2020 Spring Flood Outlook

Covering Central/Southern Minnesota and Western Wisconsin

March 2, 2020
Overview

Overview of Flood Potential for spring 2020
Review the flood factors
Compare to 2019 for reference

Look at the long range weather trends

Look at where to find current info
Snowmelt Flood Factors

- **Soil Moisture**
  - Saturated soil leads to more runoff
- **Frost Depth**
  - Deep frozen soil leads to greater runoff
- **Base River Flow**
  - Where are we starting from?
- **Snowpack/Snow Water**
  - One major source of runoff; Snow Water Equivalent (SWE) is the main measurement
- **Spring Temperatures/Humidity/Wind**
  - Weather factors can increase/decrease runoff
- **Spring Precipitation**
  - Generally the biggest wild card, have the greatest effect on flood intensity
Last Year -- Spring 2019
Similar Start to 2020

• Soil Moisture
  – Wet autumn of 2018 left soil moisture above normal before freeze up

• Frost Depth
  – 2 to 4 foot frost depth over the entire region...fairly deep frost

• Snowpack/Snow Water
  • Well above normal, at 2.5 to 4.5 inches over a widespread area, with some 5-6 inch reports in the Minnesota headwater areas and western/northern Wisconsin. This ranks near historical high levels for early March.

• Temperatures / Precipitation
  – Let’s see what happened...
Spring 2019 - Temperatures

Daily Temperature Data – Eau Claire Area, WI (ThreadEx)


- Observed temperature range (2019)
- Normal temperature range
- Record Max
- Record Min

Powered by ACIS

National Weather Service
Twin Cities/Chanhassen, MN

Weather-Ready Nation
National Oceanic and Atmospheric Administration
Spring 2019 - Precipitation
Spring 2019 - Precipitation

Accumulated Precipitation – Eau Claire Area, WI (ThreadEx)

Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values

Precipitation (inches)

Feb 13  Feb 27  Mar 12  Mar 26  Apr 9


Powered by ACIS
Spring 2019 Results
Let’s Look at 2020...

Current Soil Conditions

River Levels

Frost Depth

Long Range Weather Trends
Setting up for Spring 2020

Soil Moisture over most of the upper Midwest is the basically the highest on record for the first of March.
A piece of good news! Frost depth is fairly shallow.
2020 Precip so far

Accumulated Precipitation – Minneapolis–St Paul Area, MN (ThreadEx)

1.5 inches of water since January 1

2020 accumulation  Normal  Lowest (1885)  Highest (1881)
2020 Snowfall so far

Accumulated Snowfall - Eau Claire Area, WI (ThreadEx)

Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values

7 inches since mid January
Setting up for Spring 2020
Modeled Snow Depth vs. Normal

Snow depth fairly close to normal; and less than last year at this time
Setting up for Spring 2020

Modeled Snow Water Equivalent (SWE)

Water content decreasing over past two weeks
Setting up for Spring 2020
Modeled Snow Water Equivalent (SWE)
24 hour change

Lost from a half inch to a full inch of water yesterday in SW MN!
## Setting up for Spring 2020

*Where We Stand on March 2nd…*

<table>
<thead>
<tr>
<th>Threat</th>
<th>Impact to Potential Spring Flooding</th>
<th>Timing</th>
<th>Trend Since Jan</th>
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<tr>
<td>High base river levels</td>
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*Setting up for Spring 2020*

*Where We Stand on March 2nd…*
Mild and Dry for early March...
Biggest Concern right now – late March into early April
Mar – Apr - May 2020 Weather Trend
Chance of Exceeding Flood Levels throughout the Spring

For Long Range/Seasonal Planning, use the Long Range Flood Risk tab to evaluate overall threats.

Potential for Moderate or Major flooding remains, but is decreasing with each dry day.

Much will be determined by the temperatures and rain/snow in late March and April. A heavy rain event on top of the saturated soils during/after the melt will lead to significant flooding.
As melting begins, shift attention to current forecast page

Accounts for actual temperature and precip forecasts, rather than scenarios.

For today, starting to see some potential rises to flood stage in SW MN, upper Minnesota and tribus.

Expect to rapidly expand as melt increases this weekend.
Setting up for Spring 2020

Final Thoughts

Due to the long duration of wetter than normal conditions, area lakes, wetlands, ponds, ditches, and even groundwater are running exceptionally high. Flooding of lakes, ponds, lowlands, fields has a high probability of occurring even with normal rainfall this spring.

Also, as initial melt reaches frozen rivers, ice jams may form and cause very rapid rises.

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<td>Potential increase late in melt.</td>
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Contact Info

Final Update to be issued March 12th, 2020.

nws.twincities@noaa.gov
952-361-6671 for 24/7 service

Follow us on social media:
Facebook – US National Weather Service Twin Cities MN
Twitter -- @NWSTwinCities

--Lots of good timely info there, including safety messaging

Note: Craig Schmidt will be unavailable March 9-16 😞