Missouri River Basin Water Management

US Army Corps of Engineers

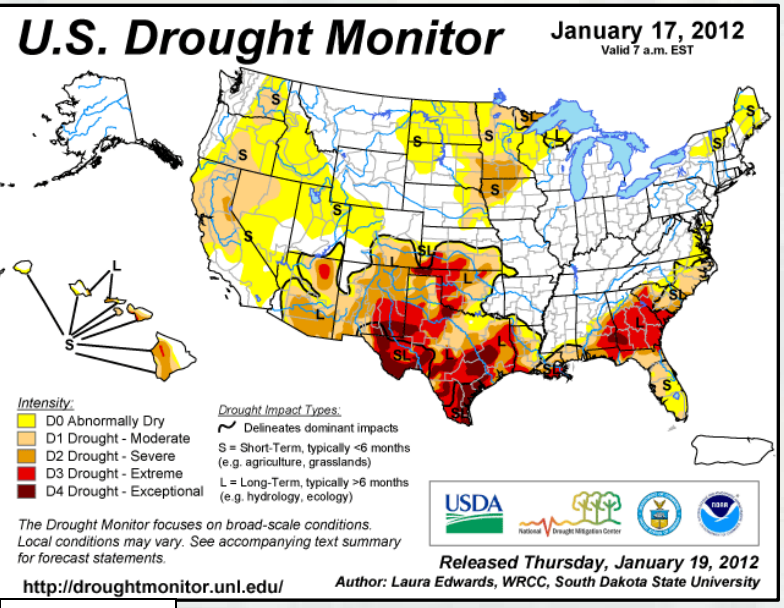
USACE-USGS Joint HQ Meeting

Jan 23, 2013

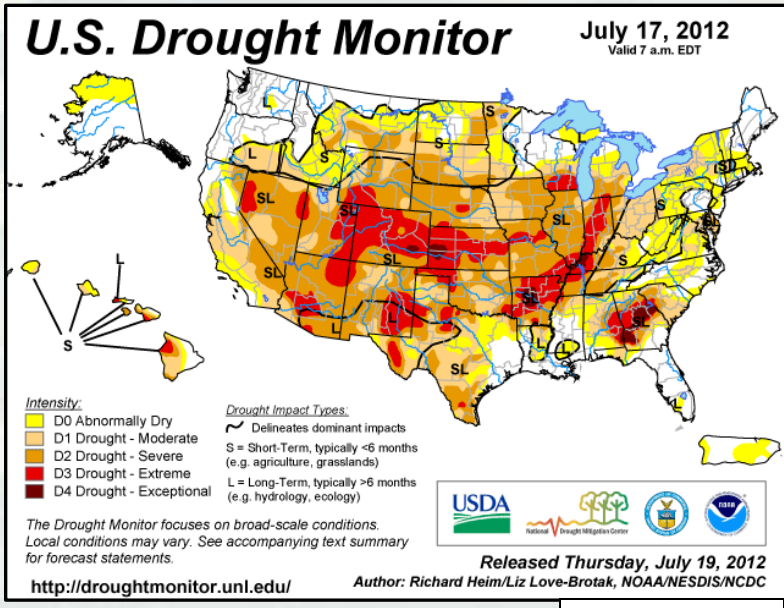
Kevin Grode, P.E.
Reservoir Regulation Team Lead
Missouri River Basin Water Management

US Army Corps of Engineers
BUILDING STRONG®

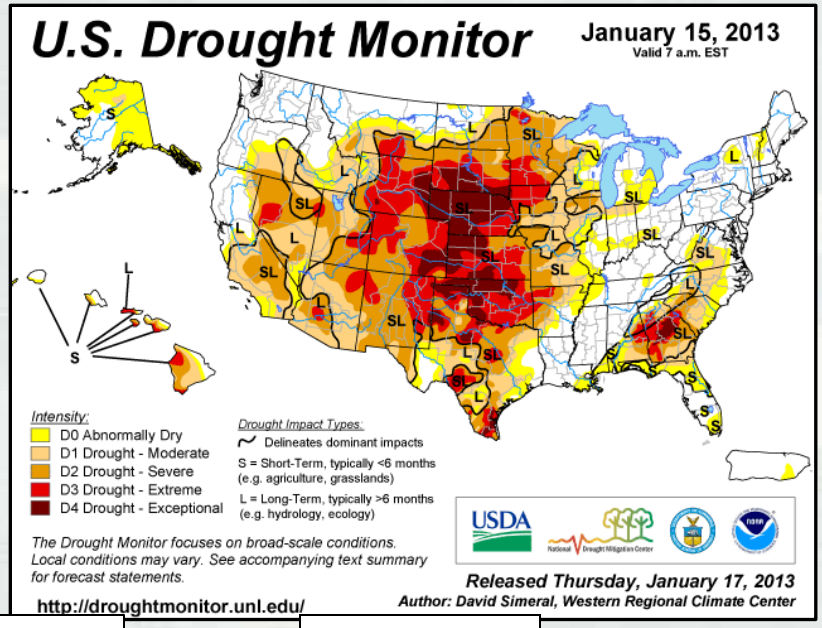
U.S. Drought Monitor (comparison)



1 Year ago



6 Months ago



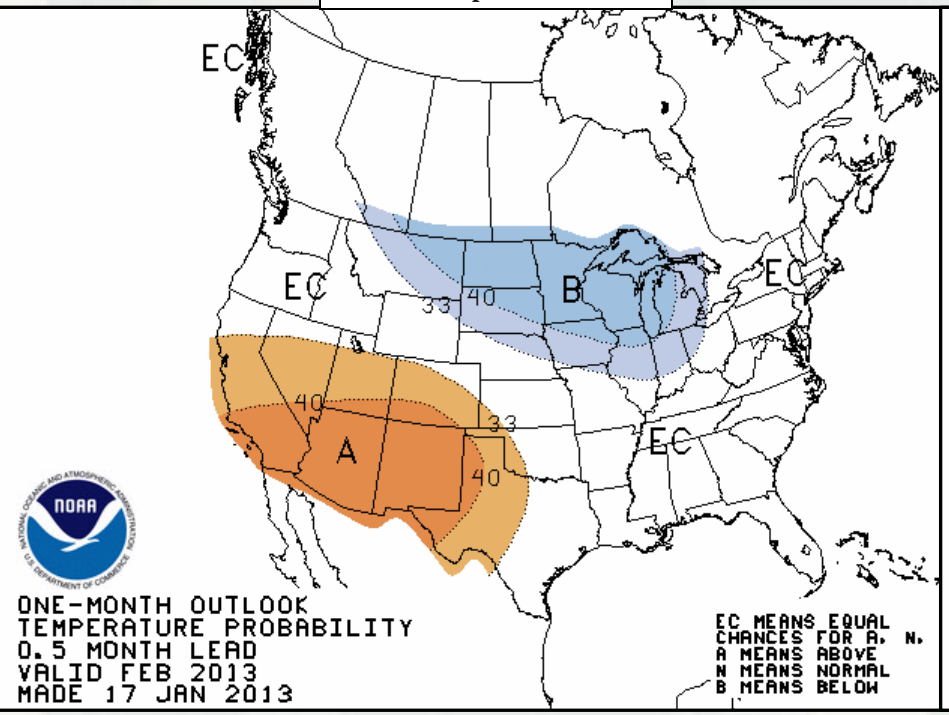
Most recent…

Drought conditions have developed or expanded dramatically throughout the Missouri River Basin over the past 12 months.

Graphics courtesy of National Drought Mitigation Center

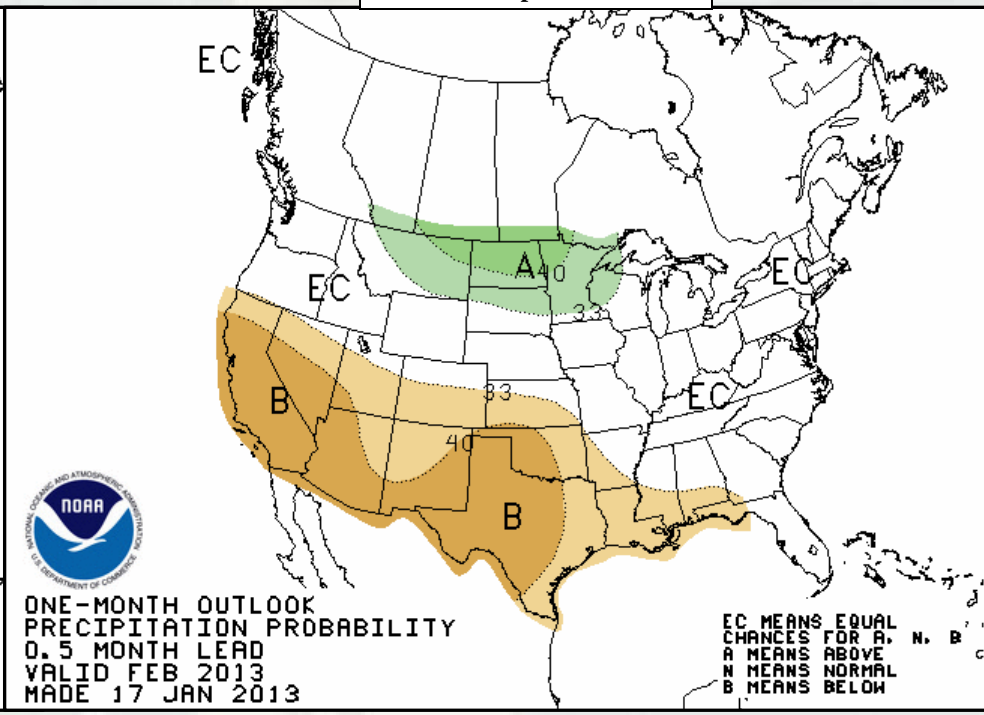
CPC 1-Month Outlook (February 2013)

Temperature



- Omaha and Upstream: Cooler than normal
- Remainder of Basin: Near average temps

Precipitation



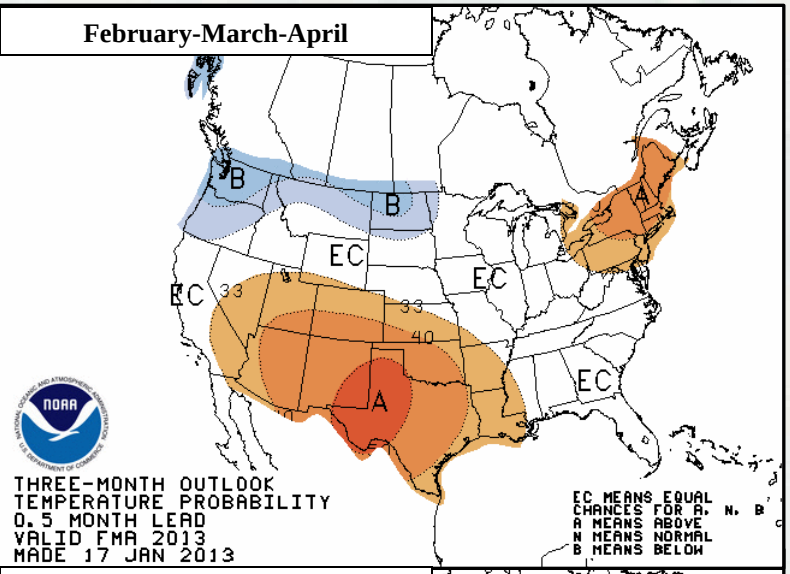
- Upper Basin: Above average moisture
- Remainder of Basin: Near average moisture

Graphics courtesy of NOAA Climate Prediction Center

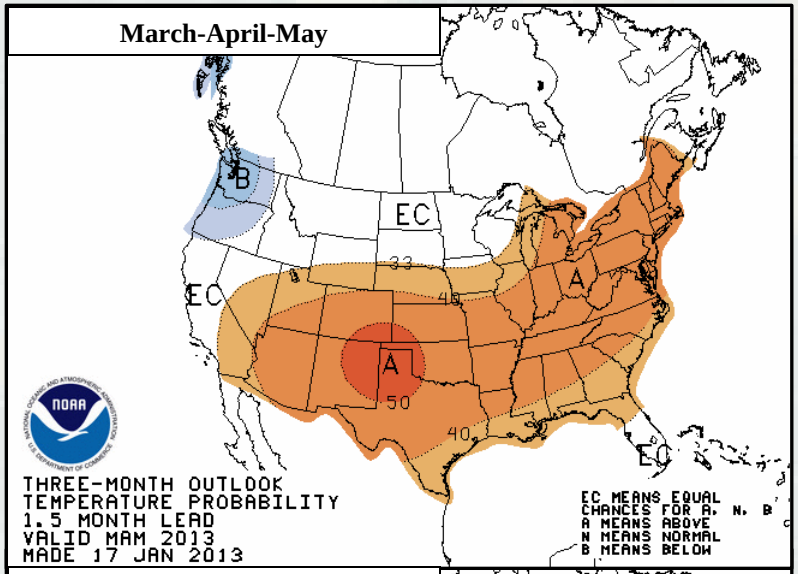
CPC 3-Month Temperature Outlooks

(17 January 2013 update)

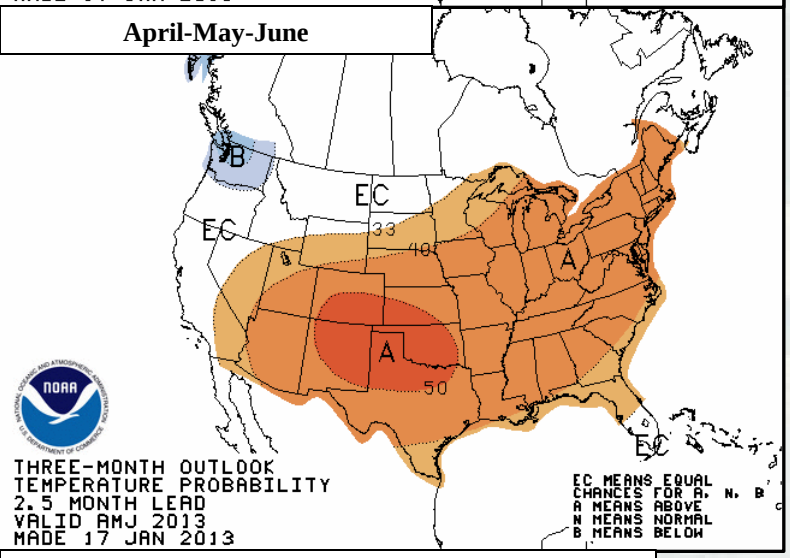
February-March-April



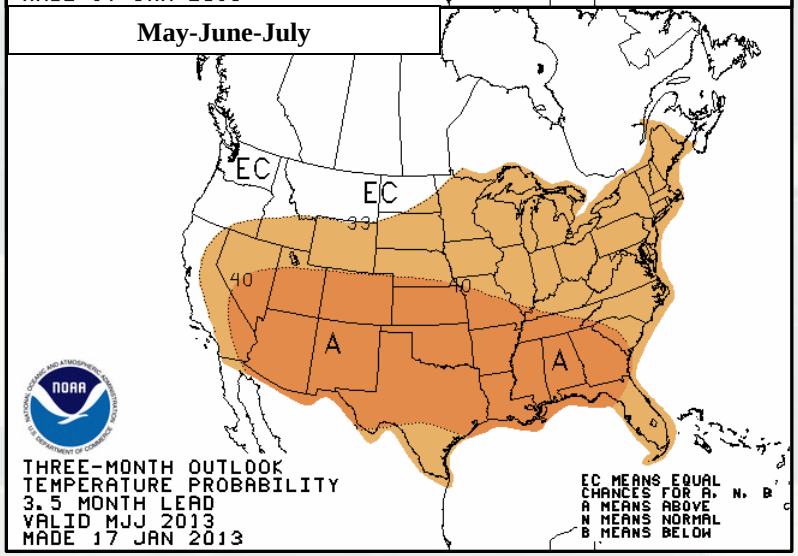
March-April-May



April-May-June



May-June-July

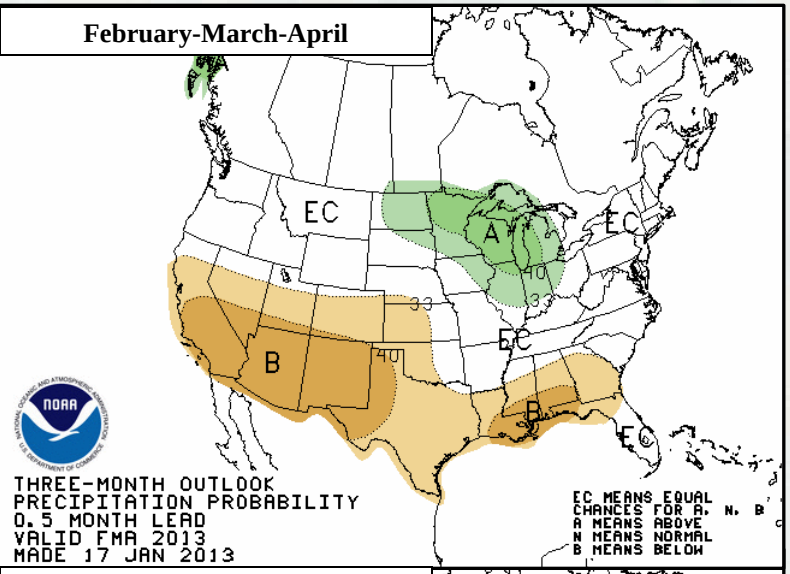


Graphics courtesy of NOAA Climate Prediction Center

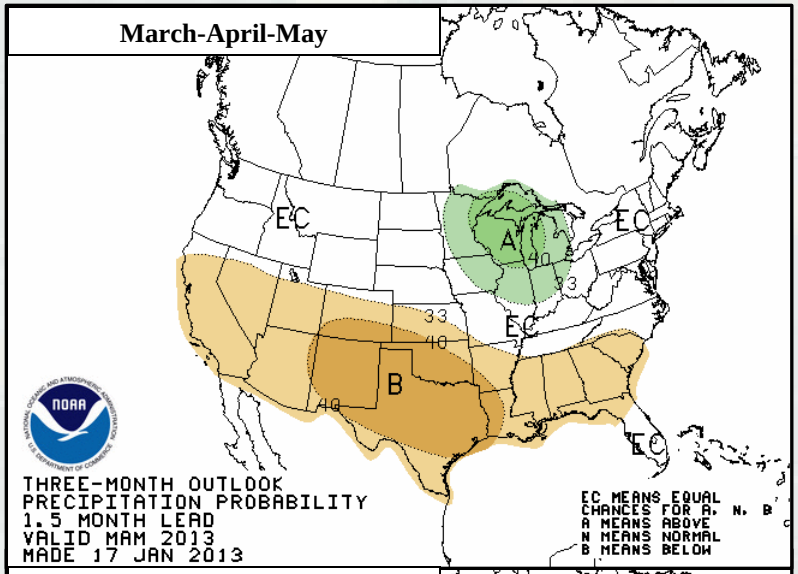
CPC 3-Month Precipitation Outlooks

(17 January 2013 update)

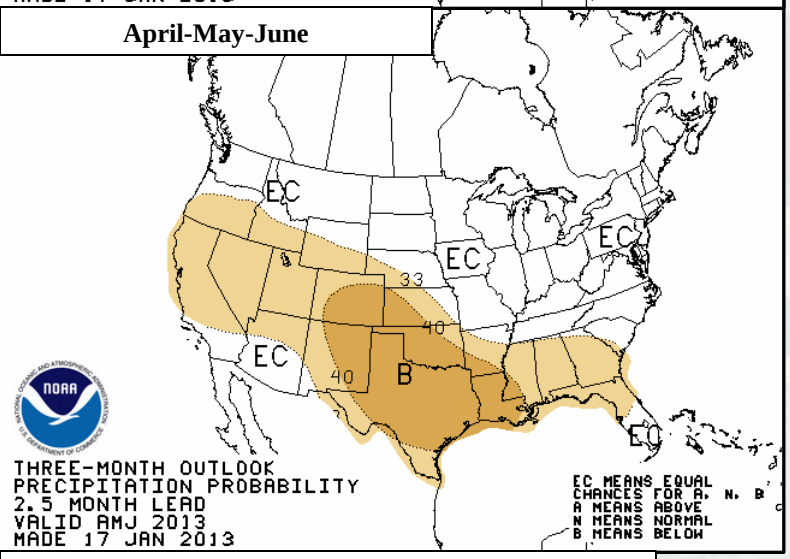
February-March-April



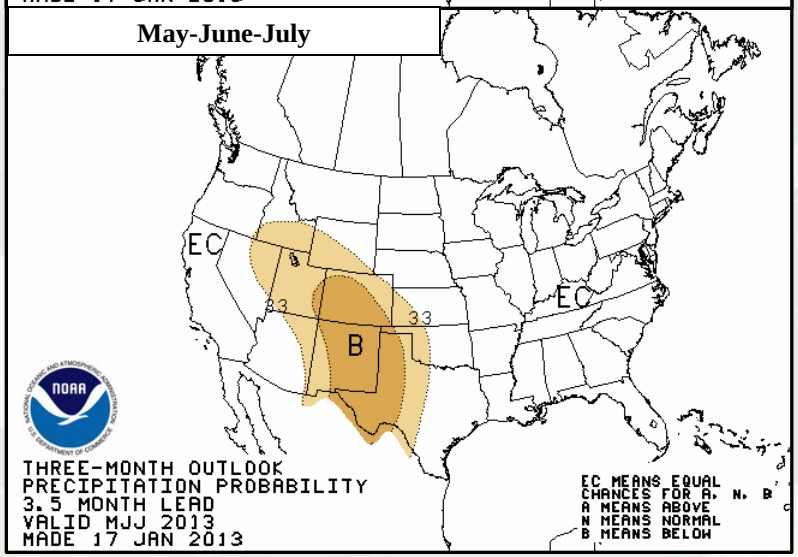
March-April-May



April-May-June

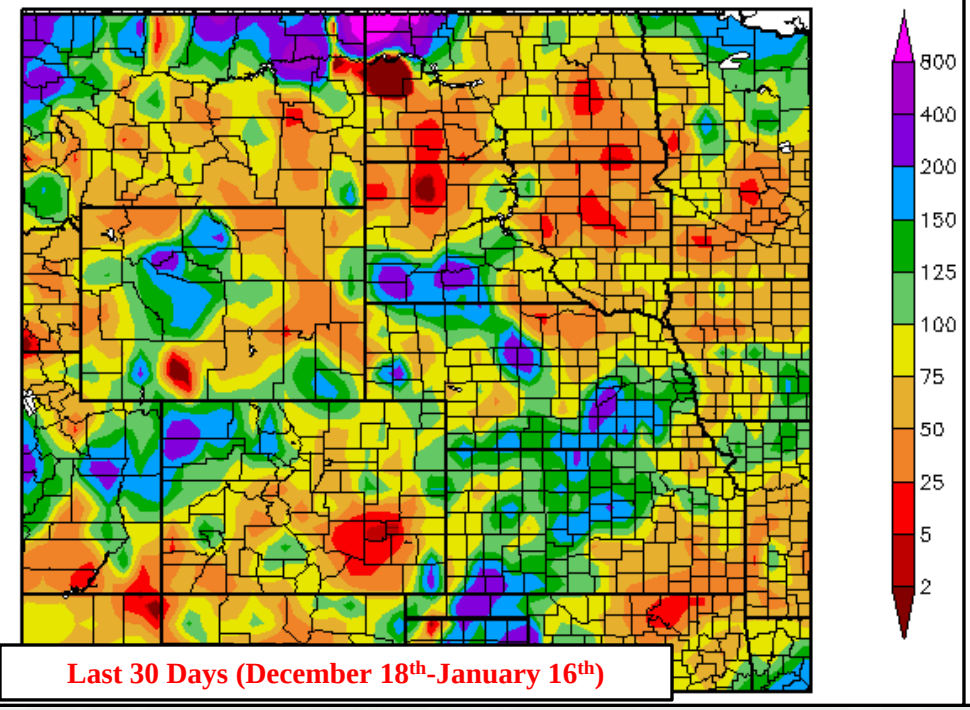


May-June-July

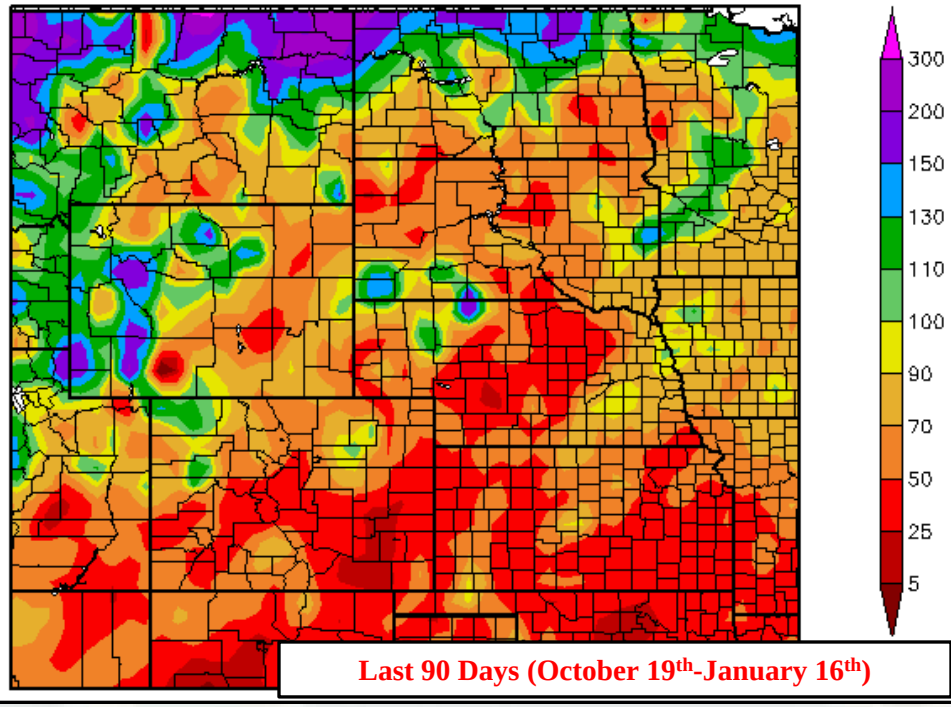


Graphics courtesy of NOAA Climate Prediction Center

Recent Precipitation (Percent of Normal)



Last 30 Days (December 18th-January 16th)



Last 90 Days (October 19th-January 16th)

> 200% of normal

- Northern Montana/Northwestern North Dakota
- Southwestern South Dakota
- Isolated parts of Nebraska

< 25% of normal

- Portions of North and South Dakota

> 150% of normal

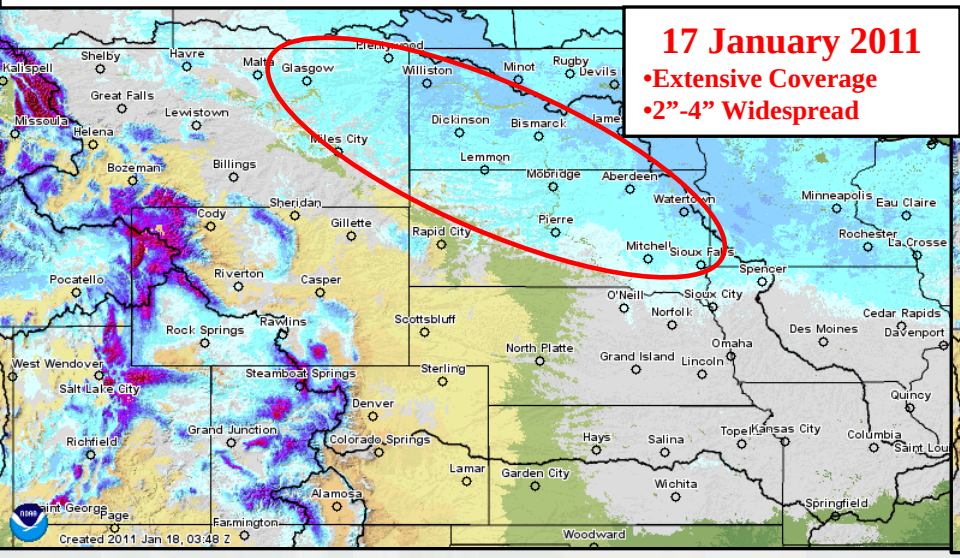
- Northern Montana
- Northern North Dakota

< 50% of normal

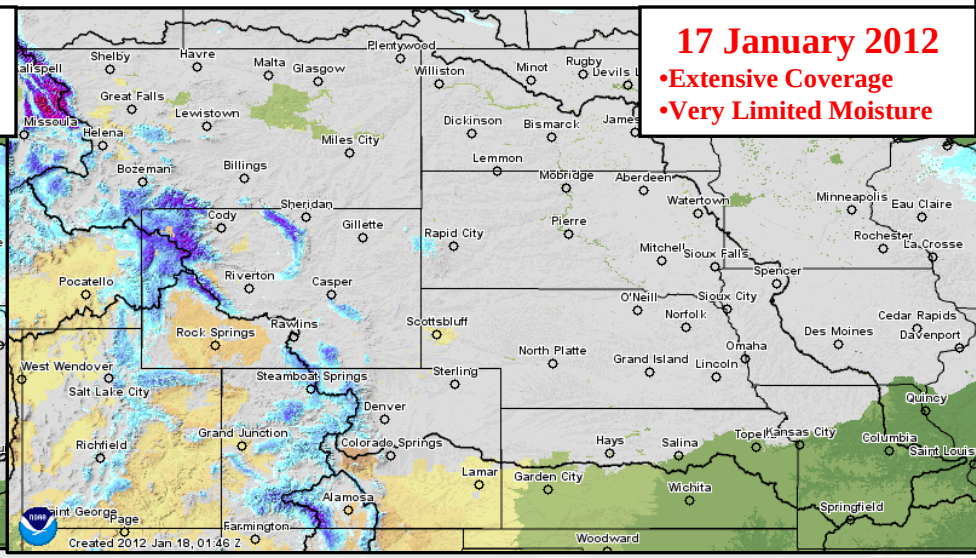
- Isolated parts of the Dakotas/Wyoming
- Central Nebraska
- Much of Kansas

Graphics courtesy of High Plains Regional Climate Center (HPRCC)

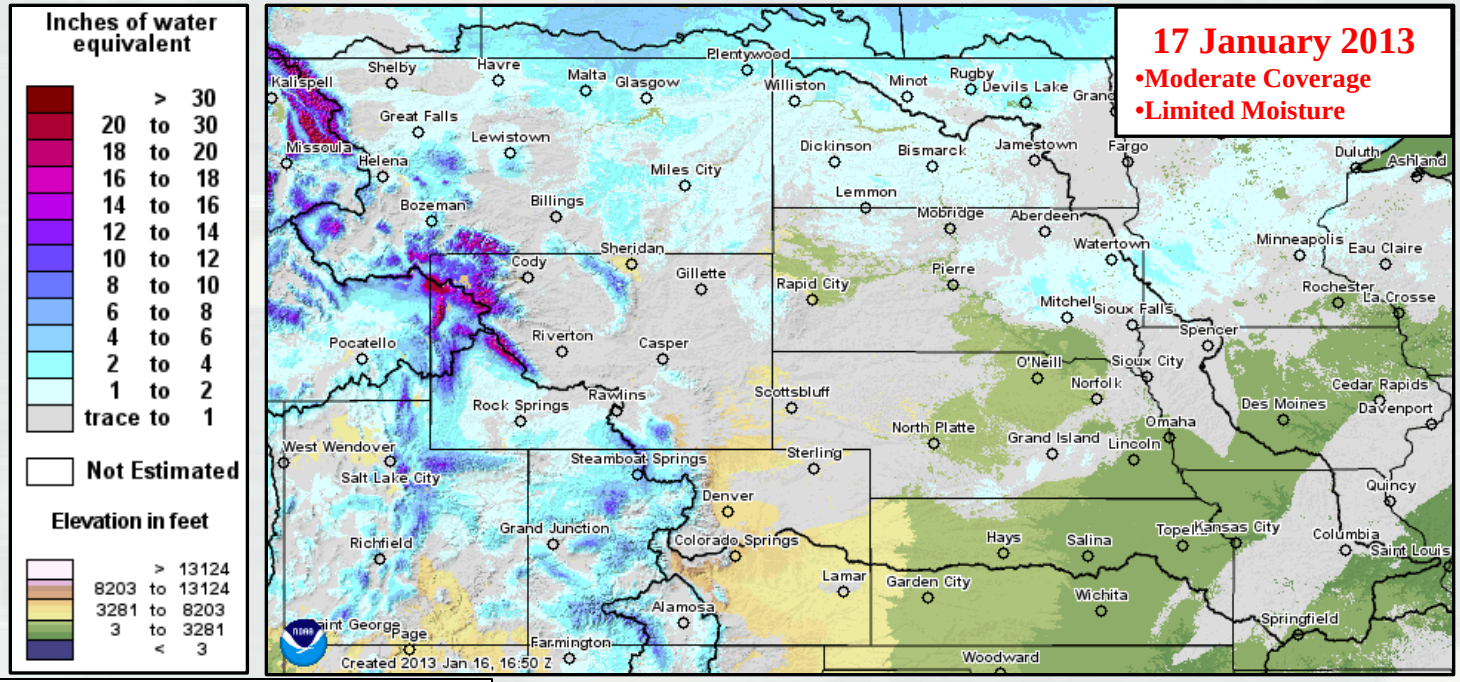
Plains Snowpack (comparison)



17 January 2011
- Extensive Coverage
- 2”-4” Widespread

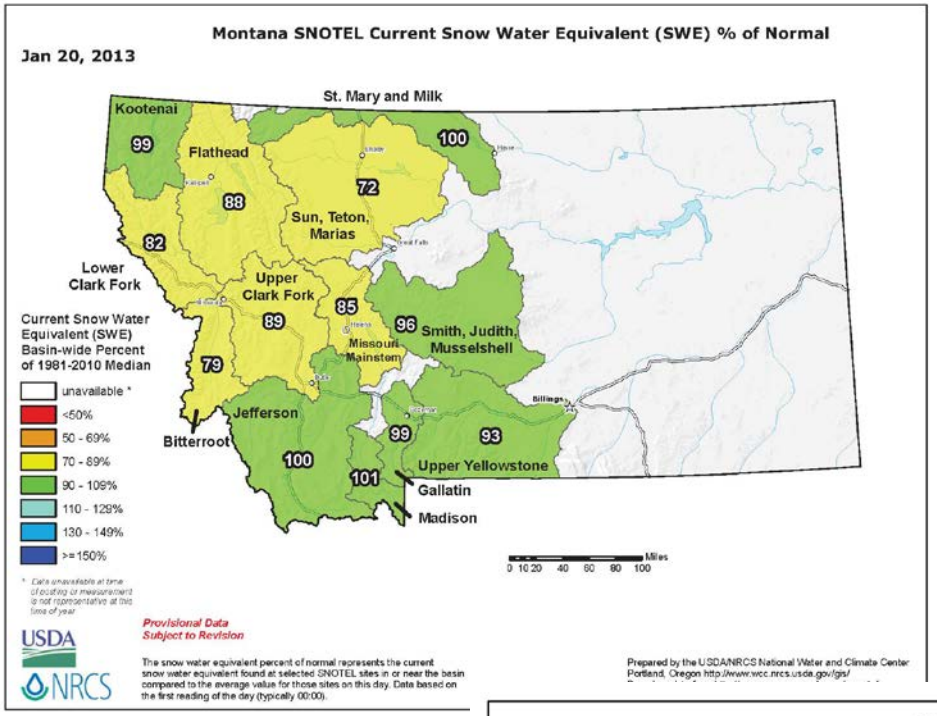


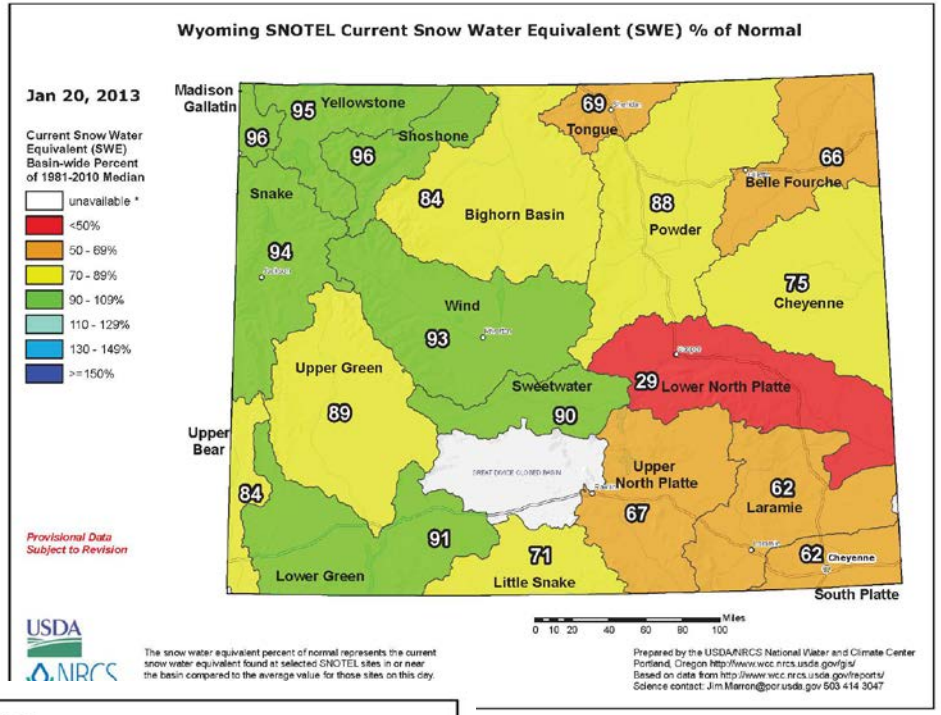
17 January 2012
- Extensive Coverage
- Very Limited Moisture

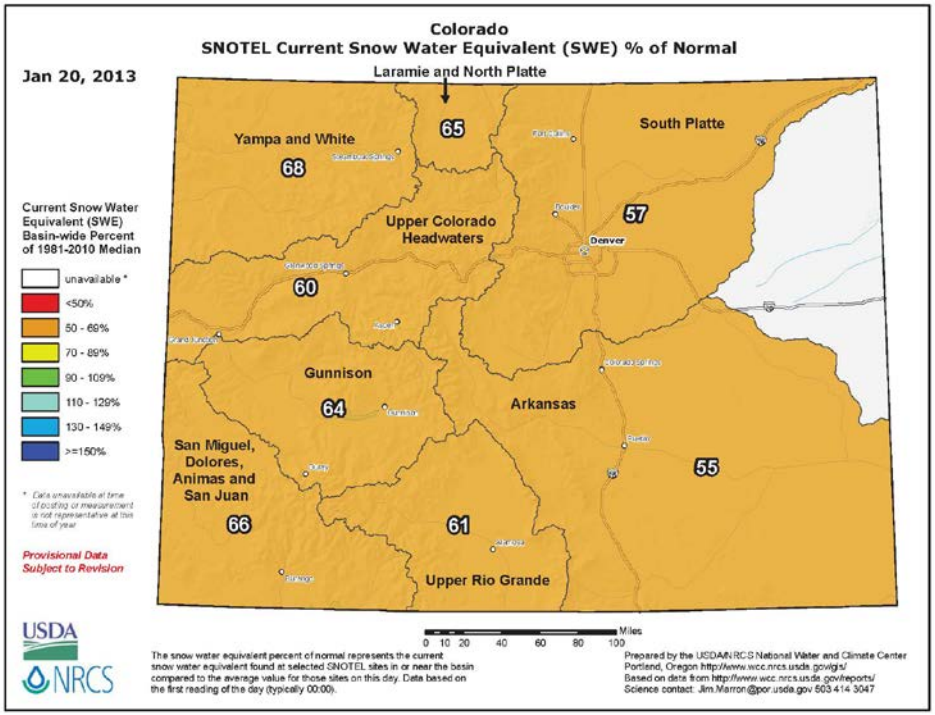


17 January 2013
- Moderate Coverage
- Limited Moisture

Graphics courtesy of National Weather Service NOHRSC
(National Operational Hydrologic Remote Sensing Center)


Montana SNOTEL Current Snow Water Equivalent (SWE) % of Normal
Jan 20, 2013
St. Mary and Milk
Kootenai
Flathead
Lower Clark Fork
Upper Clark Fork
Sun, Teton, Marias
Missouri Mainstem
Smith, Judith, Musselshell
Jefferson
Bitterroot
Upper Yellowstone
Gallatin
Madison
99
100
72
88
82
89
85
96
79
99
93
100
101
Current Snow Water Equivalent (SWE) Basin-wide Percent of 1981-2010 Median
unavailable *
<50%
50 - 69%
70 - 89%
90 - 109%
110 - 129%
130 - 149%
>=150%
* Data unavailable at time of posting or measurement is not representative at this time of year
Provisional Data Subject to Revision
USDA NRCS
The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).
Prepared by the USDA/NRCS National Water and Climate Center Portland, Oregon http://www.wcc.nrcs.usda.gov/gis/
Miles
0 10 20 40 60 80 100


Wyoming SNOTEL Current Snow Water Equivalent (SWE) % of Normal
Jan 20, 2013
Madison Gallatin
Yellowstone
Shoshone
Tongue
Snake
Bighorn Basin
Powder
Belle Fourche
Wind
Cheyenne
Upper Green
Sweetwater
Lower North Platte
Upper Bear
Upper North Platte
Laramie
Lower Green
Little Snake
South Platte
95
96
96
69
66
84
88
94
75
93
89
29
90
84
67
62
91
71
62
Current Snow Water Equivalent (SWE) Basin-wide Percent of 1981-2010 Median
unavailable *
<50%
50 - 69%
70 - 89%
90 - 109%
110 - 129%
130 - 149%
>=150%
Provisional Data Subject to Revision
USDA NRCS
The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day.
Prepared by the USDA/NRCS National Water and Climate Center Portland, Oregon http://www.wcc.nrcs.usda.gov/gis/
Based on data from http://www.wcc.nrcs.usda.gov/reports/
Science contact: Jim.Marron@por.usda.gov 503 414 3047
Miles
0 10 20 40 60 80 100


Colorado
SNOTEL Current Snow Water Equivalent (SWE) % of Normal
Jan 20, 2013
Laramie and North Platte
Yampa and White
South Platte
Upper Colorado Headwaters
Denver
Gunnison
Arkansas
San Miguel, Dolores, Animas and San Juan
Upper Rio Grande
65
68
57
60
64
55
66
61
Current Snow Water Equivalent (SWE) Basin-wide Percent of 1981-2010 Median
unavailable *
<50%
50 - 69%
70 - 89%
90 - 109%
110 - 129%
130 - 149%
>=150%
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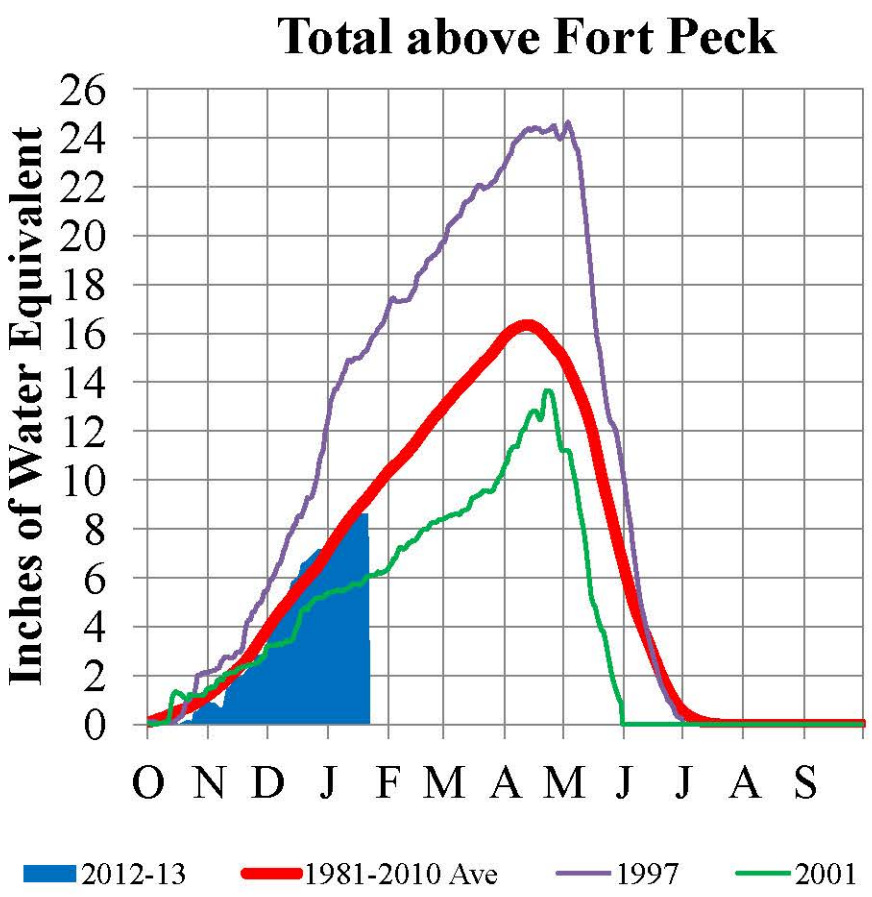
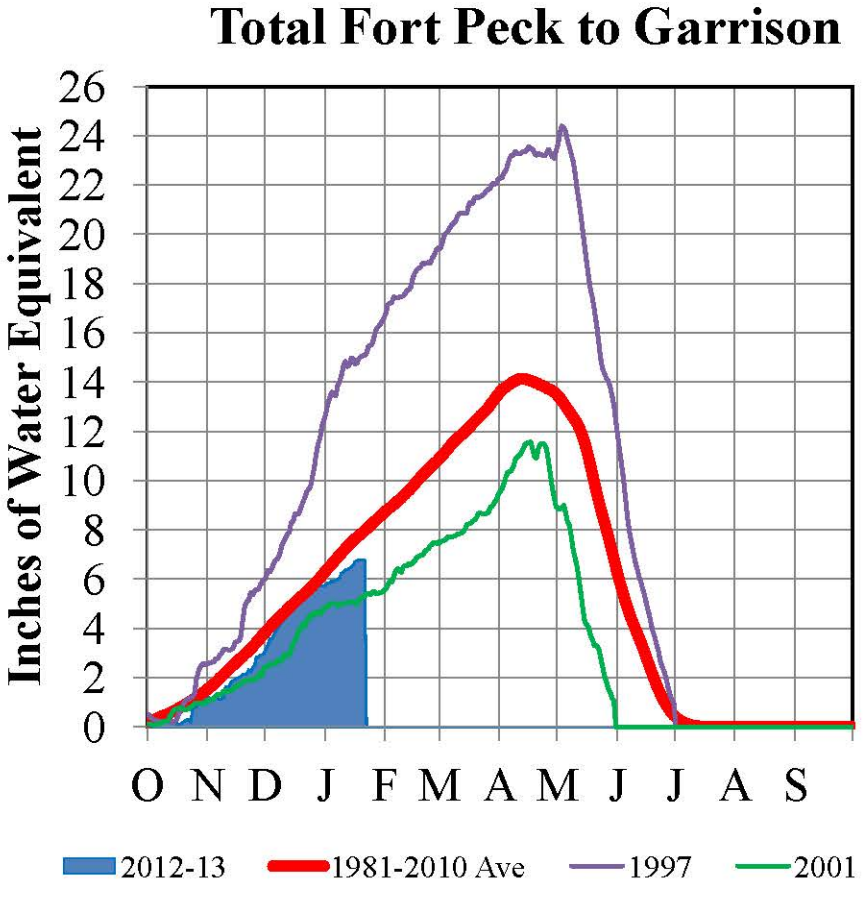
Prepared by the USDA/NRCS National Water and Climate Center Portland, Oregon http://www.wcc.nrcs.usda.gov/gis/
Based on data from http://www.wcc.nrcs.usda.gov/reports/
Science contact: Jim.Marron@por.usda.gov 503 414 3047
Miles
0 10 20 40 60 80 100

Missouri River Basin – Mountain Snowpack Water Content
2012-2013 with comparison plots from 1997* and 2001*

Jan 22, 2013



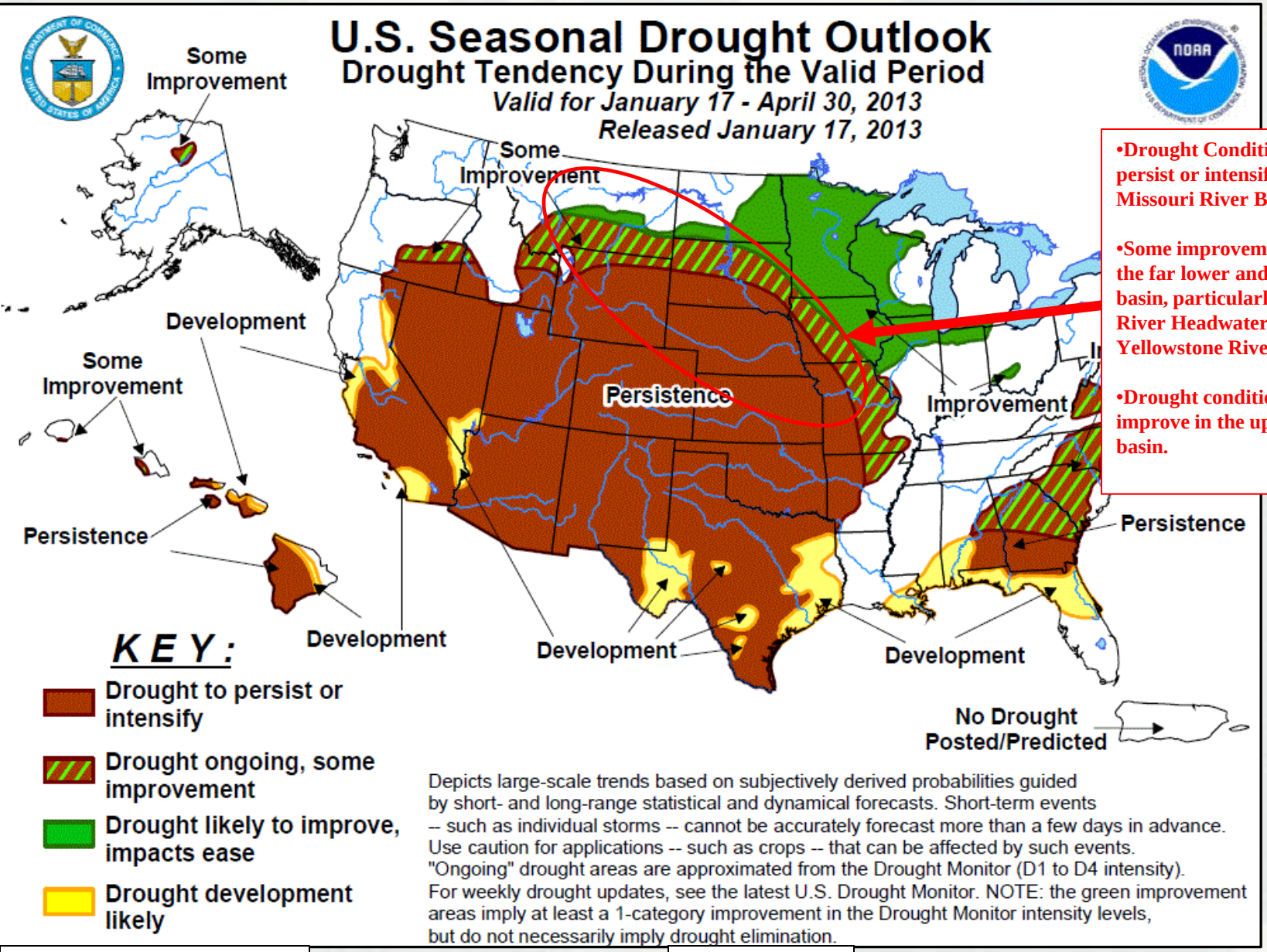


The Missouri River basin mountain snowpack normally peaks near April 15. By January 15, normally 54% of the peak has accumulated. On January 22, 2013 the mountain snowpack SWE in the "Total above Fort Peck" reach is currently 8.6", 93% of average. The mountain snowpack SWE in the "Total Fort Peck to Garrison" reach is currently 6.8", 85% of average.

*Generally considered the high and low year of the last 20-year period.

Provisional data. Subject to revision.

U.S. Drought Forecast

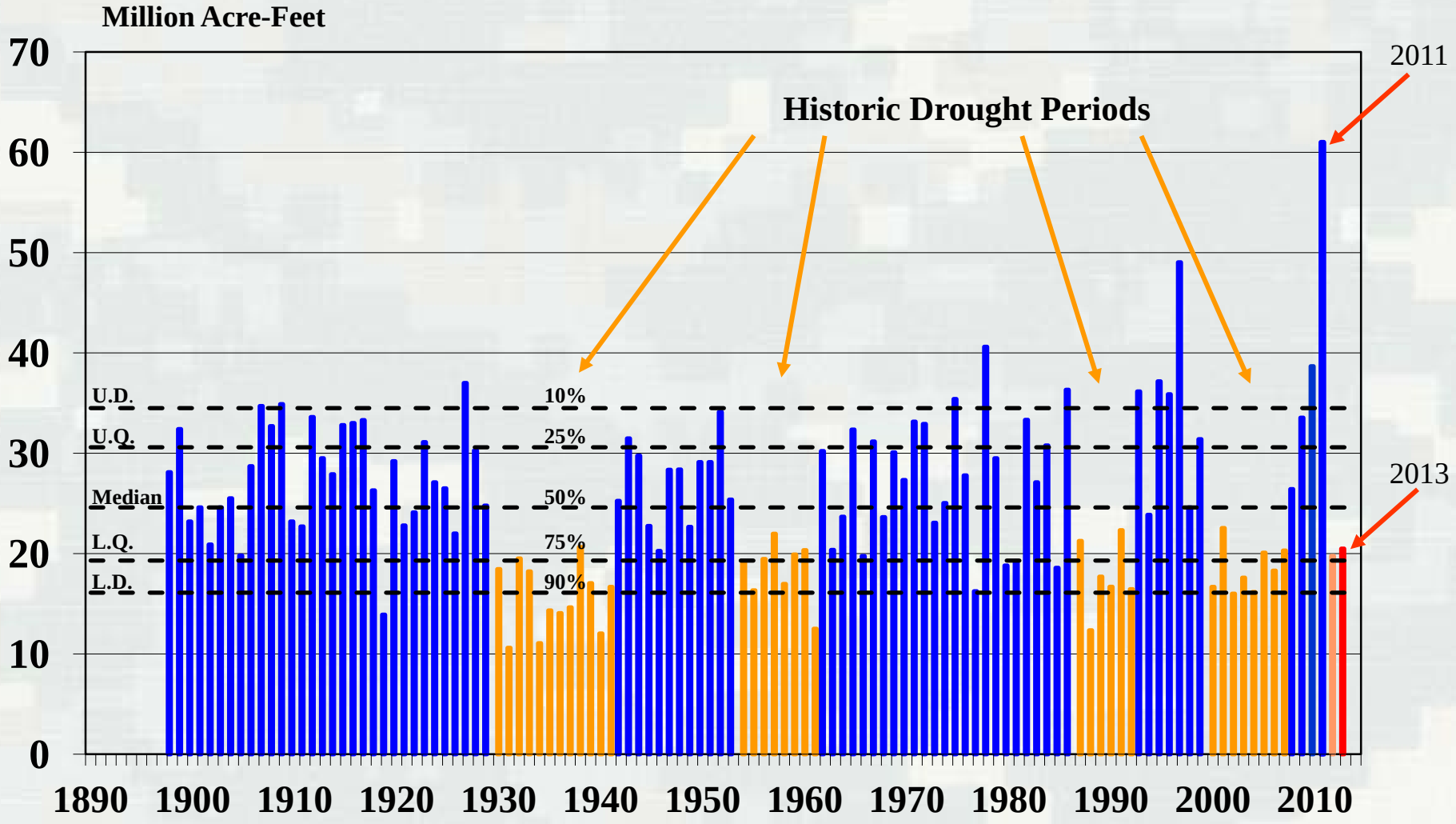


- **Drought Conditions are forecasted to persist or intensify across most of the Missouri River Basin into spring 2013.**
- **Some improvement will be possible in the far lower and upper portions of the basin, particularly near the Missouri River Headwaters and in the Yellowstone River basin.**
- **Drought conditions are more likely to improve in the upper James River basin.**

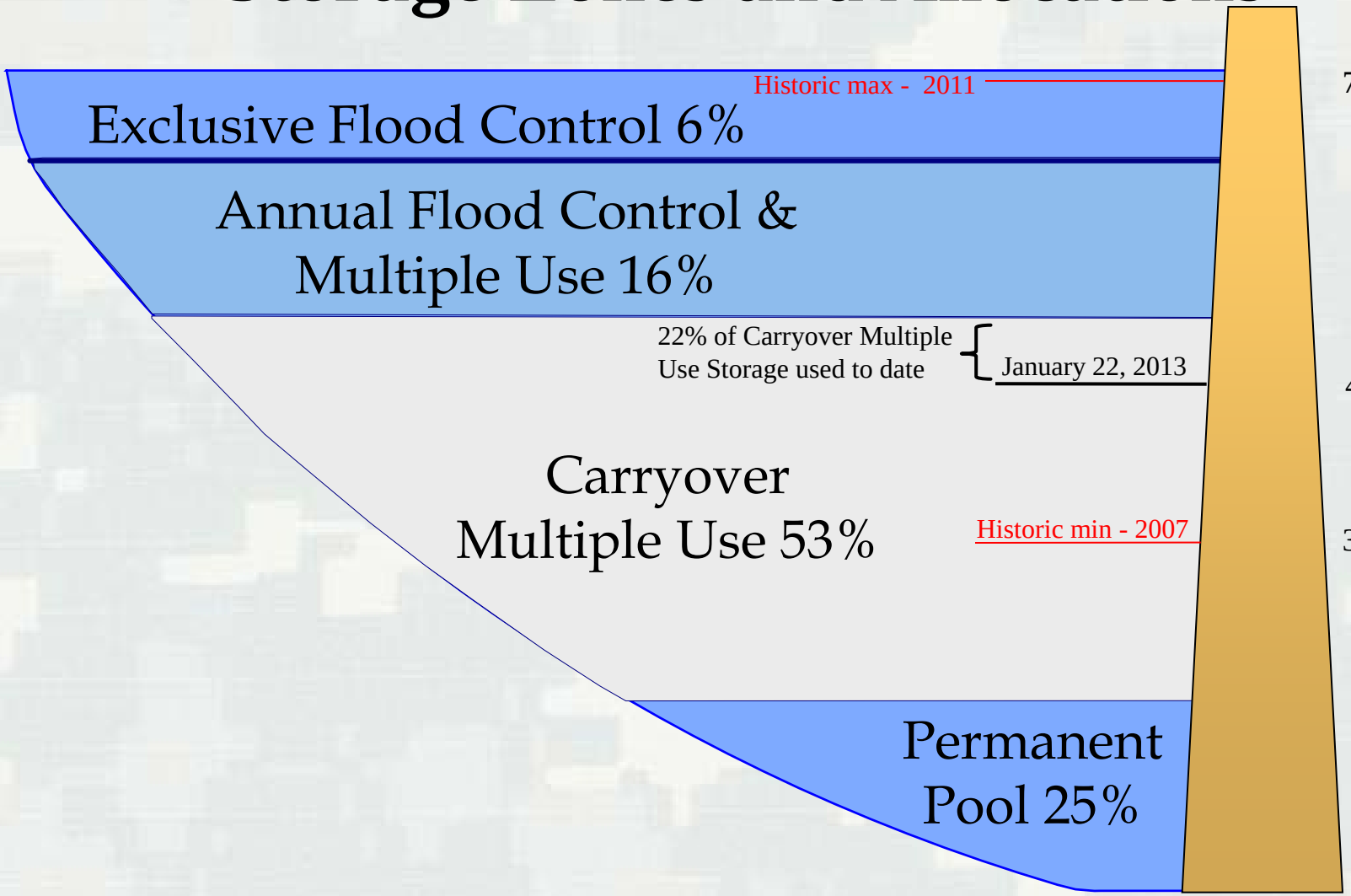
Graphics courtesy of NOAA

Most recent…

Missouri River Mainstem System
Annual Runoff above Sioux City, IA

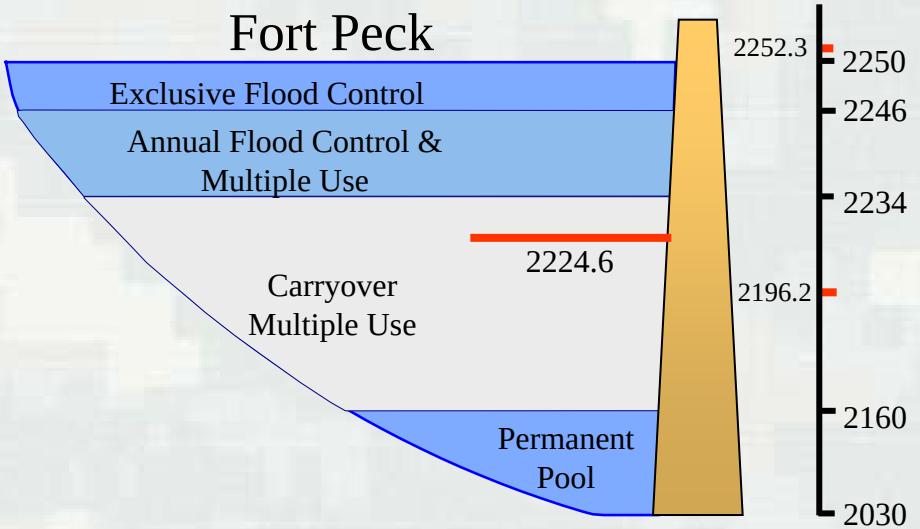


Missouri River Mainstem System Storage Zones and Allocations



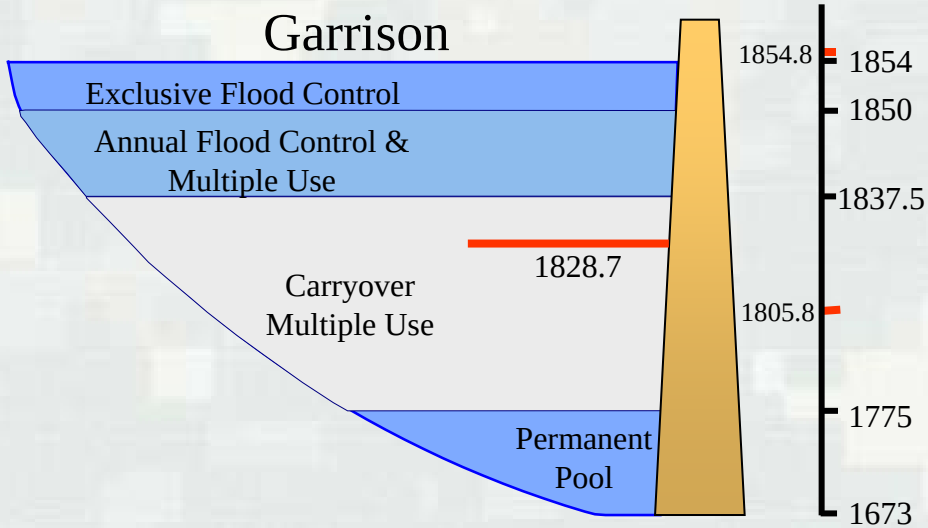
Current Reservoir Levels – January 22, 2013

Fort Peck



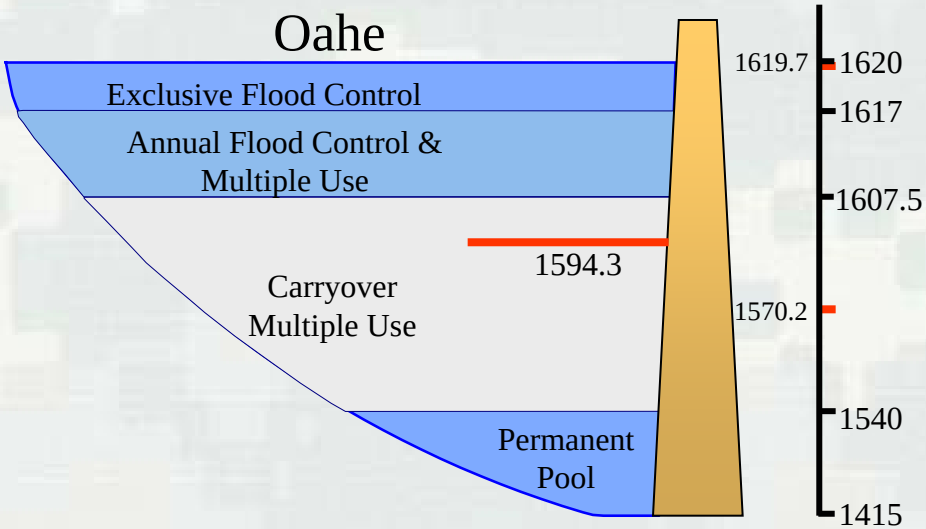
9.4 feet below base of Flood Control

Garrison



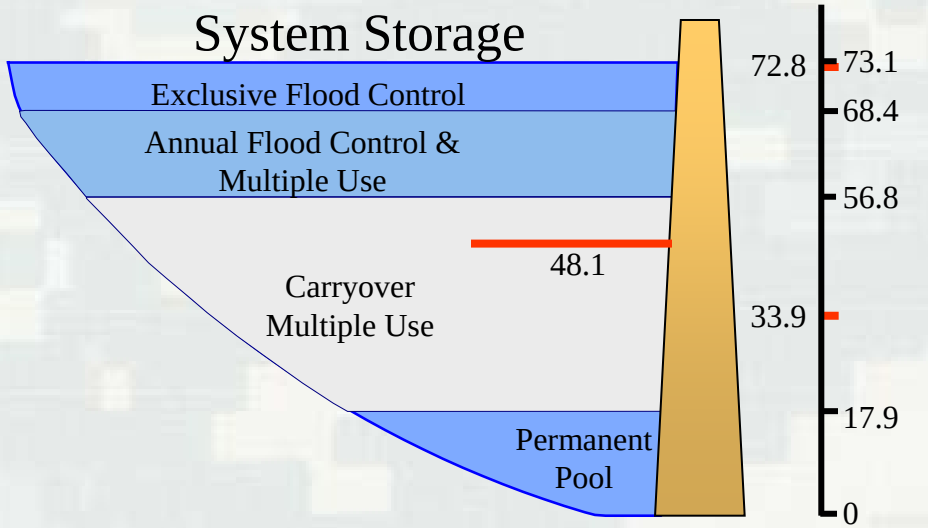
8.8 feet below base of Flood Control

Oahe



13.2 feet below base of Flood Control

System Storage



8.7 MAF below base of Flood Control

Planned Operation for 2013

- 8.6 MAF below the base of the Annual Flood Control zone at the start of the 2013 runoff season
  - 22 percent of drought storage utilized in 2012
- Drought conservations measures will be implemented
  - Minimum winter releases, reduced support for navigation, missing navigation targets in reaches without commercial navigation, use of the Kansas Basin reservoirs for navigation support, cycling Gavins Point releases
- Missouri River navigation flow support
  - Minimum service likely for the first half of the navigation season
  - Shortening of the navigation season possible if drought persists

Planned Operation for 2013 (cont'd)

- No Gavins Point spring pulse in 2013 per USFWS
- Favor Oahe and Fort Peck during the forage fish spawn if inflows are not sufficient to keep all three upper reservoir rising
- Additional potential for exposure of historic and cultural sites and boat ramp access issues if drought continues
- Public meetings tentatively scheduled week of April 8, 2013
- Monthly calls with Congressional delegations, Tribes, states and local officials and media
  - Audio file available on website or as podcast on iTunes

Thank You!

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http://www.nwd-mr.usace.army.mil/rcc/
Or Google “Corps Missouri River”