



Red River and Devils Lake Basin - 2021 Spring Flood Outlook

Discussion Points 3/11/2021

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This outlook is for the U.S. portion of the basin and is based on conditions through Tuesday, 3/09/2021. All graphics, probabilities, and related discussions are available at [weather.gov/fgf](https://www.weather.gov/fgf). This is the last scheduled update of the spring!

Bottom Line up Front!

- It's March Madness! ...and the risk for a significant snowmelt flood remains very, very low throughout the region.

- The winter snowpack is largely off the landscape... having melted last weekend.

-- Slight river rises and thawing.

-- Underlying Dry to Severely Dry conditions persist.

-- Soils remain partially/deeply frozen.

- Some Minor spring flooding due to future spring snow or rainfall is possible.

- Climate outlooks currently indicate an increased risk for near normal

temperatures and precipitation as we move through March into April, with our typical risk for late season heavy snow or rainfall.

Long Story Short: The risk for significant snowmelt flooding is quite low, running below long-term historical averages across the Red River and Devils Lake Basins (U.S. portions).

Key Snowmelt Flood Components:

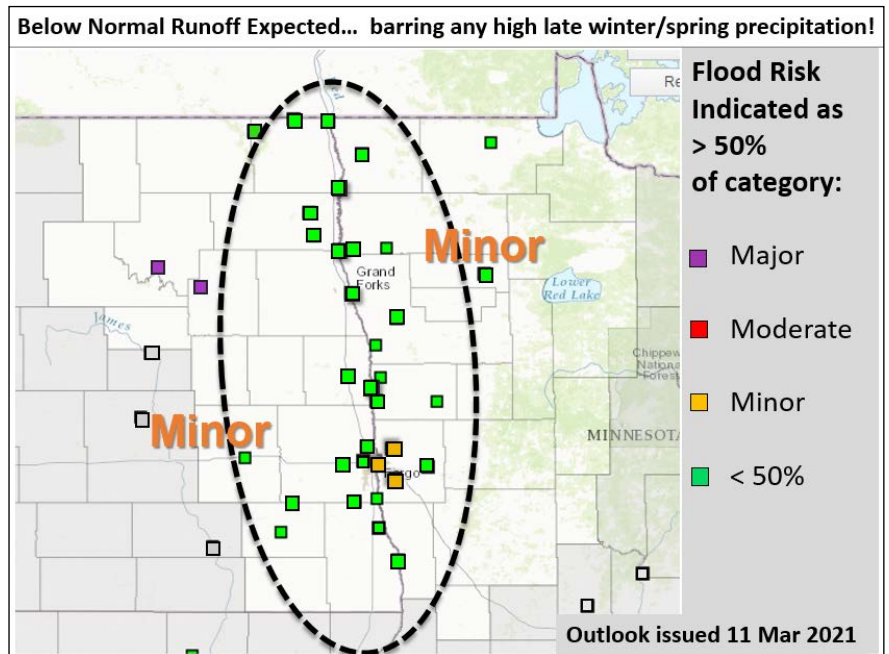
1. Base Streamflow: Near to somewhat below average for this time of year. Recent thaw conditions have caused slight rises to area streams and river though most are still largely ice covered and/or ice affected, and flowing at in the 25% -75% of normal ranges [link: <https://waterdata.usgs.gov/nwis/rt>]. Tributaries north of Grafton-Argyle at 25%.

2. Soil Moisture at Freeze-up: Near to below average across the Red River Basin, and well below average in the Devils Lake Basin. [Link: https://www.cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilmst.shtml]

3. Frost Depth: Deeper than normal, but fragile. Deep cold episodes and a shallow winter snowpack allowed for a deep frost penetration in most areas. Though recent partial thaw episodes have shown the top 2-8 inches has thawed and refrozen easily, the deeper frost still extends to from 20 to 40 inches in most locations. Lesser frost depths remain in upland areas in northwest MN, where snowpack was slightly higher though the coldest periods. Lake/River ice thicknesses have become more fragile with partial thaws. [Link: https://www.weather.gov/ncrfc/LMI_FrostDepthMap]

4. Winter Snowpack/SWE - Gone! Spring Snow is yet to melt... Fall-winter snowfall and SWE ran from 15-50 percent of normal across the area, and with recent thawing conditions has largely dissipated. Recent Spring snowfall of from 1-9 inches has mainly impacted the far southern RRV. [Link: <https://www.nohrsc.noaa.gov/nsa/>]

5. Along with our flood partners, we've developed a display graphic which relates the current flood outlook to our historical flood levels, now available for all our forecast locations! **Check it out at:** <https://www.weather.gov/fgf/PFOS>



DEVILS LAKE & STUMP LAKE... Long-Range Probabilistic Outlook
Valid March 8, 2021 - September 30, 2021

LOCATION	95%	90%	75%	50%	25%	10%	05%
CREEL BAY	1448.7	1448.7	1448.7	1448.9	1449.0	1449.1	1449.5
EAST STUMP LAKE	1448.7	1448.7	1448.7	1448.9	1449.0	1449.1	1449.5

The current heights of Devils Lake and Stump Lake are ~1448.56 ft. MSL.

Color code: Below Minor Moderate Major Flood of Record

RED RIVER AND TRIBUTARIES... Long-Range Probabilistic Outlook
Valid March 15, 2021 - June 13, 2021

LOCATION	95%	90%	75%	50%	25%	10%	05%
WAHPETON	8.6	8.6	8.7	10.6	12.2	13.9	14.3
HICKSON	17.9	18.0	18.1	20.9	25.4	30.4	33.4
FARGO	17.6	17.6	17.6	18.7	23.4	30.2	32.8
HALSTAD	12.7	12.8	12.8	14.2	20.7	28.7	30.7
GRAND FORKS	18.6	18.6	18.6	19.6	26.1	34.7	38.2
OSLO	13.4	13.5	13.5	16.0	26.1	33.4	34.3
DRAYTON	15.5	15.5	15.5	17.8	28.1	36.7	39.2
PEMBINA	18.6	18.6	18.7	22.2	30.7	38.3	43.2

Minnesota Tributaries:

South Fork Buffalo River.....							
SABIN	11.2	11.2	11.3	13.0	14.1	15.1	15.4
Buffalo River.....							
HAWLEY	3.6	3.8	4.7	5.4	6.8	7.9	8.9
DILWORTH	10.8	10.8	11.0	13.7	18.6	19.6	21.5
Wild Rice River.....							
TWIN VALLEY	2.8	3.0	3.5	4.5	6.3	7.8	9.1
HENDRUM	7.9	8.0	8.2	13.1	19.9	25.3	26.1
Marsh River.....							
SHELLY	4.7	4.7	4.8	6.9	8.9	11.8	13.0
Sand Hill River.....							
CLIMAX	5.5	5.5	6.6	7.4	9.3	15.2	17.3
Red Lake River.....							
HIGH LANDING	3.0	3.1	3.9	5.2	6.6	8.6	9.0
CROOKSTON	5.6	5.7	6.5	8.0	9.9	15.2	18.6
Snake River.....							
ABOVE WARREN	60.6	60.8	61.2	61.9	62.8	63.9	64.5
ALVARADO	96.1	96.3	96.8	97.8	100.2	102.5	104.0
Two Rivers River.....							
HALLOCK	794.8	794.8	795.0	796.8	799.5	803.3	805.8
Roseau River.....							
ROSEAU	5.8	5.8	6.2	7.0	8.1	11.5	14.8

North Dakota Tributaries:

Wild Rice River.....							
ABERCROMBIE	2.1	2.2	2.5	4.4	9.8	14.9	17.4
Sheneye River.....							
VALLEY CITY	4.6	4.6	4.6	4.6	5.2	7.2	8.3
LISBON	3.3	3.3	3.3	3.7	4.6	7.4	10.4
KINDRED	11.4	11.4	11.4	11.4	11.4	11.4	16.3
WEST FARGO DVRSN	12.9	12.9	12.9	12.9	12.9	12.9	15.9
HARWOOD	75.4	75.4	75.4	75.4	77.2	79.5	89.2
Maple River.....							
ENDERLIN	1.5	1.5	1.5	4.7	7.0	9.2	10.8
MAPLETON	8.7	8.7	9.6	12.5	16.4	20.4	21.9
Goose River.....							
HILLSBORO	1.7	1.7	1.8	1.9	3.5	4.5	5.0
Forest River.....							
MINTO	1.3	1.3	1.6	1.8	2.7	3.9	4.7
Park River.....							
GRAFTON*	7.6	7.6	7.6	7.6	8.4	9.0	9.5
Pembina River.....							
WALHALLA	1.3	1.3	1.8	2.5	4.1	6.1	7.1
NECHE	1.9	1.9	2.7	3.8	6.6	10.2	12.5

Notes

1. Devils Lake Basin Runoff Risk is low. Very little runoff or inflow is expected, leading to an additional rise of 2 to 5 inches (75% to 25% risk range). A ½ to 1 ft. rise on Devils Lake is considered about normal.

Note: Devils Lake is currently about half a foot lower than this time last year.

2. Red River Basin Flood Risk is overall quite low. Winter snowpack has largely melted and contributed to only slight rises in areas streams and rivers.

Additional rises may yet occur in response to March and early April precipitation, but overall runoff/flows are expected to remain below normal.

3. Recent heavy snow (March 10th), mainly in the far southern Red River Basin may lead to additional rises in affected river basins.

The snowfall contributed from 0.10 to 0.50 inches of moisture to portions of the far southern Red River Basin.

Dry and partially thawing soils will likely capture and retain much of the eventual melt.

Though some minor river and streams rises are still possible this spring, most basins would need additional and substantial rain or snow to push rivers above the minor flood stage.