

Flood damages average \$3.3 billion annually

Floods account for about 80% of all presidential disaster declarations

## Flood

Any high flow, overflow, or inundation by water which causes or threatens damage



Route 2 - Brunswick, NY - July 14, 2021



## Flash Flood

A rapid and extreme flow of high water into a normally dry area, or a rapid water level rise in a stream or creek. Requires immediate action to protect life and property!



Route 22 - Whitehall, NY - August 24, 2020

## Street/Poor Drainage Flooding

Usually dissipates shortly  
after heavy rain ends



Albany, NY



## River Flooding

Usually continues until  
after river crests



Dolgeville, NY - November 1, 2019

## ICE JAMS

### WHAT ARE ICE JAMS?

They are chunks of clumped up ice blocking the flow of a river, stream, or creek.

### WHY DO THEY DEVELOP?

Runoff from snow melt and/or rainfall can cause rivers to swell and break up the ice.

### WHEN DO THEY OCCUR?

They typically occur in the springtime, but can happen during warm spells in the winter.

### WHERE DO THEY FORM?

Sharp bends, confluences, bridges, or other obstructions.

### WHAT ARE THE IMPACTS?

Upstream flooding from the water building behind the jam.  
Flash flooding due to rapid release of an ice jam.

[weather.gov/safety/flood](https://weather.gov/safety/flood)



## During River Ice Formation Period

- Freeze Up Jams

## During River Ice Breakup Season

- Break Up Jams including mid-winter “thaw” Jams

## Ice Jams Typically Occur

- Obstructions in the Channel: Islands, Locks, Bridge Piers, Docks
- Changes in the Channel: Narrowing of the Channel, Bends, Gorges, Intact Ice Cover
- Change in the Channel Depth: Deep water to Shallow water
- Merger of River Channels



French Creek - Erie County PA

## Freeze Up Jams:

- Early to mid-winter formation
- Consistent sub-freezing temperatures
- Locks into river until air warms
- Natural flows will show steady or declining discharges



Hudson River – January 25, 2019

## Two primary physical processes for ice breakup

- Thermal Breakup: warming, insolation, deteriorates ice in place
- Mechanical Breakup: increase in flow stresses the ice cover causing cracks, fragmentation and movement
  - Breakup events typically a combination
  - Mechanical breakup is most dangerous due to flow and large ice fragments



- Long, gradual warming period with limited rainfall
- Ice cover thins, weakens and melts in place
- February 2015 in NY State
- Usually there is little to no issue with ice jams and flooding in this scenario

# When Will Ice Break Up?



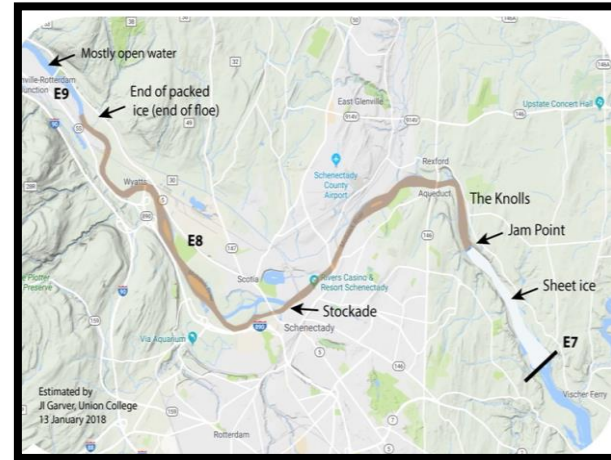
Seasonally, it is fairly predicable.

Situationally, specific prediction is unlikely.

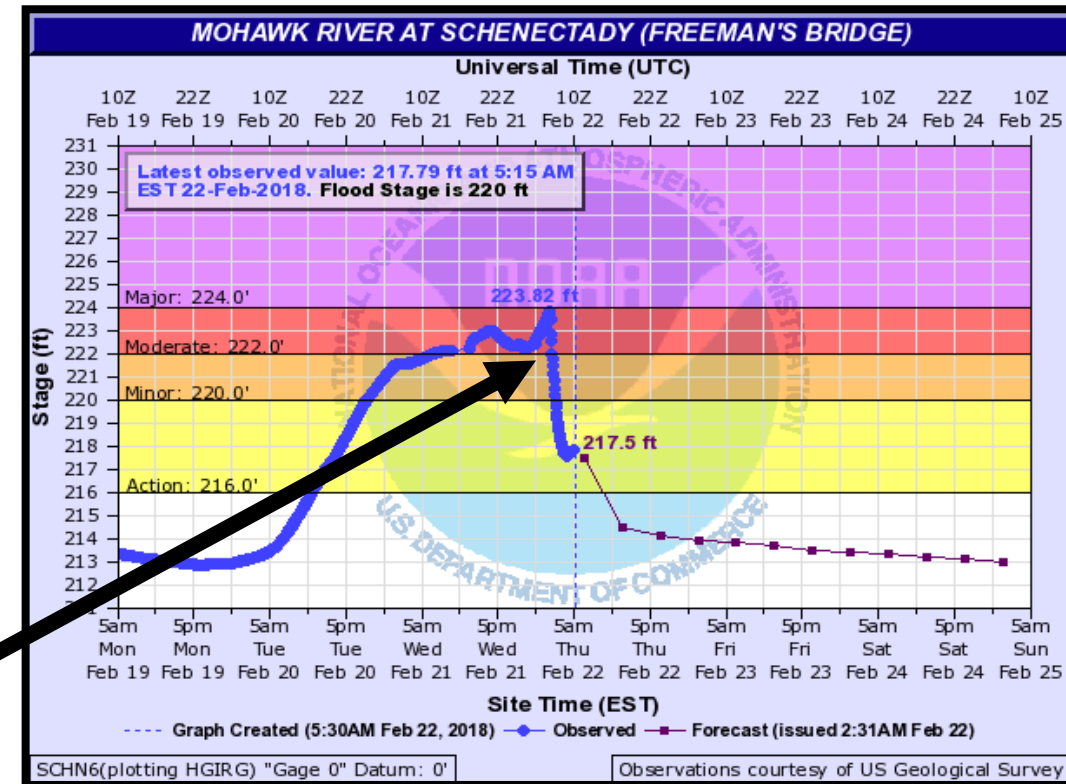
Watch for:

- Daily average temperatures above 42 degrees
- Heavy rainfall\* + snow melt
- Forecast rises in water level of at least 3 times the ice thickness

\*most important



## February 2018 Mohawk River Ice Jam



Jam Release during the overnight February 22, 2018