

RIVER AND WEATHER CONDITIONS

Prepared for Waterways Association Meeting 06/14/2017
 National Weather Service Forecast Office, Pittsburgh PA
 For the latest river and weather forecasts--<http://www.weather.gov/pittsburgh>

WEATHER RECAP

May was a wetter than normal month, ranging from 1.00 inch above normal to as much as 4 inches above normal across the area. May temperatures were slightly above normal, but most would recall that the month of May seems much cooler than normal. May's daytime maximum temperatures were much below average, while the nighttime lows were much above normal.

OUTLOOK

Rest of Week: Hot and humid summertime weather continues. Thunderstorms that could bring 2.00 inches of rain

Week of June 19: Overall less humid with cooler and pleasant days. Rain around 1.00 inches.

Week of June 26: Warm and humid weather returns with summertime thunderstorms. Rainfall 1.00-2.00.

Outlook July : About average temperatures. Rainfall below normal but more than last year.

Outlook August: Normal temperatures and rainfall. Watch for hurricanes.

Outlook September: Very warm, drier than normal but watch for hurricanes.

HIGH WATER POTENTIAL

High water potential is about normal. Soils are beginning to dry out. Around normal rainfall in Pittsburgh district, but above normal rainfall to our west in the Lower Ohio valley and mid-west. Vegetation/foliage has dramatically reduced runoff. A minimum of 2.00 inch basin wide rainfall in 6 to 12 hours is needed to bring rivers to bank full. Rainfall through the end of June should average 3.00 to 4.00 inches which is a little below normal.

| <i>Location</i> | <i>May 2017 Precipitation</i> | <i>Departure (Inches)</i> |
|--------------------------|-----------------------------------|-------------------------------|
| <i>Pittsburgh</i> | 5.15 | +1.20 |

| <i>Location</i> | <i>May Average Temperature</i> | <i>Departure Degrees</i> | <i>Extreme High</i> | <i>Extreme Low</i> |
|--------------------------|------------------------------------|------------------------------|-------------------------|--------------------|
| <i>Pittsburgh</i> | 60.6 | +0.5 | 87 May 17 | 33 May 9 |

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual |
|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|--------|
| Average monthly precipitation | 2.7 | 2.39 | 2.95 | 3.11 | 3.95 | 4.3 | 3.83 | 3.48 | 3.11 | 2.29 | 3.23 | 2.85 | 38.19 |
| Average High Temperature | 35.7 | 39.3 | 49.2 | 61.7 | 70.8 | 79.1 | 82.5 | 81.4 | 74.3 | 62.6 | 51.2 | 39.4 | 60.7 |
| Average Low Temperature | 21.1 | 23 | 30 | 40.2 | 49.3 | 58.4 | 62.8 | 61.5 | 54 | 42.9 | 34.7 | 25.3 | 42 |
| Average monthly snowfall | 11.8 | 10.3 | 7.6 | 1.5 | 0 | 0 | 0 | 0 | 0 | 0.4 | 2 | 8.3 | 41.9 |

WEATHER FORECAST

| Wednesday | Wednesday Night | Thursday | Thursday Night | Friday | Friday Night | Saturday |
|--|---|---|---|--|---|---|
|  |  |  |  |  |  |  |
| 60% | 30% | 50% → 80% | 80% | 30% | | |
| T-storms Likely | Chance T-storms | Chance T-storms then T-storms | T-storms | Chance T-storms then Partly Sunny | Mostly Cloudy | Partly Sunny |
| High: 84 °F | Low: 68 °F | High: 82 °F | Low: 66 °F | High: 83 °F | Low: 65 °F | High: 86 °F |

8-14 Day Outlook... Hot Humid days with thunderstorms, trending to less humid and pleasant days.

30 Day Outlook... Warmer than normal, below normal rainfall.

Jul-Aug-Sep Outlook... Warmer than normal July, Normal August, Very Warm September. Tropical season may become active.

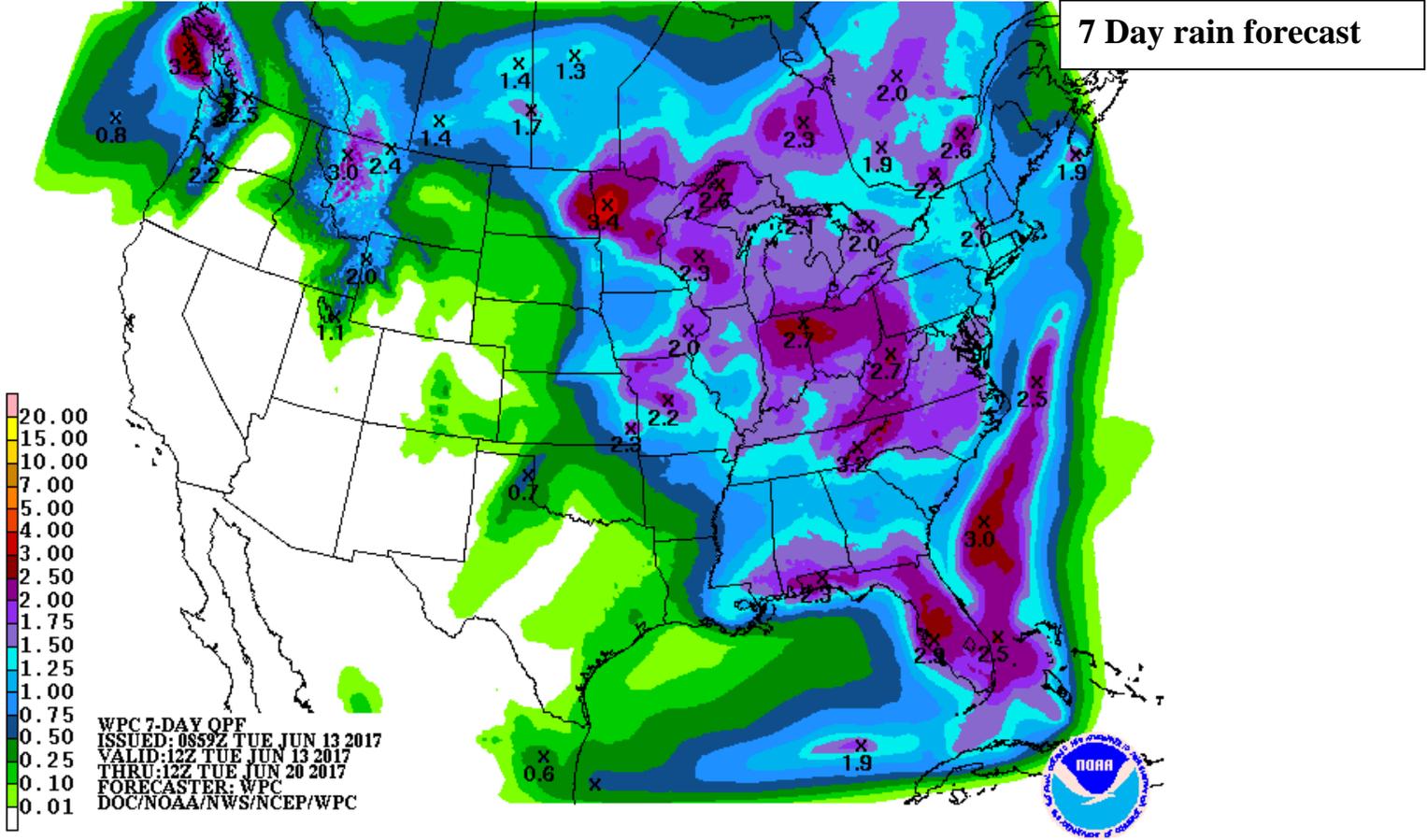
Oct-Nov-Dec Outlook... Oct warmer/drier than normal but Nov/Dec colder & wetter/snowier than normal. Early snows possible. .

Jan-Feb-Mar Outlook... Below normal temperatures and much above normal snowfall.

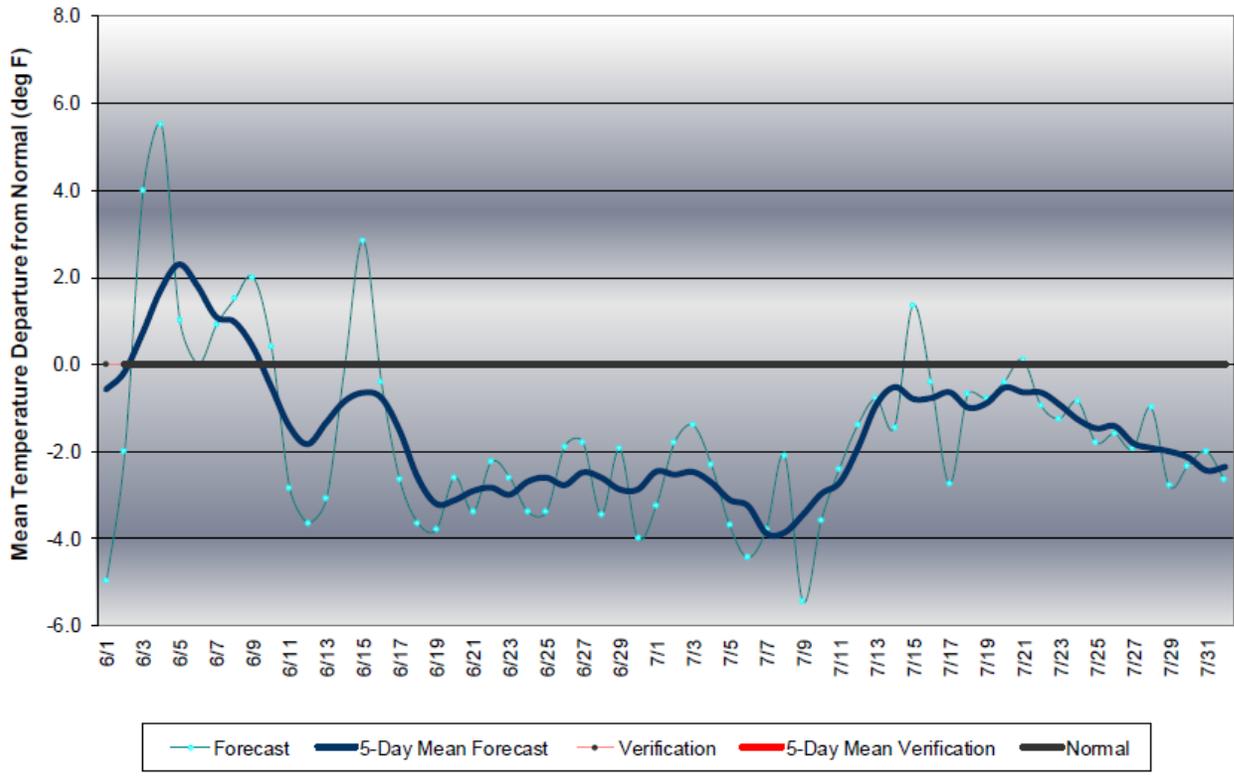
Average Yearly rainfall Pittsburgh: 38.19 inches **So far in 2017:**19.14 (+2.75)

Totals for: 2016:35.01 in 2015:40.56 in 2014:36.84 in 2013: 36.65 in; 2012: 41.74 in; 2011: 44.24 in; 2010: 37.85 in

Average Yearly snowfall Pittsburgh: 41.9 inches 2015-16 season: 29.6 inches (-12.3 2016-17: 32.0(-9.2)
 2014-15: 47.2 in 2013-14: 63.4 in; 2012-13: 57 in; 2011-12: 37 in; 2010-11: 57 in; 2009-10: 77 in



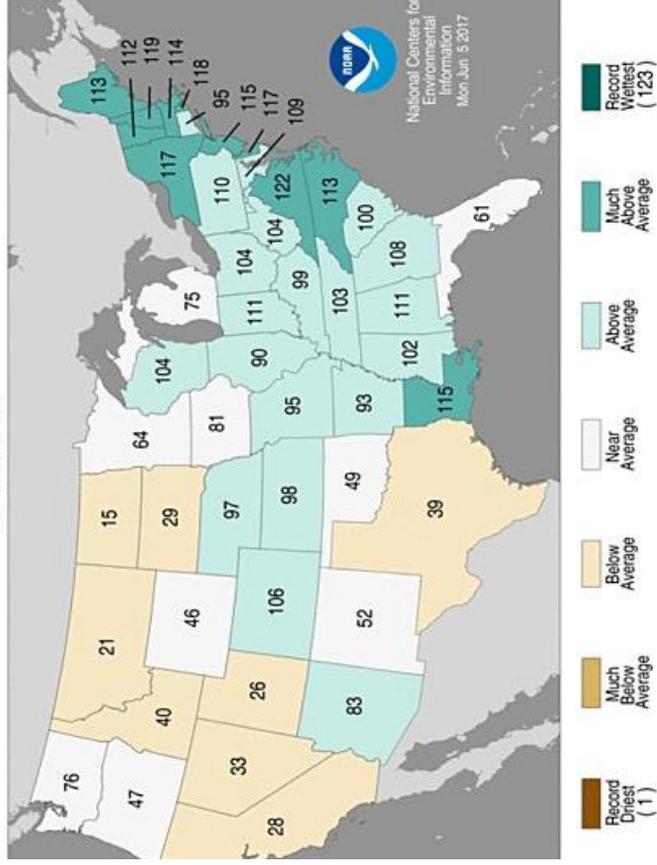
**Western Pennsylvania Temperature Forecast
 June - July 2017**



Statewide Precipitation Ranks

May 2017

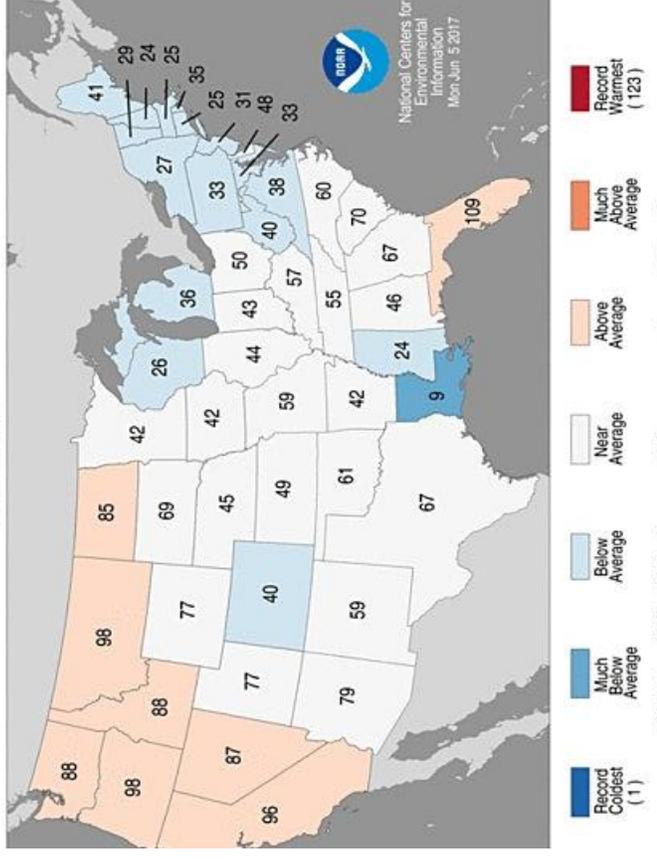
Period: 1895-2017



Statewide Maximum Temperature Ranks

May 2017

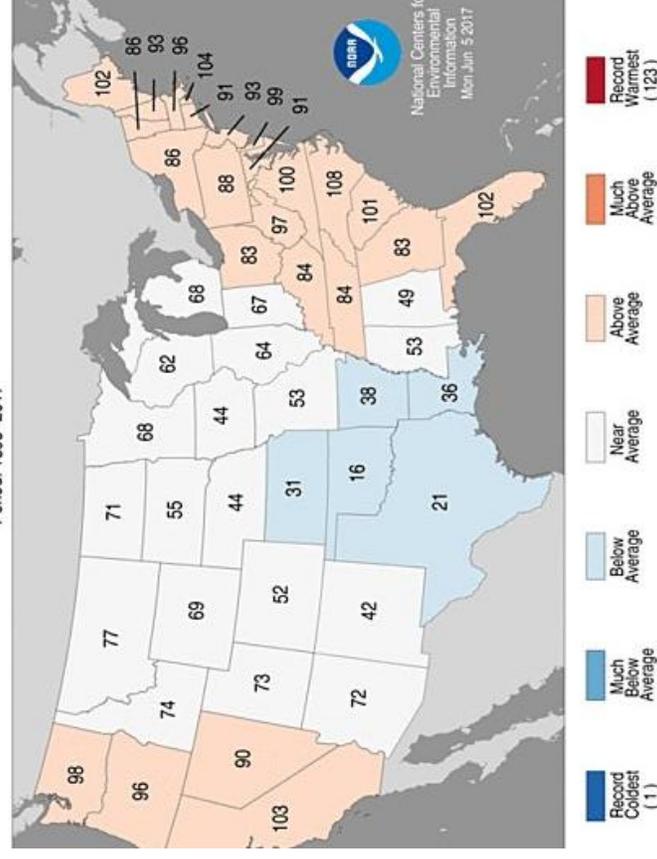
Period: 1895-2017



Statewide Minimum Temperature Ranks

May 2017

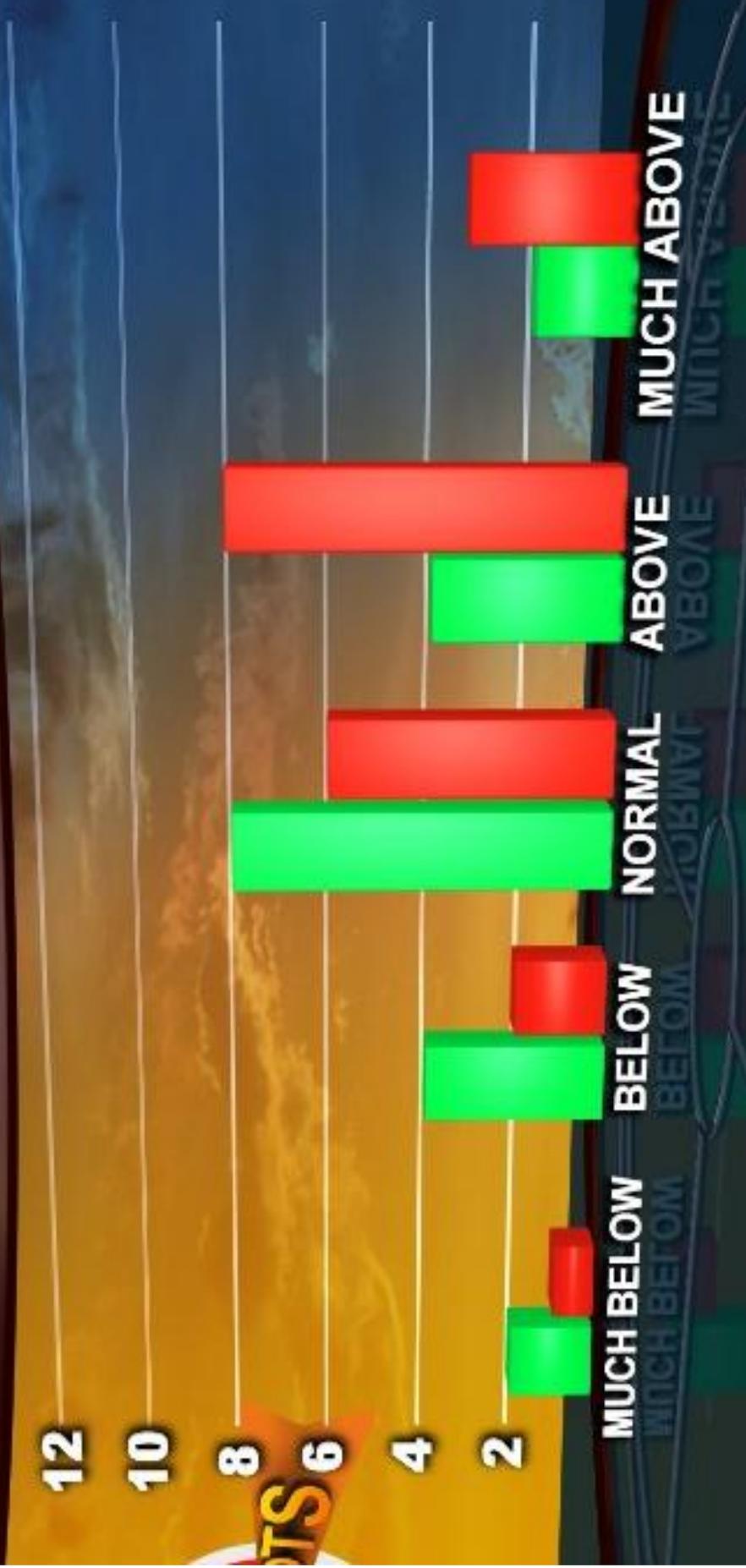
Period: 1895-2017



May might have seemed very chilly, as daytime highs were much below normal, but night time lows were much above normal. Overall it was a pretty average month temperature wise

SEPTEMBER TEMPS IN PENNSYLVANIA

CLIMATOLOGY (GREEN)/AFTER WET OHIO VALLEY SPRING (RED)



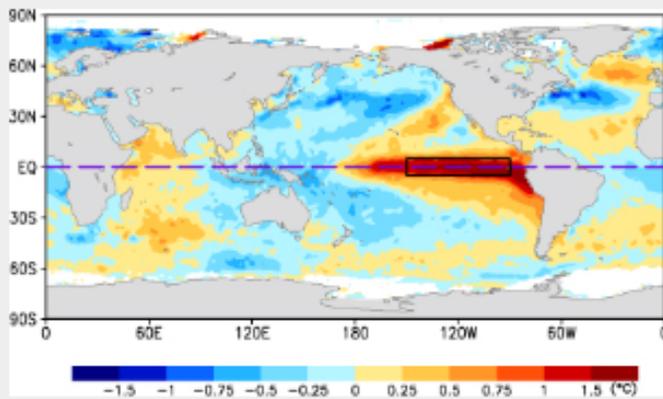
Summer forecast: June some hot periods, but July and August more normal temperatures. Not quite as dry as last summer September expected to be very warm and drier than normal

Hurricane season may be more active than earlier expected but about an average year. We have had a below normal hurricane season from several years.

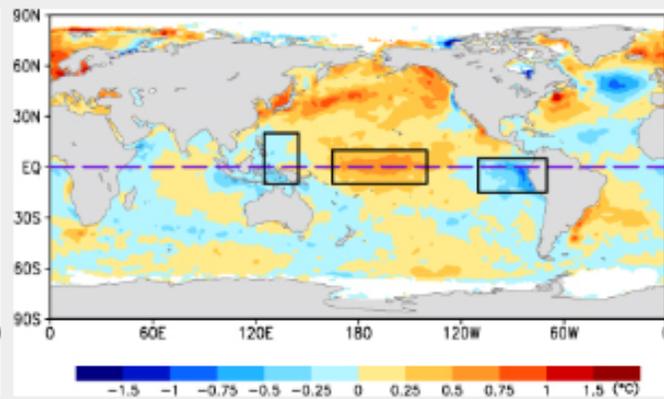
The El Niño Modoki

El Niño Modoki is a coupled ocean-atmosphere phenomenon in the tropical Pacific. It is different from another coupled phenomenon in the tropical Pacific namely, El Niño. Conventional El Niño is characterized by strong anomalous warming in the eastern equatorial Pacific (see figure below). Whereas, El Niño Modoki is associated with strong anomalous warming in the central tropical Pacific and cooling in the eastern and western tropical Pacific (see figure below). Associated with this distinct warming and cooling patterns the teleconnections are very different from teleconnection patterns of the conventional El Niño. Hence, the new phenomenon is of interest to the climate community.

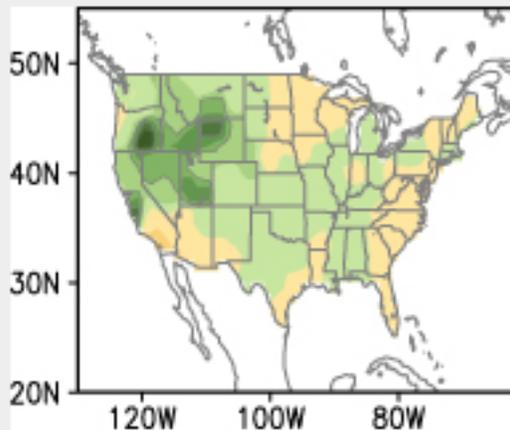
Anomalous SST during El Niño



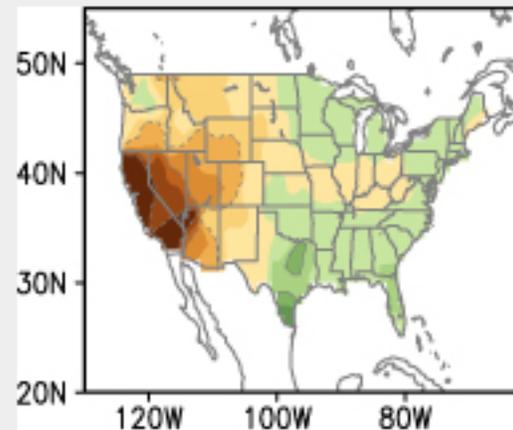
Anomalous SST during El Niño Modoki



USA, rainfall during El Niño



USA, rainfall during El Niño Modoki



Summary

The Western Gulf of Mexico temperatures were well above normal this spring, which led to a very wet spring over the middle and lower Mississippi Valley. Bulls eye of 15 to 20 inches of rain over Missouri last 60 days . In turn that rain drains back down into the Gulf and it the Western Gulf of Mexico waters have turned several degrees below normal.

Droughts have ended over US except for Florida, but Florida received more rain in the last 2week than they have from January through early May. 15 to 20 inches over Alligator Alley .

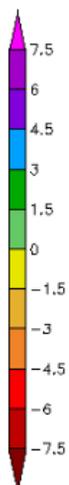
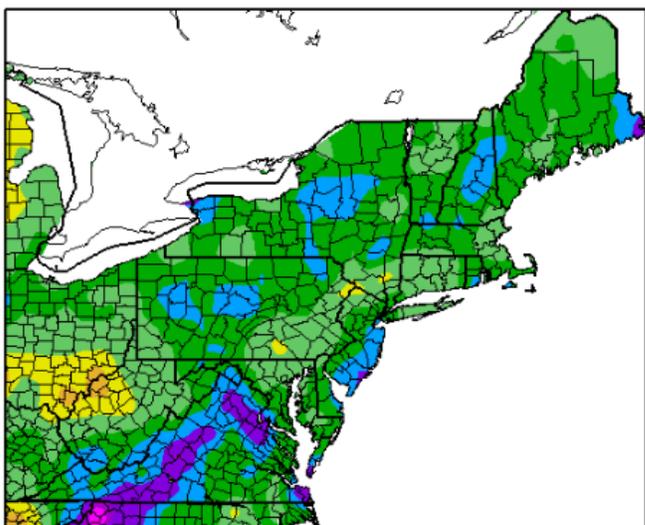
Most Strawberries coming from California and not Florida.

With much of the US and especially the Mississippi Valley and Mid west wetter than normal, it harder to get very hot temperatures as it takes energy to heat up wet ground.

Atlantic Hurricane season expected to be more active than expected earlier and overall a normal season. But we have not seen a normal tropical season in recent years!

If Modoki El Nino forms/remains through the end of the year. Winter 2017-18 snowy than normal similar to 2009-2010 with East Coast Storms

Departure from Normal Precipitation (in)
5/1/2017 - 5/31/2017



Departure from Normal Precipitation (in)
3/1/2017 - 5/31/2017

