MISSOURI RIVER BASIN WATER MANAGEMENT
2019 MRB NAVIGATORS' MEETING
NWS TRAINING CENTER, KANSAS CITY, MO

MAINSTEM OPERATIONS

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NWD, MRBWM
13 February 2019

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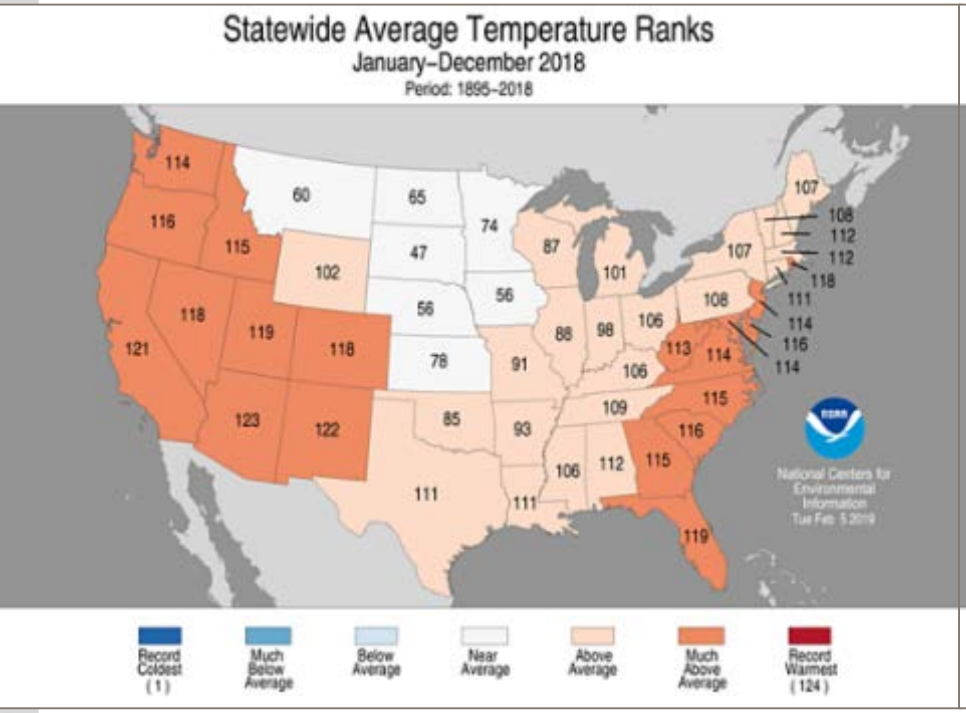
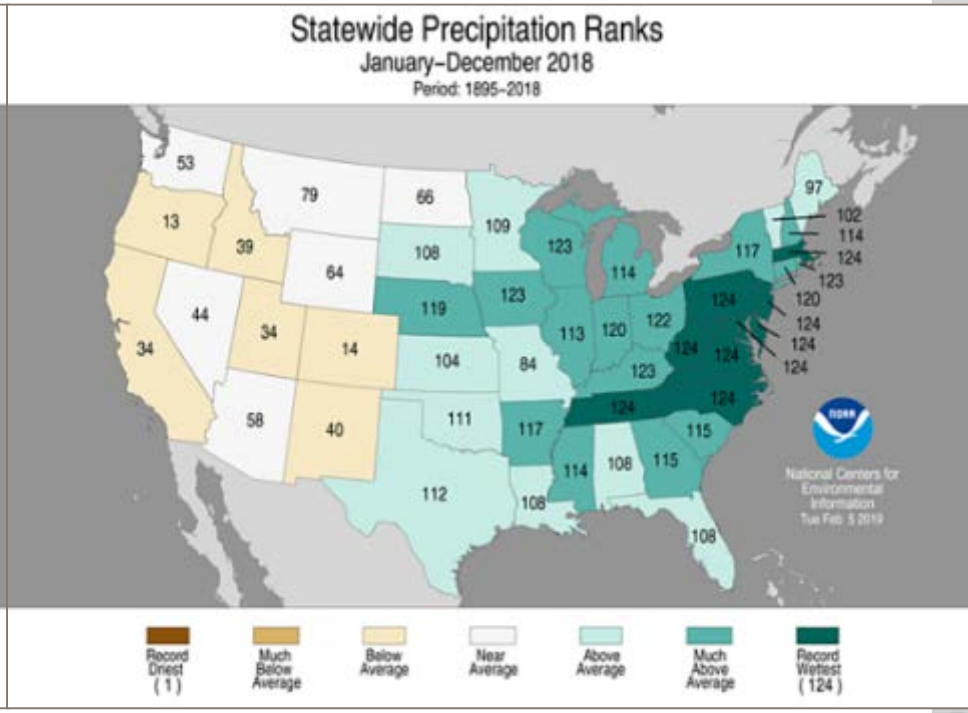
2018 – Climate Summary
Missouri River Basin



Near Average



Near to Much Above Average

2018 upper basin runoff – 41.9 MAF* (165% of average)

3rd highest in 120 years of record

*above Sioux City, IA; preliminary volume

Source: NOAA, National Centers for Environmental Information

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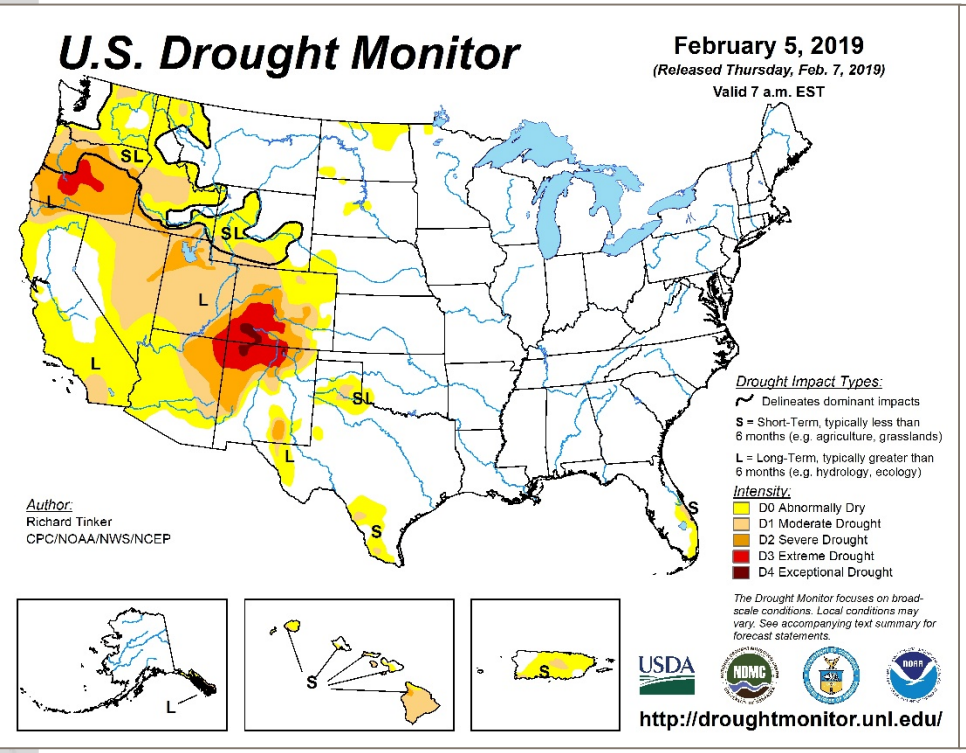
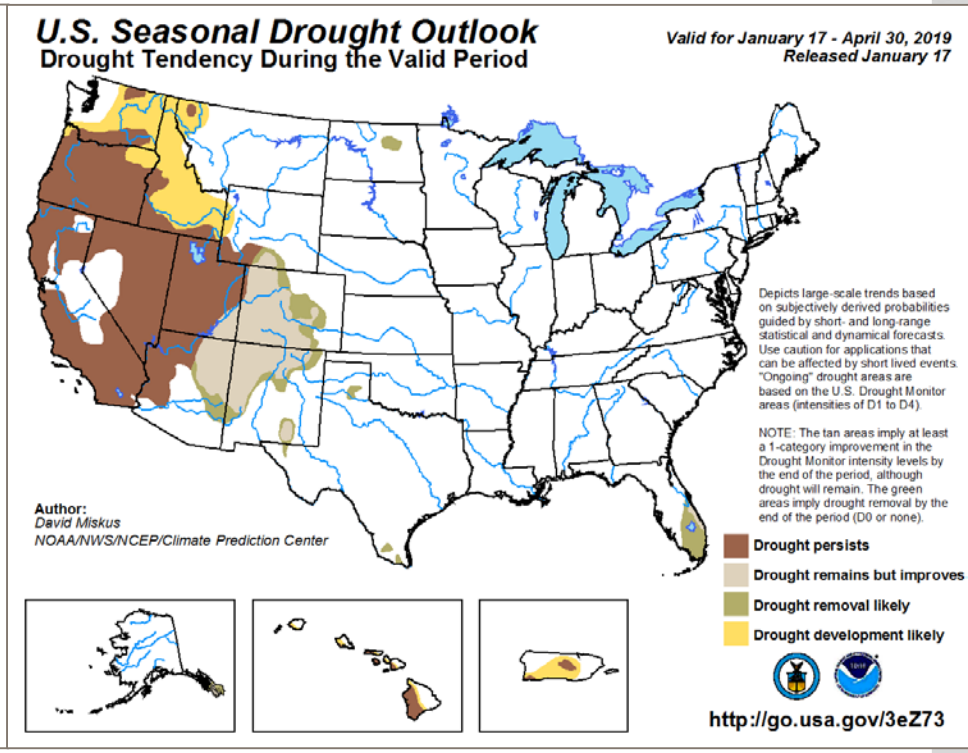
Current Drought Conditions
Missouri River Basin





- Missouri Basin is not being impacted by drought.
- No drought development is expected through the end of April

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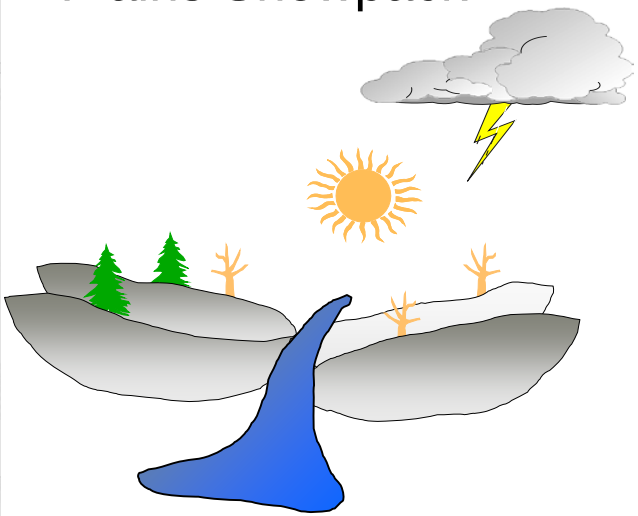
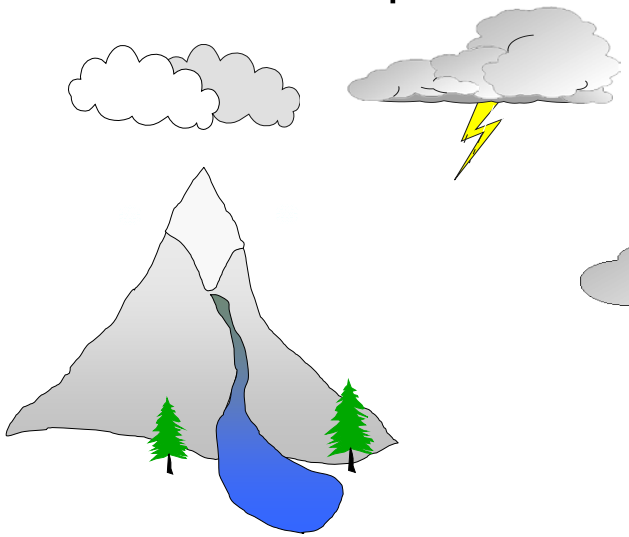
Runoff Components

Plains Snowpack



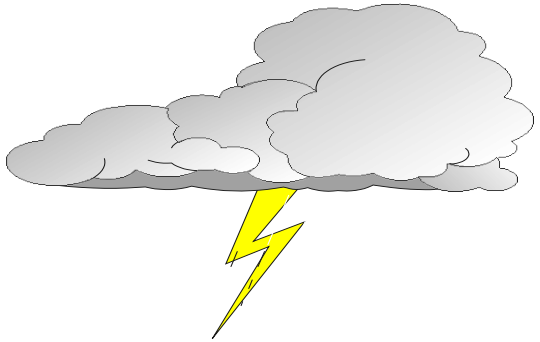
March and April

Mountain Snowpack



May, June and July

Rainfall



March through October

2019 Forecast = 25.6 MAF, about average*

*Average runoff = 25.3 MAF

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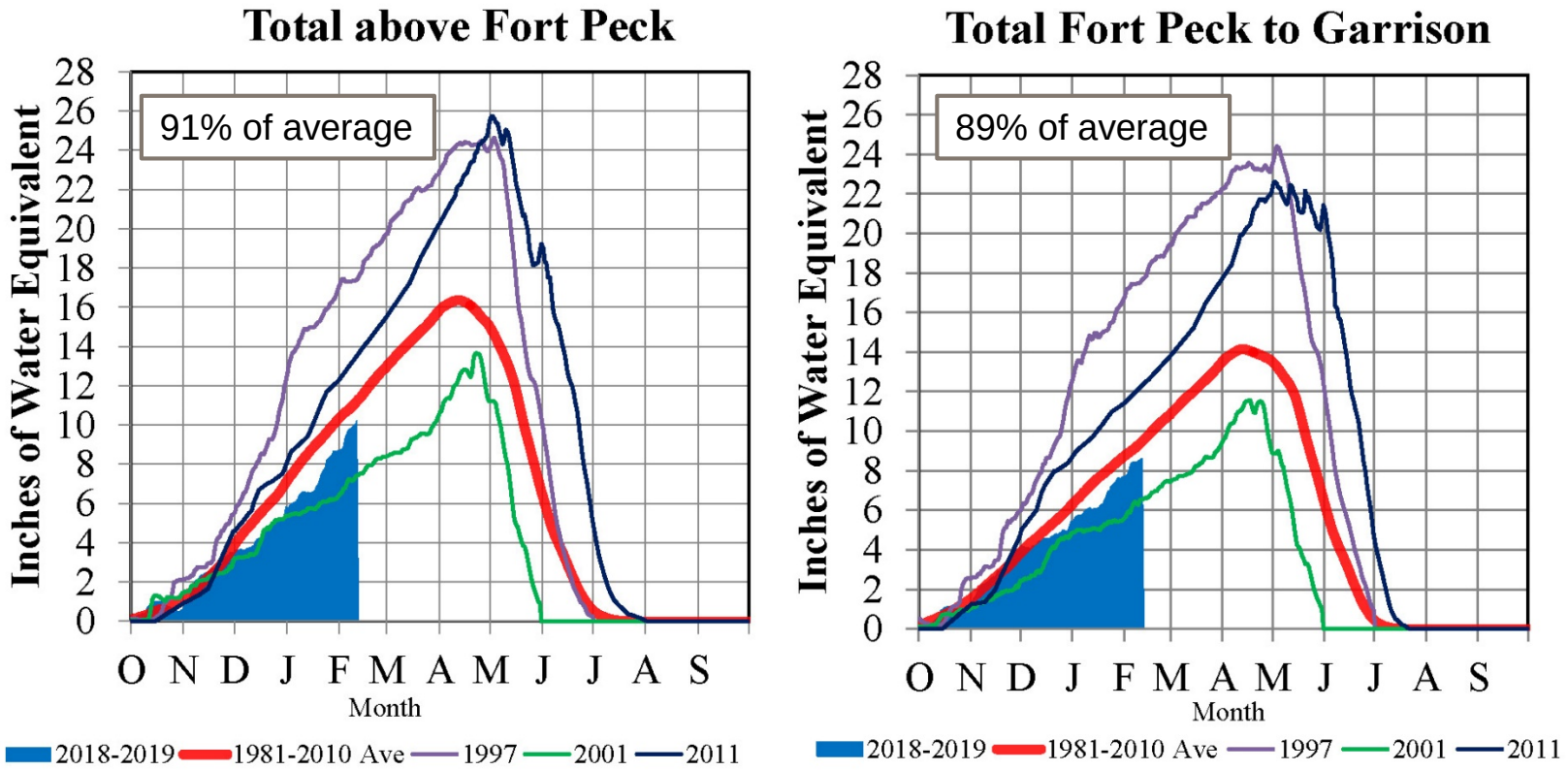
Missouri River Basin
2018-19 Mountain Snowpack
February 11, 2019

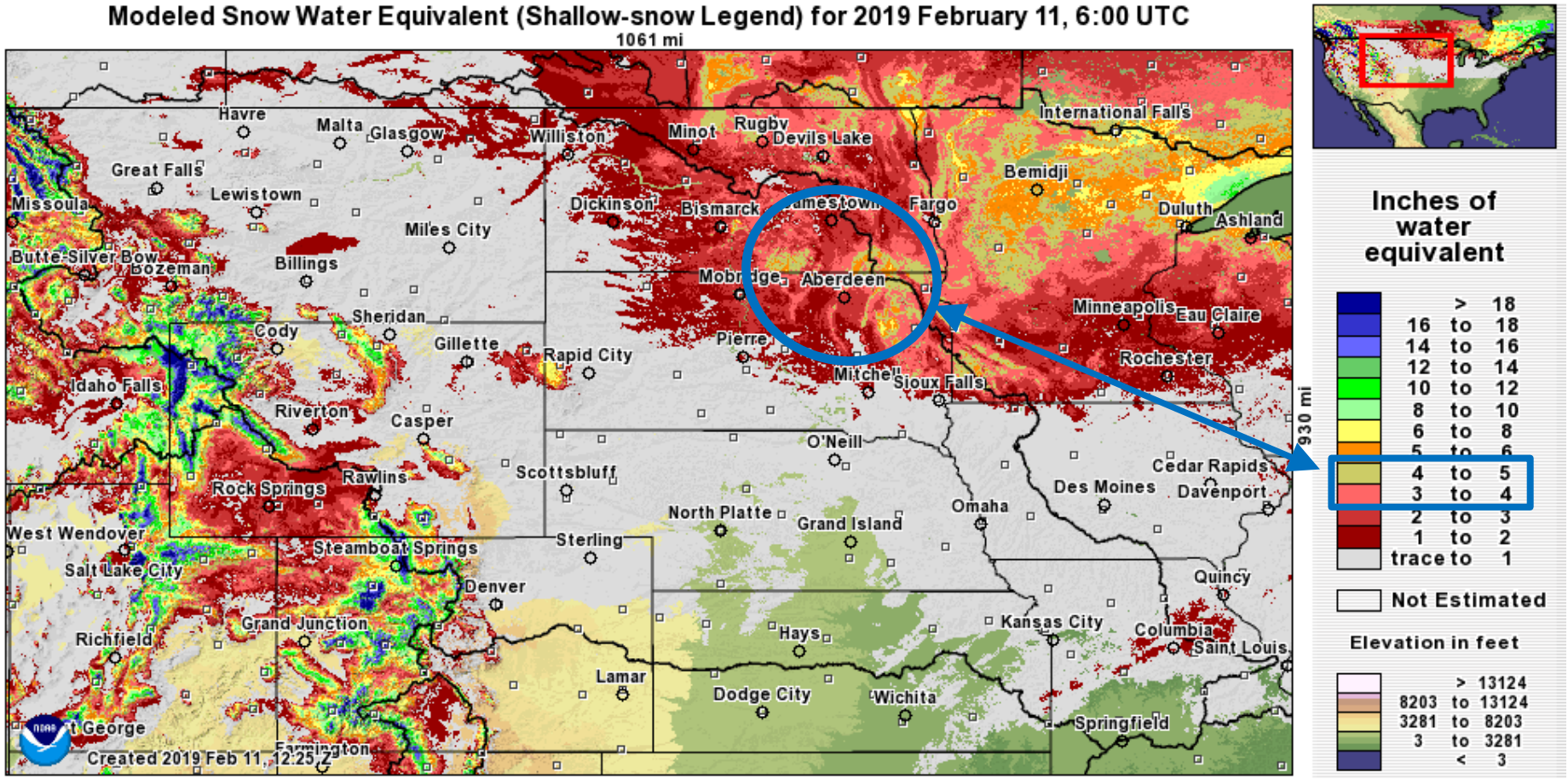


The Missouri River Basin mountain snowpack normally peaks near April 15. On February 11, 2019 the mountain Snow Water Equivalent (SWE) in the "Total above Fort Peck" reach was 10.2", 91% of the February 11 average. The mountain SWE in the "Total Fort Peck to Garrison" reach was 8.6", 89% of the February 11 average. By February 15, about 70% of the total accumulation has occurred.

70% of peak accumulation normally occurs by February 15.

Plains Snowpack

February 11, 2019



Source: NOAA, National Operational Hydrologic Remote Sensing Center

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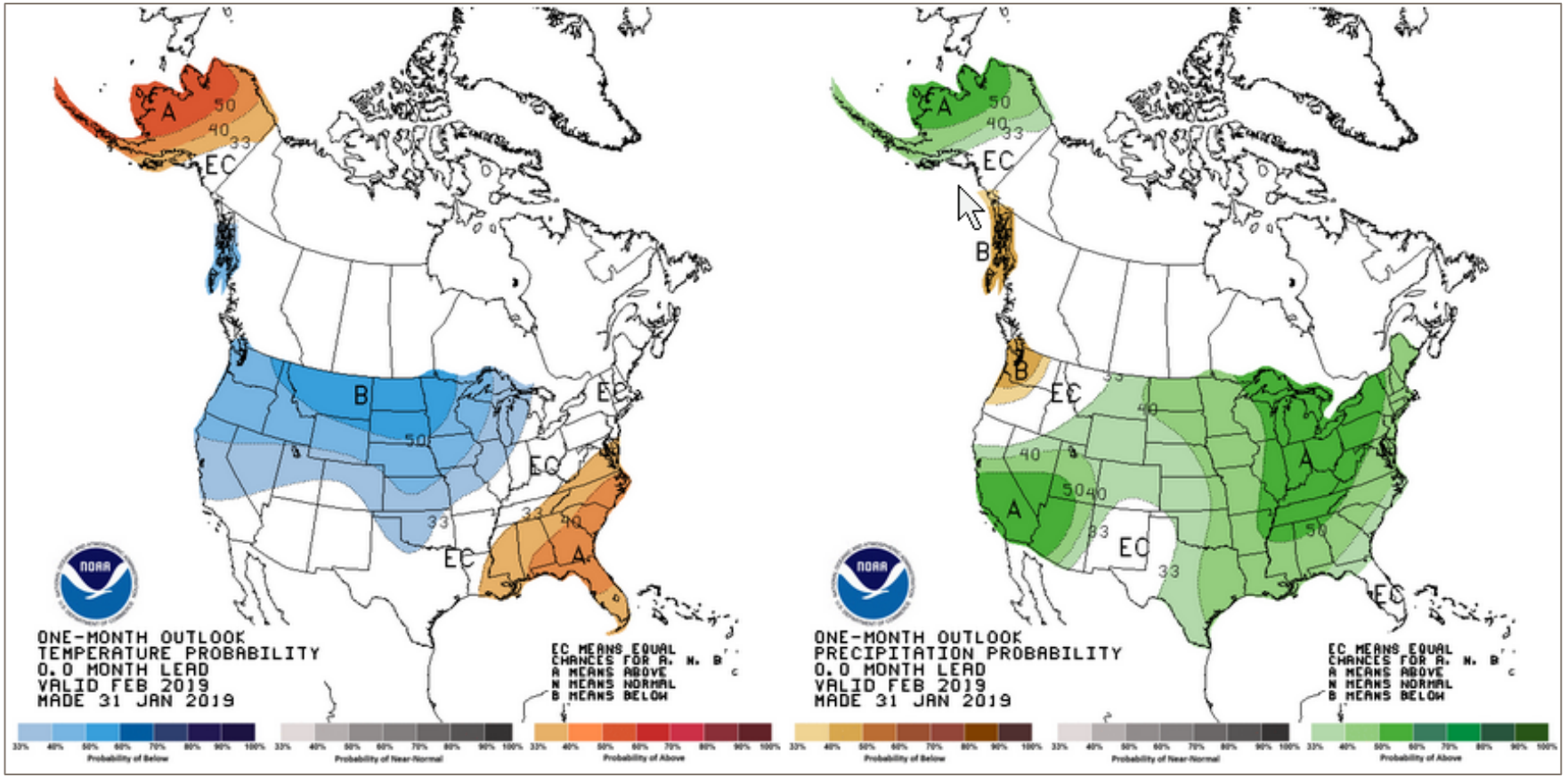
Temperature and Precipitation Outlooks February



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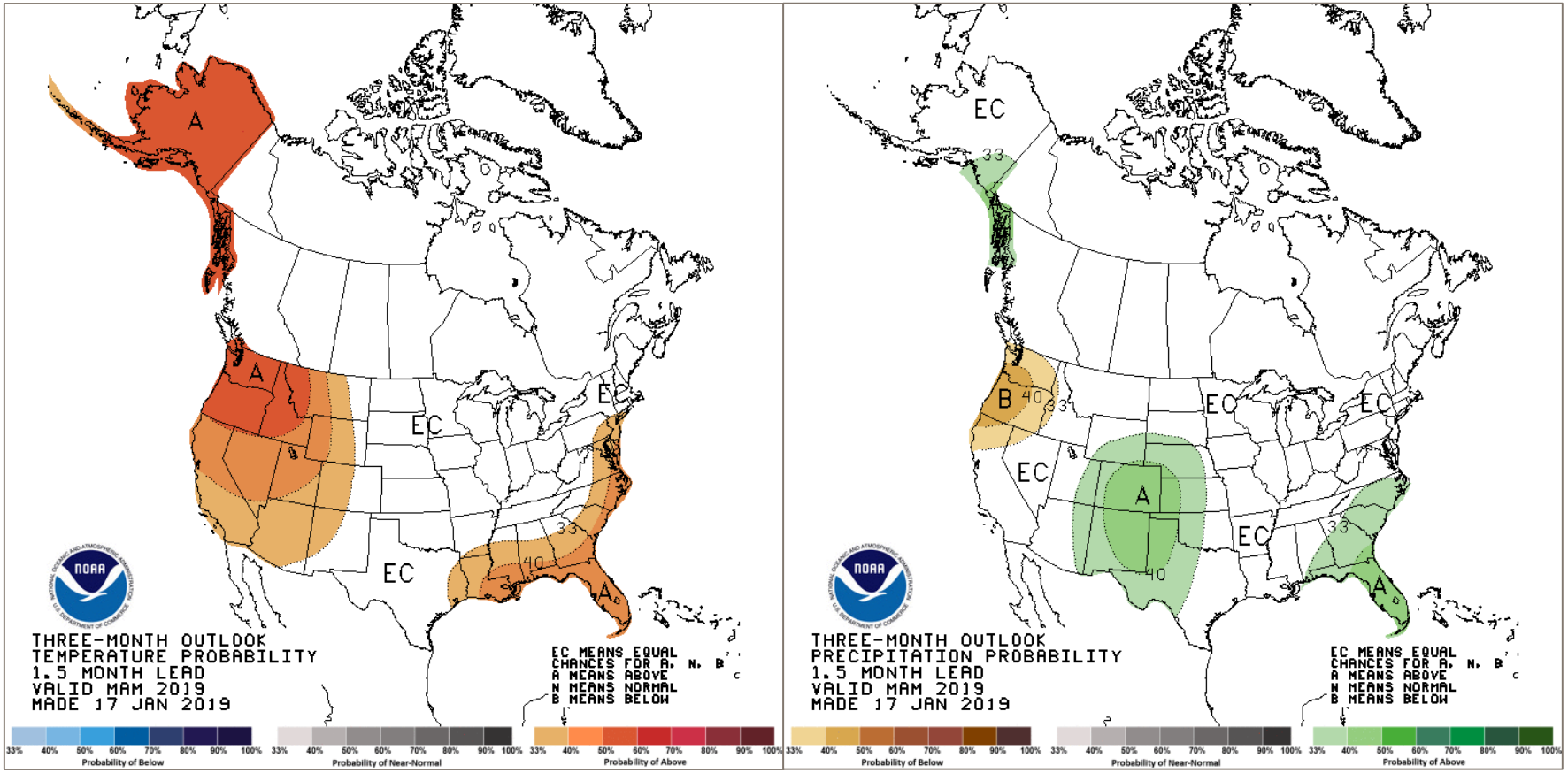
Temperature and Precipitation Outlooks
March - April - May



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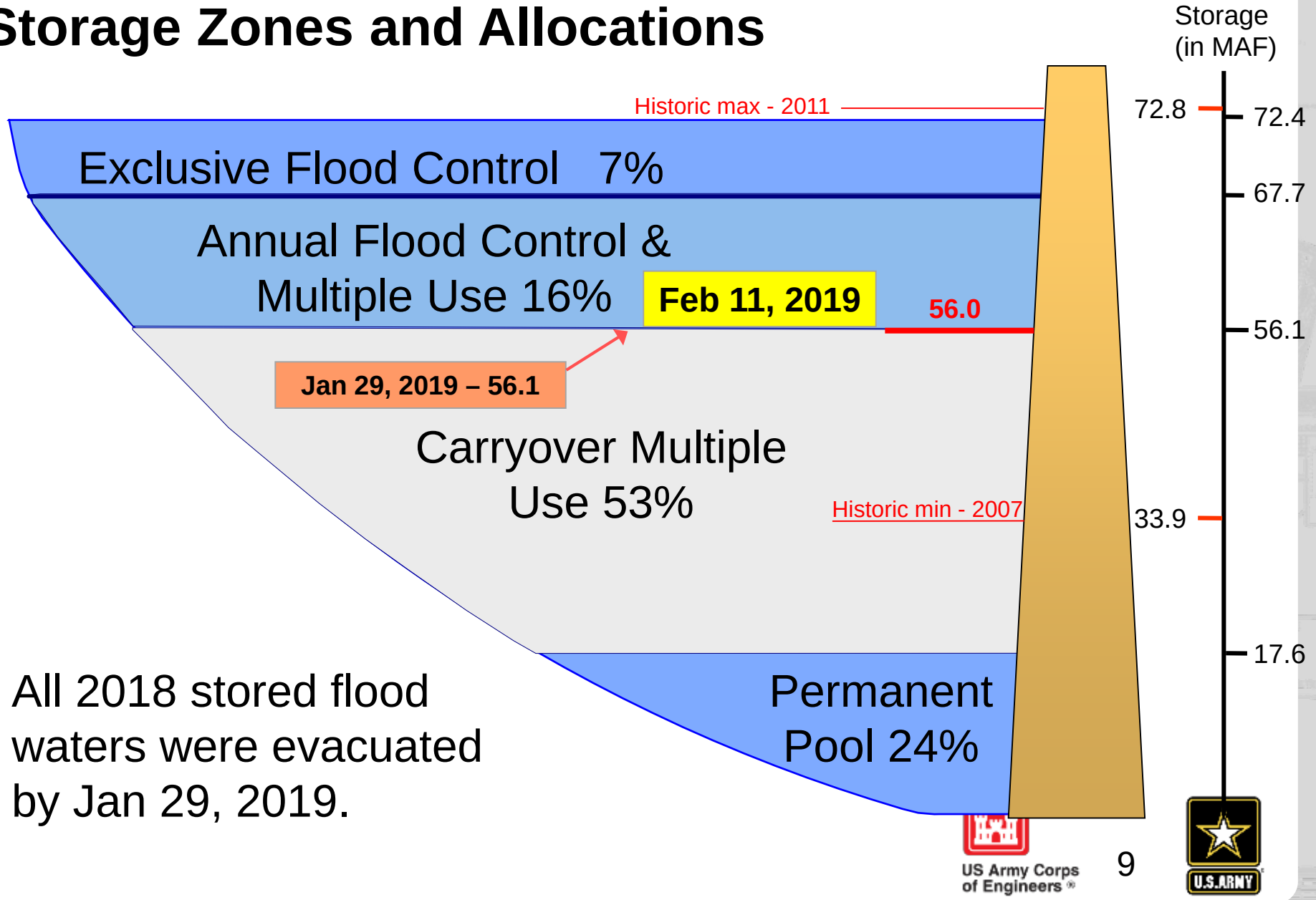
Missouri River Mainstem System Storage Zones and Allocations



All 2018 stored flood waters were evacuated by Jan 29, 2019.

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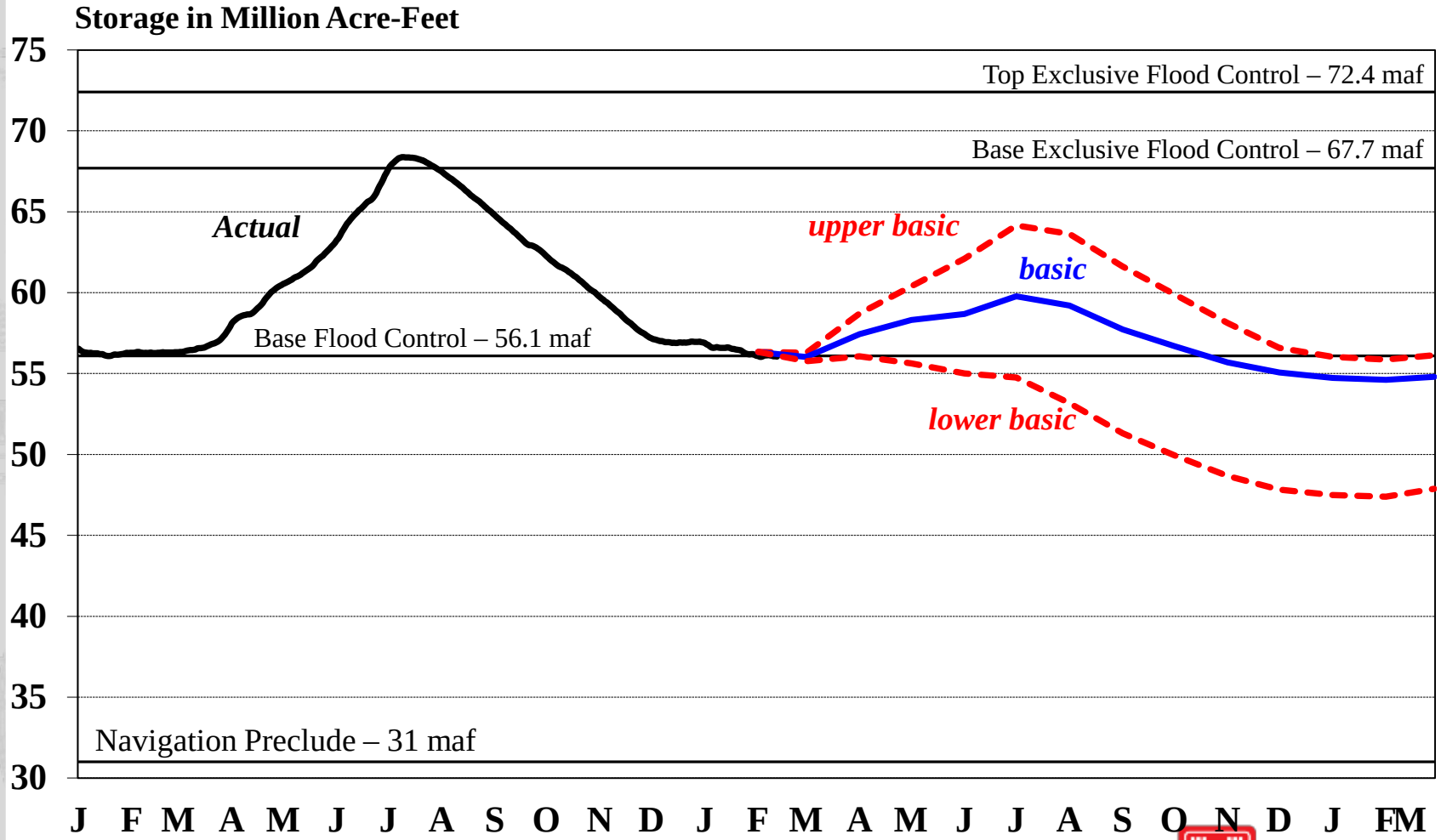
Mainstem System Storage – Forecast for 2019
February 1 Monthly Study



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Planned Operation for 2019*

- 2019 Runoff Forecast (Feb 1) = 25.6 MAF (about average)
- All stored 2018 flood waters evacuated (Jan 29, 2019)
- Navigation flow support (first half of season) based on March 15 system storage check
  - ➢ Full service flow support
    - ✓ 31,000 cfs at Sioux City and Omaha
    - ✓ 37,000 cfs at Nebraska City
    - ✓ 41,000 cfs at Kansas City
  - ➢ Season begins April 1 at mouth
- Navigation flow support and season length (second half of season) based on July 1 system storage check

*based on February 1 monthly studies

Planned Operation for 2019* (cont'd)

- **Navigation Flow Support**
  - Basic (most likely) – full service for the entire season
  - Lower Basic – full service for the 1st half; 2,200 cfs below full service for 2nd half
  - Upper Basic – full service for the 1st half; flood evacuation releases for 2nd half
- **Length of Flow Support**
  - Basic (most likely) – full 8-month season
  - Lower Basic – full 8-month season
  - Upper Basic – 10-day extension
- **Opening Dates of Flow Support**
  - Sioux City, IA – March 23
  - Omaha, NE – March 25
  - Kansas City, MO – March 28
  - Mouth of Missouri – April 1

*based on February 1 monthly studies

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Planned Operation for 2019 (cont'd)

- Reservoir unbalancing and Gavins Point bimodal spring pulse were removed as part of the 2018 Master Manual
- Favor Oahe during the forage fish spawn period if inflows are not sufficient to keep all three upper reservoirs steady or rising
- Public meetings scheduled April 9-11, 2019
- Monthly calls with Congressional delegations, Tribes, states, local officials and media
  - Audio file available on our website
  - Next CODEL scheduled for Thursday, March 7

WEEKLY UPDATE
www.nwd-mr.usace.army.mil/rcc/

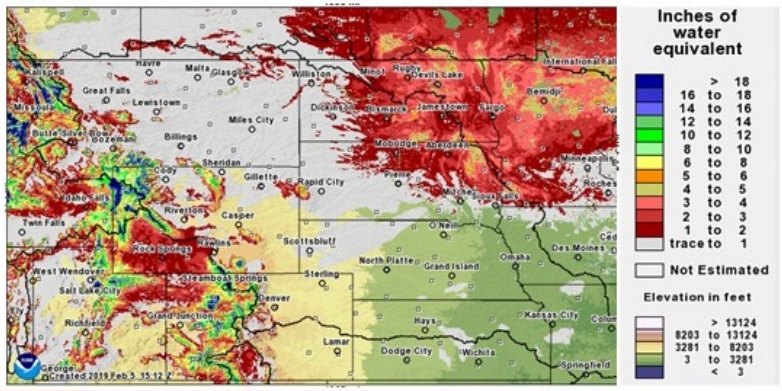
Missouri River Basin – Weekly Update – 05 Feb 2019

Mainstem Reservoir Status:

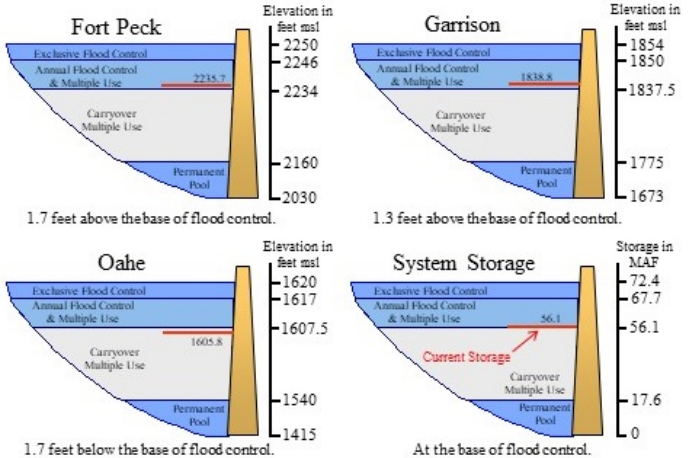
- System storage reached 56.1 MAF, the base of the Annual Flood Control and Multiple Use Zone, on January 28, 2019. This means that all stored flood waters from 2018 have been evacuated.
- The upper Basin runoff forecast for 2019 is 25.6 MAF, which is about average.
- Mountain snowpack is currently below average (lower right graphic).
- Plains snow conditions vary throughout the upper Basin: light in Montana and North Dakota, and moderate-to-heavy in the central and eastern Dakotas (upper right graphic).
- The Gavins Point winter release is currently 20,000 cfs. Releases are expected to be reduced to 17,000 cfs by mid-February. Ice conditions will be closely monitored.
- The Gavins Point release schedule and forecasted Missouri River flows and stages can be found here:

Click Here for Missouri River releases, flows & stages

Plains Snowpack
February 4, 2019



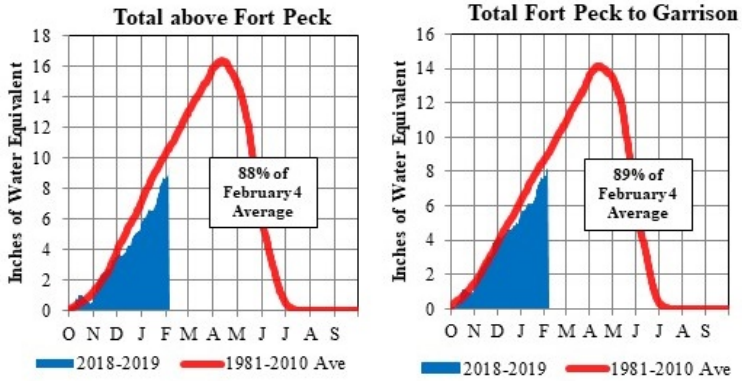
Current Reservoir Levels



Click Here for Latest 3-Week Forecast

Click Here for Comparison Plots

Mountain Snowpack
February 4, 2019



The Missouri River Basin mountain snowpack normally peaks near April 15.

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LOWER MISSOURI RIVER FORECAST
Gavins Release Forecasting Tool (GRFT)

Missouri River below Gavins Point Dam Forecast

** All flows in 1000 cfs ** as of: 2/8/2019

Date	GAPT	AKIA	SUX	DENE	TUIA	OMA	GRNE	WTNE	LUNE	NCNE	
2/5	20.2	2.4	22.3	24.5	3.7	34.0	0.9	2.6	13.1	44.2	
2/6	20.0	2.2	22.2	22.6	3.5	31.0	1.0	2.2	11.1	40.9	
2/7	20.0	2.1	23.0	23.3	3.4	29.2	1.5	1.9	9.8	36.8	
2/8	20.0	2.0	22.3	23.6	3.3	29.4	2.6	1.6	7.3	33.4	Observed
2/9	20.0	1.9	22.2	23.1	3.2	29.1	2.8	1.6	6.7	31.7	Forecast
2/10	20.0	1.9	22.1	22.9	3.1	28.5	2.8	1.6	7.0	31.1	
2/11	20.0	1.9	22.0	22.8	3.0	28.1	2.7	1.6	6.6	30.7	
2/12	20.0	1.8	22.0	22.7	2.8	27.8	2.6	1.7	6.7	30.2	
2/13	17.0	1.8	22.0	22.6	2.7	27.6	2.5	1.7	6.9	30.1	
2/14	17.0	1.7	21.6	22.6	2.7	27.4	2.5	1.7	6.8	30.0	
2/15	17.0	1.7	19.9	21.9	2.6	27.0	2.4	1.7	6.7	29.8	
2/16	17.0	1.7	19.1	20.5	2.5	25.7	2.4	1.7	6.6	28.8	
2/17	17.0	1.6	18.9	19.7	2.5	24.5	2.4	1.7	6.6	27.4	
2/18	17.0	1.6	18.9	19.5	2.4	24.0	2.3	1.7	6.5	26.6	
2/19	17.0	1.6	18.9	19.5	2.4	23.8	2.3	1.7	6.4	26.3	
2/20	17.0	1.6	18.9	19.5	2.3	23.7	2.2	1.7	6.3	26.1	
2/21	17.0	1.6	18.9	19.4	2.3	23.6	2.2	1.7	6.2	26.0	
2/22	17.0	1.5	18.9	19.4	2.3	23.6	2.1	1.7	6.2	25.9	

Date	HAIA	RUNE	STJ	SSMO	MKC	WVMO	SMNM	BNMO	BAGL	HEMO	
2/5	5.5	51.6	63.4	10.6	81.6	65.7	48.8	107.3	2.4	86.2	
2/6	4.6	46.4	54.9	8.6	79.8	87.6	35.4	117.8	10.4	120.3	
2/7	3.4	40.6	48.6	3.3	66.5	76.5	20.0	123.7	18.3	142.2	
2/8	2.9	34.7	42.9	1.9	56.1	68.0	10.5	102.7	22.0	182.3	Observed
2/9	2.5	31.8	37.9	1.2	48.0	56.9	7.4	79.9	6.3	141.2	Forecast
2/10	2.2	30.3	34.8	0.9	42.9	48.6	5.8	65.5	6.3	117.0	
2/11	2.1	29.8	33.3	0.8	40.0	43.8	5.2	56.8	12.6	92.4	
2/12	2.0	29.3	32.4	0.8	38.5	41.0	5.0	51.9	12.6	80.9	
2/13	2.0	29.1	31.7	0.7	37.3	39.4	4.7	49.0	12.6	76.7	
2/14	1.9	29.0	31.5	0.7	36.6	38.2	4.3	46.9	9.5	71.6	
2/15	1.9	29.0	31.4	0.6	36.4	37.5	4.2	45.3	9.5	67.4	
2/16	1.8	28.5	31.1	0.6	36.1	37.1	4.0	44.3	2.5	62.8	
2/17	1.8	27.3	30.2	0.5	36.0	36.8	3.9	43.7	2.5	59.7	
2/18	1.8	26.2	28.9	0.5	36.2	36.7	3.9	43.1	2.5	54.4	
2/19	1.7	25.7	28.0	0.5	36.4	36.9	3.8	42.9	2.5	51.9	
2/20	1.7	25.6	27.6	0.5	36.0	36.8	3.7	42.8	2.5	51.4	
2/21	1.7	25.5	27.5	0.4	35.8	36.5	3.7	42.5	2.5	51.1	
2/22	1.6	25.5	27.4	0.4	35.7	36.3	3.6	42.2	2.5	50.8	

Results of Release for Date					Service Level Exceeded				Flood Targets:		
Date	SUX	OMA	NCNE	MKC	SUX	OMA	NCNE	MKC	Full Service		
2/8	22.1	28.1	30.2	36.6	-8.9	-2.9	-6.8	-4.4	OMA	NCNE	MKC
2/9	22.0	27.8	30.1	36.4	-9.0	-3.2	-6.9	-4.6	41.0	47.0	71.0
2/10	22.0	27.6	30.0	36.1	-9.0	-3.4	-7.0	-4.9	Minimum Service		
2/11	22.0	27.4	29.8	36.0	-9.0	-3.6	-7.2	-5.0	OMA	NCNE	MKC
2/12	21.6	27.0	28.8	36.2	-9.4	-4.0	-8.2	-4.8	46.0	57.0	101.0
2/13	19.9	25.7	27.4	36.4	-11.1	-5.3	-9.6	-4.6	Current Service Level:		
2/14	19.1	24.5	26.6	36.0	-11.9	-6.5	-10.4	-5.0	35.0	kcfs	
2/15	18.9	24.0	26.3	35.8	-12.1	-7.0	-10.7	-5.2			
2/16	18.9	23.8	26.1	35.7	-12.1	-7.2	-10.9	-5.3			

This forecast is prepared and used by the Corps of Engineers' (Corps) Missouri River Basin Water Management (MRBWM) office, per the Master Manual. The National Weather Service prepares and distributes river stage forecasts for the general public. Please refer to the following link for further discussion:

Corps Missouri River Forecast

Missouri River below Gavins Point Dam
Stage Forecast

** All stages in feet ** as of: 2/8/2019

Date	SUX	DENE	OMA	NCNE	RUNE	STJ	MKC	WVMO	BNMO	HEMO	
2/5	8.7	19.4	14.8	11.1	11.3	12.0	16.0	14.0	14.6	10.2	
2/6	8.6	18.7	13.7	10.3	10.3	10.5	15.7	16.6	15.7	13.9	
2/7	8.9	19.0	13.1	9.2	9.1	9.2	13.7	15.3	16.2	15.9	
2/8	8.7	19.1	13.1	8.4	7.9	8.0	12.0	14.3	14.2	19.1	Observed
2/9	8.6	18.9	13.0	7.9	7.4	6.8	10.5	12.7	11.7	15.8	Forecast
2/10	8.6	18.8	12.8	7.8	7.1	6.0	9.5	11.4	9.8	13.6	
2/11	8.6	18.8	12.7	7.7	6.9	5.6	8.9	10.6	8.5	10.9	
2/12	8.6	18.8	12.6	7.5	6.8	5.4	8.6	10.1	7.7	9.5	
2/13	8.6	18.7	12.5	7.5	6.8	5.2	8.3	9.8	7.2	9.0	
2/14	8.4	18.7	12.4	7.5	6.8	5.1	8.2	9.5	6.8	8.3	
2/15	7.9	18.5	12.3	7.4	6.8	5.1	8.1	9.4	6.5	7.7	
2/16	7.6	18.0	11.8	7.2	6.7	5.0	8.1	9.3	6.3	7.0	
2/17	7.5	17.7	11.3	6.9	6.4	4.8	8.0	9.2	6.2	6.5	
2/18	7.5	17.6	11.2	6.7	6.2	4.4	8.1	9.2	6.1	5.6	
2/19	7.5	17.6	11.1	6.6	6.1	4.1	8.1	9.3	6.0	5.2	
2/20	7.5	17.6	11.1	6.5	6.0	4.0	8.1	9.2	6.0	5.1	
2/21	7.5	17.6	11.0	6.5	6.0	4.0	8.0	9.2	5.9	5.1	
2/22	7.5	17.6	11.0	6.5	6.0	3.9	8.0	9.1	5.9	5.0	

Flood stages at the above stations are shown below										
30.0	35.0	29.0	18.0	17.0	17.0	32.0	20.0	21.0	21.0

http://www.nwd-mr.usace.army.mil/rcc/

* Forecast Information

** River (Corps Only)

*** Missouri River Forecast

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Visit the MRBWM website:
www.nwd-mr.usace.army.mil/rcc/
or Google: *corps Missouri river*

THANK YOU!

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