

12th Annual Meteorological Memories

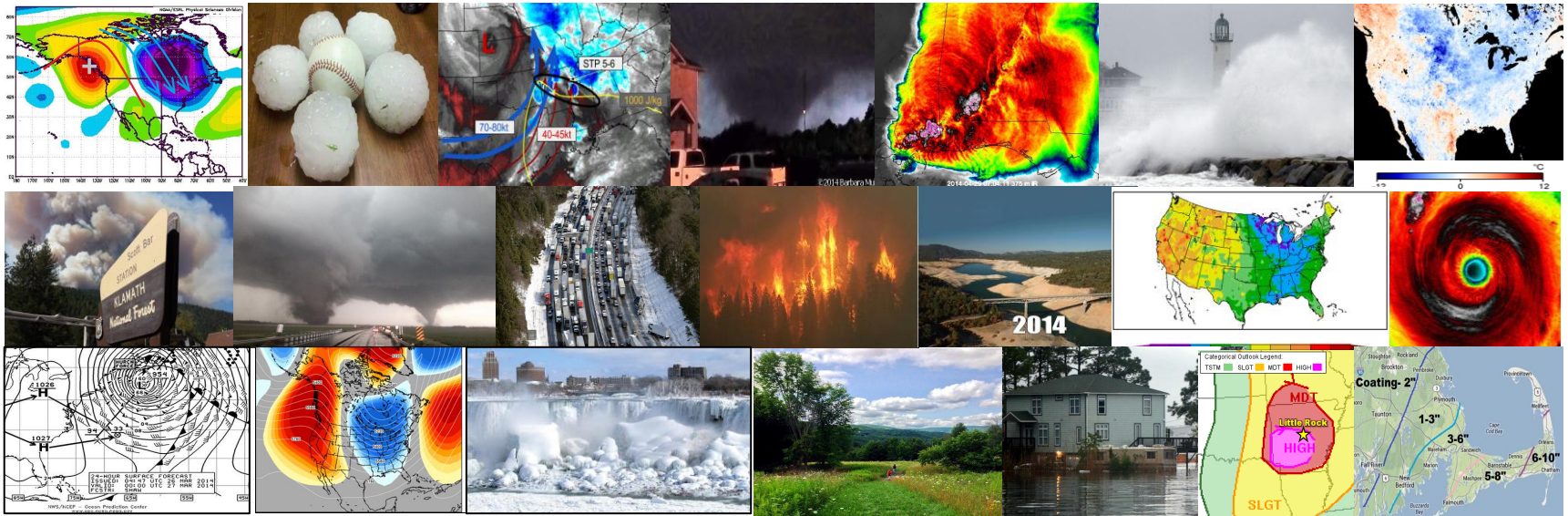
December 11, 2014



Greg Carbin
DOC/NOAA/NWS/NCEP/SPC



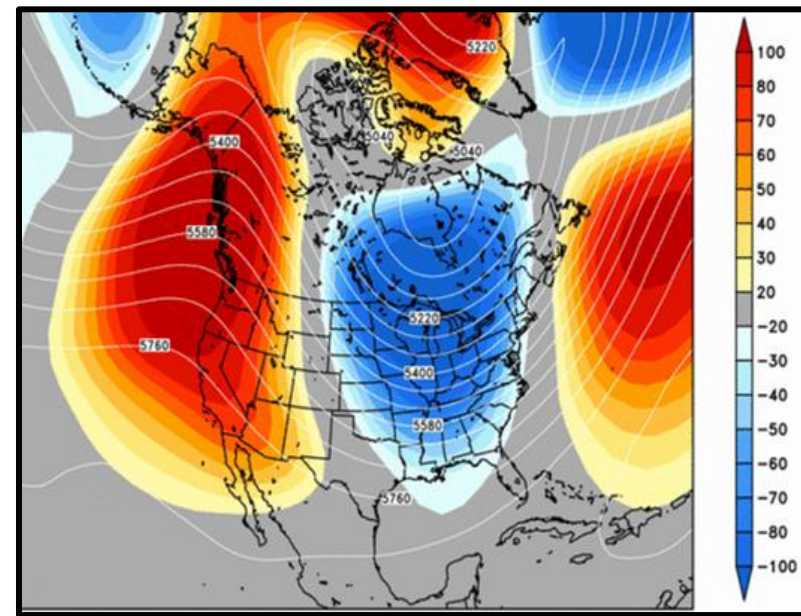
12th Annual Meteorological Memories 2014



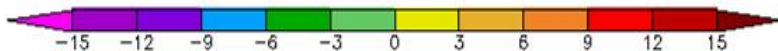
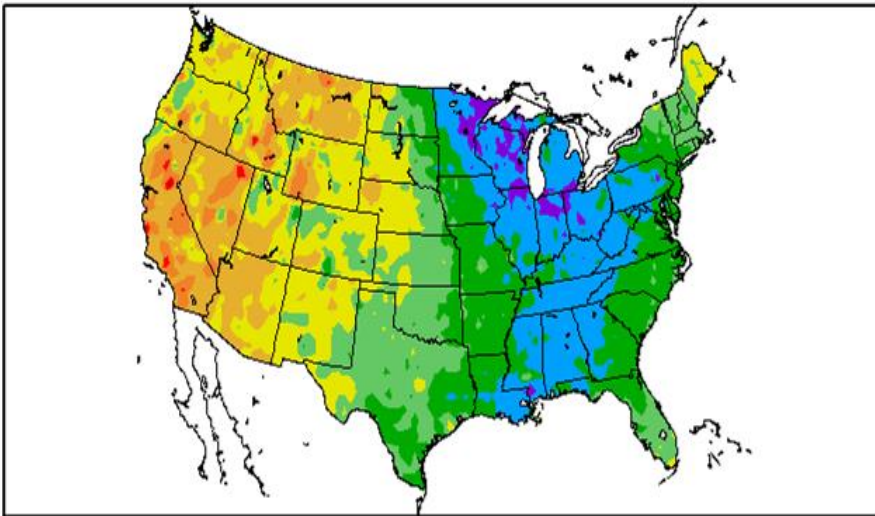
Greg Carbin
DOC/NOAA/NWS/NCEP/SPC



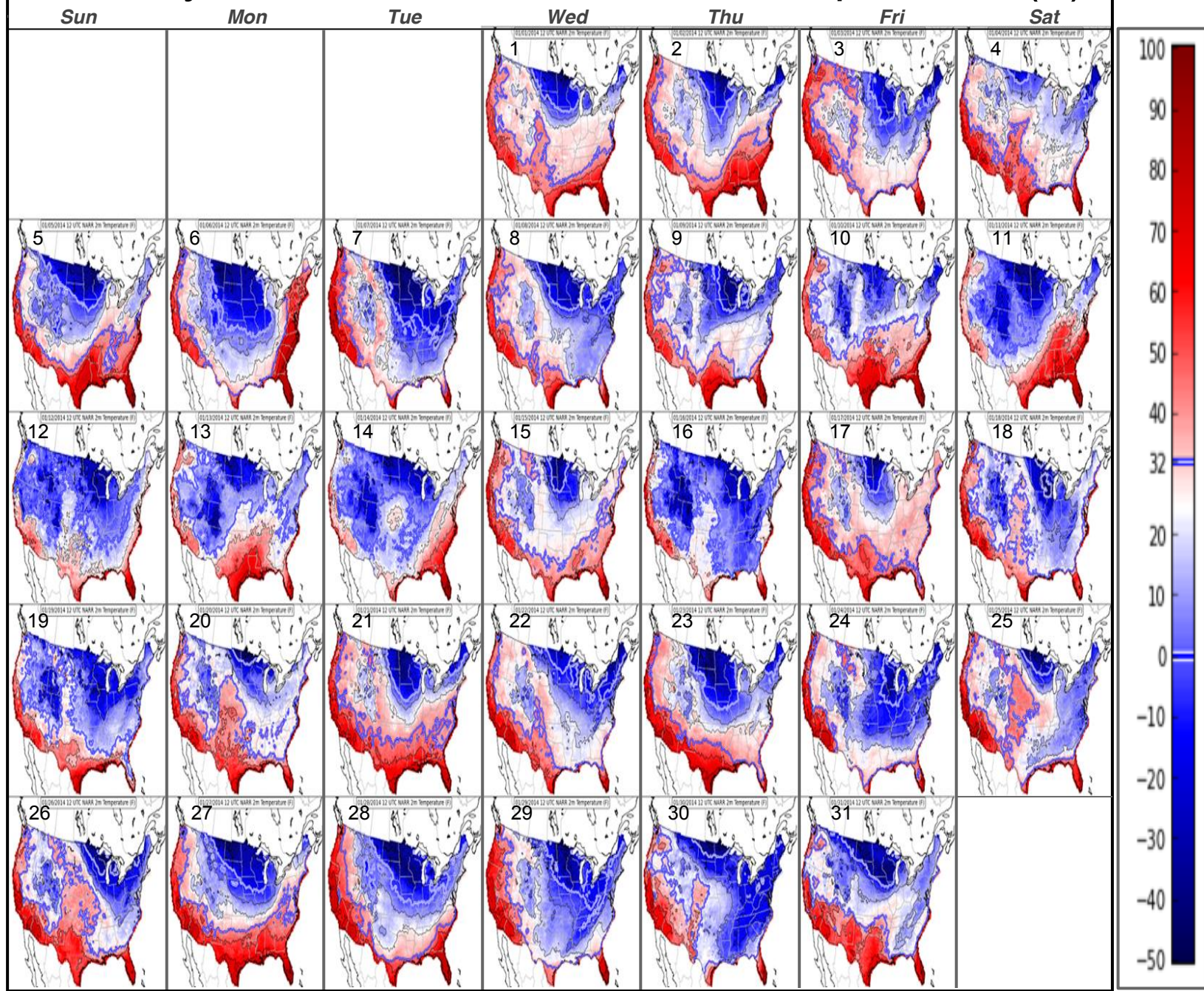
1



January Cold and Dixie Woes



January 2014 12 UTC NARR 2m Temperature (F)



January 2014 12 UTC NARR 2m Temperature (F)

Sun

Mon

Tue

Wed

Thu

Fri

Sat

Coldest 5%
of January
days since
1979:

--2014--

6th 16.6F

7th 15.0F

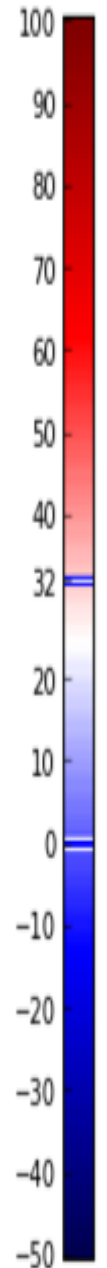
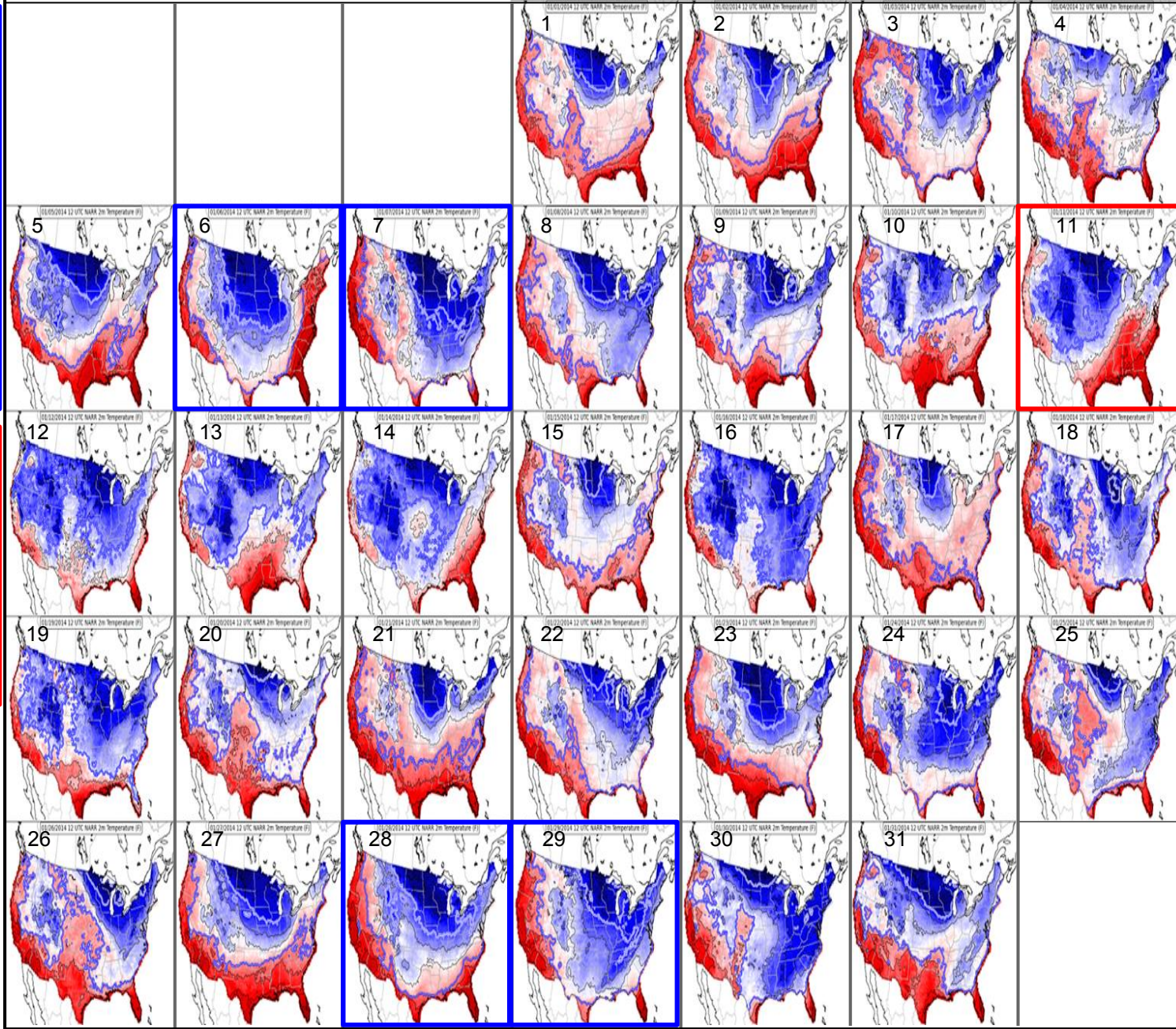
28th 17.1F

29th 18.5F

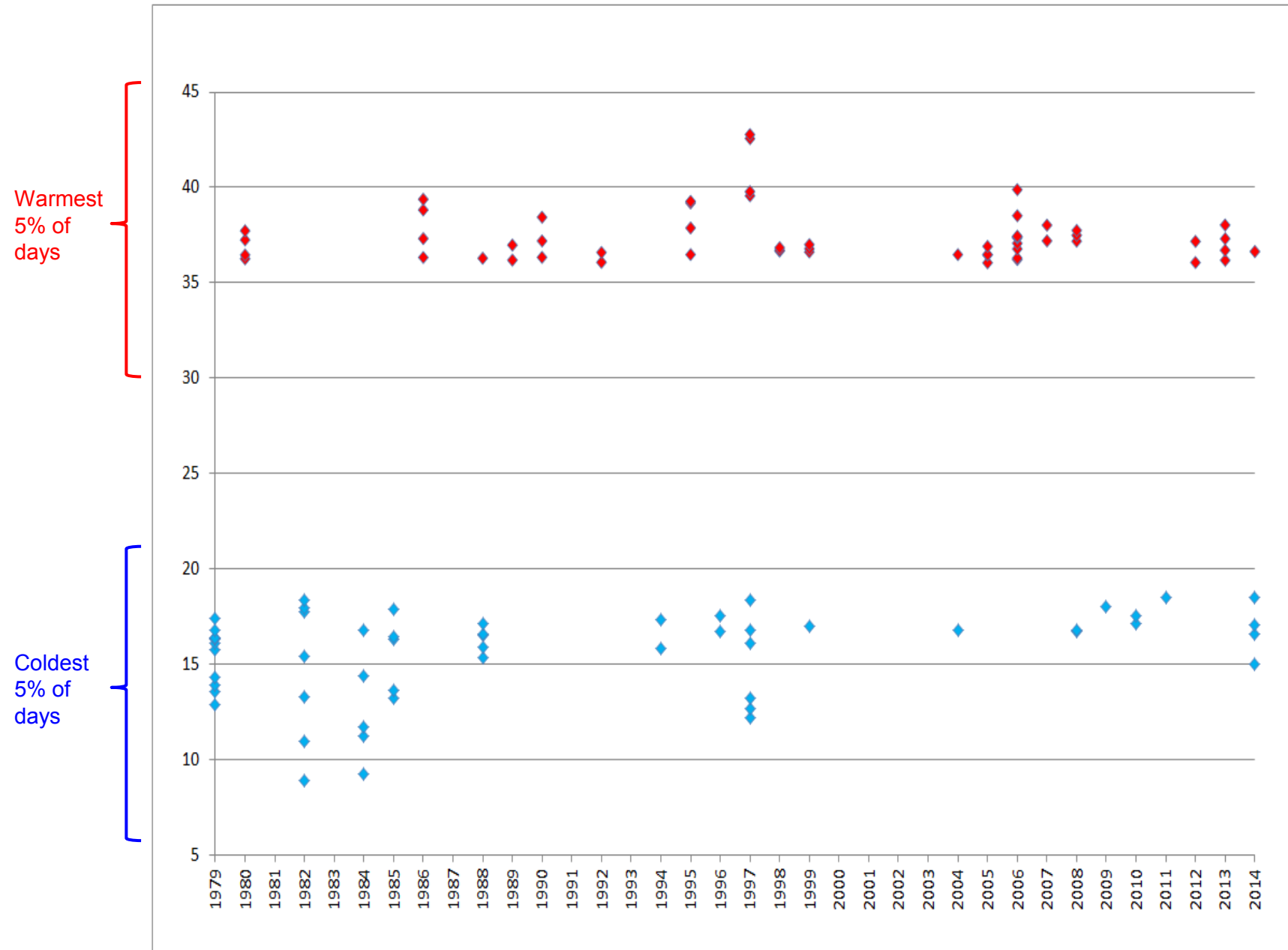
Warmest 5%
of January
days since
1979:

--2014--

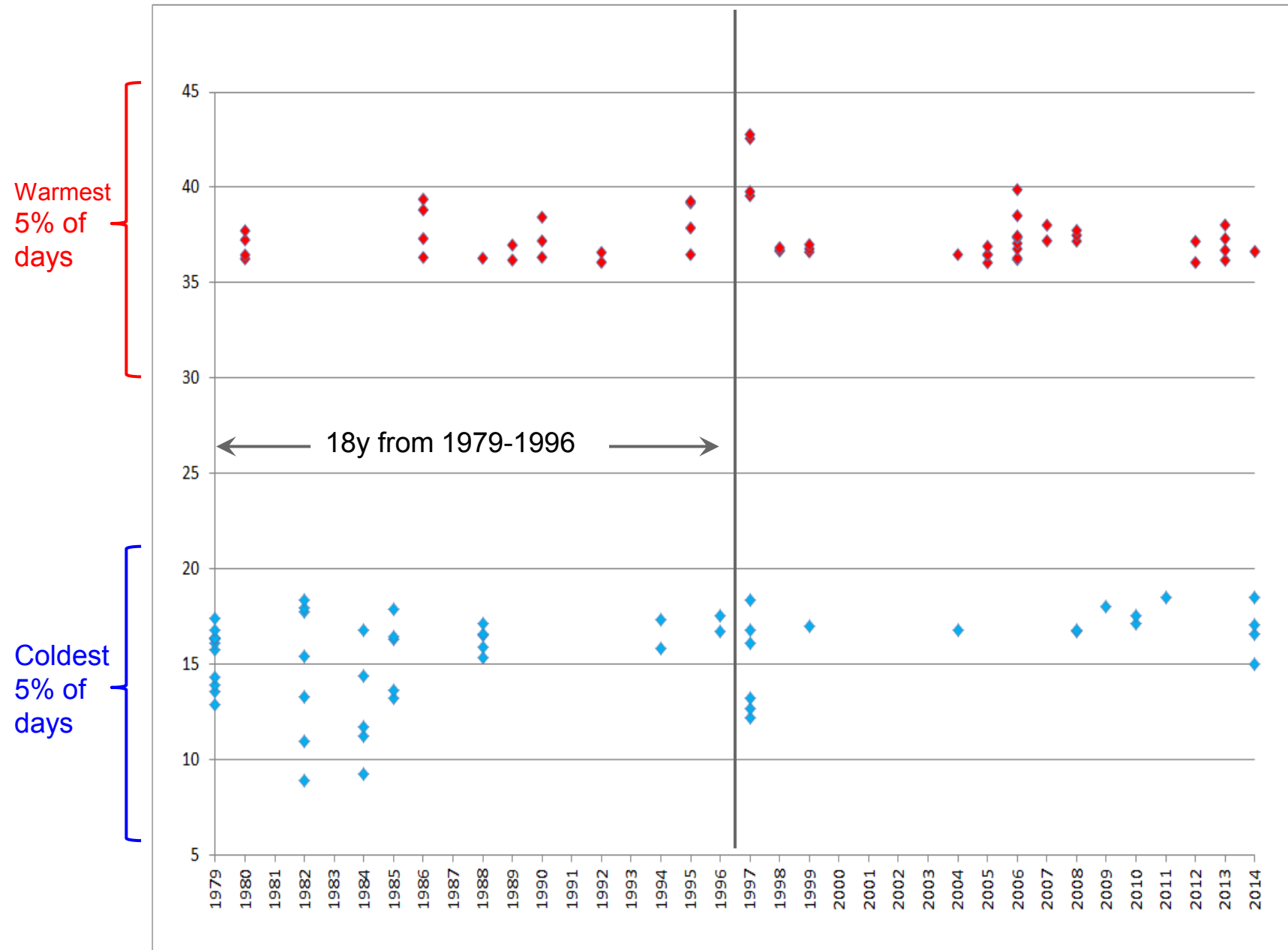
11th 36.6F



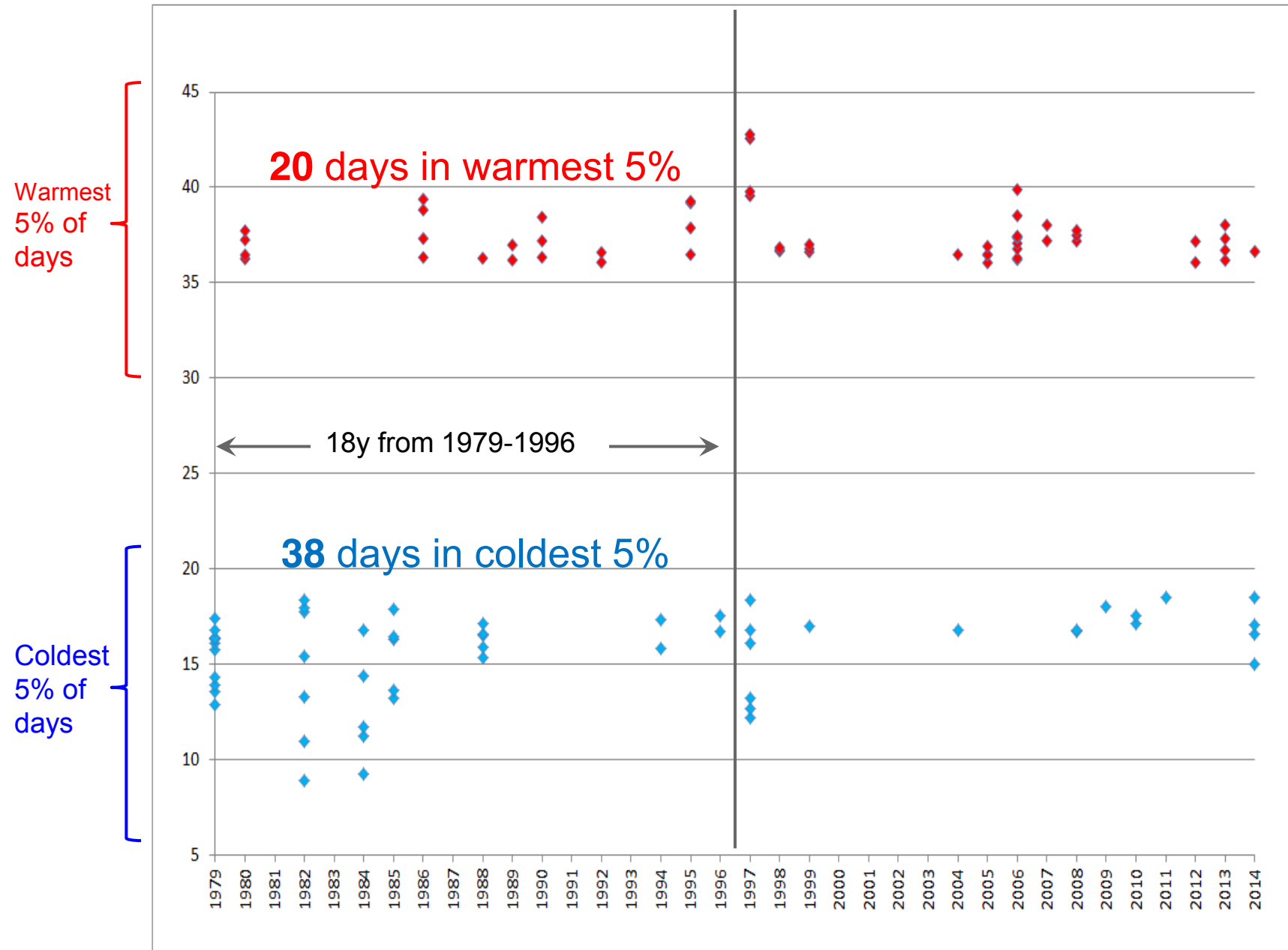
12 UTC NARR CONUS 2m Temp Extremes by Year (1979-2014)



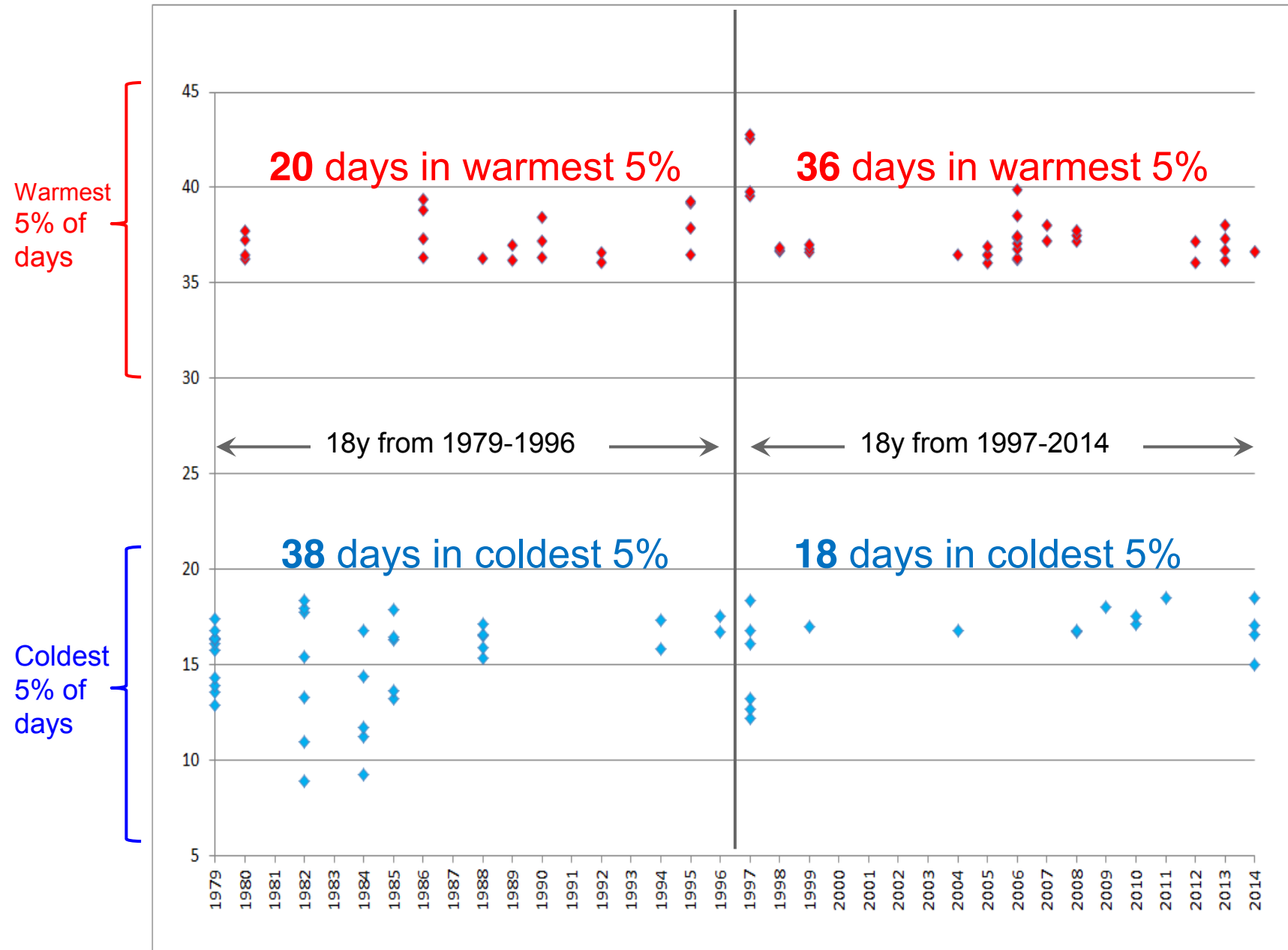
12 UTC NARR CONUS 2m Temp Extremes by Year (1979-2014)



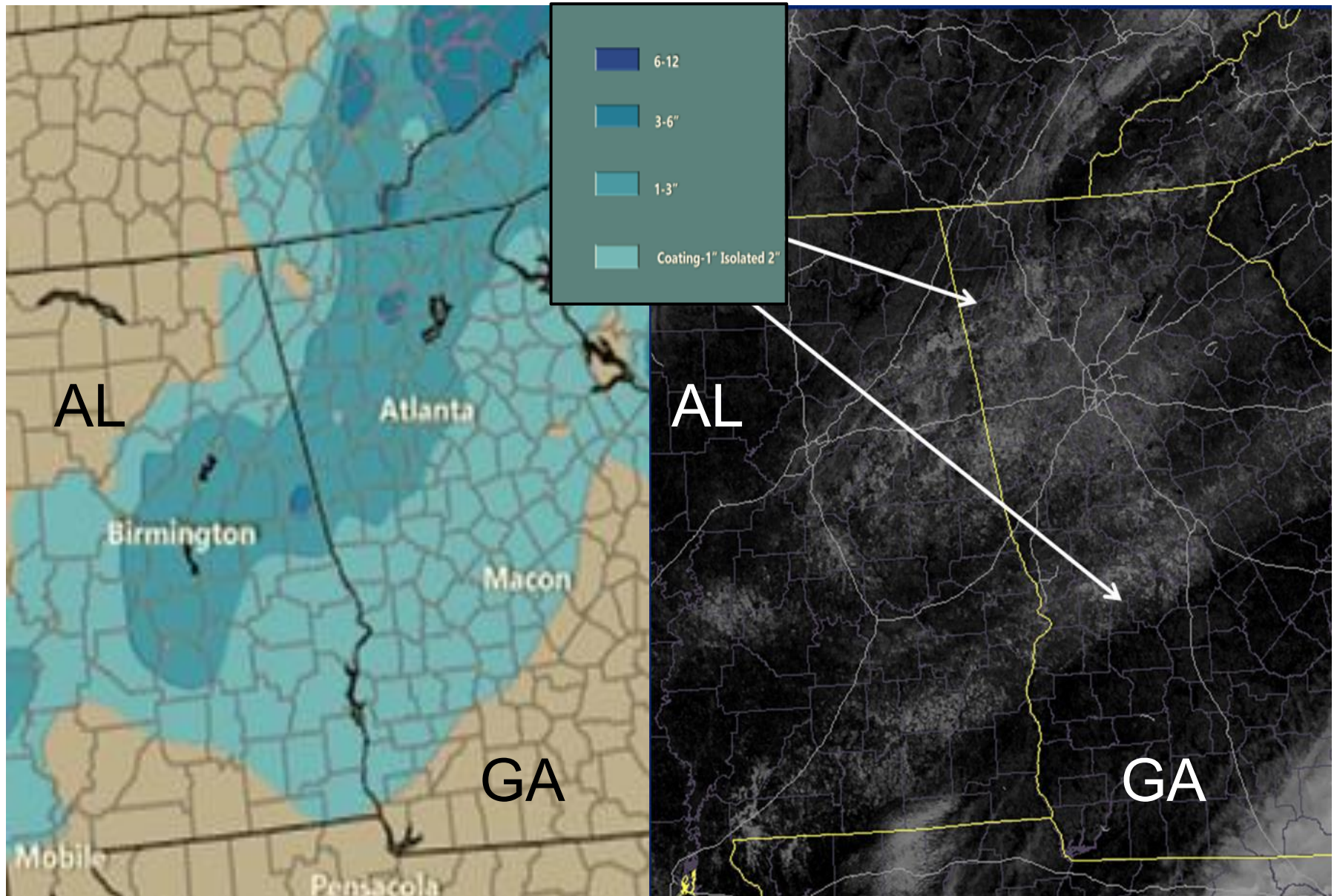
12 UTC NARR CONUS 2m Temp Extremes by Year (1979-2014)



12 UTC NARR CONUS 2m Temp Extremes by Year (1979-2014)

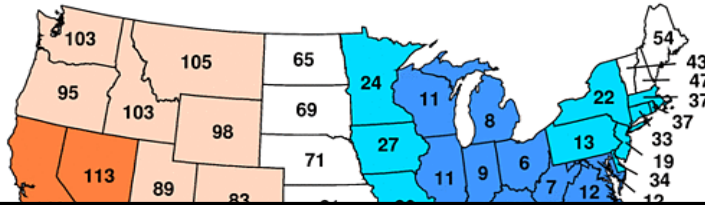


Southern U.S. Snowfall from January 27-29, 2014 Winter Storm



January 2014 Statewide Ranks

National Climatic Data Center/NESDIS/NOAA



– January Cold & Dixie Woes Summary –

Midwest & SE Feel Brunt of Coldest Jan. in Many Years

Thousands Stranded by Dixie Winter Storm, 27th-29th

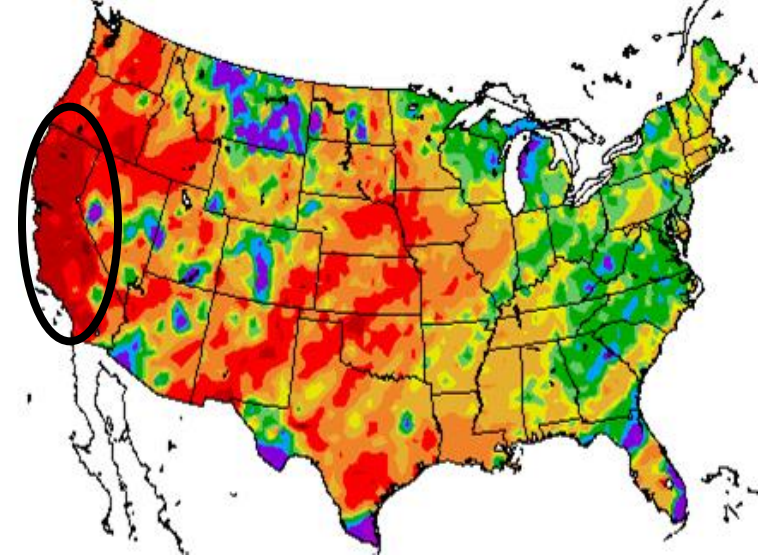
Few Jan. Mornings w/ Record Cold Recent ~2 Decades



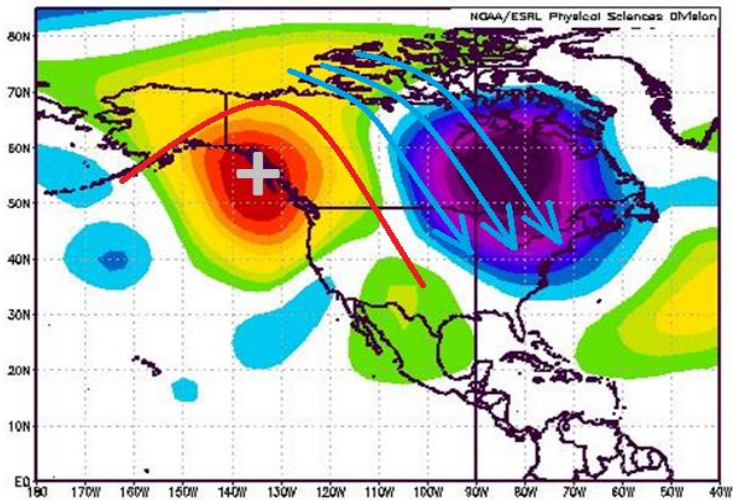
NOAA/NWS/SPC

G. Carbin

2

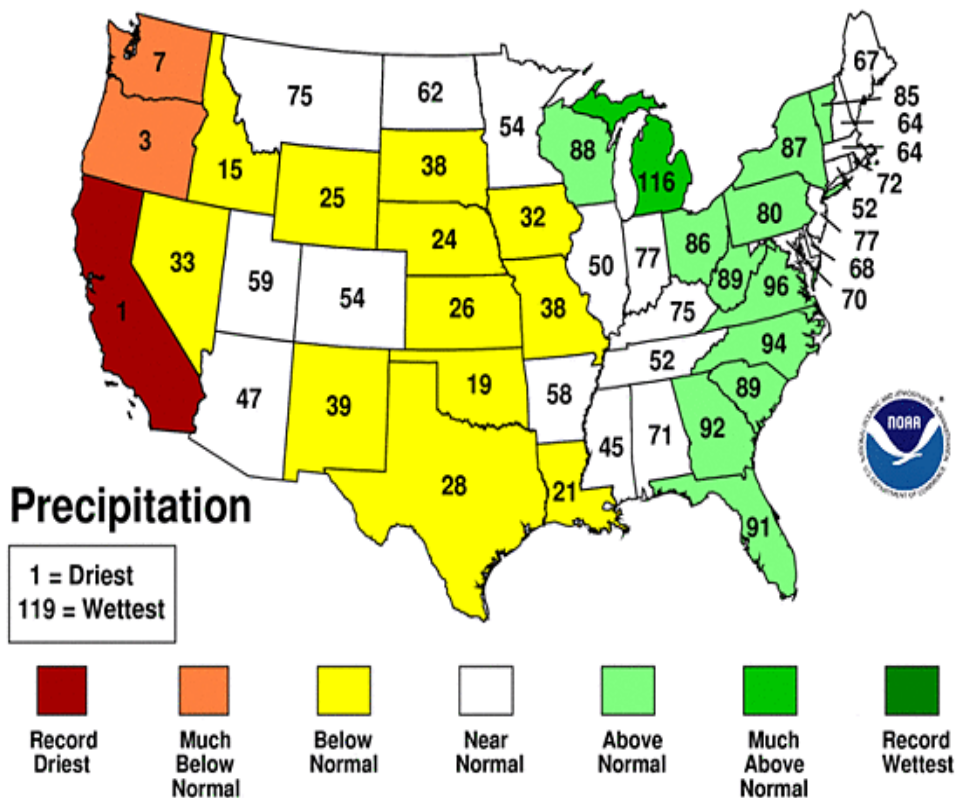


California's Drought Nightmare



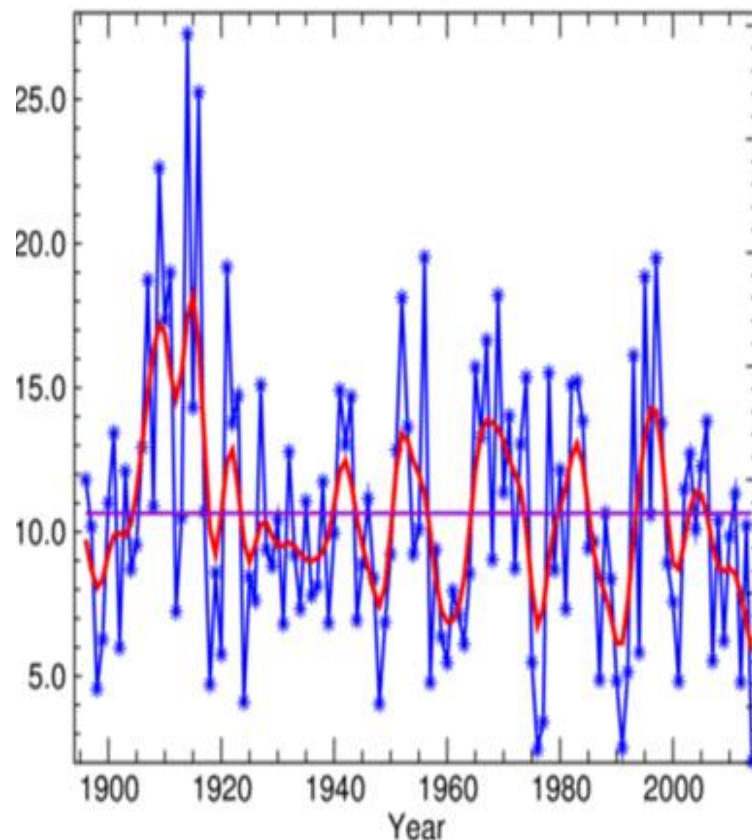
Nov 2013-Jan 2014 Statewide Ranks

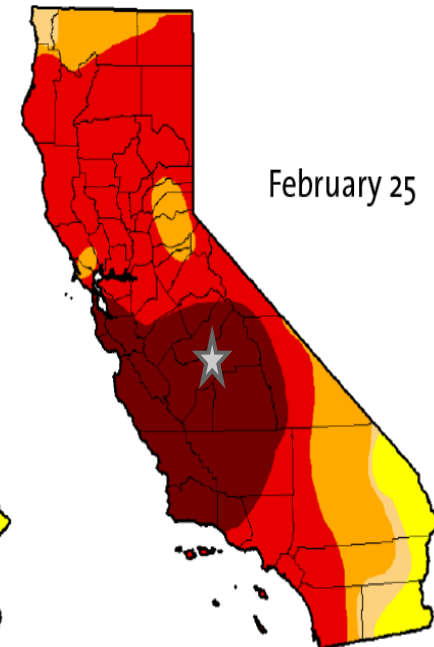
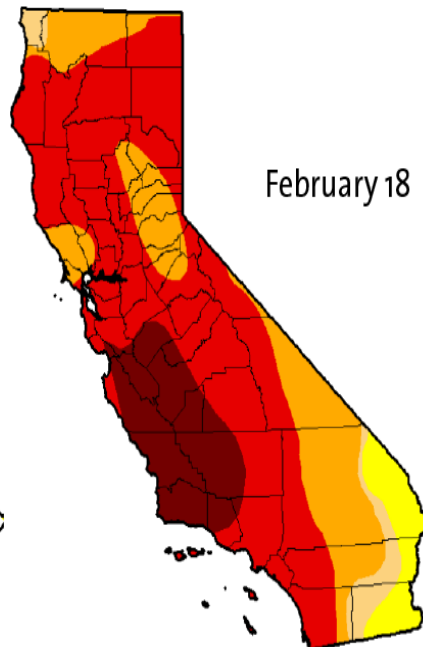
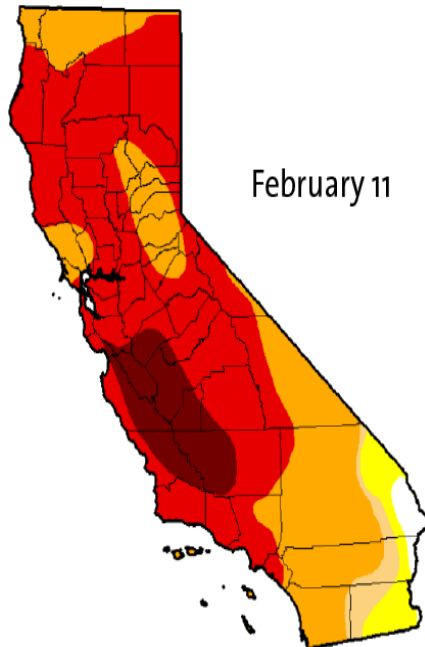
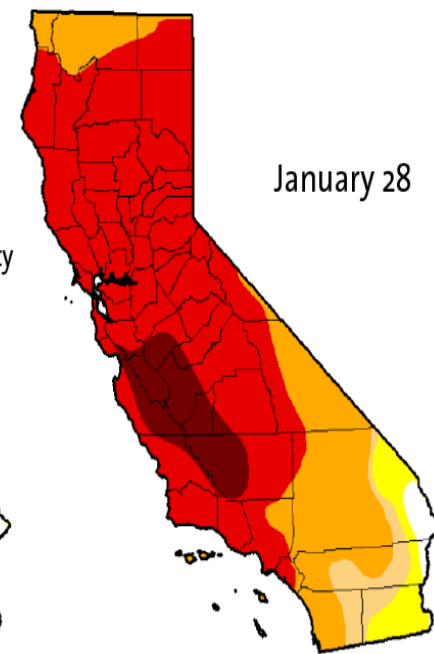
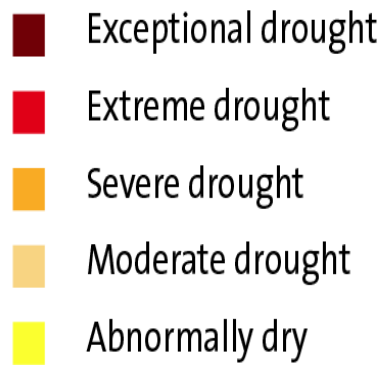
National Climatic Data Center/NESDIS/NOAA

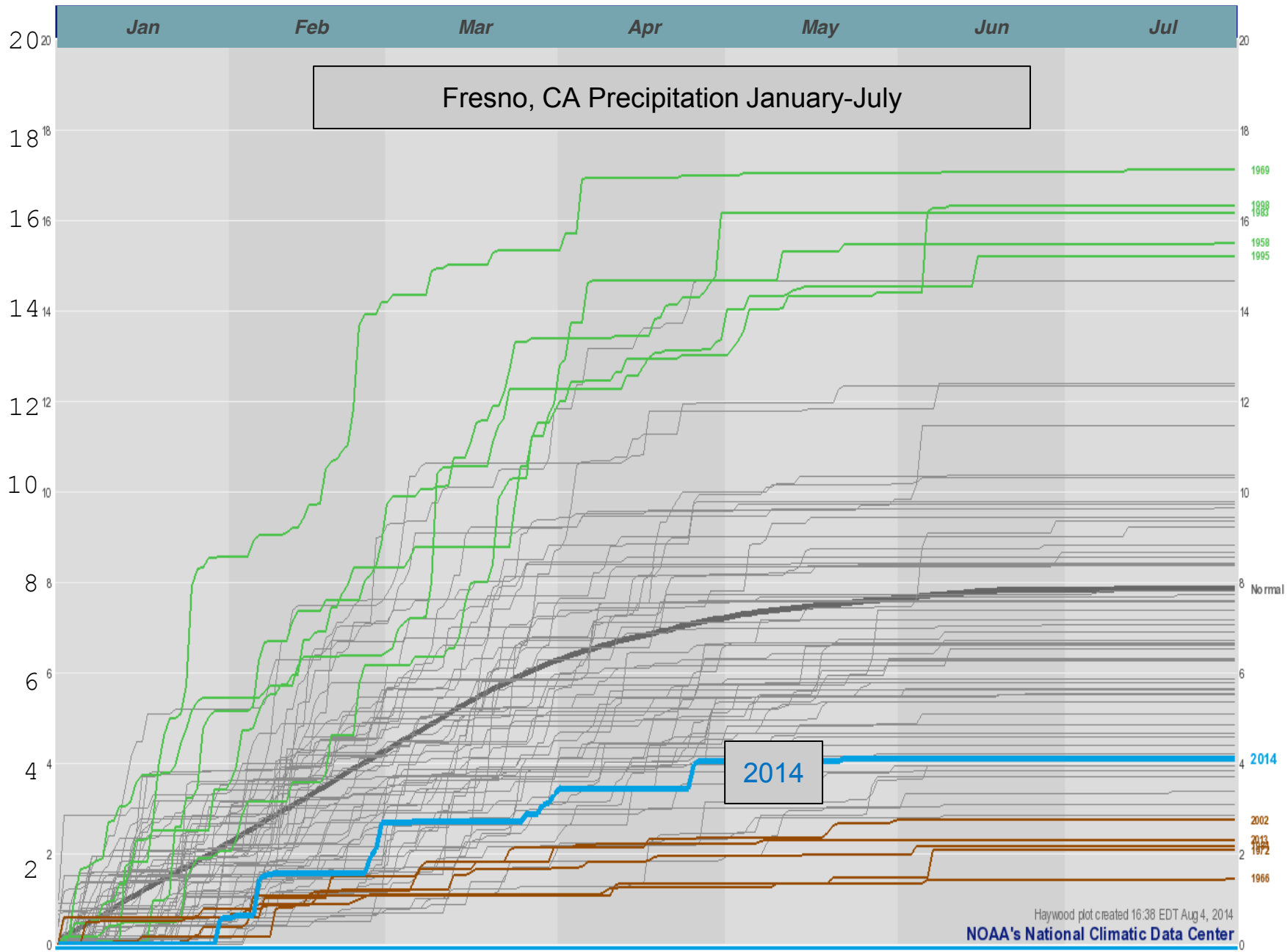


California Statewide Precipitation

November - January, 1895 - 2014

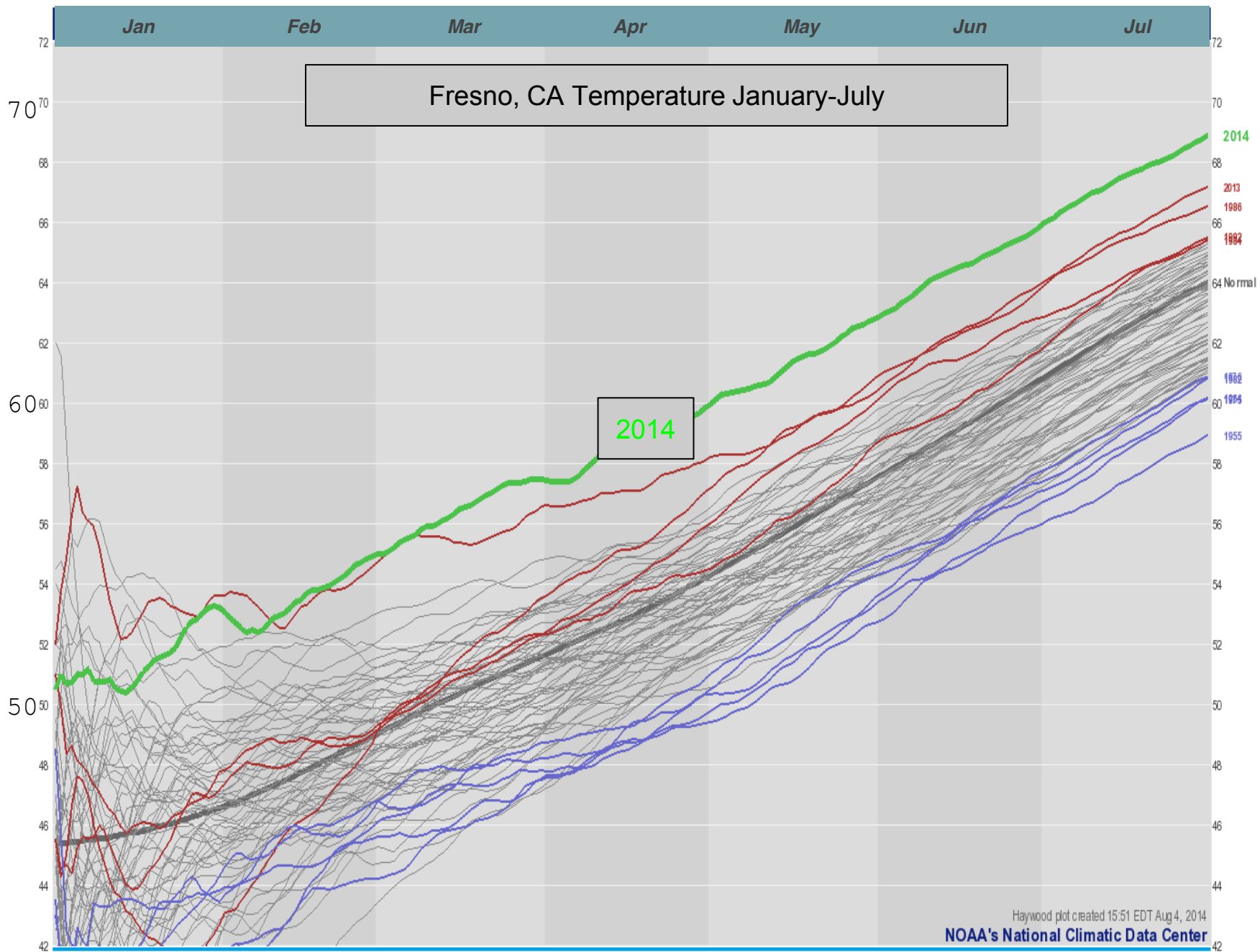






Precipitation (in) to Date for Fresno, CA
Jan 1 through Jul 31. Period of record is 1948 through 2014

5 wettest periods in mint: 1969 1998 1983 1958 1995
5 driest periods in brown: 2002 2013 1984 1972 1966
1981-2010 Normal underlaid in dark gray
2014 period in NOAA Lite Blue



Average Temperature (F) to Date for Fresno, CA
Jan 1 through Jul 31. Period of record is 1948 through 2014

5 warmest periods in crimson: 2014 2013 1986 1992 1984
5 coolest periods in cornflower: 1976 1982 1964 1975 1955
1981-2010 Normal underlaid in dark gray
2014 period in mint



– California's Drought Nightmare Summary –

Feb. 2013 - Jan. 2014: Driest 12-months on Record

January 13, 2013

January 13, 2014

More of CA in Extreme Drought than Ever (80% by July)

At Least \$1 Billion in Agricultural Losses

Hydroelectric Power Generation ~50% of Average



2011

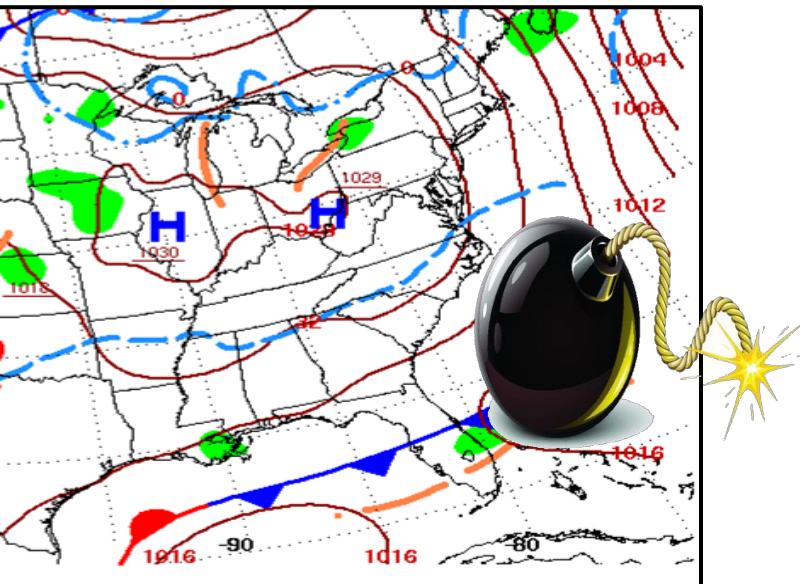


2014

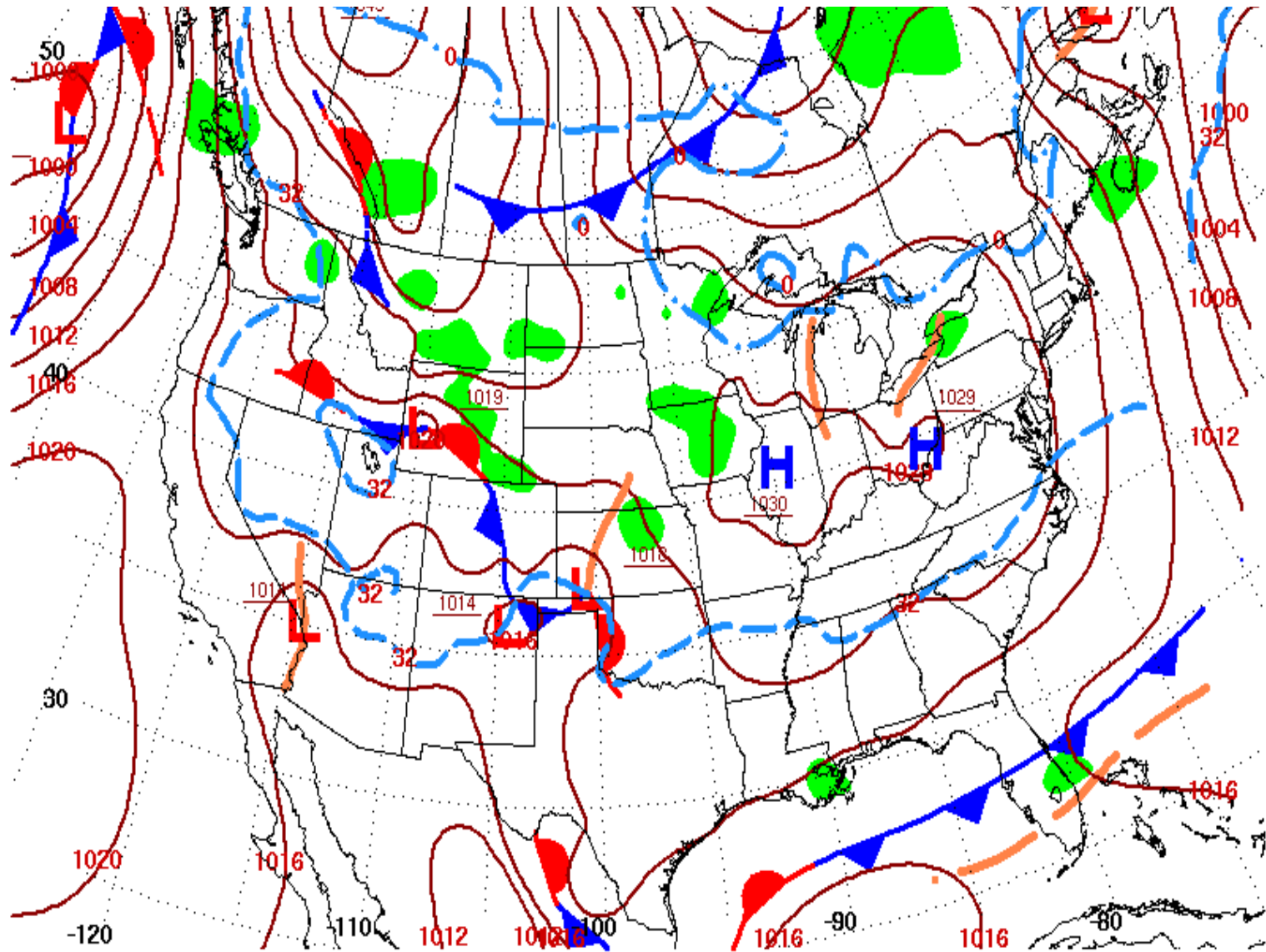
3



Atlantic Bomb – March 25-26



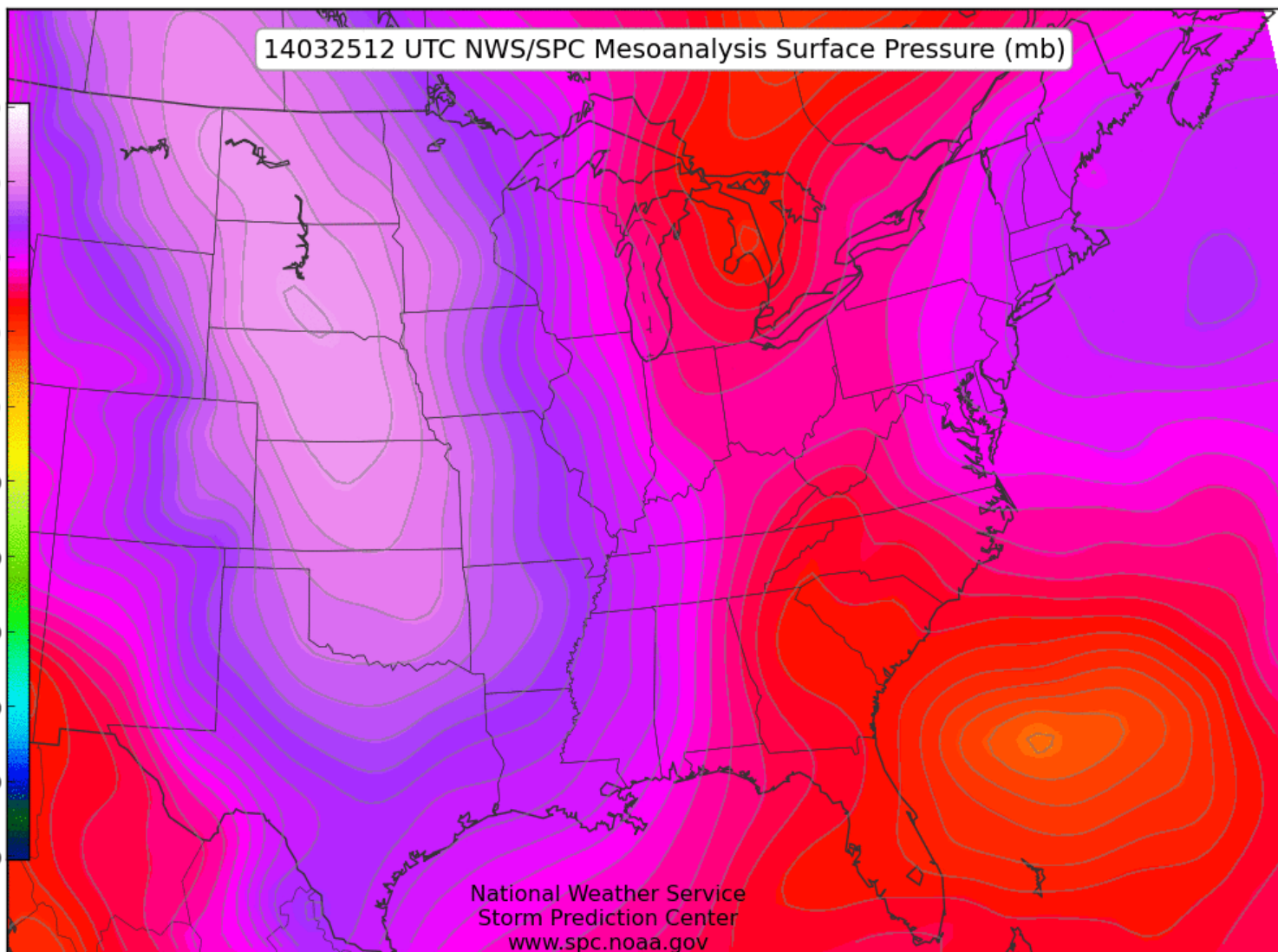
12 UTC Surface Maps “Ping-pong” Loop for Mar. 24-25-26-27



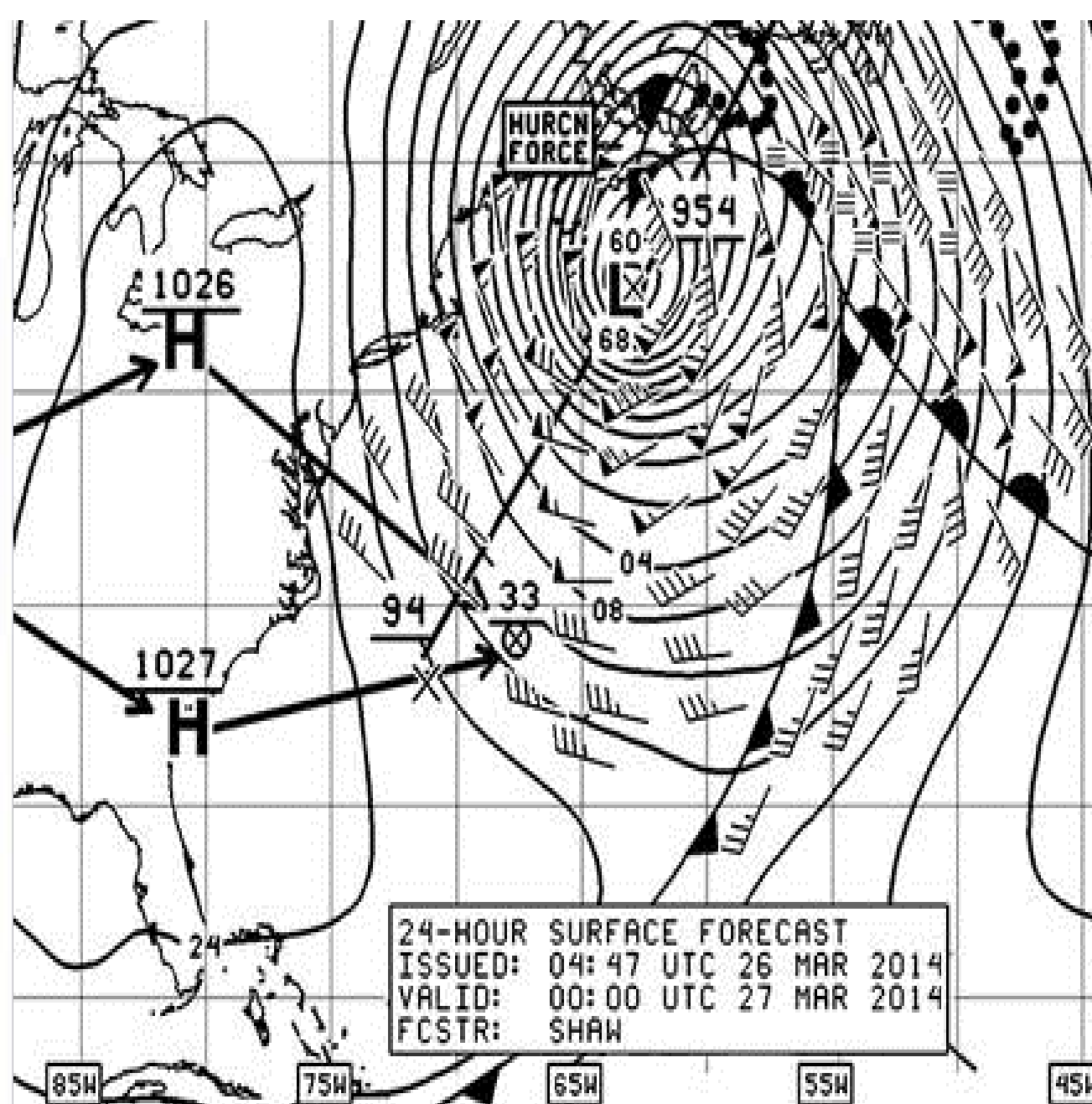
Surface Weather Map at 7:00 A.M. E.S.T.

14032512 UTC NWS/SPC Mesoanalysis Surface Pressure (mb)

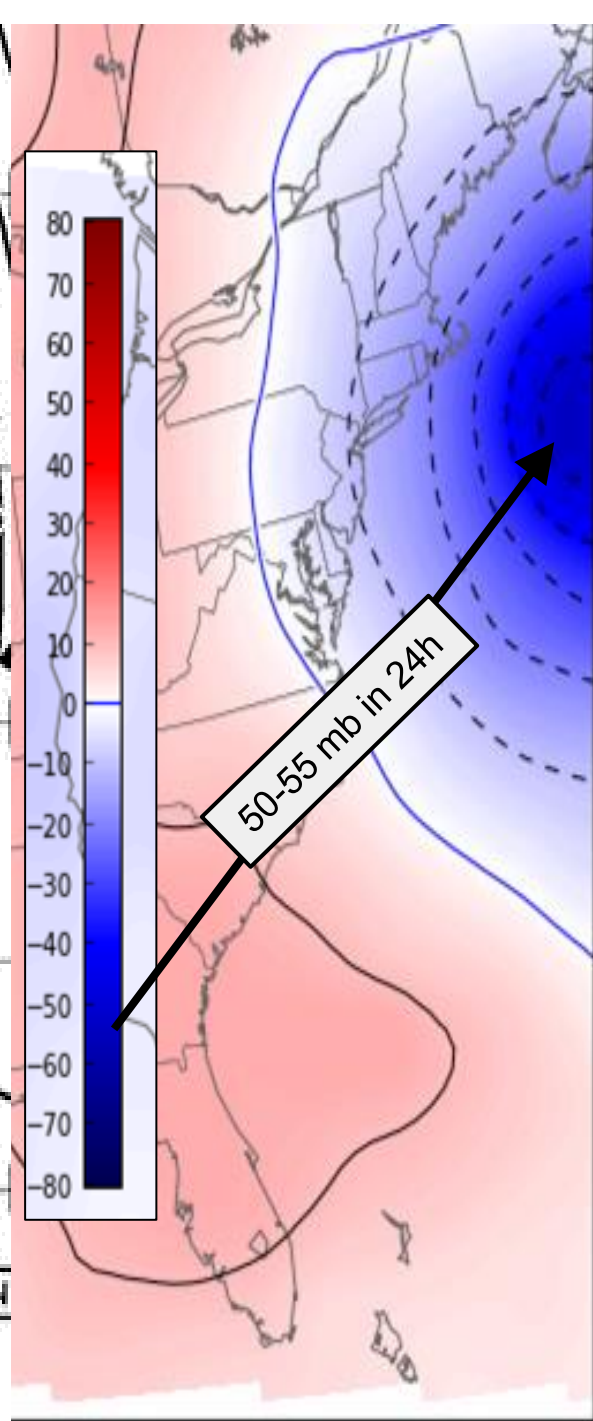
1040
1030
1020
1010
1000
990
980
970
960
950
940

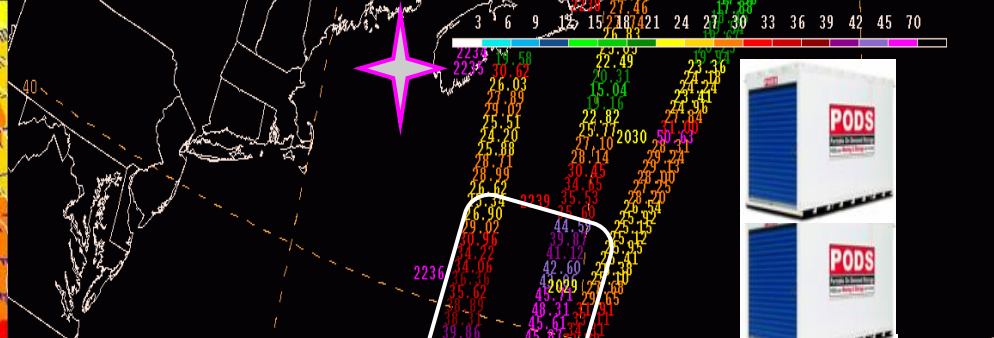
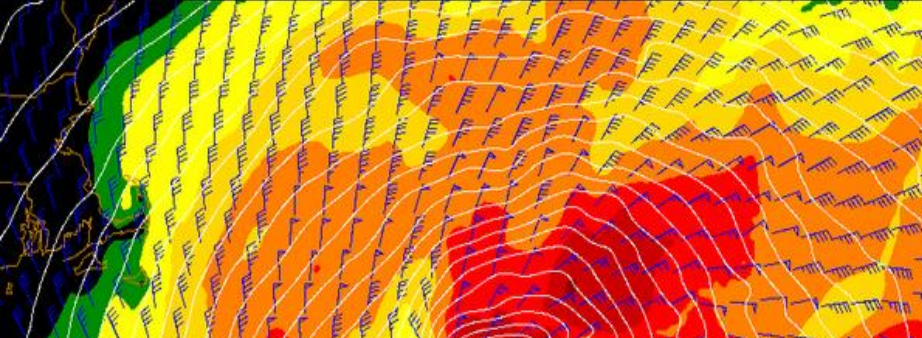


National Weather Service
Storm Prediction Center
www.spc.noaa.gov



NWS/NCEP - Ocean Prediction Center
www.opc.ncep.noaa.gov



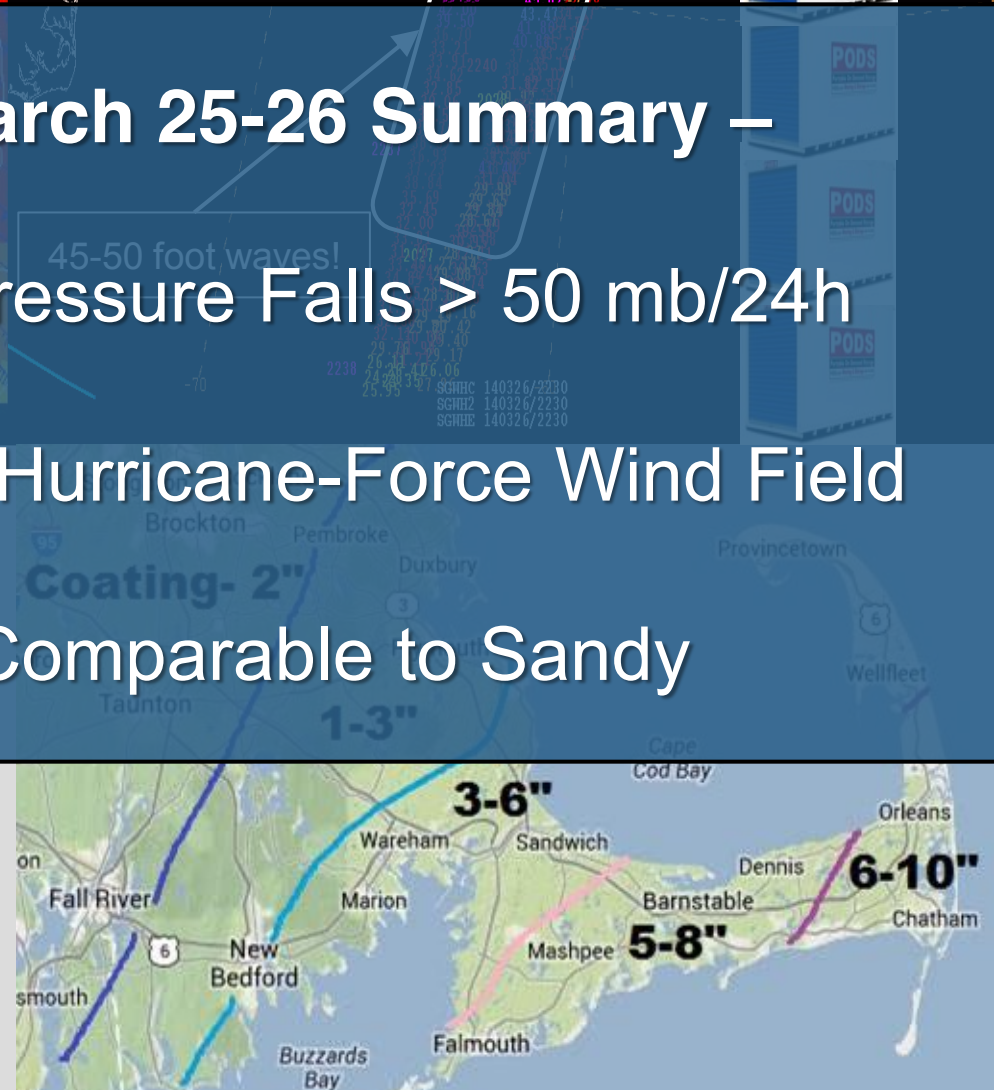
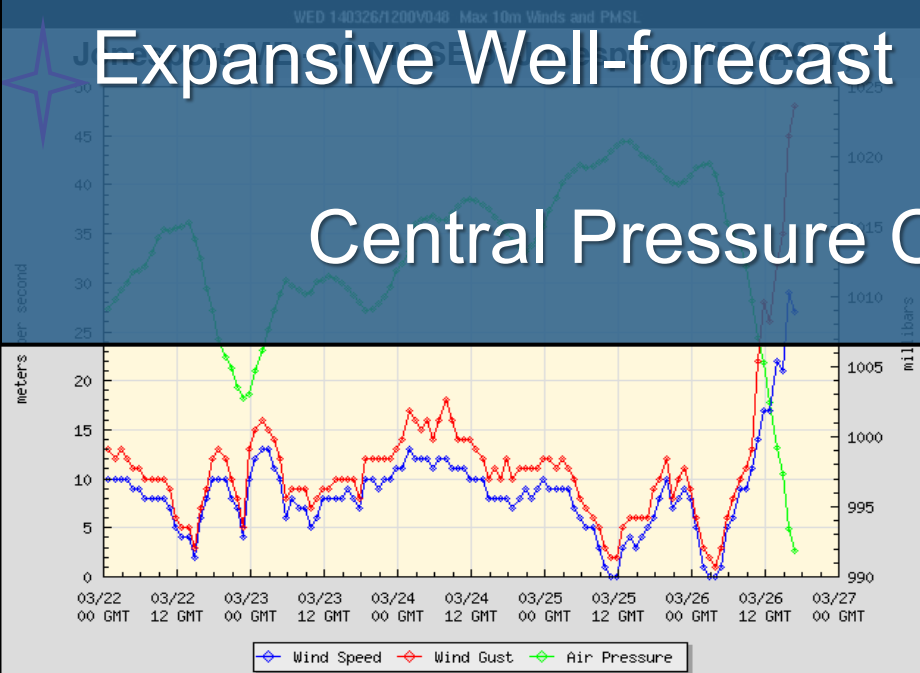


– Atlantic Bomb, March 25-26 Summary –

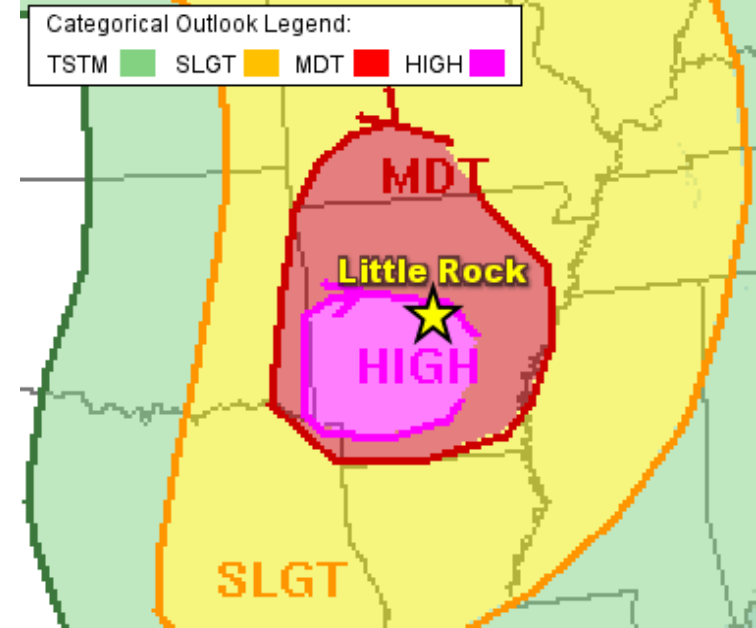
Rapid Intensification: Pressure Falls > 50 mb/24h

Expansive Well-forecast Hurricane-Force Wind Field

Central Pressure Comparable to Sandy



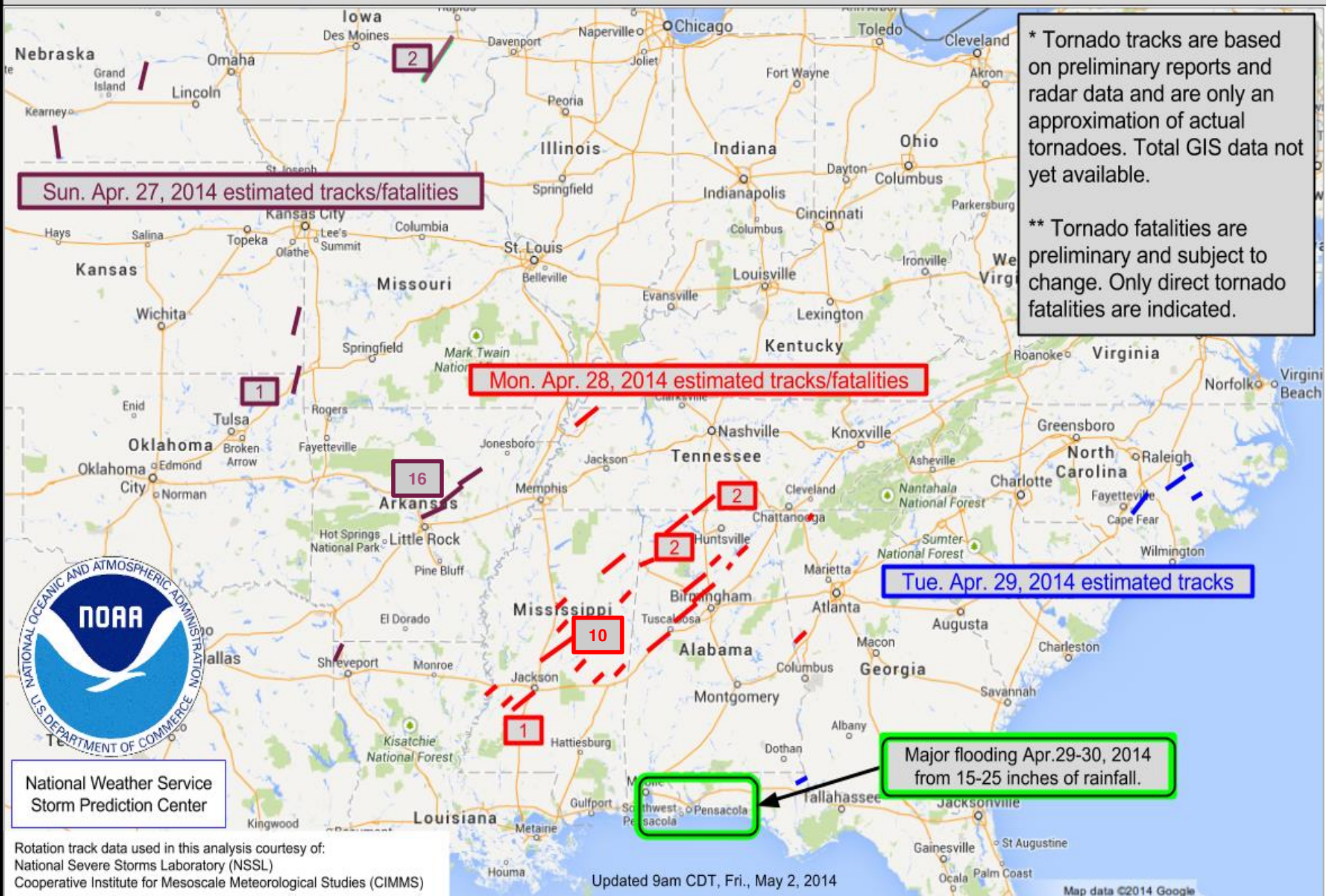
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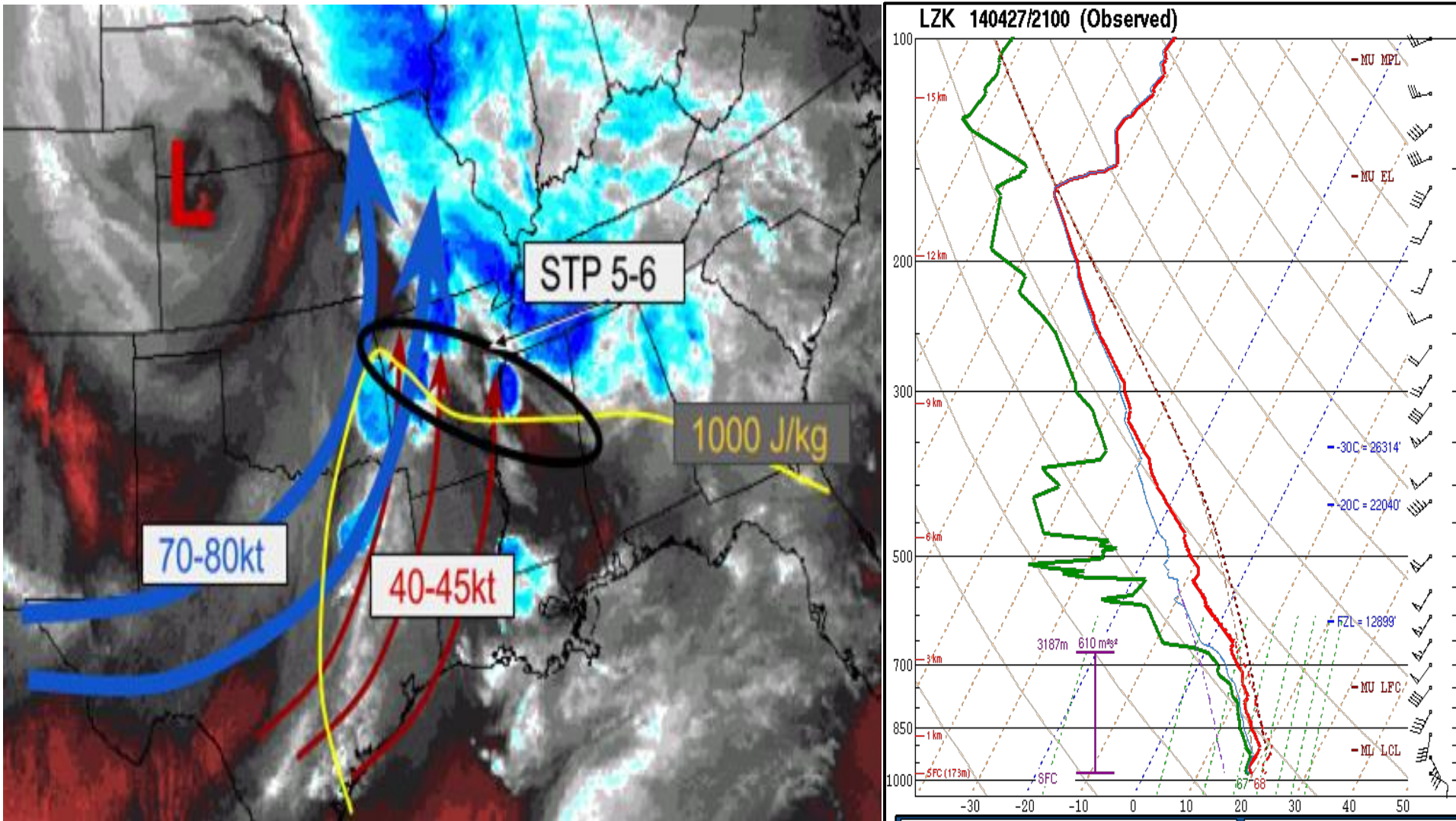
Tornadoes Return – Apr 27-28



April 27-30, 2014 Severe Weather Outbreak: Preliminary Tracks* and Tornado Fatalities**

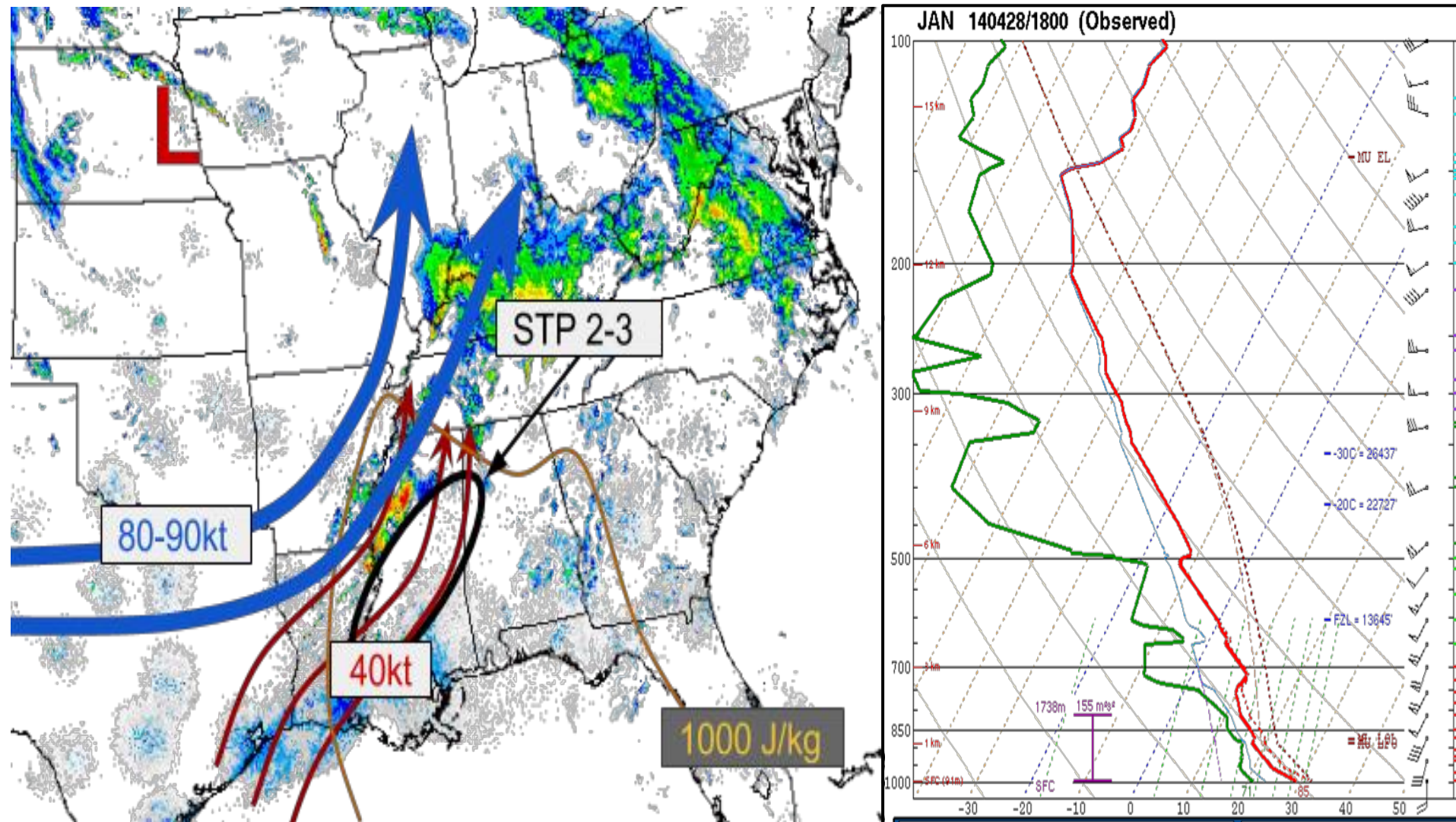


21 UTC April 27, 2014 WV Composite Chart and Sounding

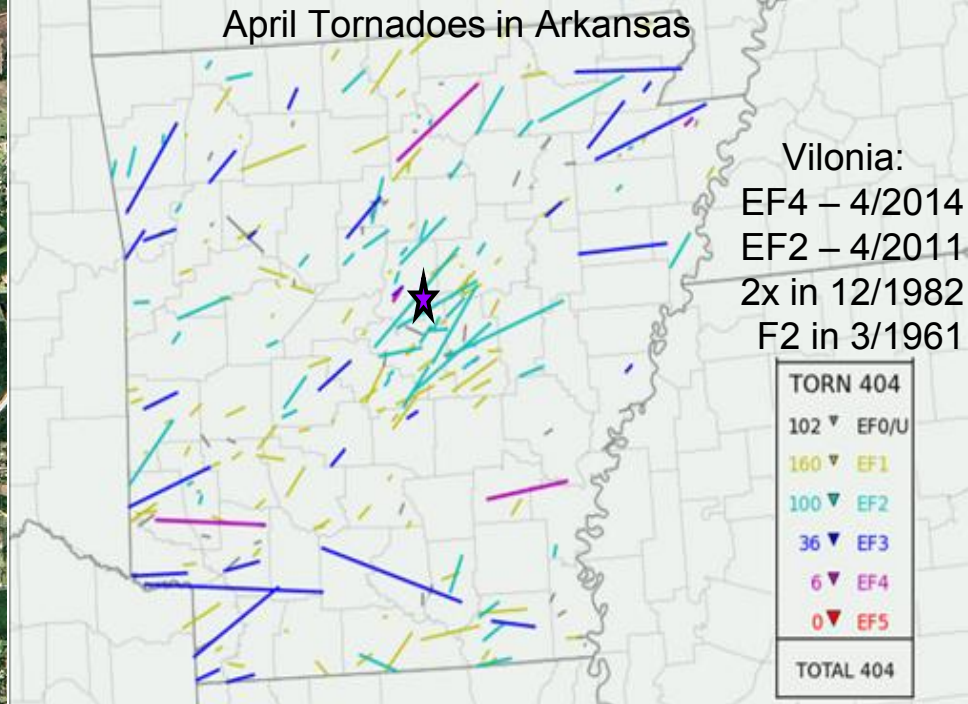
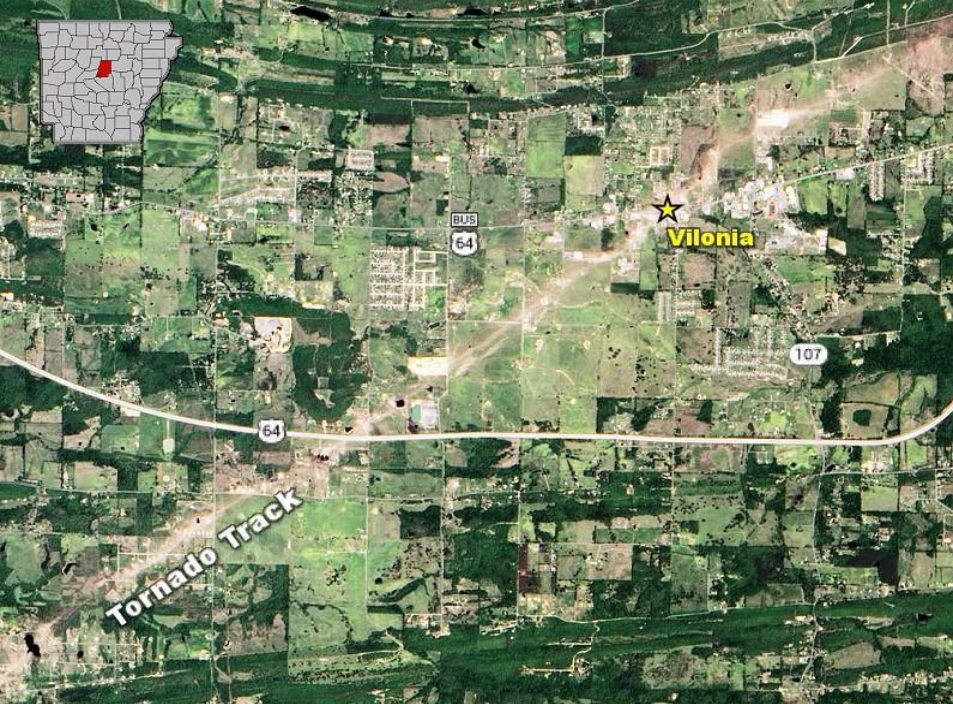


Little Rock, AR upper-air sounding taken ~ 21 UTC showed 1200 J/kg CAPE, ~600 effective SRH. Storm motion was estimated to be from 235 degrees at 36 knots. A classic supercell tornado thermodynamic and kinematic profile and the best proximity sounding for this event.

18 UTC April 28, 2014 Radar Composite Chart and Sounding



Jackson, MS upper-air sounding taken ~ 18 UTC showed 3500 J/kg CAPE, ~155 effective SRH. Storm motion was estimated to be from 230 degrees at 34 knots. A classic supercell tornado thermodynamic and kinematic profile and another great proximity sounding immediately prior to tornado development.



BEFORE

Louisville/Winston County, MS (EF4)

AFTER





– Tornadoes Return, April 27-28 Summary–

Two-day event: 70 Tornadoes, 34 Fatalities, 434 Injuries
 ~\$400 Million in Property Damage

BEFORE

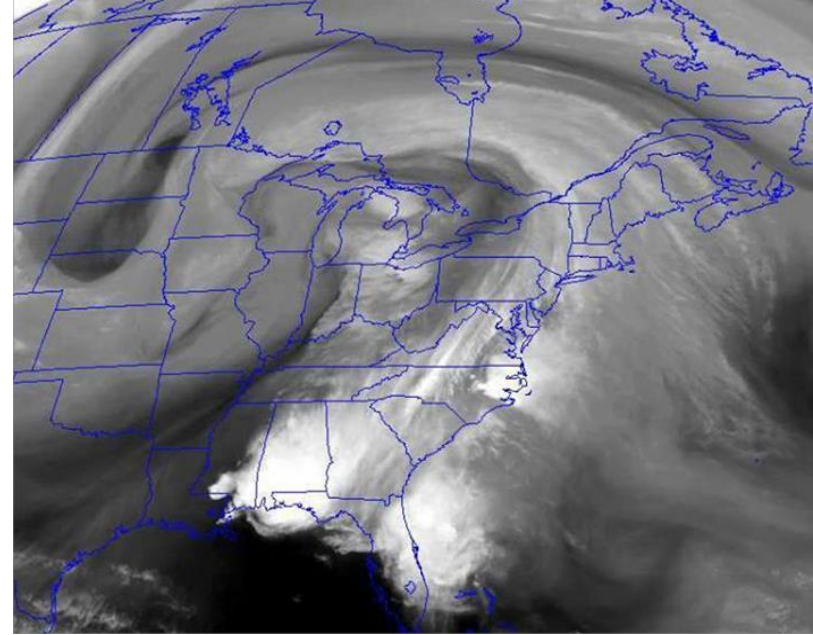
AFTER

With 23 tornadoes, 3rd Largest MS Outbreak on Record

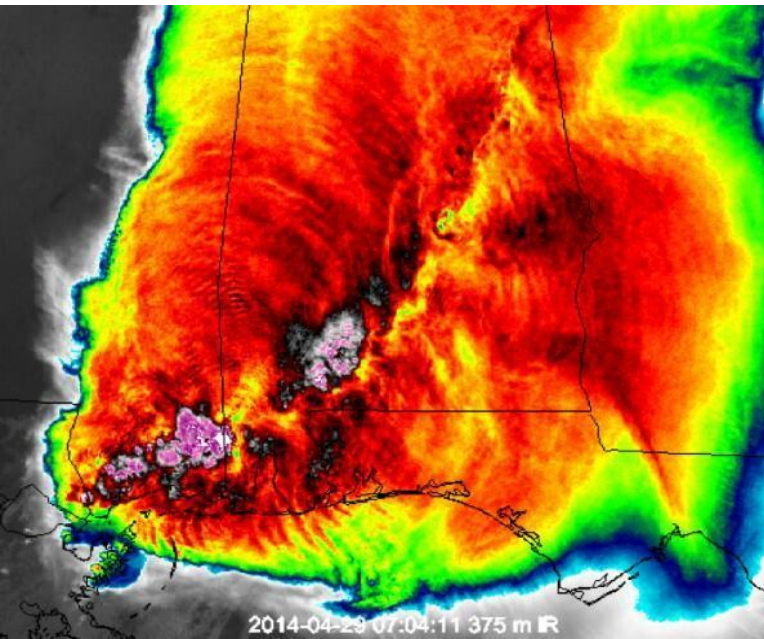
Vilonia, AR (EF4), after EF2 in '11 & 5th Tor Since '50



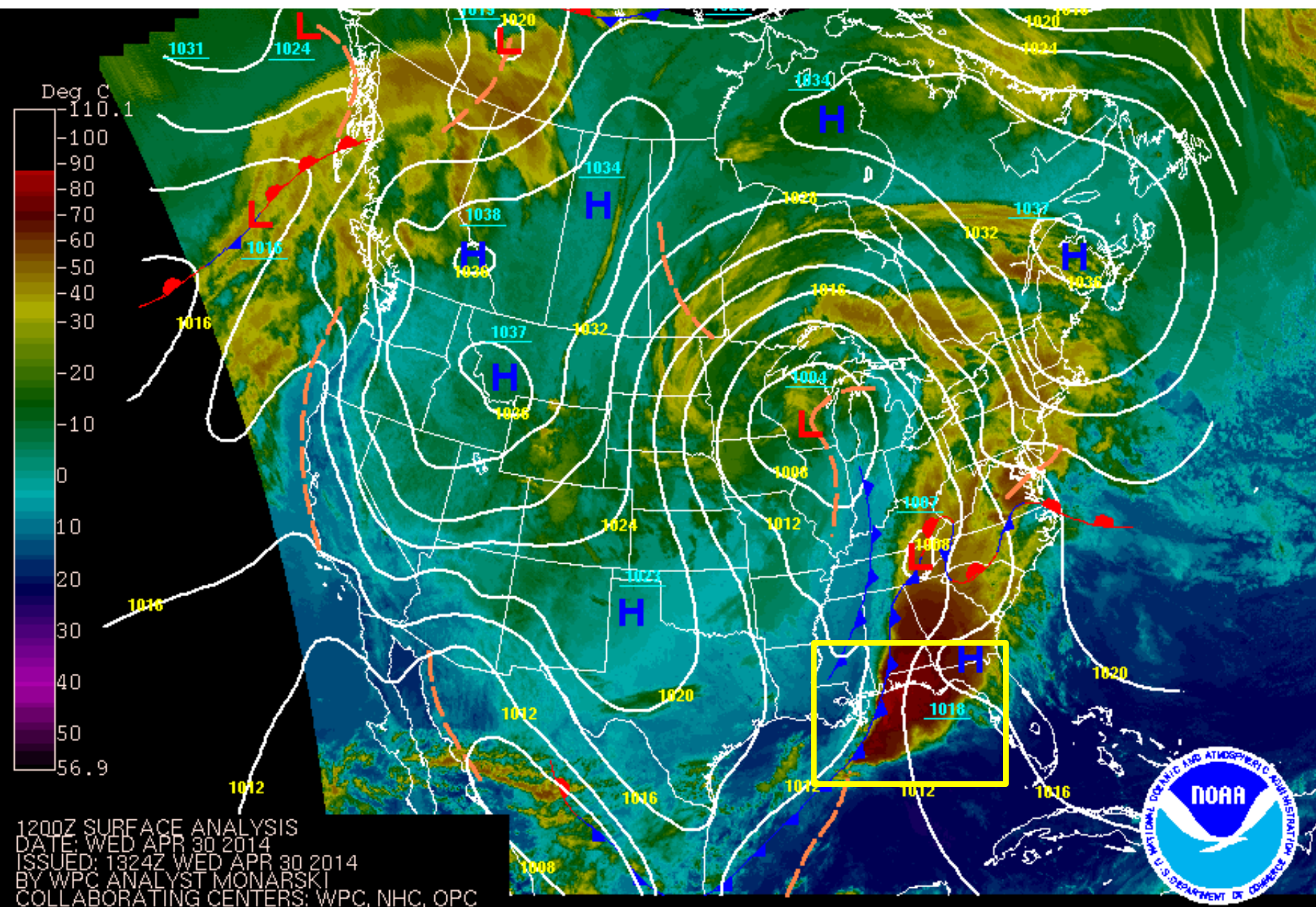
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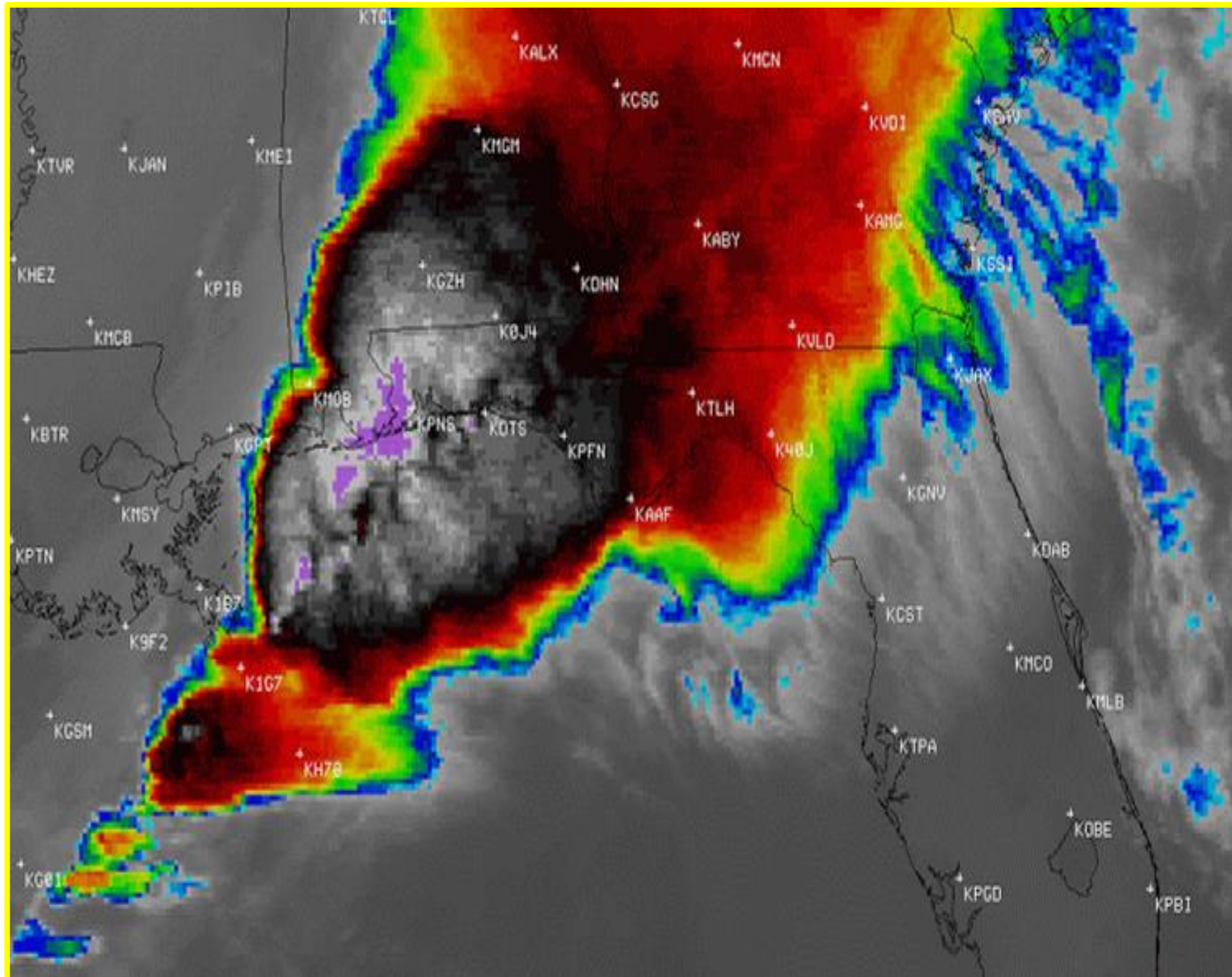
Gulf Coast Soak – April 30

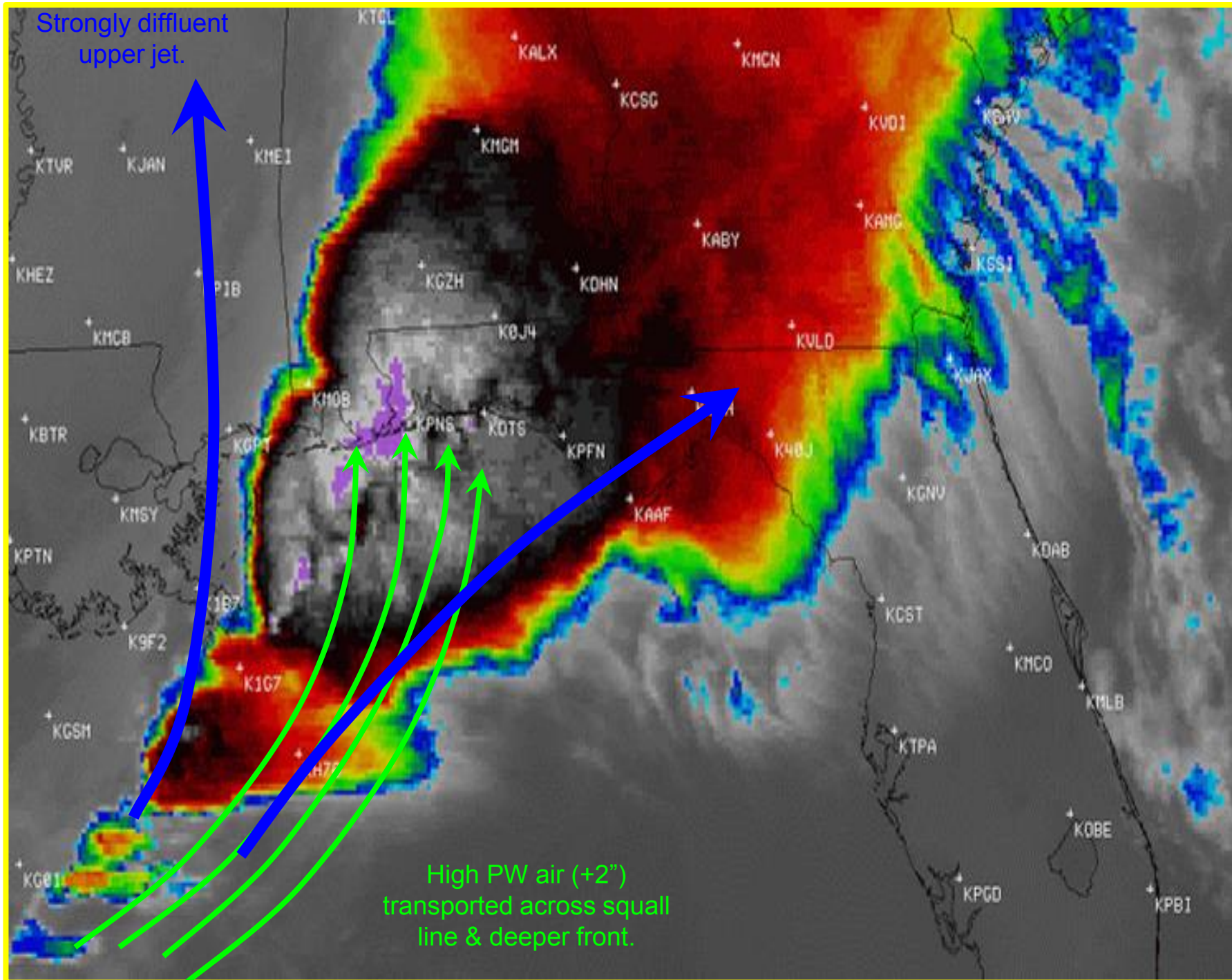


WPC Surface and IR Composite at 1200 UTC 4/30

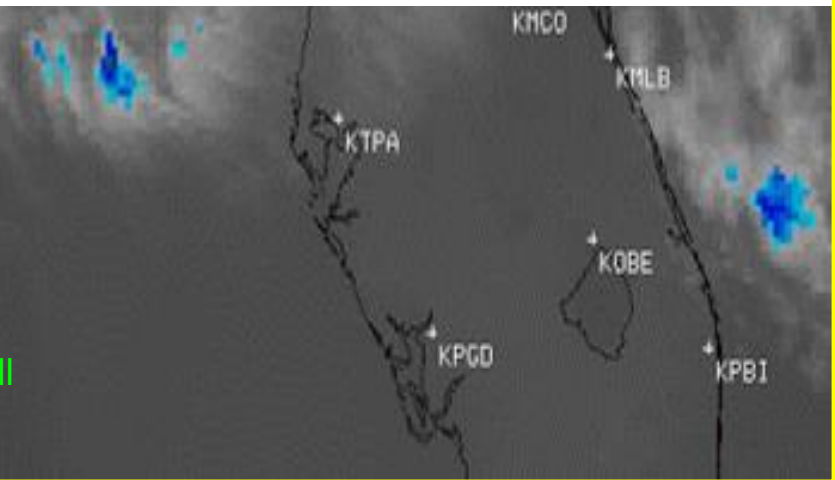
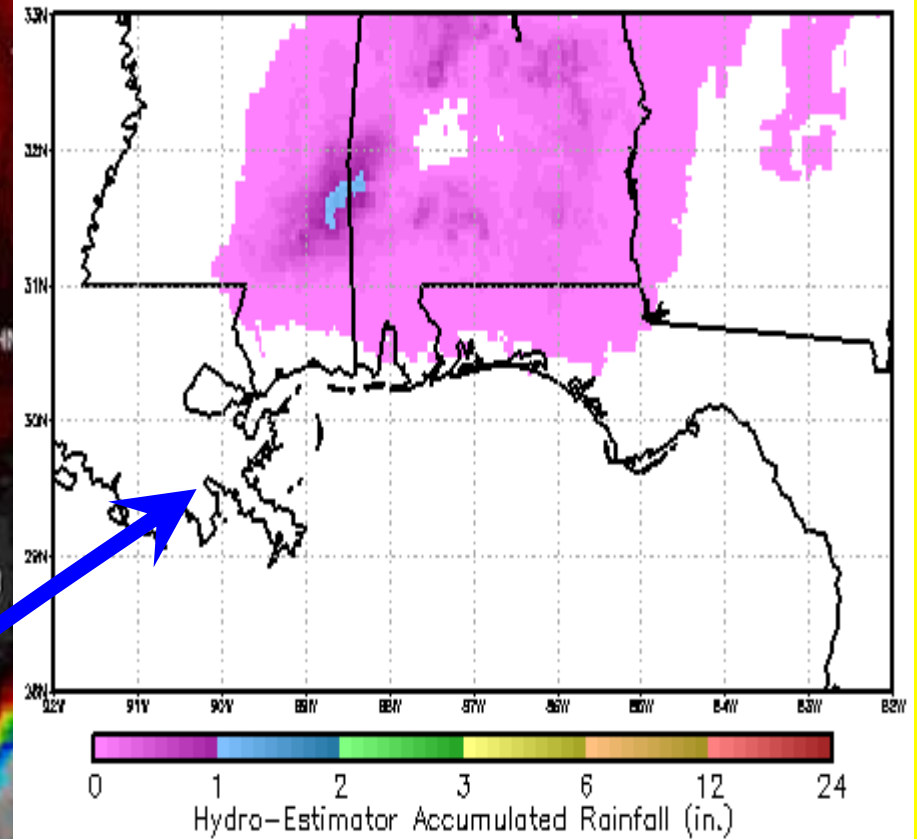
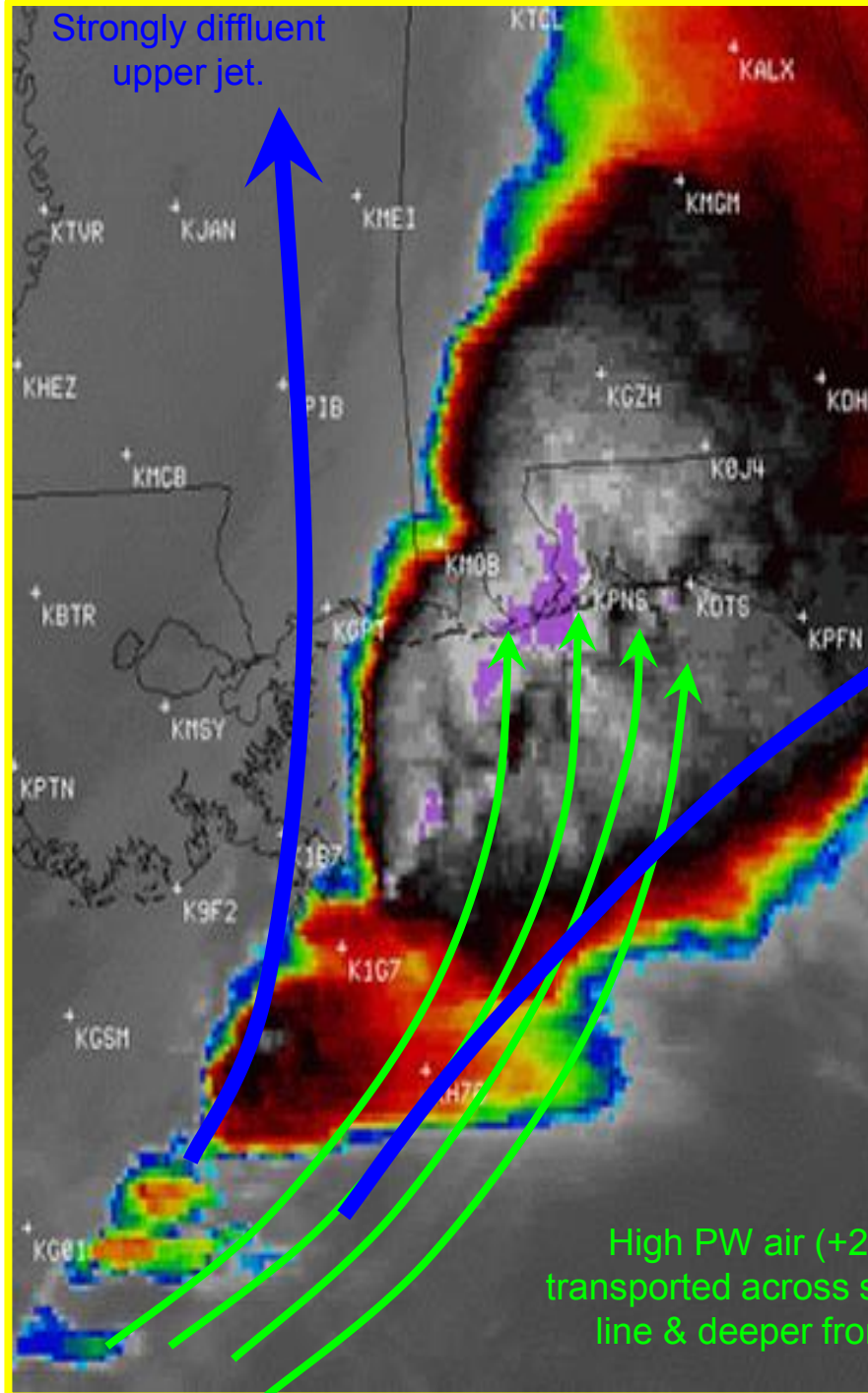


IR 20140430 1215Z GOES-E SAT IMAGE





Midnight-2pm Tue-Wed, April 29-30, 2014

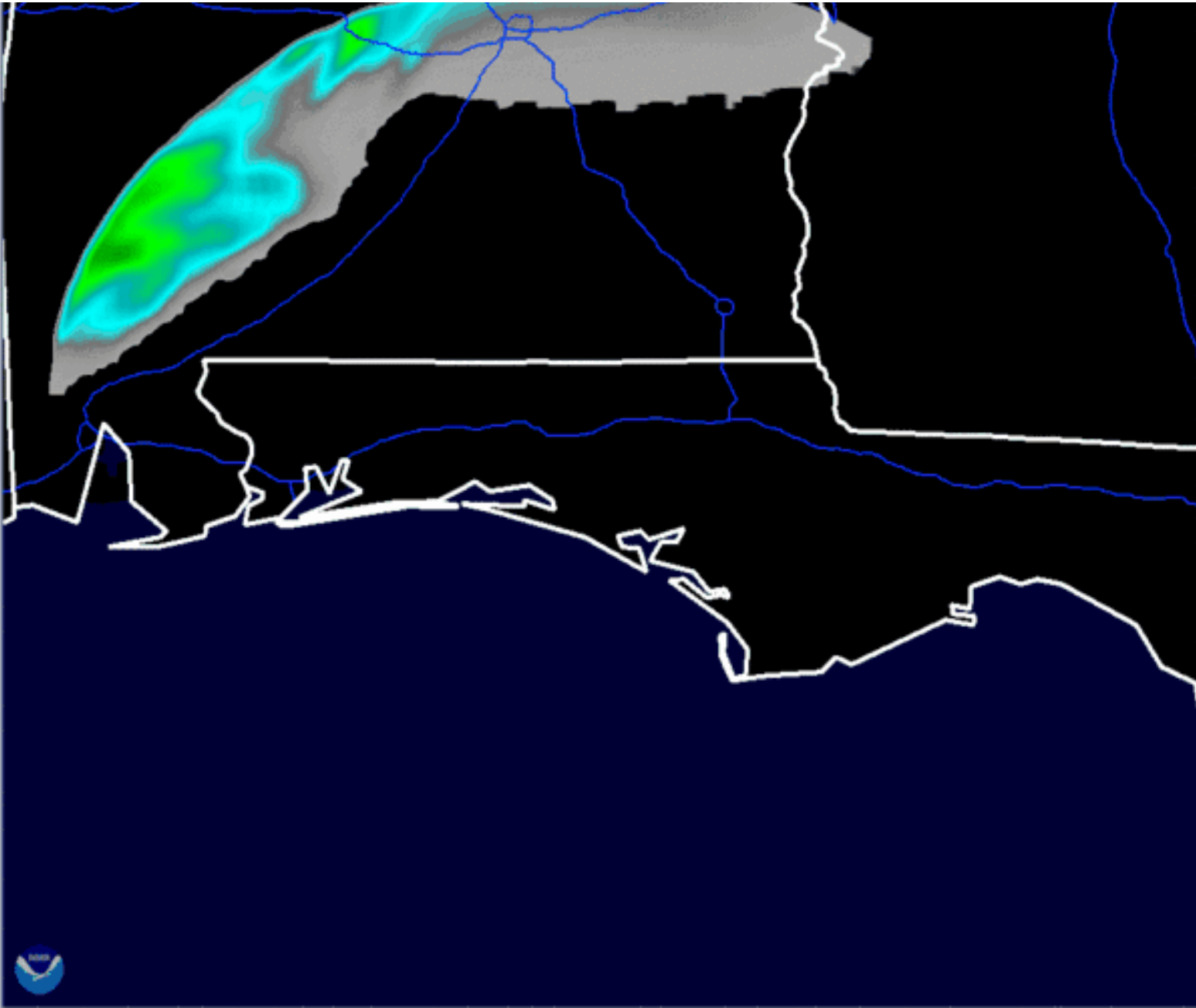
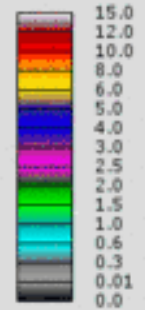


Storm-total Animation Covering 36h

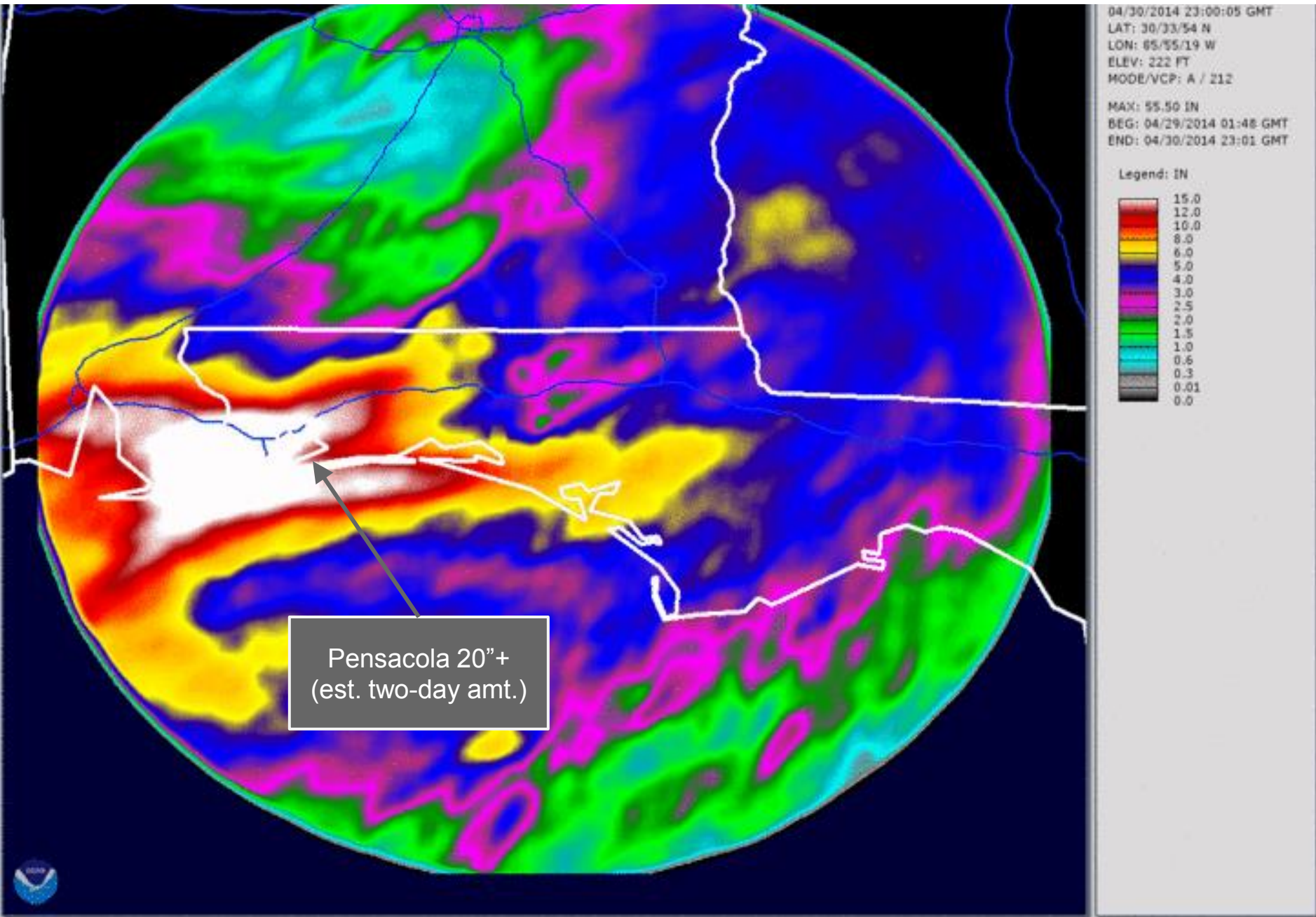
04/29/2014 06:01:13 GMT
LAT: 30/33/54 N
LON: 85/55/19 W
ELEV: 222 FT
MODE/VCP: A / 212

MAX: 2.20 IN
BEG: 04/29/2014 01:48 GMT
END: 04/29/2014 06:01 GMT

Legend: IN



Once in a 100-200 Year Event for Florida Panhandle





LIVE

– Gulf Coast Soak, April 30 Summary –

PNS: 5.68" in 1h, New 24h Record of ~16 Inches (1879)

Gulf Shores Swamped with a Foot of Rain in 9 Hours

Mobile, AL; 1 Foot of Rain in 24h, 3rd Greatest (1871)



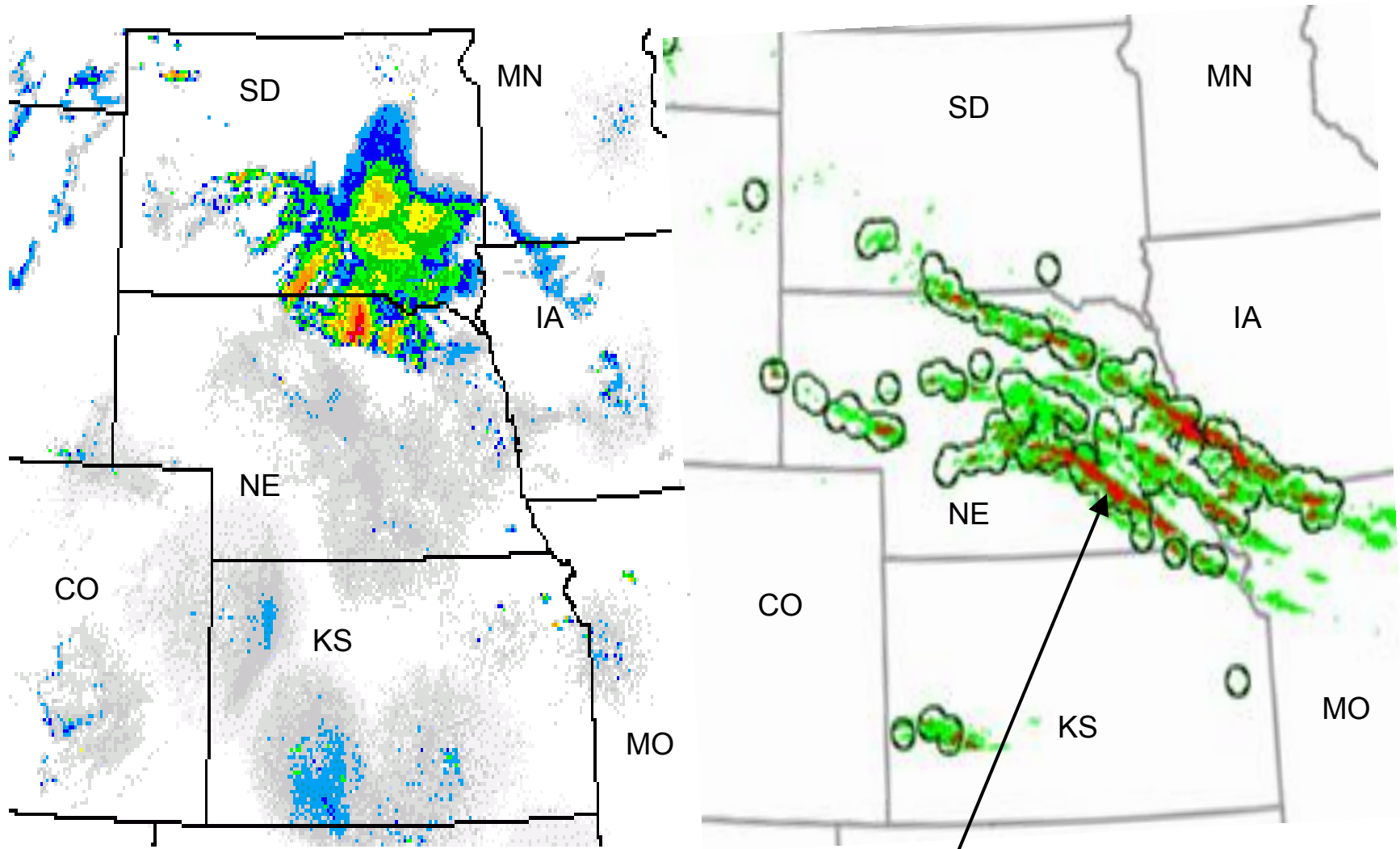
6



Nebraska Nasty – June

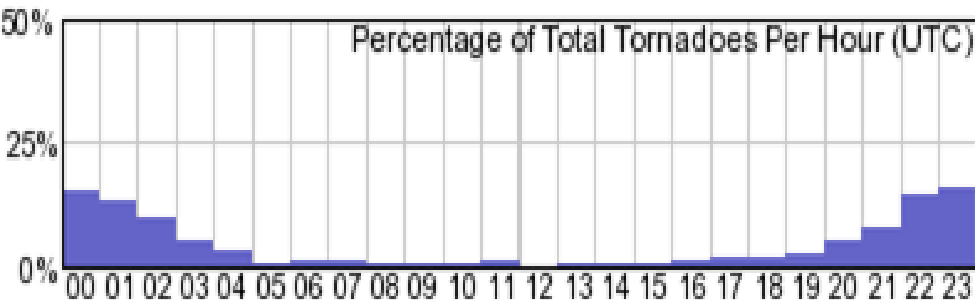
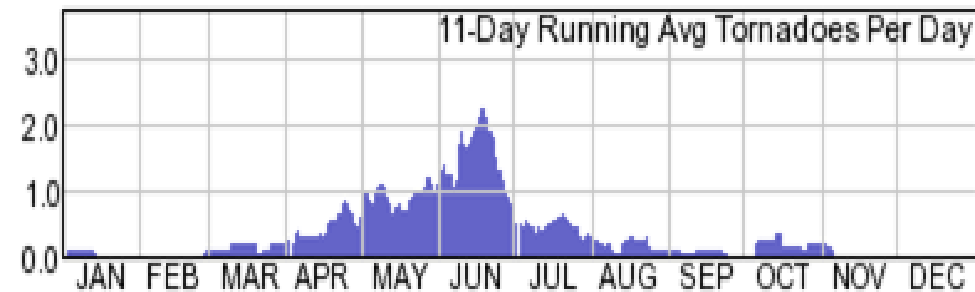


June 3, 2014 16h Radar Loop and MESH Hail Swaths

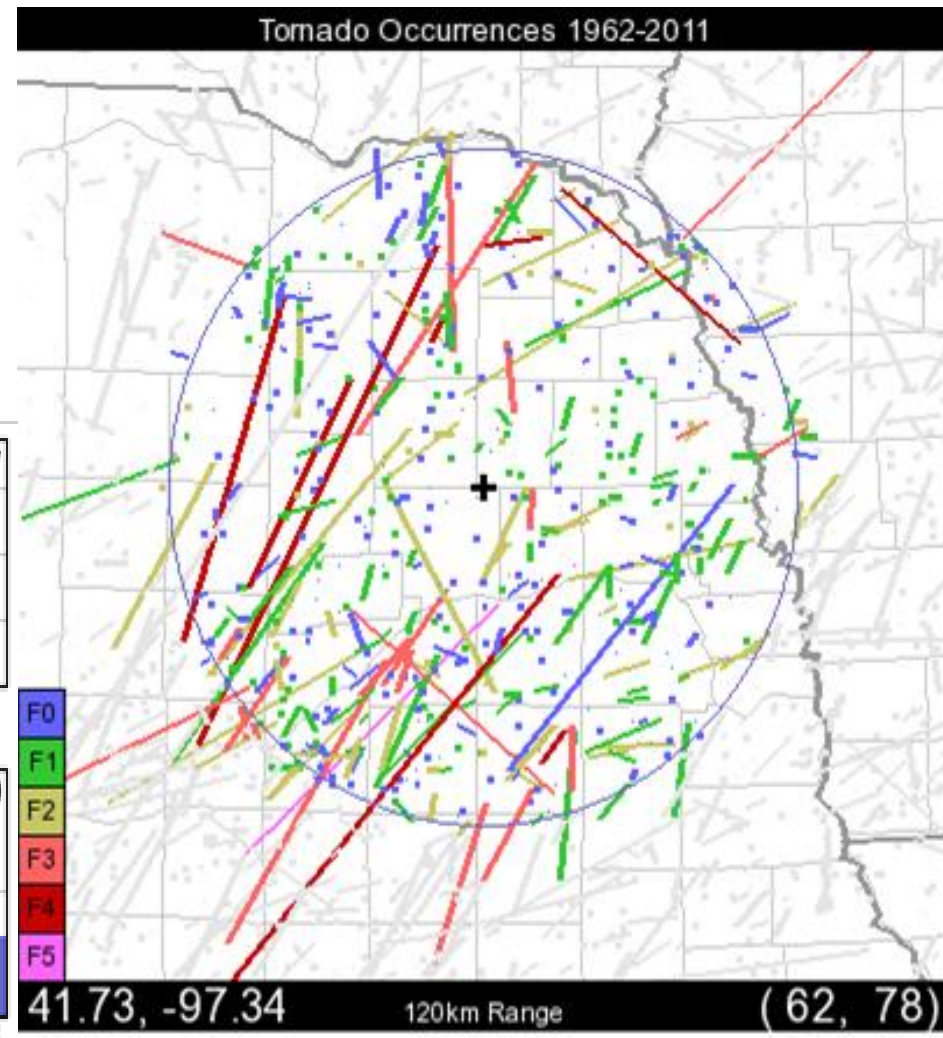


Radar estimated hail size ≥ 2 inches in dia.
Two swaths ~ 150 miles in length across southeast Nebr.

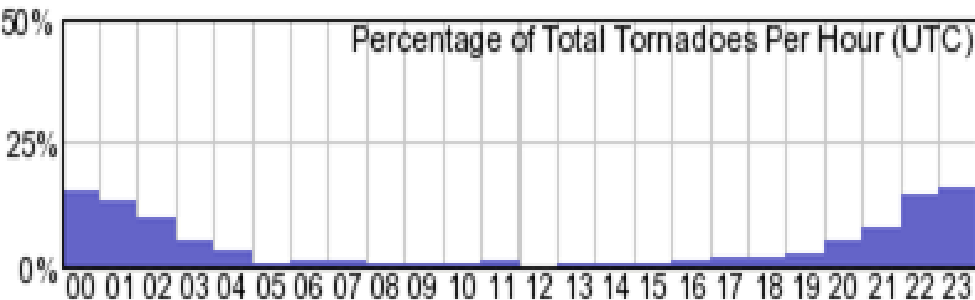
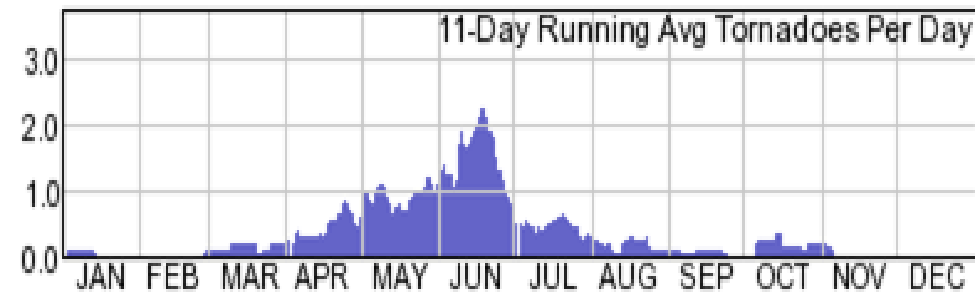
Next: Northeast Nebraska Tornado Climatology



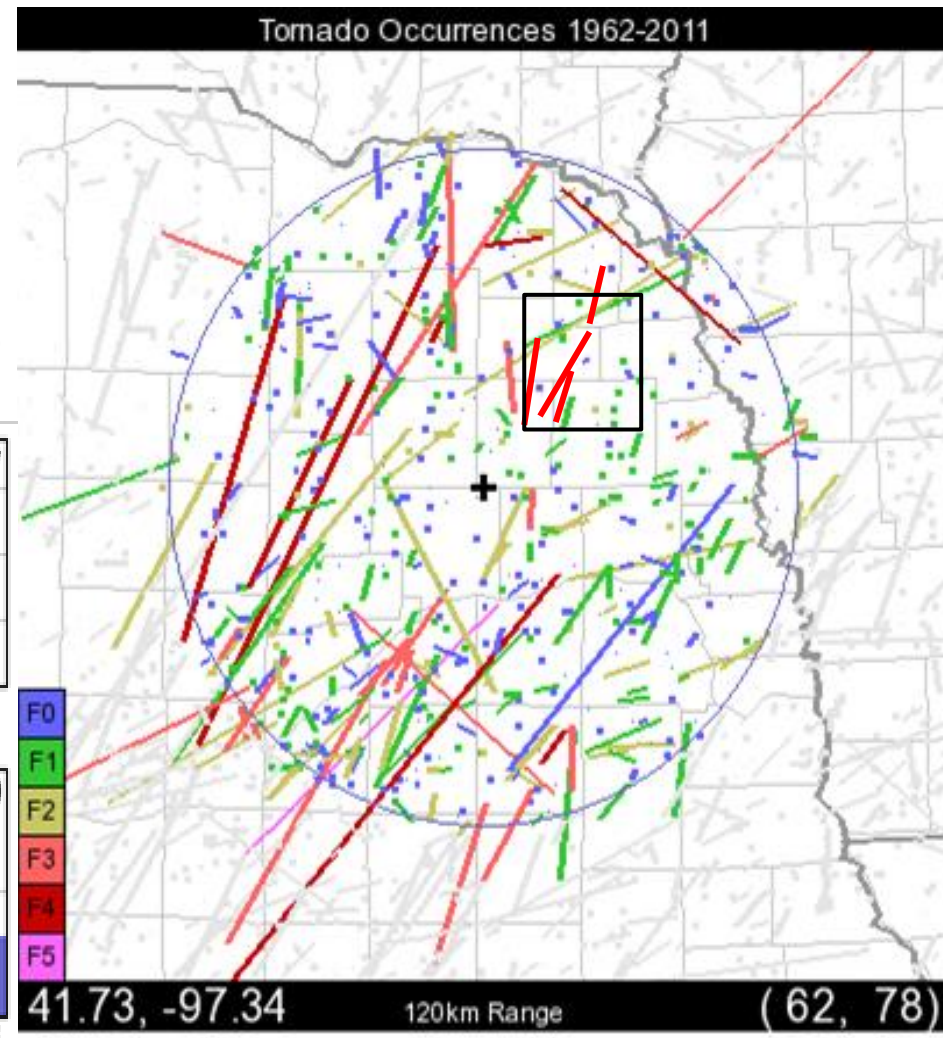
NOAA/NWS/NCEP Storm Prediction Center



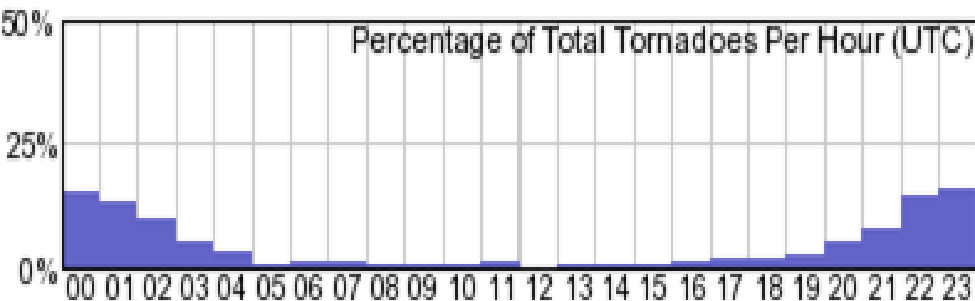
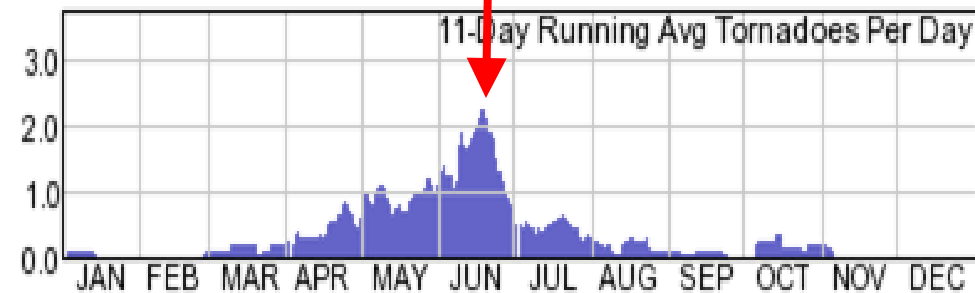
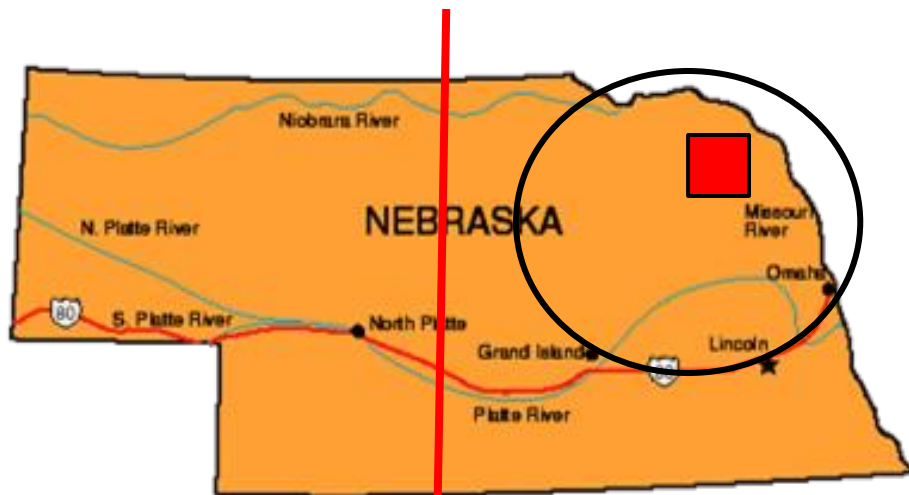
June 16, 2014 – Add Four More EF4 Tornadoes



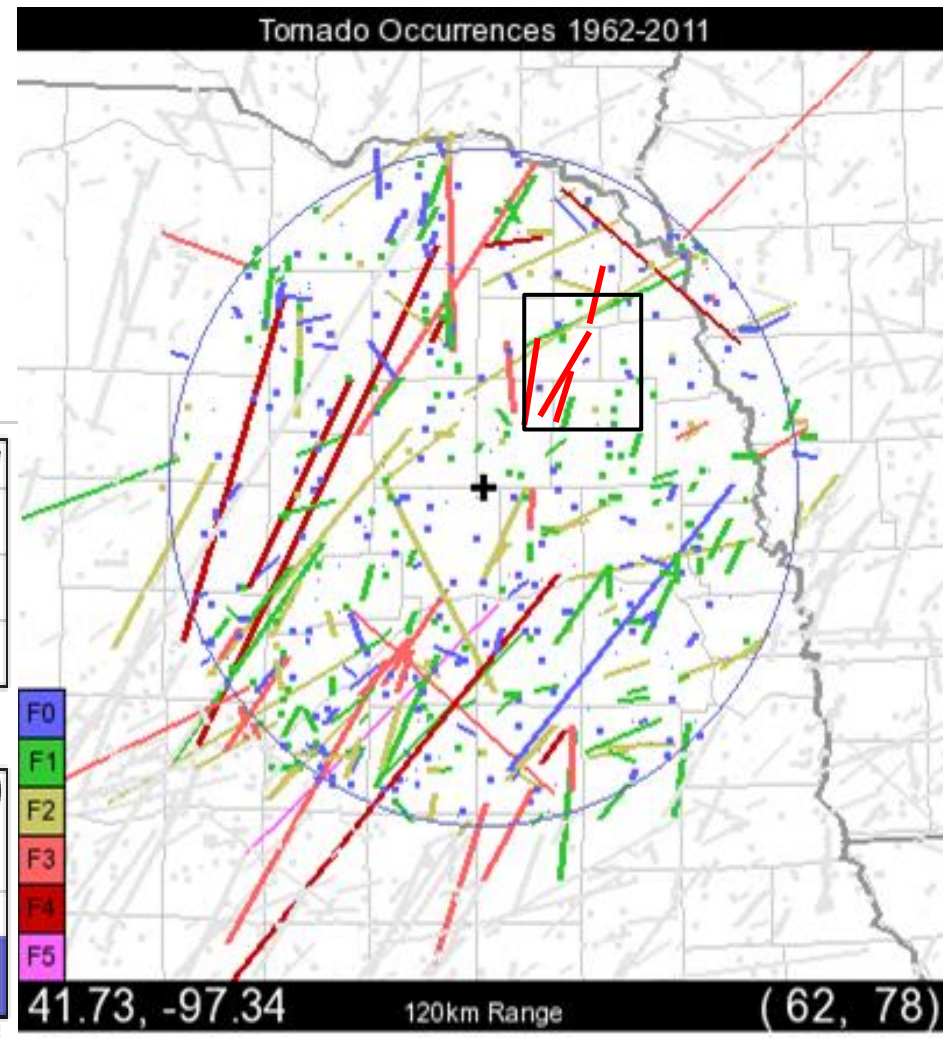
NOAA/NWS/NCEP Storm Prediction Center



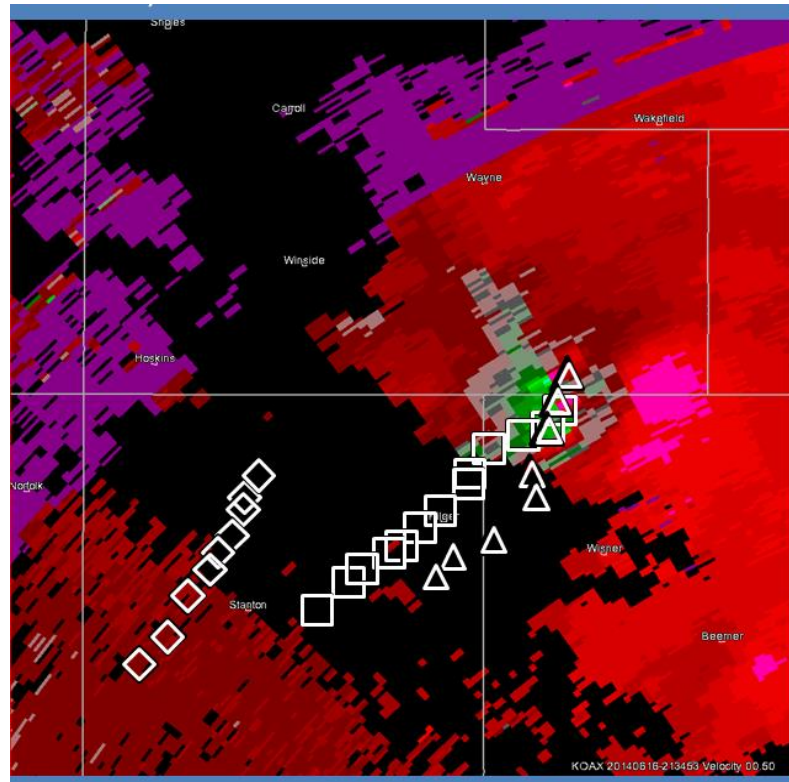
June 16, 2014 – Add Four More EF4 Tornadoes



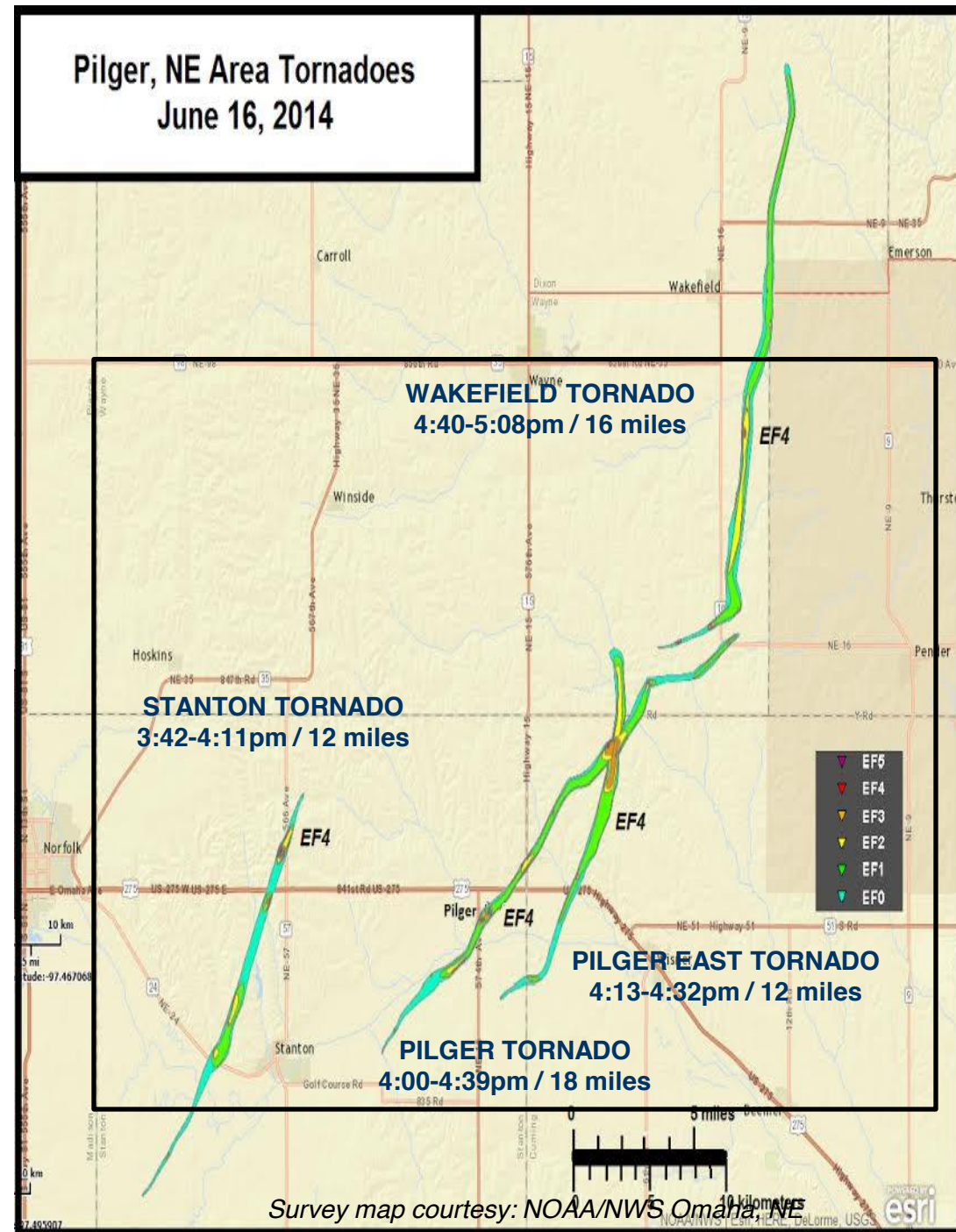
NOAA/NWS/NCEP Storm Prediction Center



Pilger, NE Area Tornadoes June 16, 2014

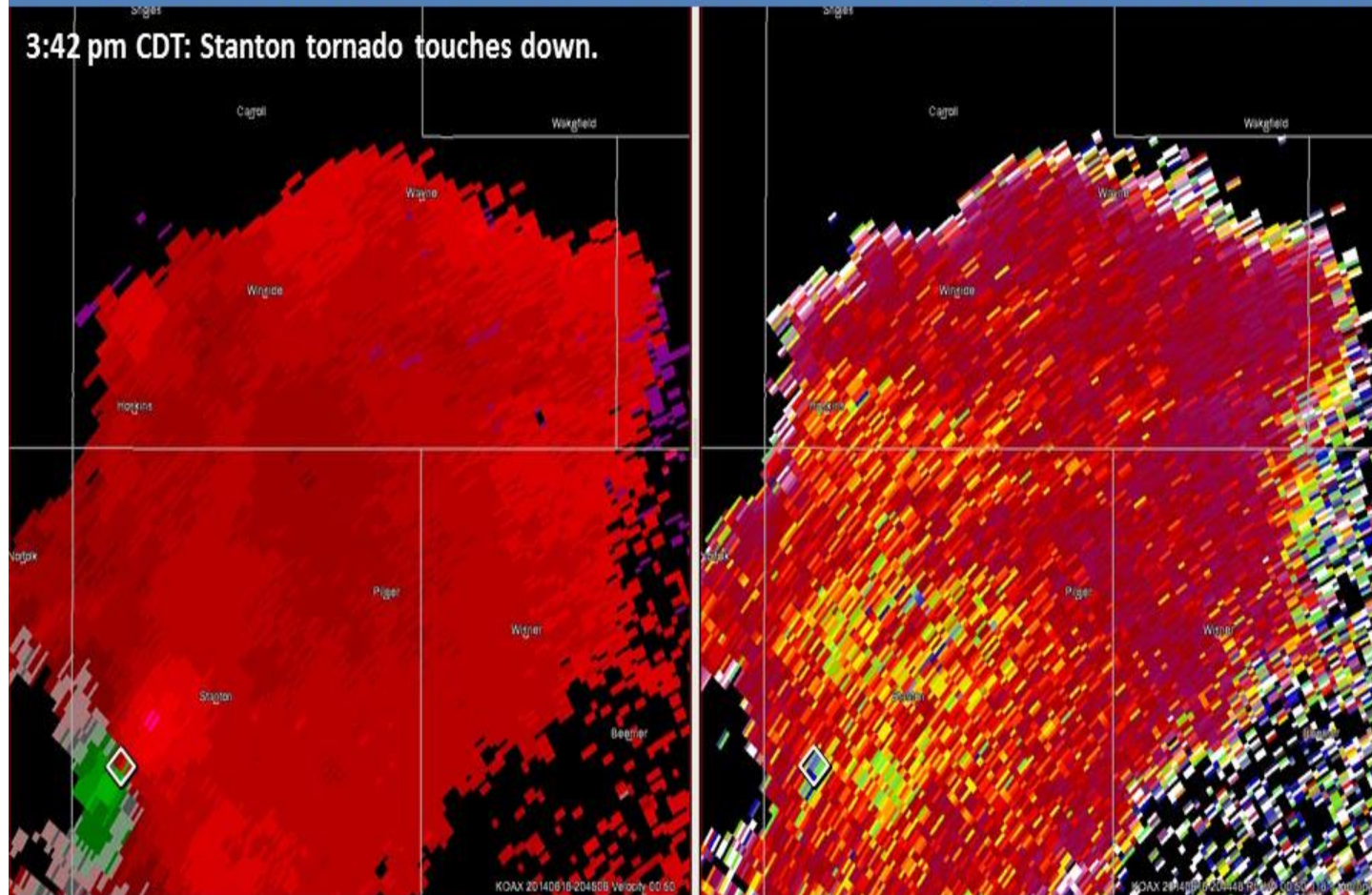


Next: Vel/CC Animation



June 16, 2014 – Four EF4 Nebraska tornadoes: \diamond Stanton \square Pilger \triangle Pilger-East \circ Wakefield

3:42 pm CDT: Stanton tornado touches down.



0.5 degree Doppler velocity(left) & 0.5 RhoHV (right, 19 seconds behind). RDA is ~65 mi SE.



– Nebraska Nasty, June Summary–

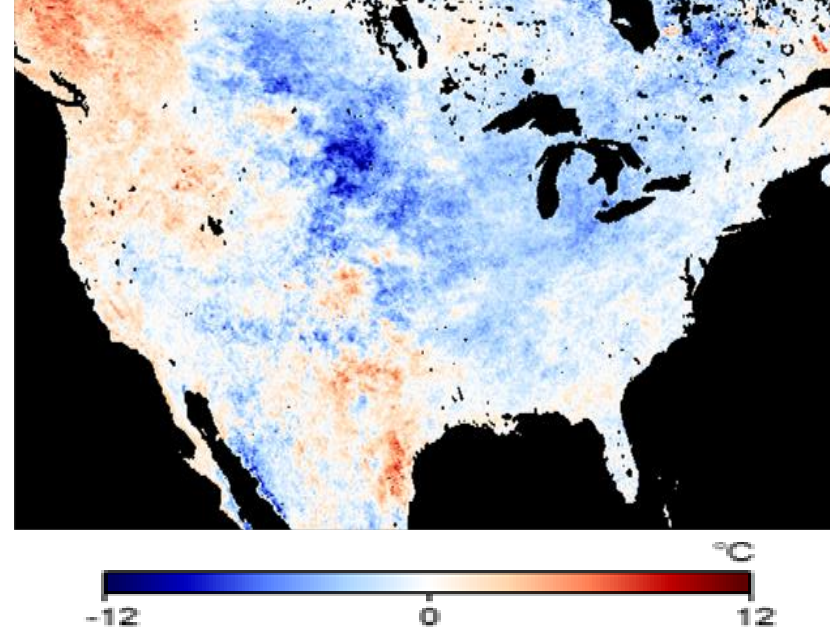
Over \$0.5 Billion in Wind-Driven Hail Damage, June 3rd

379 Total Severe Hail Reports Set New Record for June

Four EF4 Tornadoes & \$Millions in Damage, June 16th



7



Cool Summer?



National Average Temperature Rank

June–August 2014

Period: 1895–2014



Record
Coldest
(1)

Much
Below
Average

Below
Average

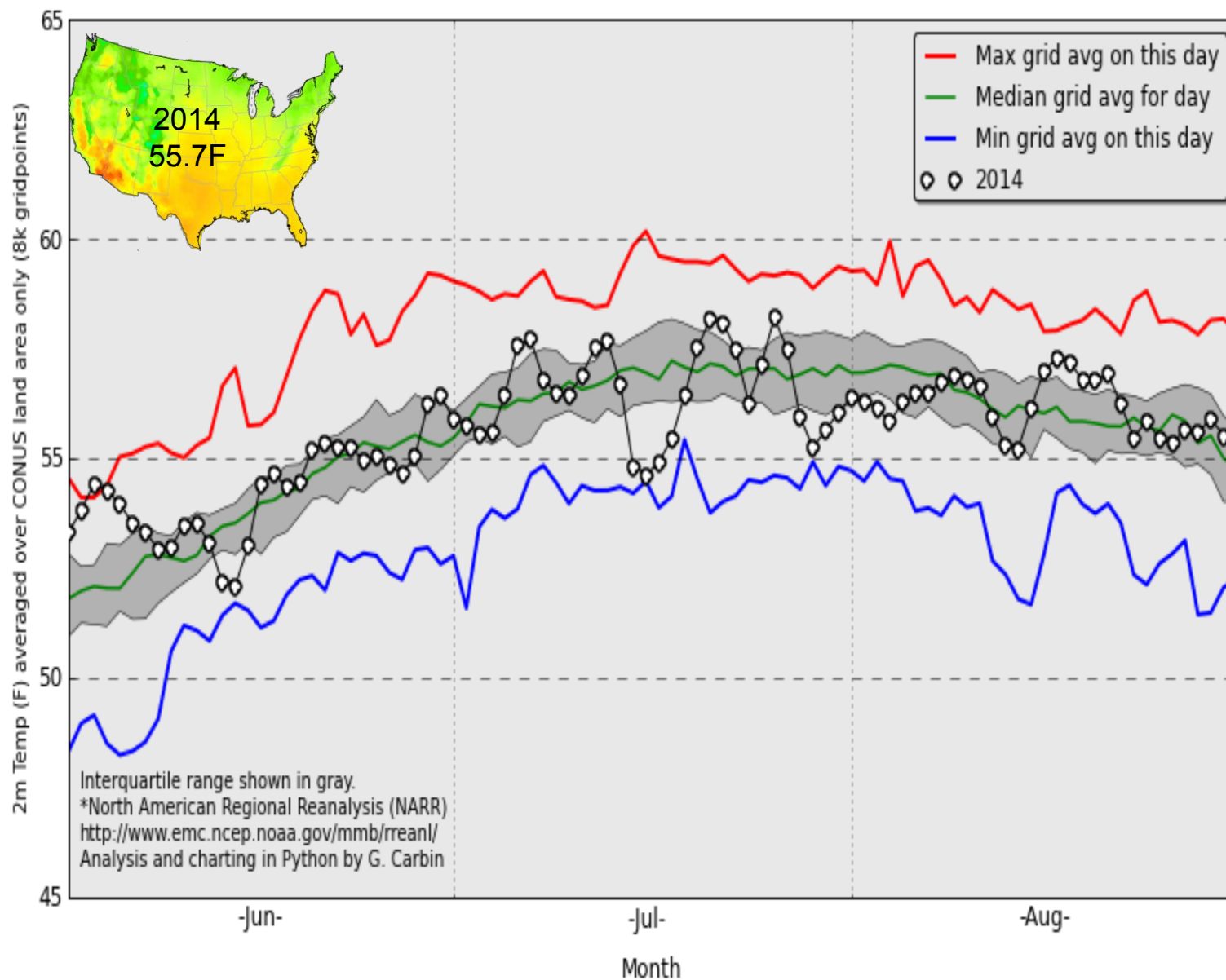
Near
Average

Above
Average

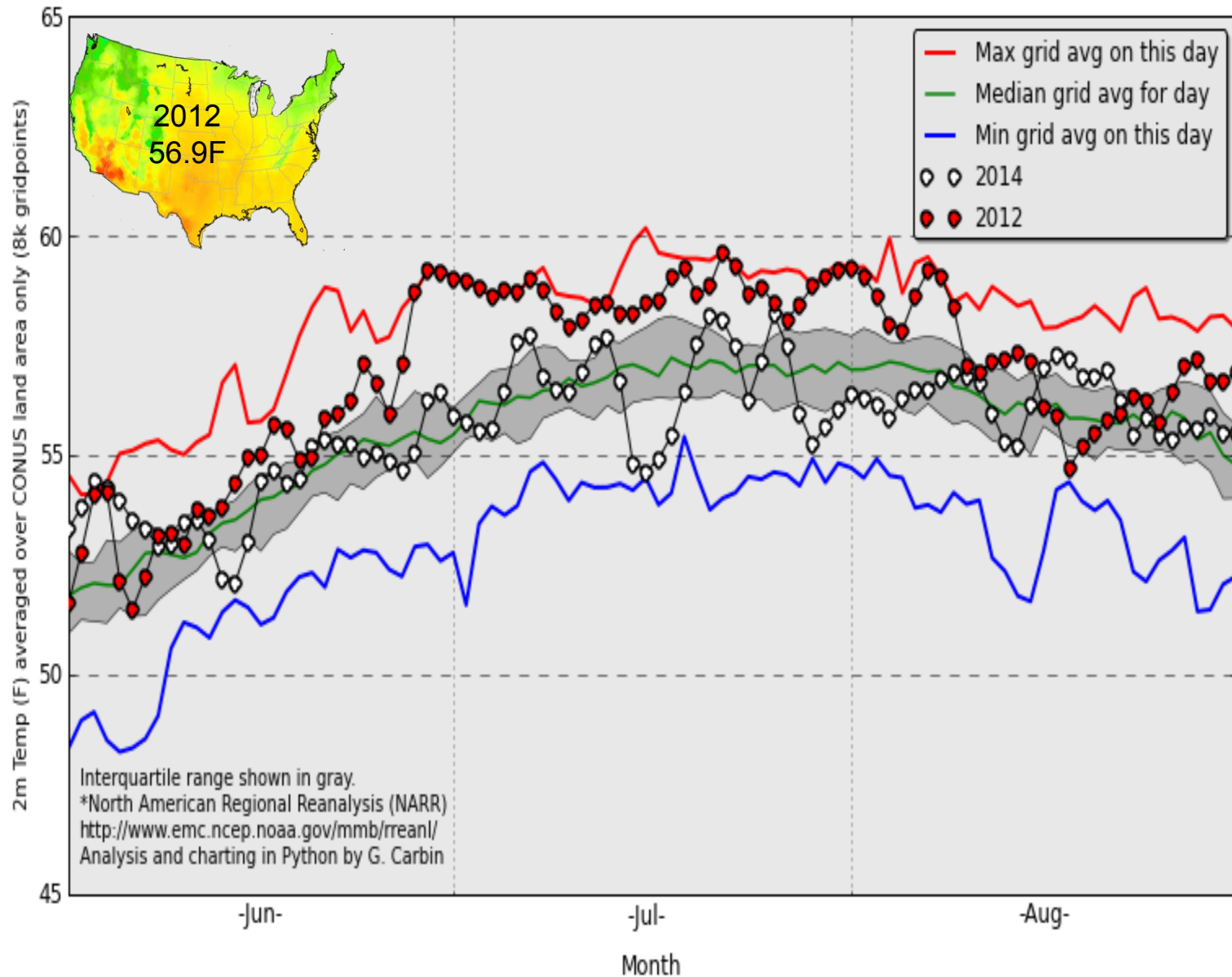
Much
Above
Average

Record
Warmest
(120)

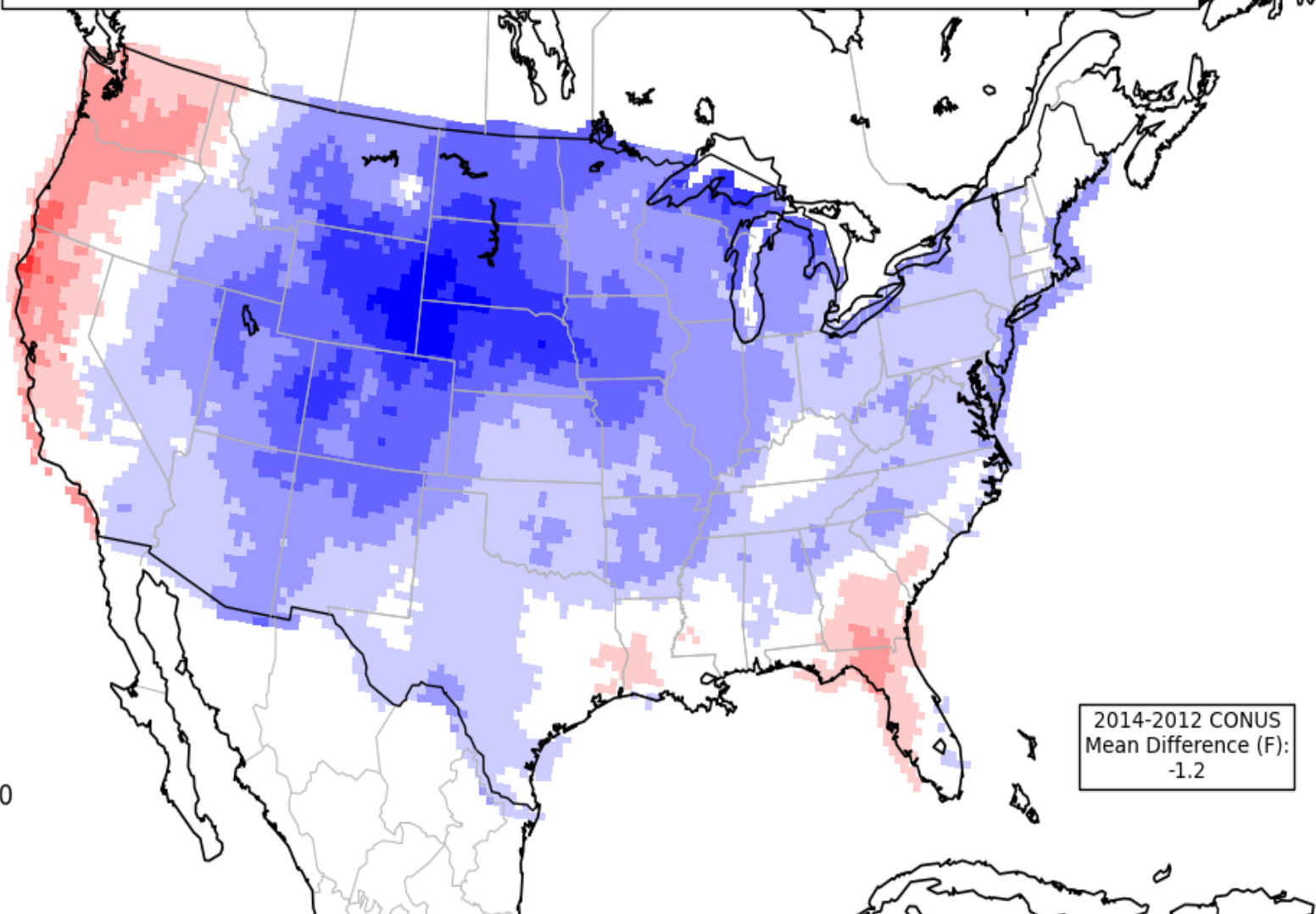
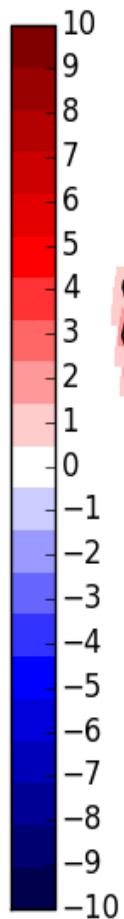
NARR (1979-2013) June-July-August CONUS Daily Grid Avg 2m Temp(F)*
2014 compared to range of daily grid avg values



NARR (1979-2013) June-July-August CONUS Daily Grid Avg 2m Temp(F)*
2014 compared to range of daily grid avg values

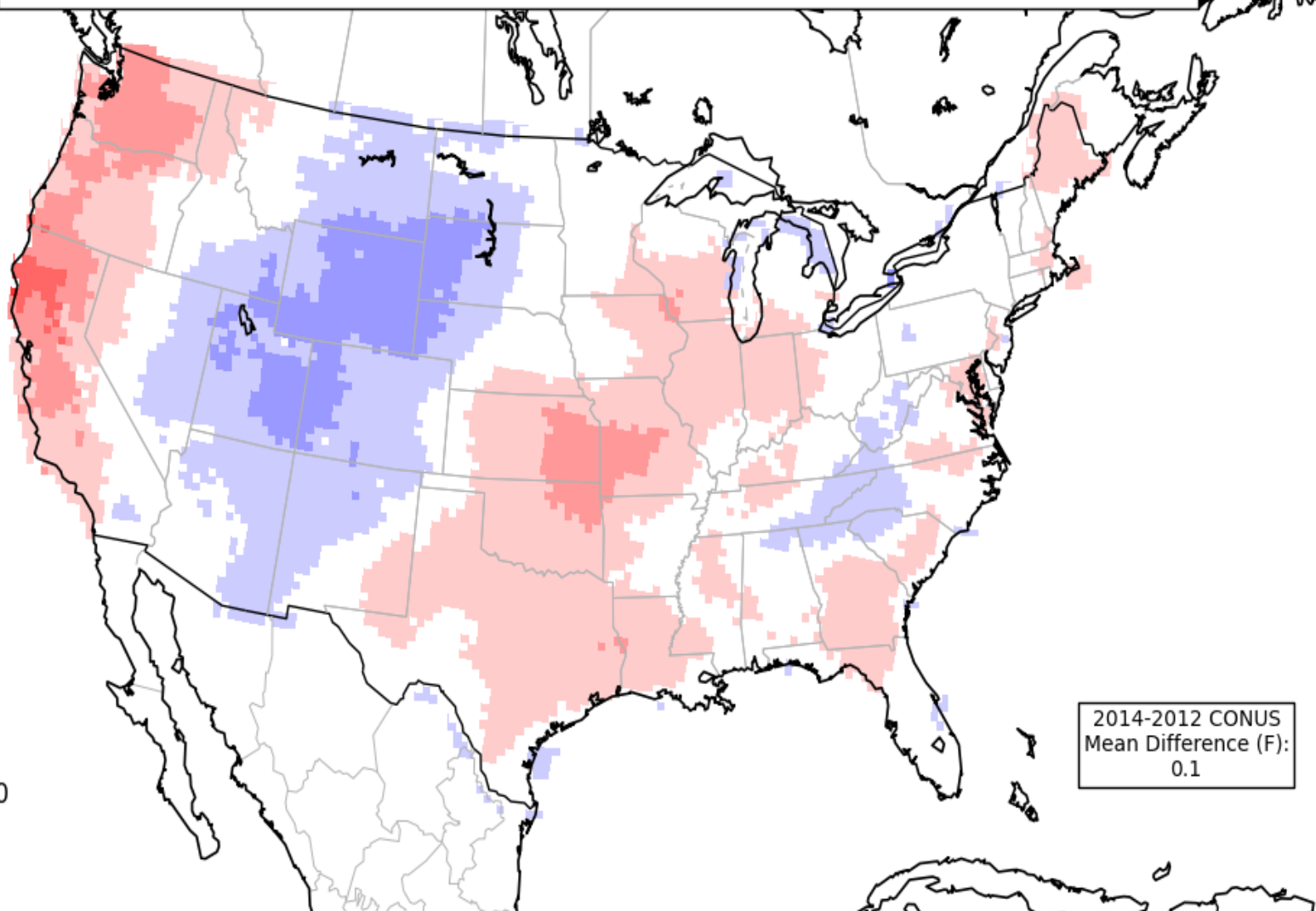
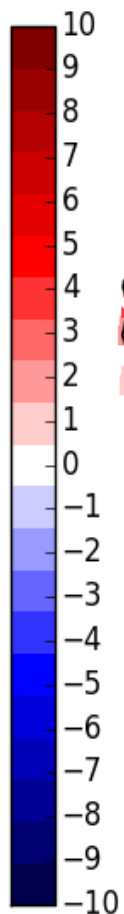


Summer (JJA) NARR 2m Temperature Difference Between 2014 and 2012
Using daily average temperatures from 3h data, 12-09 UTC, over CONUS domain.



2014-2012 CONUS
Mean Difference (F):
-1.2

Summer (JJA) NARR 2m Temperature Difference Between 2014 and (1979-2013)
Using daily average temperatures from 3h data, 12-09 UTC, over CONUS domain.



2014-2012 CONUS
Mean Difference (F):
0.1

Comparison of Summer 2014 Temps, NARR vs. State Ranks*

June

July

August

– Cool Summer? Summary –

Overall CONUS JJA '14 Temperatures Were “Normal”

Summer 2014 Much Cooler than 2012, Most of U.S.

West Coast a Sizzling Exception

* www.ncdc.noaa.gov/temp-and-precip/maps.php



8



Western Fire Facts



The onset of the largest western wildfires began with a lightning “bust” across Oregon and Washington on July 14.

Next is a loop of MODIS fire detection imagery displayed on a background map from northern California to Washington.

Images update weekly, starting on July 2, 2014, and continuing until September 24, 2014.



The onset of the largest western wildfires began with a lightning “bust” across Oregon and Washington on July 14.

Loop of MODIS fire detection imagery displayed on a background map from northern California to Washington.

Images update weekly, starting on July 2, 2014, and continuing until September 24, 2014.

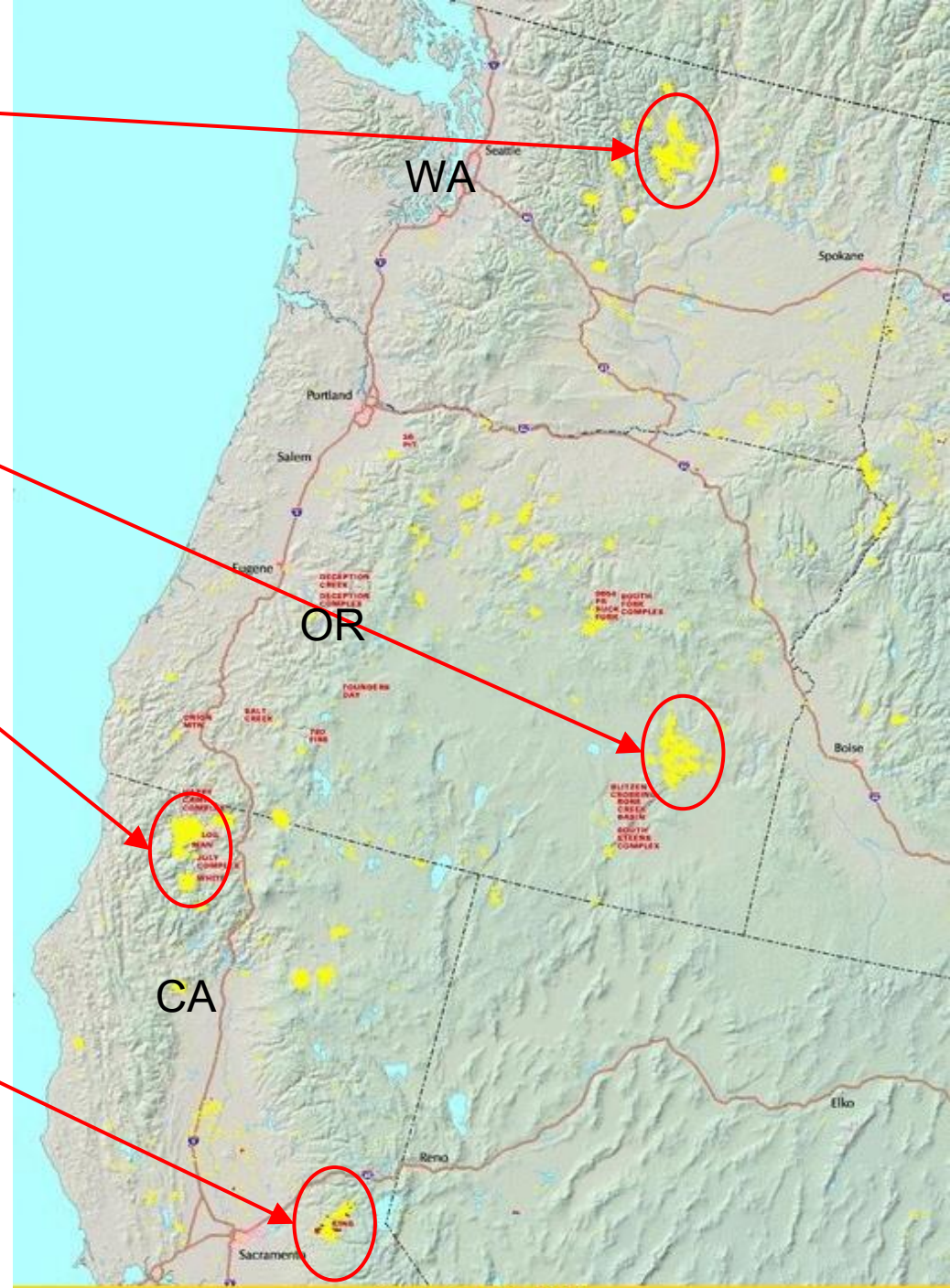


Carlton Complex

Buzzard Complex,

Happy Camp Fire

King Fire



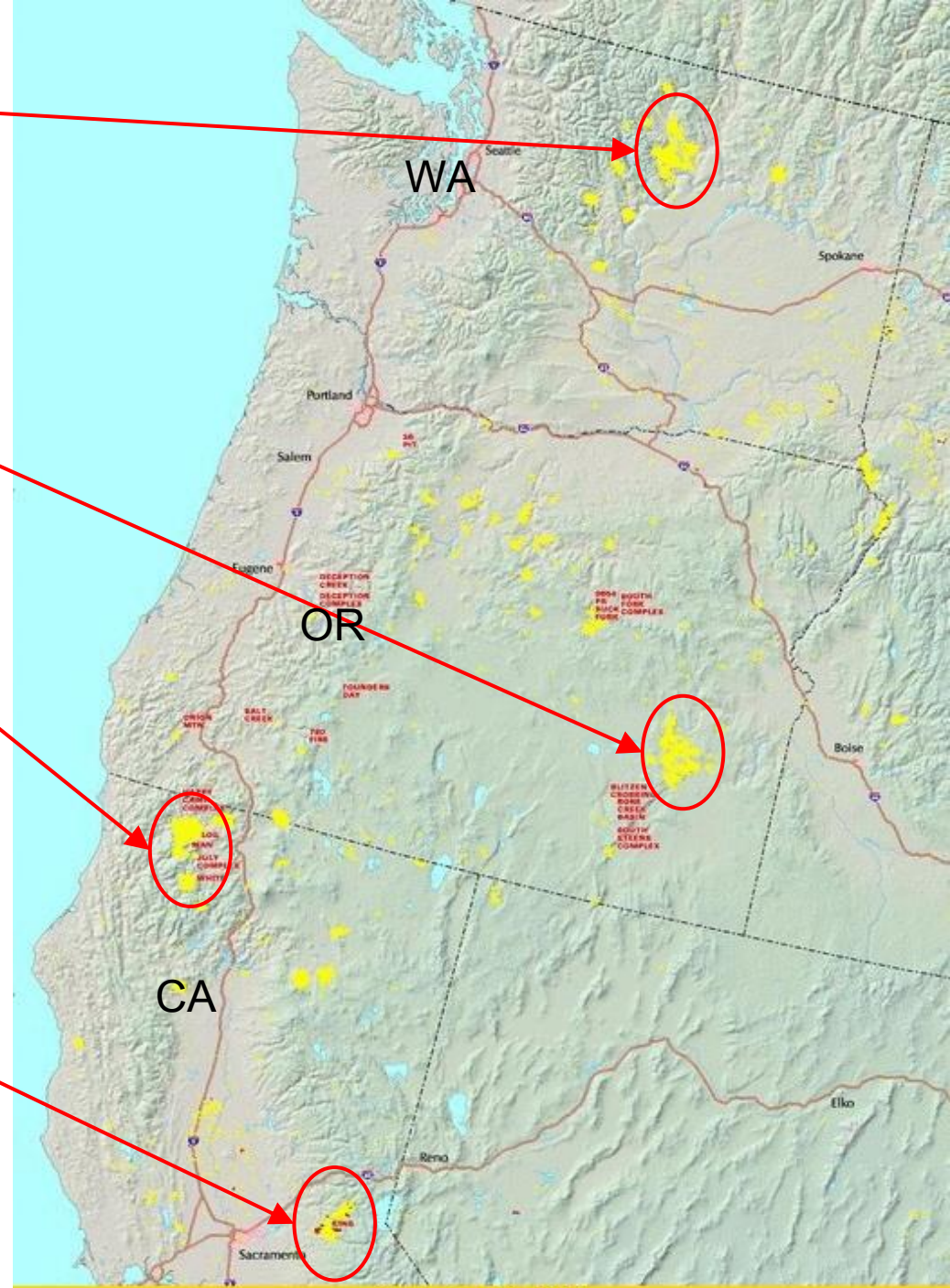
September 24, 2014

Carlton Complex
nearly 300,000 acres

Buzzard Complex
nearly 400,000 acres

Happy Camp Fire
over 130,000 acres

King Fire
nearly 100,000 acres

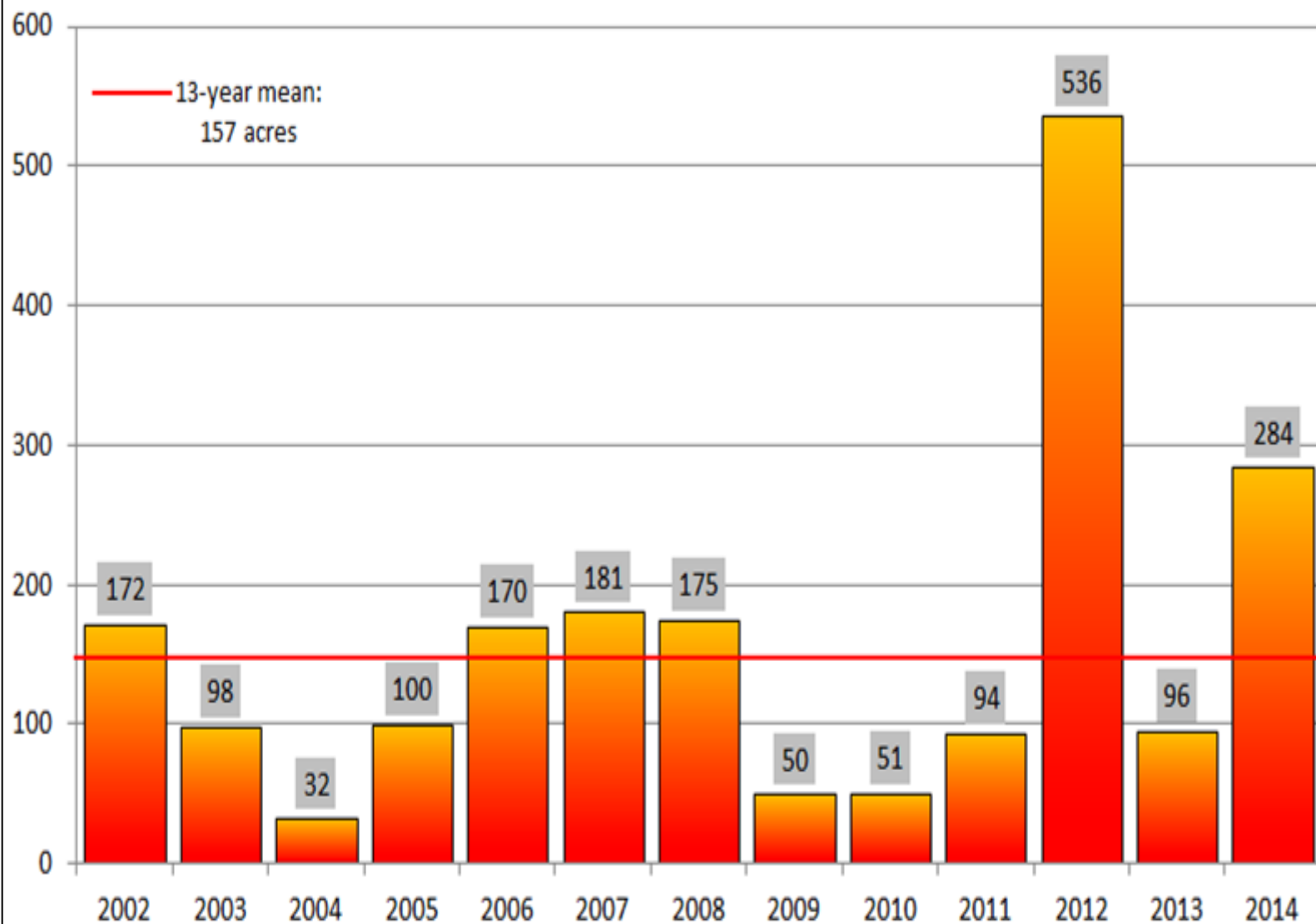


September 24, 2014

Combined, these four western U.S. wildfires equal the size of the state of Rhode Island!



CA, OR, WA Combined Average Fire Size (acres) 2002-2014*



* NFIC Data. 2014 incomplete.

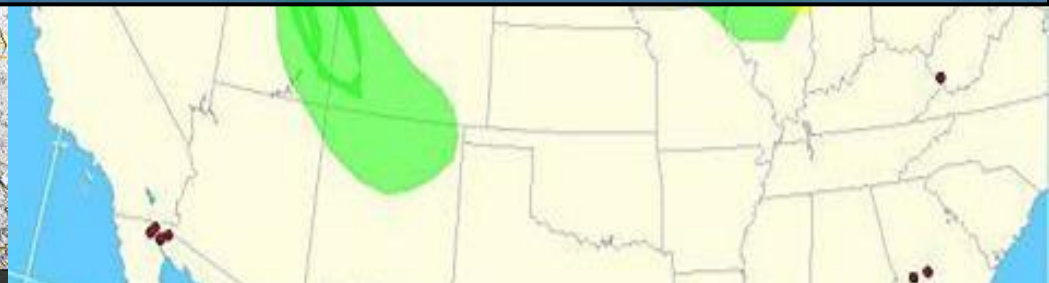
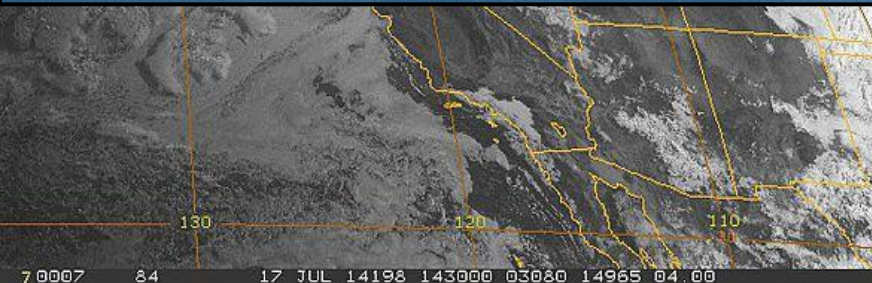


– Western Fire Facts Summary –

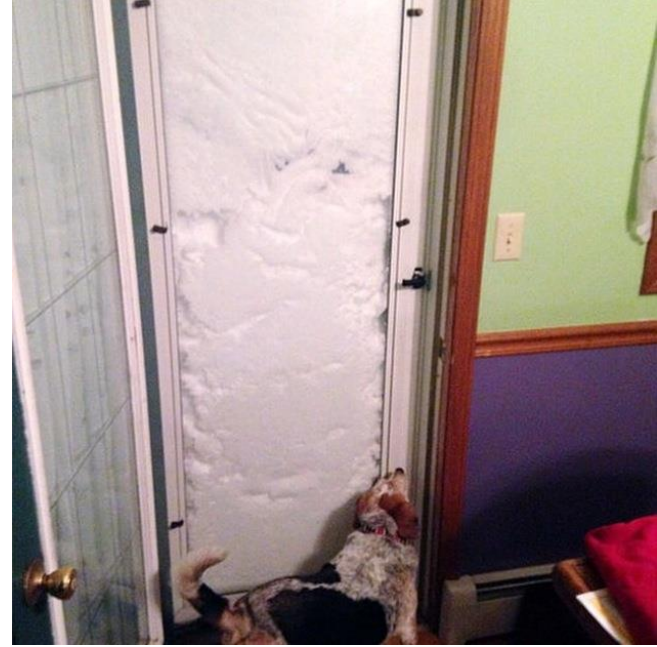
Busy Fire Season across West/Northwest

Average Acres Burned 2nd Highest in 13 Years

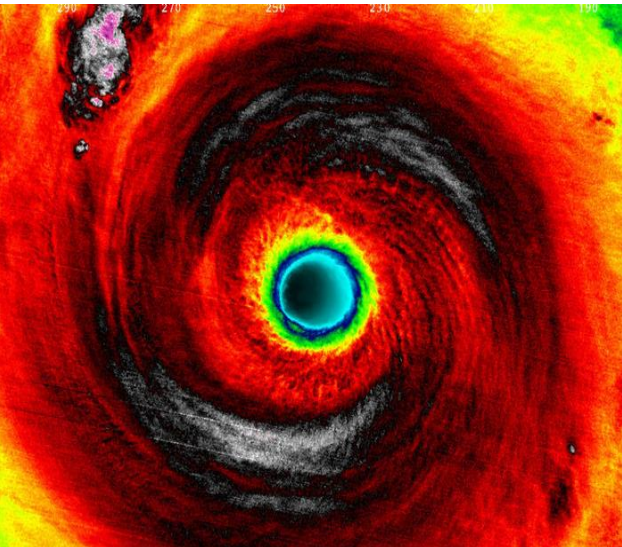
Poor Air Quality and Visibility a Daily Occurrence



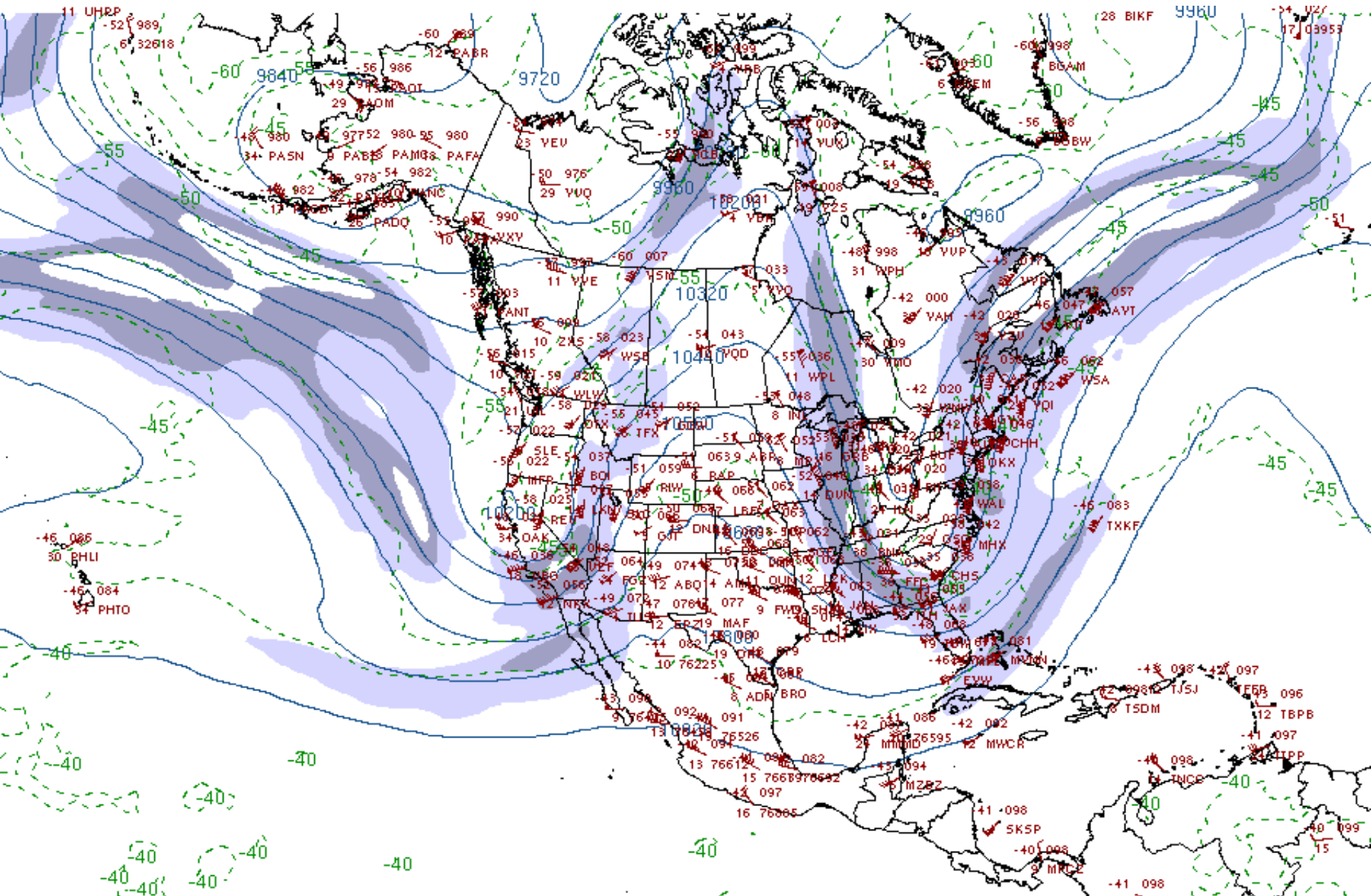
9



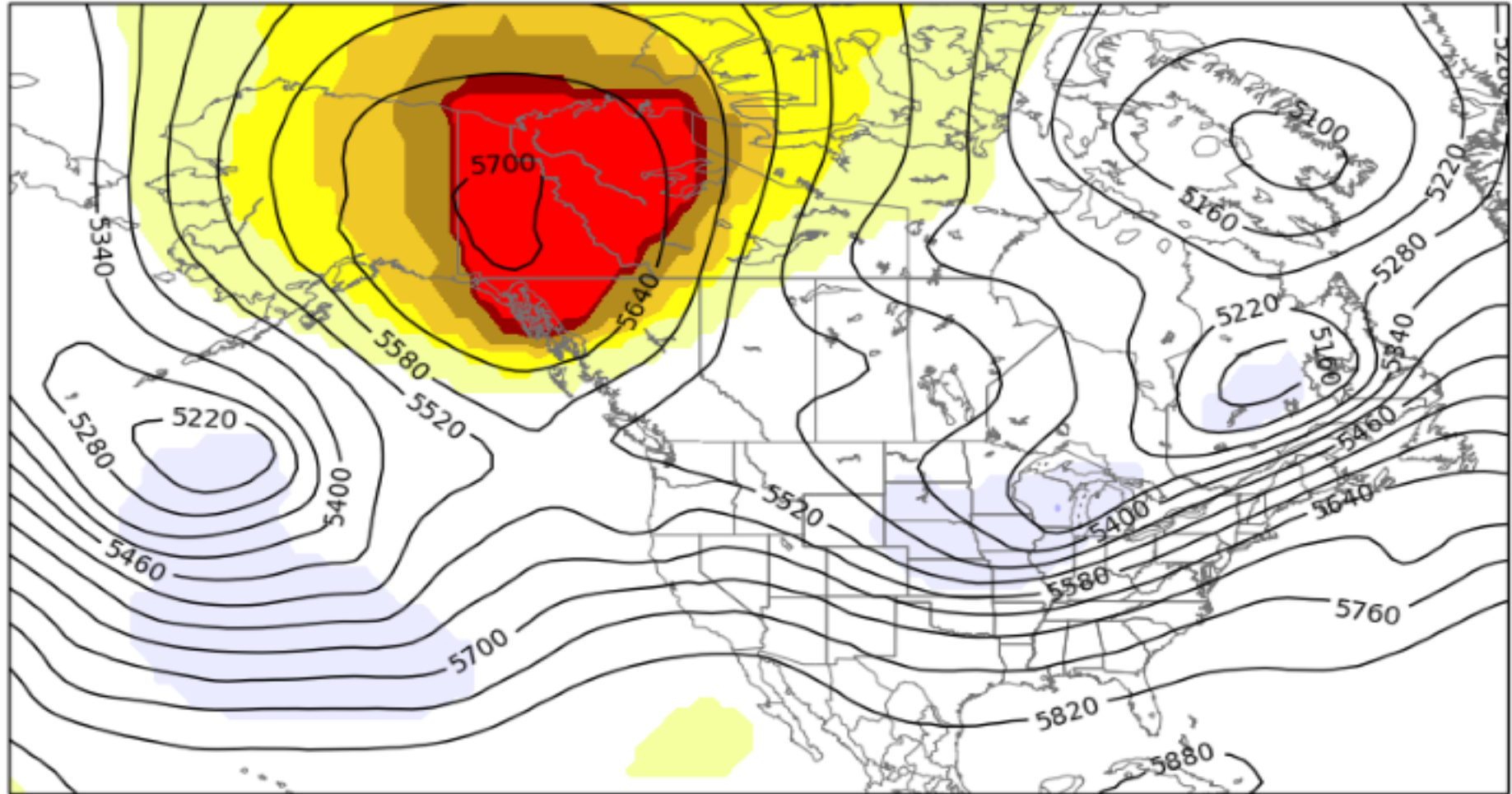
November Cold & Great Lakes Snow!



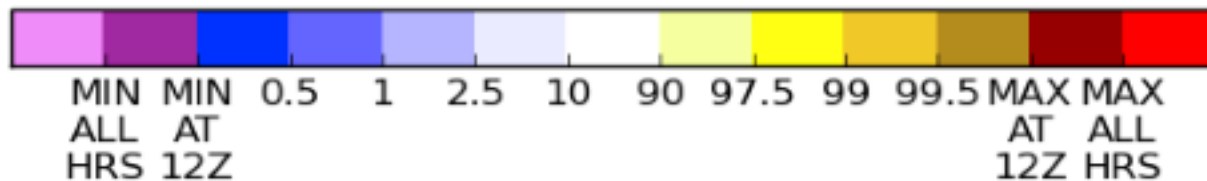
Super Typhoon Nuri, Nov. 2, 2014



NAEFS Mean 500-hPa Geopotential Height (m) and Climatological Percentile
HOUR 000 - VALID 12:00 UTC Thu Nov 13 2014

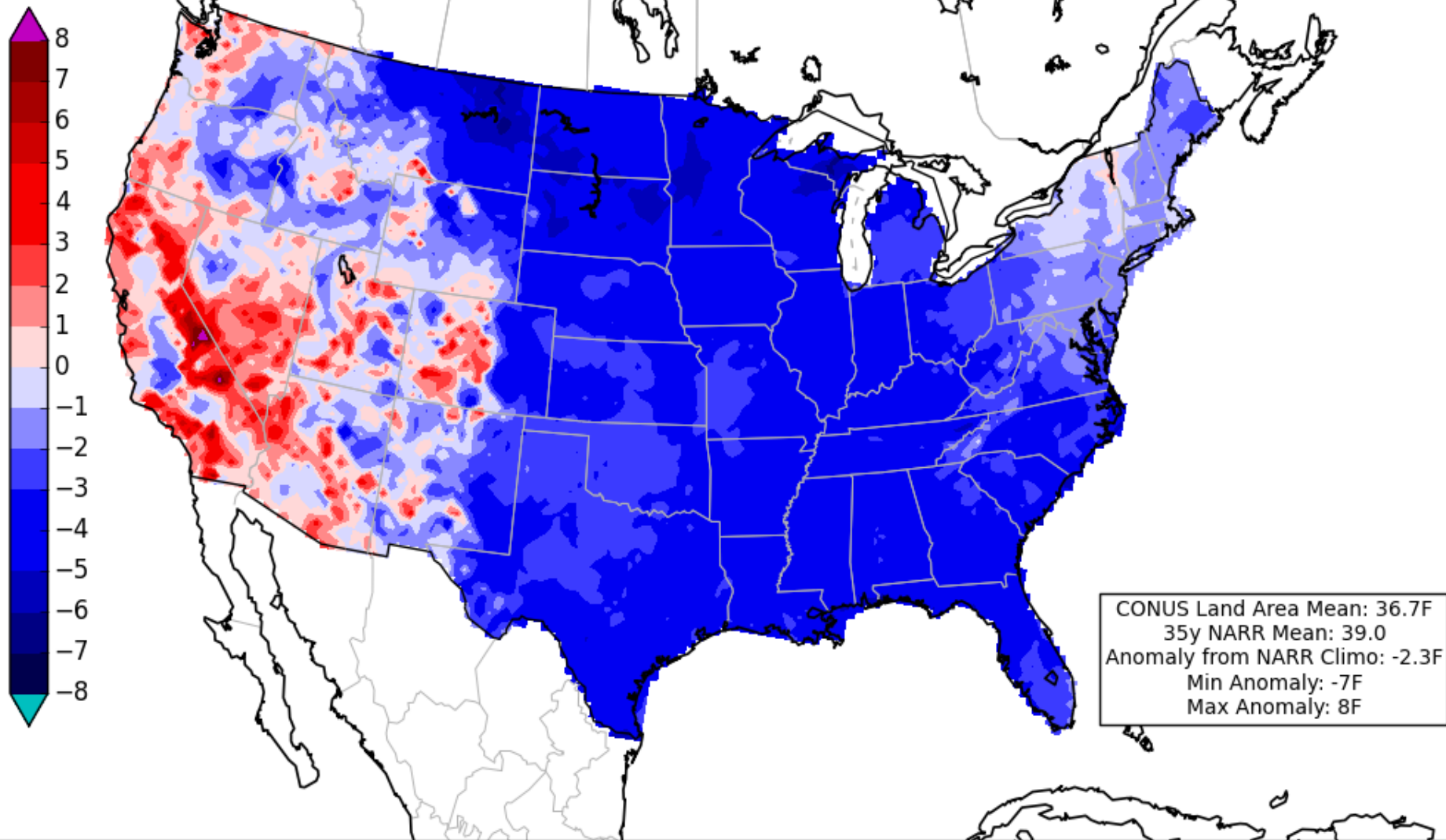


Relative to the 03-Nov to 24-Nov 1979-2009 CFSR climatology



Source: NWS Western Region Headquarters

November 2014 CONUS Temperature Anomaly (F) from 35-Year NARR Climatology



Number of Hours Experiencing dBZ > 20 (MRMS Composite Reflectivity)
00 UTC 17 Nov 2014 - 00 UTC 22 Nov 2014



Three (out of 6) solid days of heavy snow!

Radar 9:24 am EST November 18, 2014



LAKE-EFFECT SNOW TOTALS

SINCE MON PM



– November Cold and Gr. Lakes Snow Summary –

Teleconnections Bring Arctic Air South Early

2nd Coldest CONUS November in 36 Years

Epic Lake Effect Snow Events (esp. NY)



10



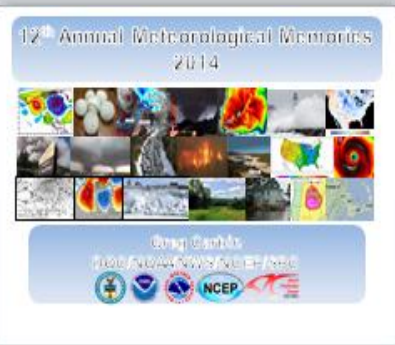
Memory # 10 for 2014 will be described on
Dec. 29, at 8:30 pm CST
on:



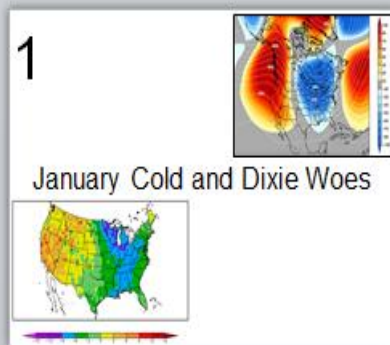
<http://weatherbrains.com/weatherbrains/>

Please join us!

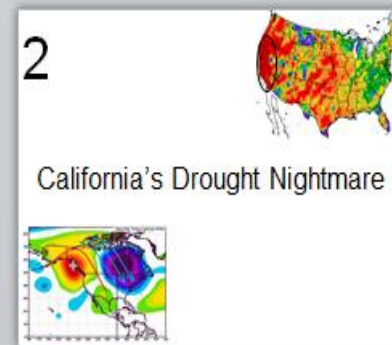
2014 Meteorological Memories



☆ 0



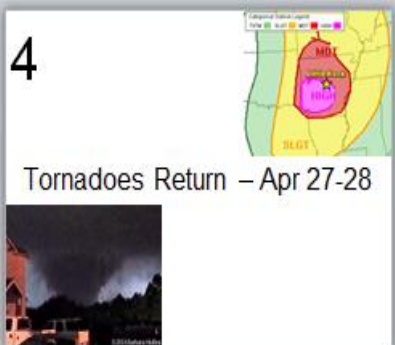
☆ 1



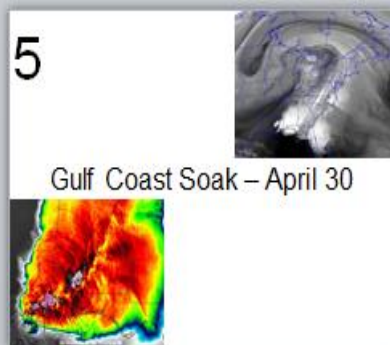
☆ 2



☆ 3



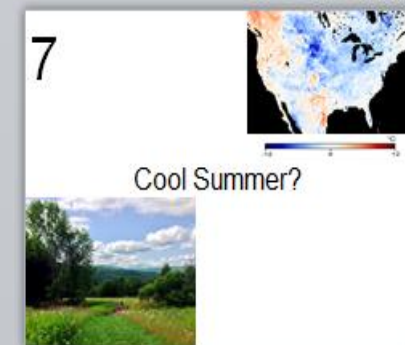
☆ 4



☆ 5



☆ 6



☆ 7



☆ 8



☆ 9



☆ 10



☆ 11

Thank-you!



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Will Campbell