

# Delaware River Basin Commission

## Hydrologic Conditions

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Water Resource Scientist

Water Management Advisory Committee

March 16, 2021

This was presented to an advisory committee of the DRBC on 3/16/21.  
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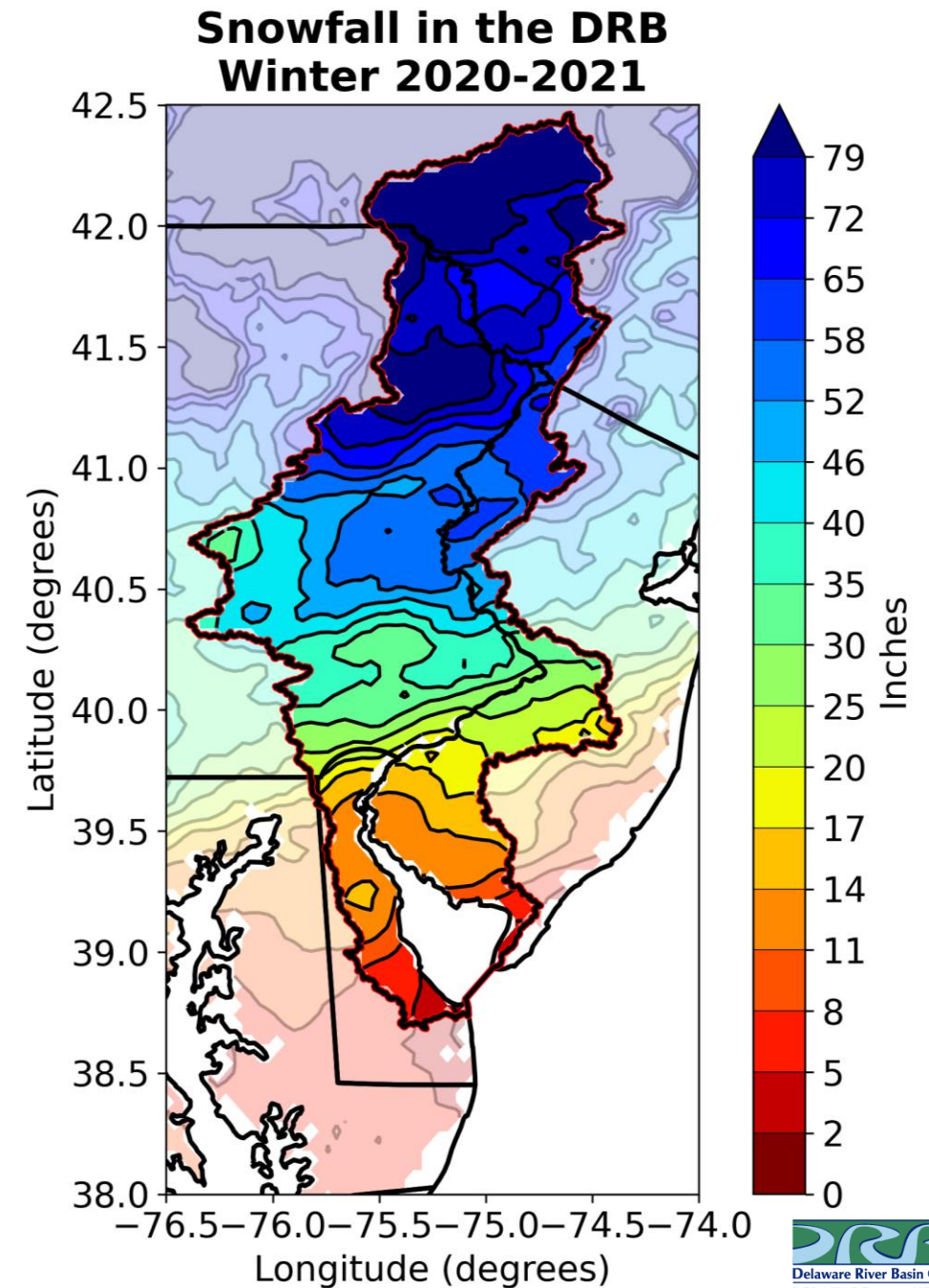


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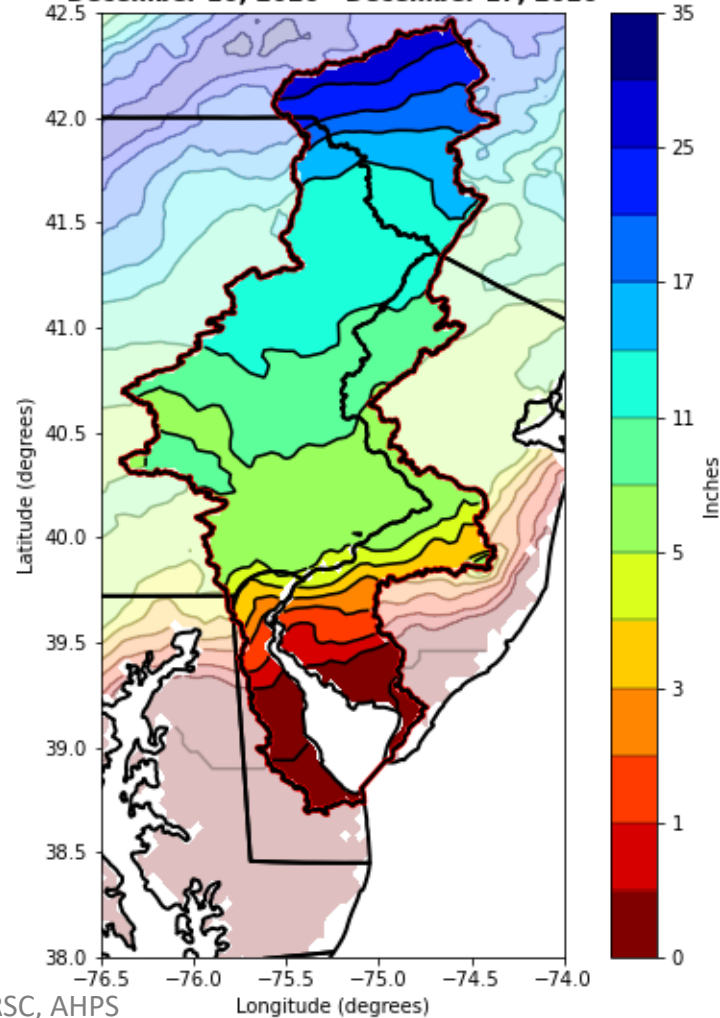
# Winter 2020 – 2021 Recap

- \* Features:
  - \* La Nina Weather Pattern
  - \* More Variable Jet Stream led to more “storminess” in the second half of the season
  - \* Negative Phase of the North Atlantic Oscillation led to colder air and precipitation fell as snow
  - \* February cold and snow led to ice in the river

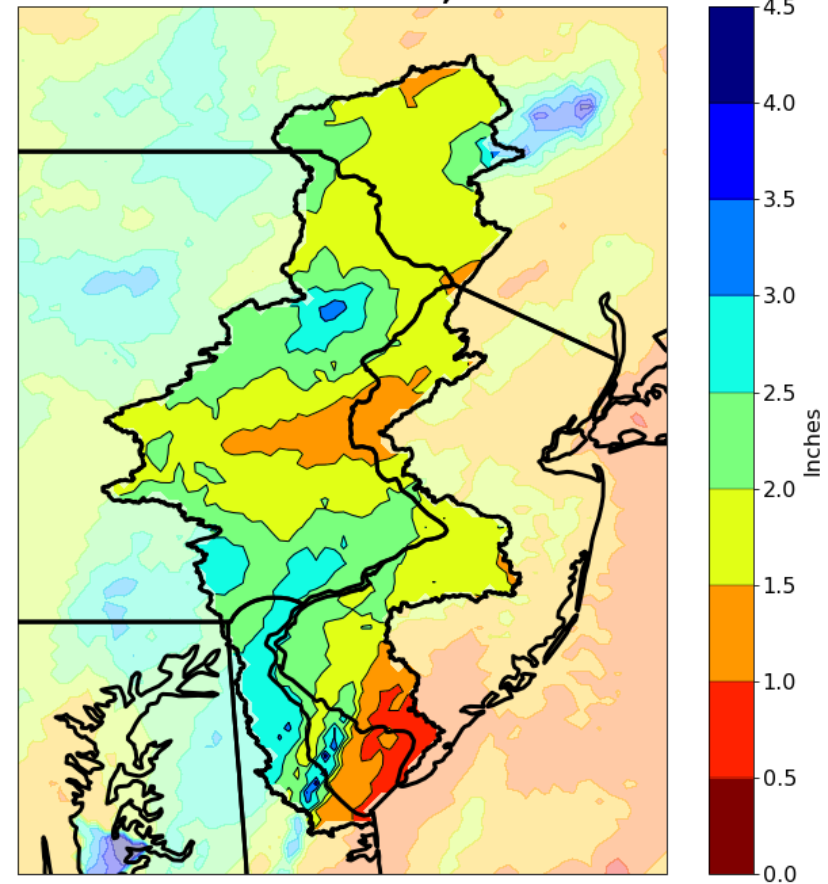


# Rain and snow melt event December 24 - 25

**Snowfall in the DRB  
December 16, 2020 - December 17, 2020**

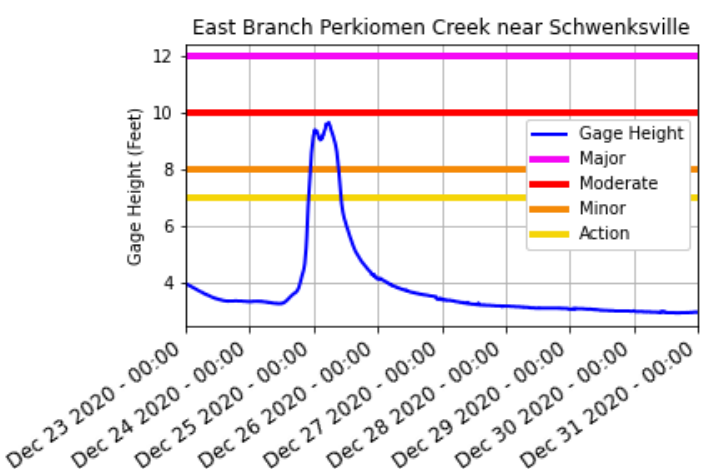
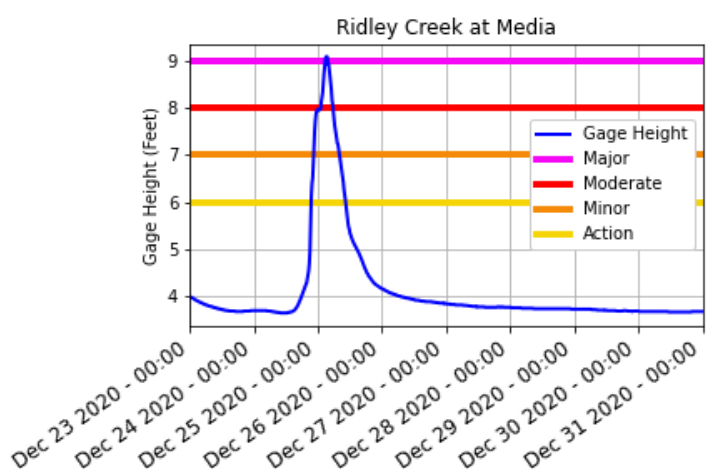
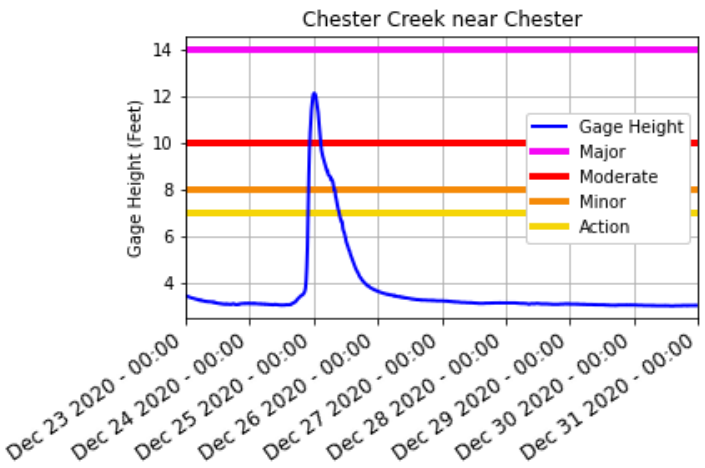
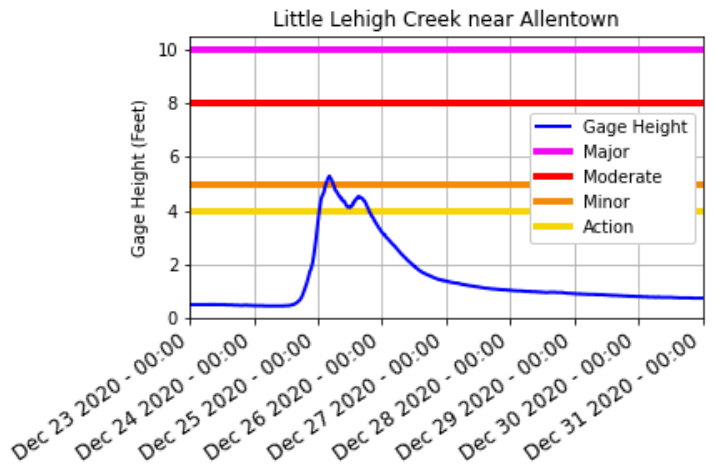
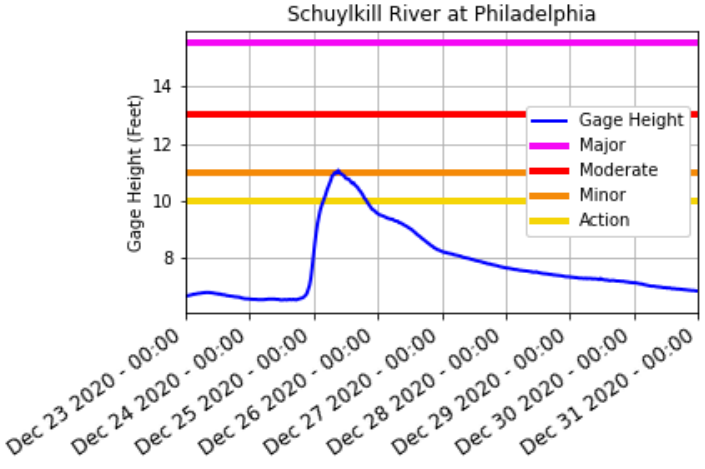
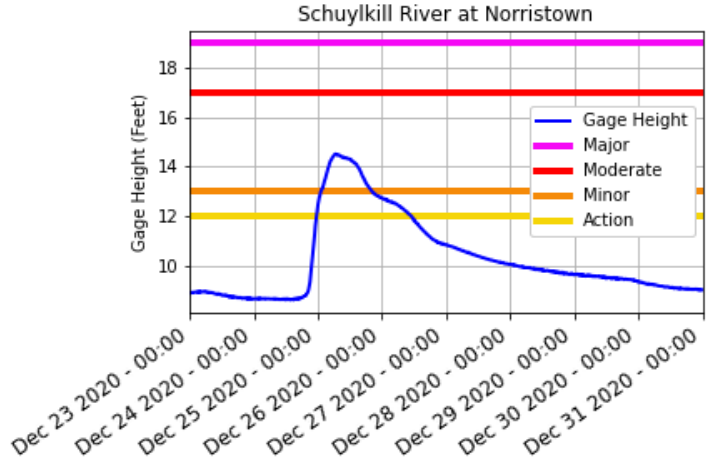


**Basin Precipitation  
December 24- 25, 2020**





# Rain and snow melt event December 24 - 25



- Many locations in the lower basin reached at least moderate flood stage
- Some tidal flooding occurred

Data Source: USGS, NWS

# Cold and Snowy for February

February 2, 2021



Photo by Patrick Rago, DRBC



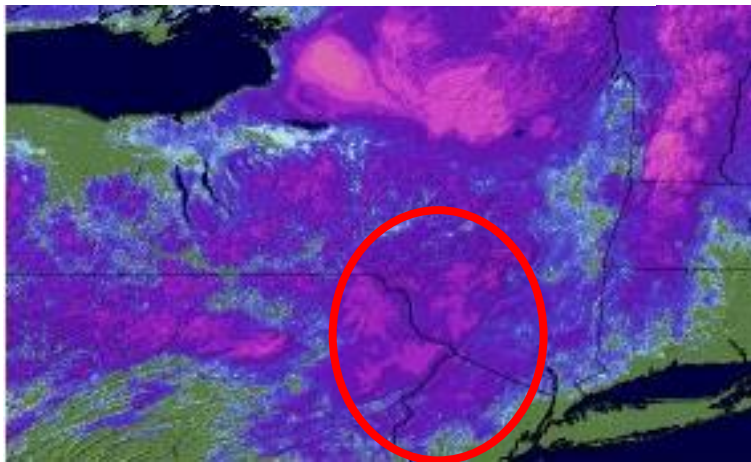
Satellite view of the basin: Feb 20, 2021

Data Source: NASA TERRA SATELLITE

# Recent Snowmelt

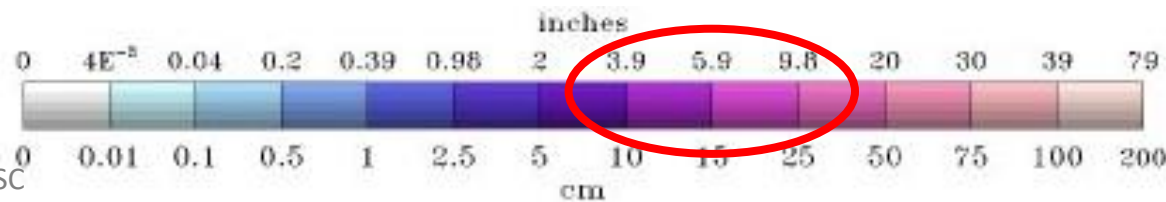
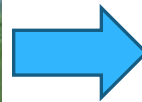
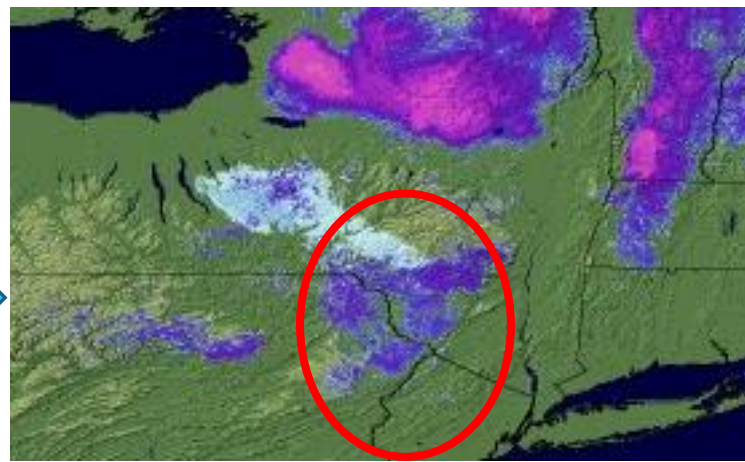
**One week ago**

Snow Water Equivalent  
2021-03-07 06 UTC



**Yesterday**

Snow Water Equivalent  
2021-03-15 06 UTC

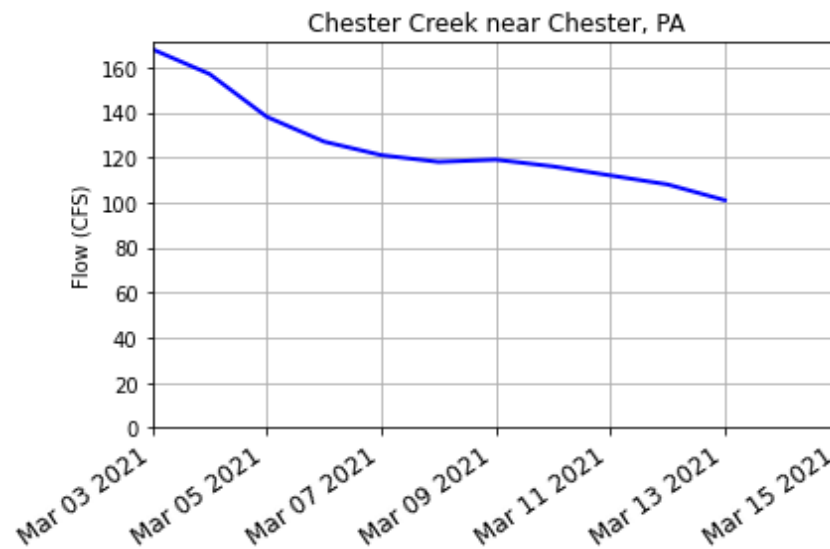
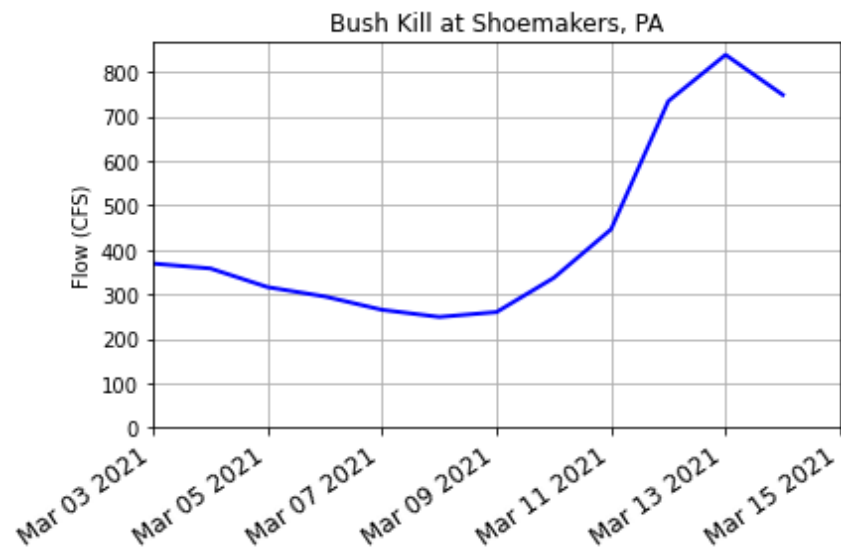
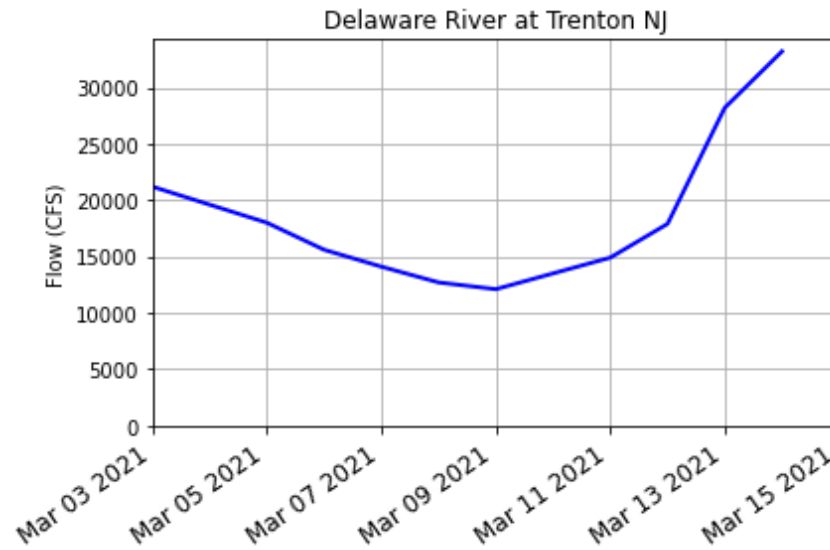
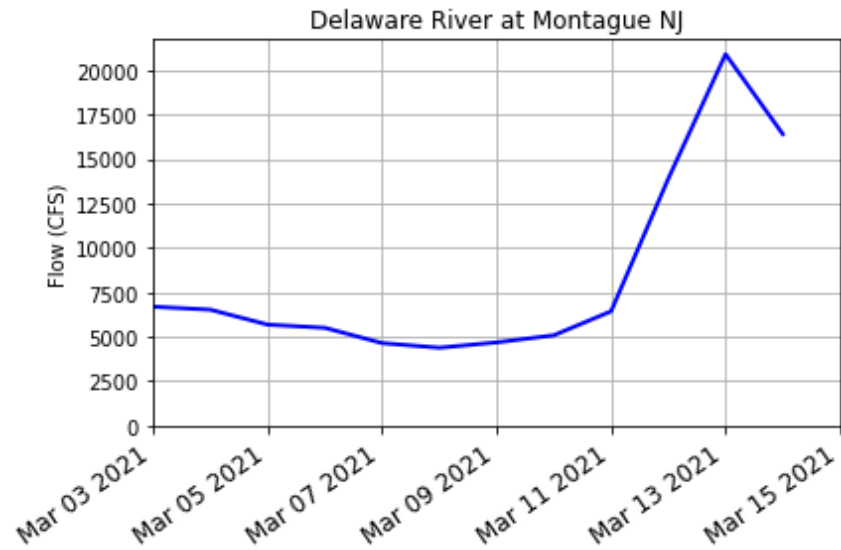


- Snow water equivalent of up to **10 inches** in some parts of the northern basin

Date	Temperature (Binghamton)
3/7	39 °F
3/8	44 °F
3/9	56 °F
3/10	62 °F
3/11	54 °F
3/12	38 °F



# Recent Snowmelt

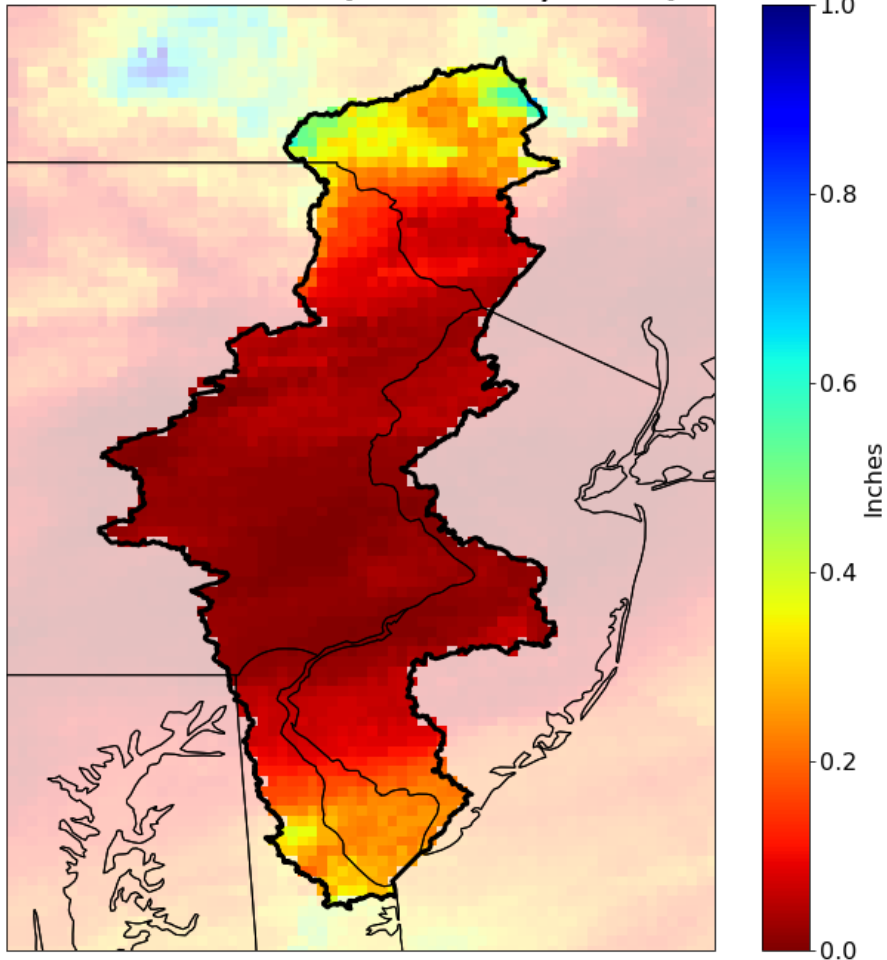


- Streamflow has been began increasing in the upper basin first
- Stream flow now increasing downstream on the main stem
- No snow melt in the southern basin, no stream flow increase

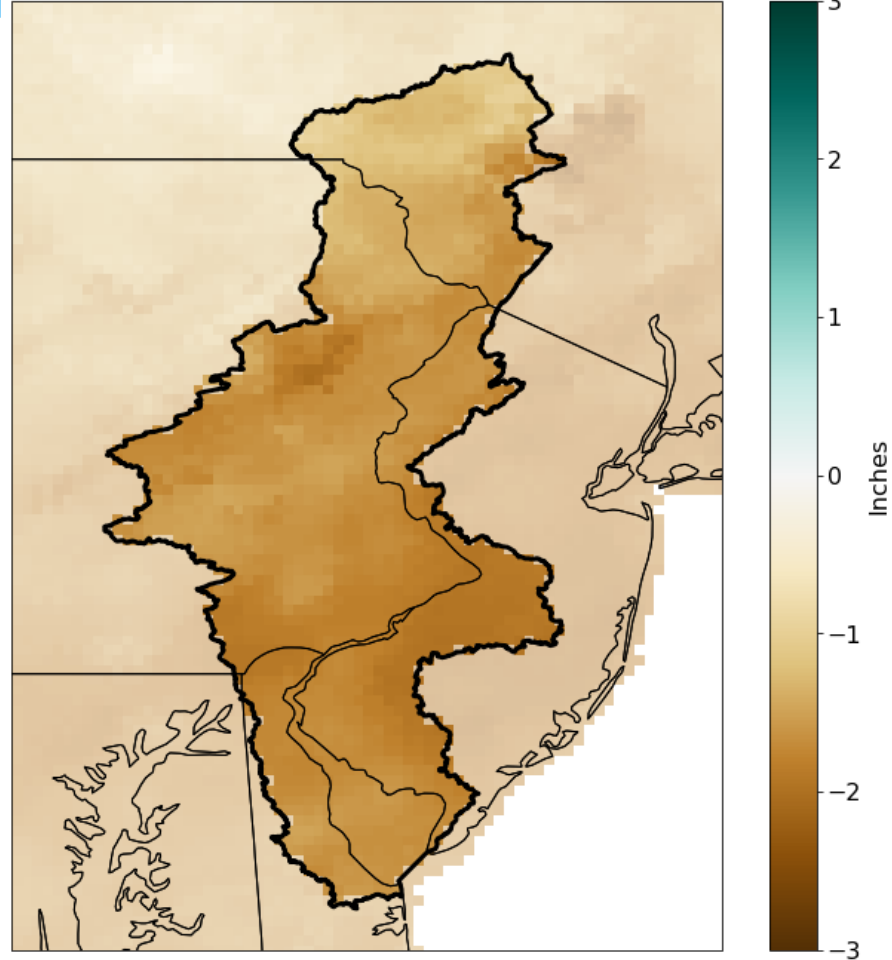
Data Source: USGS

# Month to Date Precipitation

**Basin Precipitation  
Month to Date (March 15, 2021)**



**Departure from Normal  
Month to Date (March 15, 2021)**



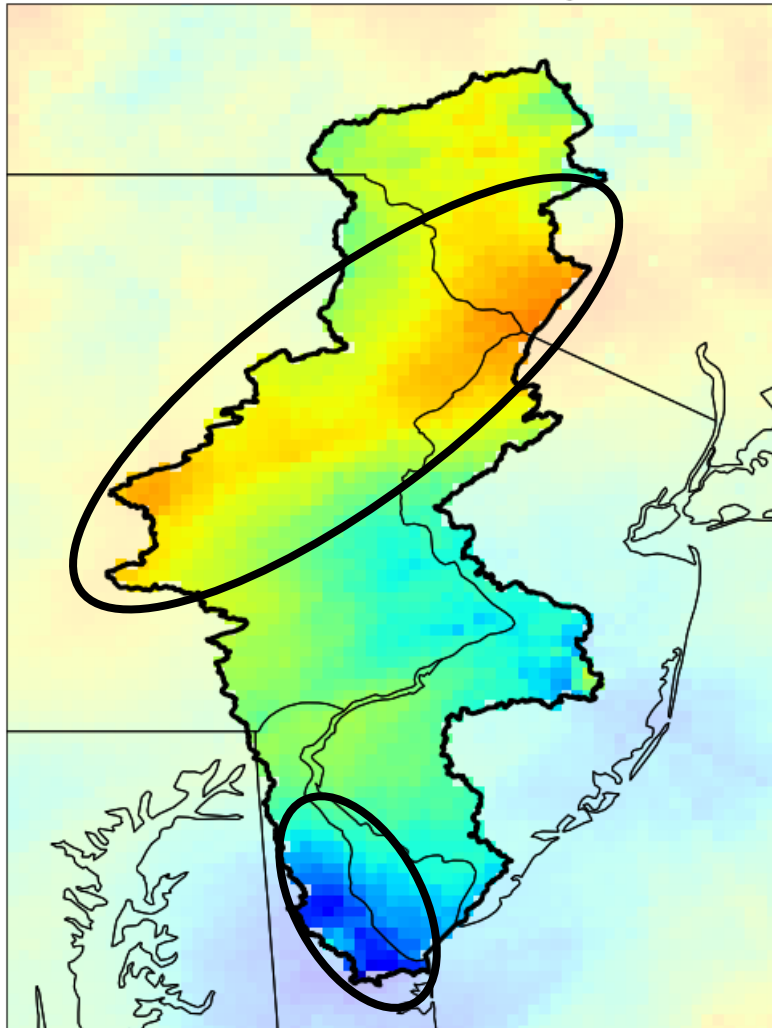
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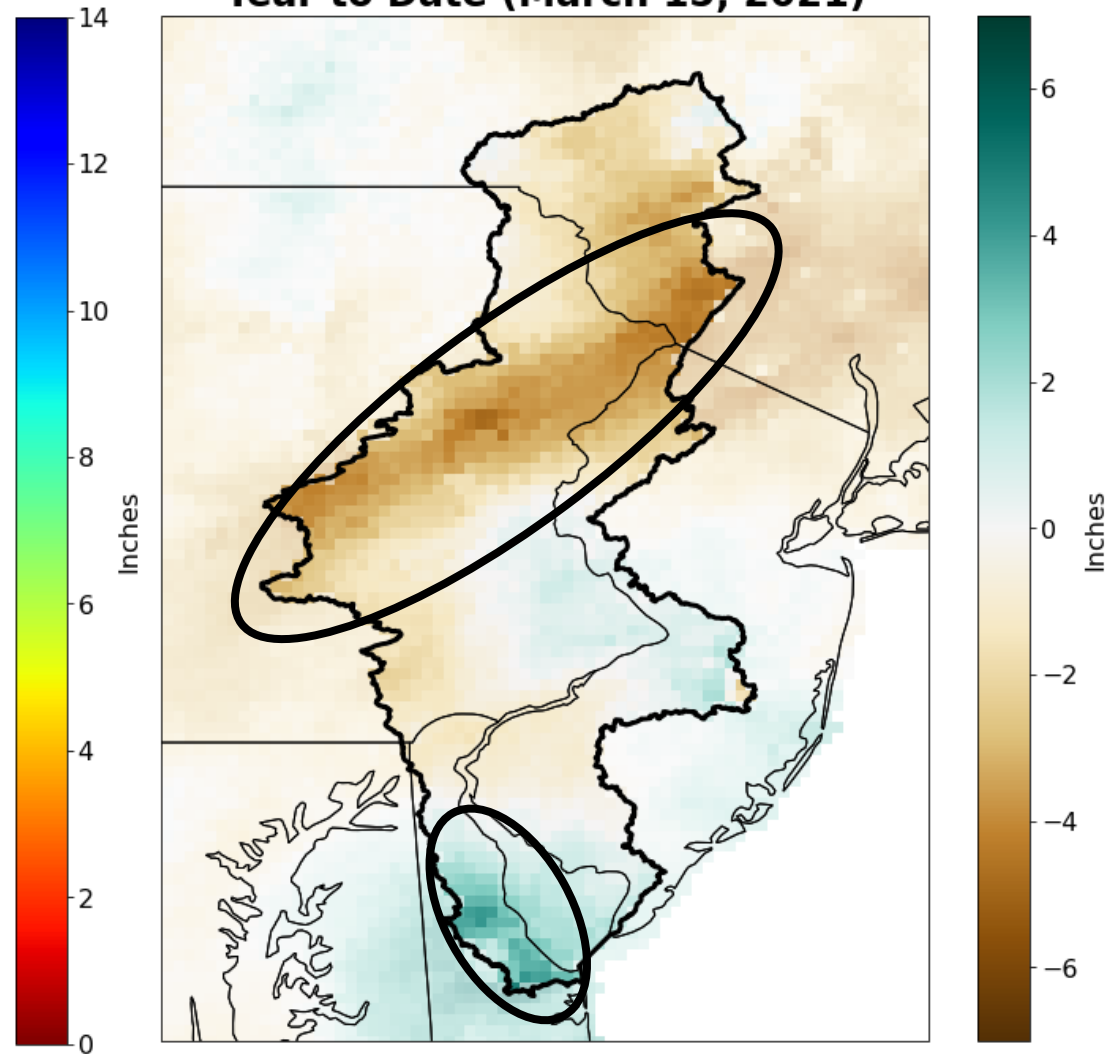


# Year to Date Precipitation

**Basin Precipitation  
Year to Date (March 15, 2021)**



**Departure from Normal  
Year to Date (March 15, 2021)**











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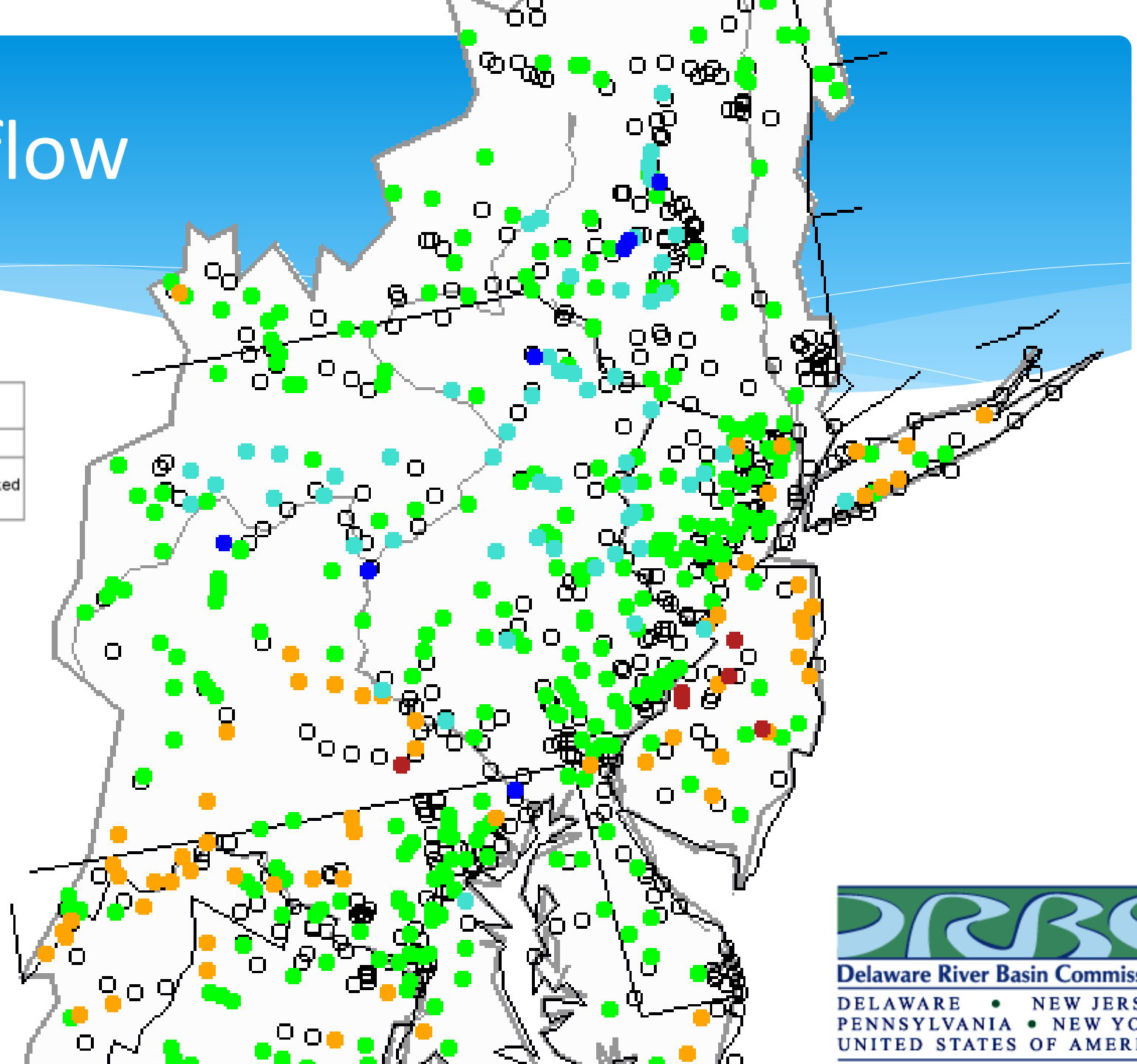
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# Streamflow

Explanation - Percentile classes

							
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

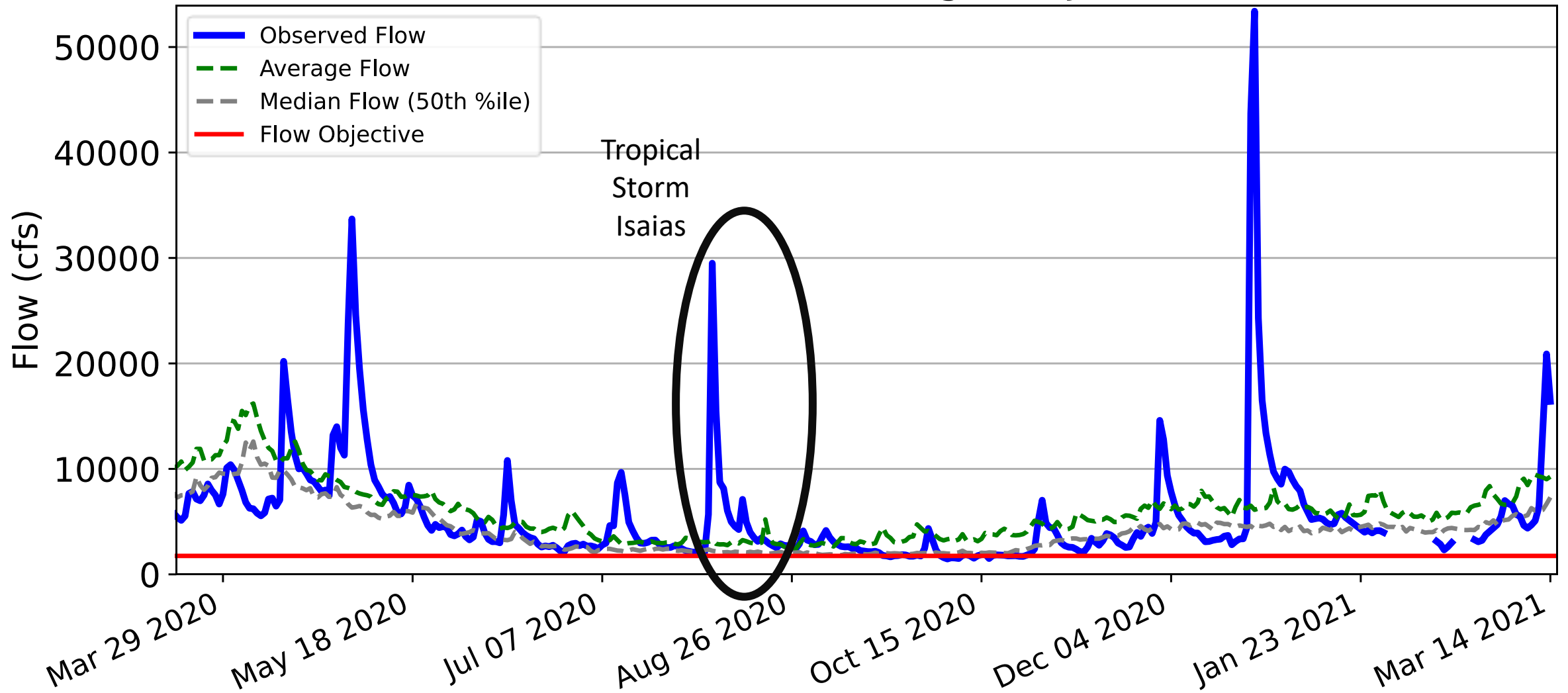
March 15, 5:00 PM EDT



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Updated: 2021-03-15 16:58 Flow at Montague, NJ

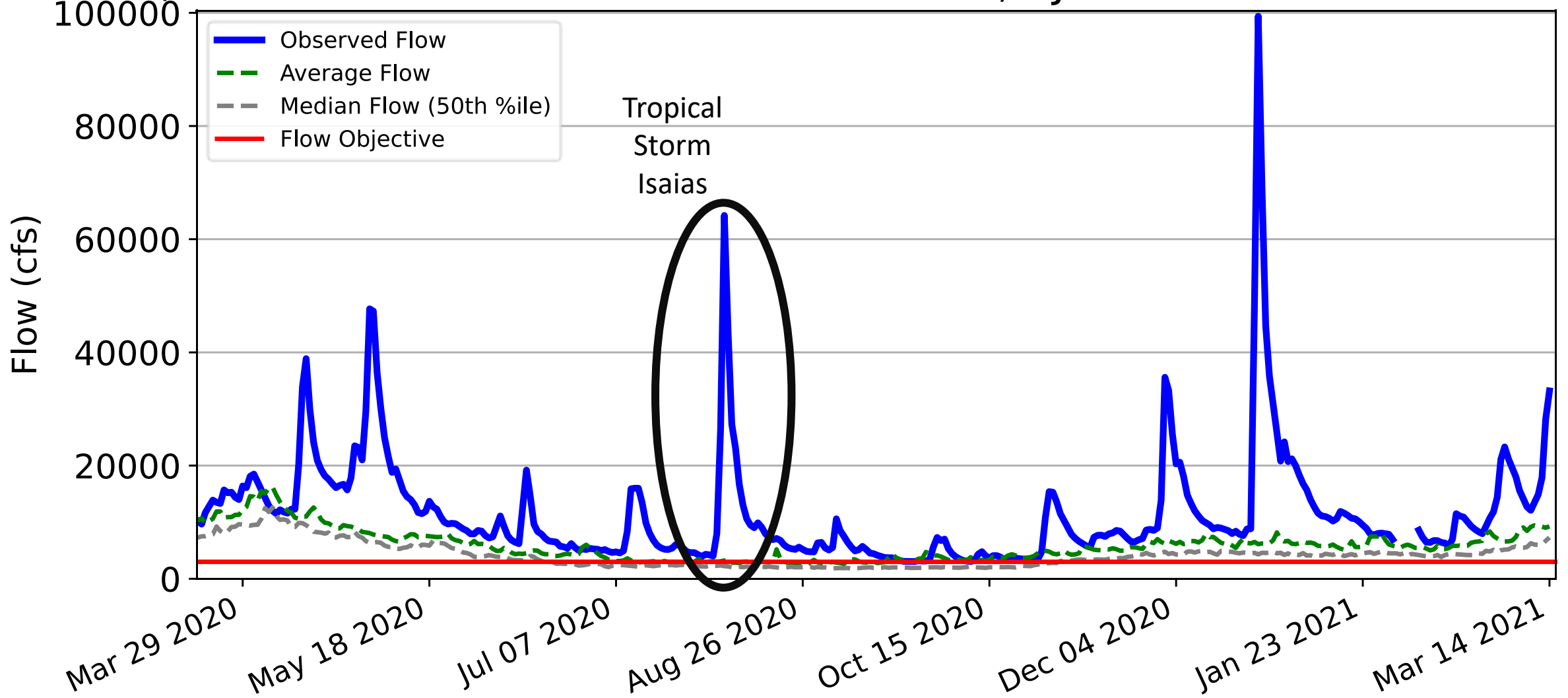


Data Source: USGS



Updated: 2021-03-15 16:58

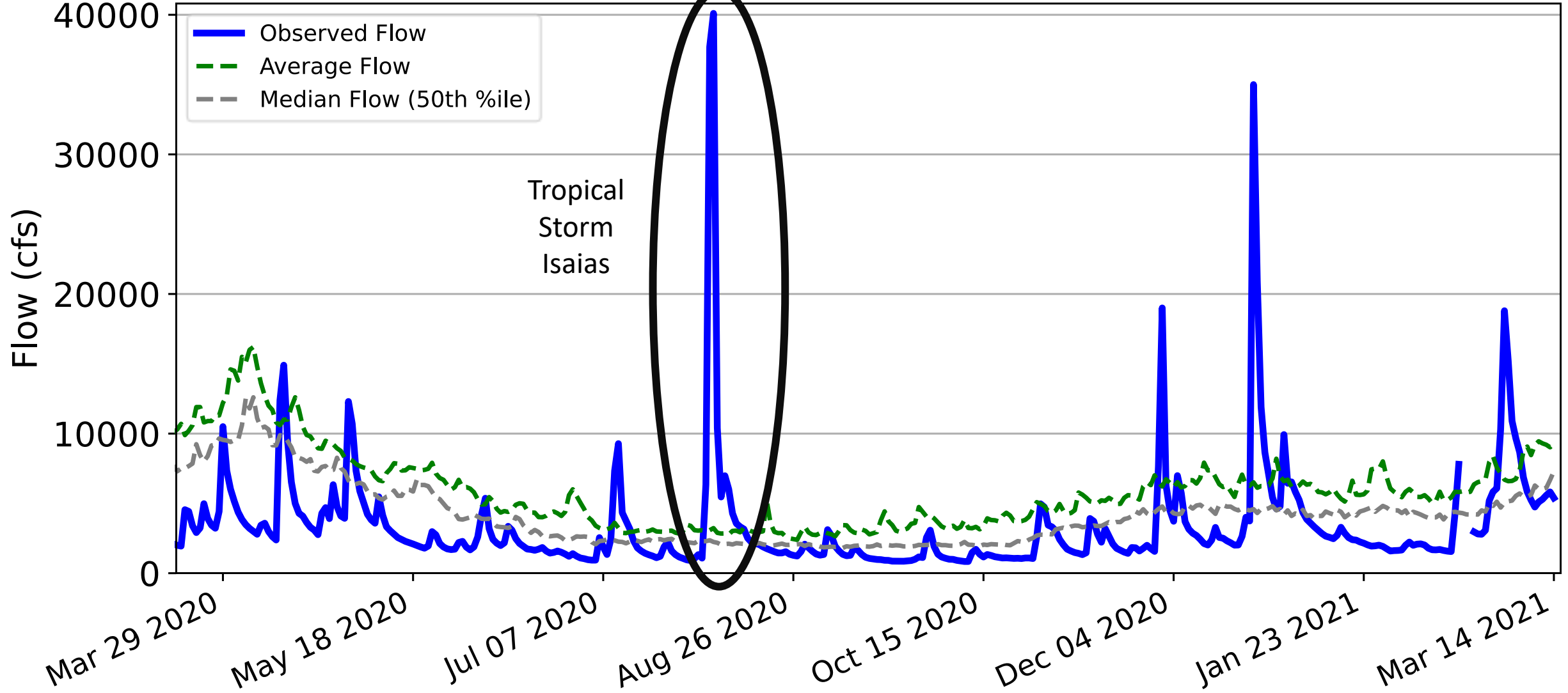
# Flow at Trenton, NJ



Data Source: USGS



Updated: 2021-03-15 16:58 Flow at Philadelphia, PA

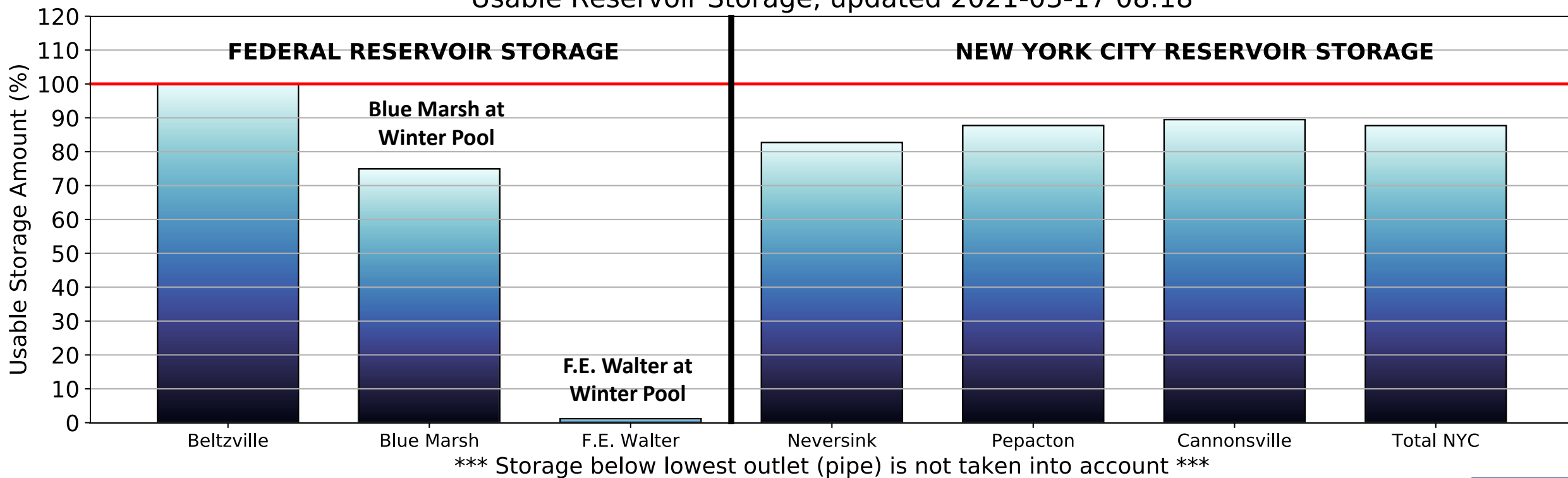


Data Source: USGS



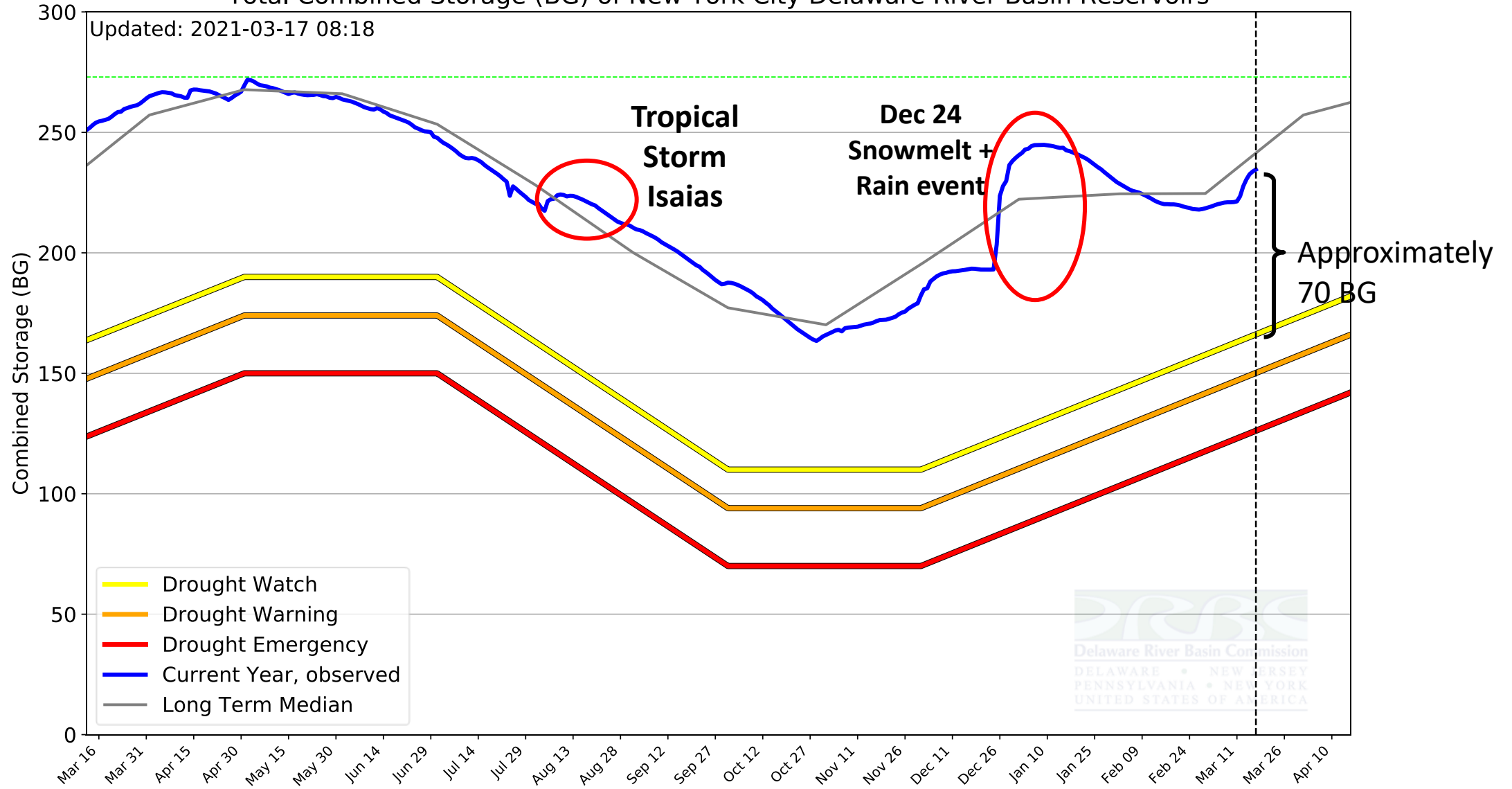
# Basin Storage

Usable Reservoir Storage, updated 2021-03-17 08:18





# Total Combined Storage (BG) of New York City Delaware River Basin Reservoirs

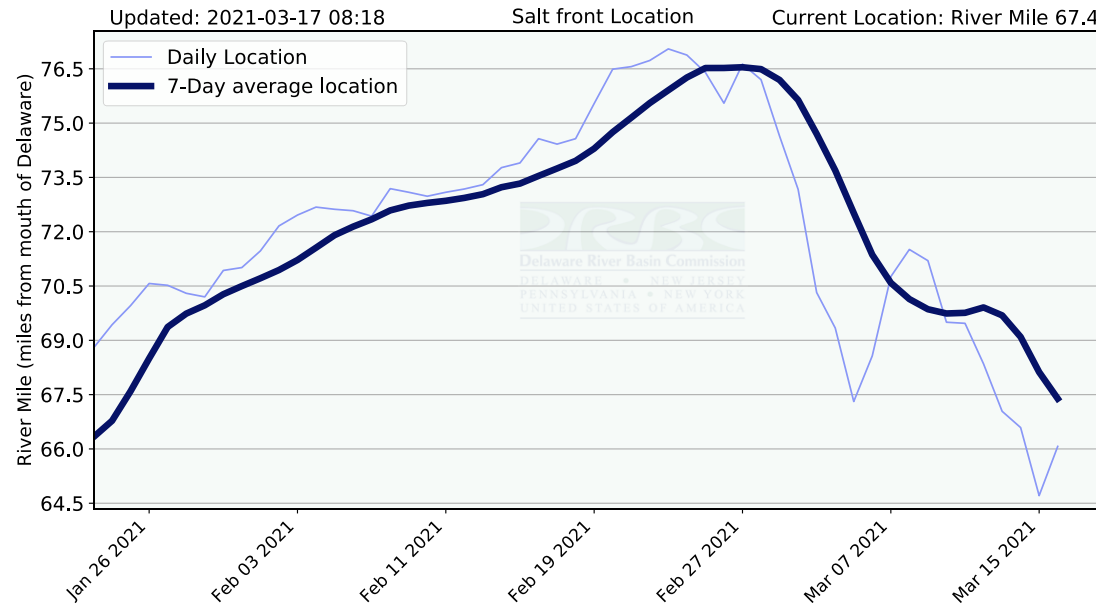
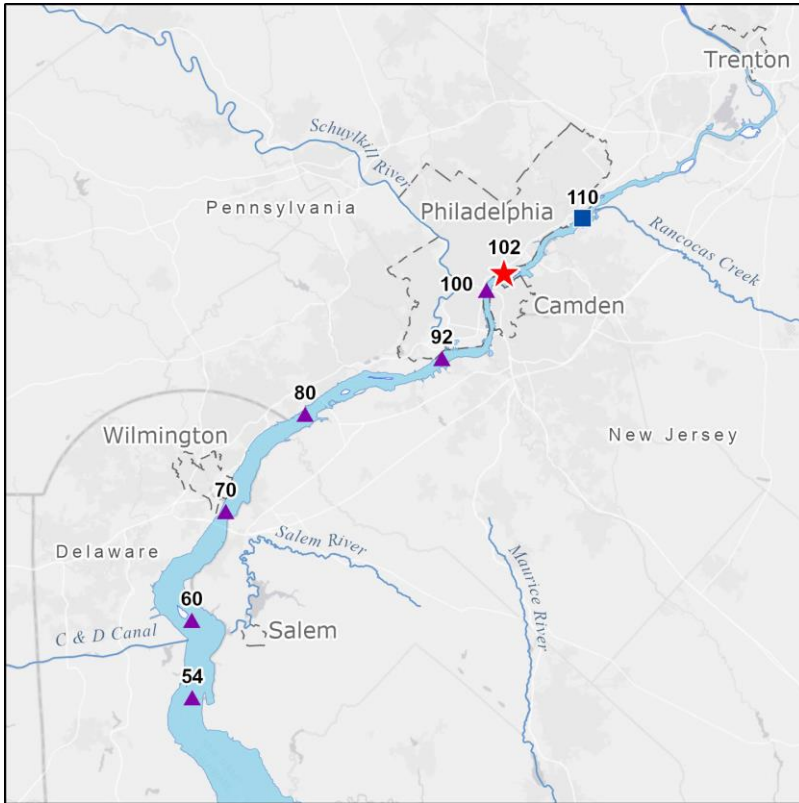


Usable Storage BG	Cannonsville	Pepacton	Neversink	Total	BG above drought watch = 68.4	BG below median = 6.9
	83.6	122.2	28.7	234.6	BG above drought warning = 84.4	BG below one year ago = 20.7
%	89.5	87.7	82.7	87.7	BG above drought = 108.4	

Data Source: USGS



# Salt Front



**Chlorides**  
**7-Day Average RM**  
**Location of 250 mg/L**

**Current: 68.1**  
**March Median: 70**

**The Flow Objective at Trenton was designed to repel salinity for the protection of drinking water treatment facilities and industrial intakes.**

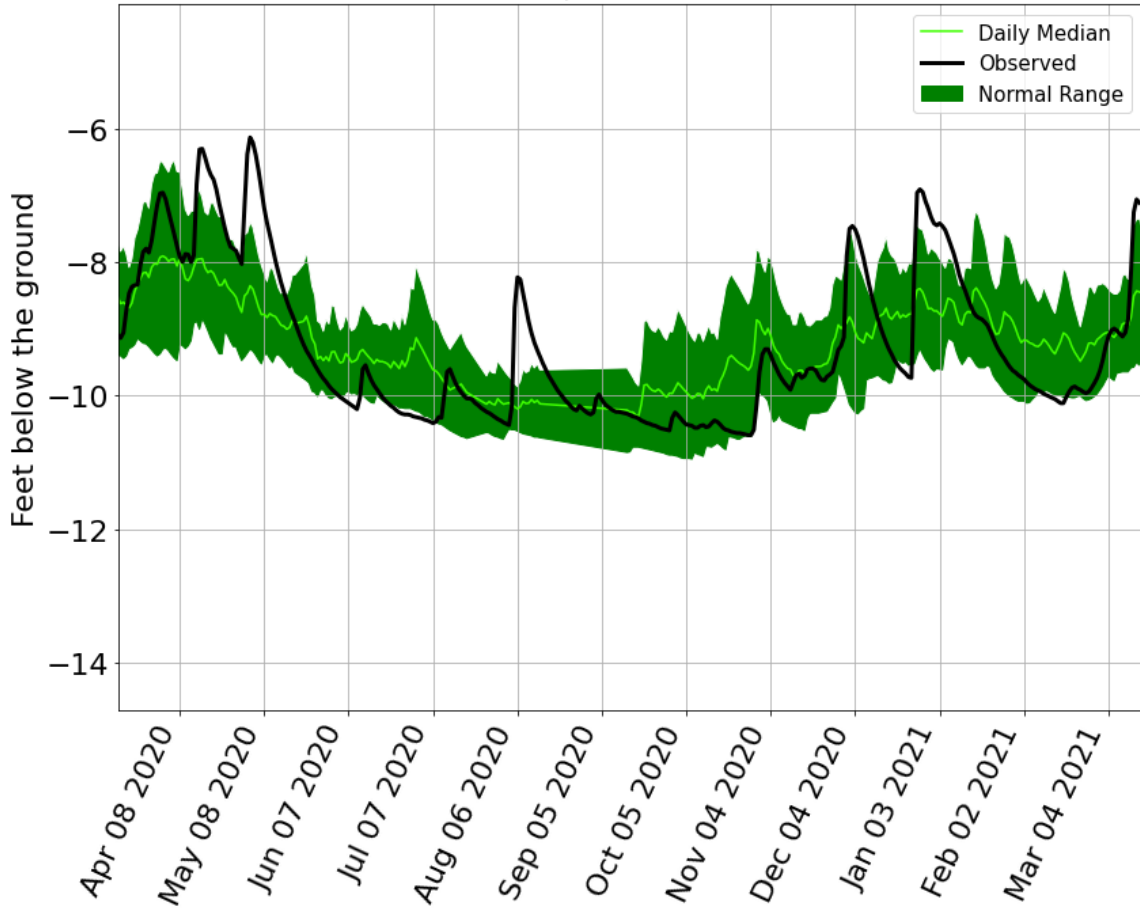
# Groundwater Conditions

COUNTY	STATE	DATA SOURCE	WELL ID	INDICATOR AS OF 2021-03-16
Wayne	PA	USGS	WN 64	Normal
Monroe	PA	USGS	MO 190	Normal
Carbon	PA	USGS	CB 104	Above Normal
Schuylkill	PA	USGS	SC 296	Above Normal
Lehigh	PA	USGS	LE 372	Above Normal
Bucks	PA	USGS	BK 1020	Above Normal
Chester	PA	USGS	CH 10	Above Normal
Delaware	PA	USGS	DE 723	Above Normal
Lebanon	PA	USGS	LB 372	Above Normal
Burlington	NJ	USGS	050689	Normal
Cumberland	NJ	USGS	110042	Above Normal

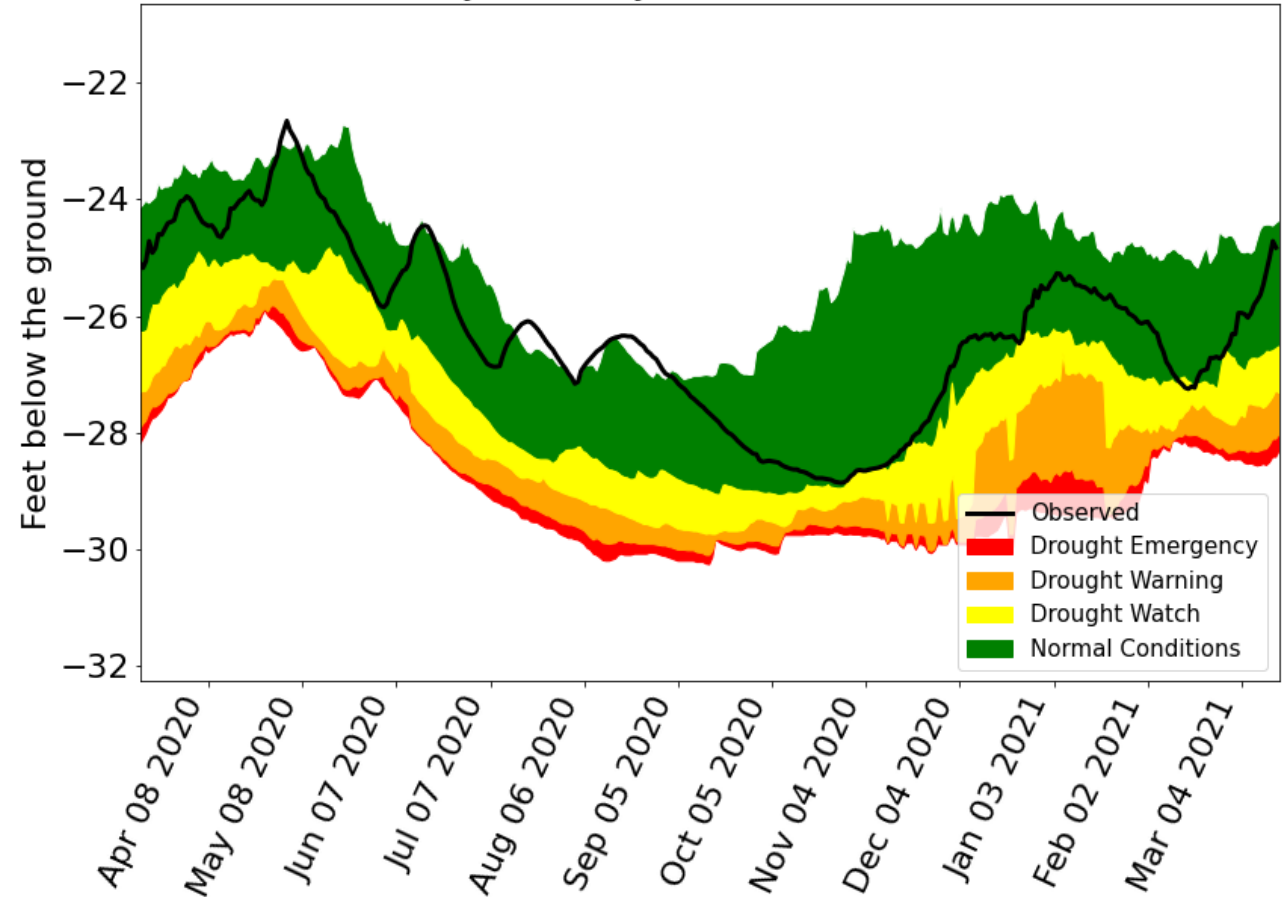


# Upper Basin

Woodbourne, NY Observation Well

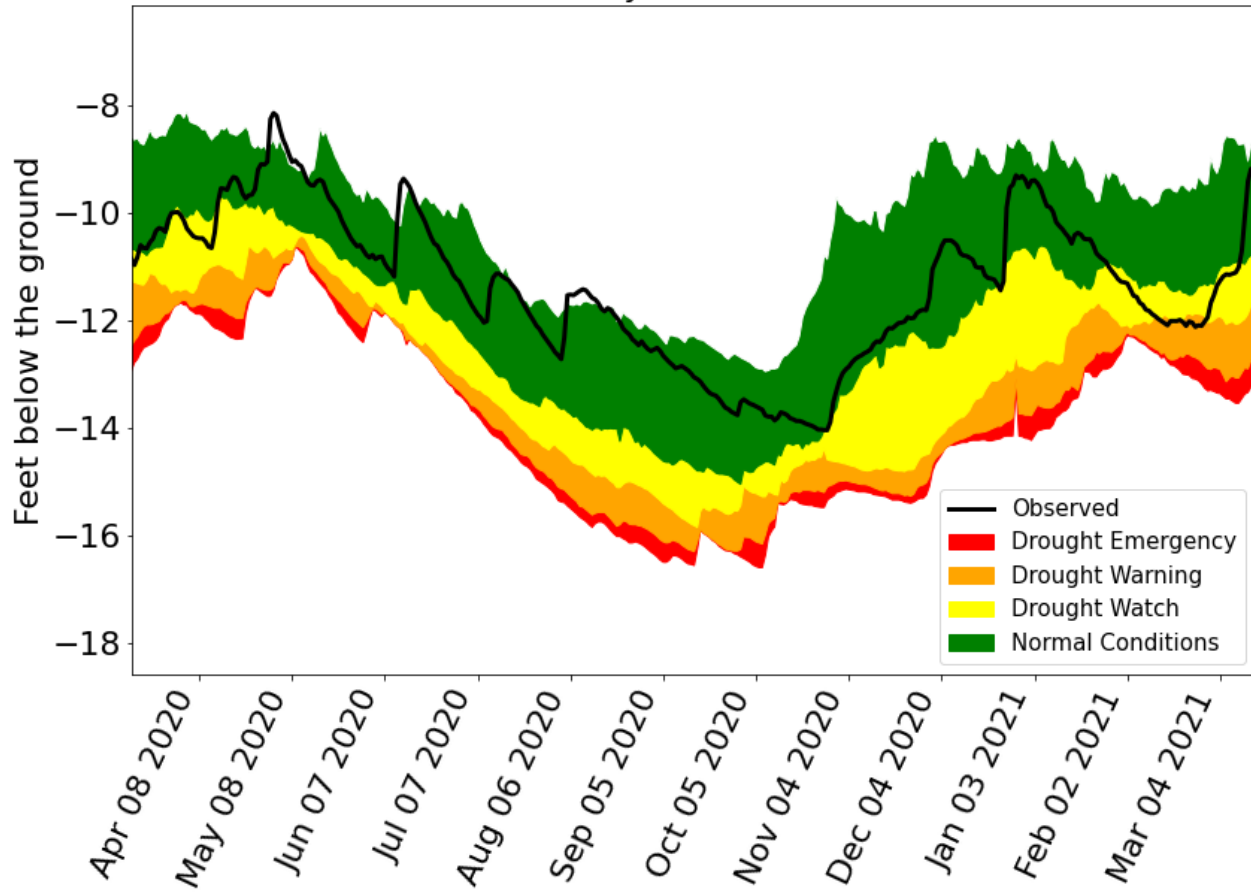


Wayne County, PA Observation Well

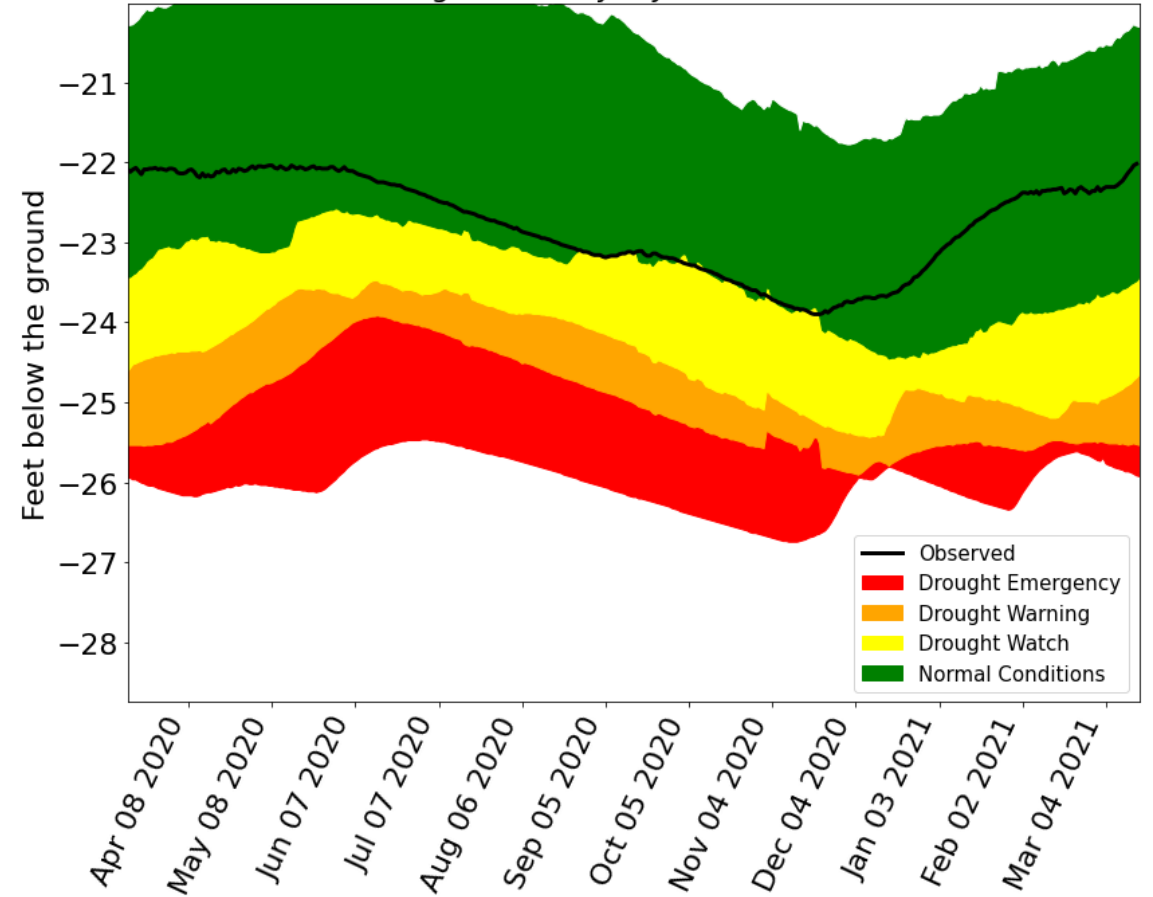


# Middle Basin

### Monroe County, PA Observation Well

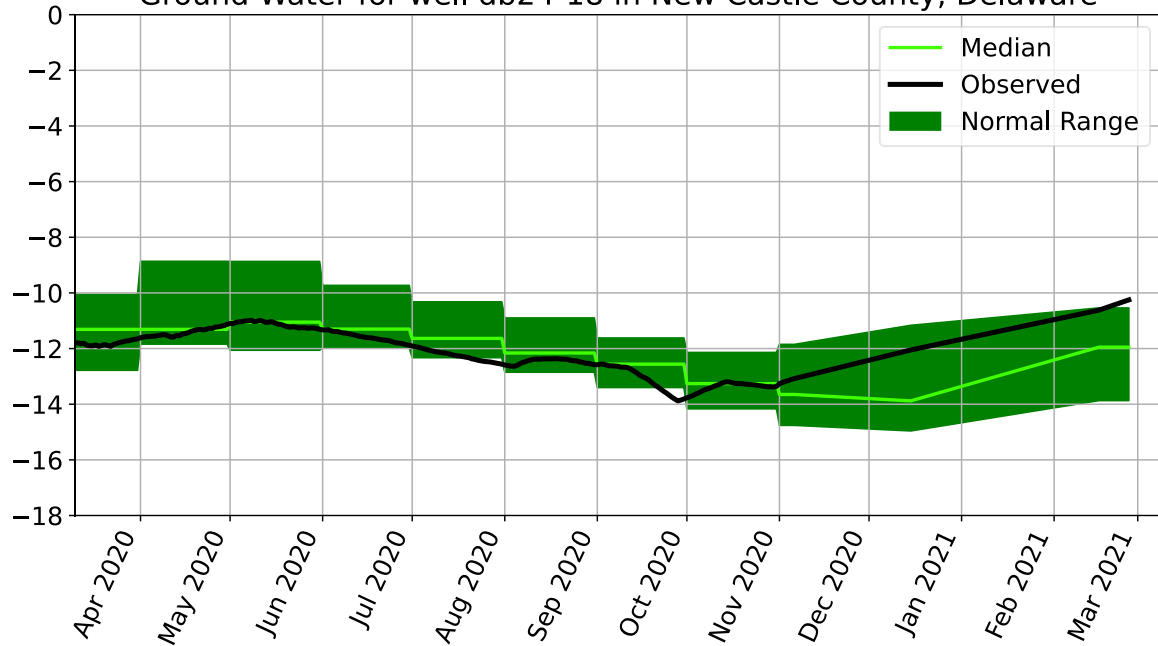


### Burlington County, NJ Observation Well



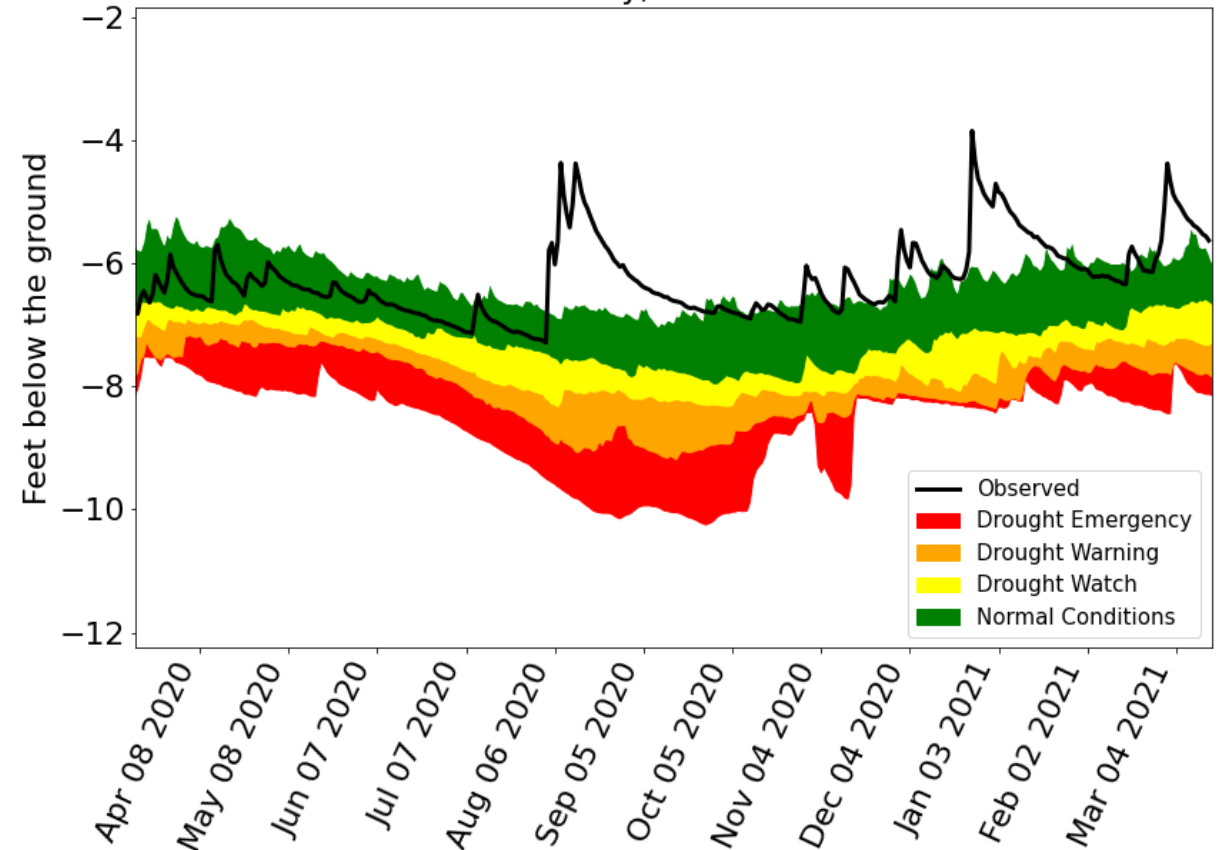
# Lower Basin

Ground Water for well db24-18 in New Castle County, Delaware



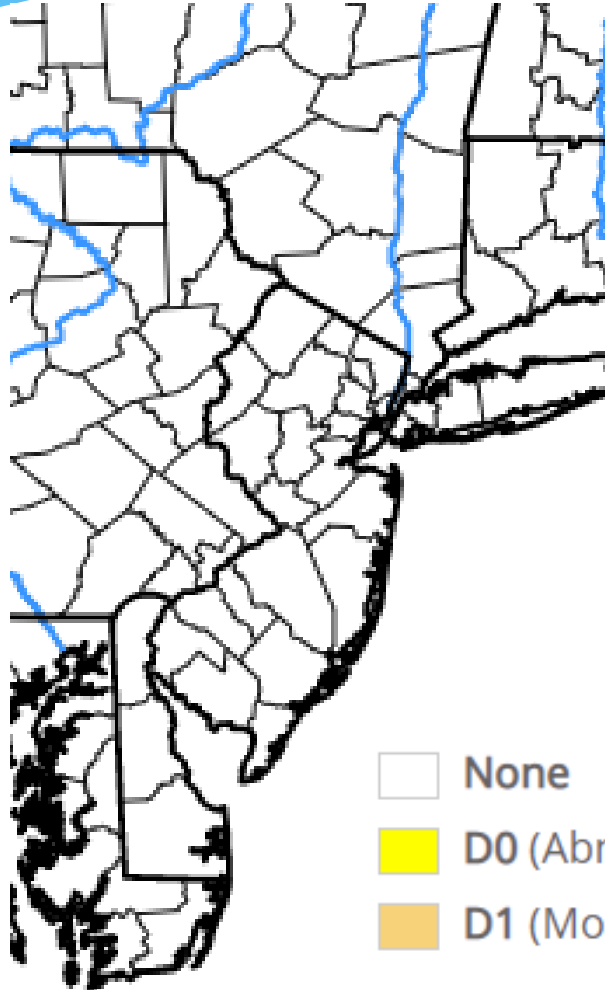
Note: Data for New Castle County, DE is updated through February 27, 2021.

Delaware County, PA Observation Well



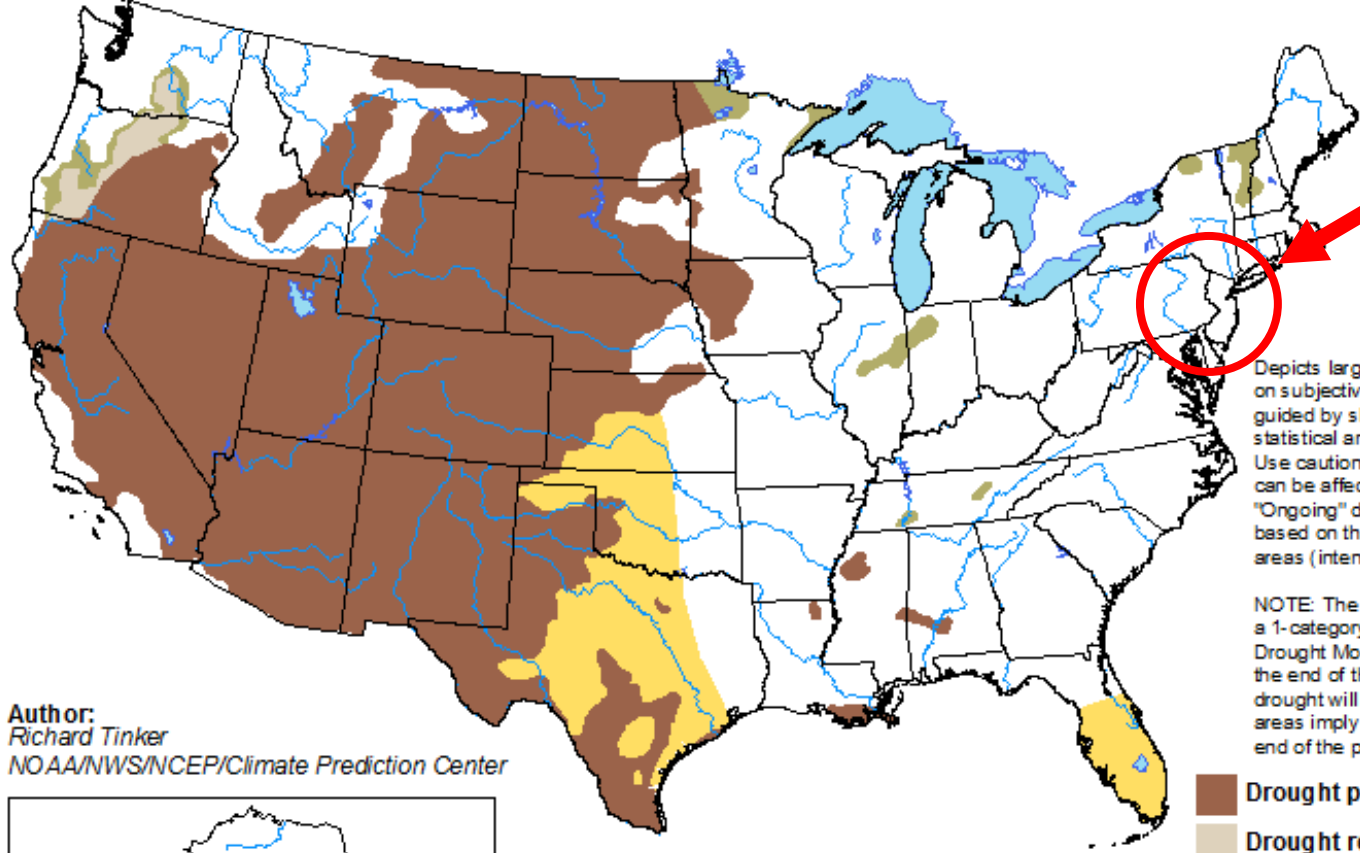
# Drought Monitor

March 9, 2021



## U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period

Valid for February 18 - May 31, 2021  
Released February 18

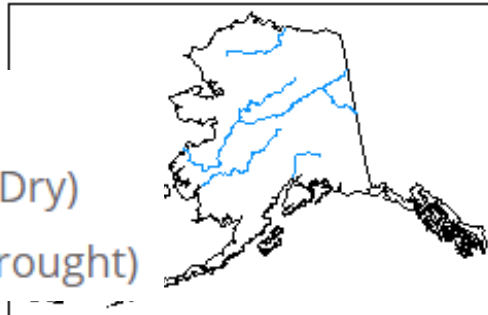


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

Author:  
Richard Tinker  
NOAA/NWS/NCEP/Climate Prediction Center

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)

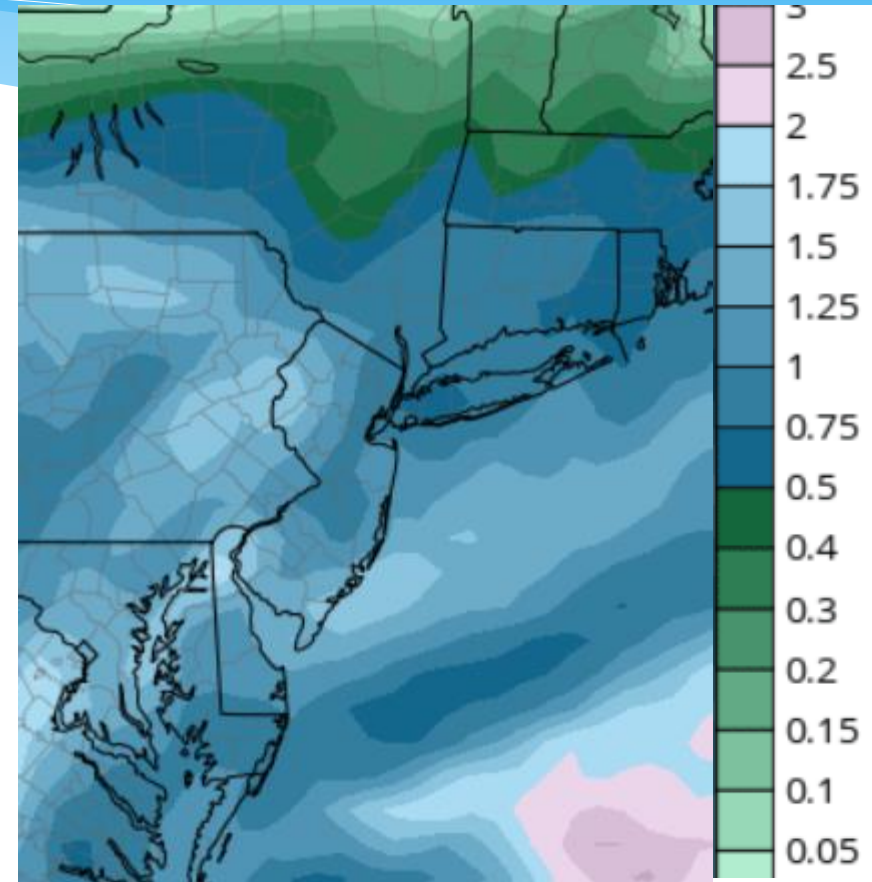


- Drought persists
- Drought remains but improves
- Drought removal likely
- Drought development likely



# Upcoming Weather

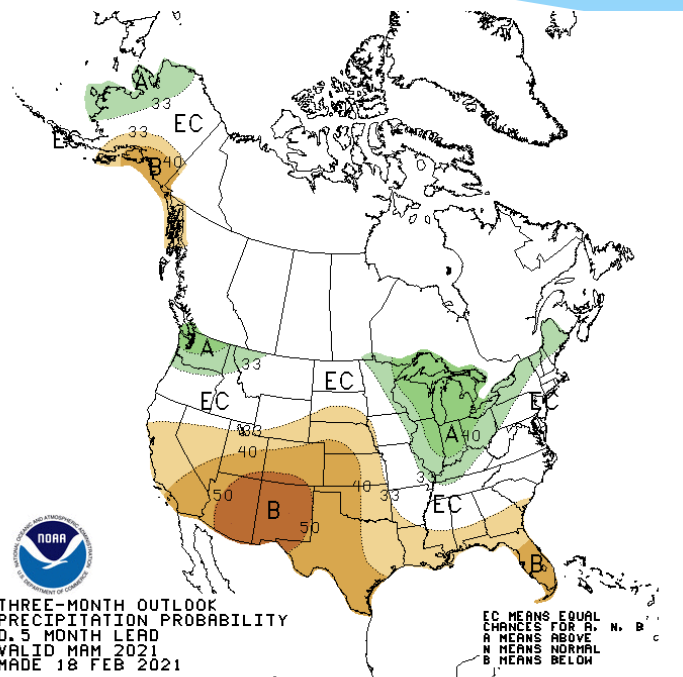
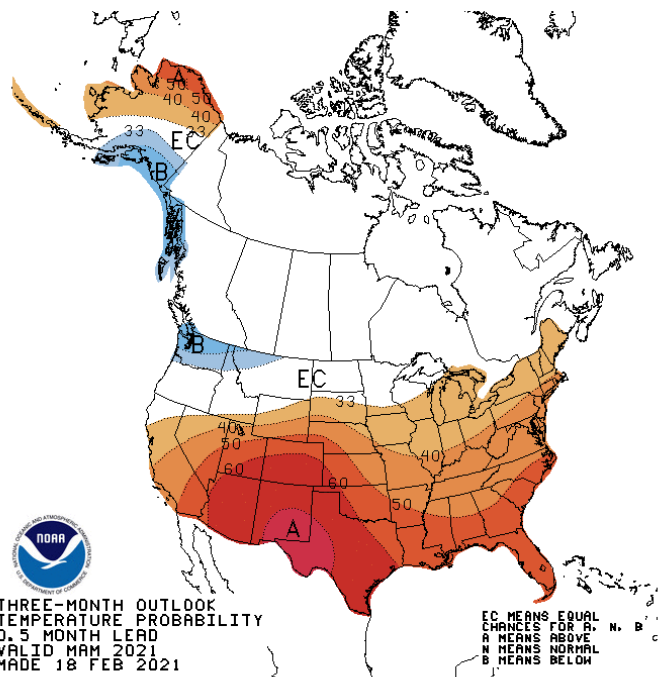
- \* Near Term (next few weeks)
  - \* Early spring snow for upper basin, rain for everyone else
  - \* Recent pattern continues into April:
  - \* Warm up for a few days → cold front with rain → cooler for a few days



One-Week forecast for total rain accumulations (GFS Model)



# Spring Outlook 2021



**Three Month Outlook** from Climate Prediction Center shows a 40% to 50% chance of above normal temperatures. Precipitation has equal chances of being above or below normal – toss up!

**Philadelphia April Normal: 60 – 70 degrees**

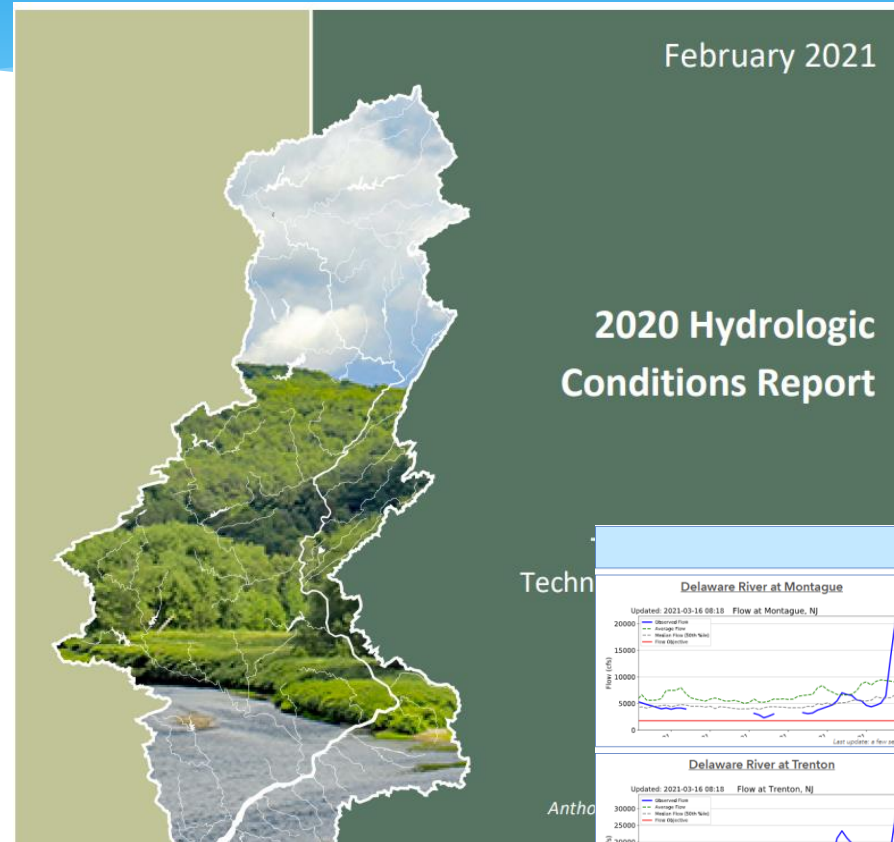
**Philadelphia Spring Normal: 11 inches**

**Binghamton April Normal: 48 – 60 degrees**

**Binghamton Spring Normal: 10 inches**

# For more information...

- \* Annual Hydrologic Report for 2020 has been posted here:  
<https://www.nj.gov/drbc/library/documents/2020Hydrologic-Conditions-Rpt.pdf>
- \* Graphics update daily on our dashboard here:  
<http://hydrosnap.drbc.net>



February 2021

2020 Hydrologic Conditions Report

Techn

Antho

