



Red River and Devils Lake Basin - 2020 Spring Flood Outlook

Discussion Points 1/23/2020

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This outlook is for the U.S. portion of the basin and is based on conditions through Tuesday, 1/21/2020. All graphics, probabilities, and related discussions are available at weather.gov/fgf. The next update will be issued by 2/13/2020.

Bottom Line up Front!

- It's early, but... this outlook starts with a threat for *significant* snowmelt flooding that could meet or exceed the level of flooding seen in 2019.

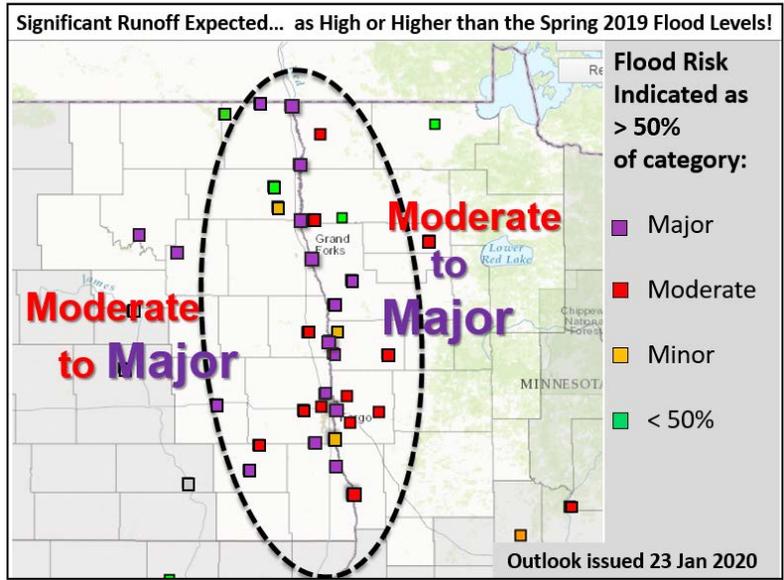
- Follows record wettest Fall Period, and record fall floods. Excess water remains in soggy soils, high streamflows, and parked water on the landscape.

- Snowfall/SWE at mid-January was near/above long term winter season normal amounts.

- Somewhat less excessively wet and less overall snowpack north of a Devils Lake-Grafton-Roseau line... so somewhat less threat in northern tributaries.

- Frost is less deep than normal, especially in the far southern RRV, so some infiltration may be possible... if the thaw cycle allows.

- Climate outlooks currently indicate an increased risk for cooler and wetter late winter early spring period, which increases our risk for rapid and/or rainfall enhanced runoff.



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

Key Snowmelt Flood Components:

1. Base Streamflow: At or near record high levels for this time of year. USGS analyses indicate that the Red River and most of its ND and MN tributaries (south of Grafton-Argyle) are moderate-thin ice covered and/or flowing at 95th percentiles or greater [link: <https://waterdata.usgs.gov/nwis/rt>]. Tributaries north of Grafton-Argyle 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. Heavy snowcover most of the season has kept frost depth somewhat shallow across the far southern RRV, at 6-12 inches. Frost at most locations north of Fargo is 14 to 30 inches deep. Lake/River ice thicknesses less-than normal and are quite variable. [Link: https://www.weather.gov/ncrfc/LMI_FrostDepthMap]

4. Winter Snowpack/SWE: above normal. Since Dec 1st, snowfall runs from 150-300 percent of normal, SWE ranges 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 Jan 21st sets Record High. Total precipitation (rain and snow-water) measured across the Basin from Sep 1st thru Jan 21st ranged from 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]

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>

DEVILS LAKE & STUMP LAKE... Long-Range Probabilistic Outlook
Valid January 20, 2020 - September 30, 2020

LOCATION	95%	90%	75%	50%	25%	10%	05%
CREEL BAY	1450.7	1450.8	1451.1	1451.6	1452.2	1452.8	1453.2
EAST STUMP LAKE	1450.7	1450.8	1451.1	1451.6	1452.2	1452.8	1453.2

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 January 27, 2020 - May 19, 2020

LOCATION	95%	90%	75%	50%	25%	10%	05%
WAHPETON	11.9	12.3	13.1	14.2	15.7	17.4	17.5
HICKSON	26.6	27.6	30.4	32.8	34.7	36.4	36.9
FARGO	27.6	31.9	34.1	35.9	37.6	39.6	40.6
HALSTAD	31.5	36.1	38.0	39.0	39.7	40.2	40.8
GRAND FORKS	43.4	44.6	46.6	48.8	51.2	53.1	55.4
OSLO	36.7	37.0	37.4	37.8	37.9	38.0	38.1
DRAYTON	40.7	41.3	42.4	43.2	44.4	45.1	45.6
PEMBINA	50.0	50.5	52.1	53.0	54.0	54.6	54.9

Minnesota Tributaries:

South Fork Buffalo River.....							
SABIN	15.0	15.6	16.1	16.8	17.8	18.5	19.7
Buffalo River.....							
HAWLEY	8.5	9.1	9.7	10.2	10.8	11.2	11.9
DILWORTH	20.8	22.0	22.9	23.6	24.7	25.2	26.7
Wild Rice River.....							
TWIN VALLEY	8.8	9.4	10.5	12.0	13.1	14.6	15.2
HENDRUM	28.0	29.8	31.2	32.3	32.8	33.6	34.5
Marsh River.....							
SHELLY	13.2	14.8	17.4	19.2	21.3	22.5	24.0
Sand Hill River.....							
CLIMAX	21.2	24.4	28.2	30.5	33.2	35.5	37.0
Red Lake River.....							
HIGH LANDING	9.7	10.4	11.4	12.8	13.1	13.3	13.5
CROOKSTON	19.3	19.7	21.5	24.0	25.5	28.2	28.5
Snake River.....							
ABOVE WARREN	65.1	65.3	65.5	66.3	67.5	69.8	71.4
ALVARADO	105.9	106.6	107.8	109.2	109.6	110.0	110.9
Two Rivers River.....							
HALLOCK	804.5	805.3	807.0	807.8	808.6	809.7	810.3
Roseau River.....							
ROSEAU	12.7	13.7	14.9	15.6	18.1	18.4	18.8

North Dakota Tributaries:

Wild Rice River.....							
ABERCROMBIE	16.8	19.3	22.0	24.2	25.7	27.6	28.5
Sheyenne River.....							
VALLEY CITY	13.8	15.3	16.8	19.6	21.8	24.4	27.4
LISBON	14.9	15.6	17.3	19.4	22.8	27.4	30.5
KINDRED	19.6	20.2	20.8	21.2	21.2	21.2	21.2
WEST FARGO DVRSN	19.3	20.9	21.3	21.3	21.3	21.3	21.3
HARWOOD	90.3	91.2	91.6	92.0	92.1	92.2	92.3
Maple River.....							
ENDERLIN	11.0	11.8	12.6	13.1	13.7	14.5	15.0
MAPLETON	21.5	22.1	22.4	22.8	23.3	23.9	24.1
Goose River.....							
HILLSBORO	9.9	11.8	13.2	14.0	14.9	16.0	17.1
Forest River.....							
MINTO	4.6	5.2	5.7	6.7	7.5	9.0	9.2
Park River.....							
GRAFTON*	10.0	10.2	10.8	11.4	13.5	15.3	15.8
Pembina River.....							
WALHALLA	8.9	9.5	10.9	12.1	14.1	15.5	15.8
NECHE	16.4	17.3	19.7	20.9	21.4	21.5	21.6

Notes

1. Devils Lake Basin Runoff Risk is quite high. An additional rise of 2 to 3 feet is expected (75% to 25% risk range). A ½ 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 main-stem points will see significantly high flows.

- heavily influenced by excess flow and soil moisture now.

- coupled with higher winter snowpack and SWE.

- exacerbated by a potentially delayed thaw cycle.

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

The northern-most 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.

Mid and Upper Sheyenne is carrying substantial soil moisture and snowpack with potential for both early and later crest issues.

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

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

Note: Reduced risk expected for areas now protected by new Grafton Bypass!