Spring Flood Outlook 2019
Updated Outlook

Greater than 50% chance of exceeding river flood levels during Mar-Apr-May

NWS Quad Cities
Weather Forecast Office

March 7, 2019

Jessica Brooks
Service Hydrologist
NWS Quad Cities
Factors Considered for this Flood Outlook

- Antecedent Conditions
- Snow Cover/Water Equivalent
- Frost Depth
- Soil Moisture
- Streamflows
- Weather Forecasts/Outlooks

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Antecedent Conditions: Fall Moisture

Accumulated Precipitation (in)
September 1, 2018 to November 30, 2018

Accumulated Precipitation: Percent of Mean
September 1, 2018 to November 30, 2018
Winter Precipitation

Accumulated Precipitation: Percent of Mean December 1, 2018 to December 31, 2018

Accumulated Precipitation: Percent of Mean January 1, 2019 to January 31, 2019

Accumulated Precipitation: Percent of Mean February 1, 2019 to February 28, 2019
Winter Precipitation

Accumulated Precipitation (in)
December 1, 2018 to February 28, 2019

Accumulated Precipitation: Percent of Mean
December 1, 2018 to February 28, 2019

Midwestern Regional Climate Center
Illinois State Water Survey, Prairie Research Institute
University of Illinois at Urbana-Champaign
Entire area above normal seasonal snowfall.

Circled area has snowfall in of 10 to 20+ inches above normal.

Some parts of Minnesota and Wisconsin have up to 40 inches above normal or nearly 300% of normal.
Current Snow Depth

Modeled Snow Depth forecasted for 2019 February 22, 17:00 UTC

Modeled Snow Depth for 2019 March 7, 6:00 UTC

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Frost Depth

https://www.weather.gov/ncrfc/LMI_FrostDepthMap

* Can overlay current snow analysis from NOHRSC and precipitation forecast from WPC
Drought Status

U.S. Drought Monitor
Midwest

March 5, 2019
(Released Thursday, Mar. 7, 2019)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

<table>
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<th>Date</th>
<th>D0</th>
<th>D1</th>
<th>D2</th>
<th>D3</th>
<th>D4</th>
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<tr>
<td>Current</td>
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<td>Last Week</td>
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<td>3 Months Ago</td>
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<td>Start of Calendar Year</td>
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<td>Start of Water Year</td>
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</tbody>
</table>

Intensity:
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Eric Luebbersen
U.S. Department of Agriculture

http://droughtmonitor.unl.edu/
Near to above normal current streamflows.

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Above normal streamflows throughout the area. Some abnormally high streamflows.
Ice Jams

- Excessive runoff from snowmelt or rainfall causes the river to rise. Ice is rapidly pushed up, causing it to break up and flow downstream. Ice jams and associated flooding can result from this process.
- Ice Jams will be a threat until all rivers have no ice cover.

Break-up Jams
- Form mid to late-winter
- Air temperatures near freezing
- Unsteady water flow
- Composed of broken sheet and border ice
- Moderate to very rough surface
- Highly unstable, can release suddenly

Mid-winter Jams
- Form with mid-winter thaw
- Characteristics of break-up jams
- Refreeze in place forming significant blockage
- May result in more jamming

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Two storm systems to impact the region.

- Saturday into Sunday
- Tuesday night through Thursday (13th-15th)
Weekend Storm System

- Saturday into Sunday
- Rain across the southern part of the Upper Mississippi River basin.
- Snow across the northern part of the Upper Mississippi River basin.

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Weekend Storm System
(Saturday into Sunday)

Probabilities for at least 4 inches of snow
Potential System for Next Week (Tuesday evening through Thursday)

Probability of Measurable Snow

Tuesday

Wednesday

Snow

Rain

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Week 2 Weather Outlook
Weeks 3 & 4
Weather Outlooks

https://www.cpc.ncep.noaa.gov/

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Outlooks

National Weather Service
Advanced Hydrologic Prediction Service

Chance of Exceeding River Stage at Mississippi River at Rock Island L&D 15 (ROK12)
Forecast for the period 03/11/2019 - 06/09/2019
This is a conditional simulation based on the conditions as of 03/04/2019

Weekly Chance of Exceeding River Stage at Mississippi River at Rock Island L&D 15 (ROK12)
Forecast for the period 02/11/2019 - 06/09/2019
This is a conditional simulation based on the conditions as of 03/04/2019

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Probabilistic Flood Outlook
95% Chance – High Probability

Greater than: 95% chance of exceeding river flood levels during Mar-Apr-May

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Probabilistic Flood Outlook
50% Chance
Probabilistic Flood Outlook
25% Chance
Probabilistic Flood Outlook
5% Chance – Low Probability
Overview of Flooding Threat

• Saturated Soils & extensive area of Frozen Soils
• Above normal river levels going into spring
• Significant snowpack and associated water equivalent across much of the region
• Snowmelt alone will likely cause many rivers to rise above flood stage
• Ice jams may continue to be problematic
Mississippi River – Well Above Normal
Tributary Rivers – Above to Well Above Normal

- High confidence on widespread rises to near or above flood stage on nearly all rivers (especially those with source regions where snowpack currently exists)
- Low confidence on the peak severity on eventual flooding

- The rate of the snowmelt and additional spring rains will be essential to the severity of flooding that occurs this spring

- Ice Jam flooding will be a threat until all rivers are ice free
Information Sources

- Advanced Hydrologic Prediction Service (AHPS) (observations and forecasts, etc) — water.weather.gov
- Local Quad Cities WFO AHPS — water.weather.gov/ahps2/index.php?wfo=DVN
- North Central River Forecast Center — weather.gov/ncrfc
- National Operational Hydrologic Remote Sensing Center (snow information) — nohrsc.noaa.gov
- NWS Weather Prediction Center — wpc.ncep.noaa.gov
- NWS Climate Prediction Center — cpc.ncep.noaa.gov

Quad Cities WFO Forecast Discussions (technical weather and hydrology discussion)
forecast.weather.gov/product.php?site=DVN&issuedby=DVN&product=AFD

Find out more information at: www.weather.gov/dvn/2019_springfloodoutlook

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Spring Flood Outlook

Information can be found from the NCRFC

https://www.weather.gov/ncrfc/

From the Quad Cities Weather Forecast Office:

Quad Cities - http://www.weather.gov/dvn/

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