

# 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 2<sup>nd</sup> 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






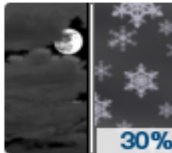
High water potential is above normal. It will be a rainy period from mid to late January. Increased flows and levels are likely. The storm track keeps the heaviest rains over KY, OH and IN, but the Pittsburgh area will be getting its share. A minimum of 1.50 inch basin wide rainfall in 6 to 12 hours 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.

<i>Location</i>	<i>Dec 2016 Precipitation</i>	<i>Departure (Inches)</i>	<i>Dec Snowfall</i>	<i>Seasonal Snowfall</i>
<i>Pittsburgh</i>	3.41	+0.65	6.0 (-2.1)	9.1(-4.0)

<i>Location</i>	<i>Dec Average Temperature</i>	<i>Departure Degrees</i>	<i>Extreme High</i>	<i>Extreme Low</i>
<i>Pittsburgh</i>	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

Wednesday	Wednesday Night	Thursday	Thursday Night	Friday	Friday Night
					
30%	80%	50%	70%	30%	30%
Mostly Cloudy then Chance Rain	Rain	Chance Rain	Rain Likely	Chance Rain/Snow then Mostly Cloudy	Mostly Cloudy then Chance Snow
High: 49 °F	Low: 49 °F	High: 58 °F	Low: 36 °F	High: 38 °F	Low: 26 °F

**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.

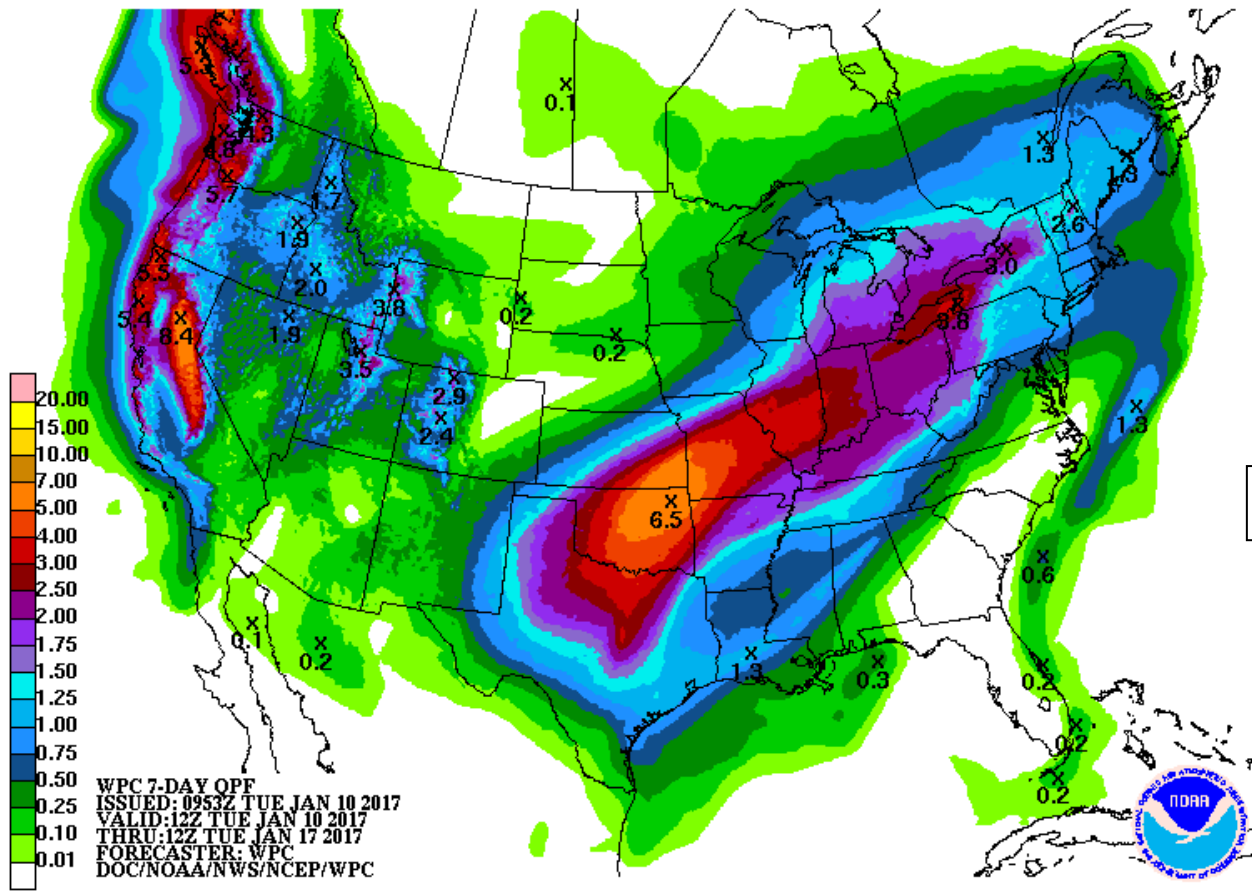
**Jul-Aug-Sep Outlook...** Normal temperatures and normal precipitation. Very good chance for an active tropical season.

**Average Yearly rainfall Pittsburgh:** 38.19 **So far in 2017:** 1.18 (+0.39) **2016:** 35.01(-3.18)

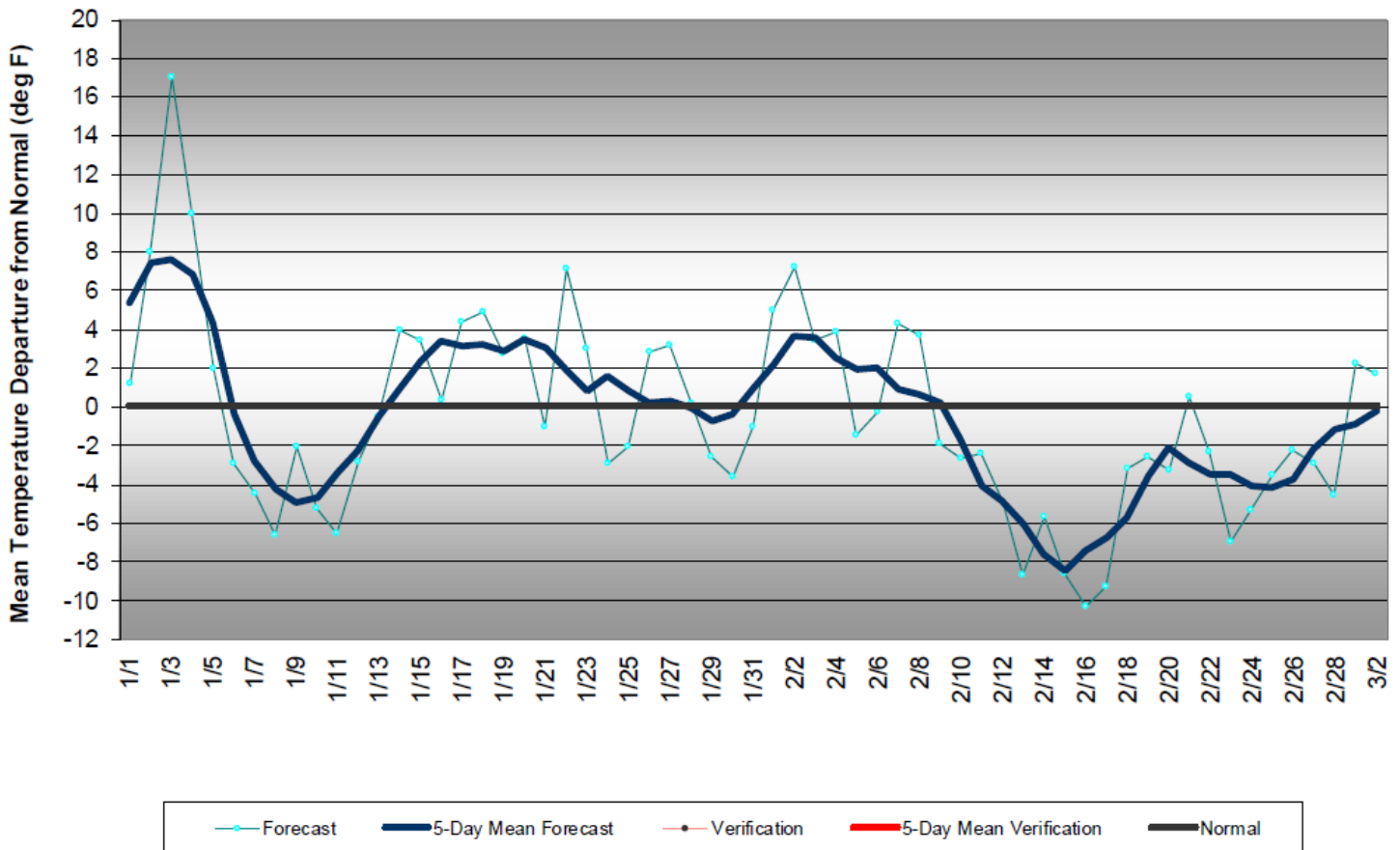
Totals for: 2016:35.01; 2015:40.56; 2014: 36.84; 2013: 36.65; 2012: 41.74; 2011: 44.24; 2010: 37.85

**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



Western Pennsylvania Temperature Forecast  
 January - February 2017

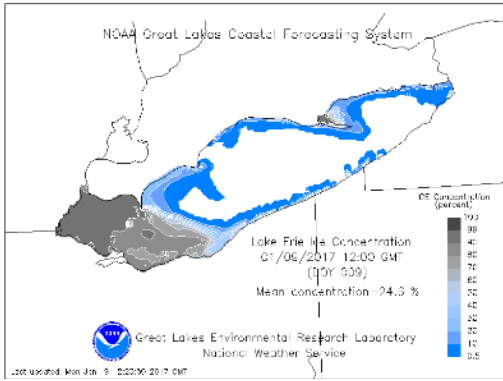


# Lake Erie Ice coverage is slightly ahead of last 2 years

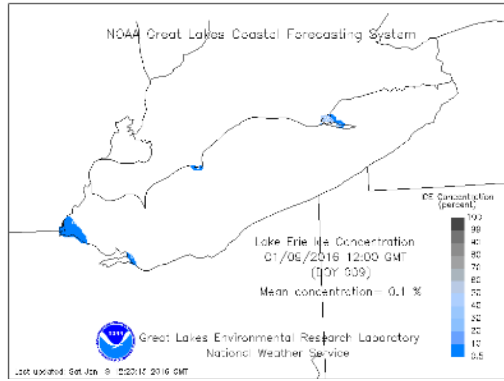
2017

2016

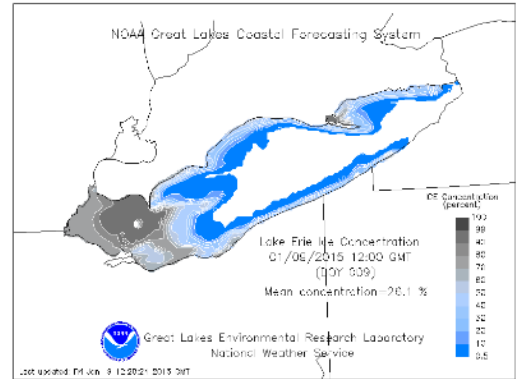
2015



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

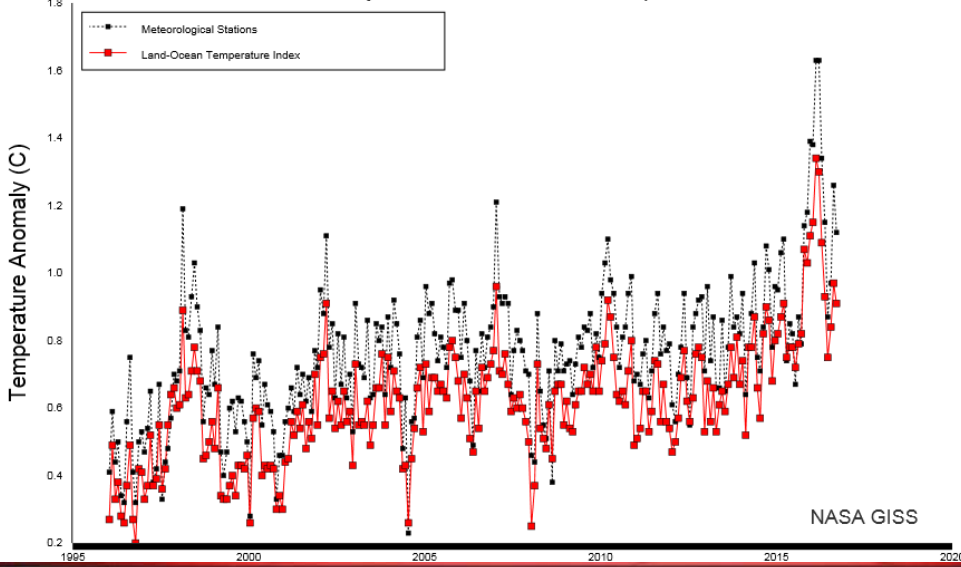


Mean Lake Erie Surface Temp = 39.6 F  
Mean Lake Erie Whole Volume Temp = 40.6 F



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

## Monthly Mean Global Surface Temperature



## FEB-APR PENNSYLVANIA PRECIPITATION

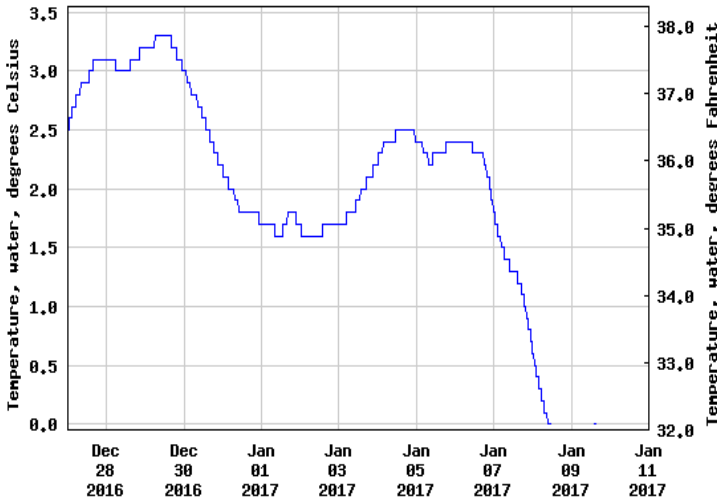
AFTER YEARS WITH A BIG GLOBAL TEMPERATURE DROP

- |         |                |          |                |
|---------|----------------|----------|----------------|
| 1. 1993 | 12th Wettest * | 9. 1991  | 44th Driest    |
| 2. 1994 | 4th Driest     | 10. 1985 | 65th Driest    |
| 3. 1974 | 50th Wettest   | 11. 1999 | 32nd Wettest   |
| 4. 2001 | 54th Driest    | 12. 1908 | 5th Wettest *  |
| 5. 1960 | 9th Wettest *  | 13. 1907 | 6th Wettest *  |
| 6. 1951 | 16th Wettest   | 14. 1954 | 33rd Wettest   |
| 7. 1989 | 21st Driest    | 15. 1982 | 11th Wettest * |
| 8. 1976 | 28th Wettest   |          |                |

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

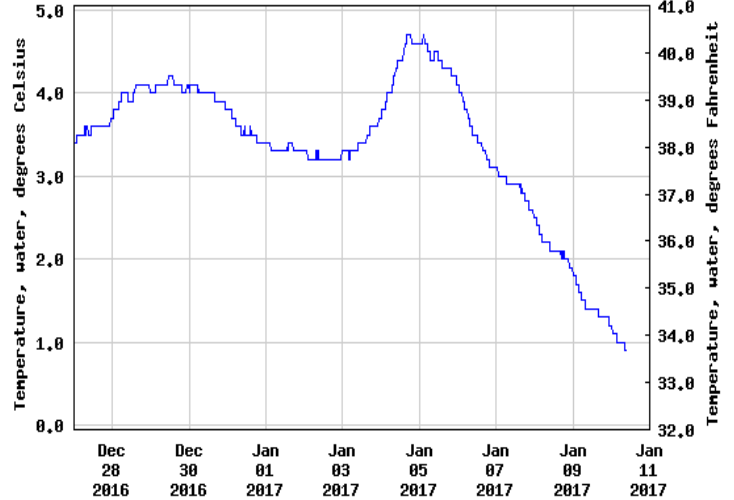
USGS 03049640 Allegheny R at CM Bill Young L&D at Acnetonia, PA



----- Provisional Data Subject to Revision -----

Graph courtesy of the U.S. Geological Survey

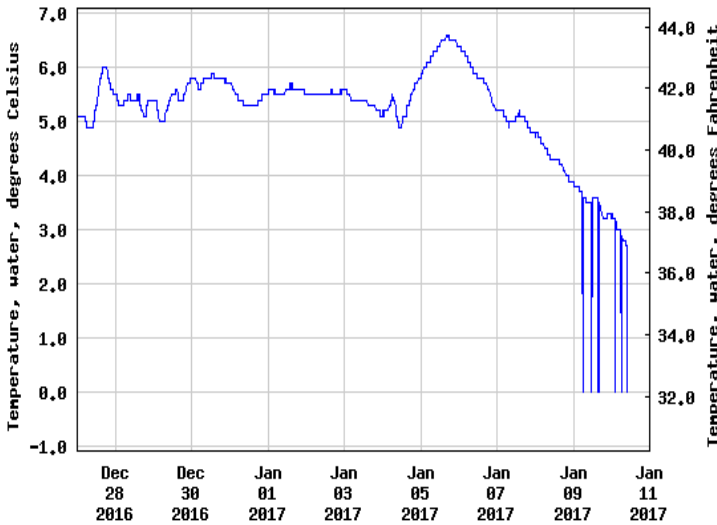
USGS 03108490 Ohio R ab Montgomery Dan & Locks at Ohioview, PA



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Graph courtesy of the U.S. Geological Survey

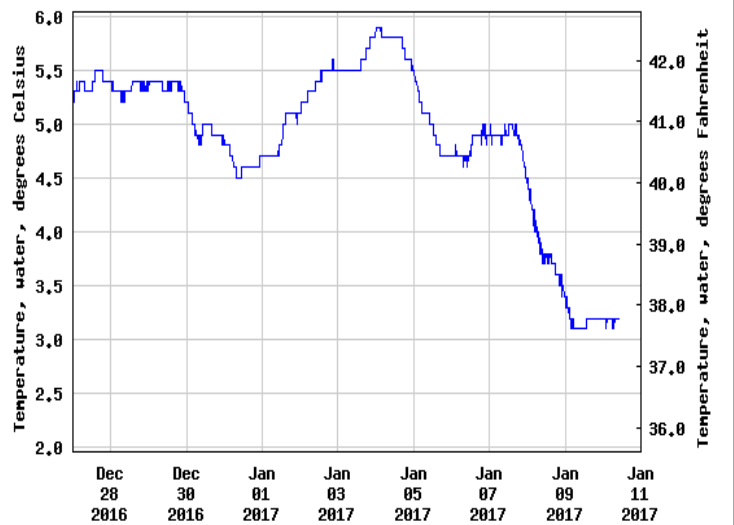
USGS 03072655 Monongahela River near Masontown, PA



----- Provisional Data Subject to Revision -----

Graph courtesy of the U.S. Geological Survey

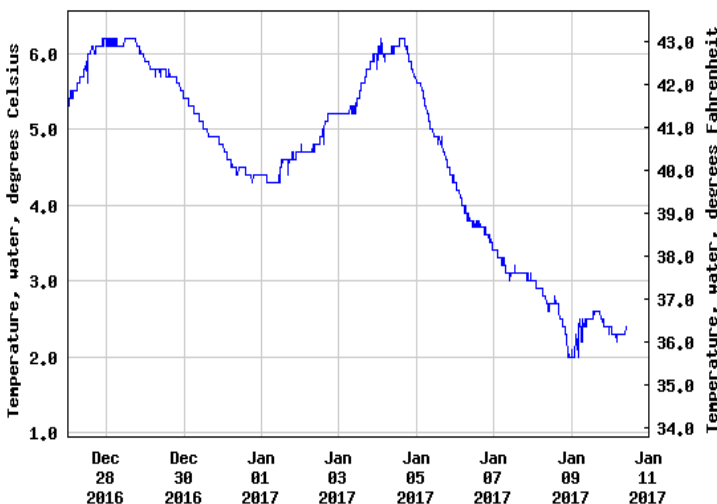
USGS 03075070 Monongahela River at Elizabeth, PA



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Graph courtesy of the U.S. Geological Survey

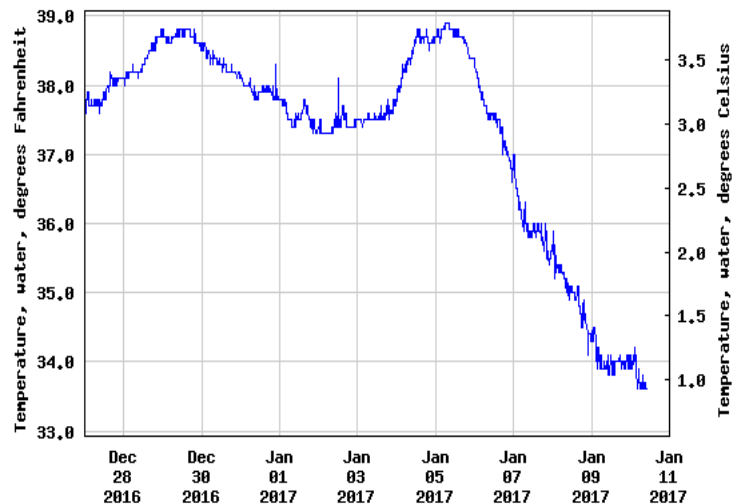
USGS 03085002 Monongahela R at L&D2 Lower Pool at Braddock, PA



----- Provisional Data Subject to Revision -----

Graph courtesy of the U.S. Geological Survey

USGS 03110685 OHIO R AT NEW CUMBERLAND LOCK & DAM (UPPER), OH



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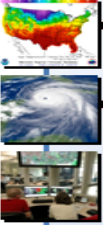
Graph courtesy of the U.S. Geological Survey



# River Ice

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

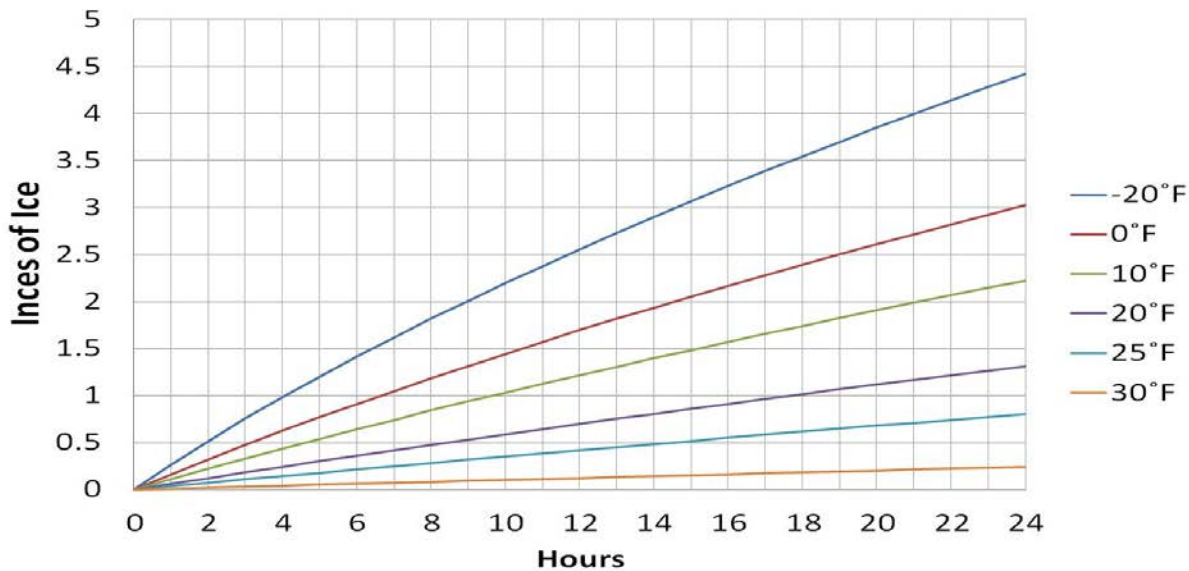
National Weather Service  
Protecting Lives and Property



- 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.



### Ice Growth over a Day



### Ice Growth Over a Week

