

2020 Annual Meteorological Memories

Thursday, January 28, 2021

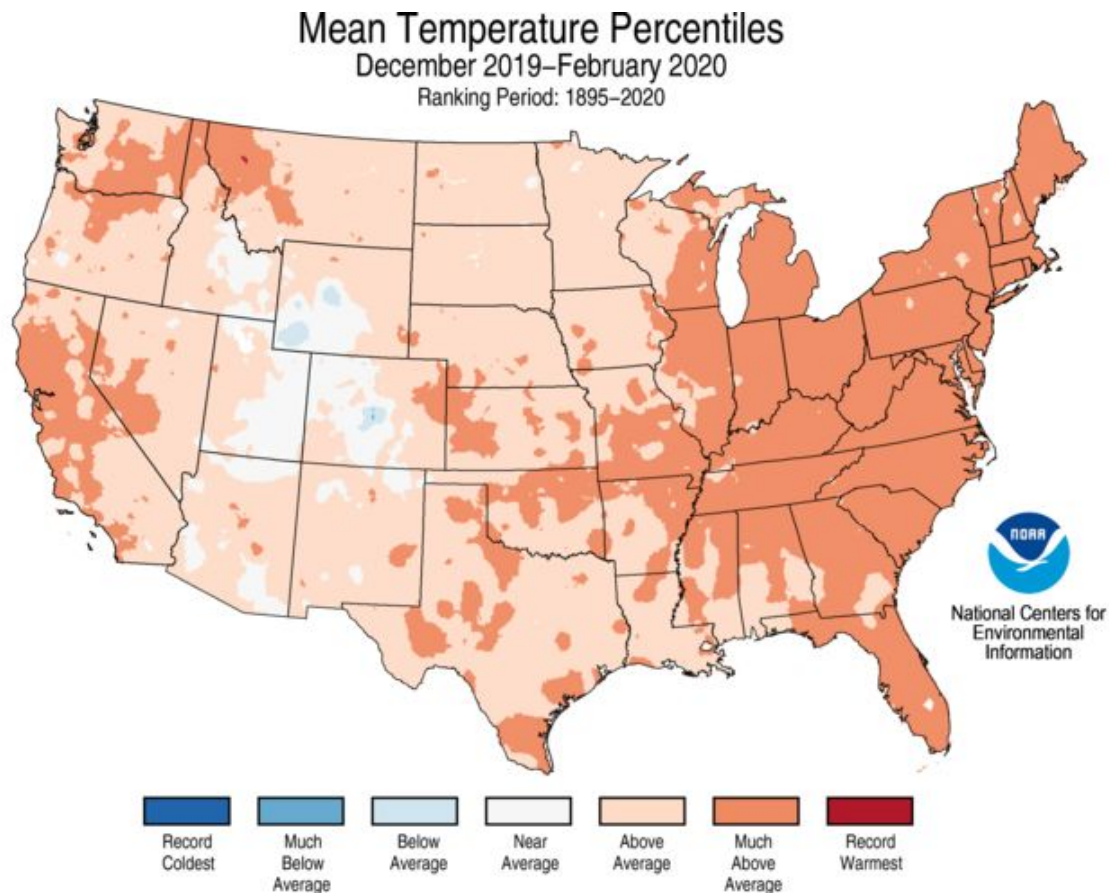


CoCoRaHS *WxTalk* Webinar Series

Greg Carbin
Chief of Forecast Operations, NWS Weather Prediction Center
College Park, Maryland
@GCarbin

1-2020

Where's Winter?

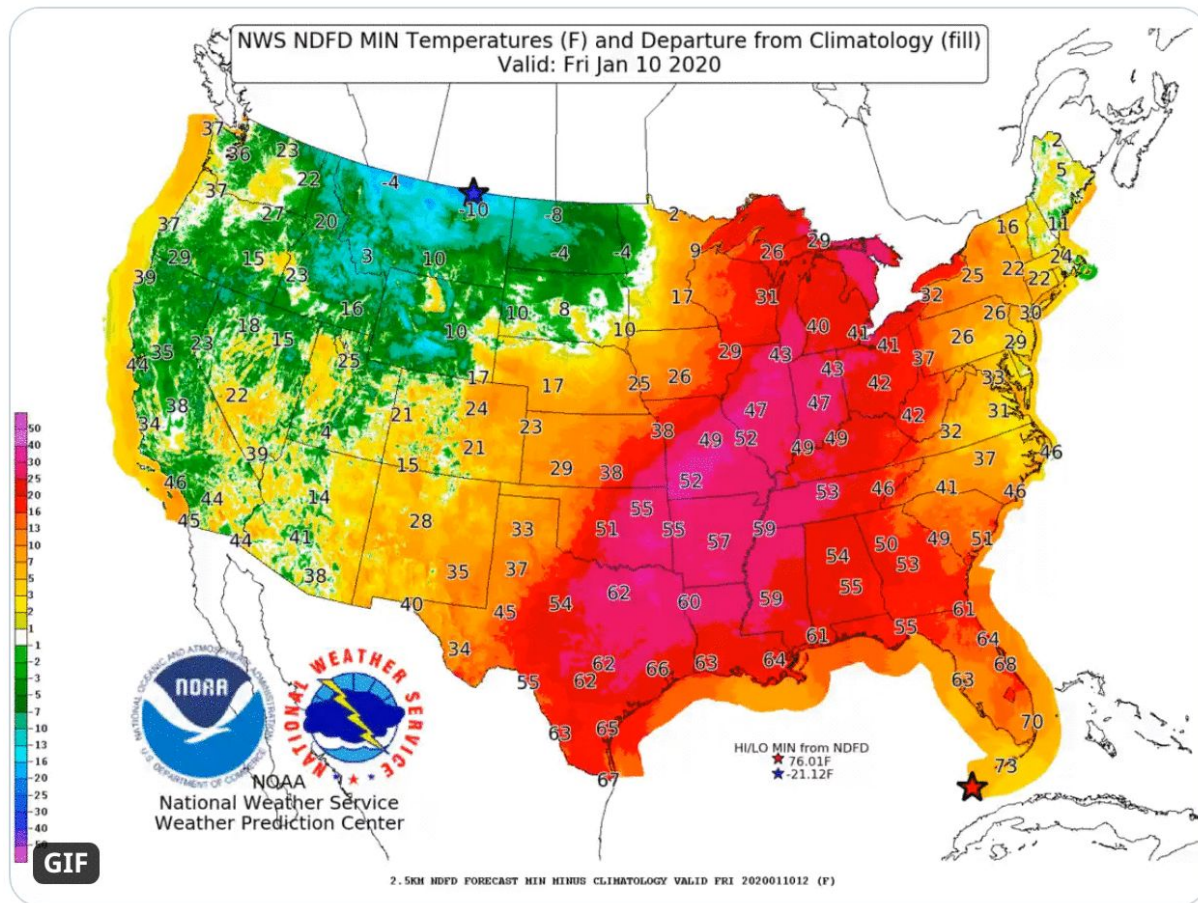


Created: Wed Mar 04 2020

Data Source: 5km Gridded Dataset (nClimGrid)

1-2020

Where's Winter?



January 10-14, 2020

of Temperature Records Broken

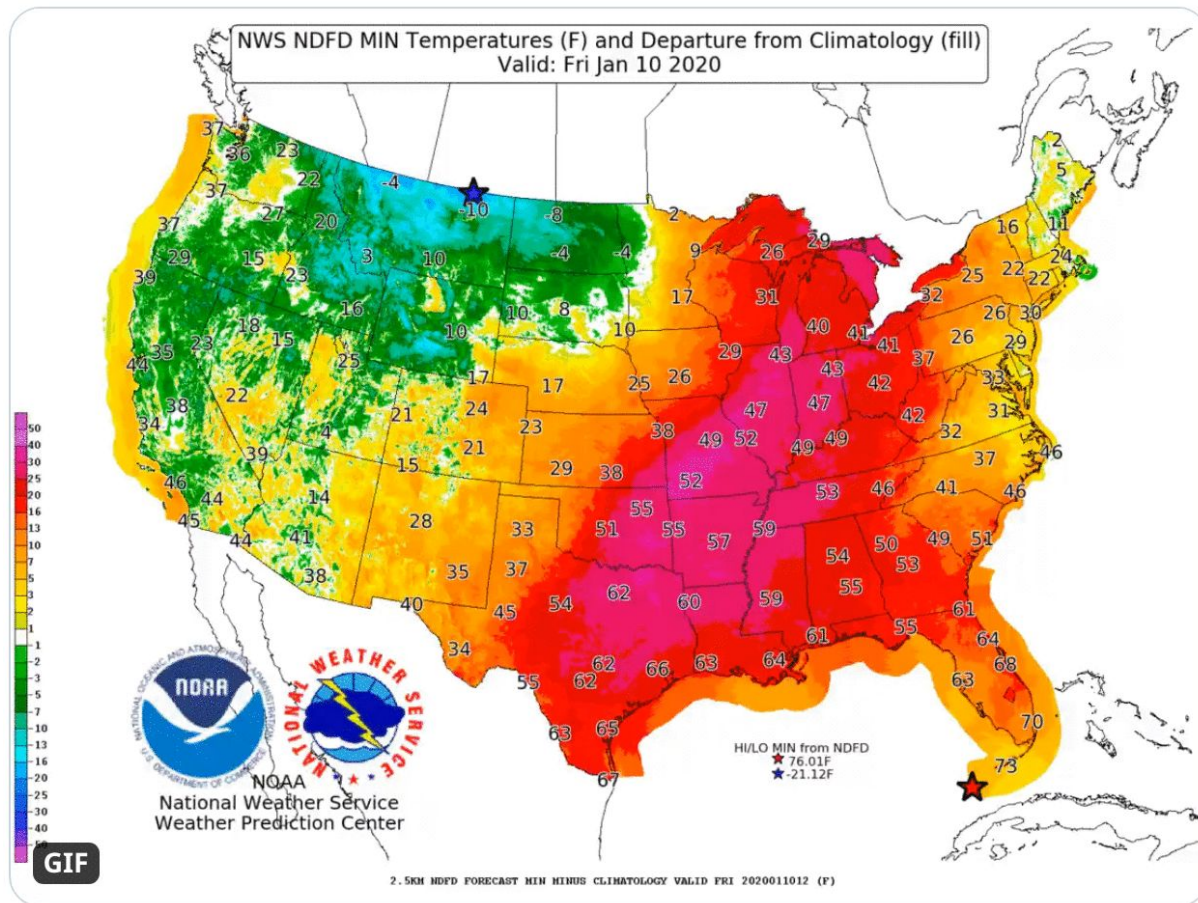
Date	HiMin	HiMax
Jan. 10	244	83
Jan. 11	241	206
Jan. 12	207	263
Jan. 13	87	56
Jan. 14	92	36

Date	MeanD	MeanD
Jan. 10	+5F	+3F
Jan. 11	+5F	+4F
Jan. 12	+6F	+5F
Jan. 13	+3F	+4F
Jan. 14	+3F	+3F

Most Extreme Record Highs:
Marietta OH 77F 1/11/20 +19F
Pulaski VA 79F 1/12/20 +17F

1-2020

Where's Winter?



January 10-14, 2020 Temperature Records Broken

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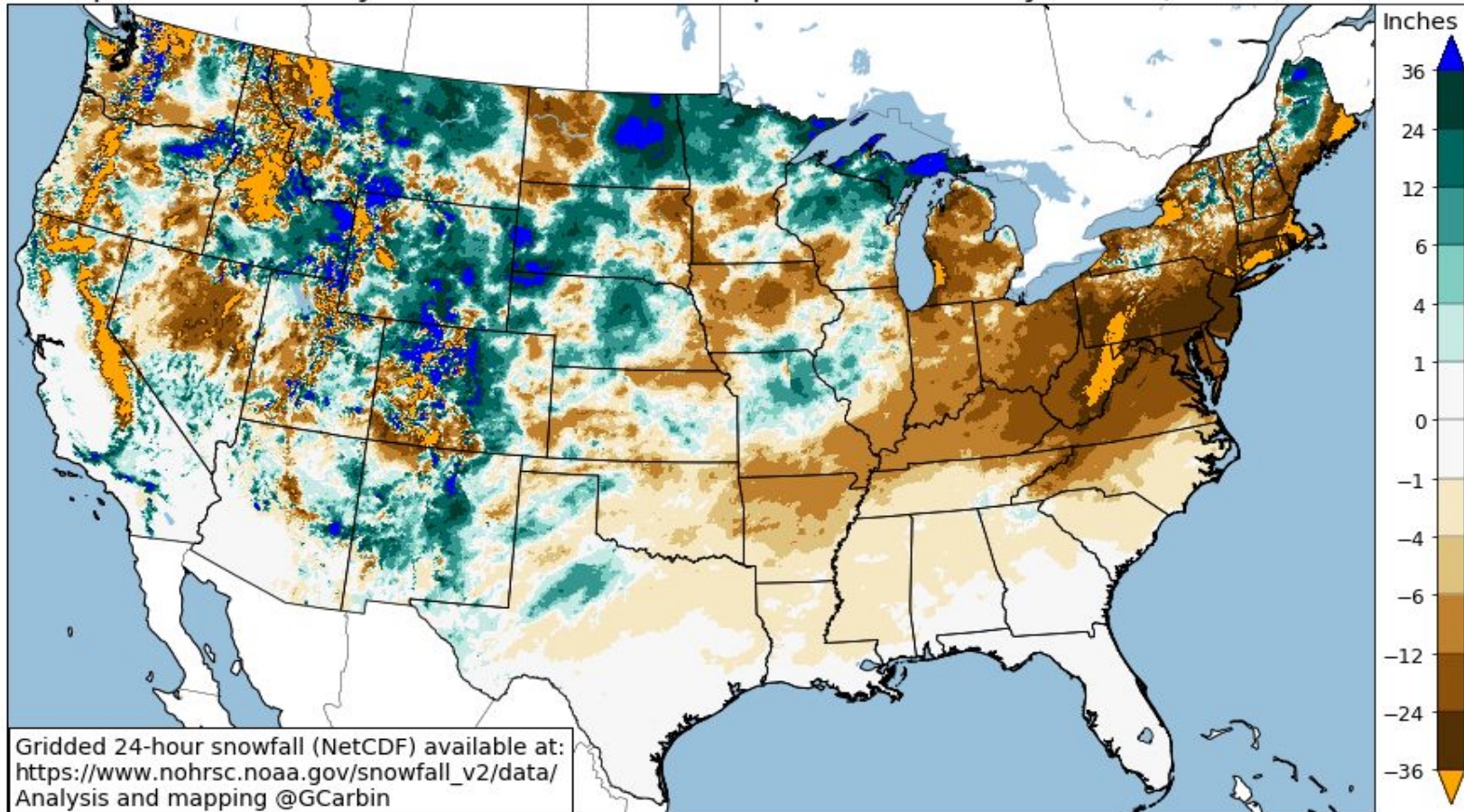
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1-2020

Where's Winter?

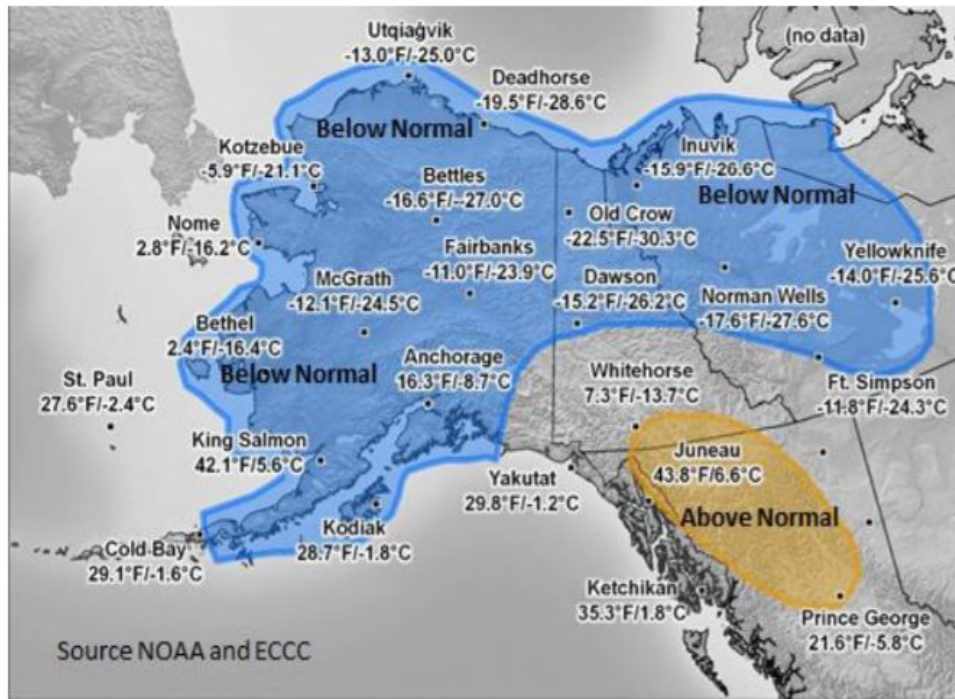
Oct-Apr 2019-20 Daily Summed Snowfall Departure from 11y Mean (2008/09-2018/19)



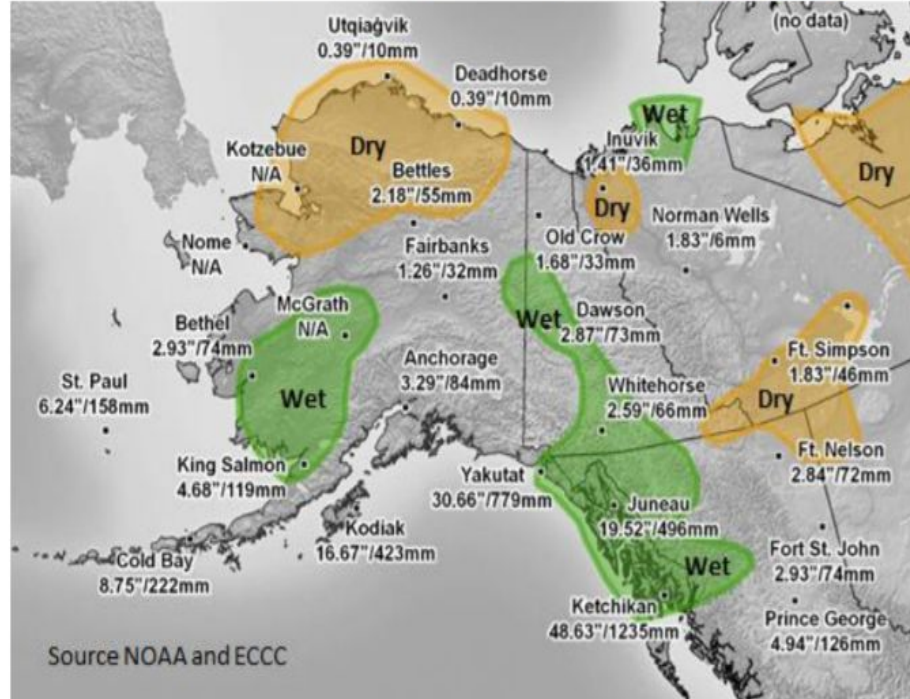
1-2020

Where's Winter?

Dec 2019-Feb 2020 Temperature Averages (°F/°C) & Anomalies- **Below** / **Above** / **N**



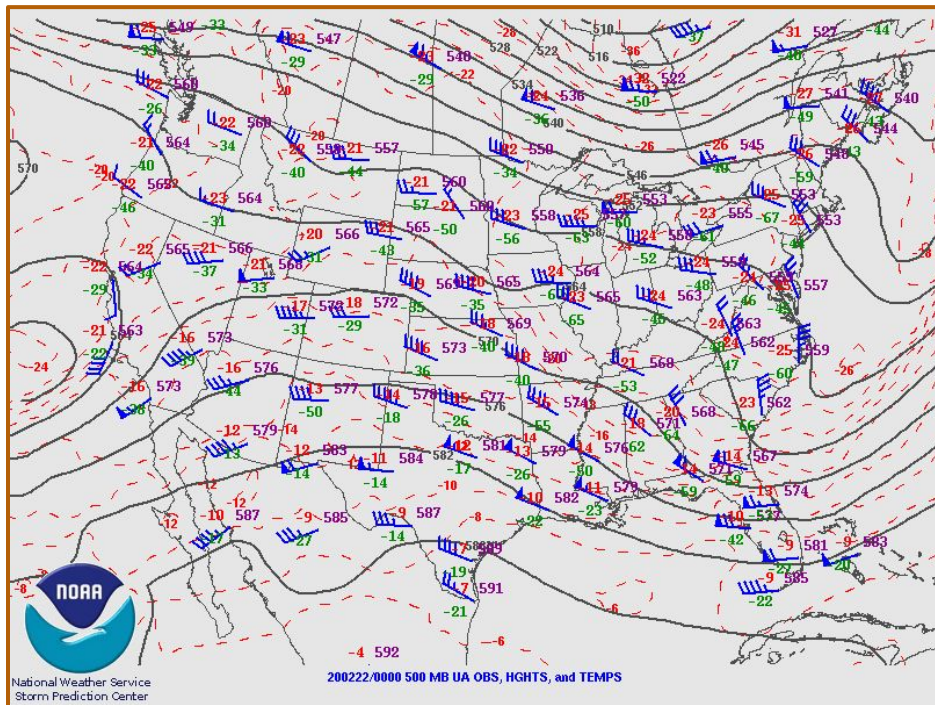
Dec 2019-Feb 2020 Precipitation Totals (inches/mm) & Anomalies- **Dry** / **Wet** / **Normal**



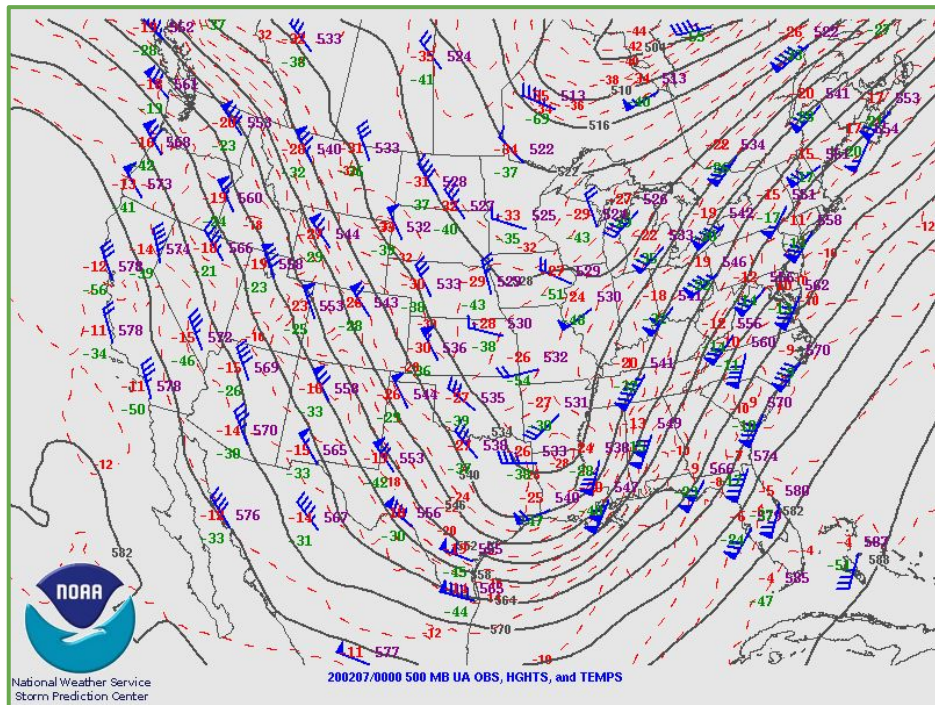
While the CONUS had its 4th warmest winter on record, Alaska had its coldest winter in 21 years and one of the coldest Februarys on record. The January high in Fairbanks averaged 4 degree F, the lowest average daily high for January on record. Heavy snow in McGrath pushed the seasonal snowpack to more than twice the normal depth.

2-2020

February Flip-Flop (Driest Day to A Wet Month*)



Driest February 2020 Day on the 22nd (1060 inches)

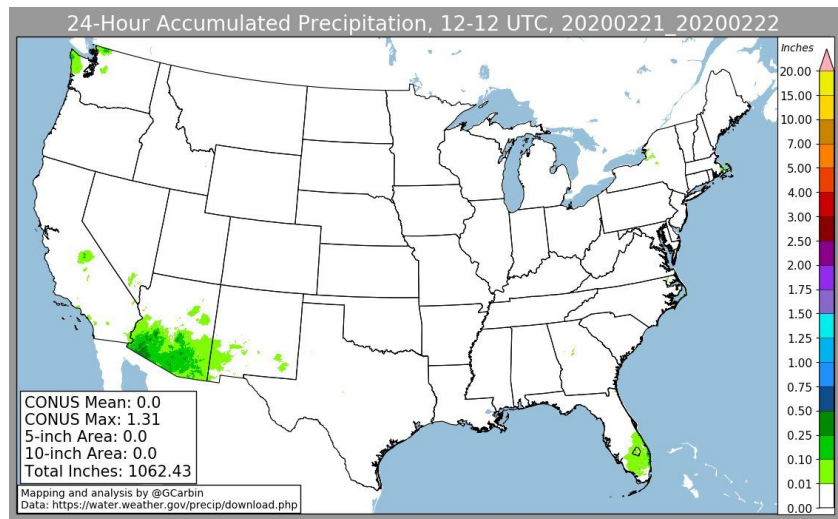


Wettest February 2020 Day on the 7th (125k inches!)

*In some areas.

2-2020

February Flip-Flop (Driest Day to A Wet Month*)



#WeekendDataMining Poll: For the driest 20 days based on CONUS daily mean precipitation since 2005, which month has the greatest number of driest days?

January

February

October

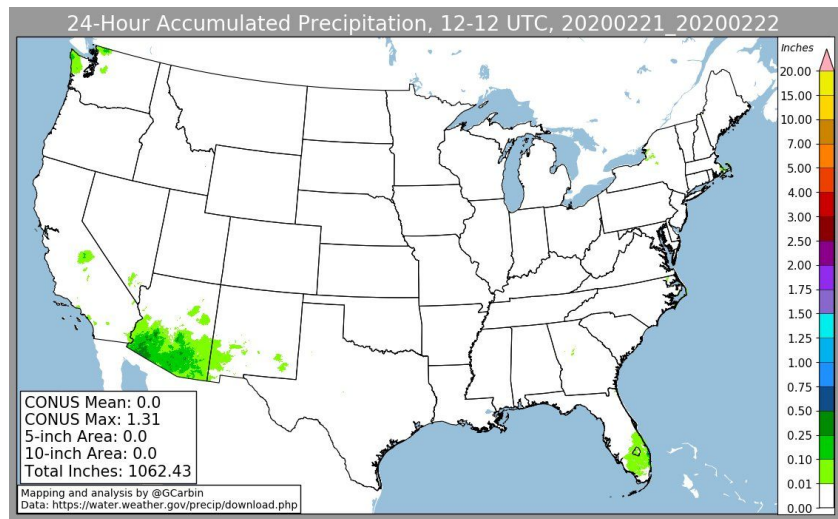
November

Driest February 2020 Day on the 22nd (1060 inches)

*In some areas.

2-2020

February Flip-Flop (Driest Day to A Wet Month*)



#WeekendDataMining Poll: For the driest 20 days based on CONUS daily mean precipitation since 2005, which month has the greatest number of driest days?

January

34.6%

February

21.2%

October

38.5%

November

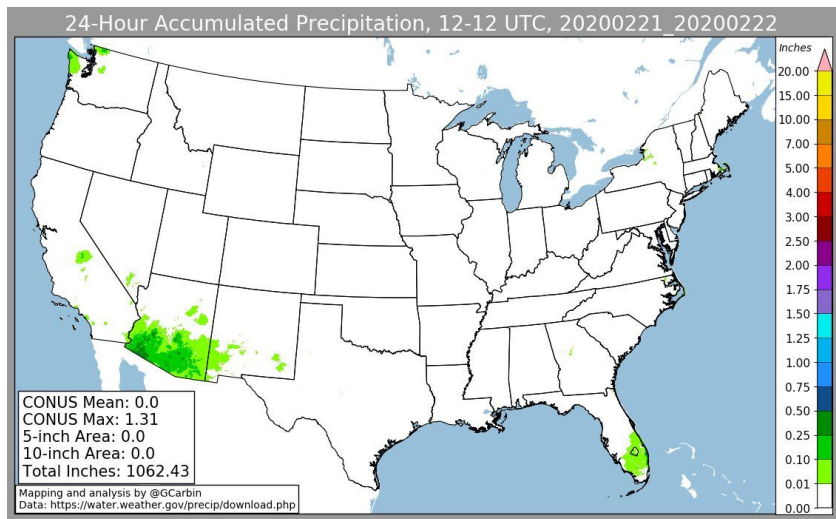
5.8%

Driest February 2020 Day on the 22nd (1060 inches)

*In some areas.

2-2020

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#WeekendDataMining Poll: For the driest 20 days based on CONUS daily mean precipitation since 2005, which month has the greatest number of driest days?

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34.6%

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October

38.5%

November

5.8%

#DryDayTrivia #WeekendDataMining. The month of November shows up most often in list of 20 driest days since 2005. Here's the ranked frequency based on CONUS daily mean precip:

November: 7 days

January: 5 days

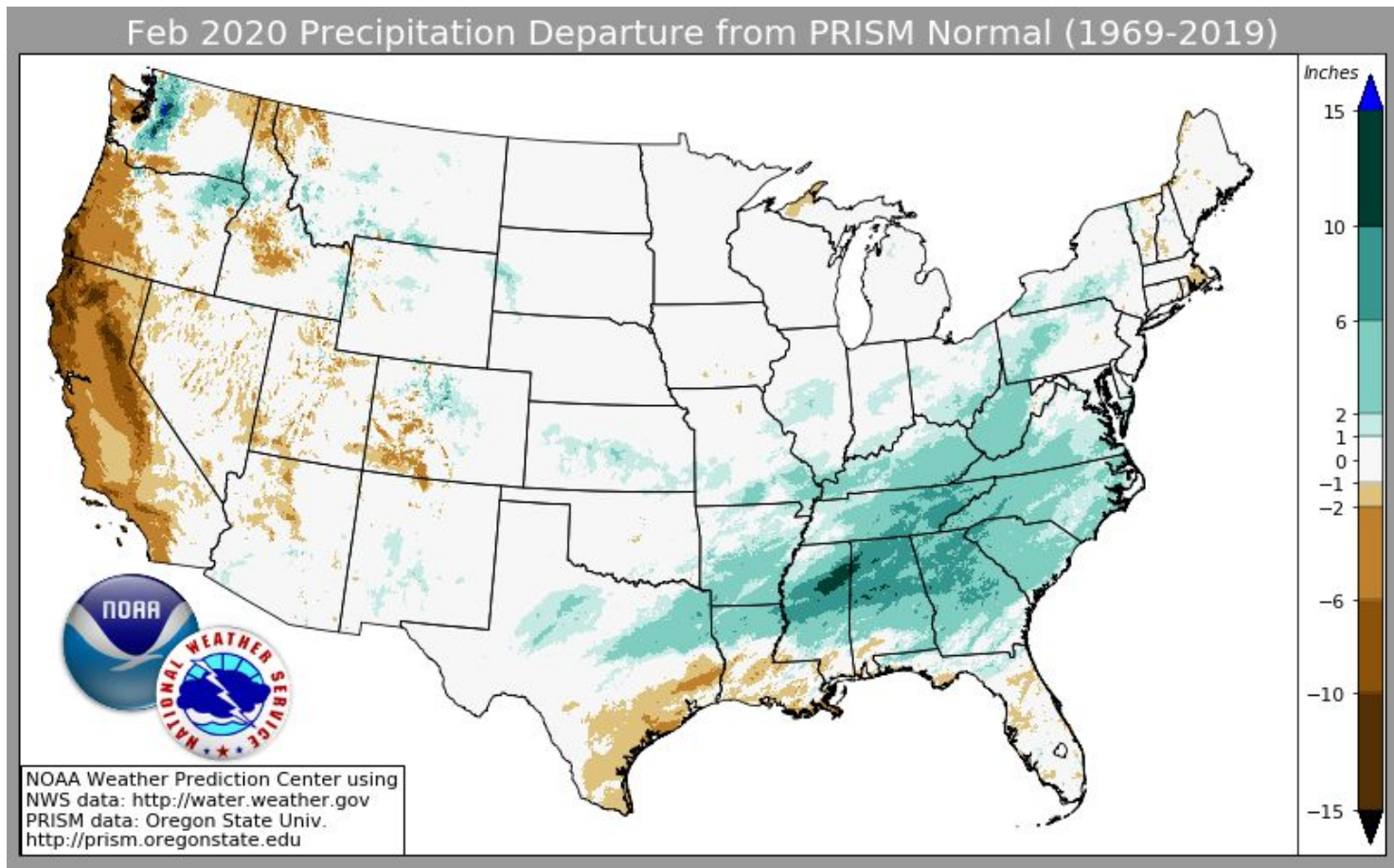
February: 3 days

March/October: only 2 days each!

December: 1 day

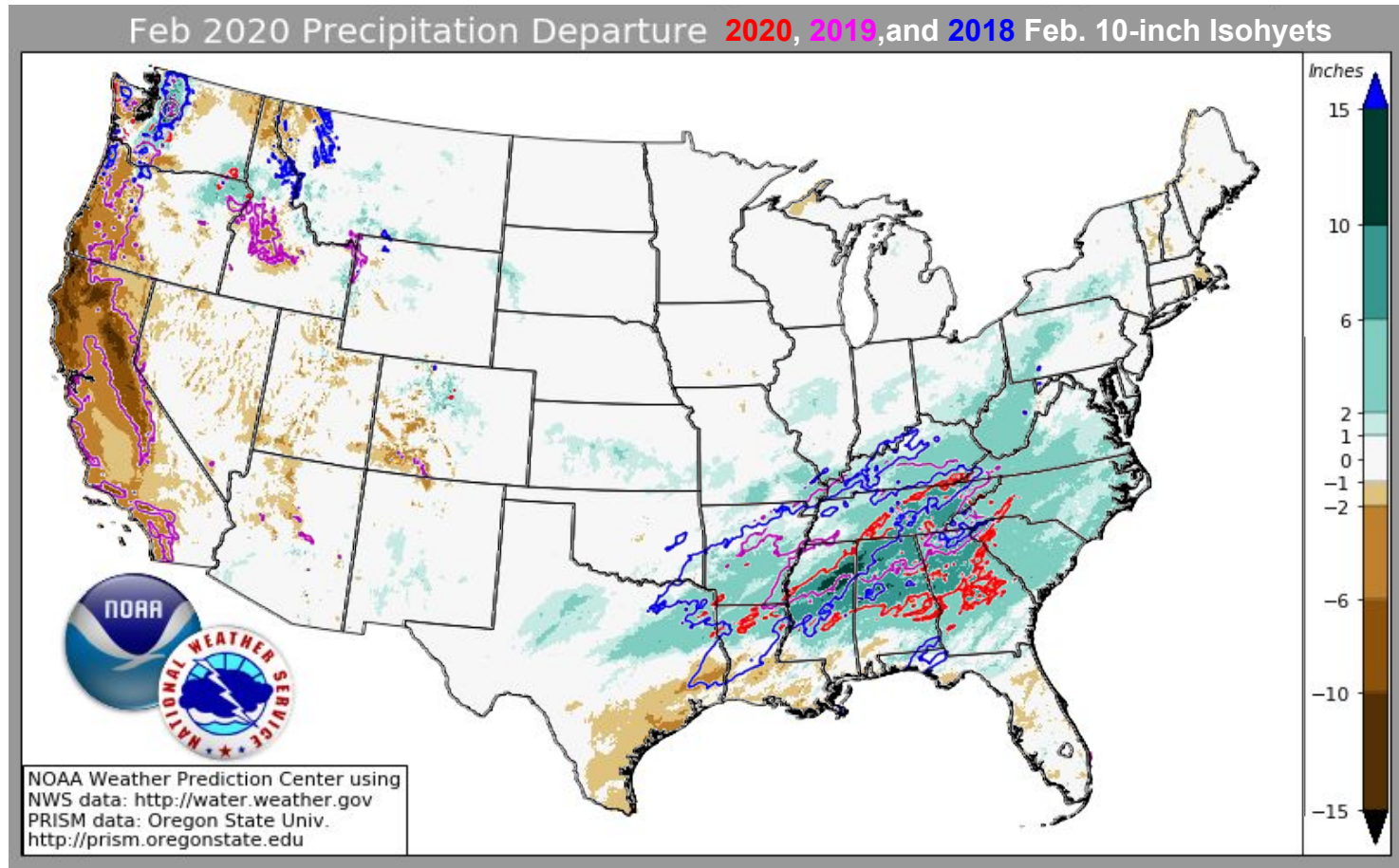
2-2020

February Flip-Flop (Driest Day to A Wet Month*)



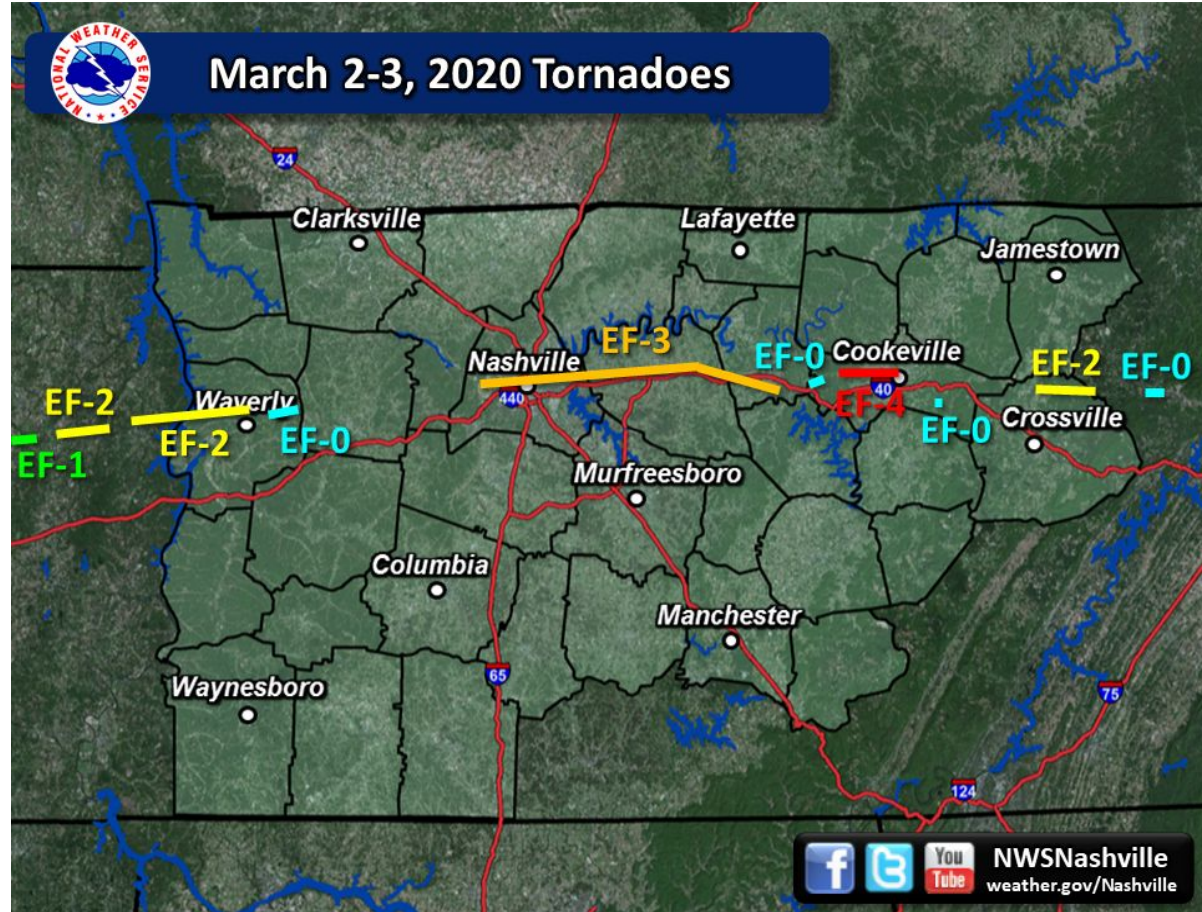
2-2020

February Flip-Flop (Driest Day to A Wet Month*)



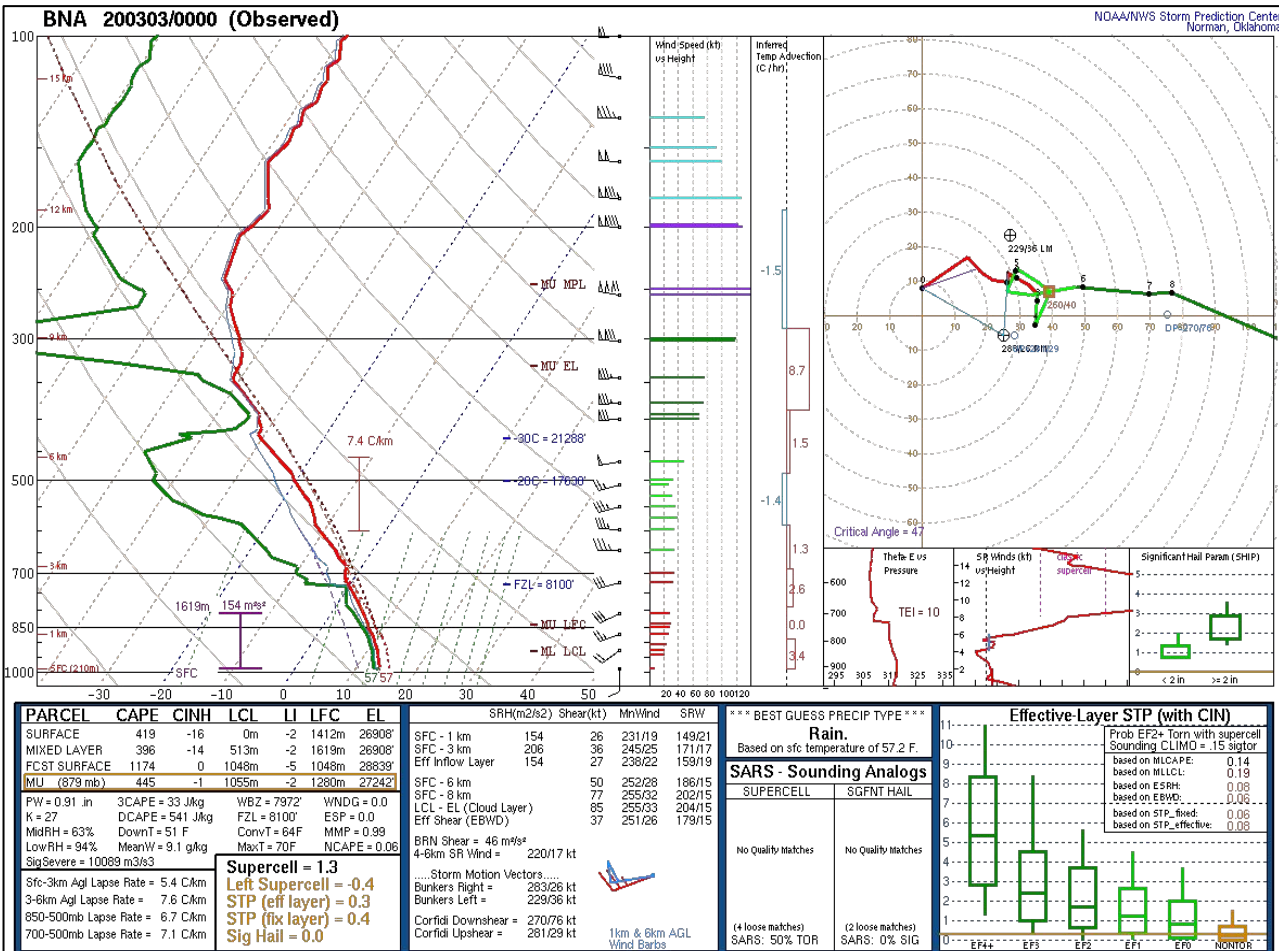
3-2020

Tennessee Tornadoes, March 2-3, 2020

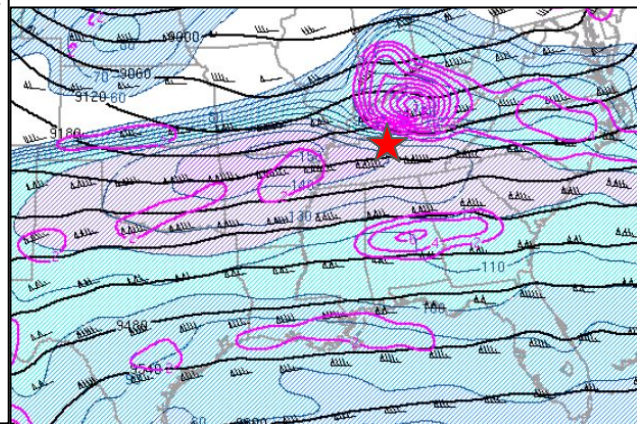


3-2020

Tennessee Tornadoes, March 2-3, 2020

BNA Parameter Changes
0000 to 0500 UTC 3/3/2020

Parm	0000	0500
500 wind	30	65 (kt)
MLCAPE	400	800 (J/Kg)
0-6km BS	50	70 (kt)
SCP	1	10
STP	0	3



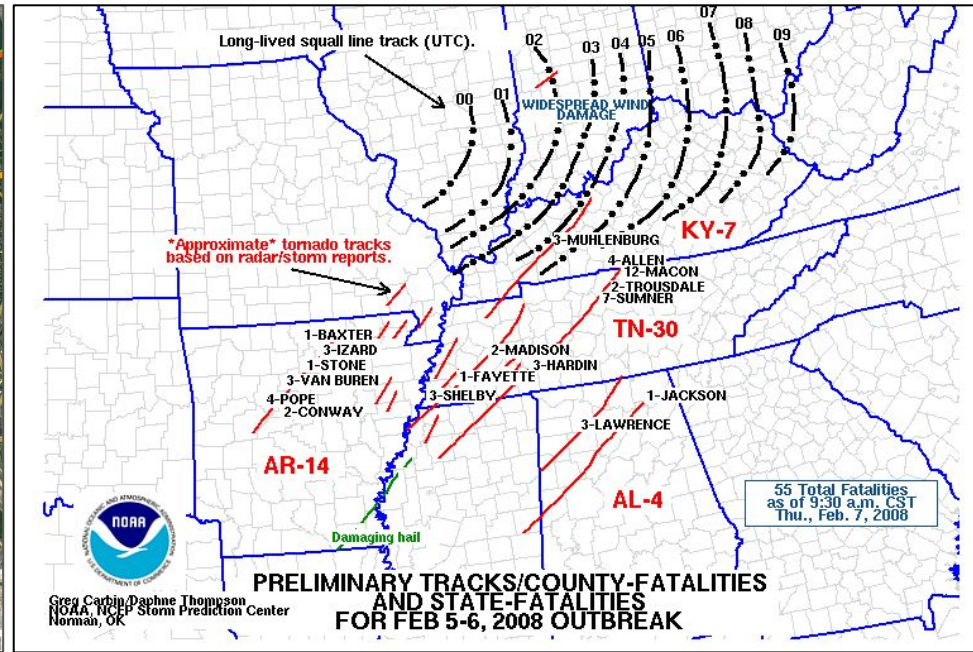
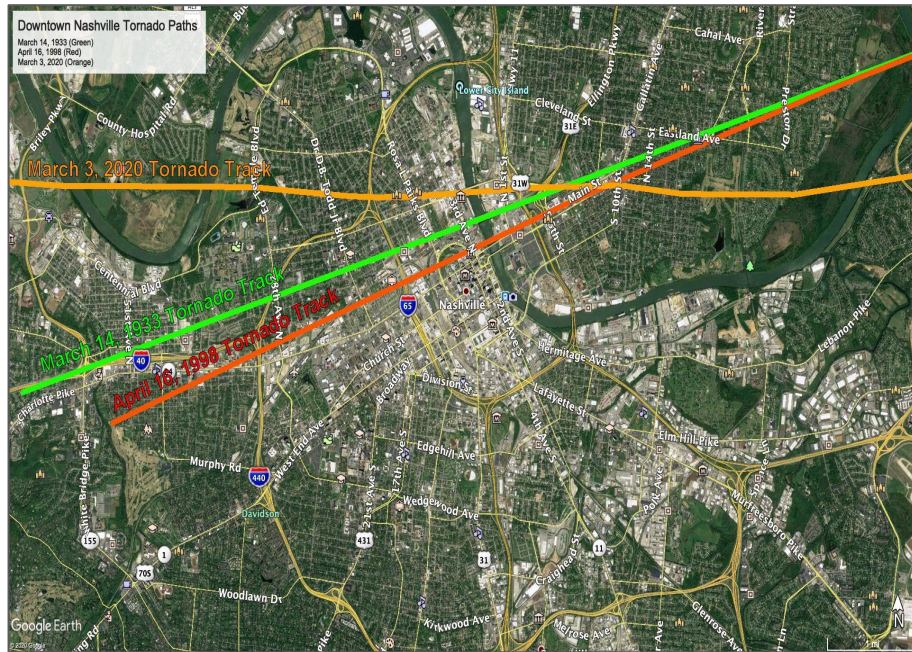
3-2020

Tennessee Tornadoes, March 2-3, 2020



3-2020

Tennessee Tornadoes, March 2-3, 2020



Per Gensini and Brooks (2018), this region of the CONUS has had an increase in tornado environments and reports in recent decades. Historically, TN has experienced more killer tornadoes at night than any other state.

4-2020

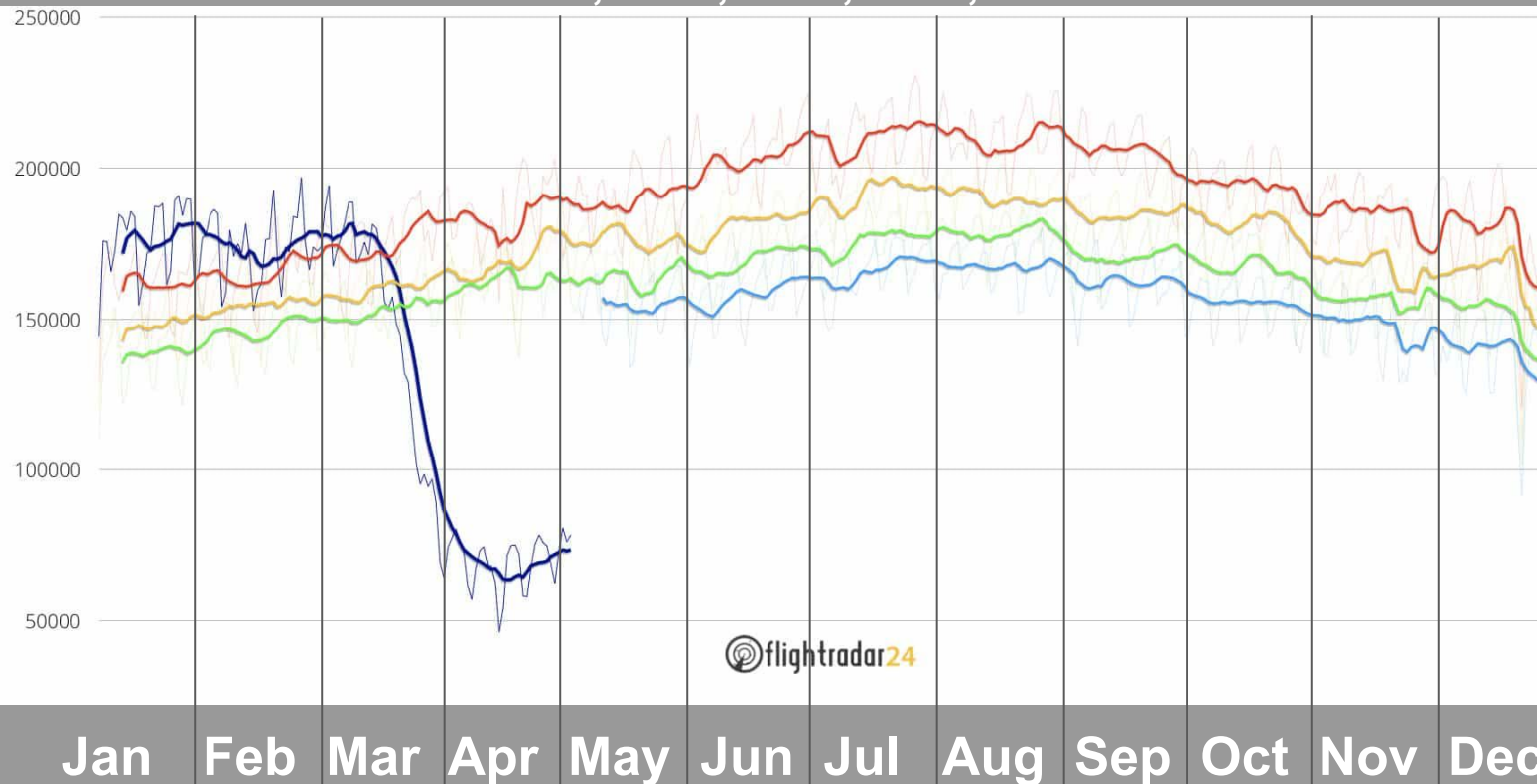
COVID Clears the Skies



4-2020

COVID Clears the Skies

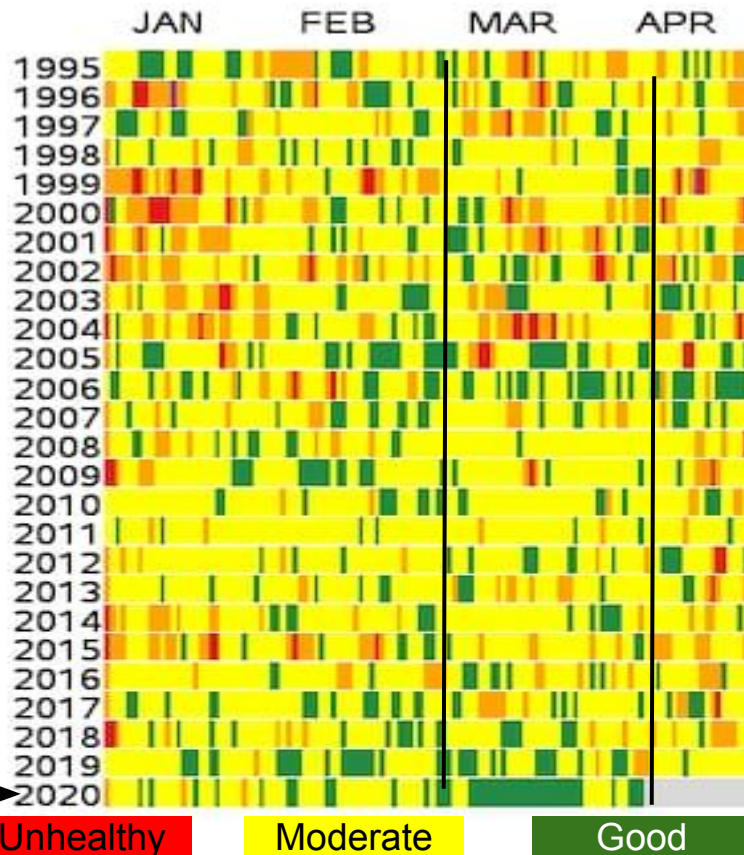
7-day moving average of total flights tracked by FlightRadar for
2016, 2017, 2018, 2019, 2020



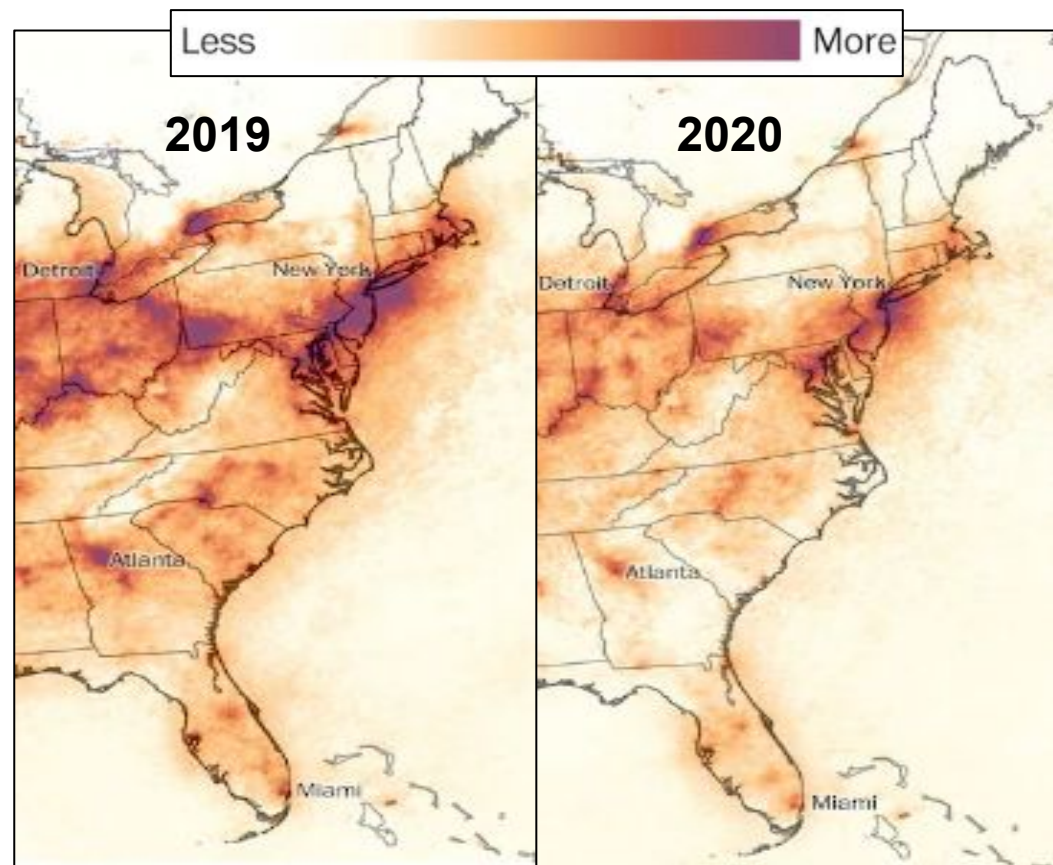
4-2020

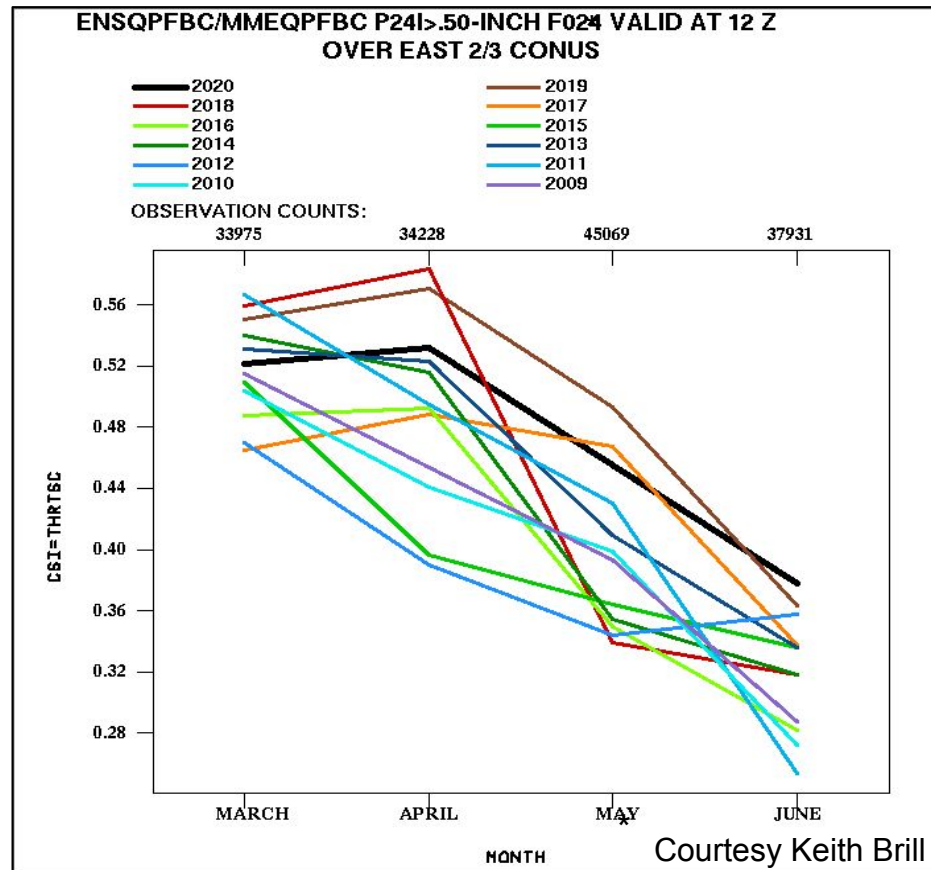
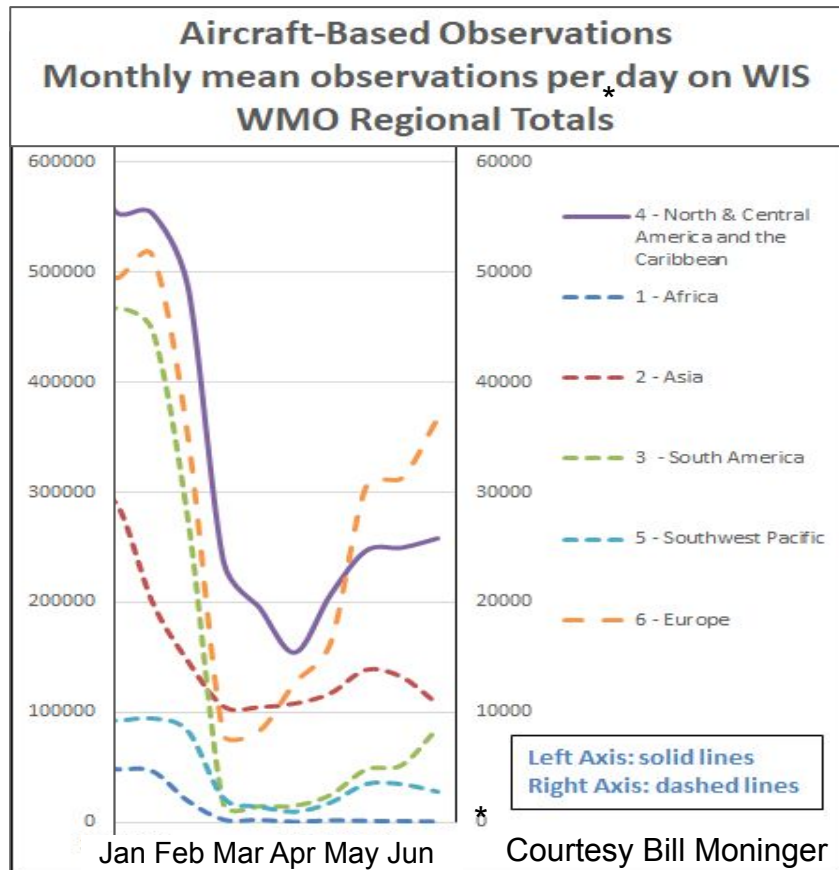
COVID Clears the Skies

Daily AQI, 1995-2020 Los Angeles/Long Beach, CA



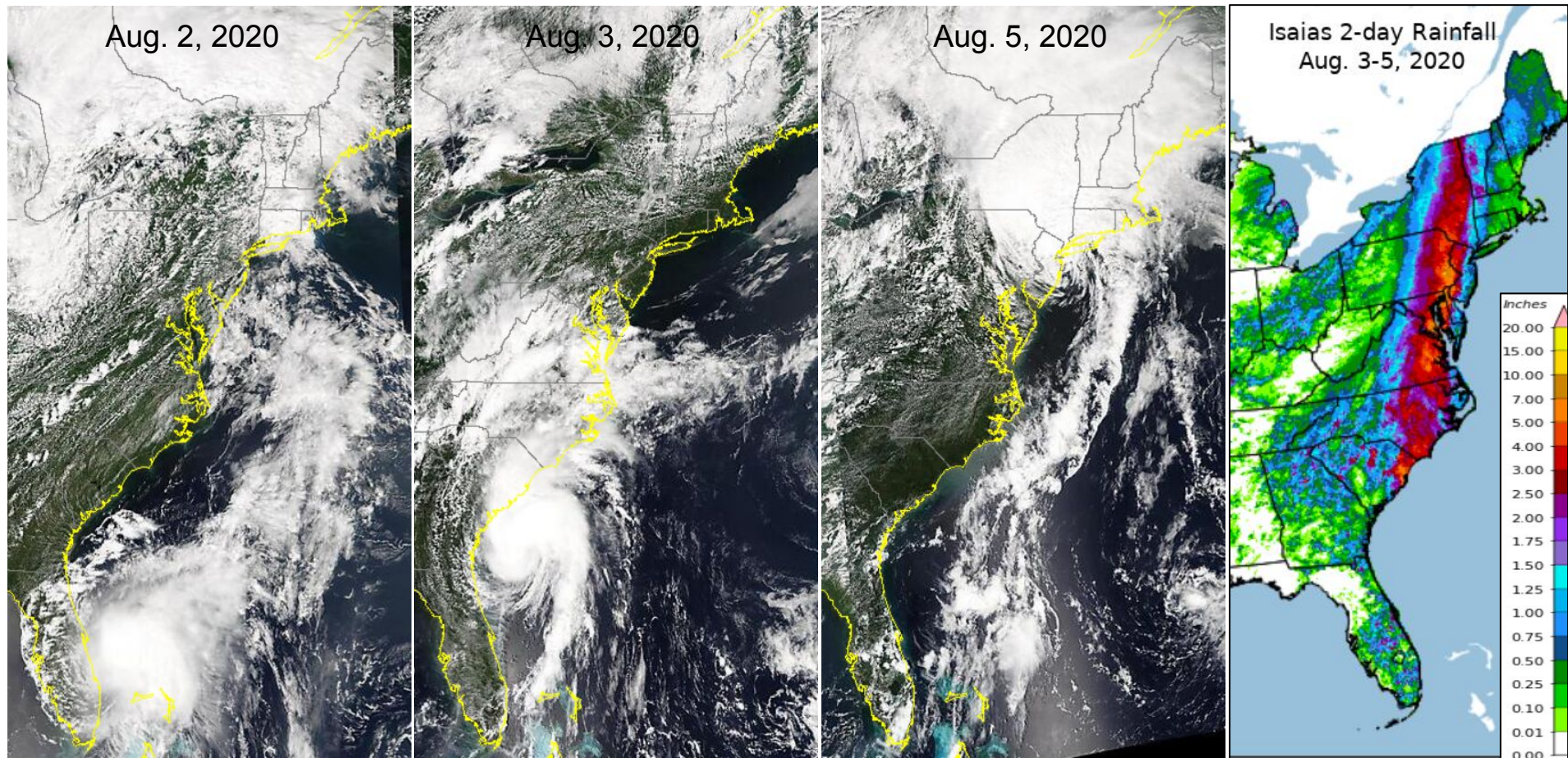
NO2 Concentration, Mar-Apr





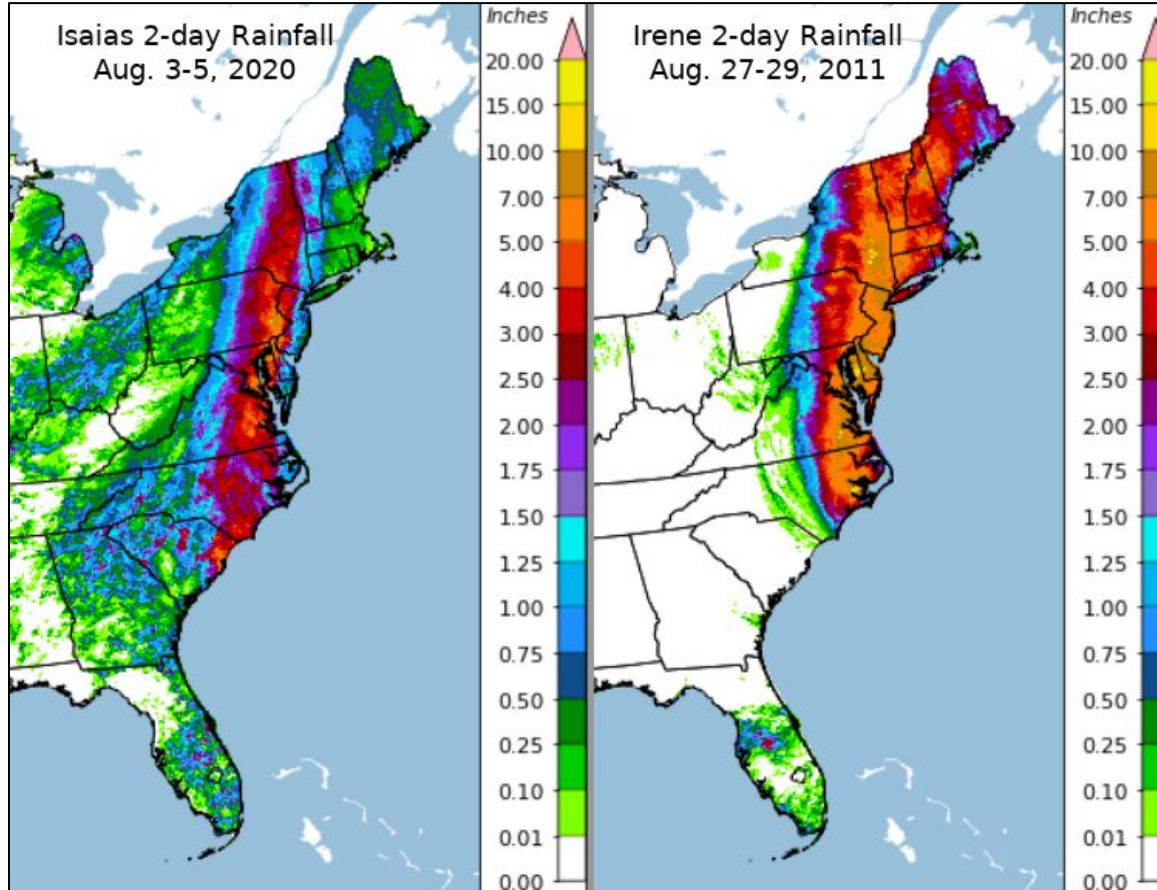
5-2020

Hurricane Isaias



5-2020

Hurricane Isaias

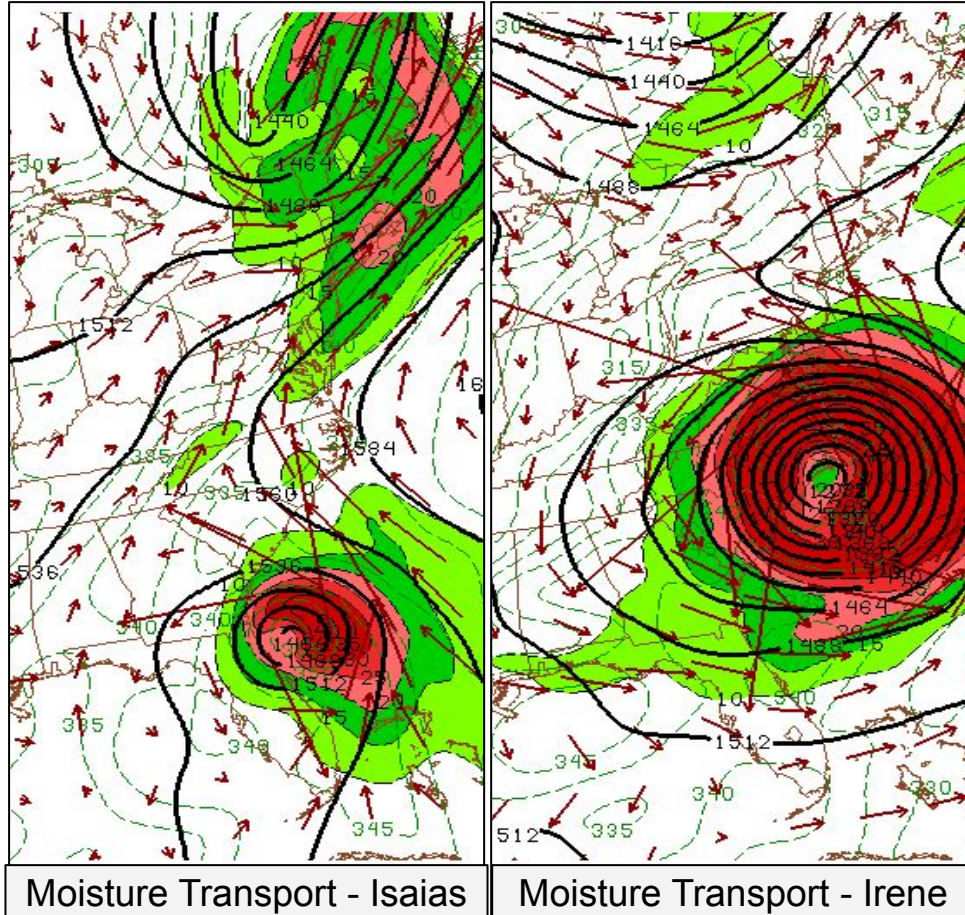


Two August “I” Hurricanes

A rainfall comparison between two East Coast tropical cyclones: Isaias in 2020, and Irene in 2011. Irene still holds a top spot with its extreme daily rainfall amounts over the Eastern U.S. in late August 2011. The rainfall with Irene resulted in extreme and devastating flooding across parts of the Northeast.

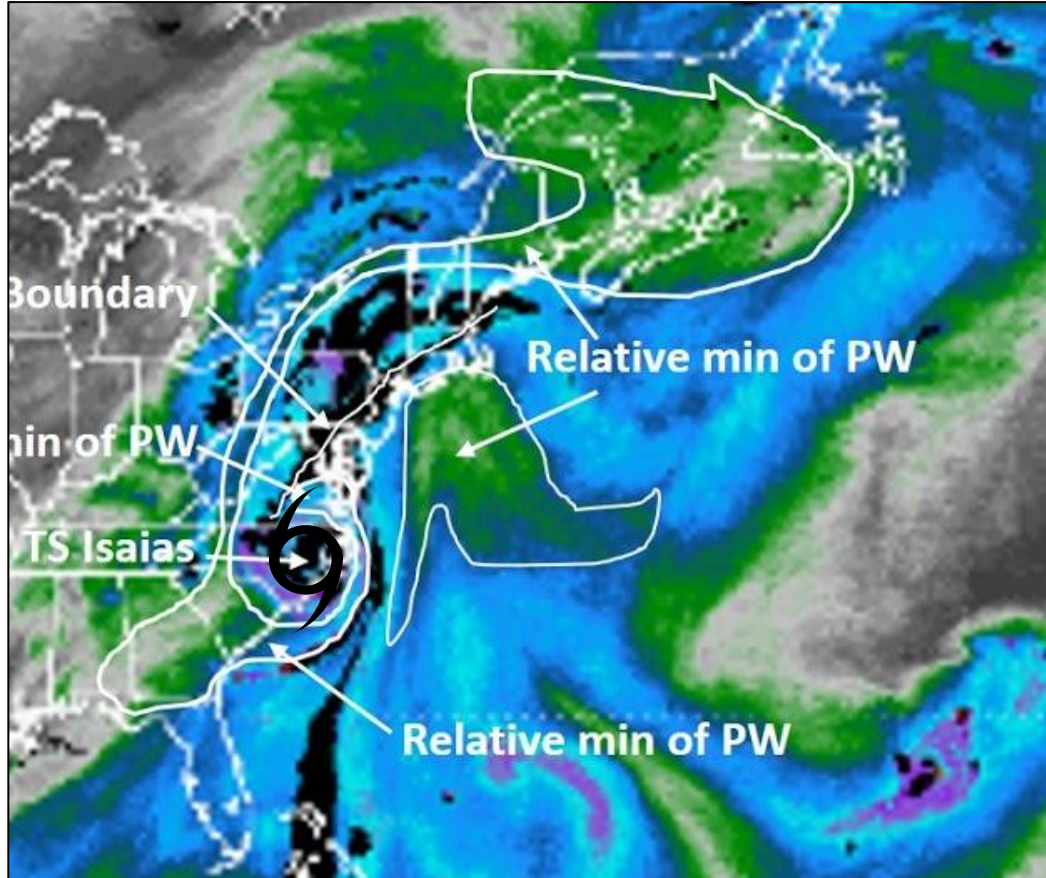
5-2020

Hurricane Isaias



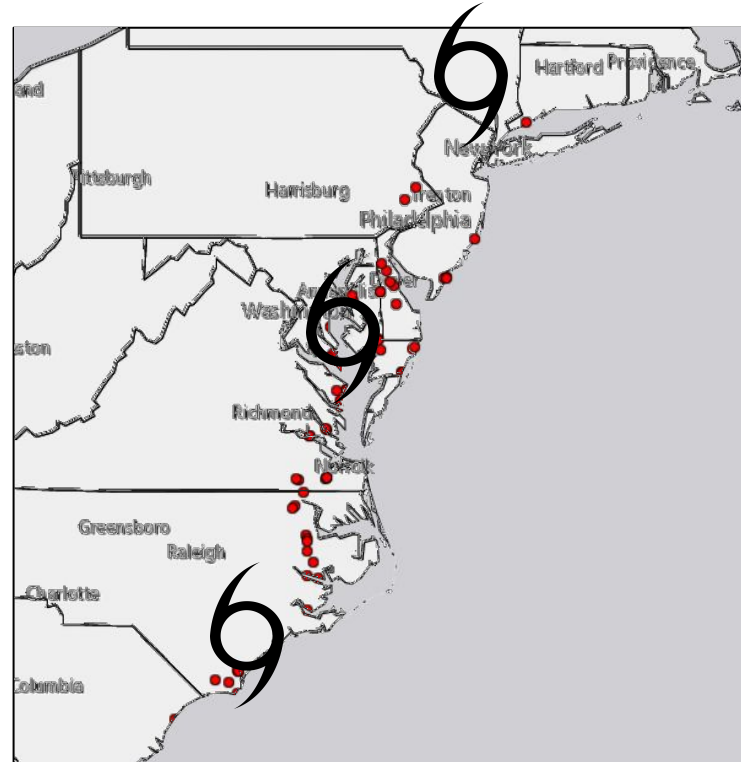
5-2020

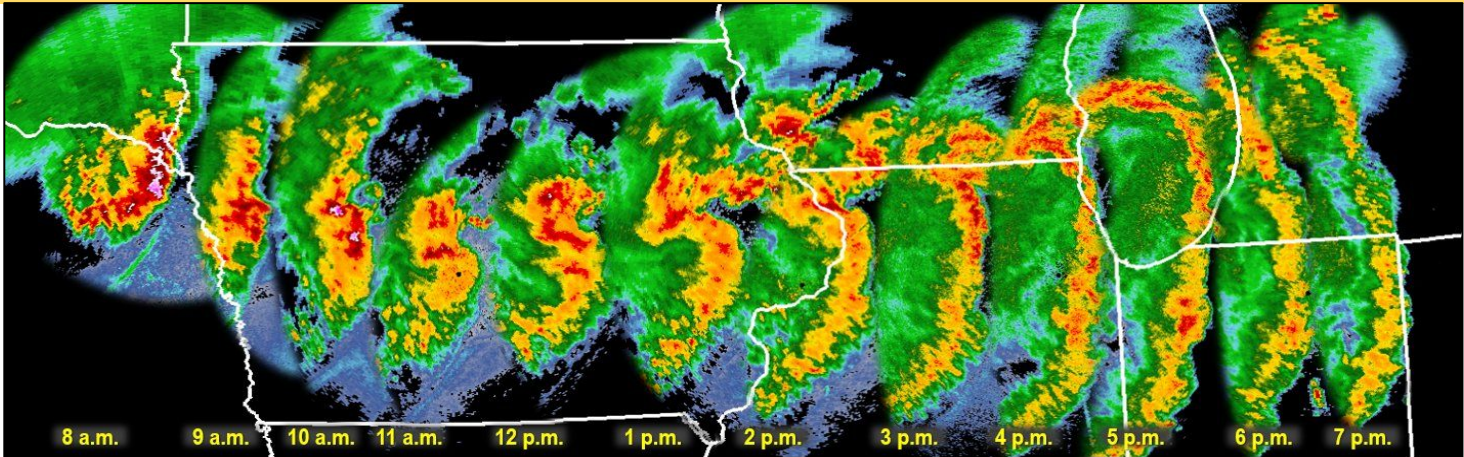
Hurricane Isaias



Courtesy Sheldon Kusselson

Tornado Reports Aug. 3-4 ●



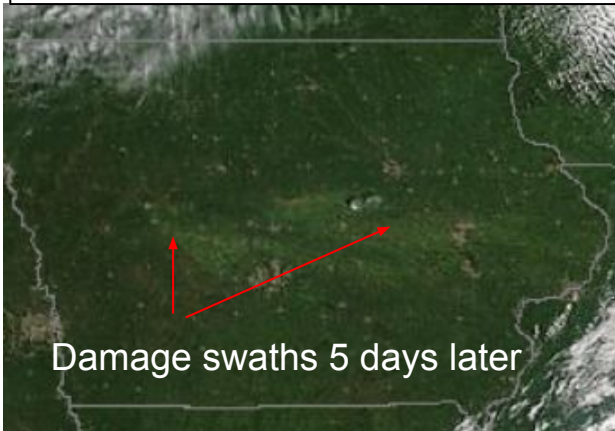


This long-lasting, severe wind thunderstorm complex (known as a derecho) produced hundreds of reports of damage along with likely a few tornadoes.

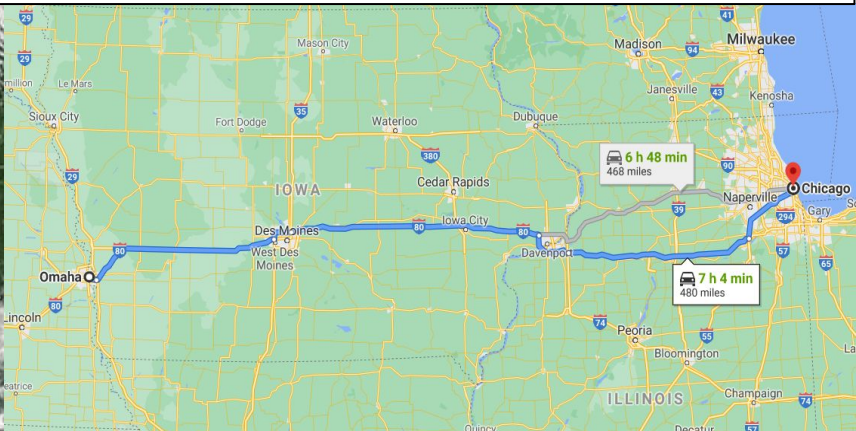


NWS Chicago | weather.gov

Aug 11, 2020

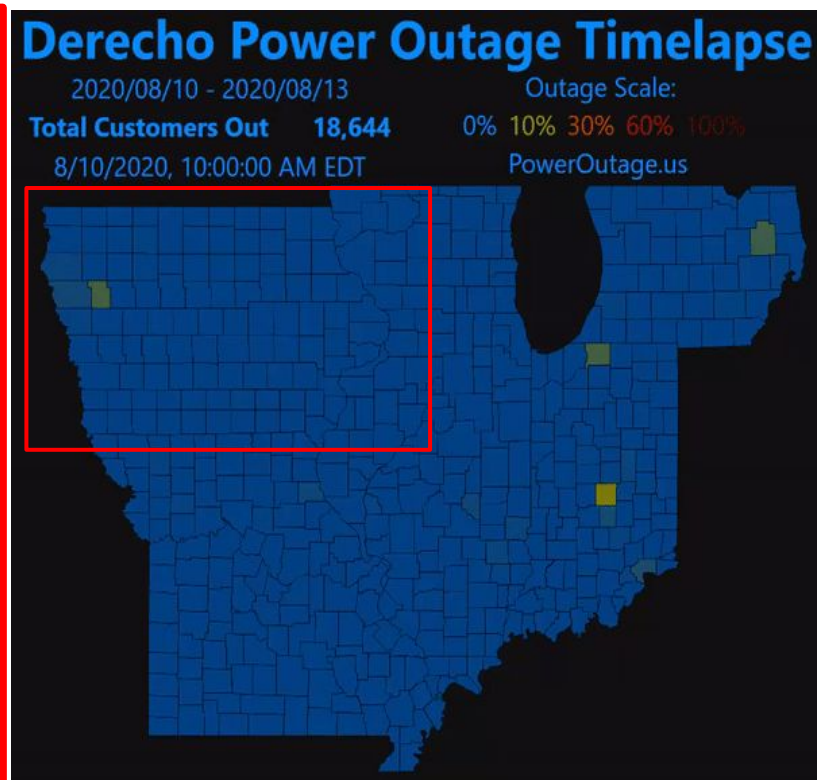
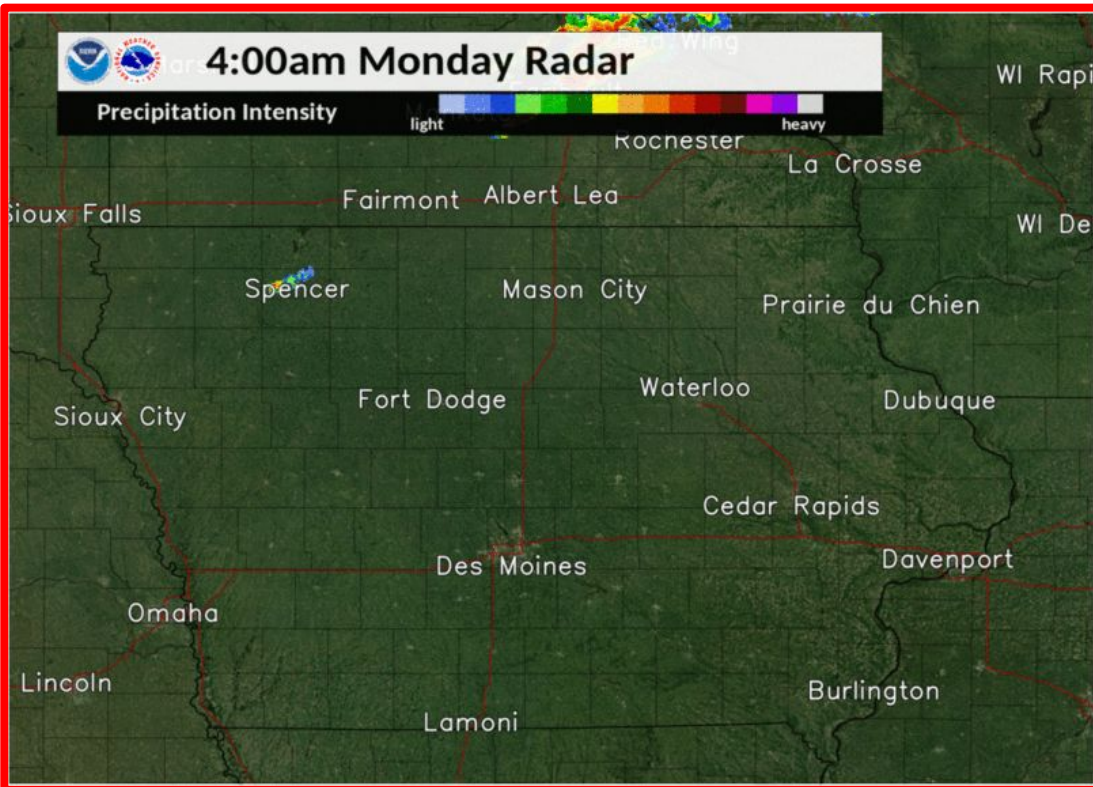


Damage swaths 5 days later



6-2020

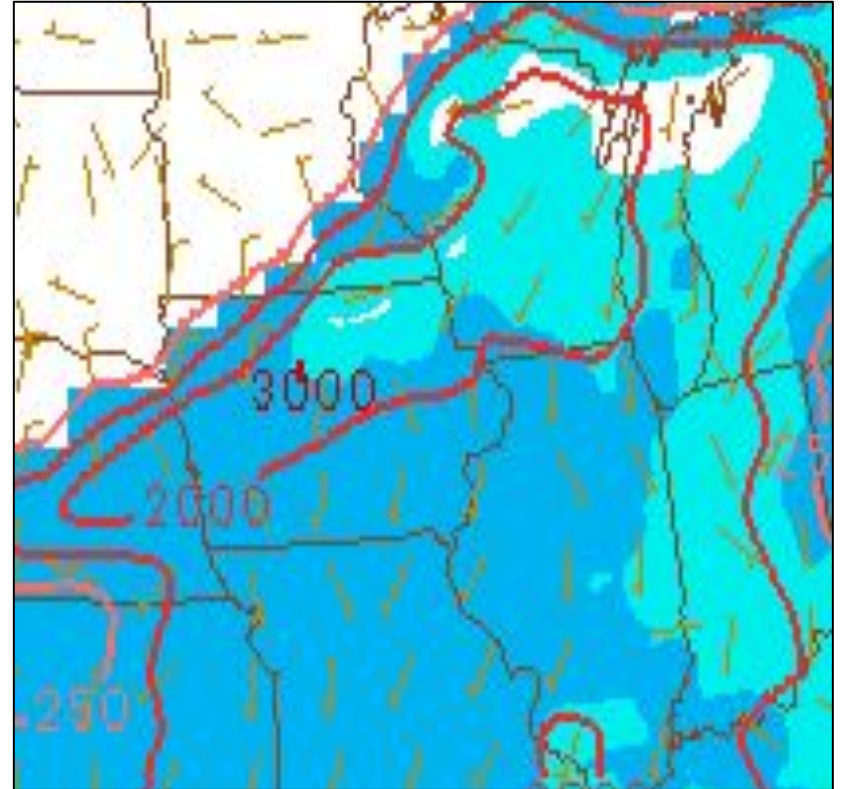
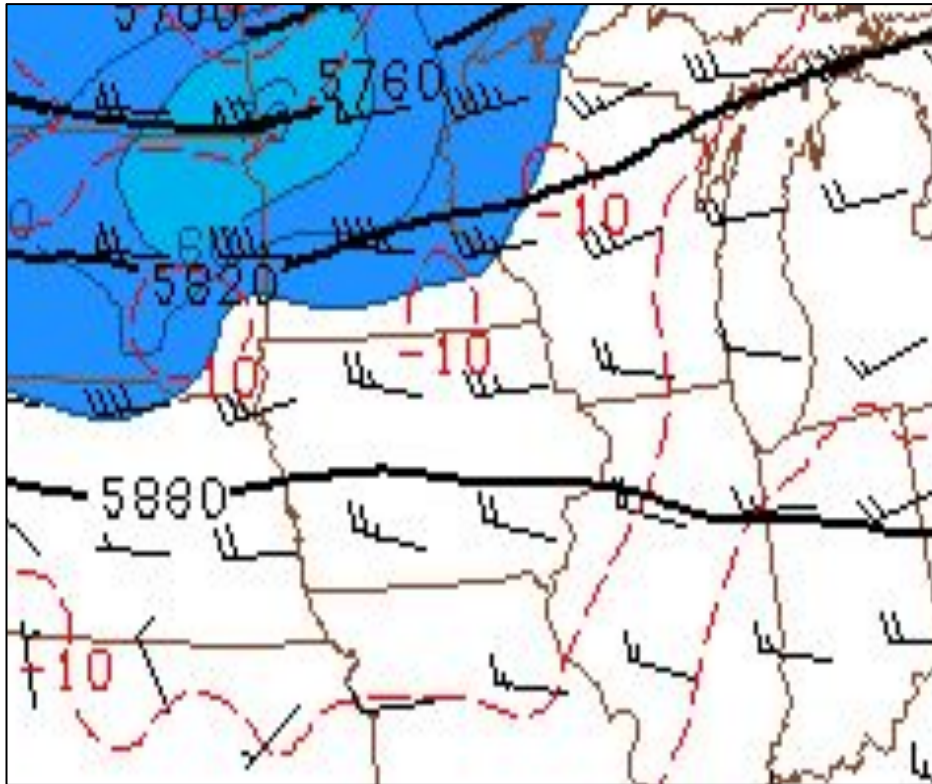
Iowa Derecho



6-2020

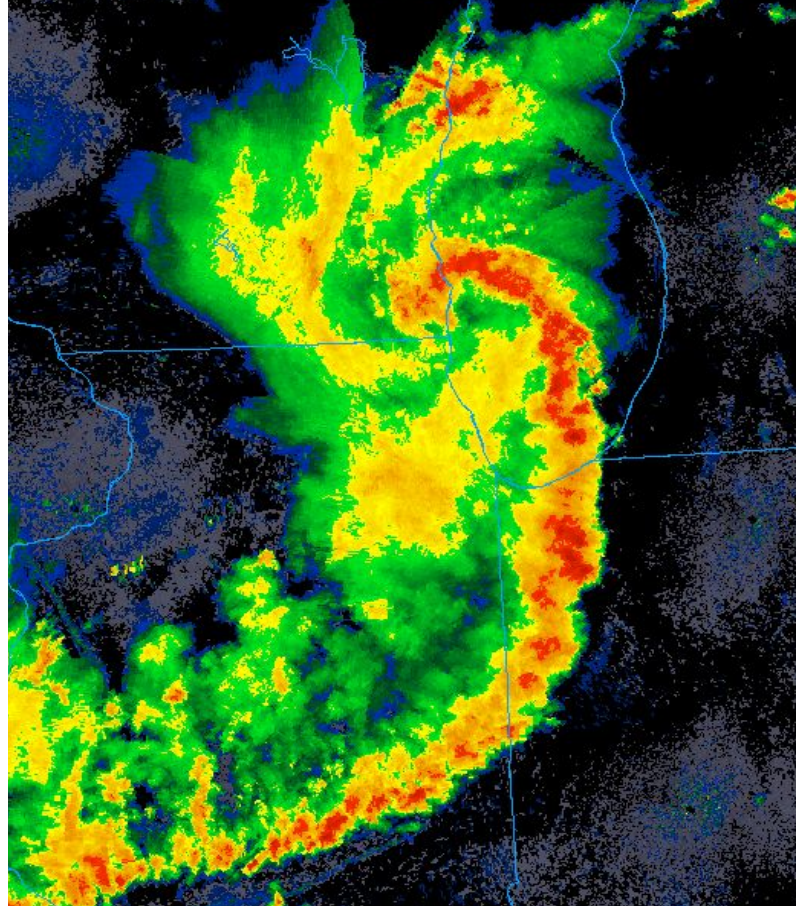
Iowa Derecho

Aug. 10, 2020, 7 am to 2 pm CDT Loop 500mb and MLCAPE



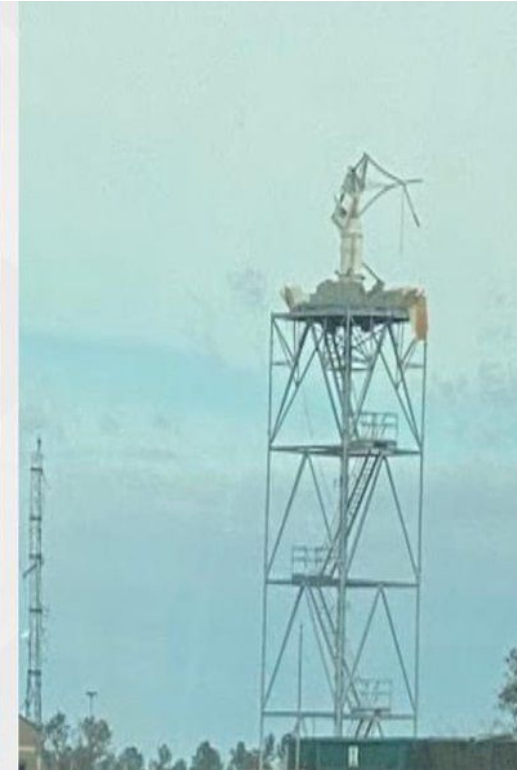
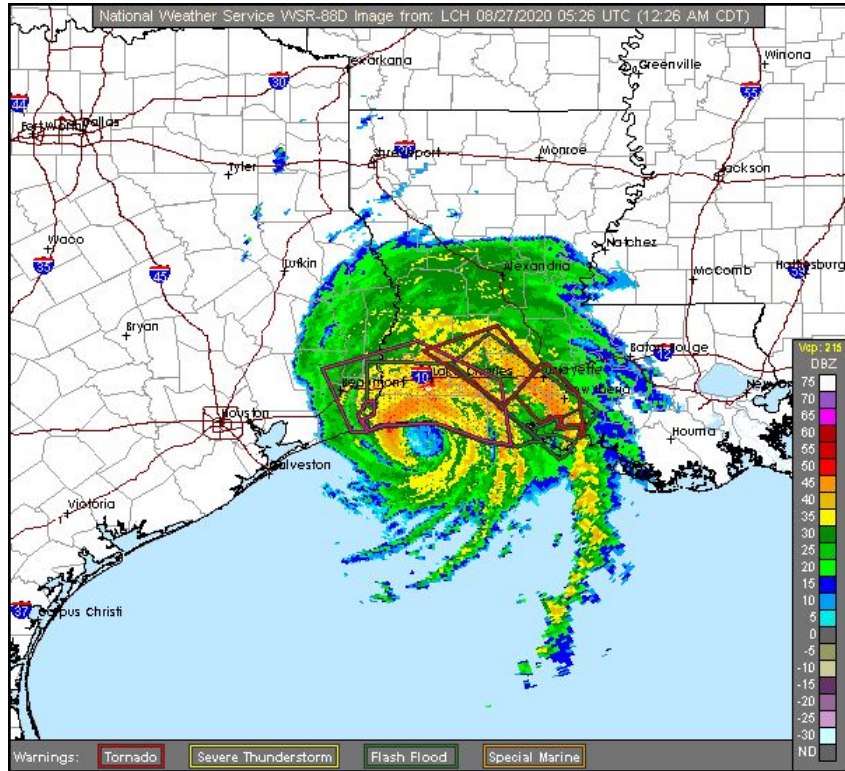
6-2020

Iowa Derecho



7-2020

Hurricane Laura



7-2020

Hurricane Laura

**NOAA
Emergency Response Imagery
Aug. 30, 2020
Cameron, LA**



Before

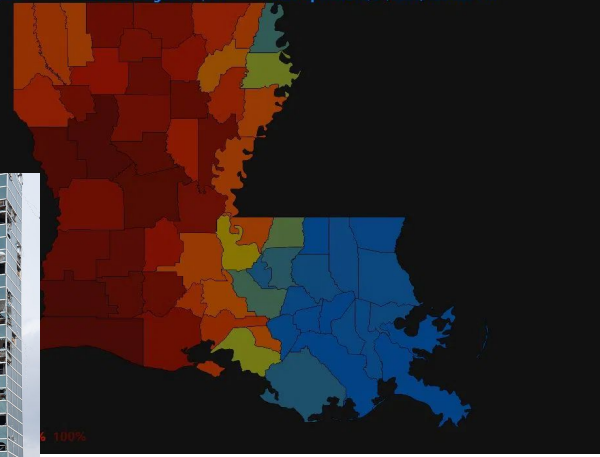
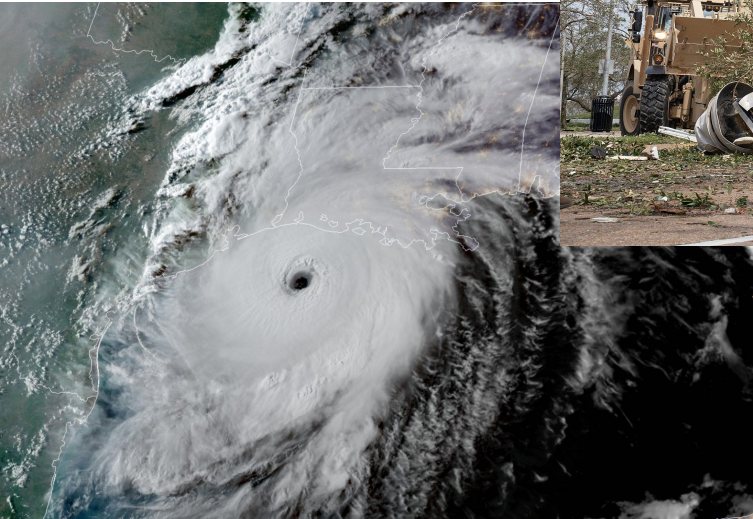
Waterline well inland

Partially sunken vessel

After

7-2020

Hurricane Laura



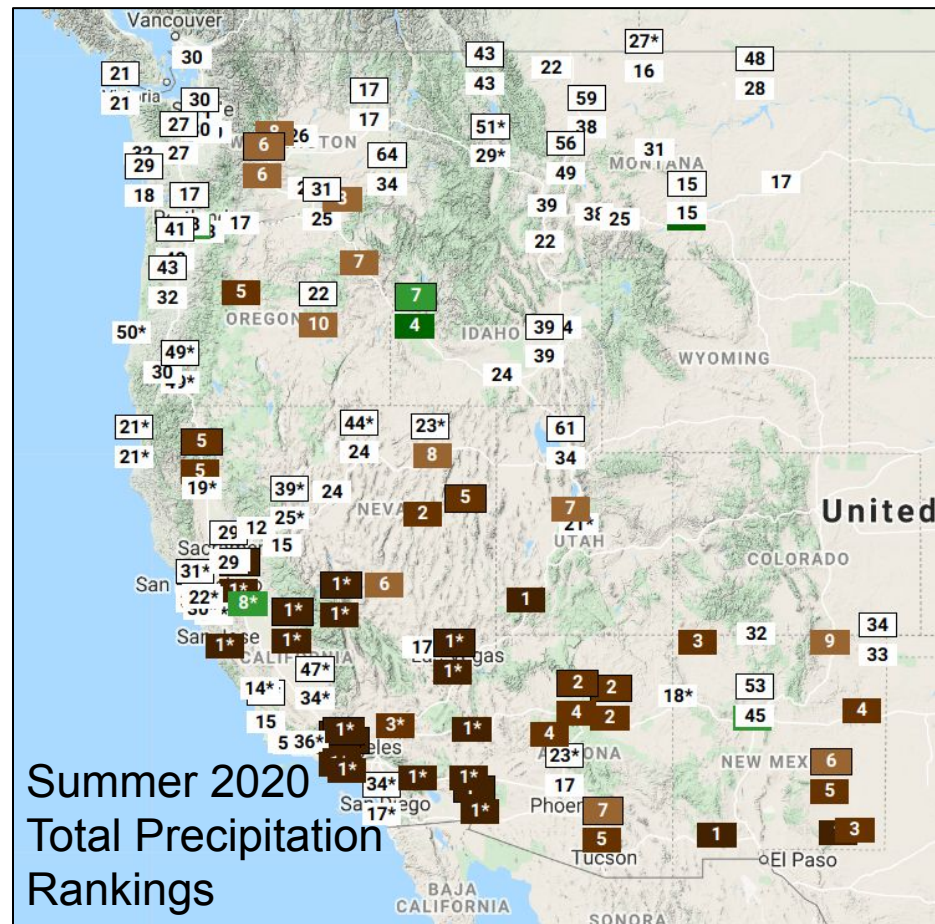
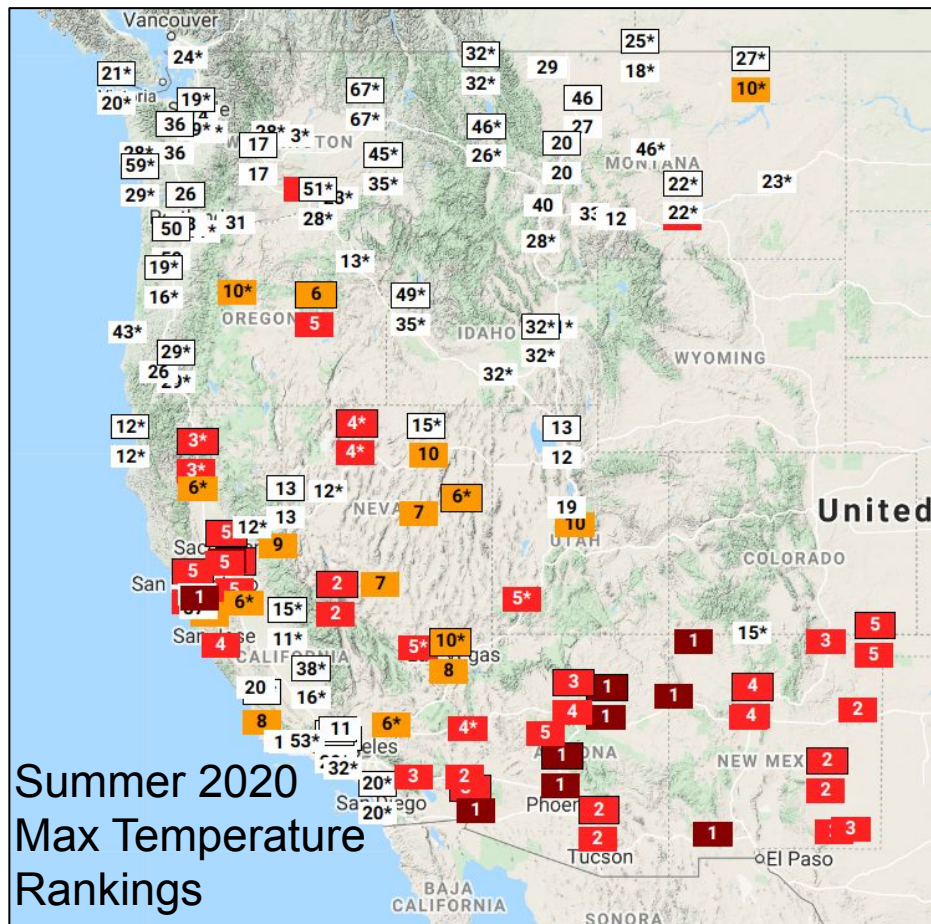
8-2020

Western Heat, Fire & Smoke



8-2020

Western Heat, Fire & Smoke



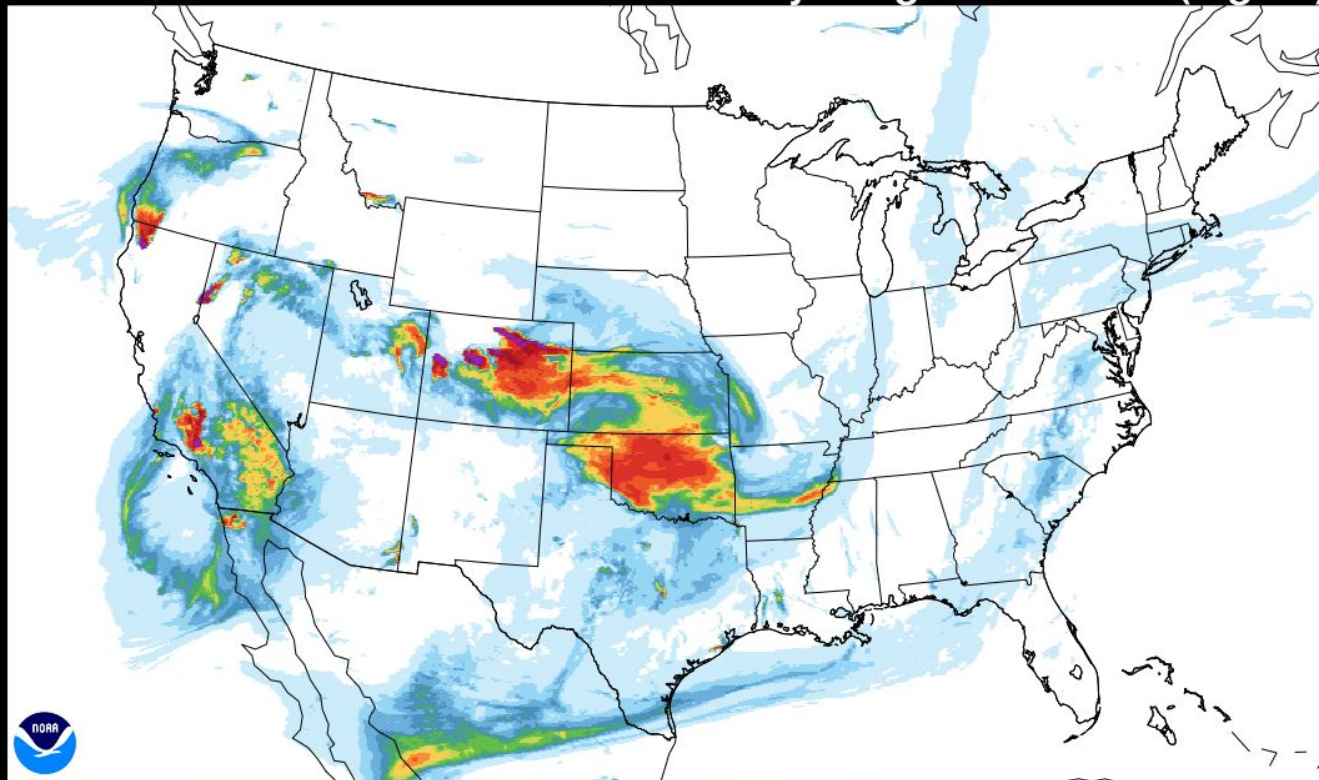
8-2020

Western Heat, Fire & Smoke

HRRR-SMOKE 2020-08-16 00 UTC 0h fcst - Experimental

Valid 08/16/2020 00:00 UTC

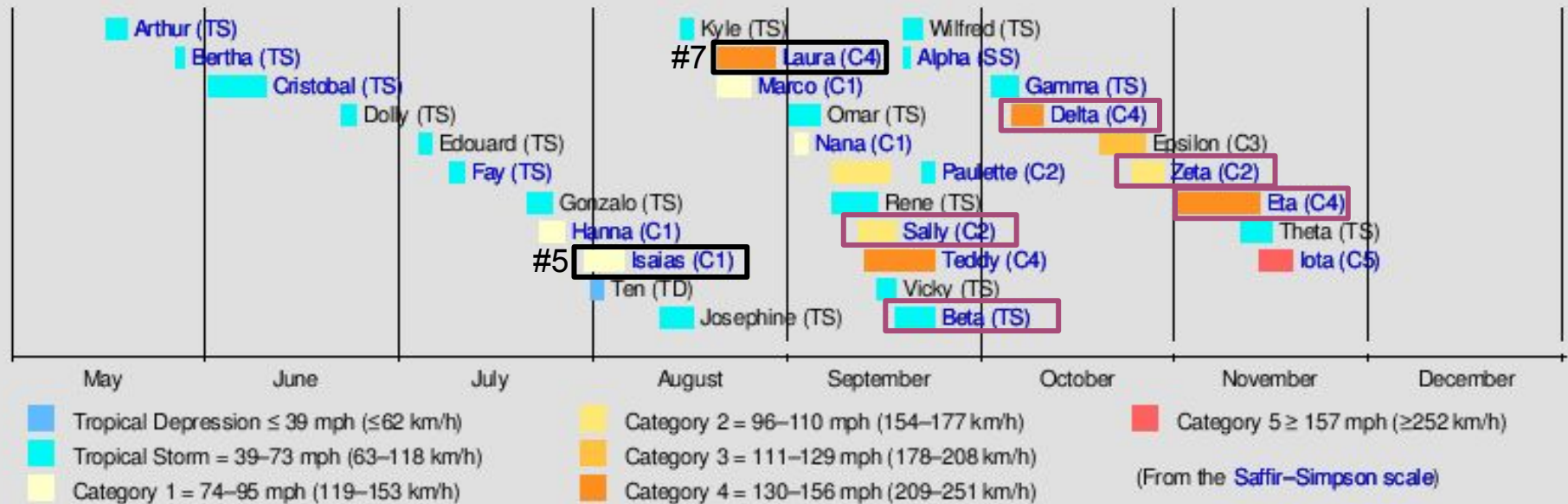
Vertically Integrated Smoke (mg/m^2)



1 4 7 11 15 20 25 30 40 50 75 150 250 500

9-2020

Sally, Beta, Delta, Zeta, & Eta!



The 2020 Atlantic hurricane season was the most active and the seventh costliest Atlantic hurricane season on record. In addition, it was the fifth consecutive above average Atlantic hurricane season from 2016 onward. The season featured a total of 31 (sub)tropical cyclones, all but one of which became a named storm. Of the 30 named storms, 13 developed into hurricanes, and six further intensified into major hurricanes, with one, Hurricane Iota, attaining Category 5 strength on the Saffir–Simpson scale. It was the second season to use the Greek letter storm naming system, the first being 2005. Of the 30 named storms, **12 made landfall in the contiguous United States, breaking the record of nine set in 1916**. The season was also the fifth consecutive season in which at least one Category 5 hurricane formed. During the season, 27 tropical storms established a new record for the earliest formation by storm number. This season also featured a record 10 tropical cyclones that underwent rapid intensification, tying it with 1995.^[2] This unprecedented activity was fueled by a La Niña that developed in the summer months of 2020.

9-2020

Sally, Beta, Delta, Zeta, & Eta!

 Sally

Sep. 17, 2020

 Beta

Sep. 23, 2020

 Delta

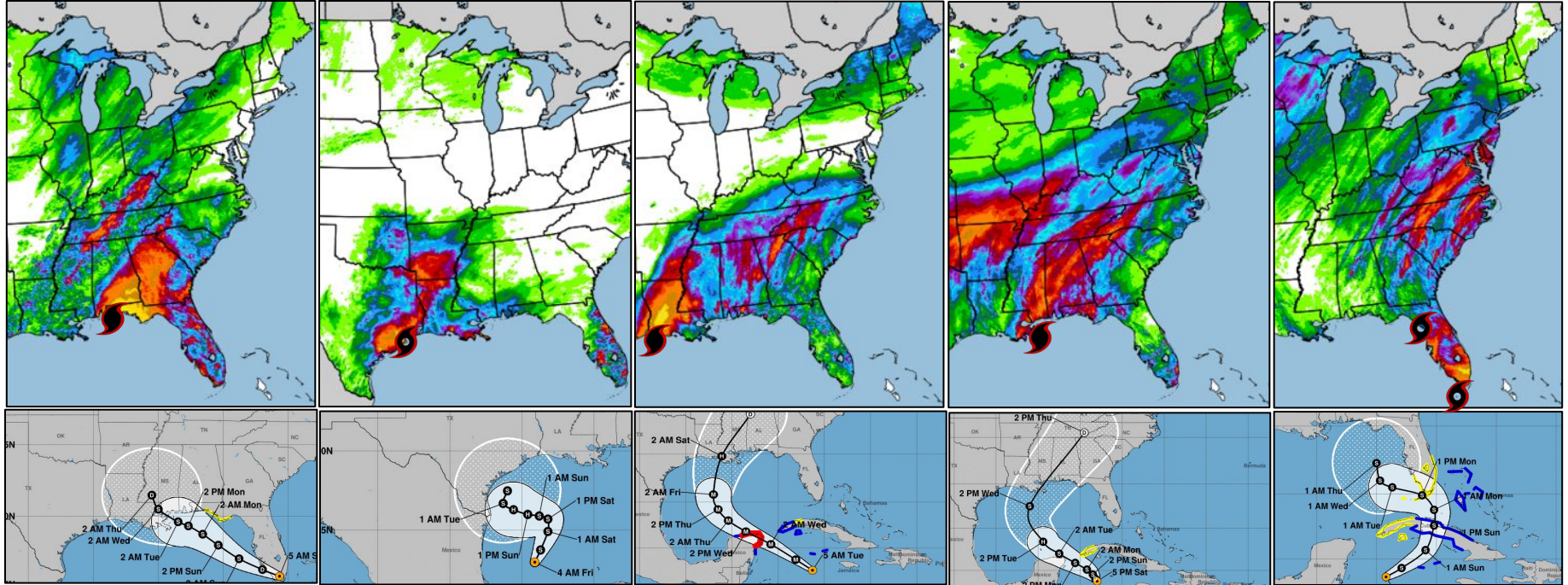
Oct. 11, 2020

 Zeta

Oct. 27, 2020

 Eta

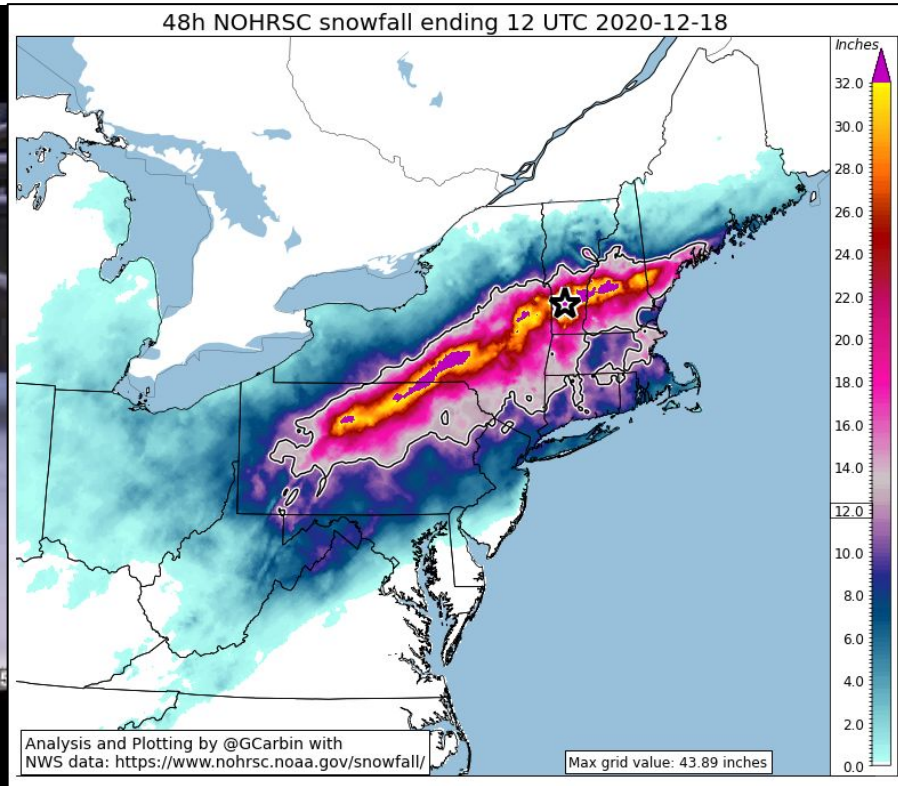
Nov. 11, 2020



Observed rainfall maps and landfall/intensity (top), NHC day 5 track forecasts (bottom)

10-2020

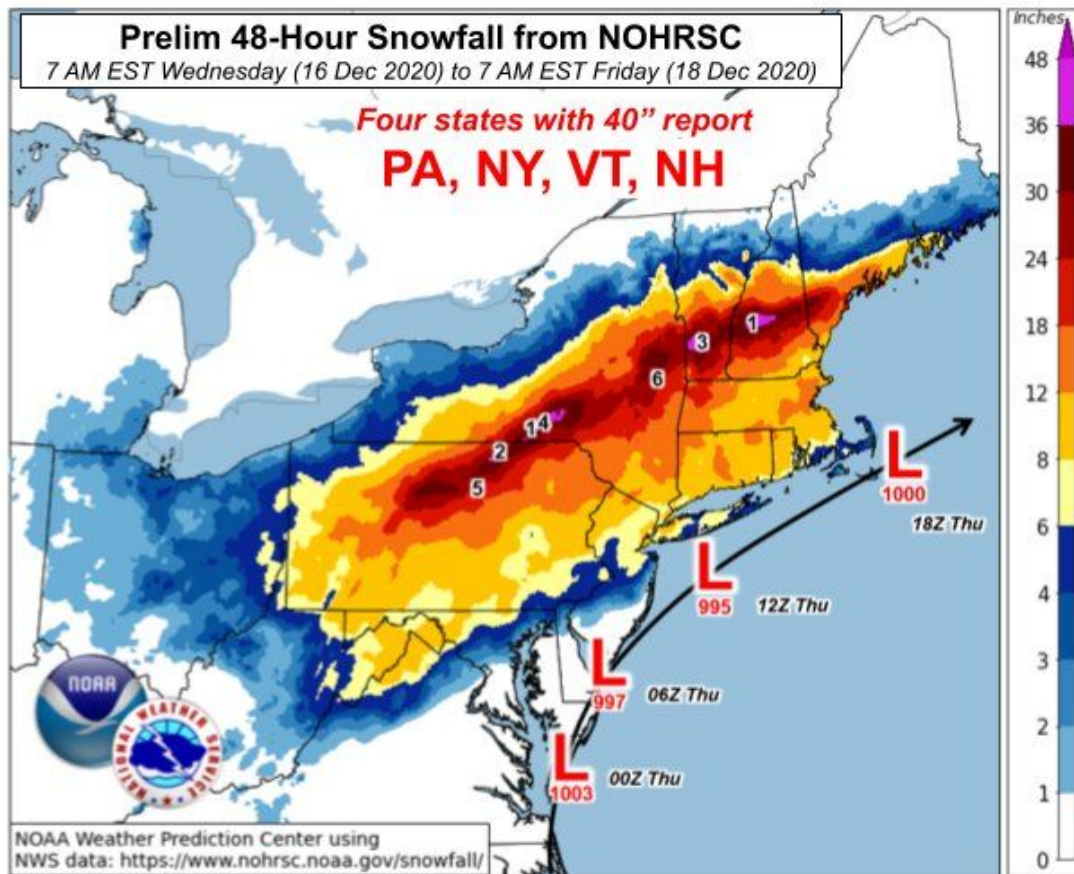
A December Dendrite Dumping!



10-2020

A December Dendrite Dumping!

Record-Setting Snowstorm in the Interior Northeast



1. **Event Maximum: 44" near Newark Valley, NY and near Croydon, NH**
(Croydon report is only 5" shy of the 24-hr record for NH set on Mount Washington!)
2. **Potential 24-Hour Pennsylvania State Record: 43.3" near Alba, PA**
(current 38"; requires validation from State Climate Extremes Committee)
3. **Potential 24-Hour Vermont State Record: 42" near Landgrove, VT**
(current 42"; would tie; requires validation from State Climate Extremes Committee)
4. **Two-day snowfall record (40.0") at Binghamton, NY (69y p.o.r.). Snow depth was 39" breaking the record from the Blizzard of '93.**
5. **Two-day snowfall record (24.7") at Williamsport, PA (125y p.o.r)**
6. **8th largest snowstorm on record (22.9") at Albany, NY. 4th largest in the month of December.**

