



# Red River and Devils Lake Basin - 2018 Spring Flood Outlook

Discussion Points 3/1/2018

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This outlook is for the U.S. portion of the basin and is based on conditions through Wednesday, 2/28/18. All graphics, probabilities, and related discussions are available at [weather.gov/fgf](http://weather.gov/fgf). The next update will be issued by 3/22/18.

## Bottom Line up Front! (Only a Slight Uptick in Flood Risk)

- The threat for *significant* (**moderate-major**) snowmelt flooding remains **low** across the main-stem Red River, its Tributaries, and the Devils Lake Basin. Current conditions and expectations though March continue to indicate *minor* flooding as the predominant risk.
- **Abnormally Dry** conditions have persisted across the basin since last February and could continue into the springtime. Soil moisture, streamflow, and snowpack in all sub-basins are near to below normal.
- The remaining winter and early spring should trend to near normal temperatures and near to above normal moisture. Recent NWS/CPC updates have March temperatures a bit less cold, nearer to normal, with precipitation still near to above normal.
- A Significant Winter Storm is expected early next week! (Fig 1.)

**Long Story Short: The risk for significant snowmelt flooding is still quite low. It remains near long-term averages in far northwest MN, and somewhat lower than historical averages across the remainder of the Red River and Devils Lake Basin.**

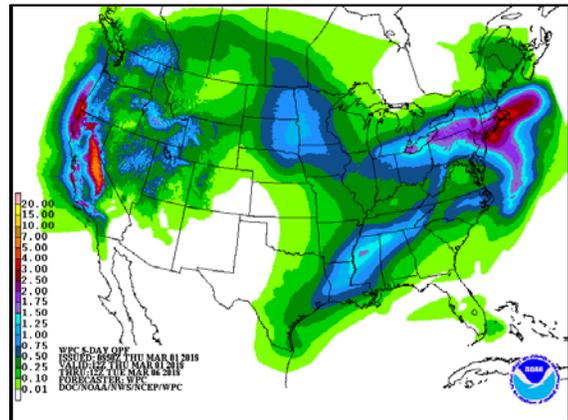
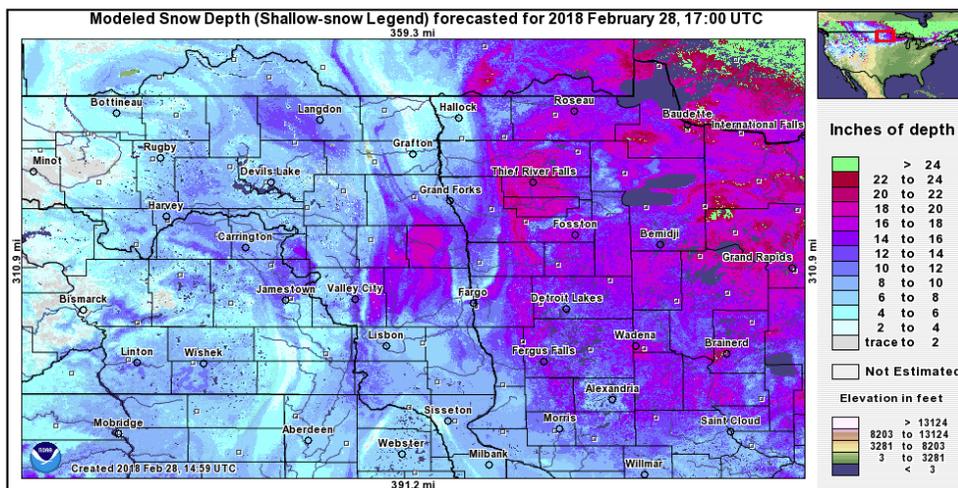


Fig. 1, A Large Winter Storm System (Colorado Low type) is expected to move into the region later this weekend. We can expect:

- Sunday - warm south winds, and rain changing to snow late in the day or overnight.
  - Monday - colder north wind, with heavy snow.
- Total moisture could range from 0.5 to 1.25 inches. These amounts would likely maintain flood risk at near normal levels.

## Key Snowmelt Flood Components:

- 1. Base Streamflow: Near normal.** USGS analyses indicate that the Red River and its ND and MN tributaries are ice covered and/or flowing within long-term normal ranges, between 25<sup>th</sup> and 75<sup>th</sup> percentiles.
- 2. Soil Moisture at Freeze-up: Near to well below normal.** Precipitation (rain and snow-water) measured across the Basin from April 1<sup>st</sup> through Dec 1<sup>st</sup> ranged from 2 to 7 inches below the long-term normal. Soil moisture at freeze-up was mainly below normal north and west of Grand Forks and near normal for sub-basins south of Grand Forks.
- 3. Frost Depth: Deeper than normal.** More than 3 feet deep across the area, with a depth of 42 inches measured on Feb 26th at the NWS in Grand Forks. With less snow, Fargo and Langdon had frost depths are running closer to 49 inches.



- 4. Winter Snowpack/SWE: Near to well below normal.** Since Dec 1<sup>st</sup>, snowfall is running from 33-95% of normal, and remains least in the far southern RRV and in northeast ND.

Current Snowpack and Snow Water Equivalent (SWE) are highest across far northwest MN, with a 6 to 20 inch snowpack holding from 1-3 inches of water. The central Red River Valley and the Devils Lake Basin had water amounts from 1 to 2 inches. SWE tapers to less than an inch south of Fargo and northwest of Grand Forks.

**DEVILS LAKE & STUMP LAKE...** Long-Range Probabilistic Outlook  
Valid February 25, 2018 - September 30, 2018

LOCATION	95%	90%	75%	50%	25%	10%	05%
CREEL BAY	1450.1	1450.1	1450.1	1450.3	1450.4	1450.7	1451.2
EAST STUMP LAKE	1450.1	1450.1	1450.1	1450.3	1450.4	1450.7	1451.2

The current heights of Devils Lake and Stump Lake are ~1449.6 ft. MSL.

Color code: Below Minor Moderate Major Flood of Record

**RED RIVER AND TRIBUTARIES...** Long-Range Probabilistic Outlook  
Valid March 11, 2018 - June 2, 2018

LOCATION	95%	90%	75%	50%	25%	10%	05%
WAHPETON	7.0	8.3	9.2	10.6	12.2	13.3	14.7
HICKSON	14.0	15.7	18.4	20.5	25.7	30.5	32.5
FARGO	16.4	17.0	18.3	20.2	25.7	28.9	34.0
HALSTAD	13.2	13.6	16.1	20.4	25.4	30.2	34.8
GRAND FORKS	21.5	21.9	26.2	31.7	37.0	41.5	46.3
OSLO	20.3	20.9	26.5	31.9	34.1	35.2	37.2
DRAYTON	21.1	21.7	26.2	30.9	37.3	39.5	42.0
PEMBINA	29.5	30.2	35.6	39.3	45.1	47.6	50.9

**Minnesota Tributaries:**

South Fork Buffalo River.....							
SABIN	12.8	12.8	13.1	13.7	14.6	15.3	16.1
Buffalo River.....							
HAWLEY	5.1	5.4	5.8	6.7	8.0	9.2	9.4
DILWORTH	13.2	13.7	14.8	17.0	19.4	20.3	21.9
Wild Rice River.....							
TWIN VALLEY	4.5	4.9	5.2	6.0	6.9	8.6	9.5
HENDRUM	14.5	15.8	17.6	20.4	23.9	27.4	29.4
Marsh River.....							
SHELLY	8.4	8.8	9.4	10.5	11.9	17.8	18.8
Sand Hill River.....							
CLIMAX	9.0	10.0	11.1	11.7	13.5	19.1	24.2
Red Lake River.....							
HIGH LANDING	4.8	5.1	6.2	7.2	9.2	10.8	12.1
CROOKSTON	9.4	9.7	11.8	14.2	16.6	20.1	22.6
Snake River.....							
ABOVE WARREN	62.9	63.1	63.3	64.0	64.8	66.3	67.6
ALVARADO	99.4	99.6	100.2	101.5	104.0	105.7	108.6
Two Rivers River.....							
HALLOCK	803.6	804.3	804.8	806.0	807.5	808.5	809.3
Roseau River.....							
ROSEAU	10.9	11.1	11.5	12.6	14.5	15.7	16.4

**North Dakota Tributaries:**

Wild Rice River.....							
ABERCROMBIE	2.6	3.6	5.2	9.2	14.1	17.3	19.4
Sheyenne River.....							
VALLEY CITY	6.0	6.2	7.1	8.3	9.6	11.7	13.0
LISBON	5.3	5.6	6.6	8.1	10.3	12.2	16.9
KINDRED	6.2	6.7	7.9	9.9	12.6	15.2	19.5
WEST FARGO DVRSN	12.2	12.4	13.0	14.3	16.1	17.6	22.5
HARWOOD	874.7	874.9	876.1	878.0	880.3	884.8	891.0
Maple River.....							
ENDERLIN	6.0	6.3	7.1	8.1	9.1	10.4	12.4
MAPLETON	898.6	899.1	900.2	902.1	904.2	906.6	908.5
Goose River.....							
HILLSBORO	4.2	4.4	4.8	5.9	8.0	11.1	13.4
Forest River.....							
MINTO	2.6	2.7	3.1	4.3	5.3	7.3	8.5
Park River.....							
GRAFTON	8.3	8.5	8.7	8.9	9.6	11.4	12.8
Pembina River.....							
WALHALLA	2.9	3.0	3.5	4.2	5.7	7.9	8.1
NECHE	4.7	4.9	5.8	7.1	9.6	14.0	15.7

Notes

**1. Devils Lake Basin: Another slight decrease** in runoff risk from January and February Outlooks due to below normal snow accumulations since Jan.

A one-half foot to one foot rise on Devils Lake is still considered near climatological normals.

**2. Red River Main-stem: A slight uptick on high end,** due mainly to increased Central Basin snow.

Risk at Fargo and points south is slightly *below* long term avg.

Risk at Halstad and points north is now *very near* long term avg.

**3. Minnesota Tributaries: A slight uptick** in most areas with near normal snowfall over past 2 weeks.

Highest snowpack areas are still in Red Lake River Basin and points north and east of Crookston MN.

Hallock, Roseau, and Warren MN are only points with higher than average risk (at 50% probability).

**4. North Dakota Tributaries: No appreciable change.** Mid-Upper Sheyenne Basin is still quite dry with low snowpack.

Some higher snowpack areas exist in east-central areas from West Fargo up through Hatton ND.

Else, snowpack is also quite low in northeast ND.