

Probabilistic Hydrologic Outlook  
National Weather Service Quad Cities IA IL  
1230 PM CST Thu Mar 01 2018

...2018 Updated Spring Flood and Water Resources Outlook..

This is the second of two planned Spring Flood and Water Resource Outlooks for the Quad Cities Hydrologic Service Area, which covers portions of eastern Iowa, northwest and west central Illinois, and extreme northeast Missouri. Rivers included in this outlook are the Mississippi River and its tributaries from above Dubuque, Iowa to below Gregory Landing, Missouri. The primary tributary systems include the Maquoketa, Wapsipinicon, Cedar, Iowa, Skunk, and Des Moines Rivers in Iowa; the Fox River in Missouri; and the Pecatonica, Rock, and La Moine Rivers in Illinois.

The outlook is for the time period from mid March through May.

...The risk for flooding this spring, beyond the middle of March, is above normal for the Mississippi River, near to above normal on rivers in Illinois, and near normal for rivers in Iowa and Missouri...

Main Points:

- \* The northern part of the Mississippi River basin is vulnerable to extreme runoff given a quick snowmelt and heavy rainfall, which could cause flooding along the entirety of the Mississippi River this spring
- \* Wet soils and high streamflows following heavy rains in February will keep rivers across Illinois susceptible to additional flooding this spring.
- \* While snowmelt flooding remains possible along the Mississippi River, heavy rains will be needed for flooding this spring along local rivers and would contribute to more severe flooding on the Mississippi River.

NOTE: A heightened risk for flooding is not an indicator of severity.

Many factors are considered when determining the overall flood risk for the upcoming spring season. The combination of these influences factor into the final determination. These factors are discussed in detail below.

.Seasonal Precipitation: Near to above Normal

After well above normal precipitation during the second part of February, total precipitation for the season averages out to near normal for the local area. The wettest conditions occurred over Illinois, with amounts in February of 3 to 5 inches, where slightly lesser amounts were observed over the Iowa and Missouri portions of the area.

.Snow Cover and Liquid Water Content: Near Normal

Additional snow fell across the northern parts of the Upper Mississippi River basin to add to the snowpack through the end of February.

The current snowpack resides north of a line from far north central Iowa to the Green Bay, WI area. Liquid water content in snowpack is

measuring at 1 to 4 inches, with a some localized areas of 4 to 6 inches in northern Wisconsin.

.Soil Conditions: Near to Above Normal

Ponded surface water has soaked into the ground as it thawed across much of the area during the last week of February. This has allowed moistening of the soils. Across Iowa and Missouri, where the soils are less saturated, more water can be absorbed leading to lowered chances for flooding when compared to locations in Illinois, where soils are more saturated.

.Frost Depth: Near to Above Normal

The ground has thawed across much of the local area, which will lower flooding potential on area rivers given unsaturated soils. However, the upper portions of the Mississippi River watershed remain frozen to depths of 1 to 4 feet. Conditions that would cause higher chances for flooding on the Mississippi River would be a quick melt of the snowpack, heavy rain, or a combination of heavy rain and a melting snowpack as frozen ground will contribute to escalated runoff amounts.

.River Conditions: Near to Above Normal

Measurements from USGS streamgages are indicating streamflows are near to above normal across the area. This leads to a higher chance for flooding as lesser amounts of runoff are needed to rise the rivers to flood stage.

.Ice Jam Flooding: Below Normal

River ice has lessened considerably through the end of February due to warm temperatures as well as high streamflows pushing ice out of the rivers. Going through March, warming temperatures will lead to the continued melting of river ice which will lessen the chances for ice jams, and subsequent flooding. However, any rivers that still have ice cover will still be vulnerable to ice jam flooding.

.Drought:

Abnormally dry to moderate drought conditions are ongoing from Missouri into southeast Iowa. Conditions have improved because of the rainfall the end of February.

.Weather Outlooks:

The probabilities are above normal for both temperatures and precipitation through the month of March. Going through May, the next three months look to have higher probabilities for above normal precipitation, with no clear signal for above, near, or below normal for temperatures.

The above normal potential for precipitation through the coming months would lead to increased potential for flooding.

.Numerical River Outlooks:

In Table 1 below, the current (CS) and historical (HS) or normal probabilities of exceeding minor, moderate and major flood stages are listed for the valid time period.

CS values indicate the probability of reaching a flood category based on current conditions.

HS values indicate the probability of reaching a flood category based on historical or normal conditions.

When the value of CS is greater than HS, the probability of exceeding that level is higher than normal. When the value of CS is less than HS, the probability of exceeding that level is lower than normal.

...Table 1--Probabilities for minor, moderate and major flooding...  
Valid Period: 03/11/2018 - 06/02/2018

Location	Categorical Flood Stages (ft)			Current and Historical Chances of Exceeding Flood Categories as a Percentage (%)					
	Minor	Mod	Major	Minor		Moderate		Major	
				CS	HS	CS	HS	CS	HS
:Mississippi River									
Dubuque LD11	16.0	17.0	20.5	70	48	56	35	18	10
Dubuque	17.0	18.0	21.5	78	52	69	42	18	12
Bellevue LD12	17.0	18.0	20.0	48	32	33	22	18	10
Fulton LD13	16.0	18.0	20.0	71	51	44	30	18	11
Camanche	17.0	18.5	20.5	69	47	45	31	19	13
Le Claire LD14	11.0	12.0	13.5	71	50	50	32	28	16
Rock Island LD15	15.0	16.0	18.0	78	59	71	51	33	20
Ill. City LD16	15.0	16.0	18.0	75	56	63	44	31	20
Muscatine	16.0	18.0	20.0	80	60	63	44	28	19
New Boston LD17	15.0	16.5	18.5	86	62	71	54	45	27
Keithsburg	14.0	15.5	17.0	83	62	65	49	37	27
Gladstone LD18	10.0	12.0	14.0	85	62	64	48	30	23
Burlington	15.0	16.5	18.0	81	61	64	48	34	26
Keokuk LD19	16.0	17.5	19.0	41	35	28	24	26	11
Gregory Landing	15.0	18.0	25.0	81	64	53	41	<5	<5
:Maquoketa River									
Manchester Hwy 20	14.0	17.0	20.0	15	21	12	14	6	6
Maquoketa	24.0	26.0	28.5	10	16	<5	11	<5	6
:Wapsipinicon River									
Independence	12.0	13.0	15.0	11	14	8	9	7	8
Anamosa Shaw Rd	14.5	18.0	21.5	18	25	12	16	6	6
De Witt 4S	11.0	11.5	12.5	70	65	62	60	23	28
:North Skunk River									
Sigourney	16.0	18.0	21.0	46	55	27	40	5	11
:Skunk River									
Augusta	15.0	17.0	20.0	32	43	22	30	7	14
:Cedar River									
Vinton	15.0	18.0	19.0	14	21	6	8	<5	6
Cedar Rapids	12.0	14.0	16.0	21	28	10	16	6	8
Conesville	13.0	15.0	16.5	65	55	19	26	6	8

:Iowa River									
Marengo	14.0	15.5	18.5	: 72	74	56	62	<5	5
Iowa City	22.0	23.0	25.0	: <5	8	<5	7	<5	<5
Lone Tree	15.0	16.5	18.0	: 10	24	7	13	<5	10
Columbus Jct	19.0	22.0	23.0	: 50	53	16	22	12	14
Wapello	20.0	22.0	25.0	: 67	60	34	47	11	12
Oakville	10.0	12.0	19.0	: 48	53	16	26	<5	<5

:English River									
Kalona	14.0	16.0	18.0	: 44	47	22	33	8	13

:Des Moines River									
Keosauqua	22.0	25.0	27.0	: 6	9	<5	<5	<5	<5
St Francisville	18.0	22.0	25.0	: 31	40	<5	5	<5	<5

:Fox River									
Wayland	15.0	18.0	20.0	: 19	25	8	10	<5	<5

:Pecatonica River									
Freeport	13.0	14.0	16.0	: 38	37	27	27	10	11

:Rock River									
Como	12.5	15.5	18.0	: 25	20	6	8	<5	<5
Joslin	12.0	14.0	16.5	: 79	49	39	28	12	14
Moline	12.0	13.0	14.0	: 70	51	39	30	26	19

:Green River									
Geneseo	15.0	16.5	18.0	: 26	23	14	16	10	9

:La Moine River									
Colmar	20.0	22.0	24.0	: 69	66	51	46	19	18

Legend  
CS = Conditional Simulation (Current Outlook)  
HS = Historical Simulation  
ft = Feet

In Table 2 below, the 95 through 5 percent columns indicate the probability of exceeding the listed stage levels (ft) for the valid time period.

...Table 2--Exceedance Probabilities...

Chance of Exceeding Stages at Specific Locations							
Valid Period: 03/11/2018 - 06/02/2018							
Location	95%	90%	75%	50%	25%	10%	5%
:Mississippi River							
Dubuque LD11	12.5	13.8	15.6	17.3	19.0	23.0	24.3
Dubuque	14.0	15.4	17.2	19.0	20.6	24.4	25.8
Bellevue LD12	12.5	13.6	15.2	16.9	18.4	21.8	22.6
Fulton LD13	12.6	14.1	15.7	17.4	19.1	22.5	23.6
Camanche	13.7	14.8	16.3	18.1	19.9	23.8	25.1
Le Claire LD14	9.0	9.8	10.6	12.1	13.6	16.6	18.0
Rock Island LD15	12.6	13.9	15.5	17.1	18.7	21.7	22.6
Ill. City LD16	12.3	13.4	15.0	16.8	18.8	22.5	23.6
Muscatine	13.8	15.0	16.7	18.8	20.5	23.3	24.2
New Boston LD17	13.6	14.6	16.0	18.0	20.0	23.0	23.8
Keithsburg	12.8	13.2	14.8	16.4	18.5	20.3	21.4

Gladstone LD18	8.9	9.3	11.0	12.8	15.2	17.5	18.7
Burlington	13.8	14.2	15.6	17.2	19.6	21.5	23.0
Keokuk LD19	10.8	11.1	13.1	15.4	19.1	20.7	22.7
Gregory Landing	13.0	13.3	15.9	18.1	21.6	23.3	24.9
:Maquoketa River							
Manchester Hwy 20	6.2	7.0	8.1	9.5	11.9	18.4	20.3
Maquoketa	12.6	13.1	14.5	16.3	19.2	23.9	25.1
:Wapsipinicon River							
Independence	5.8	6.5	6.9	7.6	8.7	12.2	16.8
Anamosa Shaw Rd	7.7	8.8	9.6	11.4	13.1	18.5	22.5
De Witt 4S	9.1	9.6	10.8	11.8	12.4	13.0	13.4
:North Skunk River							
Sigourney	6.1	7.9	13.6	15.5	18.2	19.5	21.2
:Skunk River							
Augusta	4.1	5.5	9.2	13.3	16.1	18.4	22.3
:Cedar River							
Vinton	8.4	8.6	10.5	12.4	13.6	15.7	18.8
Cedar Rapids	6.1	6.6	7.7	9.3	11.1	14.0	18.4
Conesville	9.8	10.4	12.2	13.6	14.7	15.7	17.0
:Iowa River							
Marengo	10.2	10.8	13.9	15.7	16.8	17.8	18.1
Iowa City	13.5	14.0	16.1	18.2	19.6	19.7	19.8
Lone Tree	9.0	9.5	12.0	13.4	14.4	15.2	17.5
Columbus Jct	14.4	14.9	17.4	19.0	20.9	23.7	24.9
Wapello	16.8	17.2	19.7	21.1	22.8	25.4	26.5
Oakville	5.8	6.3	8.5	9.9	11.2	13.9	15.0
:English River							
Kalona	6.1	7.1	11.2	13.6	15.9	17.4	18.9
:Des Moines River							
Keosauqua	13.3	13.9	17.6	18.7	20.0	21.2	22.1
St Francisville	10.7	11.4	15.8	17.1	18.7	19.8	21.9
:Fox River							
Wayland	3.3	4.4	6.9	10.2	14.3	17.3	19.0
:Pecatonica River							
Freeport	9.8	10.2	10.9	12.7	14.1	16.1	17.0
:Rock River							
Como	9.5	9.6	9.8	11.2	12.4	14.6	15.9
Joslin	11.8	11.8	12.1	13.3	14.6	17.3	19.6
Moline	11.4	11.5	11.8	12.7	14.1	15.5	17.5
:Green River							
Geneseo	5.9	6.8	9.8	12.5	15.1	17.9	20.7
:La Moine River							
Colmar	10.8	14.7	18.6	22.1	23.6	25.2	25.7

In Table 3 below, the 95 through 5 percent columns indicate the probability of falling below the listed stage levels (ft) for the valid time period.

...Table 3--Non-Exceedance Probabilities...

Location	Chance of Falling Below Stages at Specific Locations						
	Valid Period: 03/11/2018 - 06/02/2018						
	95%	90%	75%	50%	25%	10%	5%
:Mississippi River							
Dubuque LD11	6.4	6.2	5.8	5.4	5.0	4.9	4.7
Dubuque	8.8	8.6	8.3	8.1	7.9	7.8	7.7
Bellevue LD12	7.1	6.7	5.9	5.3	4.9	4.7	4.4
Fulton LD13	7.0	6.7	5.9	5.2	5.0	4.8	4.7
Camanche	9.9	9.8	9.5	9.3	9.2	9.0	8.9
Le Claire LD14	6.0	5.7	5.4	5.1	4.9	4.8	4.7
Rock Island LD15	8.7	8.2	7.2	6.7	5.9	5.4	5.1
Ill. City LD16	7.5	6.8	6.0	5.4	4.8	4.4	4.1
Muscatine	9.3	8.4	7.8	7.3	6.8	6.5	6.4
New Boston LD17	9.1	8.2	7.2	6.3	5.3	4.7	4.2
Keithsburg	9.8	9.4	8.8	7.9	7.0	6.4	5.9
Gladstone LD18	5.2	4.8	4.1	3.4	2.6	2.0	1.6
Burlington	10.9	10.6	10.1	9.5	8.6	8.3	8.1
Keokuk LD19	7.2	6.8	6.2	5.5	4.9	4.1	3.3
Gregory Landing	9.4	8.7	8.1	7.1	6.8	6.6	6.4
:Maquoketa River							
Manchester Hwy 20	4.5	4.5	4.3	4.2	4.1	4.0	3.9
Maquoketa	11.7	11.5	11.2	10.9	10.6	10.3	10.1
:Wapsipinicon River							
Independence	5.3	5.2	5.1	5.1	5.0	4.8	4.8
Anamosa Shaw Rd	6.4	6.1	5.7	5.5	5.2	5.0	4.8
De Witt 4S	7.5	7.1	6.7	6.4	5.9	5.6	5.3
:North Skunk River							
Sigourney	6.2	5.8	5.2	4.8	4.4	3.8	3.6
:Skunk River							
Augusta	3.9	3.3	2.8	2.4	1.9	1.4	1.2
:Cedar River							
Vinton	4.8	4.7	4.1	3.5	3.0	2.5	2.3
Cedar Rapids	4.8	4.7	4.5	4.1	3.9	3.6	3.5
Conesville	7.8	7.6	7.3	6.6	6.2	5.6	5.4
:Iowa River							
Marengo	8.9	8.4	7.8	7.3	7.0	6.3	6.2
Iowa City	11.5	11.0	10.8	10.5	9.3	9.1	9.0
Lone Tree	7.3	7.0	6.4	5.8	4.6	4.1	3.9
Columbus Jct	12.5	12.0	11.4	10.7	10.0	9.3	8.9
Wapello	14.7	14.1	13.6	12.8	12.2	11.4	10.9
Oakville	4.2	3.6	3.2	2.5	1.9	1.2	0.8
:English River							
Kalona	5.5	5.3	5.0	4.7	4.4	4.0	3.9
:Des Moines River							
Keosauqua	13.0	12.6	12.0	11.5	11.0	10.5	10.4
St Francisville	10.2	9.7	8.7	8.0	7.3	6.6	6.4
:Fox River							

Wayland	1.9	1.8	1.5	1.4	1.3	1.0	0.9
:Pecatonica River Freeport	7.0	6.6	5.9	5.1	4.5	4.2	4.0
:Rock River Como	6.3	5.7	5.2	4.6	4.1	3.8	3.6
Joslin	8.7	8.0	7.4	6.5	5.6	5.1	4.9
Moline	9.8	9.3	9.0	8.7	8.3	8.2	8.0
:Green River Geneseo	4.4	4.2	4.1	3.9	3.6	3.2	3.0
:La Moine River Colmar	4.6	3.8	3.3	2.9	2.7	2.5	2.3

These long-range probabilistic outlooks contain forecast values that are calculated using multiple-season scenarios from 30 or more years of climatological data including current conditions of the river, soil moisture, snow cover, and 30-day to 90-day long range weather outlooks of temperature and precipitation. By providing long-range probabilities, the level of risk associated with long-range planning decisions can be determined. These probabilistic forecasts are part of the National Weather Service's Advanced Hydrologic Prediction Service (AHPS).

Information in this outlook has been collected from numerous sources, including the United States Geological Survey (USGS), the US Army Corps of Engineers (USACE), the Midwest Regional Climate Center (MRCC), and the National Operational Remote Sensing Center (NOHRSC).

Further weather and water information, including the statistical data available in graphical format, can be found at the following location: <http://www.weather.gov/dvn>. Additional information can be found at the North Central River Forecast Center's website at: <http://www.crh.noaa.gov/ncrfc>.

Regular long-range probabilistic outlooks are issued near the end of the month through the remainder of the year.

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