RIVER AND WEATHER CONDITIONS

Prepared for Waterways Association Meeting 1/11/2017
National Weather Service Forecast Office, Pittsburgh PA
For the latest river and weather forecasts--http://www.weather.gov/pittsburgh

WEATHER RECAP

December 2016 warmer than normal, with a cold spell in the middle of the month. Rainfall was above normal by 0.65 inches while snowfall was 2 inches below normal for the month. This was coming off of a fall season that was the warmest in 70 years. This was the warmest fall since 1946 and the 7th warmest fall since 1881. 2016 tied for warmest year since observations were moved to Pittsburgh Airport. Pittsburgh broke only one daily high temperature record in 2016. That occurred on November 2 when the temperature reached 80 degrees. No daily record low temperatures were broken in 2016. There were 6 days in 2016 when Pittsburgh broke the record warm low temperatures. Those warm nights were Mar 10, Aug 12, Sep 8, Oct 18, 19, 20.

OUTLOOK

Week of Jan 9:. A break from the extreme cold. Cloudy with above normal temperatures, with occasional rain from time to time. About 1.0 inch. Precipitation in the form of mostly rain. Heavier rains over KY, OH and IN.
Outlook for week of Jan 16: Rainy periods with above normal temperature. Limited chances for snow. 1.0-2.0 inches.
Outlook for week of Jan 23: More frequent swings in temperatures from warm to cold. More rain than snow.
Outlook February: Above normal snow fall and below normal temperatures, especially by 2nd week of month..
Outlook March: Above normal precipitation and cooler than normal temperatures.
Outlook for Spring. A wet spring. Perhaps one of the top 25 wettest springs.

HIGH WATER POTENTIAL

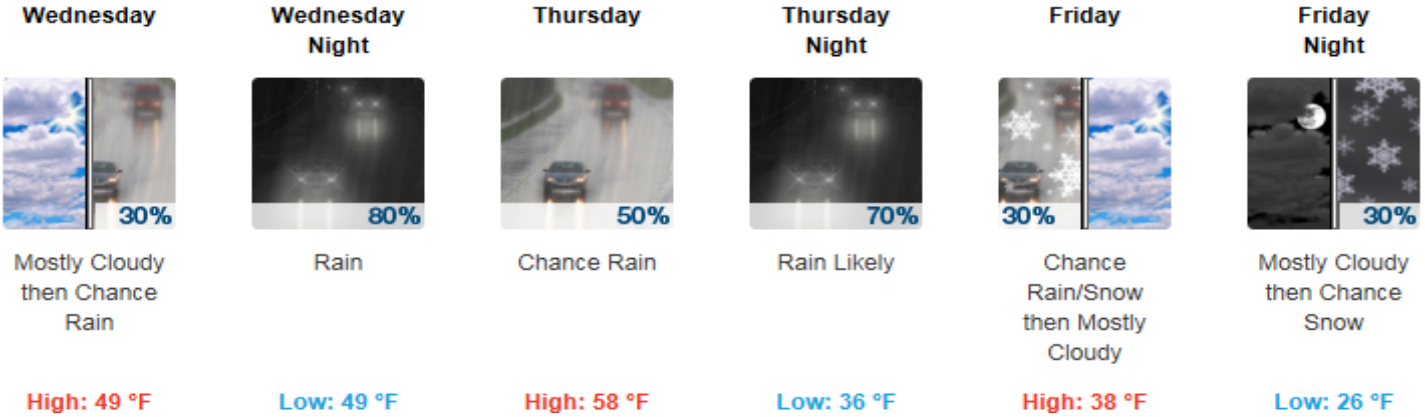
High water potential is above normal. It will be a rainy period from mid to late January. Increased flows and levels are likely . The storm track keeps the heaviest rains over KY, OH and IN, but the Pittsburgh area will be getting its share. A minimum of 1.50 inch basin wide rainfall in 6 to 12 hours is needed to bring rivers to bank full. Total precipitation through the last week of January should average about 3 inches which is above normal.

Location	*Dec 2016 Precipitation*	*Departure (Inches)*	*Dec Snowfall*	*Seasonal Snowfall*
Pittsburgh	3.41	+0.65	6.0 (-2.1)	9.1(-4.0)

Location	*Dec Average Temperature*	*Departure Degrees*	*Extreme High*	*Extreme Low*
Pittsburgh	33.6	+1.2	66 Dec 26,27	5 Dec 16

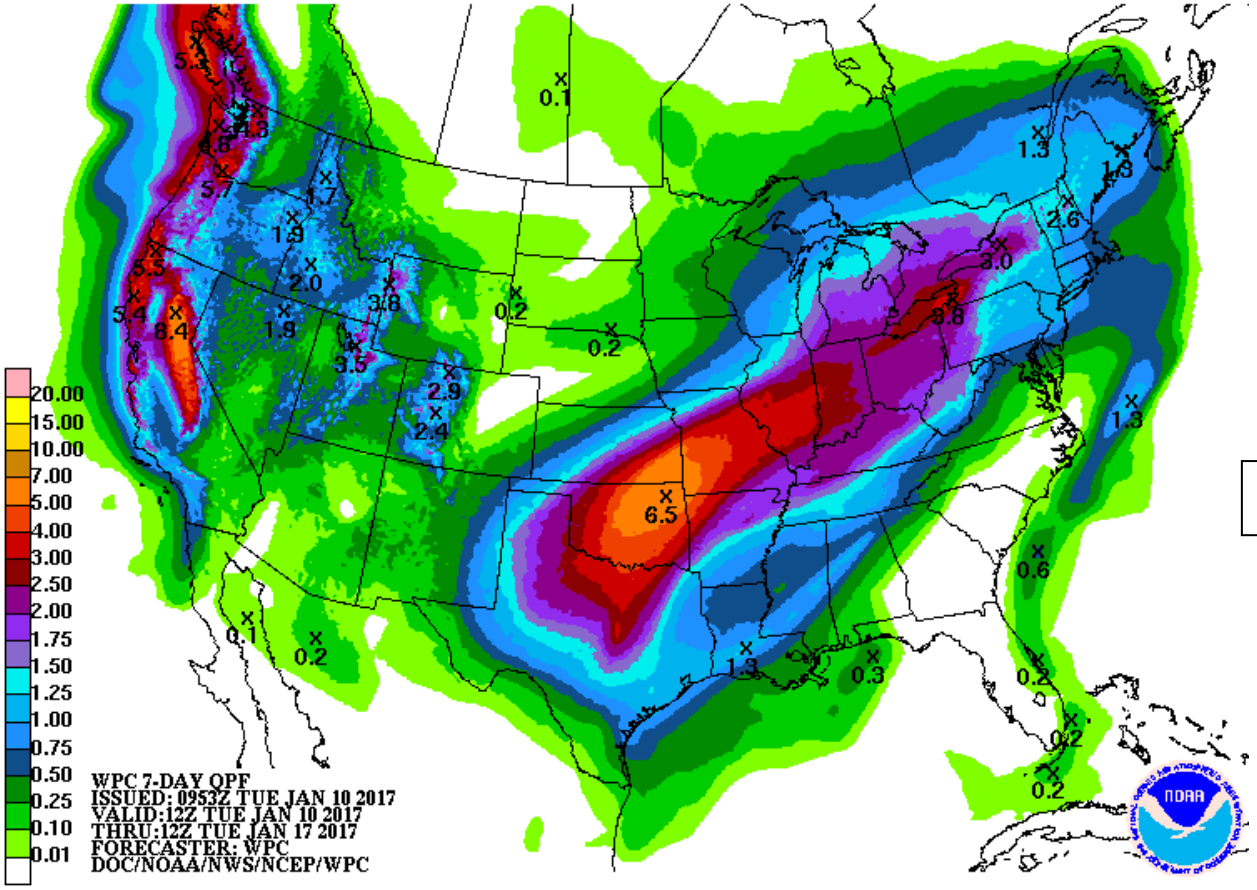
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average monthly precipitation	2.7	2.39	2.95	3.11	3.95	4.3	3.83	3.48	3.11	2.29	3.23	2.85	38.19
Average High Temperature	35.7	39.3	49.2	61.7	70.8	79.1	82.5	81.4	74.3	62.6	51.2	39.4	60.7
Average Low Temperature	21.1	23	30	40.2	49.3	58.4	62.8	61.5	54	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



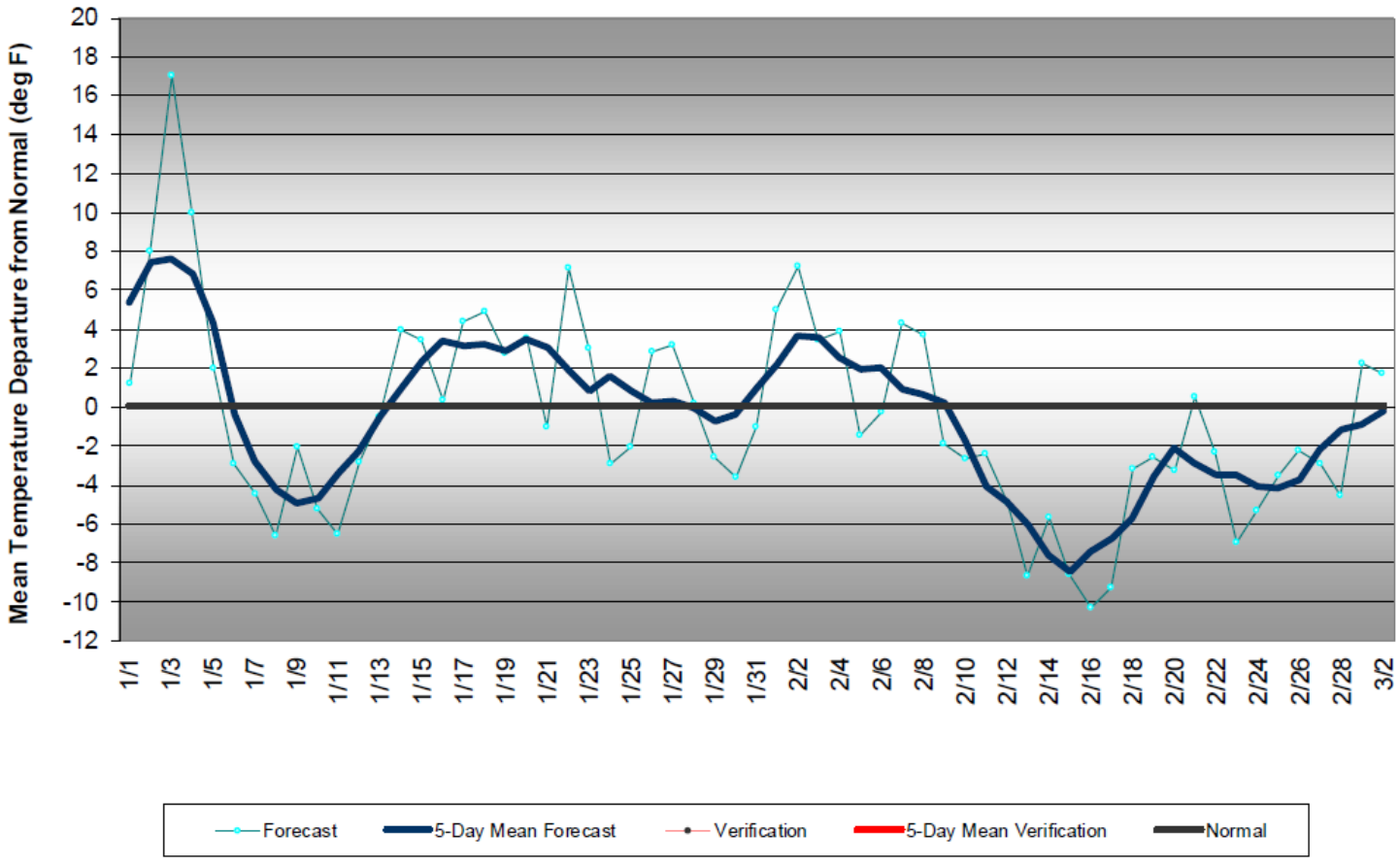
8-14 Day Outlook…Rainy period .
30 Day Outlook... Frequent storms. More rain than snow. Turning very cold in February. Above normal precipitation.
Mar-Apr-May Outlook… Perhaps one of the top 25 wettest for total precipitation. Above normal snowfall early.
May-Jun-Jul Outlook… Wetter/Colder than normal to start then sudden switch to summer weather.
Jul-Aug-Sep Outlook… Normal temperatures and normal precipitation. Very good chance for an active tropical season.

Average Yearly rainfall Pittsburgh: 38.19 **So far in 2017:** 1.18 (+0.39) **2016:**35.01(-3.18)
Totals for: 2016:35.01; 2015:40.56; 2014: 36.84; 2013: 36.65; 2012: 41.74; 2011: 44.24; 2010: 37.85
Average Yearly snowfall Pittsburgh: 41.9 inches 2015-16 season: 29.6 inches (-12.3) **So far 2016-17**: 9.8(-4.0)
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



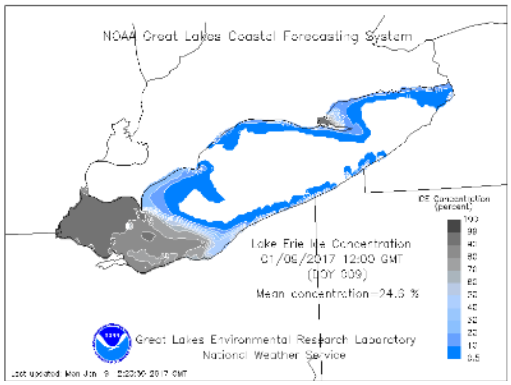
7 Day rain forecast

Western Pennsylvania Temperature Forecast
January - February 2017



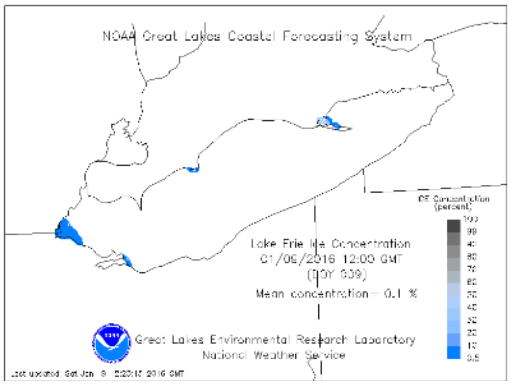
Lake Erie Ice coverage is slightly ahead of last 2 years

2017



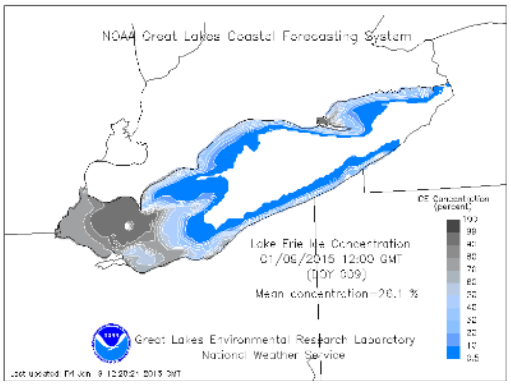
Mean Lake Erie Surface Temp = 34.5 F
Mean Lake Erie Whole Volume Temp = 35.4 F

2016

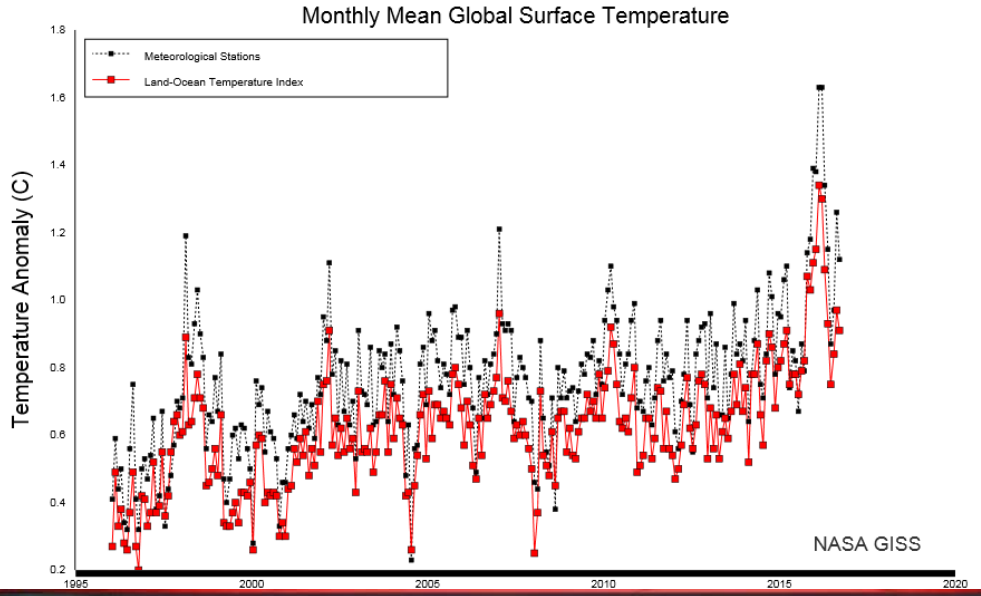


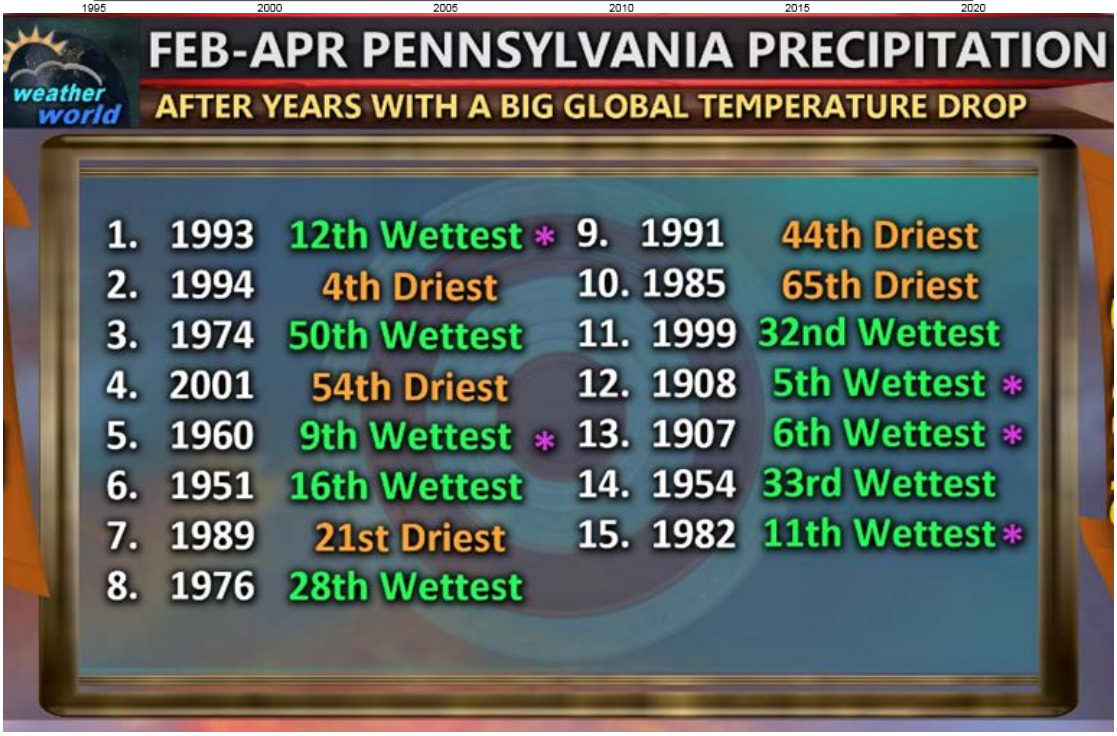
Mean Lake Erie Surface Temp = 39.6 F
Mean Lake Erie Whole Volume Temp = 40.6 F

2015



Mean Lake Erie Surface Temp = 34.9 F
Mean Lake Erie Whole Volume Temp = 35.8 F

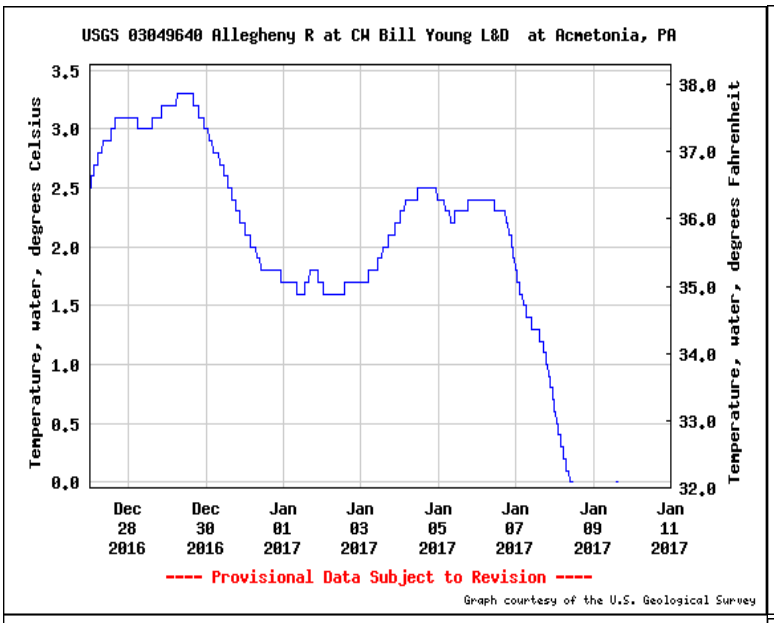


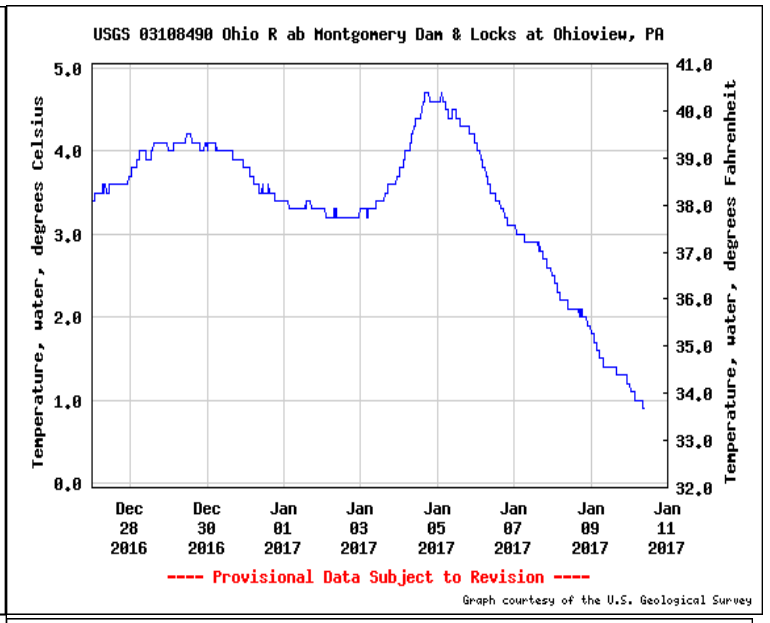


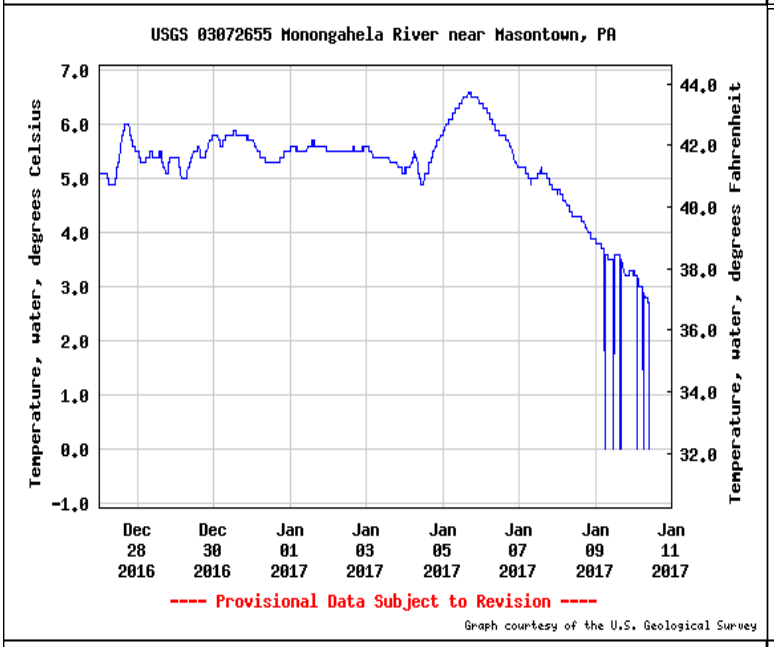
During years when we have a rapid drop of several degrees in global temperatures (typically after a strong El Nino has ended)

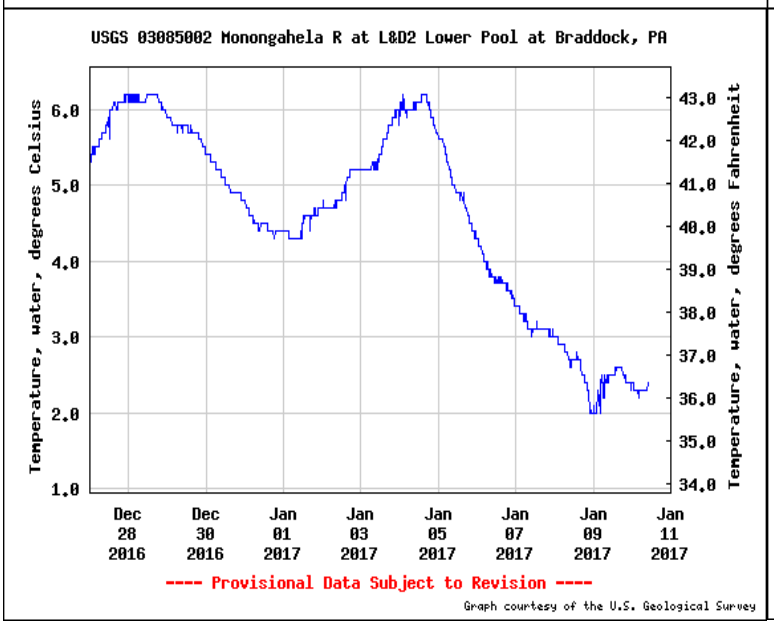
Statistically bring Pennsylvania: Normal Feb-Apr precipitation is about 8 inches. A much wetter than normal spring.

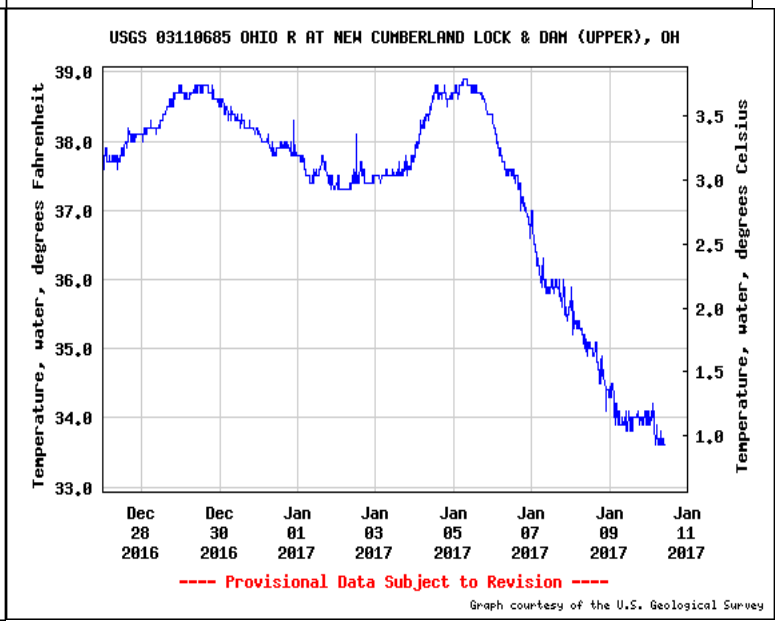
http://www.weather.gov/pbz/rivertemps







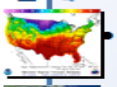




River Ice

Rule of thumb for River ice formation:
22 degree average temperature

National Weather Service
Protecting Lives and Property



- Cold wind increases heat removal from the top of the ice.
- Sun angle is a big factor as is the presence or lack of sun
- Snow is a very effective insulator and it dramatically slows growth.
- Slush on the surface stops growth on the bottom of the ice sheet until the slush is fully frozen.
- Low humidity can be the major part of the cooling effect.