



Spring Flood and Water Resources Outlook #1

This flood outlook is for the National Weather Service (NWS) Omaha/Valley <u>Hydrologic Services Area</u>. This area includes eastern Nebraska and portions of southwest Iowa. It includes portions of the following rivers and their tributaries. Click a river basin below to jump to that sub-section.

Missouri River from Decatur, Nebraska to Rulo, Nebraska

Niobrara River from Verdel, Nebraska to the Missour River

Big Blue River from Surprise, Nebraska to the Kansas border.

Elkhorn River from Neligh, Nebraska to the Platte River confluence

Platte River from Duncan, Nebraska to Louisville, Nebraska

Other Tributaries to the Missouri River in Iowa and Nebraska

Questions regarding this outlook can be directed here.

Flood Outlook Highlights

- * The risk of flooding for the remainder of winter and into mid-spring is below normal. Locally heavy spring rains will cause flooding in localized areas as is the case every year. This outlook is directed towards flooding on a larger scale.
- * Current conditions are not conducive to major, large-scale flooding.
- * The threat for localized ice jam flooding is above normal.
- * The NWS in Omaha will issue its next updated outlook on Thursday March 6.
- * Graphics for select river gauges are available on our website at: http://water.weather.gov/ahps2/long range.php?wfo=oax.
- * A video to help you better understand the probabilistic graphics is available here: http://www.youtube.com/watch?v=pSoEgvsnpv4

Overview: Based on current conditions there is a below normal threat for spring flooding across eastern Nebraska and southwest Iowa. The primary reason for this is a lack of appreciable snow cover. If we had a significant snow cover, this would be a different story. Going into the winter, soil moisture values were above normal due to widespread fall rains. Also, frost depths are deep this winter. In an above normal snow year, all of these conditions combined would be cause for concern. However, this year, that is not the case.





Mountain snow pack: For the headwaters of the Missouri River snow water equivalent values are 125% of normal through February 20. For the headwaters of the Platte River snow water equivalent values are 128% of normal.

Plains snow pack: Across the Dakotas snow depths vary significantly. In South Dakota, west of the Missouri River, there is little if any snow away from the Black Hills. Elsewhere toward the headwaters of the James and Big Sioux Rivers, snow water equivalent values range from 1 to 3 inches. Into North Dakota similar snow water equivalent values are being reported.

Ice jam threat: This year the threat for localized ice jam flooding is <u>above normal</u>. River ice thicknesses have been averaging around one foot along the Platte River and just under a foot along the Elkhorn River. Ice thickness values are unavailable for other rivers.

Frost depths: Due to the below normal temperatures observed this winter, frost depths are deep. In Valley, Nebraska the frost depth is 24 inches. While this is the only frost depth reporting site, based on regional frost depth values, it seems reasonable most areas of eastern Nebraska and southwest Iowa have similar frost depths, if not deeper. Frost depth can be a major contributor to flooding, specifically when rains or snowmelt occur on frozen ground. The frost inhibits infiltration of the rain/snowmelt and flooding is more easily achieved. Ideally, we want the ground to sufficiently warmed-up prior to the spring rains. Given how deep the frost is this year, this will take much longer than years past, thus increasing the flood threat if heavy rains were to occur.

Current river conditions: See sub-sections below. Where available streamflows have been compared to the long-term mean.

Climate outlook for the next two weeks (through March 4): The Climate Prediction Center predicts a 70 to 80 percent chance for below normal temperatures with a 50 percent chance of precipitation being below normal.

Climate outlook for March through May: The Climate Prediction Center predicts an equal chance for below, near and above normal precipitation and temperatures through May.

For basin specific information, click one of the links below:

Missouri River from Decatur to Rulo
Niobrara River
Big Blue River
Elkhorn River from Neligh to the Platte River confluence
Platte River from Duncan to Louisville
Other Tributaries to the Missouri River





To follow are sections describing the threat for flooding for select river basins.

* * *	***	***	****	*****	*****	****	*****
*	Miss	ouri	River	from	Decatu	ır to	Rulo *
* * *	****	***	****	****	*****	****	*****

Overview: The Missouri River has been running lower than normal below Gavins Point this winter. This is a function of conservation measures taken by the US Army Corps of Engineers as well as the lack of appreciable tributary contributions downstream of Gavins Point Dam. With that said, flows are higher when compared to the mean than they were last year going into snowmelt season. Based on snow and basin conditions there is a less than 50% chance of the Missouri River from Decatur to Rulo reaching flood stage through the third week in May. This is typical as the peak flow on the Missouri River usually occurs in June or July. The next outlook issued on March 6th will better capture the flood potential along the Missouri River.

	Average Streamflow Past 14 days	Long-term mean flow	Recent streamflow as a % of long-term mean
Missouri River:			
at Decatur	16 , 356	19,600	83%
at Omaha	17 , 522	20,100	87%
at Nebrask	a City 21,618	27 , 000	80%
at Rulo	21,703	28,800	75%

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Chance of Reaching
Flood Stage Chance of
Compared to Normal Minor Flooding

Niobrara River:
at Verdel near normal <5%

Ponca Creek:
at Verdel 7% less 14%





	Chance of Reaching Flood Stage Compared to Normal	
Big Blue River: at Surprise	6% less	<5%
at Seward	6% less	<5%
at Crete	15% less	32%
at Beatrice	18% less	11%
at Barneston	8% less	5%
Lincoln Creek: at Seward	12% less	11%
W Fk Big Blue Rive	er:	
at Dorchester	16% less	8%
Turkey Creek: at Wilber	11% less	26%
Little Blue River: at Deweese at Fairbury	1% greater 1% greater	15% 6%





* Elkhorn River Basin *

	nce of Reaching Flood Stage pared to Normal	
Elkhorn River:		
at Neligh	near normal	<5%
at Norfolk	near normal	<5%
at Pilger	near normal	<5%
at West Point	near normal	5%
at Winslow	near normal	<5%
at Waterloo	near normal	<5%
N Fk Elkhorn River:		
at Pierce	4% less	<5%
Maple Creek:		
at Nickerson	3% less	7%
Logan Creek:		
at Uehling	near normal	<5%





	Chance of Reaching Flood Stage Compared to Normal	Chance of
Platte River:		
at Duncan	2% less	<5%
at North Bend	7% less	6%
at Leshara	6% less	9%
at Ashland	14% less	<5%
at Louisville	15% less	<5%
Shell Creek: at Columbus	near normal	5%
Salt Creek:		
at Roca	3% less	7%
at Lincoln	2% less	7%
at Greenwood	5% less	11%
at Ashland	7% less	25%
Wahoo Creek: at Ithaca	11% less	22%





	Chance of Reaching Flood Stage Compared to Normal	
Maple River at Mapleton Little Sioux River at Turin	near normal 2% less	<5% <5%
		<5%
Boyer River at Logan	1% less	<5%
Weeping Water Creek at Union	near normal	11%
Nishnabotna River: East Nishnabotna at Red Oak West Nishnabotna at Hancock West Nishnabotna at Randolph Nishnabotna at Hamburg	19% less 9% less	14% 12% 15% 12%
Little Nemaha River at Auburn N Fk Big Nemaha River at Humbold Big Nemaha River at Falls City Nodaway River at Clarinda	near normal 4% less	

Current streamflow as a percent of long-term mean

Maple River at Mapleton	9%	
Little Sioux River at Turin	34%	
Soldier River at Pisgah	68%	
Boyer River at Logan	29%	
West Nishnabotna at Hancock	31%	
East Nishnabotna at Red Oak	53%	
Nishnabotna at Hamburg	56%	
Nodaway River at Clarinda	6%	





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.

 ${{\color{red} {\tt CS}}\ {\tt values}}\ {\tt indicate}$ indicate the probability of reaching a flood category based on current conditions.

 $\overline{\text{HS values}}$ 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. Click the link below to view a video describing the probability of exceedance graphs.

http://www.youtube.com/watch?v=pSoEgvsnpv4

	: : : Categorical			Current and Historion Chances of Exceeding Flood Categories as a Percentage					ing s	
	Flood S	_		:	Miı	nor	Mode	rate	Мај	or
LOCATION	Minor	Mod	Major	:	CS	HS	CS	HS	CS	HS
				:						
:Ponca Creek Verdel	12.0	15.0	17.0	:	7	14	<5	7	<5	<5
:Niobrara River Verdel	7.0	9.0	10.0	:	<5	<5	<5	<5	<5	<5
:North Fork Elkhorn Pierce	n River 12.0	14.0	16.0	:	<5	9	<5	<5	<5	<5
:Elkhorn River										
Neligh	11.0	12.0	14.0	:	<5	<5	<5	<5	<5	<5
Norfolk	12.0	13.0				<5	<5	<5	<5	<5
Pilger			15.0			<5	<5	<5	<5	<5
West Point	12.0	16.0			5	5	<5	<5	<5	<5
Waterloo	17.0	18.0	21.0	:	<5	<5	<5	<5	<5	<5
:Logan Creek Uehling	18.0	19.0	21.0	:	<5	<5	<5	<5	<5	<5

WEATHER SERVICE								Charlomen Parlows Control	TORR COMMEN
Columbus	20.0	21.0	22.0:	5	5	<5	<5	<5	<5
:Platte River Duncan North Bend Leshara	8.0 8.0 8.0	9.0 12.0 10.0	10.0 : 15.0 : 12.0 :	<5 6 9	7 13 15	<5 <5 <5	<5 <5 <5	<5 <5 <5	<5 <5 <5
:Maple Creek Nickerson	11.5	13.0	17.0 :	7	10	6	<5	<5	<5
:Platte River Ashland Louisville	20.0	22.0	26.0 : 12.0 :	<5 <5	19 20	<5 <5	<5 <5	<5 <5	<5 <5
:Wahoo Creek Ithaca	19.0	22.0	23.0 :	22	33	<5	7	<5	<5
:Salt Creek Roca Lincoln Greenwood Ashland	19.0 20.5 20.0 16.0	23.0 26.5 22.0 20.0	26.0 : 33.0 : 26.0 : 23.0 :	7 7 11 25	10 9 16 32	<5 <5 8 <5	<5 <5 9 <5	<5 <5 <5 <5	<5 <5 5 <5
:Big Blue River Surprise Seward Crete Beatrice Barneston	7.0 18.0 18.0 16.0 20.0	11.0 22.0 24.0 26.0 27.0	16.0 : 27.0 : 29.0 : 32.0 : 34.0 :	<5 <5 32 11 5	11 11 47 29 13	<5 <5 <5 <5	<5 <5 11 <5 6	<5 <5 <5 <5	<5 <5 <5 <5
:Lincoln Creek Seward	15.0	17.0	20.0:	11	23	<5	8	<5	<5
:West Fork Big Blue Dorchester	River 15.0	22.0	24.4 :	8	24	<5	<5	<5	<5
:Turkey Creek Wilber	12.5	16.0	21.0 :	26	37	<5	<5	<5	<5
:Little Blue River Fairbury	18.5	20.0	26.0 :	6	<5	<5	<5	<5	<5
:Weeping Water Cree Union	k 25.0	28.0	30.0:	11	11	<5	<5	<5	<5
:Little Nemaha Rive Auburn		23.0	27.0:	11	13	<5	11	<5	<5
:North Fork Big Nem Humboldt	aha Riv 28.0		31.0 :	<5	<5	<5	<5	<5	<5





:Big Nemaha River Falls City	27.0	33.0	36.0 :	<5	9	<5	<5	<5	<5
:Maple River Mapleton	21.0	24.0	27.0:	<5	<5	<5	<5	<5	<5
:Little Sioux River Turin	25.0	28.0	34.5 :	<5	7	<5	<5	<5	<5
:Soldier River Pisgah	28.0	29.0	30.0:	<5	<5	<5	<5	<5	<5
:Boyer River Logan	19.0	22.0	25.0:	<5	6	<5	<5	<5	<5
:West nishnabotna R Hancock Randolph	iver 14.0 19.0	19.0 22.0	23.0 : 24.0 :	12 15	31 24	7 7	14 6	<5 <5	<5 <5
:East Nishnabotna R Red Oak	iver 18.0	22.0	27.0:	14	28	<5	8	<5	<5
:Nishnabotna River Hamburg	25.0	27.0	33.0 :	12	43	8	21	<5	<5
:Nodaway River Clarinda	23.0	26.0	29.0:	<5	<5	<5	<5	<5	<5

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

Location	95%	90%	75%	50% 			5%
:Ponca Creek Verdel	4.5	4.7	5.5	6.7	8.8	11.2	13.1
:Niobrara River Verdel	2.1	2.8	3.1	3.6	3.8	4.3	4.7
:North Fork Elkhorn Pierce	River 2.6	2.7	3.3	4.6	6.7	8.8	10.2
:Elkhorn River Neligh Norfolk Pilger West Point Waterloo	7.2	2.3 7.3 6.7	3.5 2.5 7.9 7.4 5.0	3.5 8.5 8.4	4.3 9.0 9.2	5.0 9.6 10.6	7.2 10.9 12.1
:Logan Creek Uehling	3.0	3.6	5.0	7.3	10.2	13.4	14.9
:Shell Creek Columbus	0.5	0.5	3.3	7.9	13.7	18.6	19.6
:Platte River Duncan North Bend Leshara	4.6 4.7 5.0	4.6 4.8 5.0	4.6 5.0 5.2	4.9 5.8 6.3	5.6 6.6 7.0	7.0 7.5 7.9	7.7 8.1 8.5
:Maple Creek Nickerson	3.4	3.8	5.7	6.7	7.8	9.8	13.6
:Platte River Ashland Louisville	15.9 4.9	16.0 5.0	16.3 5.2	17.4 6.4	18.4 7.6	19.2	19.6
:Wahoo Creek Ithaca	3.7	3.9	6.4	10.7	18.0	21.4	21.9





Lincoln	2.1 2.7 2.8 7.1	3.1 3.5	4.0 5.3	6.5	12.3 15.6	16.8 20.5	22.1 24.4
:Big Blue River Surprise Seward Crete Beatrice Barneston	1.5 1.4 7.1 3.1 3.1	1.5 8.0 3.8	3.2 11.1 6.7	2.8 6.7 15.6 10.2 10.8	11.0 19.7 13.6	14.1 21.7 16.2	16.5 22.9 16.9
:Lincoln Creek Seward	3.6	3.6	7.0	9.5	12.1	15.1	15.7
:West Fork Big Blue R Dorchester	iver 2.4	2.4	4.8	8.5	11.4	14.0	17.9
:Turkey Creek Wilber	1.6	1.7	4.3	9.5	12.8	14.5	15.4
:Little Blue River Fairbury	7.8	8.2	10.3	13.1	15.6	17.0	19.2
:Weeping Water Creek Union	2.7	3.7	6.5	9.6	17.1	25.1	26.8
:Little Nemaha River Auburn	3.8	5.6	8.0	10.4	18.1	22.3	22.7
:North Fork Big Nemah Humboldt			6.4	8.2	11.7	14.6	16.3
:Big Nemaha River Falls City	4.6	7.2	9.7	13.3	17.8	21.9	26.0
:Maple River Mapleton	5.0	5.1	5.8	7.0	8.3	12.2	15.4
:Little Sioux River Turin	7.2	7.3	8.0	9.2	12.8	18.1	21.6
:Soldier River Pisgah	3.6	4.4	5.2	6.2	8.4	9.7	10.9
:Boyer River Logan	4.4	4.9	6.5	8.1	9.9	14.1	18.3





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:West Nishnabotna River								
Hancock	2.8	4.2	6.1	7.6	9.1	17.3	20.2	
Randolph	9.4	9.8	12.9	14.8	16.4	21.0	22.1	
:East Nishnabotna River								
Red Oak	_	7.3	9.2	11.7	16.0	19.8	21.5	
:Nishnabotna River Hamburg	9.3	9 9	14 2	18.8	22 7	26.2	27.6	
Hambarg	J. J	J • J	11.2	10.0	22.7	20.2	27.0	
:Nodaway River								
Clarinda	10.8	11.1	11.9	12.7	15.2	18.0	20.7	

All of this information is also available in graphical format on the internet at:

http://water.weather.gov/ahps2/long range.php?wfo=oax

The next outlook will be issued on March 6th. For questions on this outlook, please contact:

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