Spring Flood Outlook
March 2, 2018

National Weather Service
WFO Twin Cities / Chanhassen

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Typical Spring Flood Factors

• Past Precipitation / Soil Moisture
  What is our soil/streamflow status going into flood season?

• Snowpack
  What will we have to fuel the streamflow this spring?

• Frost Depth
  Will runoff flow freely?

• Weather Outlook -- for potential snow or rain
  Biggest wild card every year...what will we get in the spring?

Let’s evaluate them...
Water Year Precipitation – Since October 1, 2017

Fairly close to “normal” over the area, thanks mostly to a wet October and a wet February. About 5 to 8 inches over central/southern Minnesota and western Wisconsin (left image); close to 100 percent of normal over nearly all of the Minnesota and Mississippi basins (right image).
To illustrate: November through January was very dry (left image), while February was near to above normal (right image)
Nothing too extraordinary; a band of slightly above normal soil moisture across the central part of the area.
Winter Streamflow

Streamflows were above normal heading into the freeze-up, and are mostly close to normal as we head toward spring.

Let’s check out the snow pack →
Nothing unusual; near 1 inch in the upper Minnesota, and around 2 to 3 inches elsewhere. Recent warm temperatures have decreased the snowpack, though most of that water is still above ground.

Frost Depth

Mostly 2 to 3 feet, typical for March 1st around the region.
Spring Flood Factors (So Far)...

- Past Precipitation / Soil Moisture
  - Close to normal for the winter.

- Snowpack/Snow Water Equivalent
  - Close to normal for the winter.

- Frost Depth
  - Near normal for March 1st.

Let’s cover the long range outlook next

- Early Spring Snow Potential

- Spring Rains
  Heavy rainfall in the spring would cause the highest flood potential.
Mon/Tue – about an inch of water expected, mostly snow north, rain/snow mix over central MN-WI and southward.

This rain could cause urban/ponding issues due to clogged/frozen storm drains, but not expecting a major effect on rivers.
CPC Outlook – March

Temperature trend – near to slightly above normal for the month

Precipitation trend – Fairly strong signal toward above normal pcpn for March (may be influenced by the early storm next week)

Normal pcpn is about 1.5 to 2.5 inches
April: Models show potential for *above average precipitation* sometime during April. Temperature trend (not shown) is slightly *above normal*.

This model tends to bounce around, so confidence is low.
Spring Flood Factors – Final Tally

• Past Precipitation / Soil Moisture
  • Close to normal for the winter.

• Snowpack/Snow Water Equivalent
  • Close to normal for the winter.

• Frost Depth
  • Near normal for March 1st.

• Early Spring Snow Potential
  Would need multiple major snowfalls to greatly increase flood potential. Probability is near average at this point.

• Spring Rains
  Chances are at least normal, even a little above normal, through the spring. This is our main flood driver!

• Watch 6-10 day forecast trends closely this spring!
  http://www.cpc.ncep.noaa.gov/products/predictions/610day/
Chance of Exceeding Flood Levels


River forecasters run long range river models, including current soil moisture profiles, snow pack info, and 45-day model rainfall forecasts. The result is a graph of probability of reaching various stages.

- **Black Line** represents the newest forecast – **Blue Line** represents historical average
- When the black line is to the left of the blue line, the flood threat is above normal.
For example

Chance of Exceeding Flood Levels – Minnesota River at Jordan

Black Line represents the newest forecast – Blue Line represents historical average. Chance of reaching minor flood stage this spring is about 70 percent, above the 30% historical average. Note that threat of Moderate or Major flooding is above historical average as well, but only slightly.
Chance of Exceeding Flood Levels this spring – as of March 2, 2018

Orange -- >50 percent chance of reaching minor flood levels
Red -- >50 percent chance of reaching moderate flood levels

A handful of our sites are above normal as of today.
Updated Probability Graphics

Probability graphics are available at:

https://water.weather.gov/ahps2/long_range.php?wfo=MPX

The flood threat is generally near to a little above normal for minor flooding for most points in our area. The biggest factor is the occurrence (or lack of) heavy rain events in March and April. The chances of these rains is also a little above historical normal...so please be prepared!
More Info?

This slide set will be updated later in March as new information becomes available.

Call us **anytime** on the 24/7 Operations Line: 952-361-6671

During the week, call Service Hydrologist Craig Schmidt: 952-368-2542; craig.schmidt@noaa.gov