

RIVER AND WEATHER CONDITIONS

Prepared for Waterways Association Meeting 8/9/2017
National Weather Service Forecast Office, Pittsburgh PA

For the latest river and weather forecasts--<http://www.weather.gov/pittsburgh>

WEATHER RECAP

July was a much wetter month in West Virginia, Southeastern Ohio and in Southwestern Pennsylvania. A rare mid-summer non tropical related river flood occurred on the Cheat and Monongahela. It was more typical of a slow moving winter storm. Widespread 3 to 4 inches of rain fell July 28-29 but in areas downstream of Parsons WV 6 to 7 inches of rain fell. What made spike so high July 29 was that 2-3 inches of that rain fell in less than 6 hours during the morning of Saturday July 29. It was a 500 year return interval rainfall for July. Several locations along the Mon have only reached these summertime levels 2 or 3 times in the past. In Northwestern Pennsylvania the rainfall was below normal. July temperatures were above normal, but very few locations reached 90 degrees, but nighttime lows were much warmer than normal. So far Pittsburgh has only reached 90 degrees once!

OUTLOOK

Rest of Week: Cool for August with chance for weekend thunderstorms, that could bring ~1.00 inch of rain.

Week of Aug 14: Cooler, then humid weekend. Dry week with weekend thunderstorms. Rain ~1.00 inch.

Week of Aug 21: Becoming warmer than normal toward end of month, Rainfall ~ 1.00-2.00 inches.

Outlook September: Above average temperatures, drier than normal but watch for hurricanes

Outlook October: Normal to above normal temperatures. Normal rainfall. Watch for late season hurricanes.

Outlook November: Turning colder than normal. Normal rainfall. May see some early snow.

HIGH WATER POTENTIAL

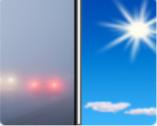
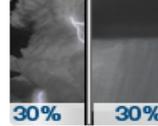
High water potential is about normal.. Very lush and actively growing dense Vegetation/foilage quickly absorbs runoff. A minimum of 2.50 inch basin wide rainfall in 6 to 12 hours is needed to bring rivers to bank full. Rainfall through the end of August should average 3.00 to 3.50 inches which is below or close to normal.

<i>Location</i>	<i>Jul 2017 Precipitation</i>	<i>Departure (Inches)</i>
<i>Pittsburgh</i>	6.42	+2.59

<i>Location</i>	<i>Jul Average Temperature</i>	<i>Departure Degrees</i>	<i>Extreme High</i>	<i>Extreme Low</i>
<i>Pittsburgh</i>	73.7	+1.1	89 Jul 19	54 Jul 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
						
Patchy Fog then Sunny	Partly Cloudy	Partly Sunny then Slight Chance T-storms	Chance Showers	Showers Likely then T-storms Likely	Chance T-storms then Chance Showers	Chance Showers then Chance T-storms
High: 81 °F	Low: 63 °F	High: 81 °F	Low: 66 °F	High: 80 °F	Low: 66 °F	High: 81 °F

8-14 Day Outlook... Cooler than normal with weekend thunderstorms,

30 Day Outlook... Starting out colder than normal, then warmer than normal late August/September. Watch tropics.

Sep-Oct-Nov Outlook... Warmer than normal into October, then colder November. Tropical season may become active.

Dec-Jan-Feb Outlook... Colder & wetter/snowier than normal.. More snow than normal..

Mar-Apr-May Outlook... Below normal temperatures. Snow continues into spring.

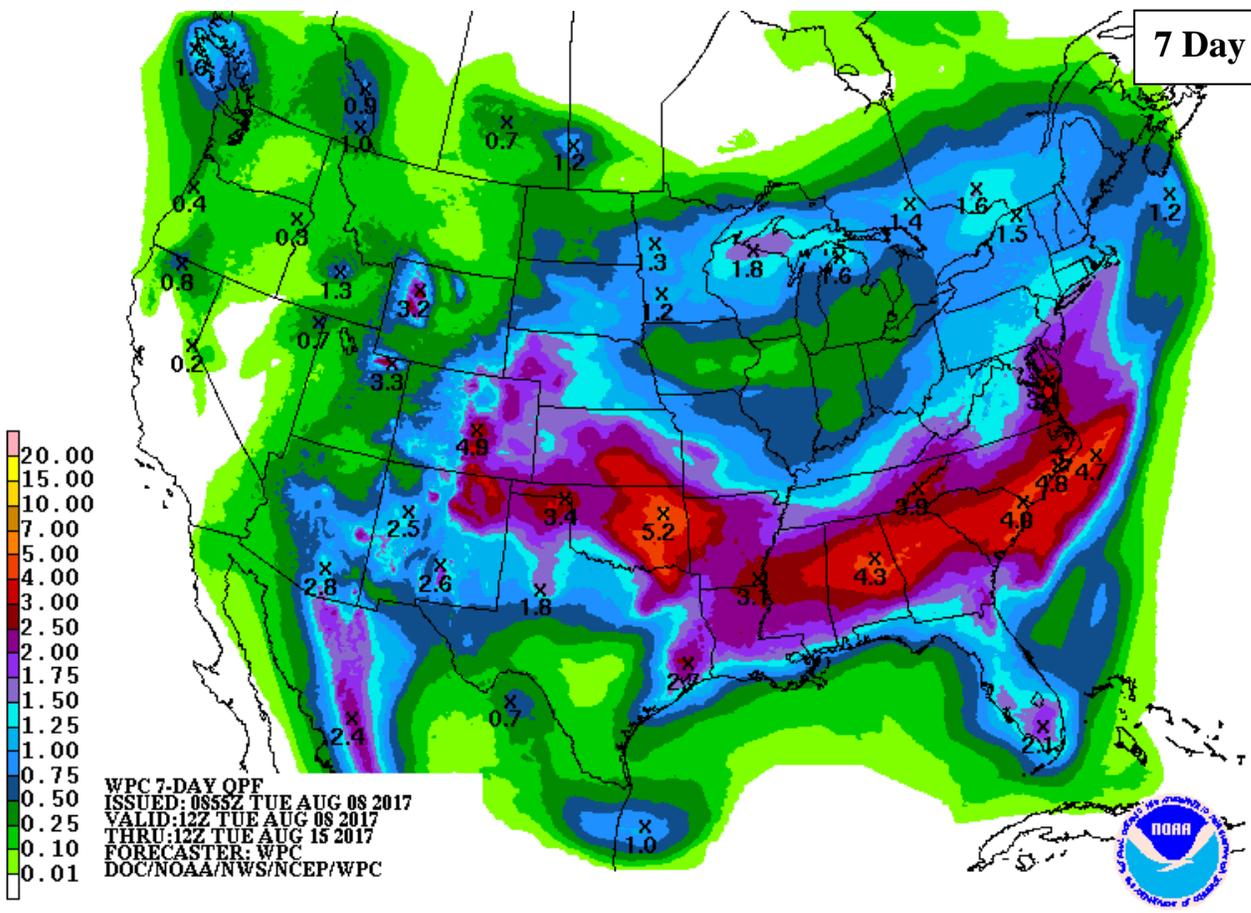
Average Yearly rainfall Pittsburgh: 38.19 inches **So far in 2017:**29.47 (+5.41)

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

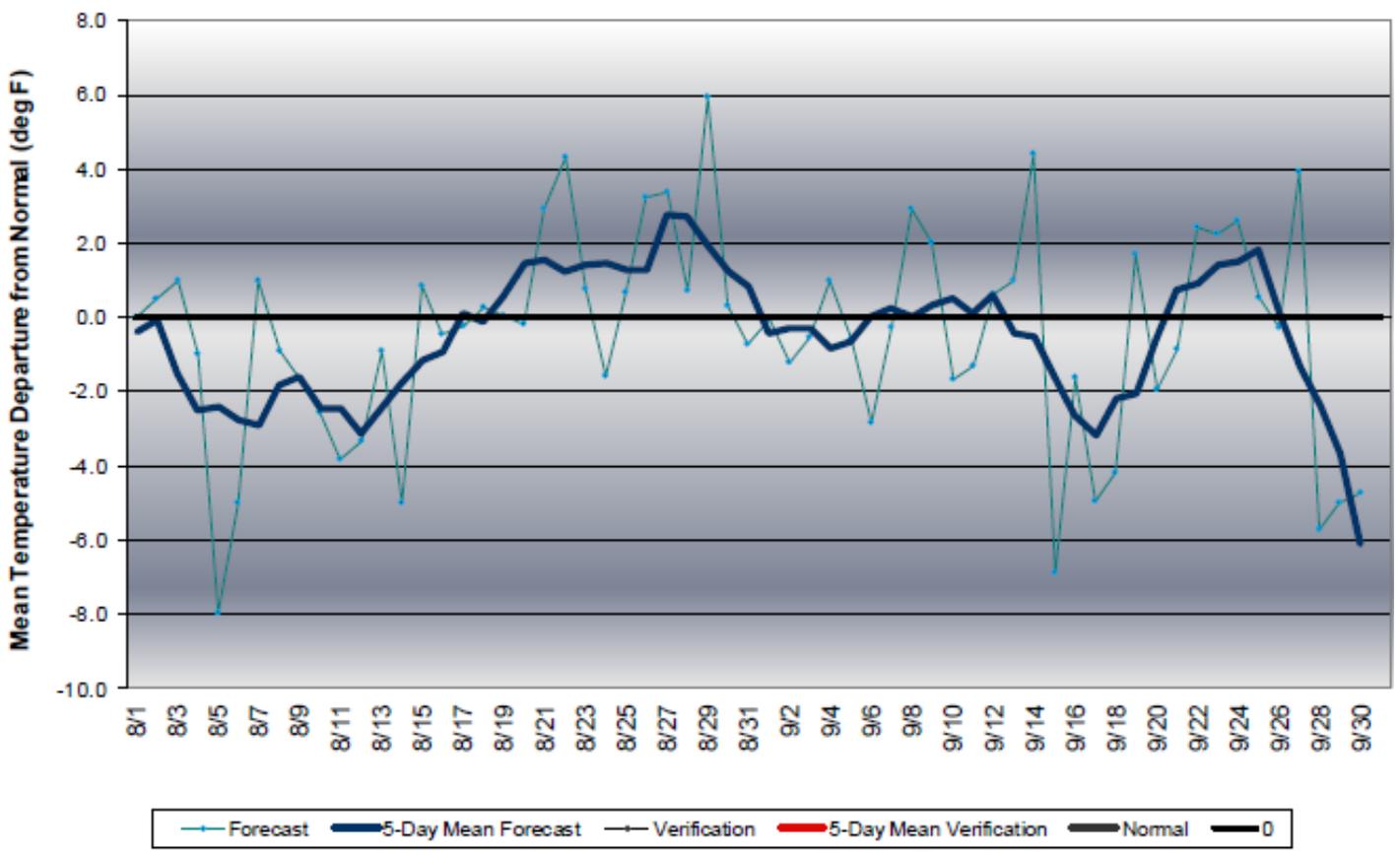
Average Yearly snowfall Pittsburgh: 41.9 inches 2016-17 Season: 32.0(-9.2), 2015-16: 29.6 inches (-12.3)

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

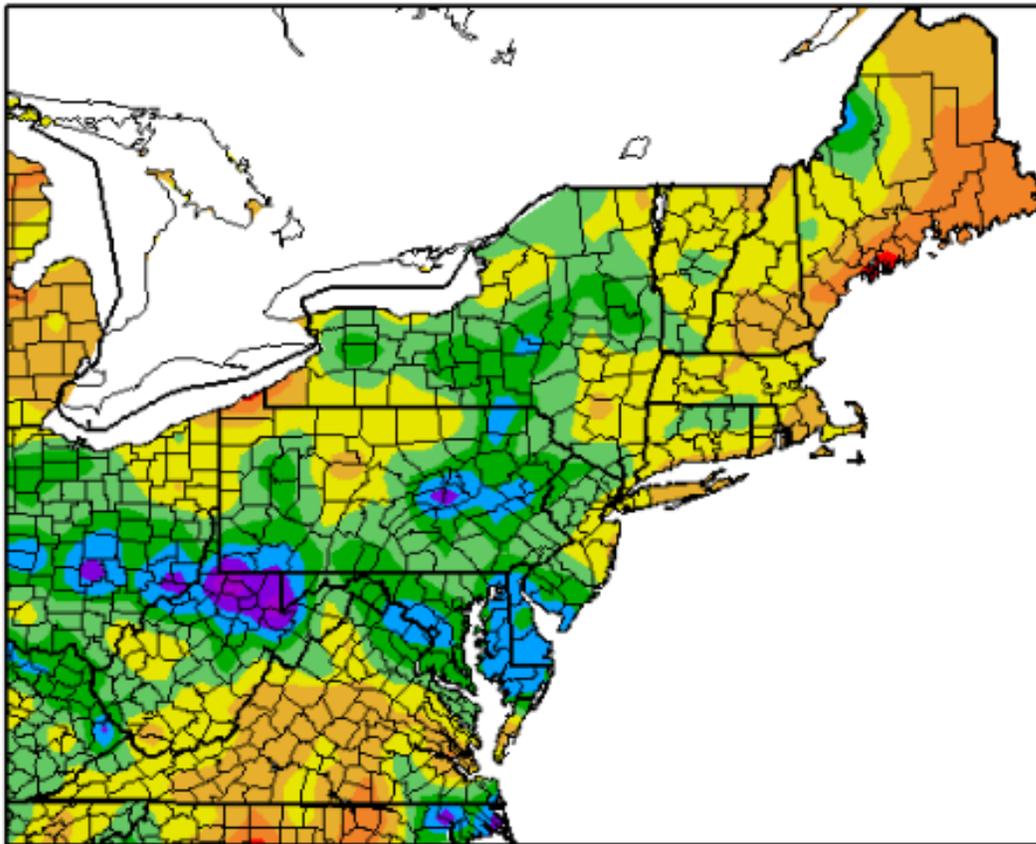
7 Day rain forecast



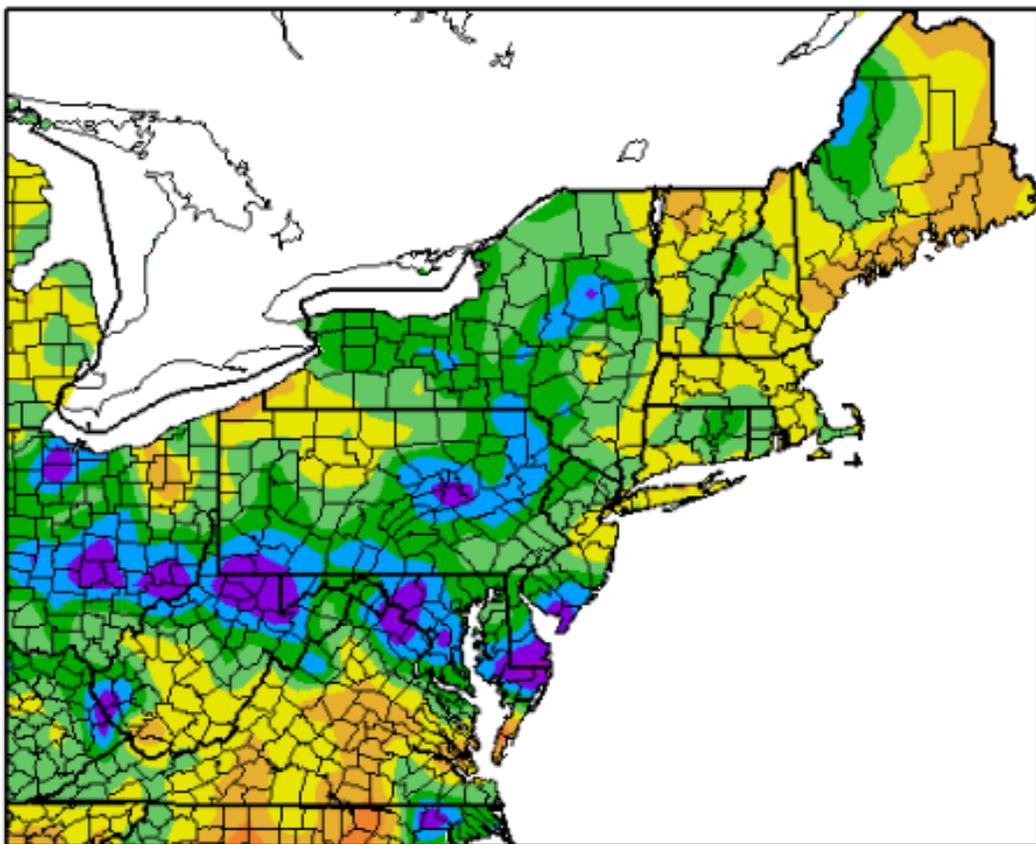
**Western Pennsylvania Temperature Forecast
 August-September 2017**



Precipitation (in)
7/1/2017 - 7/31/2017

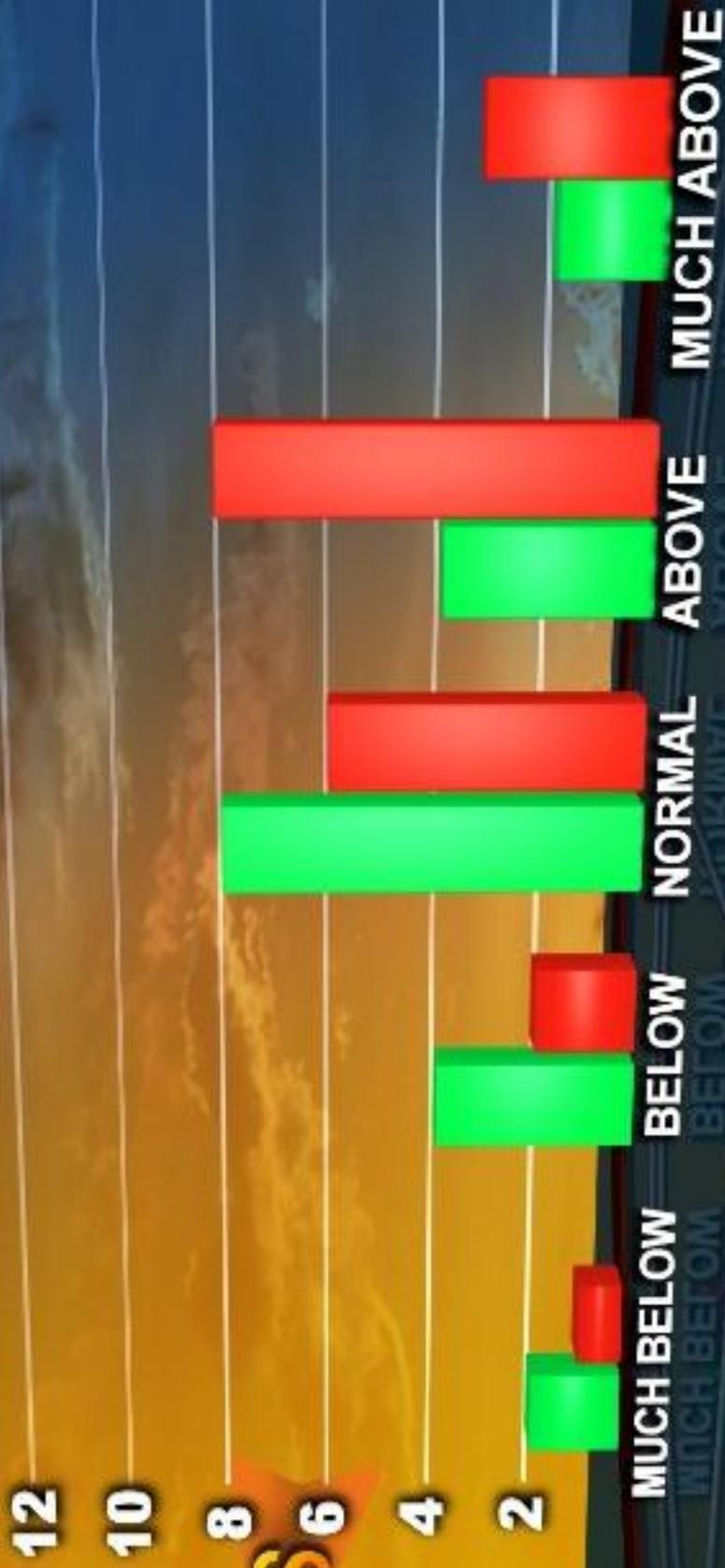


Departure from Normal Precipitation (in)
7/1/2017 - 7/31/2017



SEPTEMBER TEMPS IN PENNSYLVANIA

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



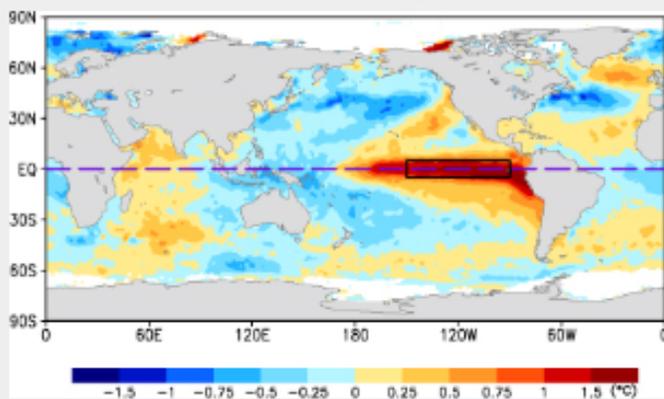
Higher Flash Flood threat early this summer. August more normal temperatures but surges of warm humid air with cold fronts from time to time. Not as dry as last summer September expected to be very warm and drier than normal.

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.

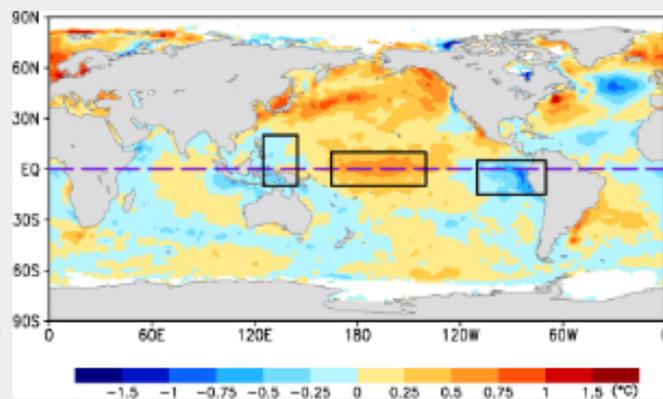
The El Niño Modoki

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.

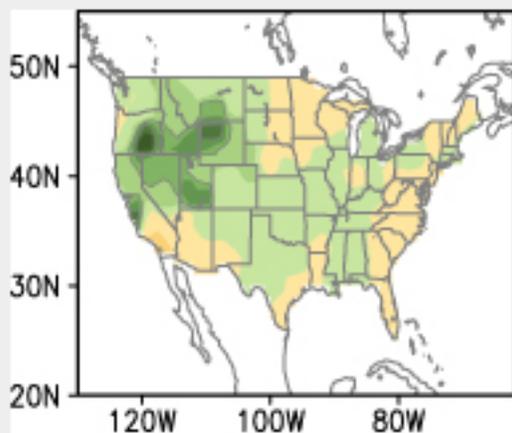
Anomalous SST during El Niño



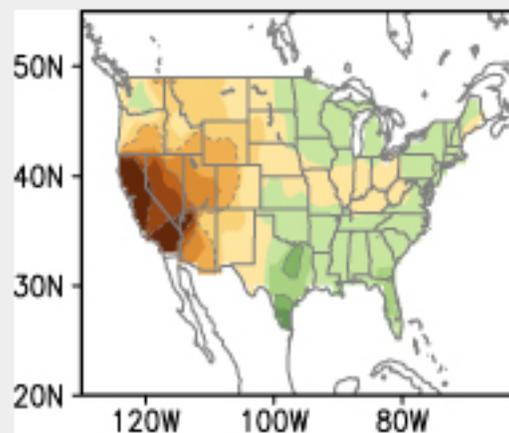
Anomalous SST during El Niño Modoki



USA, rainfall during El Niño



USA, rainfall during El Niño Modoki



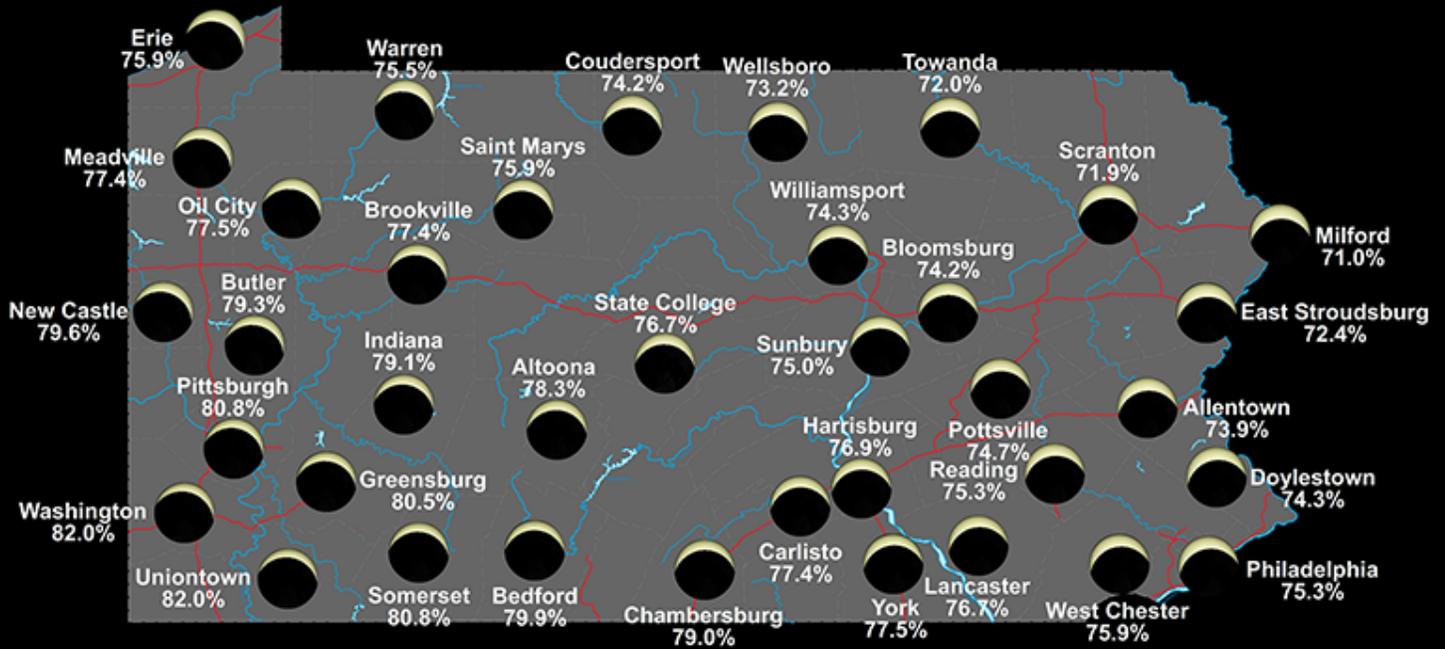
Summary

With much of the US and especially the Mississippi Valley wetter than normal, it harder to get very hot temperatures as it takes energy to heat up wet ground. The Southwest which is normally hot this time of year has had very few > 90 degree days. The Northeast and the Upper mid-west has been where the heat has been.

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 may be snowy than normal similar to 2009-2010 with East Coast Storms

Total Eclipse of the Sun as seen in Pennsylvania.



Pennsylvania

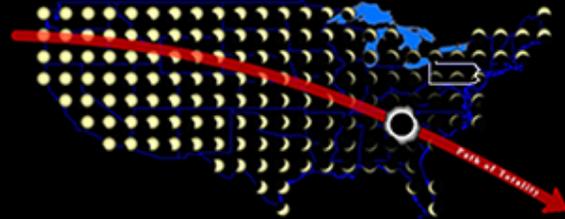
- - - State Boundaries
 Major Rivers
 Intermediate Rivers
 Interstate Highways
 Lakes



maximum time of totality and percentages



eastern daylight time



PENNSYLVANIA SOLAR ECLIPSE AUGUST 21, 2017

Next one will even be better for Pennsylvania

