



Red River and Devils Lake Basin - 2020 Spring Flood Outlook

Discussion Points 3/12/2020

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This outlook is for the U.S. portion of the basin and is based on conditions through Monday, 3/9/2020. All graphics, probabilities, and related discussions are available at weather.gov/fgf. No further spring outlooks are expected atm.

New! 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>

Bottom Line up Front!

- **Good News: Flood Risk hasn't changed much, and remains lower since mid-January.**

-- **No big late Jan, Feb, or early Mar storms:** Below normal snowfall since mid-January.

-- **Generally mild conditions:** Frost depths are still shallow and quite variable.

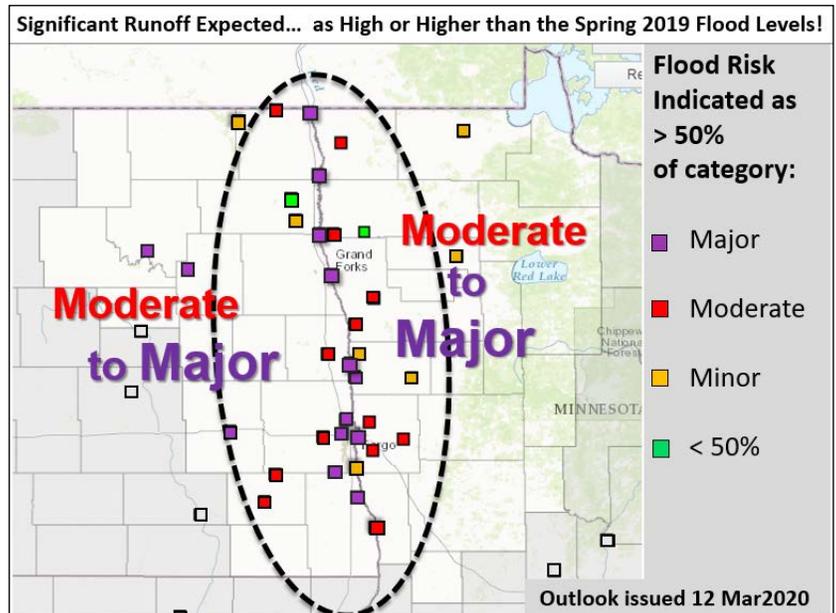
- **Bad News: But not very much of a risk reduction since January 23rd outlook.**

-- **Wet soils/high base streamflows persist.**

-- **Snowpack/SWE still remains at or above normal leading to high runoff potential.**

-- **Thaw cycle is running later than normal.**

- **Good/Bad News: Climate outlooks have no clear signal: wet, dry, or normal.** Cool and wet in the near term, but late March through April are still quite uncertain - **thus March/April will likely be big risk factors, as they always are.**



Long Story Short: The risk for significant snowmelt flooding continues to be substantial, running above long-term averages across the Red River and Devils Lake Basins (U.S.), a delayed thaw is more likely.

Key Snowmelt Flood Components: (nearly an 8 week dry period, thus little change since Jan or Feb, 2020 outlooks)

1. Base Streamflow: At or near record high levels for this time of year (pre-thaw). USGS analyses indicate that the Red River and most ND and MN tributaries (south of Grafton-Argyle) are moderate-thin ice cover and/or flowing at 95th percentiles or greater [link: <https://waterdata.usgs.gov/nwis/rt>]. Tributaries north of Grafton-Argyle are at 76% to 95%.

2. Soil Moisture at Freeze-up: Much above normal throughout. Standing water frozen into some ditches.

[Link: https://www.cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilmst.shtml]

3. Frost Depth: Shallower than normal. Snowcover is diminished across the far southern RRV, with frost variable at 0-10 inches. Frost at most locations north of Fargo is 10 to 30 inches deep. Lake/river ice thicknesses are less than normal and quite variable. [Link: https://www.weather.gov/ncrfc/LMI_FrostDepthMap]

4. Winter Snowpack/SWE: Still near to above normal. Since December 1st, snowfall has been running 125-275 percent of normal with SWE still ranging from 2.5 to 5.0 inches - least across far northeast ND and far northwest MN.

[Link: <https://www.nohrsc.noaa.gov/nsa/>]

5. Precipitation: Sep 1st to Mar 10th still near a record high. Total precipitation (rain and snow-water) measured across the basin from Sep 1st through Mar 10th was 4-8 inches above the long-term normal for most of Red River Basin. [Links:

<https://www.ncdc.noaa.gov/sotc/national/201913>; https://water.weather.gov/precip/index.php?location_type=wfo&location_name=FGF]

DEVILS LAKE & STUMP LAKE... Long-Range Probabilistic Outlook
Valid March 9, 2020 - September 30, 2020

LOCATION	95%	90%	75%	50%	25%	10%	05%
CREEL BAY	1450.6	1450.6	1450.8	1451.1	1451.6	1452.2	1453.0
EAST STUMP LAKE	1450.6	1450.6	1450.8	1451.1	1451.6	1452.2	1453.0

The current heights of Devils Lake and Stump Lake are ~1449.03 ft MSL.

Color code: Below Minor Moderate Major Flood of Record

RED RIVER AND TRIBUTARIES... Long-Range Probabilistic Outlook
Valid March 2, 2020 - May 31, 2020

LOCATION	95%	90%	75%	50%	25%	10%	05%
WAHPETON	11.8	11.9	12.4	13.5	15.3	16.3	17.2
HICKSON	27.3	27.7	28.7	31.6	33.9	35.5	36.6
FARGO	32.0	32.5	33.3	34.7	36.1	38.2	39.7
HALSTAD	36.9	37.5	38.2	38.8	39.5	40.0	40.8
GRAND FORKS	45.3	46.2	47.4	48.4	50.6	53.3	55.5
OSLO	37.2	37.3	37.5	37.7	37.9	38.0	38.1
DRAYTON	41.9	42.2	42.5	43.0	44.0	45.1	45.8
PEMBINA	51.6	51.9	52.2	52.8	53.7	54.6	54.8

Minnesota Tributaries:

South Fork Buffalo River.....							
SABIN	15.4	16.0	16.5	17.0	17.5	18.7	19.4
Buffalo River.....							
HAWLEY	8.7	8.9	9.4	9.8	10.4	10.9	11.5
DILWORTH	21.7	22.4	23.0	23.6	24.3	25.4	26.2
Wild Rice River.....							
TWIN VALLEY	9.5	10.1	10.6	11.7	12.6	14.4	15.6
HENDRUM	30.3	31.2	31.7	32.1	32.9	33.7	34.5
Marsh River.....							
SHELLY	16.1	16.7	17.6	18.7	20.3	22.6	23.4
Sand Hill River.....							
CLIMAX	26.5	27.2	28.4	29.7	32.5	35.7	37.7
Red Lake River.....							
HIGH LANDING	9.9	10.4	11.4	12.2	13.1	13.3	13.4
CROOKSTON	19.8	20.6	21.4	23.1	25.4	28.1	29.2
Snake River.....							
ABOVE WARREN	65.2	65.3	65.9	66.5	67.6	69.7	71.3
ALVARADO	105.4	105.9	107.1	108.2	109.2	110.0	110.7
Two Rivers River.....							
HALLOCK	805.6	806.1	806.7	807.9	808.9	810.0	810.6
Roseau River.....							
ROSEAU	13.4	13.7	14.9	16.5	17.7	18.5	19.7

North Dakota Tributaries:

Wild Rice River.....							
ABERCROMBIE	20.2	20.8	21.3	22.6	24.1	25.3	27.3
Sheyenne River.....							
VALLEY CITY	14.4	14.7	15.4	17.6	20.0	24.2	26.1
LISBON	15.3	15.4	16.1	17.7	20.4	26.2	28.6
KINDRED	19.6	19.8	20.2	20.8	21.2	21.2	21.2
WEST FARGO DVRSN	19.3	19.3	21.0	21.3	21.3	21.3	21.3
HARWOOD	91.4	91.4	91.6	91.7	92.0	92.2	92.3
Maple River.....							
ENDERLIN	12.0	12.5	12.8	13.1	13.6	14.3	15.3
MAPLETON	22.2	22.3	22.5	22.7	23.1	23.8	24.1
Goose River.....							
HILLSBORO	11.8	12.5	13.8	14.3	14.9	16.1	17.3
Forest River.....							
MINTO	5.0	5.8	6.3	7.0	7.7	8.3	9.0
Park River.....							
GRAFTON*	10.0	10.4	10.7	11.2	12.7	14.1	15.6
Pembina River.....							
WALHALLA	9.2	9.6	10.5	11.5	12.5	13.9	15.0
NECHE	17.0	17.6	18.9	20.3	21.1	21.4	21.5

Notes:

(no significant changes since Jan 23rd or Feb 12th/27th outlooks)

1. Devils Lake Basin runoff risk is quite high. A rise of 1.8 to 2.6 ft is expected (75% to 25% risk range). A 0.5 to 1 ft rise on Devils Lake is considered about normal.

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

2. Red River Basin runoff risk is overall quite high. All Red River mainstem points will see significantly high flows.

- heavily influenced by excess flow and soil moisture now.

- coupled with high winter snowpack and SWE.

- exacerbated by *expected* delay in thaw cycle/April rain risk.

3. Above normal snowpack and runoff potential is evident in most all MN tributaries.

The northern-most MN tribs have the wettest soils but a somewhat lesser snowpack.

4. ND Wild Rice, Sheyenne, and Maple Rivers are at a much higher runoff risk.

The Upper Sheyenne snowpack has been reduced by recent snowmelt while mid-basin soil moisture and snowpack are still substantial with potential for early and later crest issues.

Lower Sheyenne through east-central ND tribs are also at an elevated flood risk.

Northeast ND threat is still mixed with lesser runoff at the upper basins of the Forest, Park, and Pembina Rivers.

Note: Reduced risk at Grafton due to new Bypass!