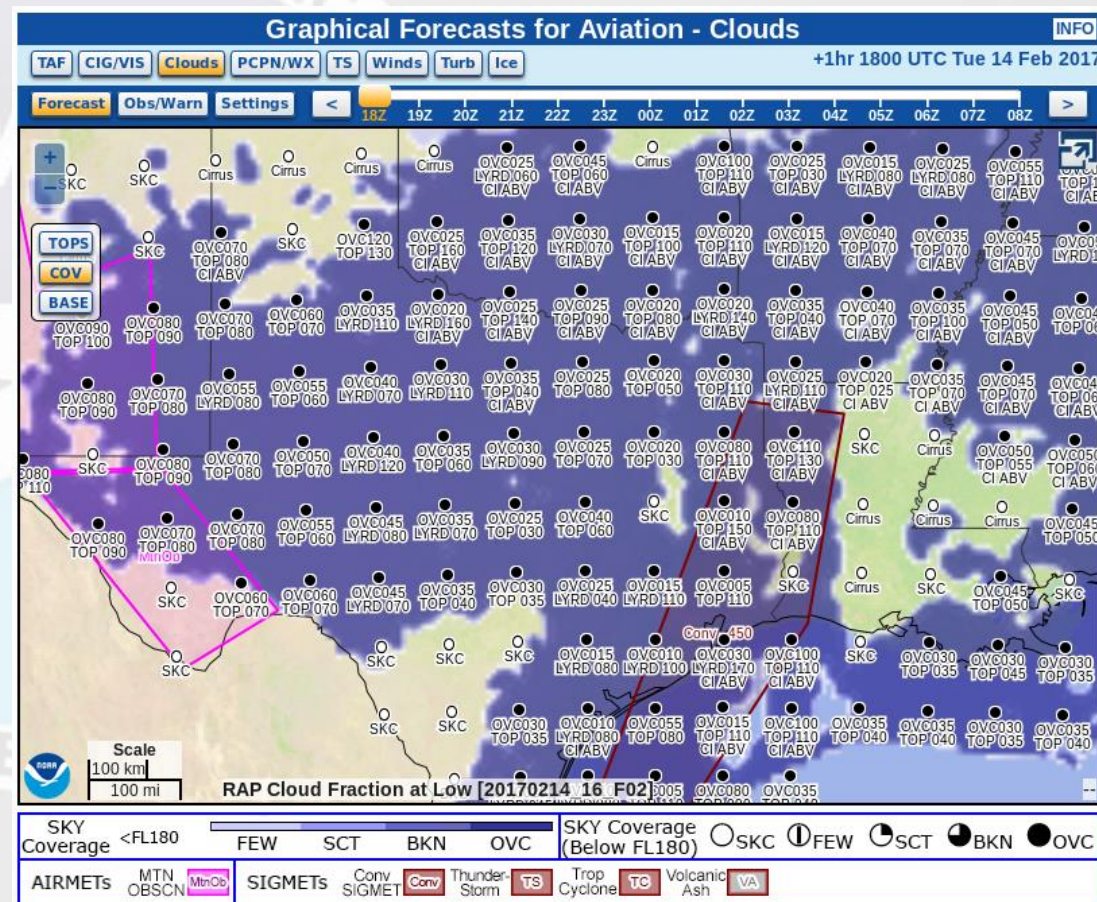


GFA Forecast Clouds



Forecast Clouds

- Derived from RAP grids
- Cloud layer information under 18,000ft
- Shows “cirrus” for clouds above 18,000ft
- Heights of bases and tops in MSL

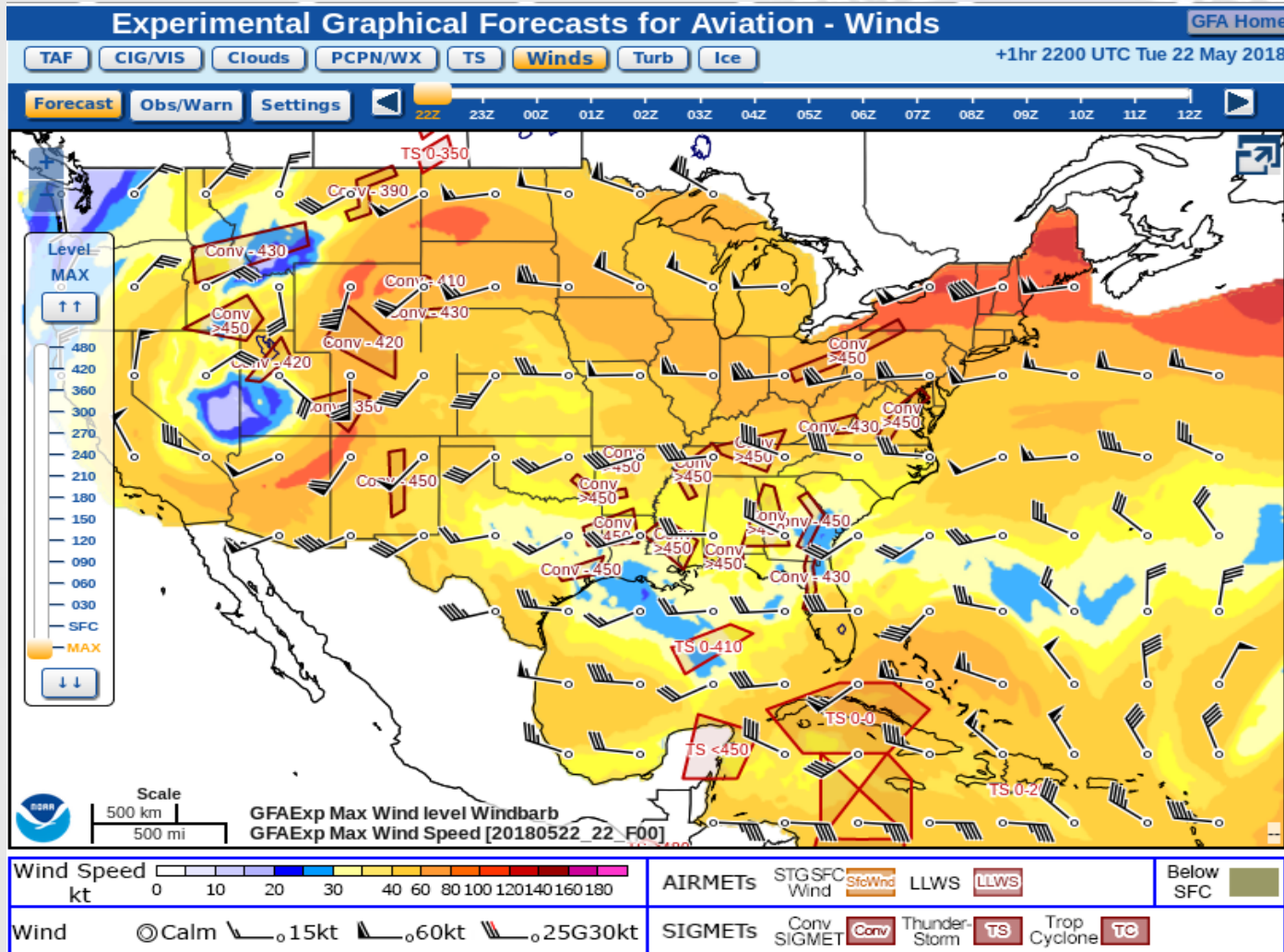


What's Next for the GFA?



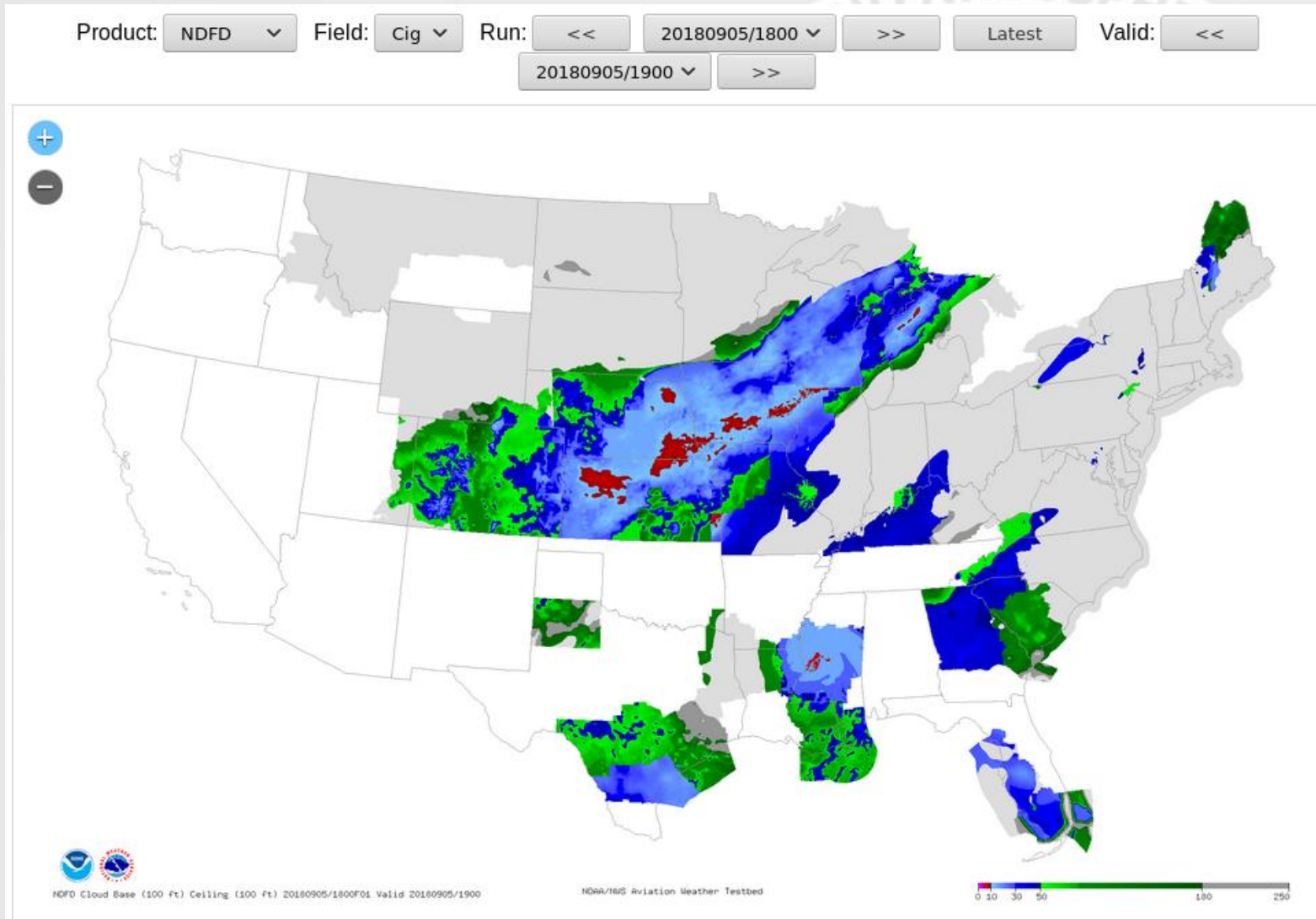
- **GFA is continuously being improved by developers at AWC**
 - **Expansion to the Gulf of Mexico and Caribbean Sea**
 - **Enhanced menu options for map overlays**
 - **More mobile friendly**
 - **Eventual Expansion to Hawaii and Alaska and extended planning times**
 - **Inclusion of more DAS grids as they become available**
 - **<https://testbed.aviationweather.gov/gfa>**

Domain Expansion



- Domain expansion over the Gulf of Mexico and Caribbean Sea will allow AWC to retire the legacy text Area Forecasts in this location and ramp up new graphical solutions
- Supports island hopping and offshore platform operations
- Bahamas Meteorology excited about this product

Digital Aviation Services Grids



➔ As more local offices begin to produce aviation grids (ie. ceiling grids at left) we will be incorporating those into the GFA tool

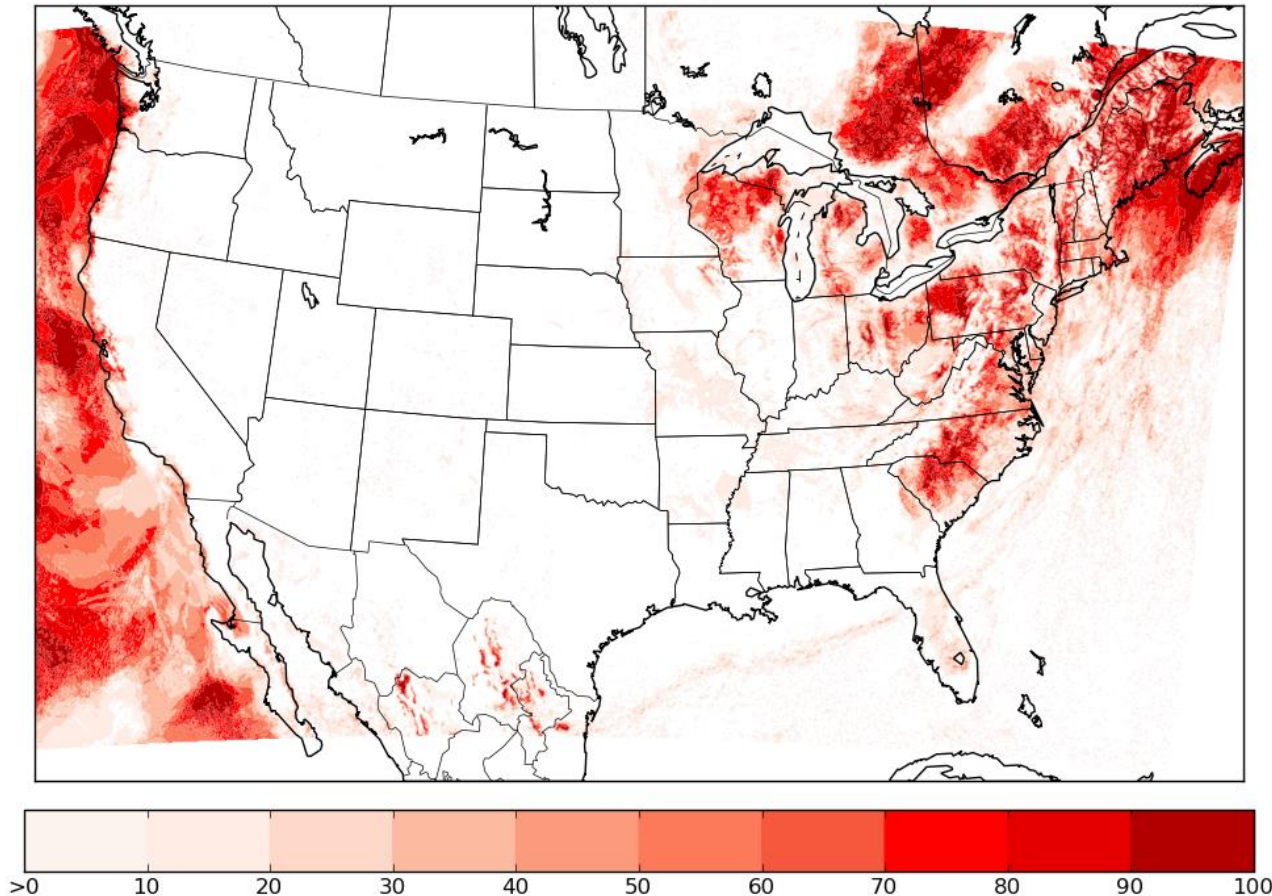
➔ This provides increased consistency between the point based TAF the gridded products in the GFA.

➔ Goal in the NWS is to provide a consistent message across offices from local to regional to national to global

Adding Longer Term Guidance



HREF Probability of being IFR or worse



- **Medium Range (6-36hrs)**
 - coarser resolution (5-10km)
 - Hourly time steps
- **Extended (Day 2 - Day 8) and global forecasts**
 - Coarse vertical and horizontal resolution (~20 km)
 - 3 to 6 hour time steps
 - Leverage probabilistic forecasts beyond day 3
- What is important in the extended?


GFA Example



MCI-PHX

Departing @ 1150am CDT (1650Z)

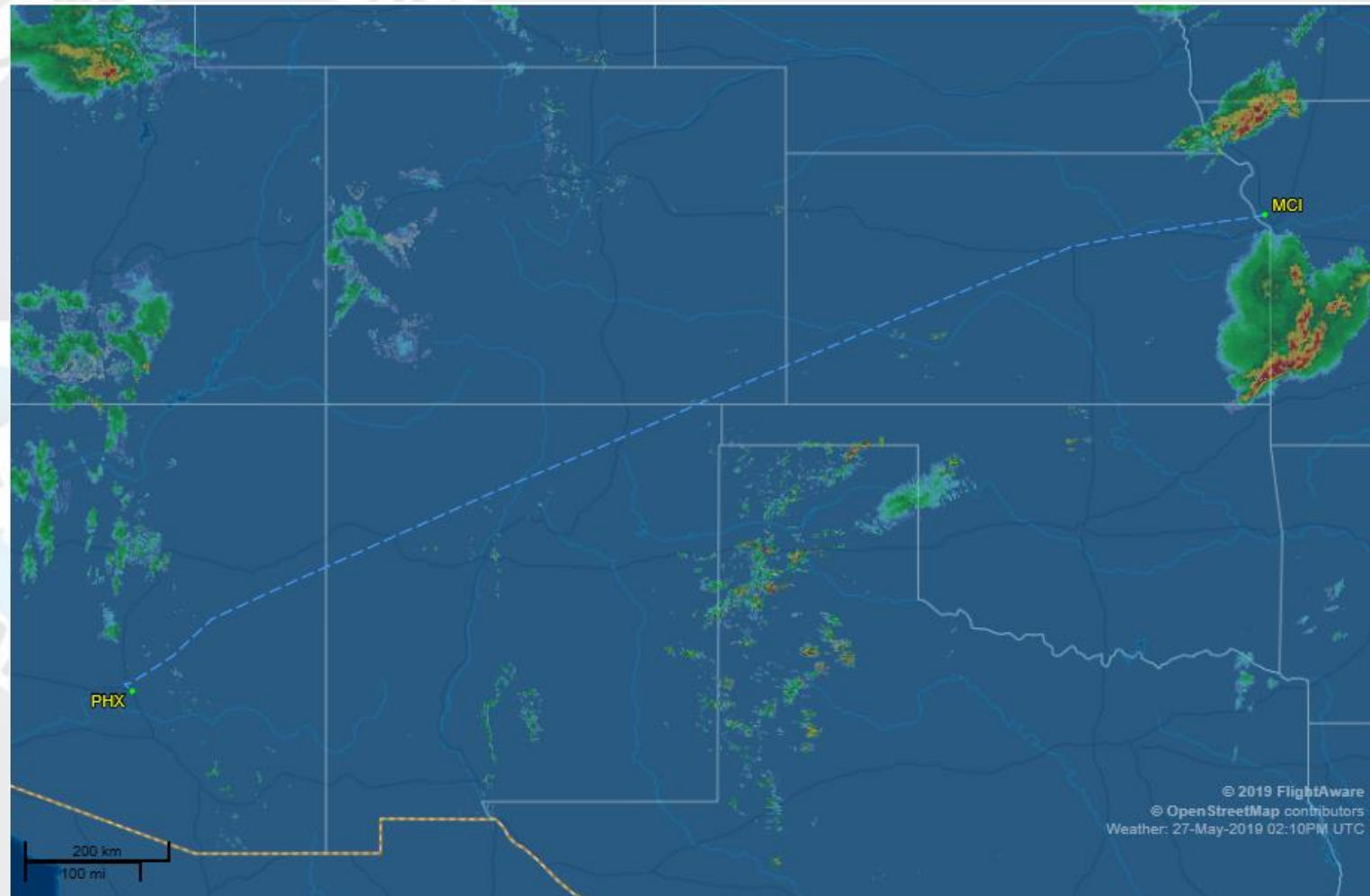
Arriving @ 1235pm MST (1935Z)

 **Southwest 2259**
SWA2259 / WN2259
[Upgrade account to see tail number](#)

EXPECTED TO DEPART IN 2 HOURS 35 MINUTES
[Where is my plane now?](#)

MCI KANSAS CITY, MO departing from GATE 39 Kansas City Intl - MCI	PHX PHOENIX, AZ arriving at GATE C2 Phoenix Sky Harbor Intl - PHX
MONDAY 27-MAY-2019 11:50AM CDT (on time)	MONDAY 27-MAY-2019 12:35PM MST (on time)

2h 45m total travel time

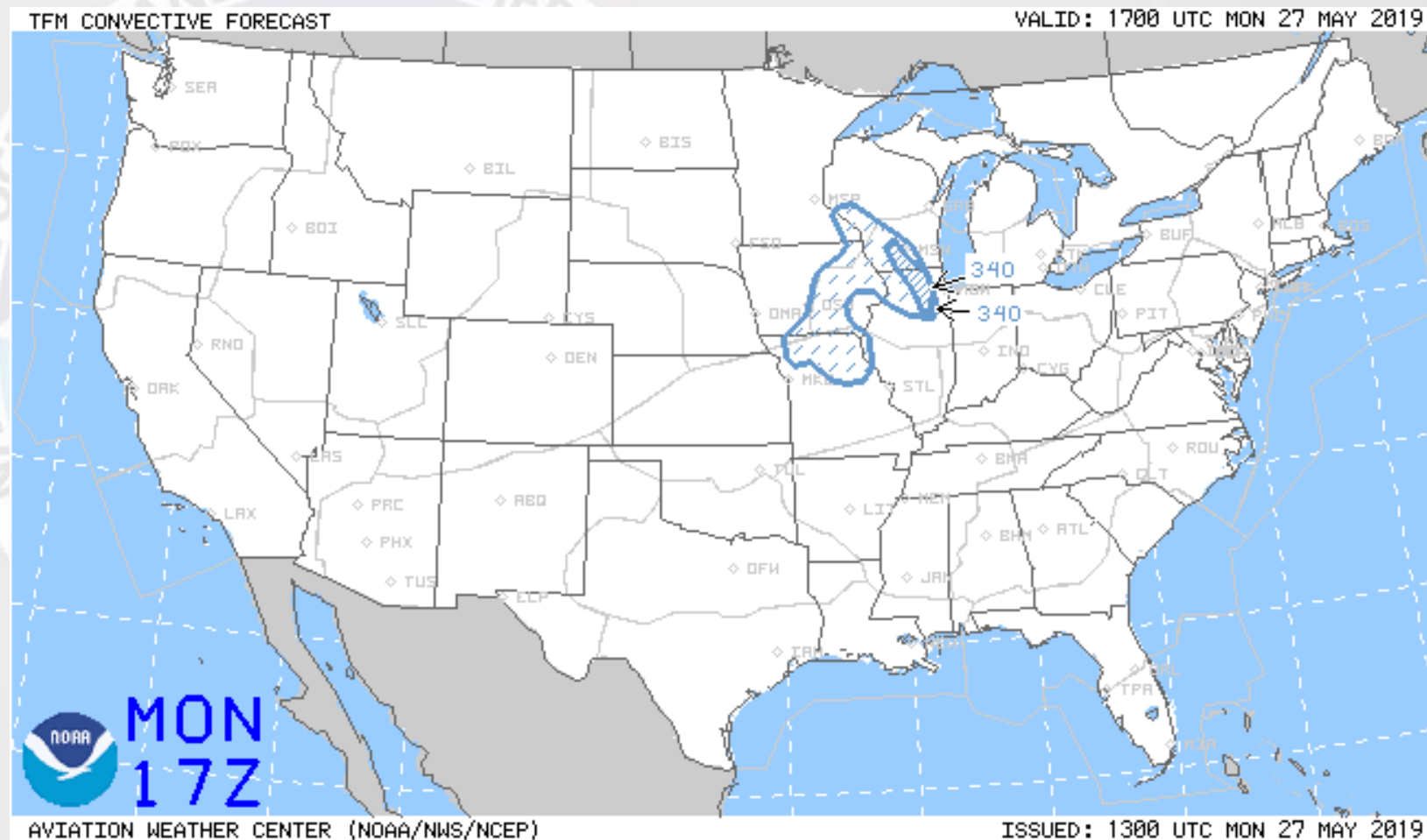


GFA Example



Preflight Planning:

- ✈️ **AIRMETs (Hazards)**
 - ✈️ LLWS on takeoff
 - ✈️ Turbulence
- ✈️ **Convection??**
 - ✈️ TCF
 - ✈️ Convection that doesn't reach TCF criteria?
- ✈️ **Clouds?**
 - ✈️ No Sierra AIRMETs
- ✈️ TAF
- ✈️ Winds (surface and aloft)
- ✈️ GFA Tool!



GFA Example



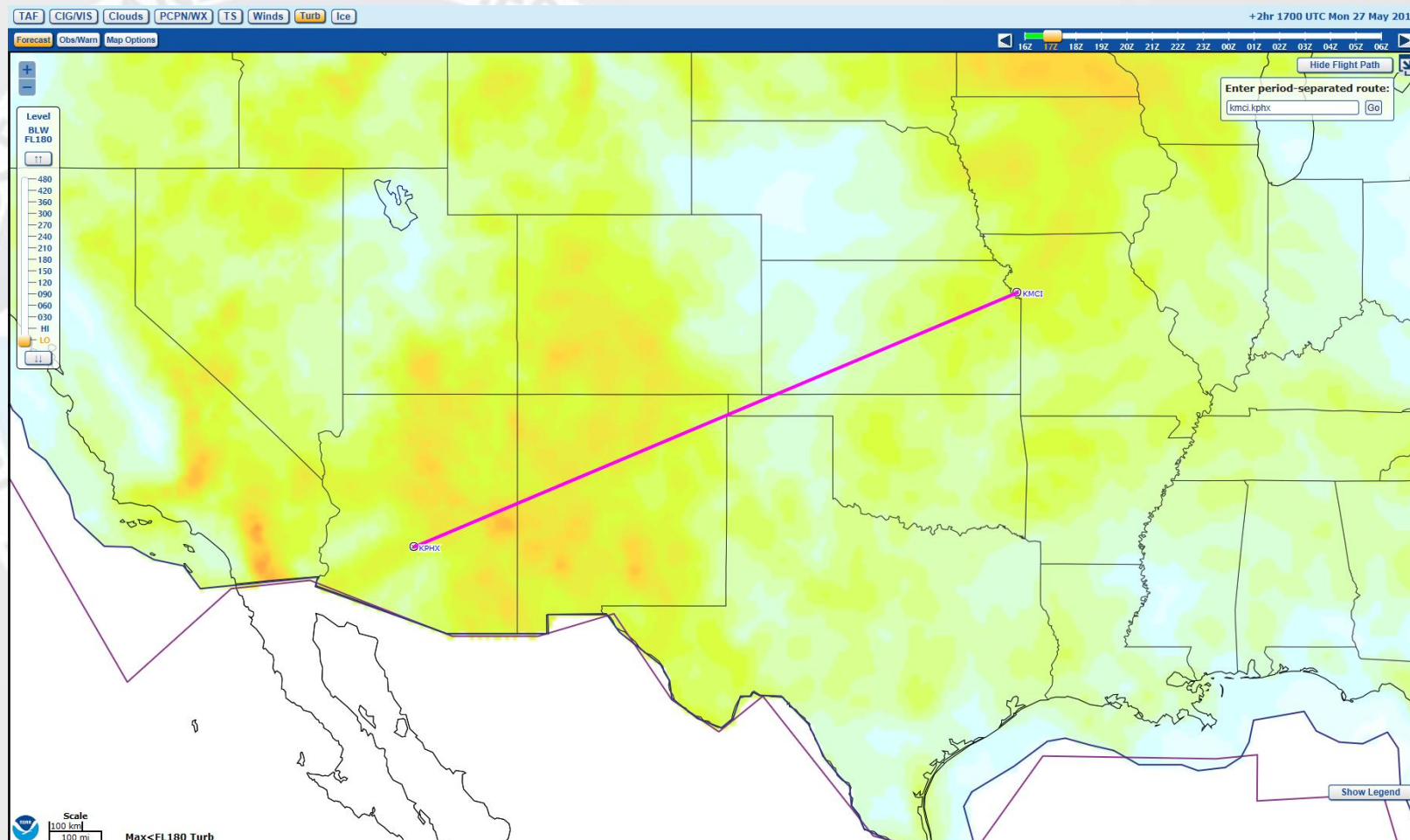
Turbulence:

✈ High-level Turb

- ✈ HI = Above FL180
- ✈ Click up through layers
- ✈ Potential for MOD turb below FL240 and above FL400.

✈ Low-level Turb:

- ✈ AIRMET FL180-100
- ✈ Mainly over Mountains

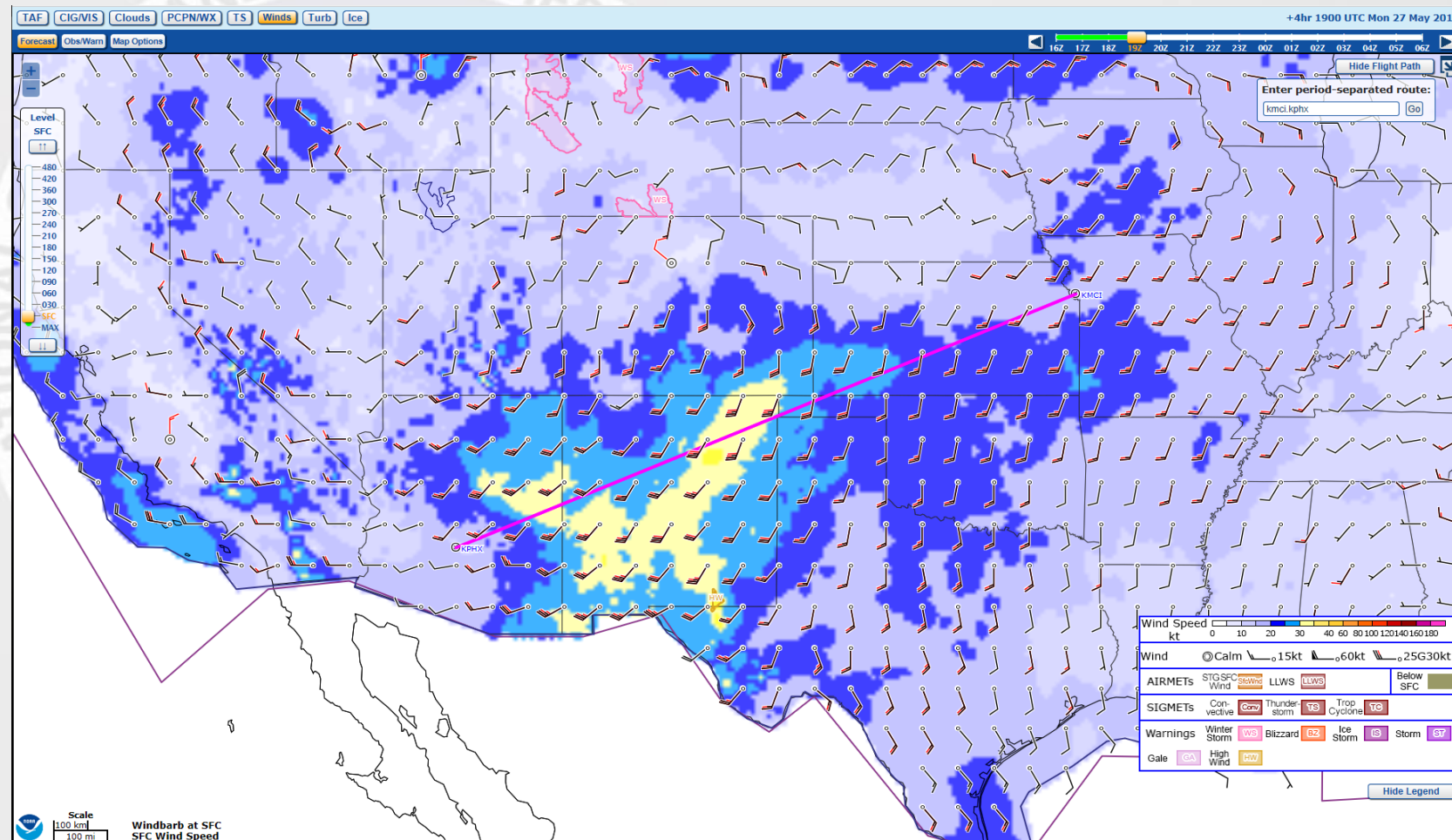


GFA Example



Winds:

- ✈ Upper-level winds
- ✈ Surface Winds
 - ✈ Ridgetop winds approaching 30 knots sustained.
 - ✈ What are your wind thresholds?

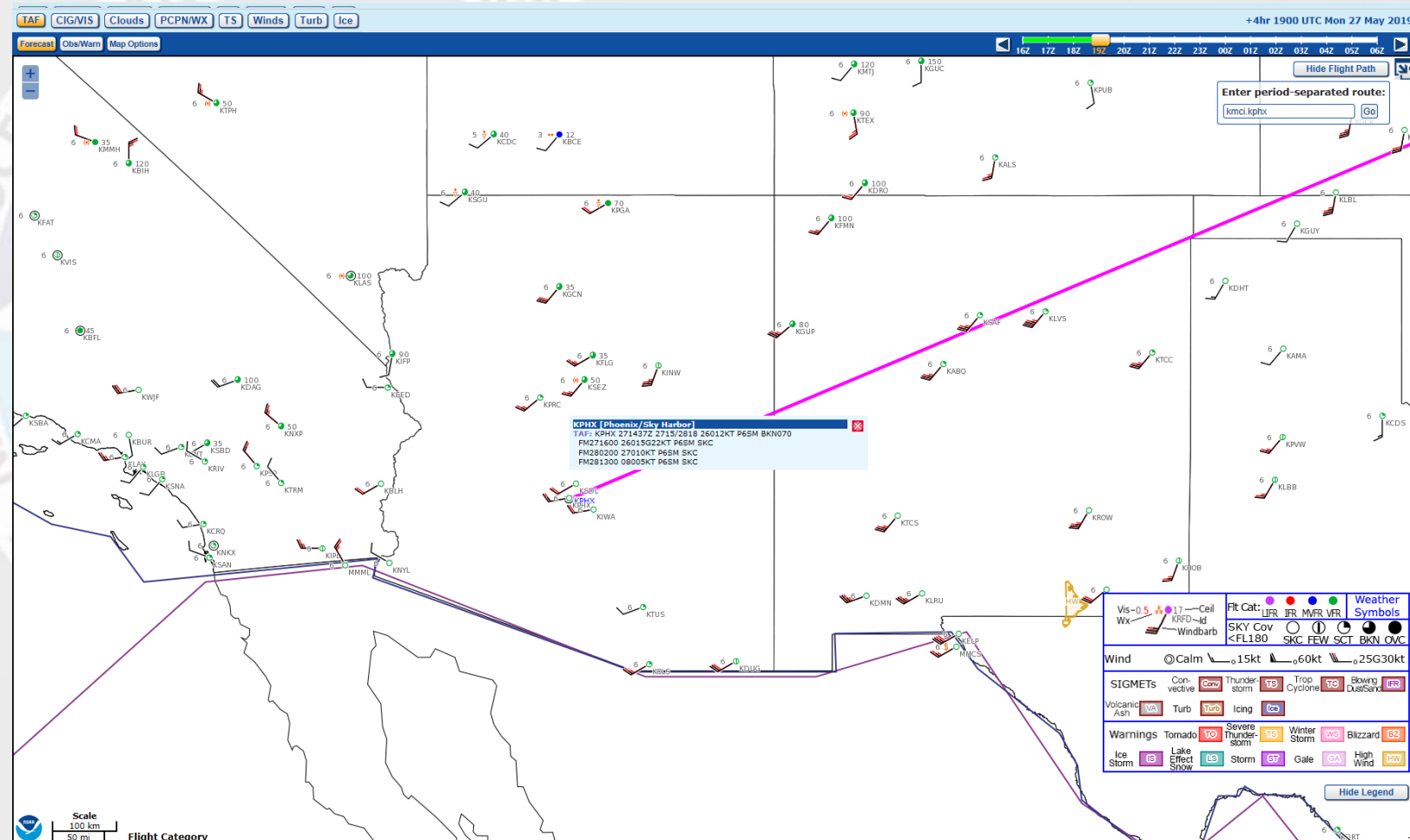


GFA Example



Showers and/or Thunderstorms:

- ✈ PCPN/WX and TS
- ✈ Clouds
- ✈ Mountain Obscn
- ✈ TAF

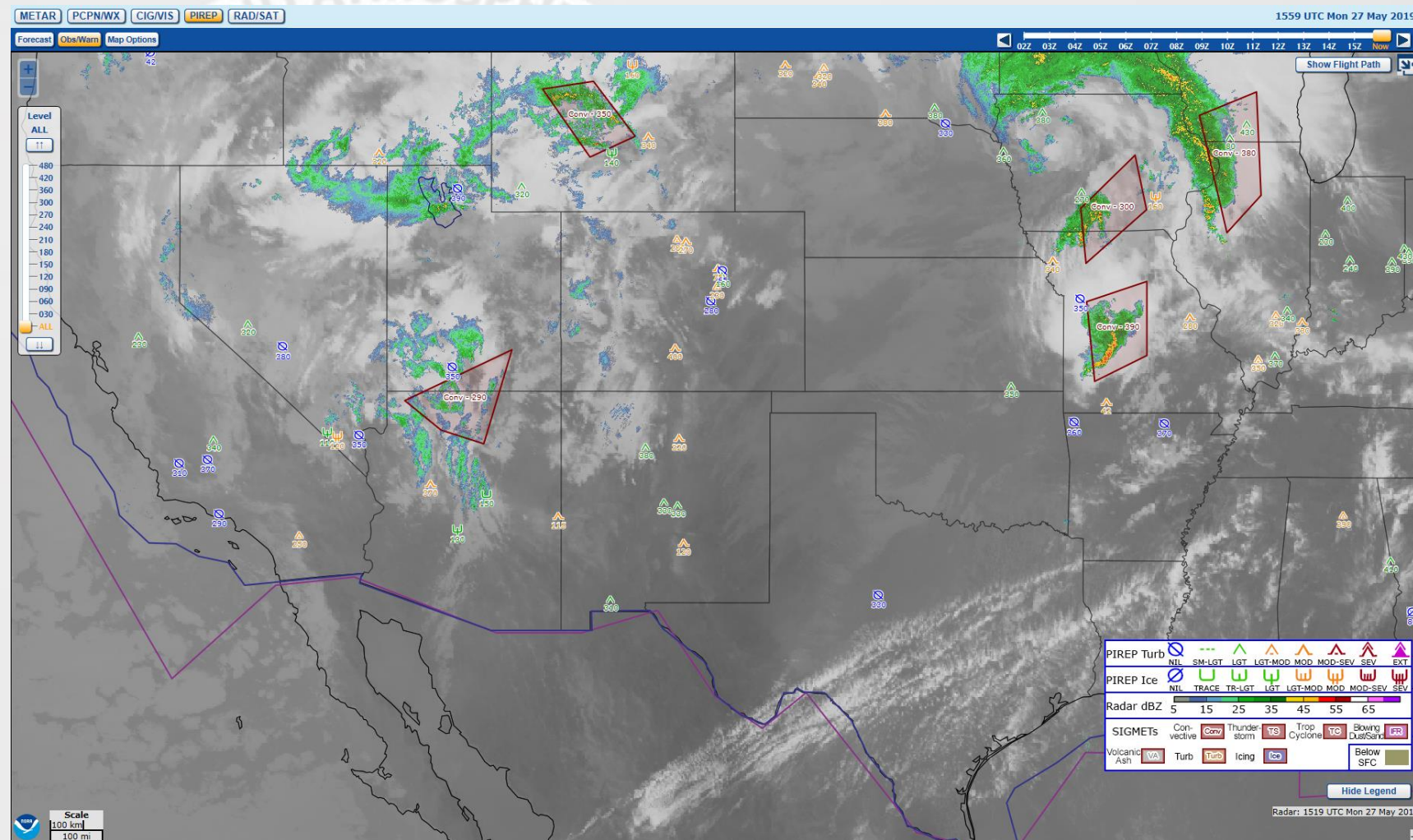


GFA Example



Current Conditions:

- ➔ Obs/Warn Tab
- ➔ Active SIGMETs
- ➔ PIREPS
- ➔ Satellite/Radar
- ➔ Past 14 hours



GFA Example



Thank You!!

→ Contact:

- **Scott Minnick**
- scott.minnick@noaa.gov



[/NWSAWC](#)



[@NWSAWC](#)



aviationweather.gov

→ Acknowledgements:

- **Stephanie Avey**
- **Ryan Solomon**
- **Jonathan Leffler**
- **Austin Cross**

