

RECLAMATION

Managing Water in the West

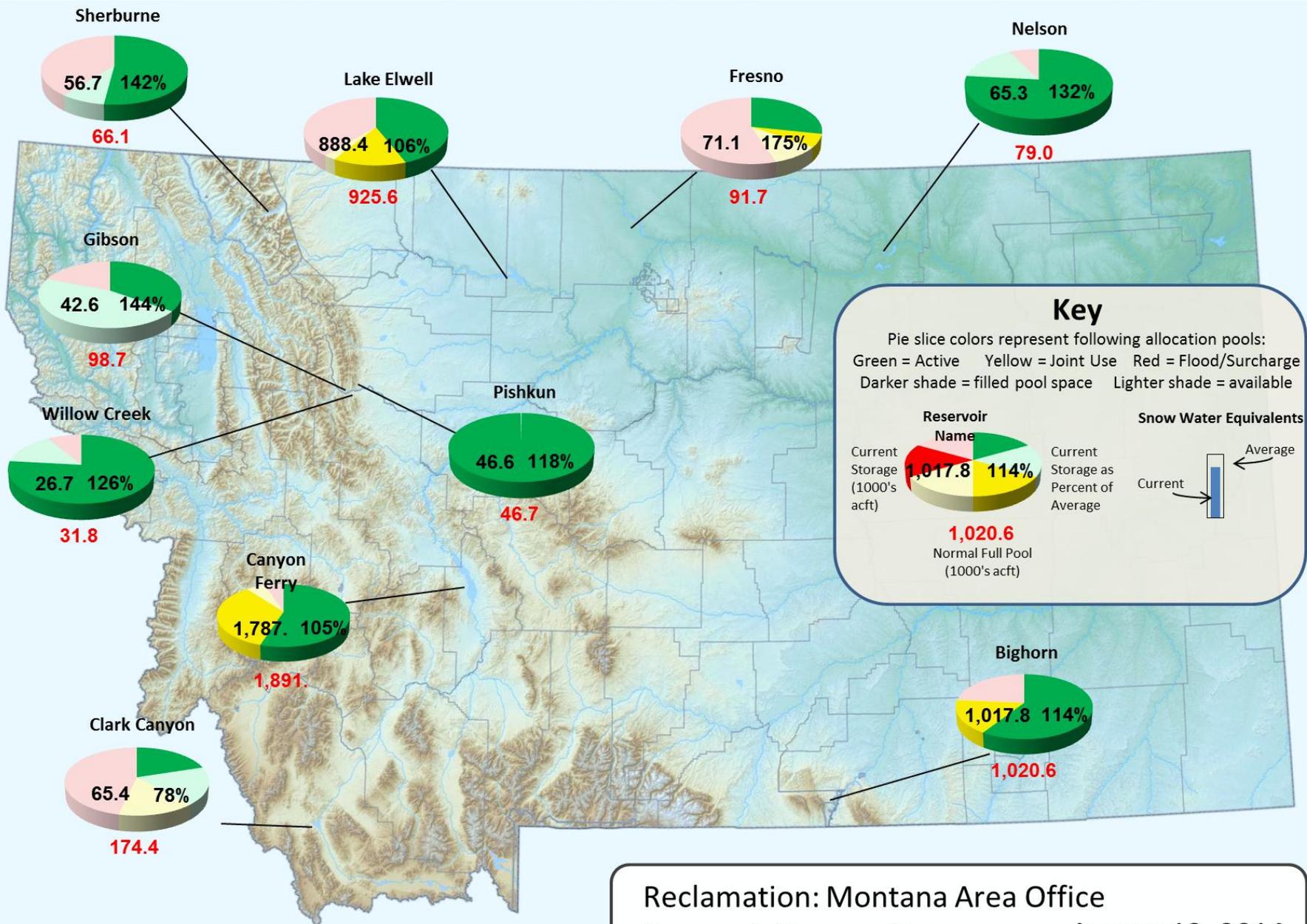
NWS –River and Reservoir Status Briefing

RESERVOIR AND RIVER OPERATIONS

**Montana Area Office
Billings
August 14, 2014**



U.S. Department of the Interior
Bureau of Reclamation



Key

Pie slice colors represent following allocation pools:
 Green = Active Yellow = Joint Use Red = Flood/Surcharge
 Darker shade = filled pool space Lighter shade = available

Reservoir Name

Current Storage (1000's acft) **1,017.8** Current Storage as Percent of Average **114%**

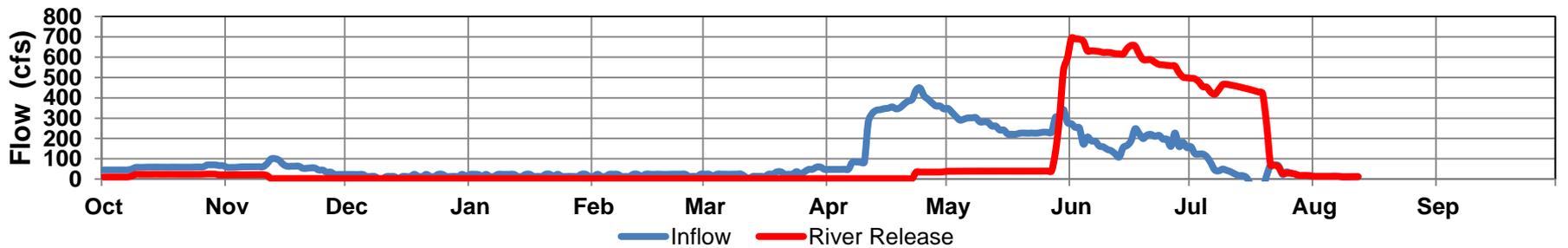
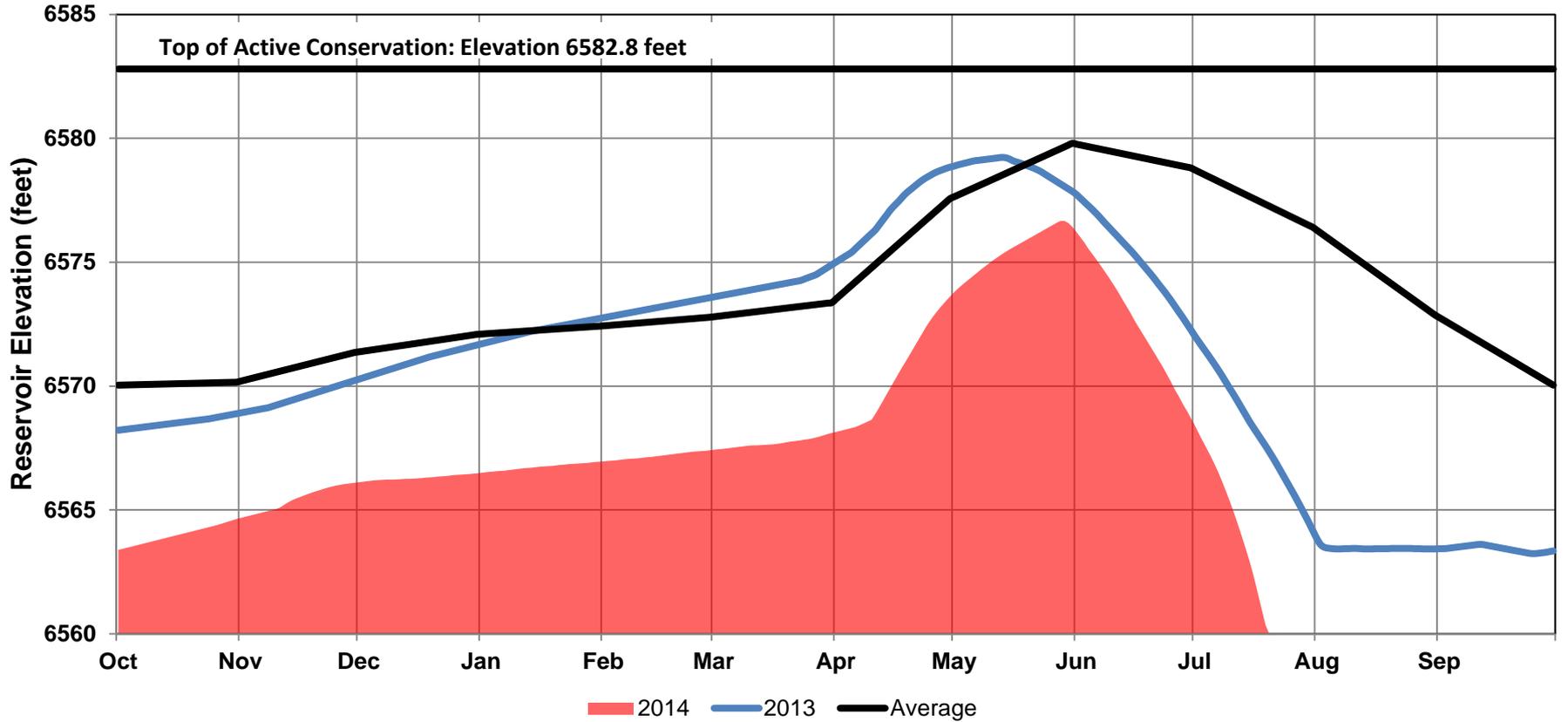
1,020.6
Normal Full Pool (1000's acft)

Snow Water Equivalents

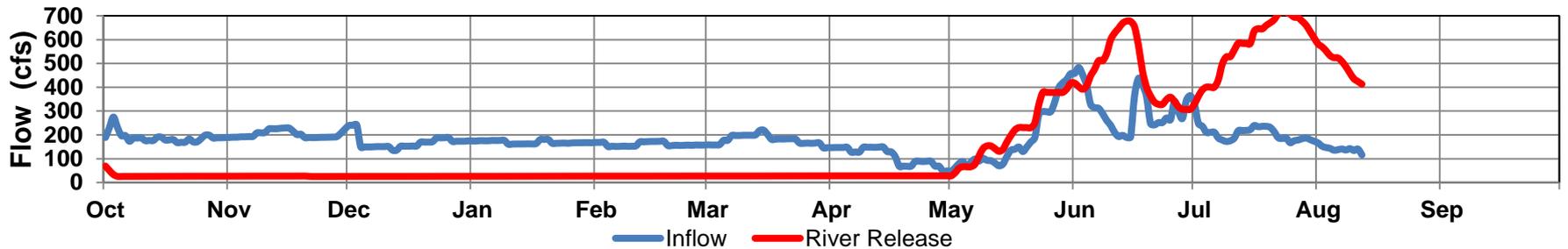
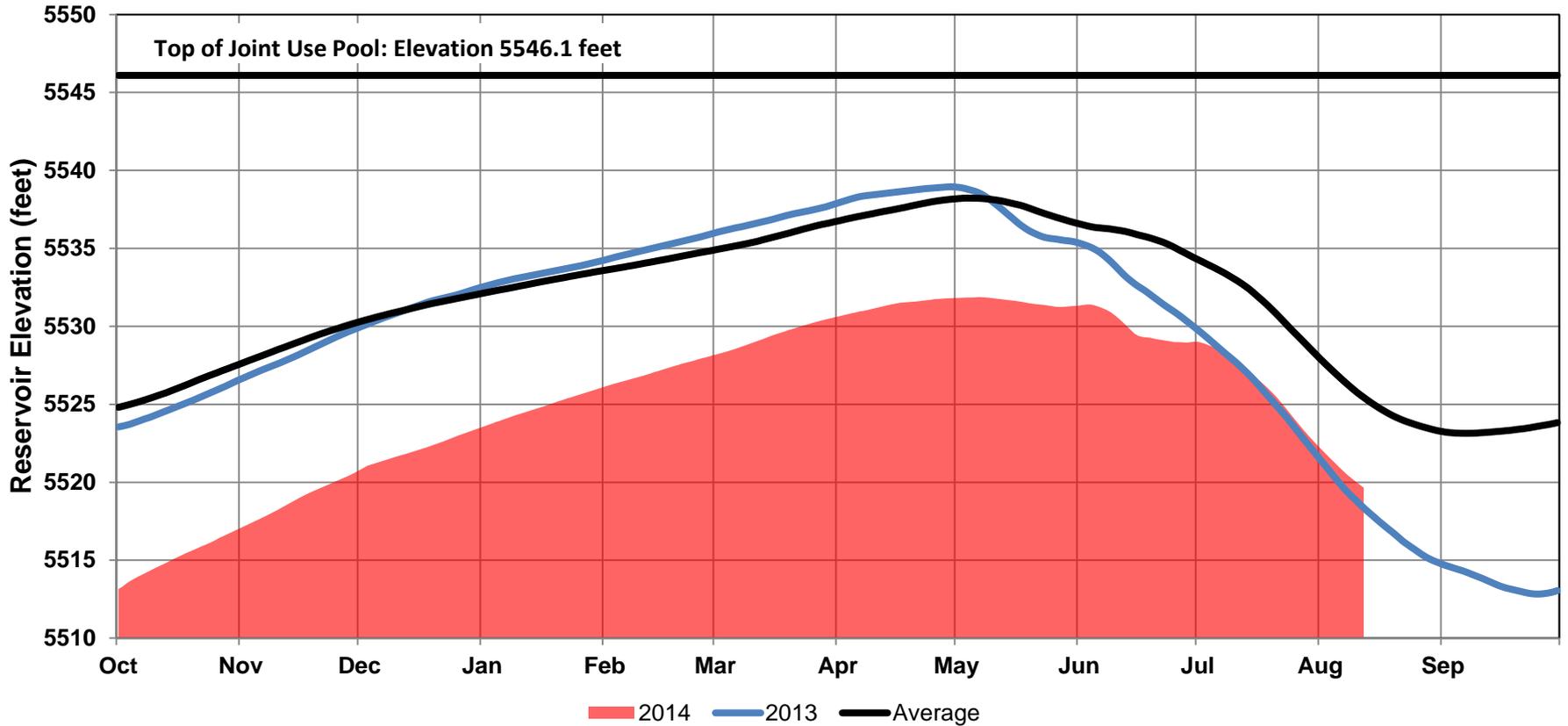
Average ←
 Current →

Reclamation: Montana Area Office
 Reservoir Storage Status : August 12, 2014

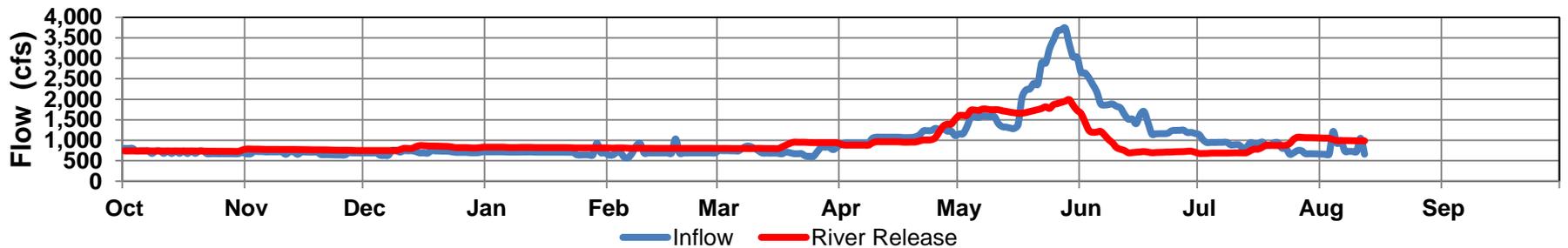
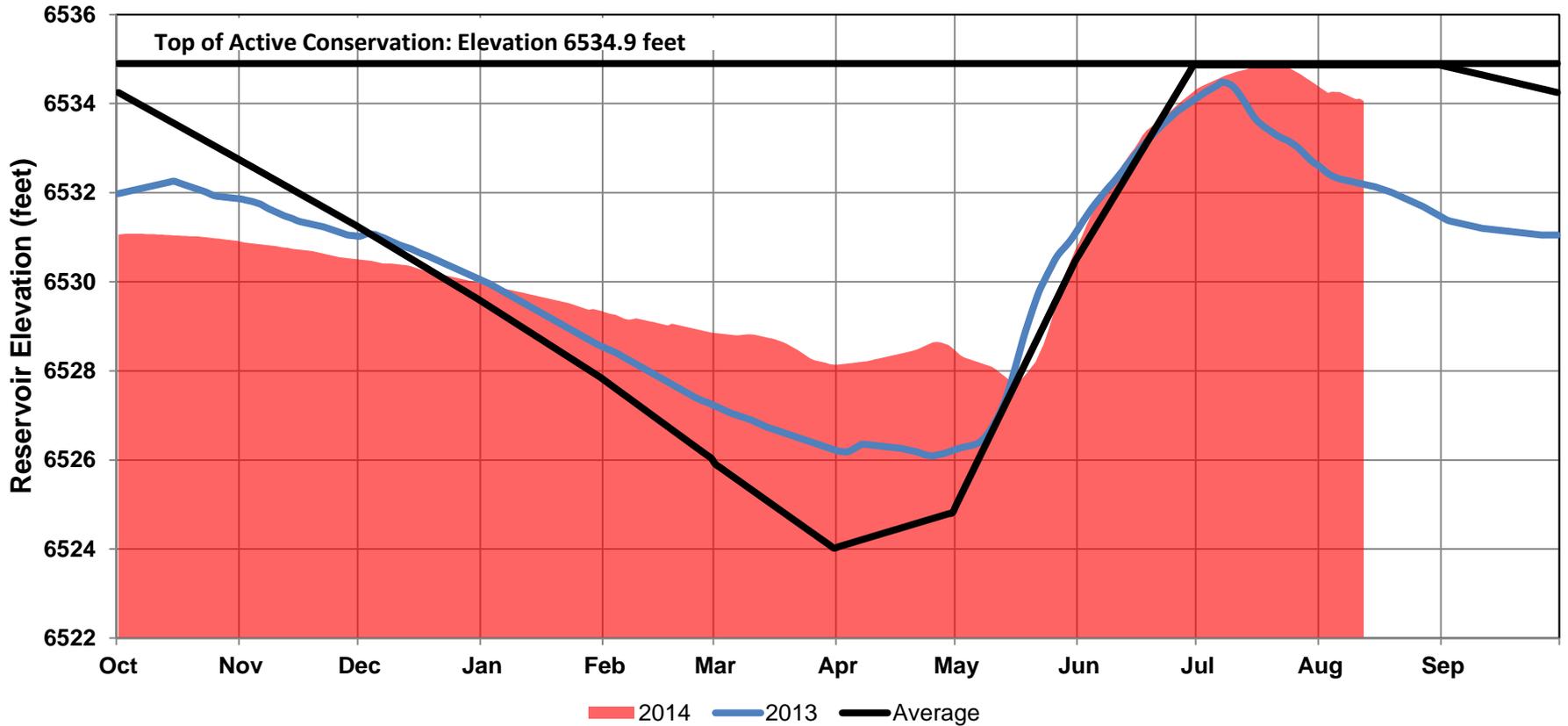
Lima Reservoir Operations



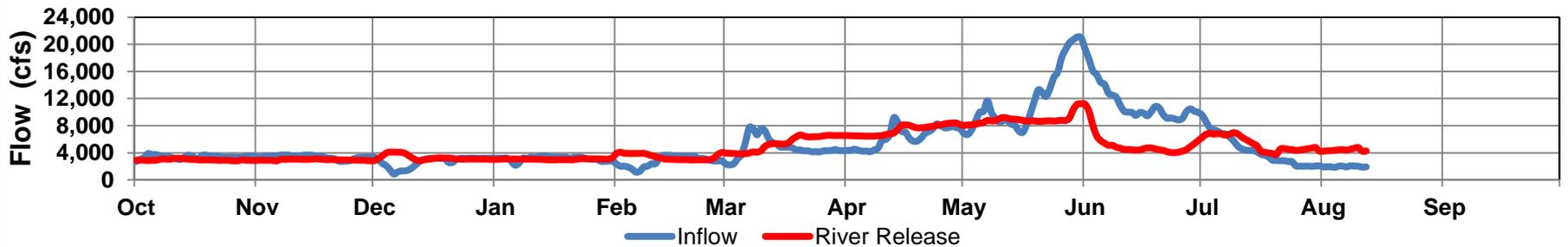
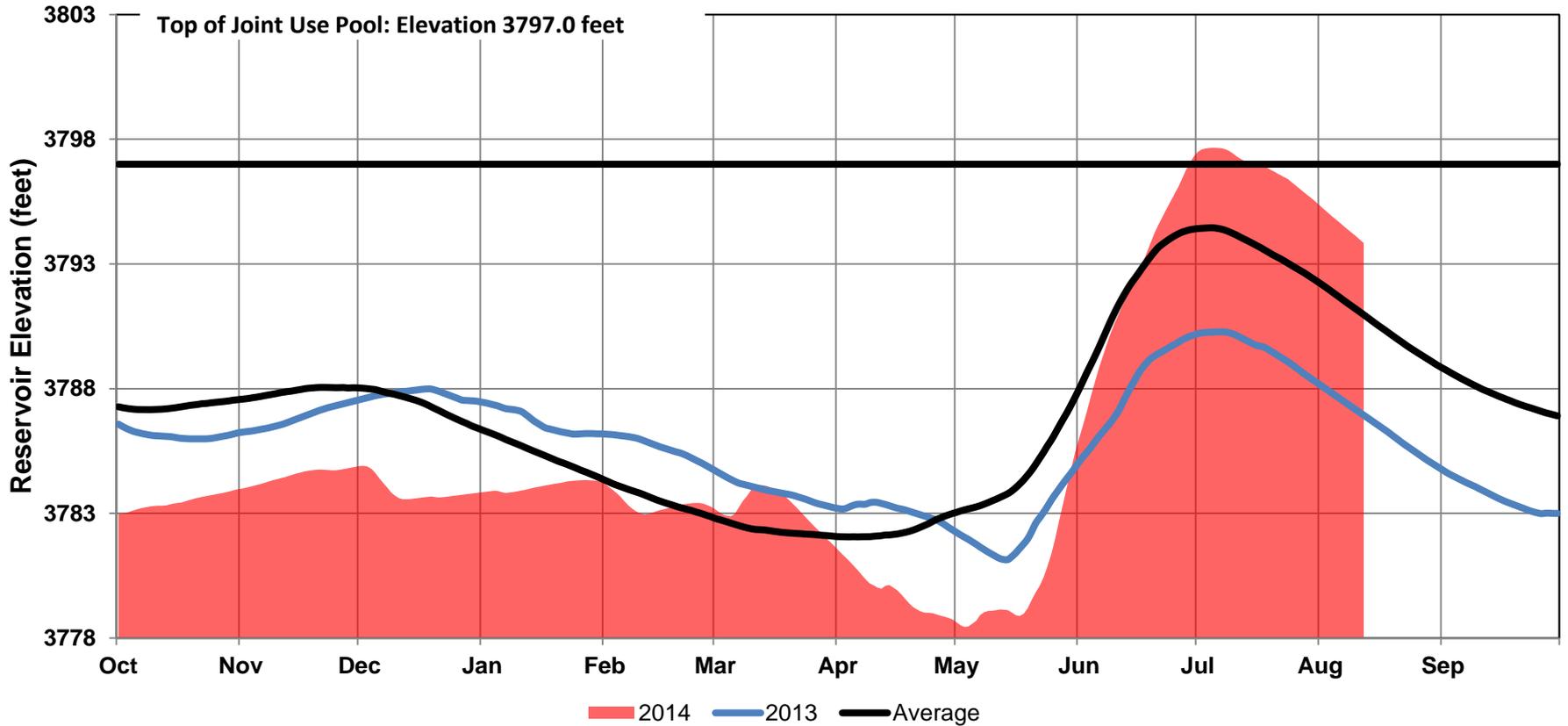
Clark Canyon Reservoir Operations



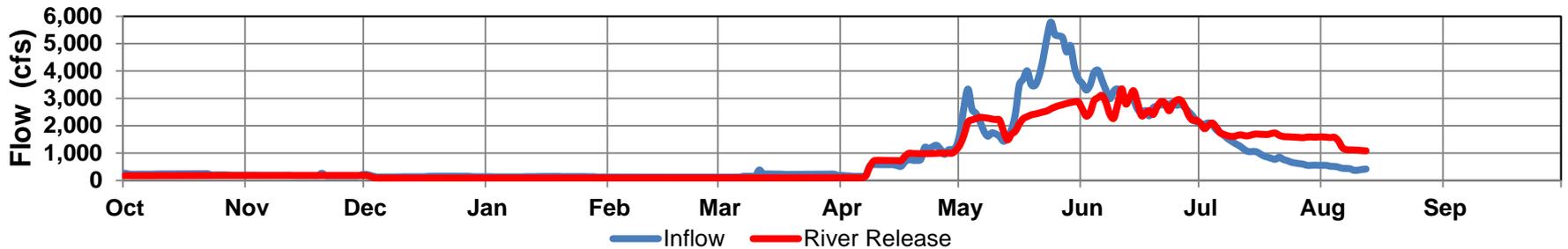
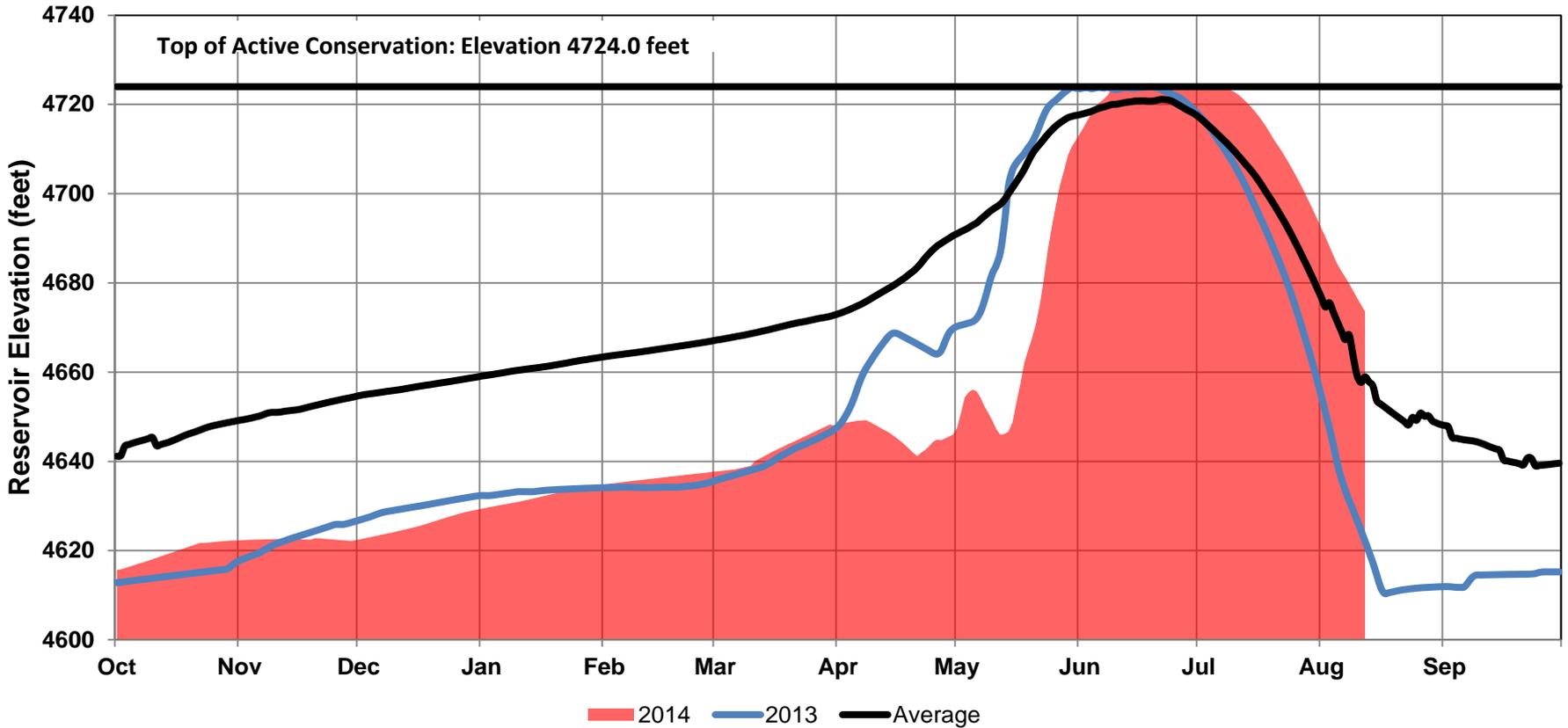
Hebgen Reservoir Operations



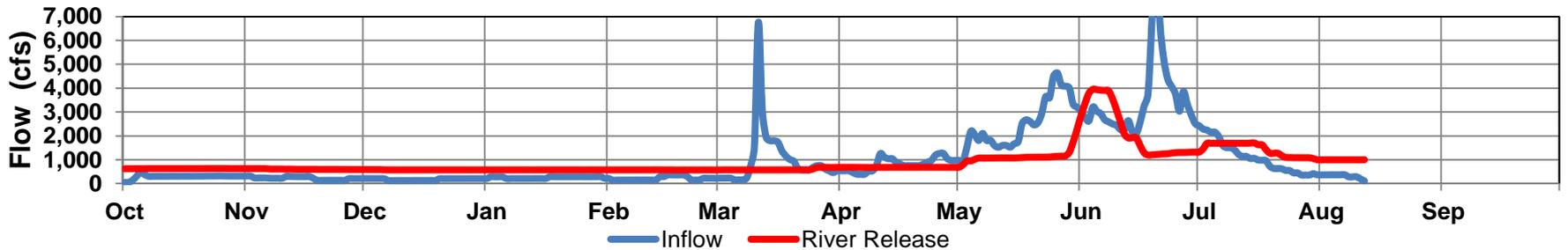
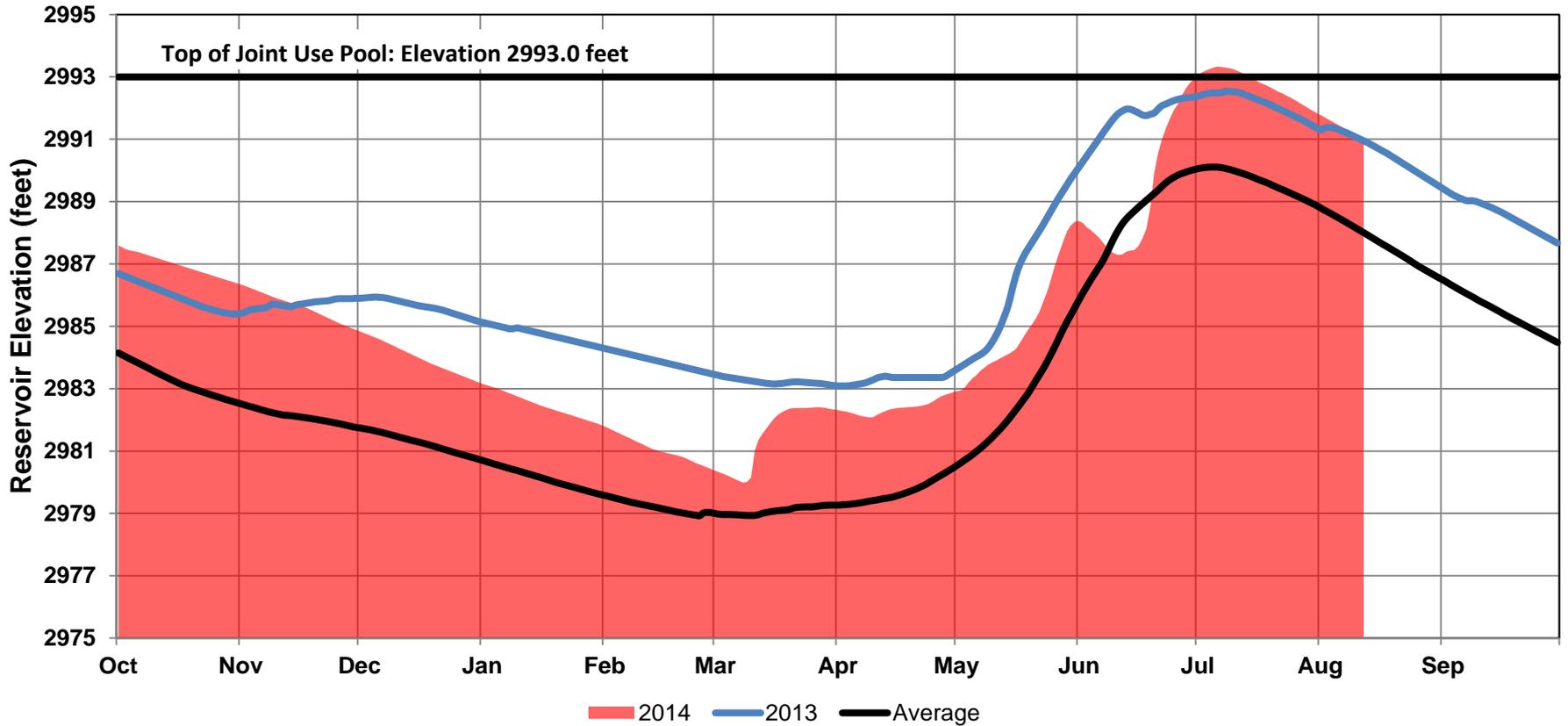
Canyon Ferry Reservoir Operations



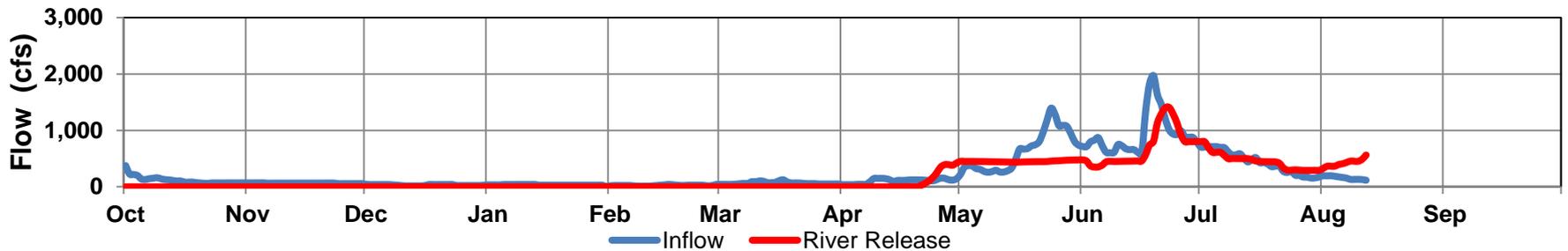
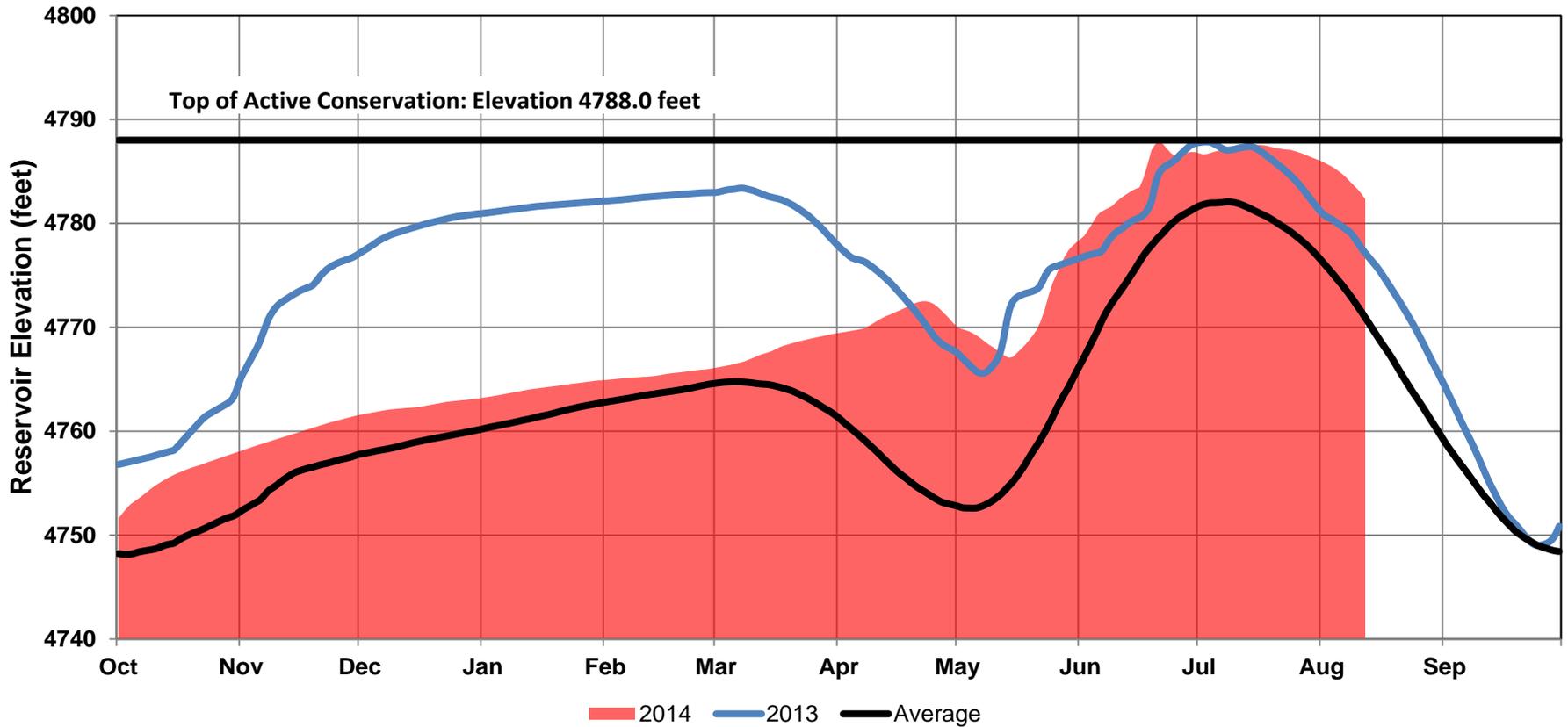
Gibson Reservoir Operations



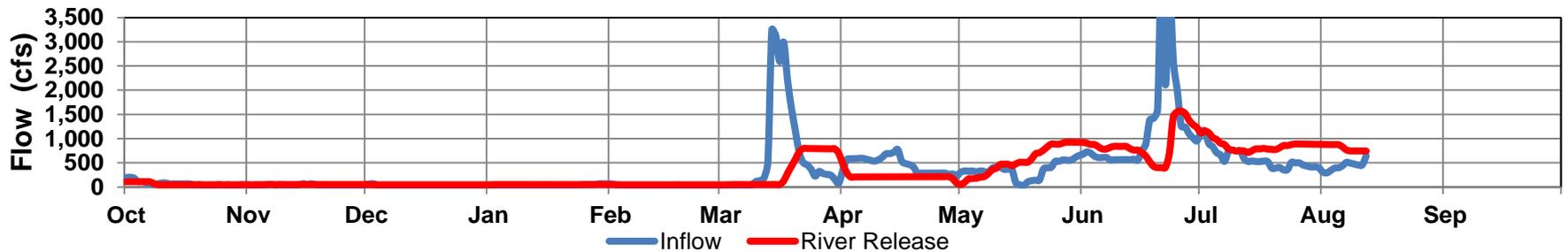
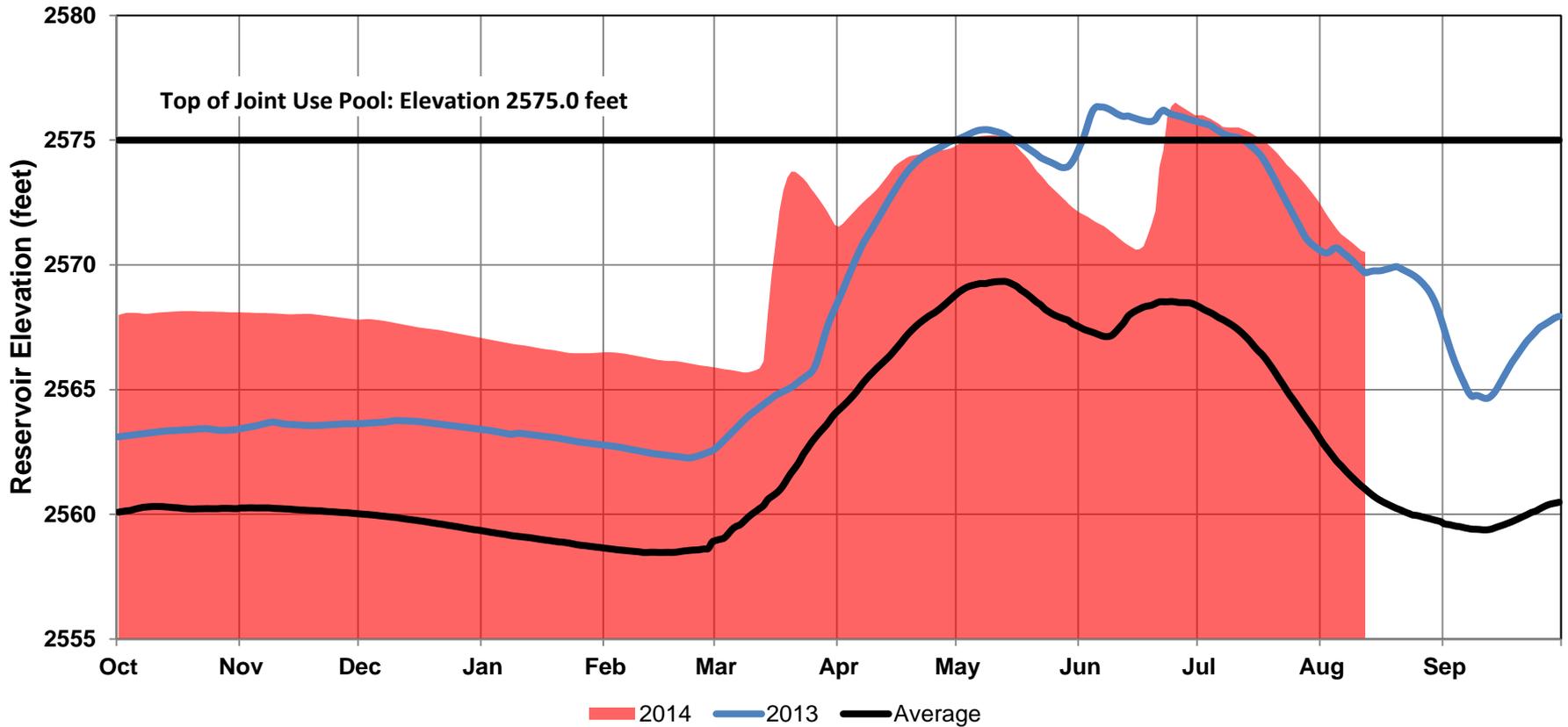
Lake Elwell (Tiber Dam) Operations



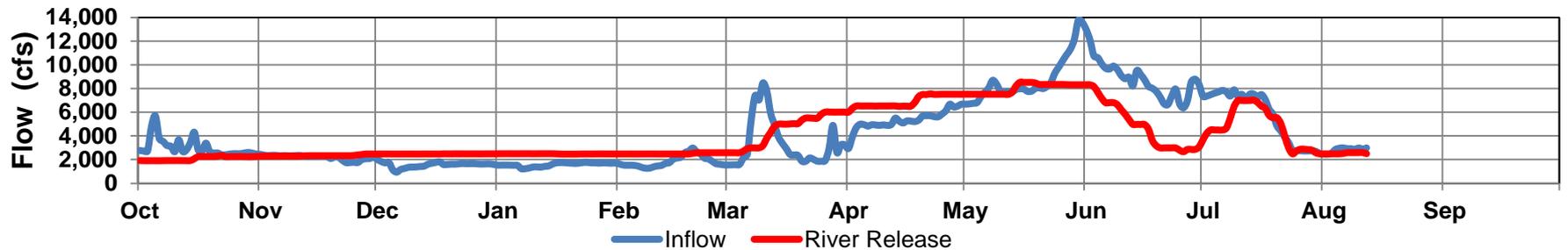
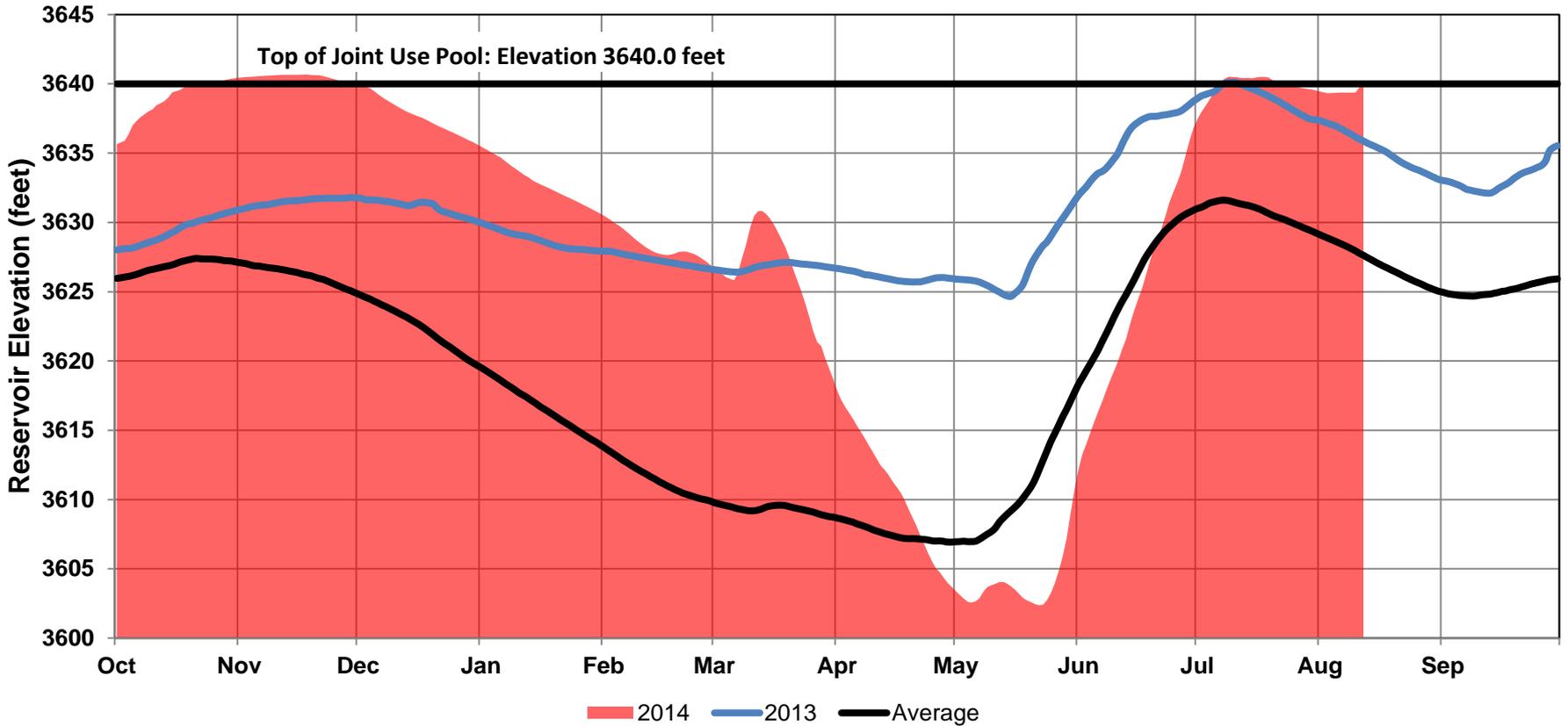
Lake Sherburne Operations



Fresno Reservoir Operations



Bighorn Lake (Yellowtail Dam) Operations



Summary of Reservoir Conditions

- All Reclamation reservoir elevations are above the 30 year average, except for Clark Canyon.
- Reclamation worked with Corps of Engineers to evacuate storage in the Exclusive Flood Control during July.
- Inflows have been declining and are below average, except for Fresno.
- Operational outlooks are favorable to maintain desired river fishery flows and reservoir elevations for recreation.

Reclamation's Internet Website

<http://www.usbr.gov/gp/hydromet/>

- near real-time data available through the HYDROMET data system
- summaries and plots of historical data
- annual reservoir operating plan publication
- monthly water supply reports
- project data
- snow plots
- links to related internet sites

RECLAMATION

Reservoir Storage Outlook

August 14, 2014

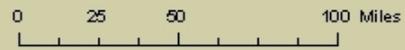
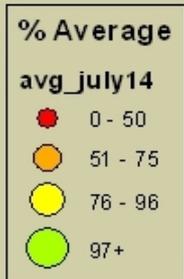
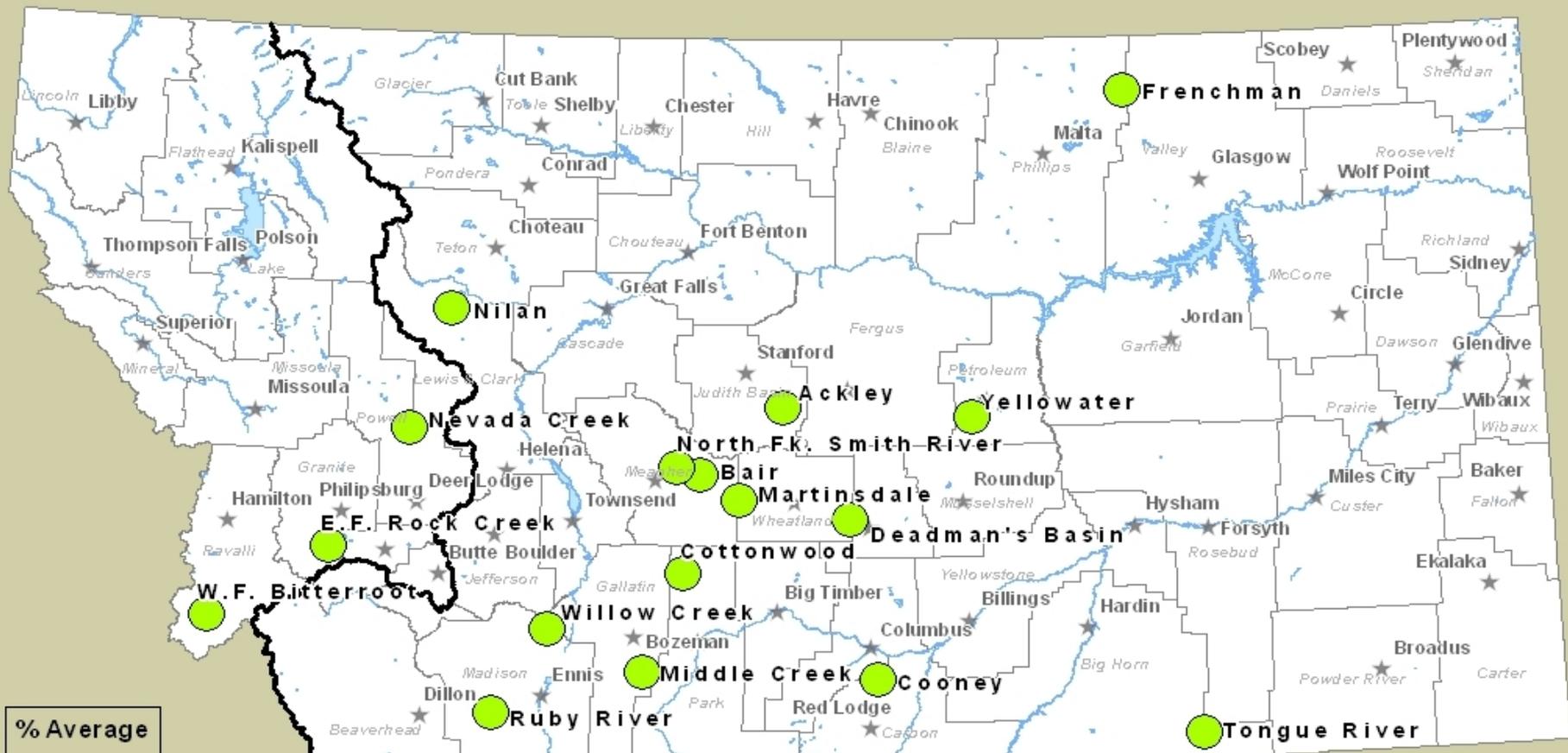


DNRC Water Resources Division
State Water Projects Bureau

Montana DNRC State Water Projects Bureau Reservoirs

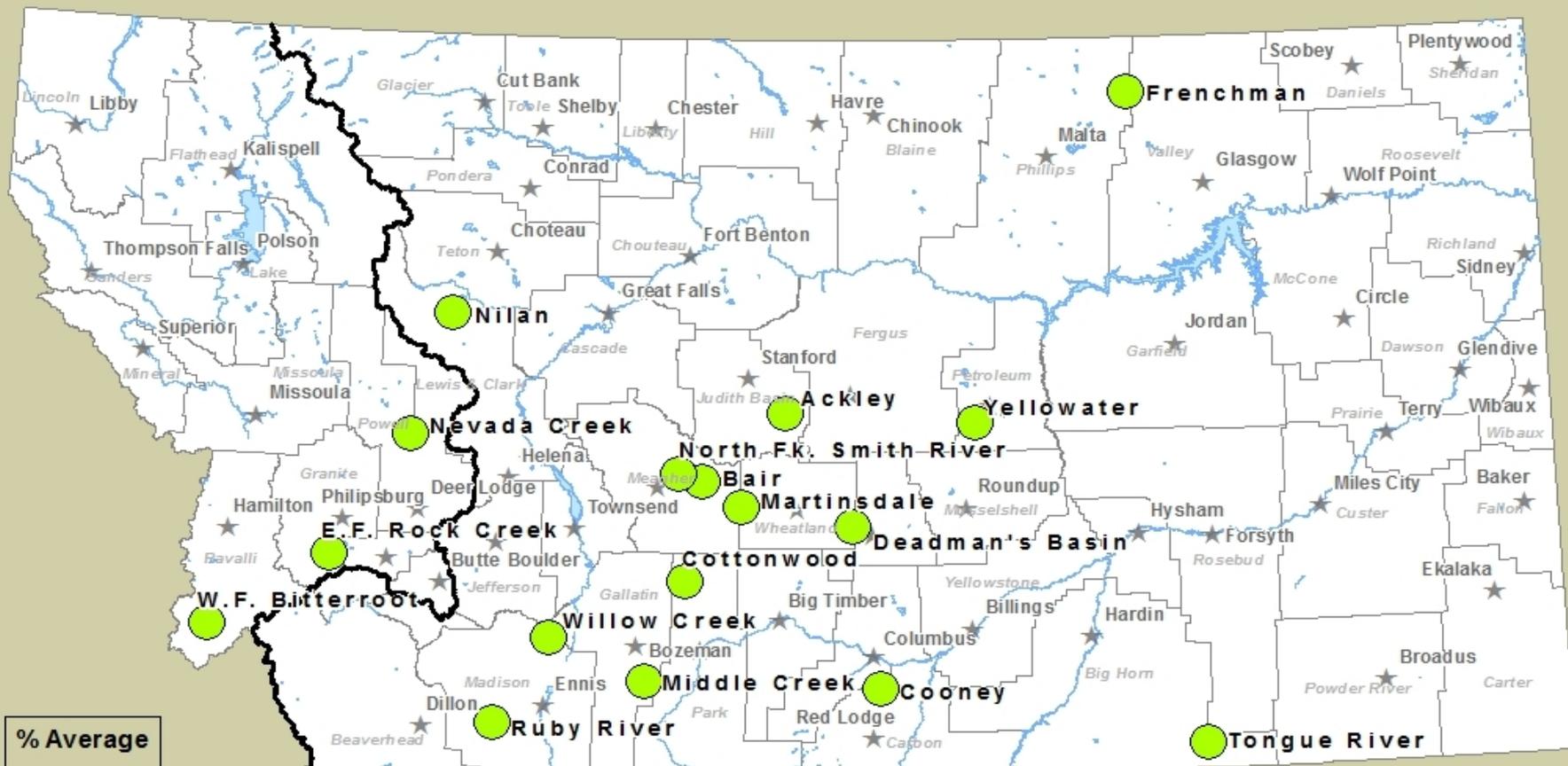


Reservoir Contents Report July 17, 2014



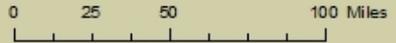
Reservoir Contents Report

August 14, 2014



**% Average
avg_Aug14**

●	0 - 50
●	51 - 75
●	76 - 96
●	97+



MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

WATER RESOURCES DIVISION - STATE WATER PROJECTS BUREAU

July, 31 2014

All Contents in Acre-Feet

RESERVOIR	TOTAL CAPACITY (includes dead storage)*	CONTENTS					% CAPACITY 7/31/2014	%AVERAGE 7/31/2014	READING DATE	COMMENTS
		Full Pool	AVERAGE	Last Year	Last Month	PRESENT				
		Contents	1960 - 2013	7/31/2013	6/30/2014	7/31/2014				
ACKLEY	6,722	4,220	5,371	6,213	5,399	80	128	8/4/2014	elev.=4312.66	
BAIR	7,300	4,701	4,670	7,512	6,416	88	136	7/30/2014	elev.=531.67	
COONEY	28,230	22,603	26,225	27,263	24,440	87	108	8/4/2014	elev.=4246.59 (24,350 AF)	
COTTONWOOD	1,900	1,233	605	1,900	1,745	92	142	7/31/2014	elev.=5101.83	
DEADMAN'S BASIN	75,968	45,278	42,831	72,480	61,770	81	136	7/30/2014	elev.=3913.9 (58,020 AF)	
E.F. ROCK CREEK	16,040	9,611	7,679	13,340	10,615	66	110	8/4/2014	elev.=6040.4	
FRENCHMAN	2,777	2,007	2,916	2,777	2,340	84	117	8/3/2014	elev.=2263.85	
MARTINSDALE	23,348	13,938	11,353	23,622	20,016	86	144	7/30/2014	elev.=4775.72	
MIDDLE CREEK	10,184	8,641	8,115	10,184	9,130	90	106	8/4/2014	elev.=6716.7	
NEVADA CREEK	11,207	8,907	6,635	10,200	9,243	82	104	8/2/2014	elev.=4610.43	
NILAN	10,992	7,490	6,795	9,854	7,833	71	105	7/31/2014	elev.=4435.92 (6,933 AF)	
N.F.K. SMITH RIVER	11,406	7,958	8,901	11,553	10,732	94	135	7/30/2014	elev.=5486.11	
RUBY RIVER	37,612	27,933	24,135	37,612	30,594	81	110	7/31/2014	elev.=5385.52	
TONGUE RIVER	79,071	57,927	61,261	80,784	71,482	90	123	8/4/2014	elev.=3426.3	
W.F. BITTERROOT	32,362	29,562	29,937	32,362	30,664	95	104	7/27/2014	elev.=4722.7	
WILLOW CREEK	18,000	13,389	9,073	18,000	16,310	91	122	7/30/2014	elev.=4733.91	
YELLOWATER	3,842	1,512	3,714	3,236	2,880	75	190	7/31/2014	elev.=3115.8	

* Note: Reservoir contents include dead storage at the following:

Ackley	1001 AF	**	** O&M slope storage table does not include dead storage (so dead storage has to be added into the storage from the table)
Cooney	90 AF	**	Tongue River 711 AF (O&M storage table includes dead storage)
Deadman's	3750 AF	**	W. F. Bitterroot 656 AF (O&M storage table includes dead storage)
Nilan	900 AF	**	Willow Creek 269 AF (O&M storage table includes dead storage)

* Note: Cooney capacity reflects capacity after 1982 dam rehabilitation; prior capacity was 24,195 A.F.. Average storage shown is for post rehabilitation data.

* Note: Middle Creek capacity reflects capacity after 1993 dam rehabilitation; prior capacity was 8,027 A.F.. Average storage shown is for post rehabilitation data.

* Note: Nevada Creek Reservoir Capacity reflects live storage capacity survey conducted in year 2000. Prior live storage capacity documented as 12,723 AF.

* Note: Tongue River capacity reflects capacity after 1999 dam rehabilitation; prior capacity was 68,040 A.F.. Average storage is post rehabilitation data.

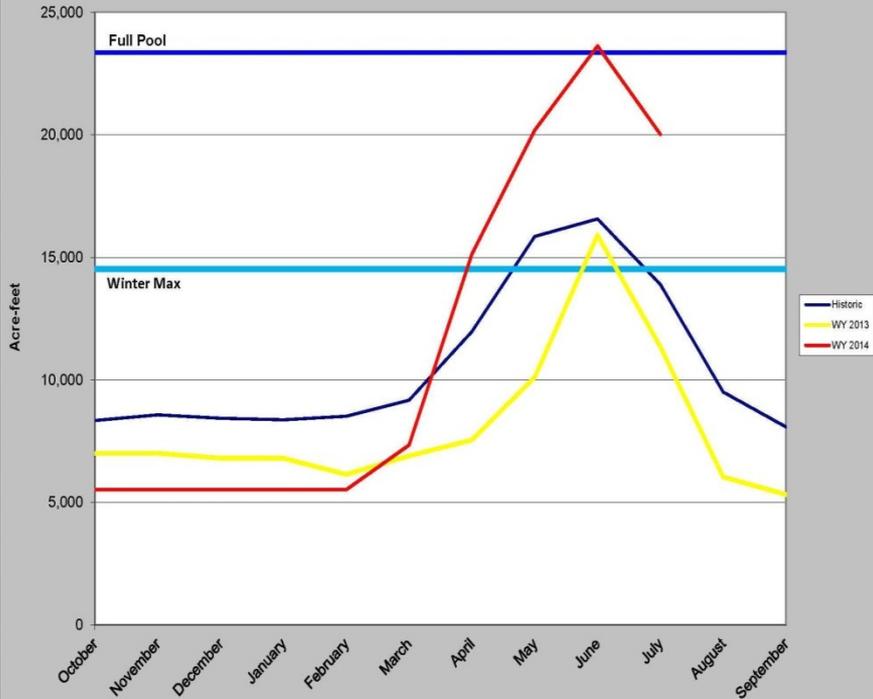
* Note: Frenchman Reservoir capacity tables updated based on aerial survey; prior capacity was 3752 A.F. Average shown is pre aerial survey

Montana DNRC State Water Projects Bureau Reservoirs

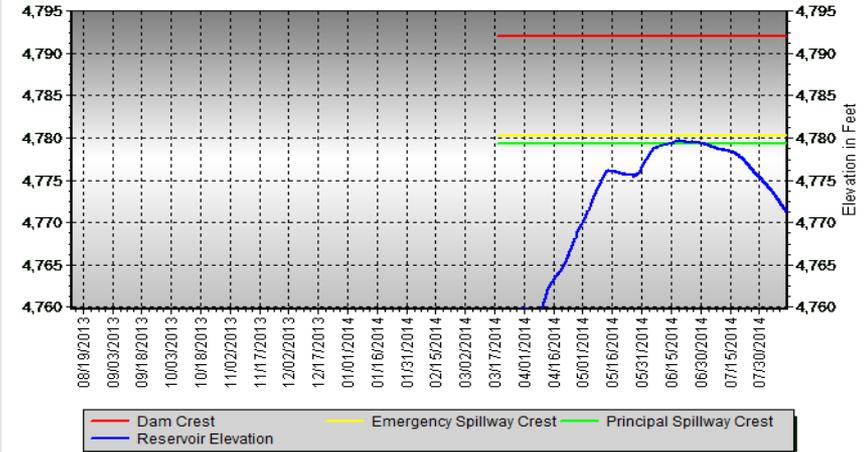


Martinsdale Reservoir

(Historic, WY 2013, and WY 2014)



MARTINSDALE DAM RESERVOIR ELEVATION — 365 DAYS



TIME OF LAST READING	8/13/2014 6:00:00 AM	REFERENCE INFORMATION	FT (MSL)	AC-FT
RESERVOIR ELEVATION	4,771.2 FT	DAM CREST	4792.0	38,958
RESERVOIR VOLUME	16,212 AF	EMERGENCY SPILLWAY CREST	4780.25	24,350
		PRINCIPAL SPILLWAY CREST	4779.25	23,348
		TRANSDUCER CASE DEPTH	4759.78	8,444

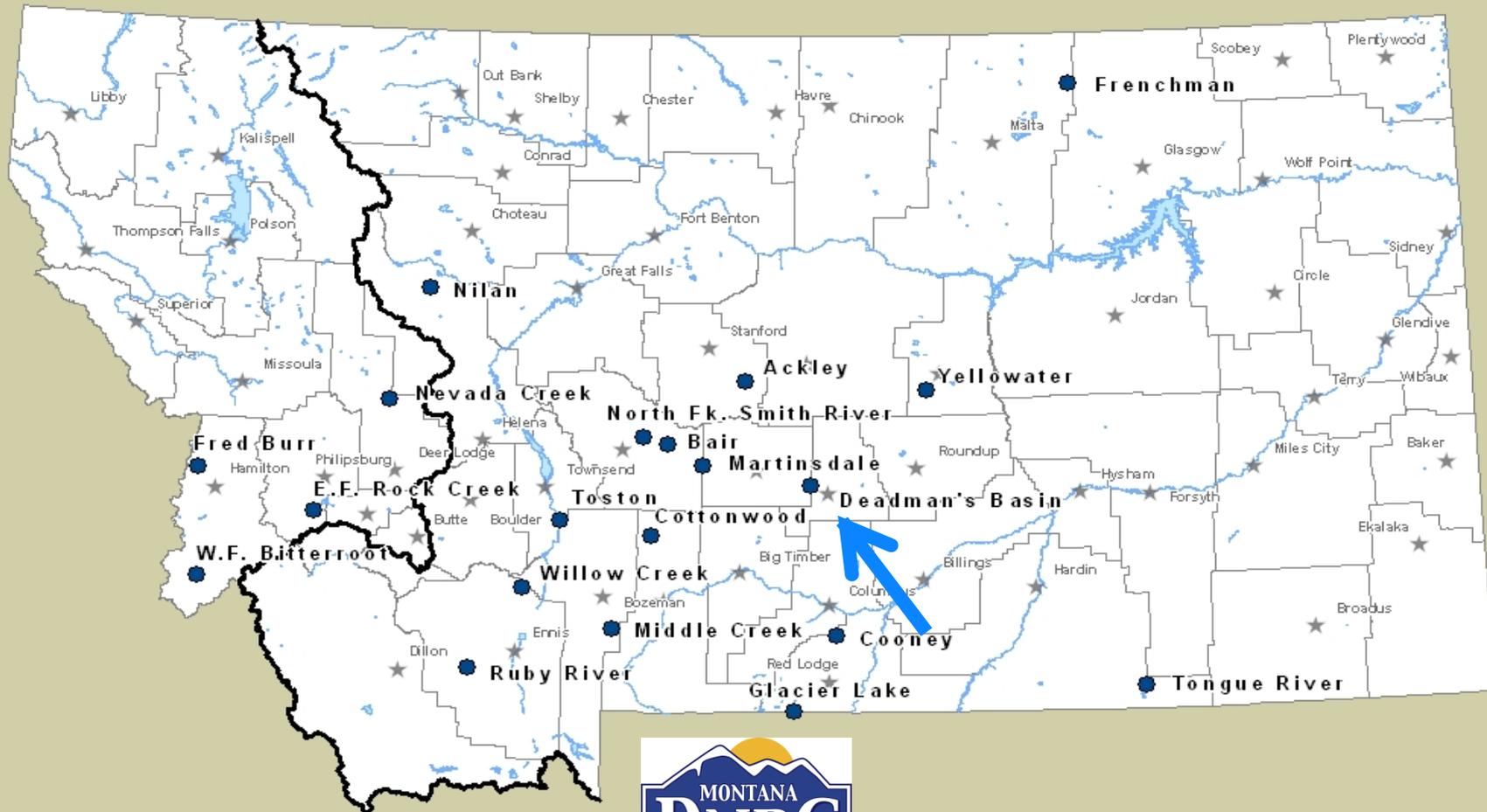
*NOTE: RESERVOIR ELEVATIONS BELOW 4759.78 FT ARE NOT VALID DUE TO INSTRUMENTATION LIMITATIONS.

*** PROVISIONAL DATA SUBJECT TO REVISION ***



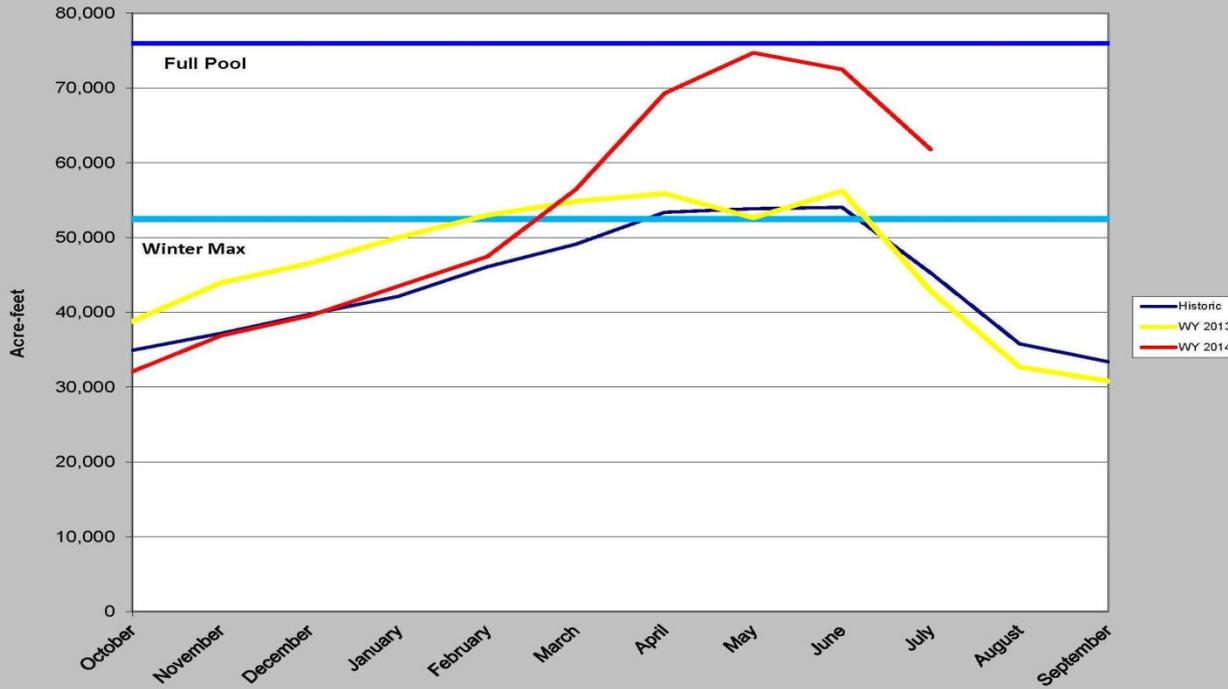
- 70% Capacity
- 16,212 Acre-Feet
- Elev. =4,771.2
- Water Supply is favorable

Montana DNRC State Water Projects Bureau Reservoirs



Deadman's Basin

(Historic, WY 2013, and WY 2014)



- 81% Capacity
- 61,770 Acre-Feet
- Elev. = 3913.9
- Outflow = 250 cfs
- Water Supply is favorable

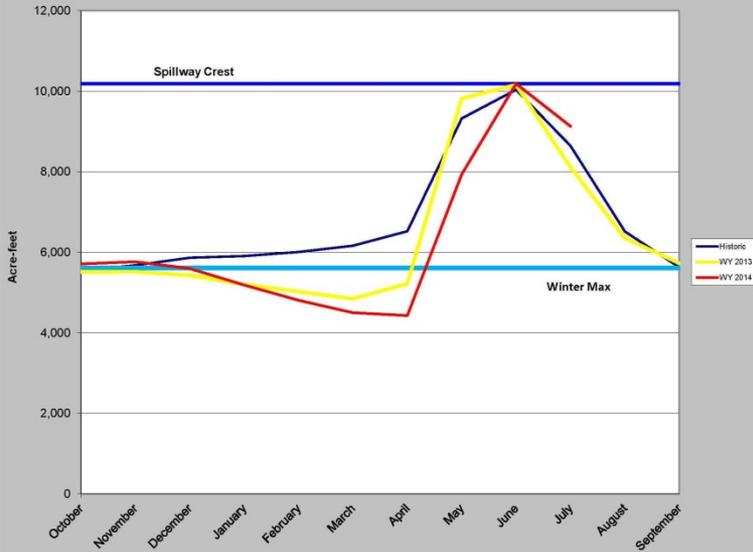


Montana DNRC State Water Projects Bureau Reservoirs

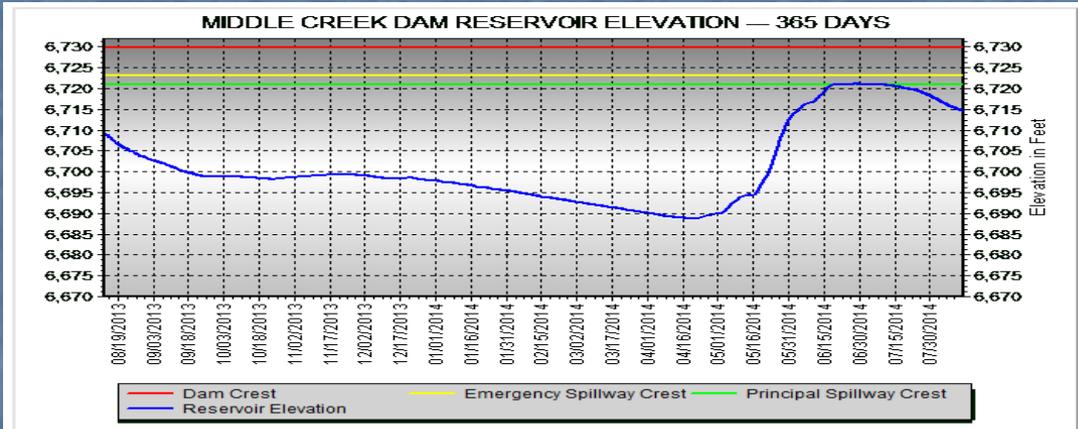


Middle Creek Reservoir

(Historic, WY 2013, and WY 2014)



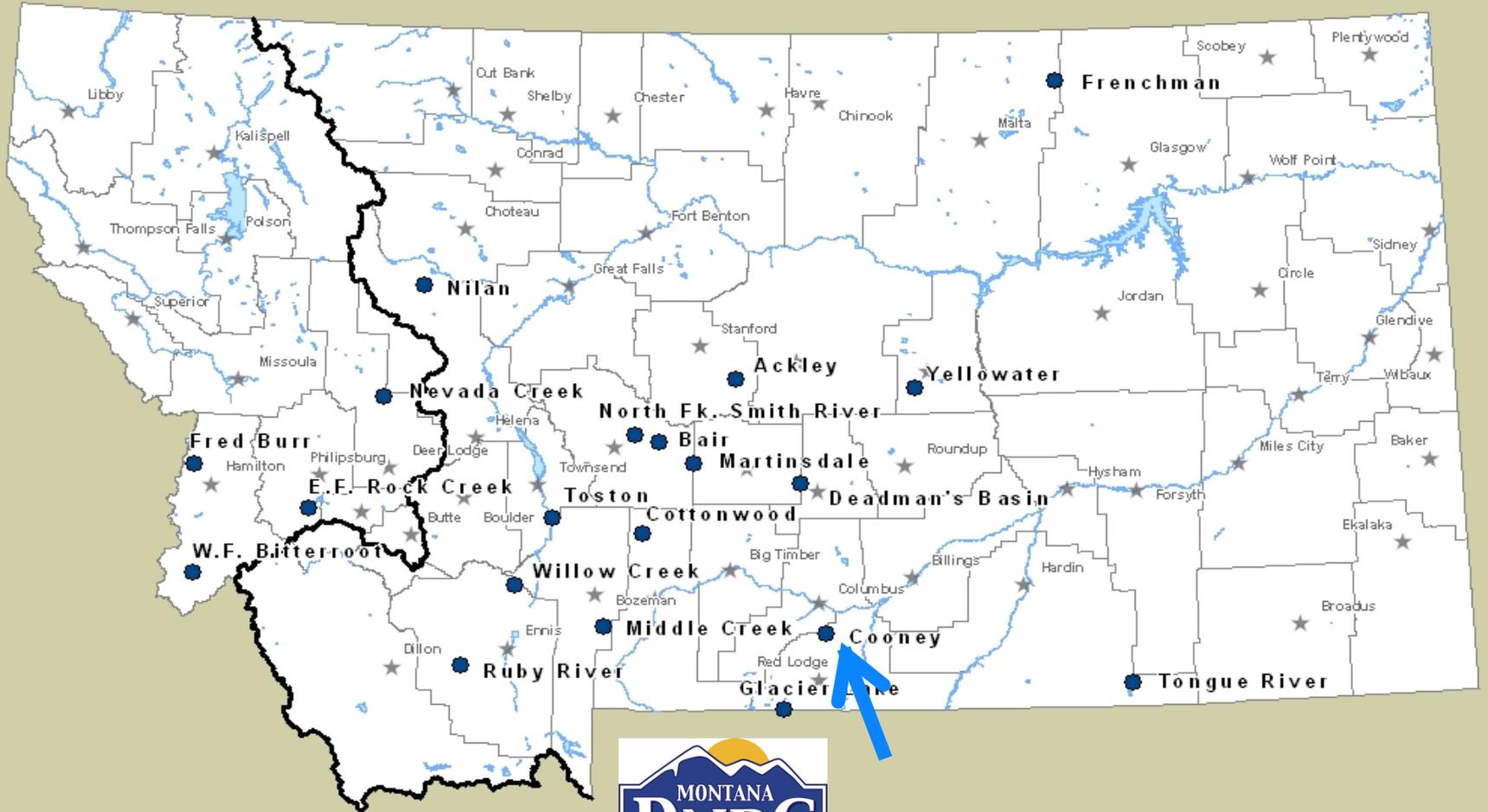
- 85% Capacity
- Outflows=59 cfs
- 8,840 Acre-Feet
- Elev.=6714.5
- Water Supply is favorable



TIME OF LAST READING	8/13/2014 6:00:00 AM	REFERENCE INFORMATION	FT (MSL)	AC-FT
RESERVOIR ELEVATION	6,714.5 FT	DAM CREST	6730.0	12,790
RESERVOIR VOLUME	8,640 AF	EMERGENCY SPILLWAY CREST	6723.0	10,707
MIDDLE CREEK BELOW DAM	59.0 CFS	PRINCIPAL SPILLWAY CREST	6721.0	10,184
TIME OF LAST READING	8/13/2014 6:45:00 AM	LOWEST USABLE ELEVATION	6637.0	0

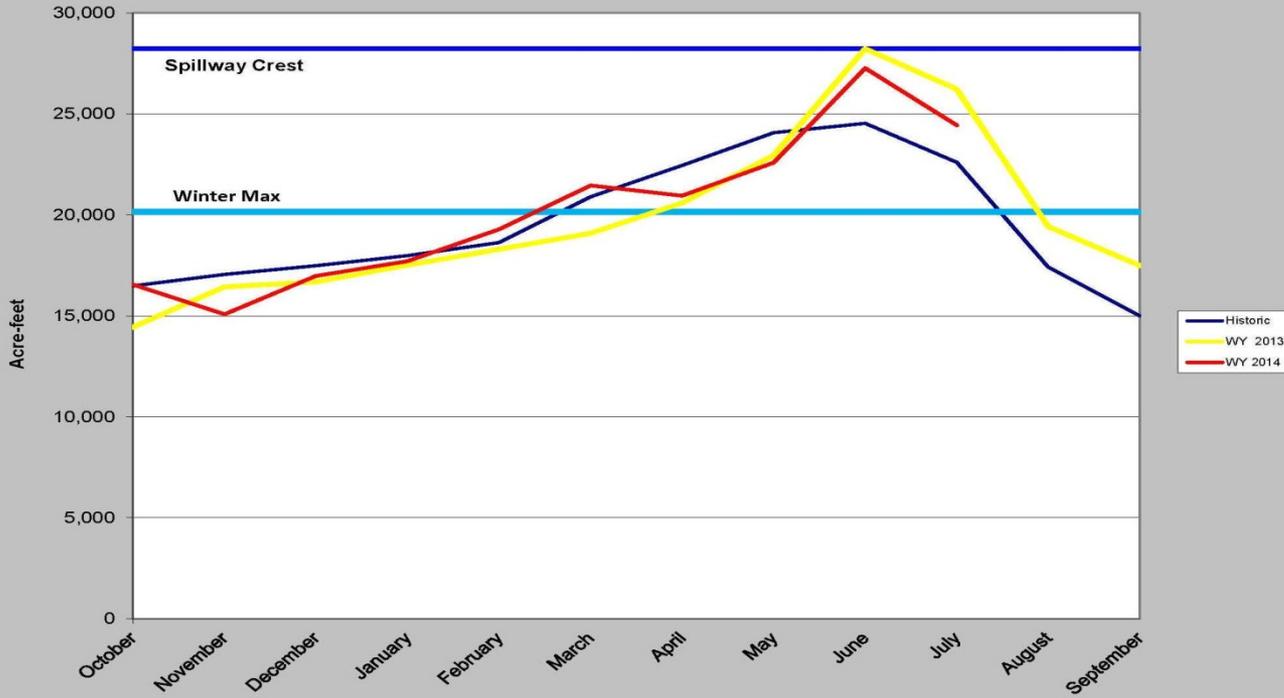
*** PROVISIONAL DATA SUBJECT TO REVISION ***

Montana DNRC State Water Projects Bureau Reservoirs



Cooney Reservoir

(Historic, WY 2013, and WY 2014)



- 87% Capacity
- 24,440 Acre-Feet
- Elev.=4246.59
- Inflows= 92 cfs
- Outflows= 90 cfs
- Water Supply is favorable



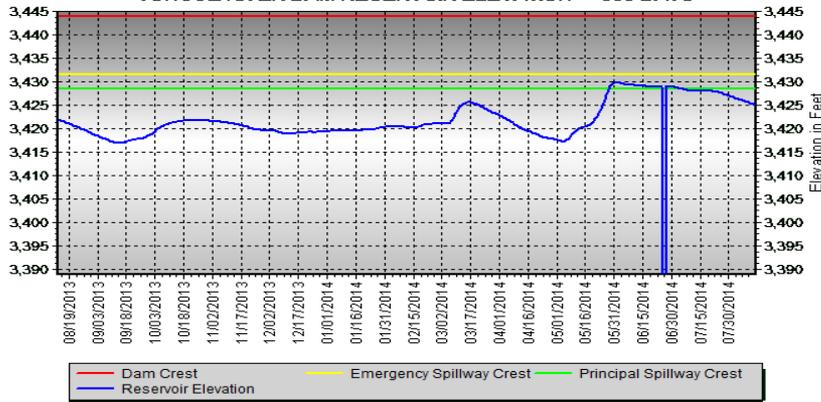
Montana DNRC State Water Projects Bureau Reservoirs



- 86% Capacity
- 67,233 Acre-Feet
- Elev. = 3425.0
- Inflows=221 cfs
- Outflows=503 cfs
- Water Supply is favorable



TONGUE RIVER DAM RESERVOIR ELEVATION — 365 DAYS



TIME OF LAST READING 8/13/2014 5:00:00 AM

REFERENCE INFORMATION FT (MSL) AC-FT

RESERVOIR ELEVATION 3,425.0 FT

DAM CREST 3444.0 150,000

RESERVOIR VOLUME 67,233 AF

EMERGENCY SPILLWAY CREST 3431.5 91,107

PRIMARY GATE 27.0%

PRINCIPAL SPILLWAY CREST 3428.4 79,071

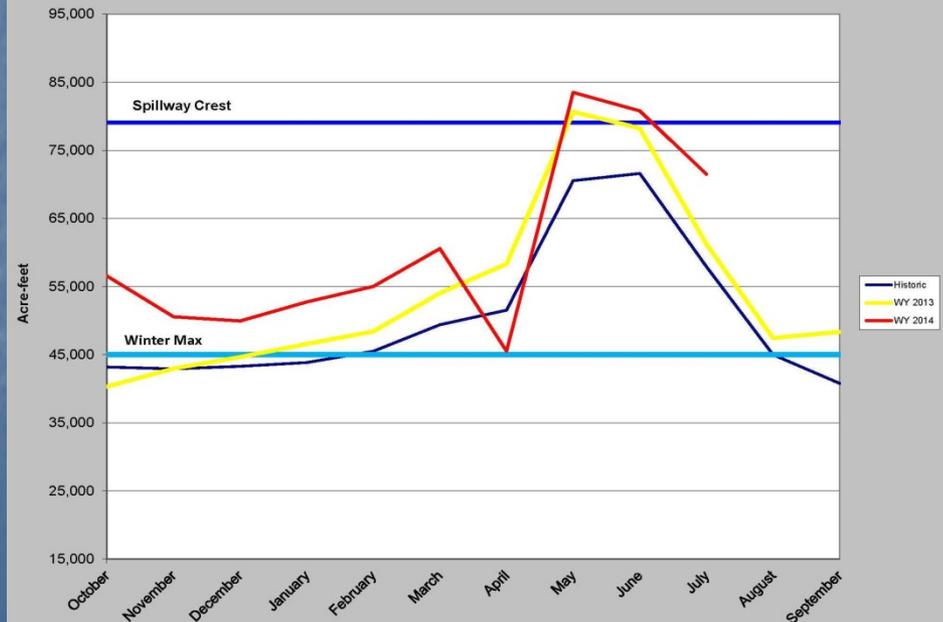
SECONDARY GATE 1.0%

TOP OF LOW LEVEL INTAKE 3390.0 6,656

*** PROVISIONAL DATA SUBJECT TO REVISION ***

Tongue River

(Historic, WY 2013, and WY 2014)



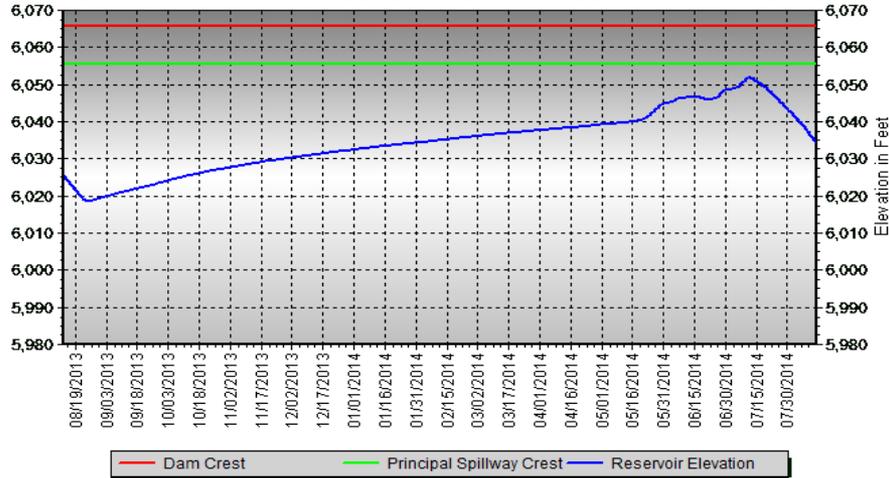
Montana DNRC State Water Projects Bureau Reservoirs





- 56% Capacity
- 8,722 Acre-Feet
- Elev. = 6034.4
- Water Supply is favorable

EAST FORK OF ROCK CREEK DAM RESERVOIR ELEVATION — 365 DAYS

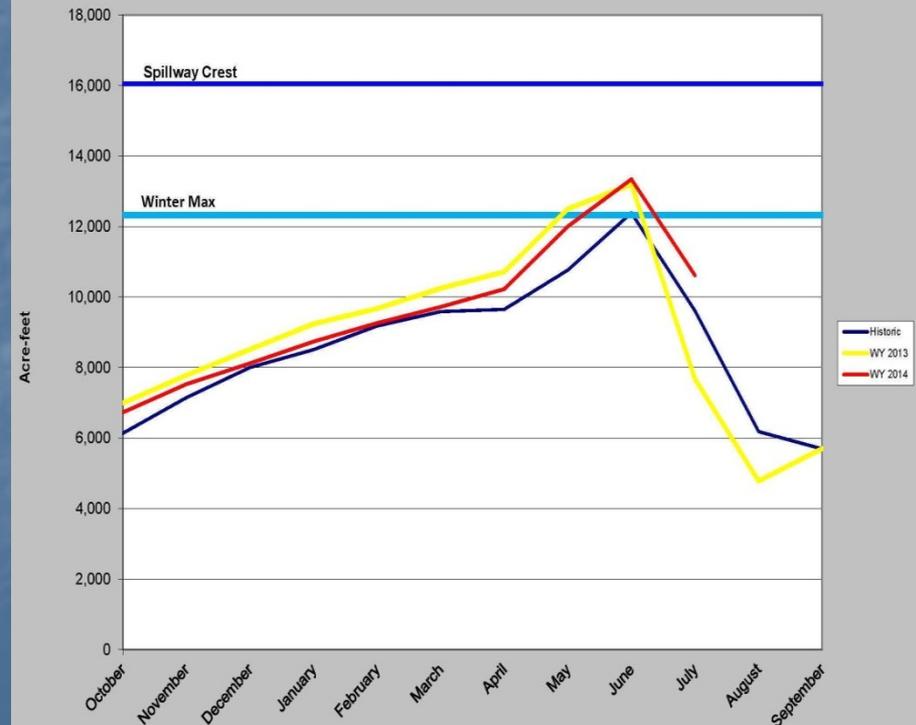


TIME OF LAST READING	8/13/2014 5:00:00 AM	REFERENCE INFORMATION	FT (MSL)	AC-FT
RESERVOIR ELEVATION	6,034.4 FT	DAM CREST	6065.6	19,850
RESERVOIR VOLUME	8,722 AF	PRINCIPAL SPILLWAY CREST	6055.5	16,040
		LOWEST USABLE ELEVATION	5989.7	0

*** PROVISIONAL DATA SUBJECT TO REVISION ***

East Fork Rock Creek Reservoir

(Historic, WY 2013, and WY 2014)

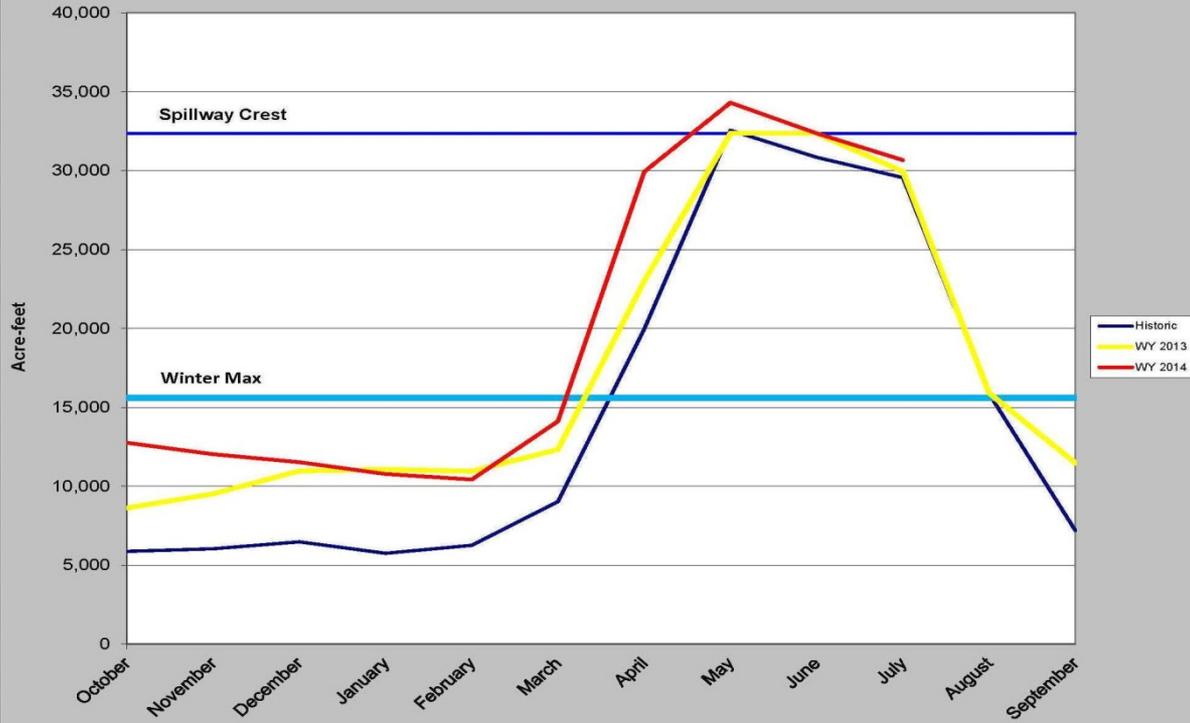


Montana DNRC State Water Projects Bureau Reservoirs



Painted Rocks Reservoir

(Historic, WY 2013, and WY 2014)



- 95% Capacity
- 30,664 Acre-Feet
- Elev. = 4722.7
- Outflows = 388 cfs
- Water Supply is favorable



REHAB PROJECTS

- EF Rock Ck Fish Screen will be wrapping up this fall
- Ruby Reservoir
 - final earthwork grading complete
 - instrumentation installation ongoing
- Broadwater Power Plant
 - bladders replaced
 - new bulkheads constructed
- Deadman' s Basin Diversion-construction to start mid-September
- Martinsdale Supply Canal re-grading to be complete by end of August

Summary

- Majority of DNRC SWP Reservoirs filled to capacity.
- All SWP Reservoirs are at or above historic averages.
- Contracted deliveries (irrigation/fisheries) are drafting reservoirs.
- Water Supply is favorable for DNRC SWP reservoirs and water users should expect full contracted deliveries through WY 2014
- Assuming normal conditions throughout the remainder of WY 2014 winter carryover levels should be favorable to start WY 2015.



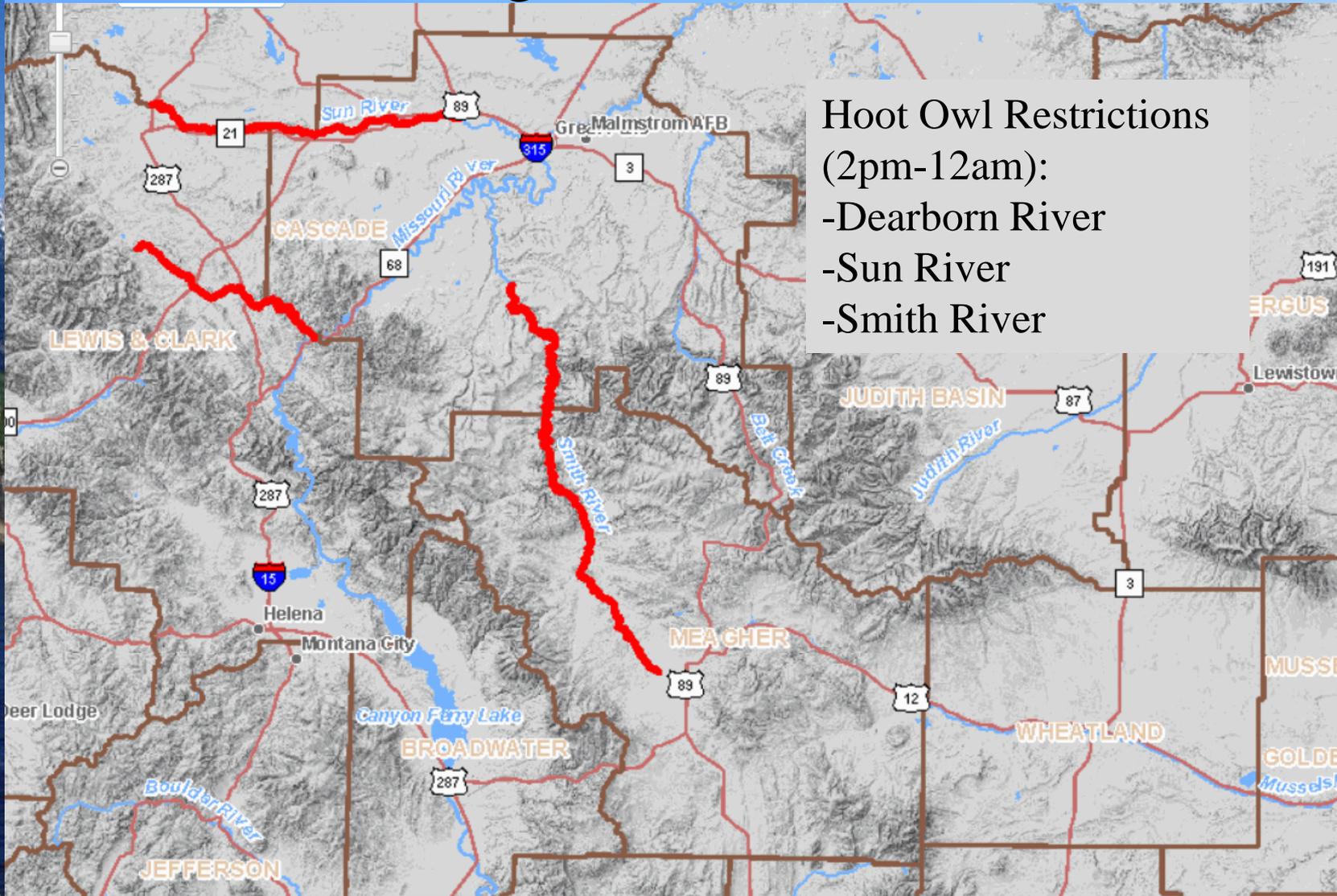
*Montana Fish,
Wildlife & Parks*

Updates on Fishing and Fire Restrictions

Stephen Begley
Water Conservation Specialist

August 14, 2014

Fishing Restrictions



Hoot Owl Restrictions

(2pm-12am):

- Dearborn River
- Sun River
- Smith River



Montana Fish,
Wildlife & Parks

Fire Restrictions on FWP Lands

Region 1:

Stage I Fire Restrictions:

- Lake County within the Flathead Indian Reservation (August 7)
- Sanders County within the Missoula Restriction Zone (Lolo National Forest) (August 7)
- Exemptions to fire restrictions when established steel fire rings are utilized at Finley Point, Big Arm and Thompson Falls State Parks.

Fire Restrictions on FWP Lands

Region 2:

Stage I Fire Restrictions:

- Mineral County (August 7)
- Missoula County (August 7)
- Ravalli County (August 7)
- Exemptions to fire restrictions when established steel fire rings are utilized at Chief Looking Glass Fishing Access Site, and Salmon Lake, Placid Lake, Beavertail Hill, Painted Rocks, and Frenchtown Pond State Parks

Fire Restrictions on FWP Lands

Region 5:

Stage I Fire Restrictions:

- Yellowstone County (July 23)
- Big Horn County (July 29)
- Stillwater County (July 30)
- Exemptions to fire restrictions when established steel fire rings are utilized at Cooney, Pictograph Cave, Chief Plenty Coups State Parks, and Tongue River Reservoir.

Stage II Fire Restrictions:

- Carbon County (July 29)

Fire Restrictions on FWP Lands

Region 6:

Stage I Fire Restrictions:

- Roosevelt County (July 31)

Region 7:

Stage I Fire Restrictions:

- Powder River County (August 6)

Stay Informed

Montana Fish, Wildlife & Parks

Hunting Fishing Recreation Fish & Wildlife Education Enforcement Doing Business News MyFWP

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HITCHHIKERS!**

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- Submit Public Comments
- Contact Us

FWP Today



MONTANA TALES & TRAILS What Do Ants Taste Like?

By Bruce Auchly – A recent conversation with a friend brought about one of those questions that periodically shake the foundations of Western civilization. What does an ant taste like to a trout? No, really. [Read the full story]

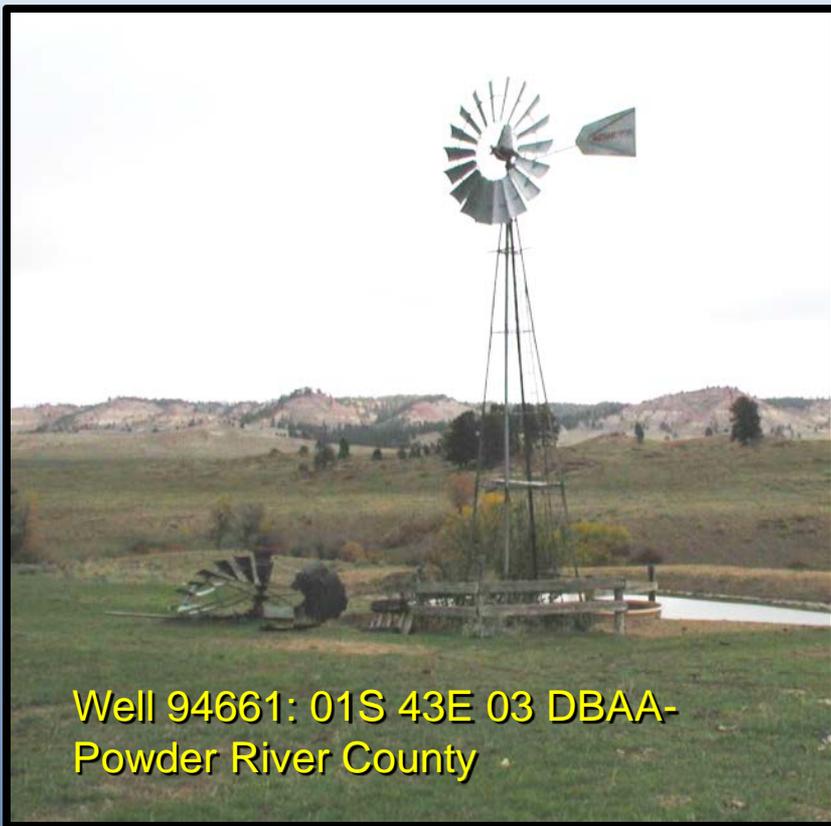
- Public Notices
- FWP Newswire

- ▼ For Hunters
- ▼ For Anglers
- ▼ For Recreationists
- ▼ For Fish & Wildlife Information
- ▼ For Educators & Students
- ▼ For Commission Information
- ▼ For FWP Maps

Questions?



*Montana Fish,
Wildlife & Parks*



Climate 2014: Groundwater- level response in wells

Thomas Patton
August 14, 2014



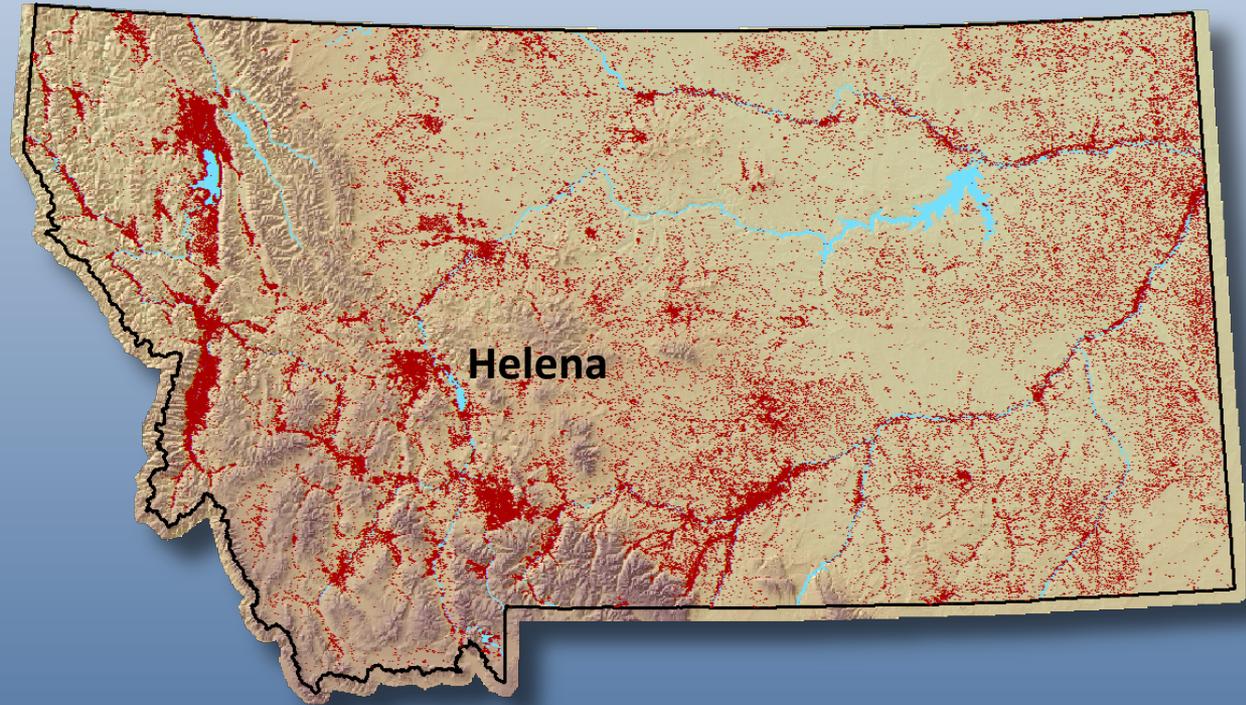
Brought to you by:

Montana Ground Water Assessment

- Ground Water Information Center (GWIC): **data and report dissemination.**
- Ground Water Monitoring: **long term records of water levels and quality.**
- Ground Water Characterization: **systematic data collection and interpretation.**

Wells in Montana

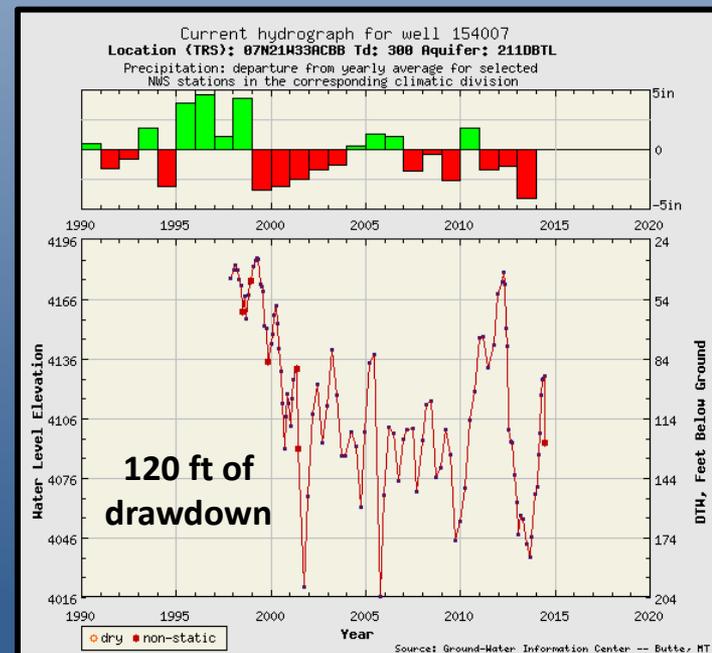
- There are about 230,000 wells in Montana.
- Because we cannot know about each individual, we need to find a way to observe them as a group.



- What kind of data do we collect and how do we analyze them to understand how aquifers react to variable climate?

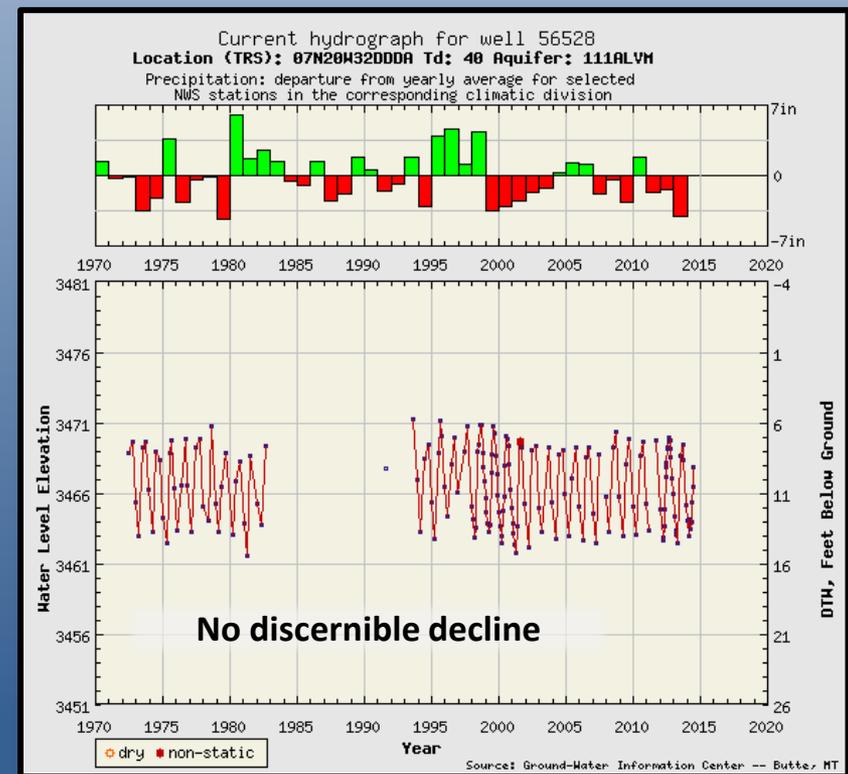
Wells are like people, they (we) all react differently to stress

- Lot of drawdown relative to available water column 🙄.
- Completed 1995 – domestic well serving in Ravalli County
- TD: 174, airlifted at 8 gpm for 1 hr with drill steel set at 160 ft.
- Water levels fell 90 ft in response to climate between 1998 and 2004.

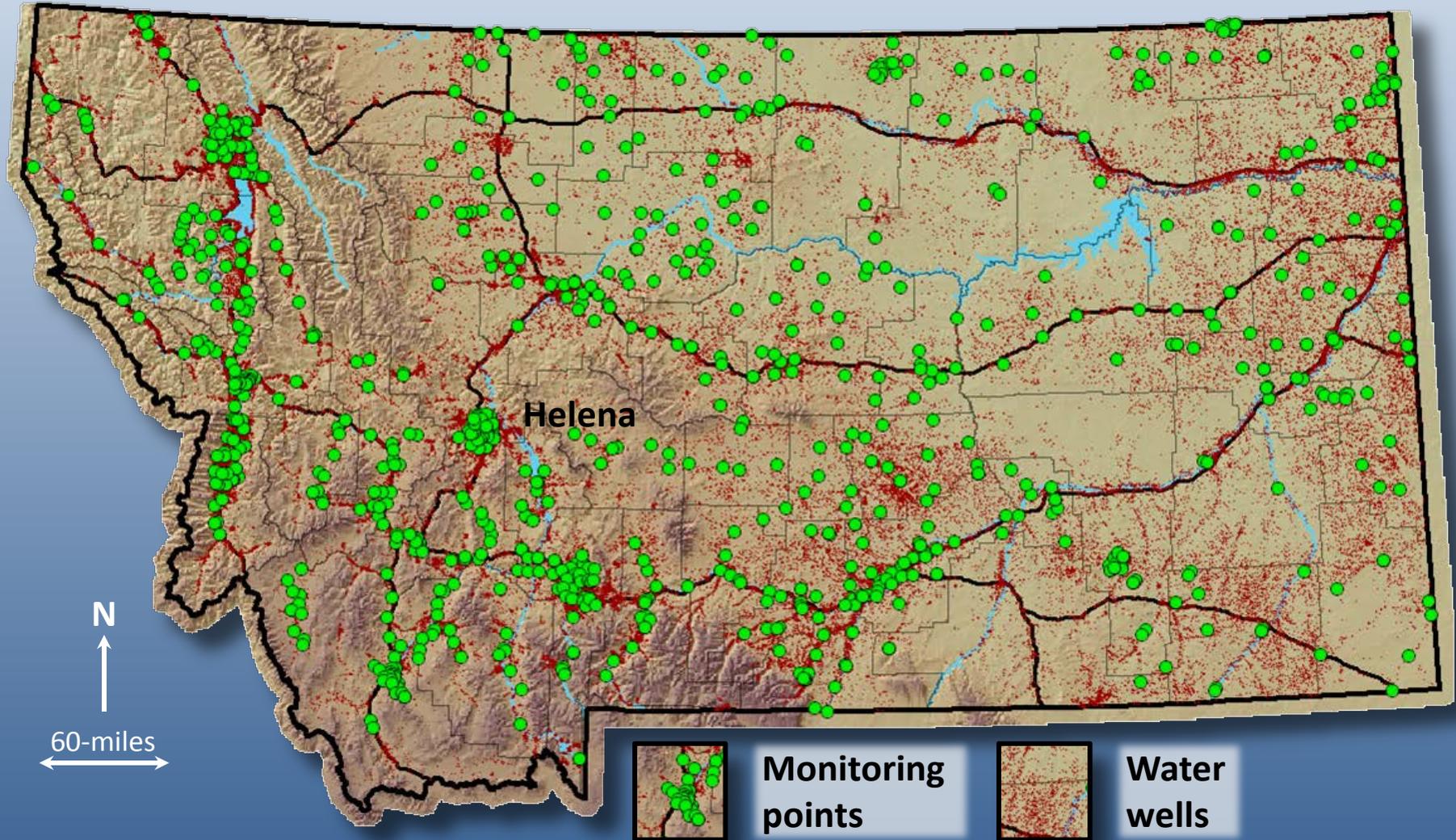


Wells are like people, they (we) all react differently to stress

- Little drawdown relative to available water column 👍.
- Domestic well serving in Ravalli County
- TD: 40, airlifted at 20 gpm for 1.5 hr with drill steel set at 20 ft.

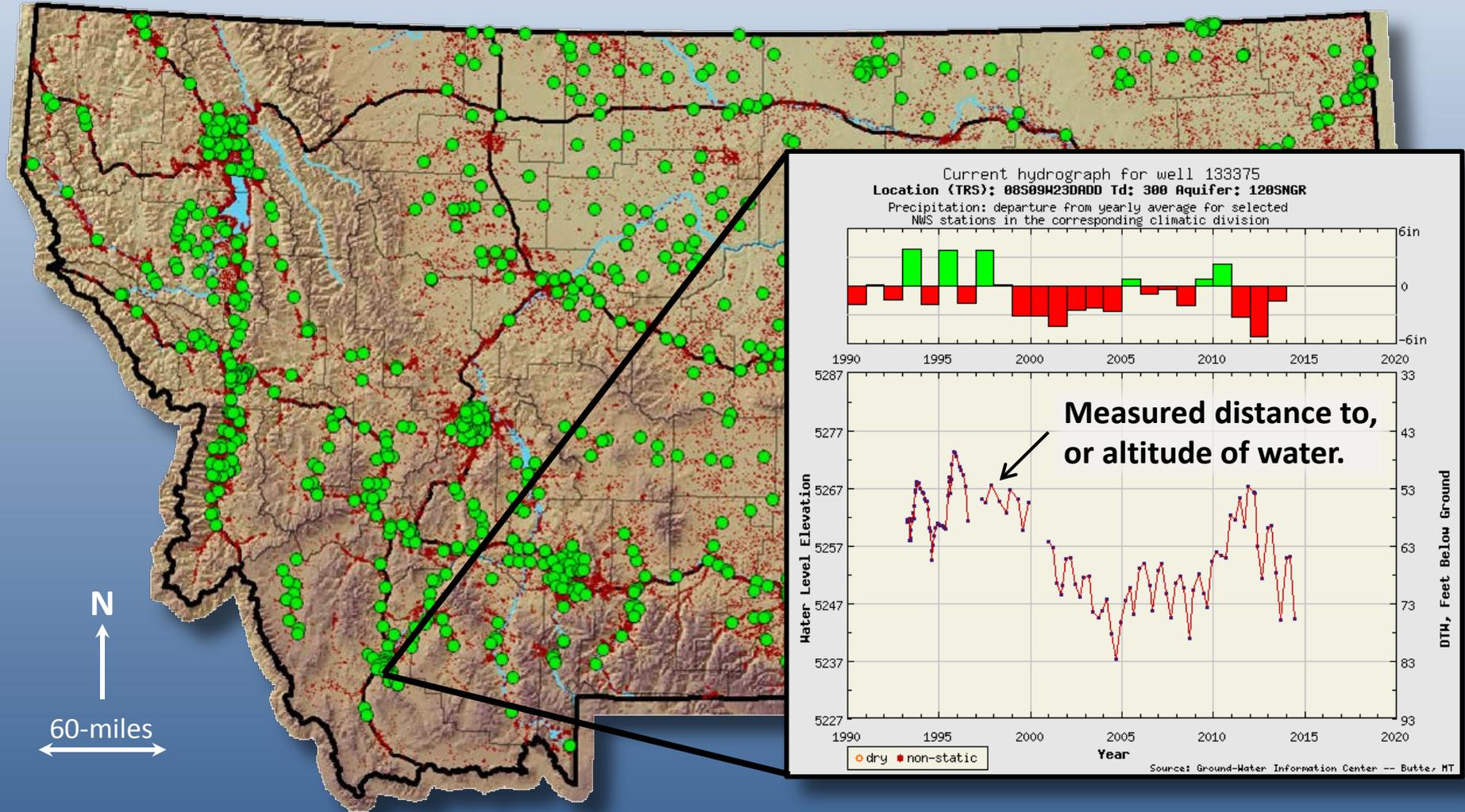


Groundwater monitoring



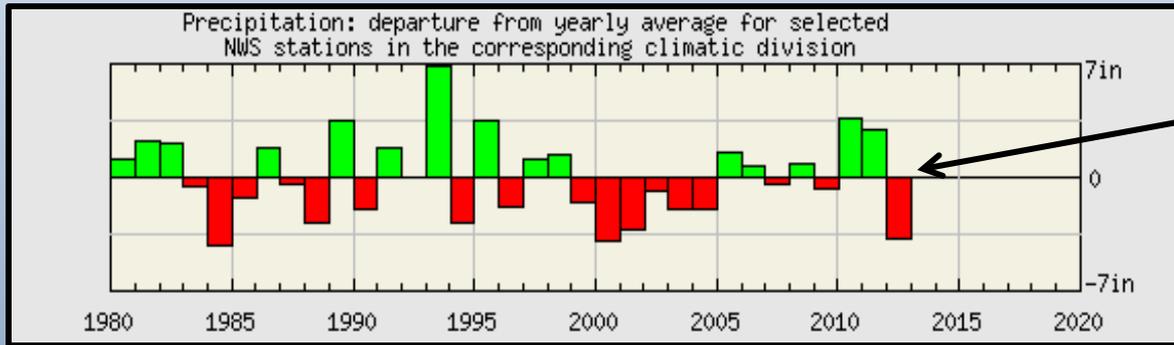
950 monitoring wells. About 30 percent (300+/-) dedicated or unused wells, 105 instrumented wells.

Groundwater monitoring



The data are used to track water-level changes. A hydrograph is available for every monitoring point.

Thinking about water balance



The precipitation we receive varies about an average or normal.



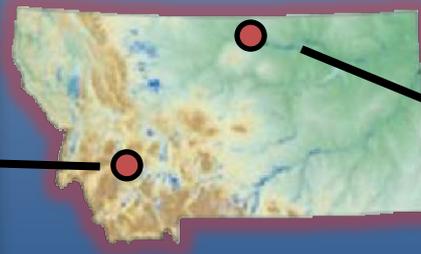
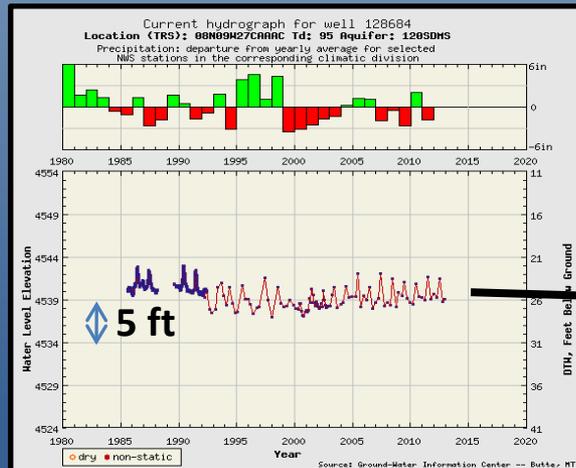
Water levels in aquifers move upward in response to more water entering than leaving, and drop at times when more water is leaving than entering.

Long periods of “average” precipitation/ groundwater recharge will result in “average” groundwater levels.

Water levels also vary about an average or normal.

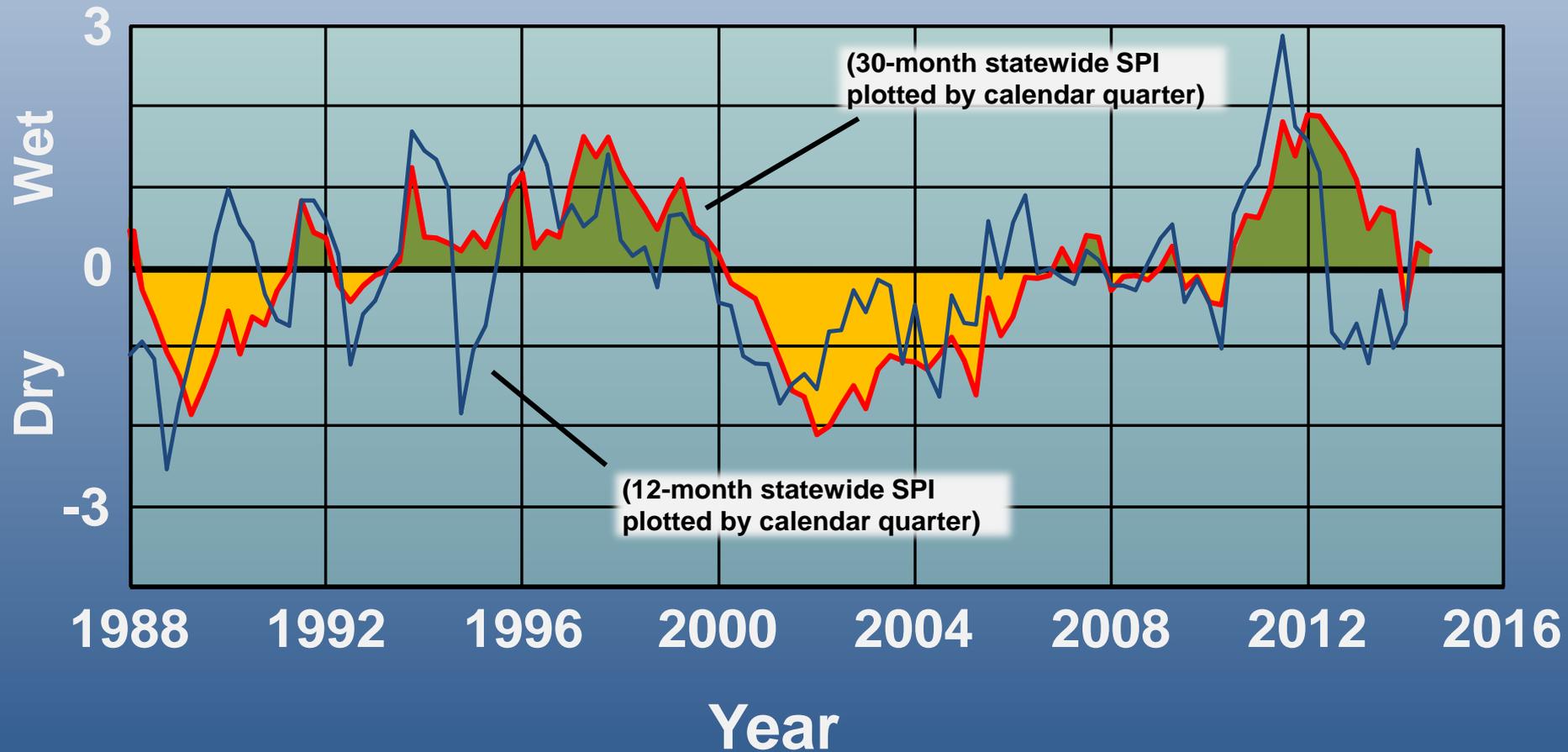
Weather or climate?

- Individual groundwater recharge episodes are like individual weather events. Recharge from a single storm may be observable on a hydrograph but by itself may not change a long-term water-level trend. Similarly, a flooding rain during a drought may not eliminate a long-term precipitation shortfall.
- Long-term recharge is comparable to the accumulation of individual weather events into climate. If there are enough recharge-producing events during a given time period to provide more water for aquifer recharge than the amount discharged, more water enters groundwater storage and water levels will increase/rise.





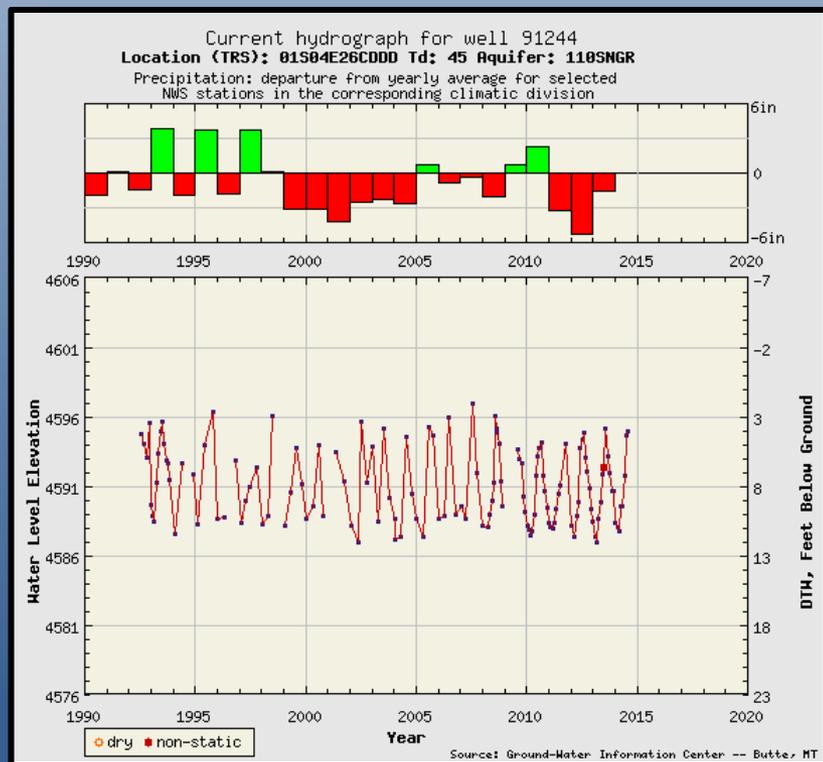
Time series of SPI values by calendar quarter



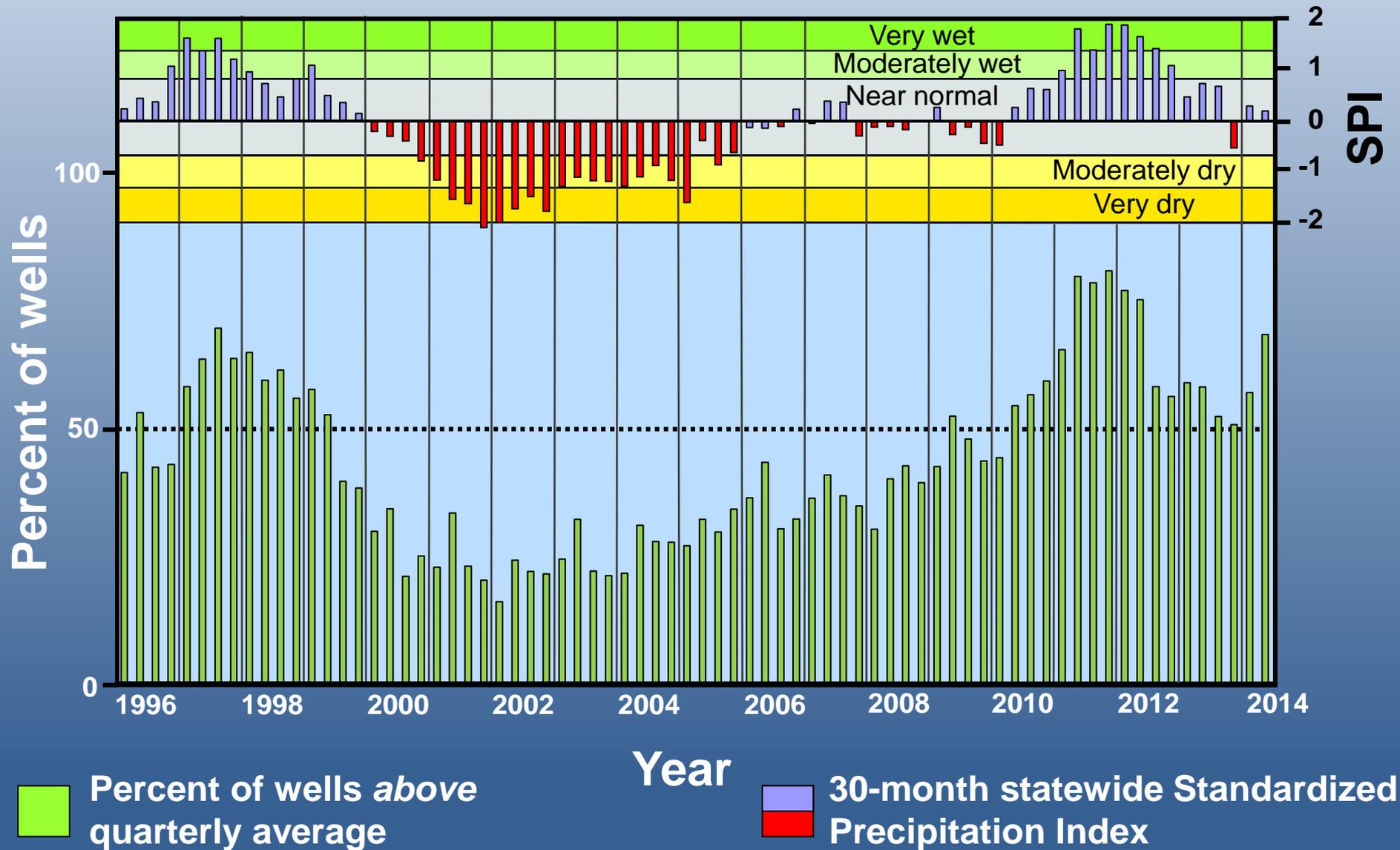
Climate sensitive wells

Hydrographs with little to no low frequency signal (~440 wells)

Hydrographs with a low frequency signal (~550 wells)

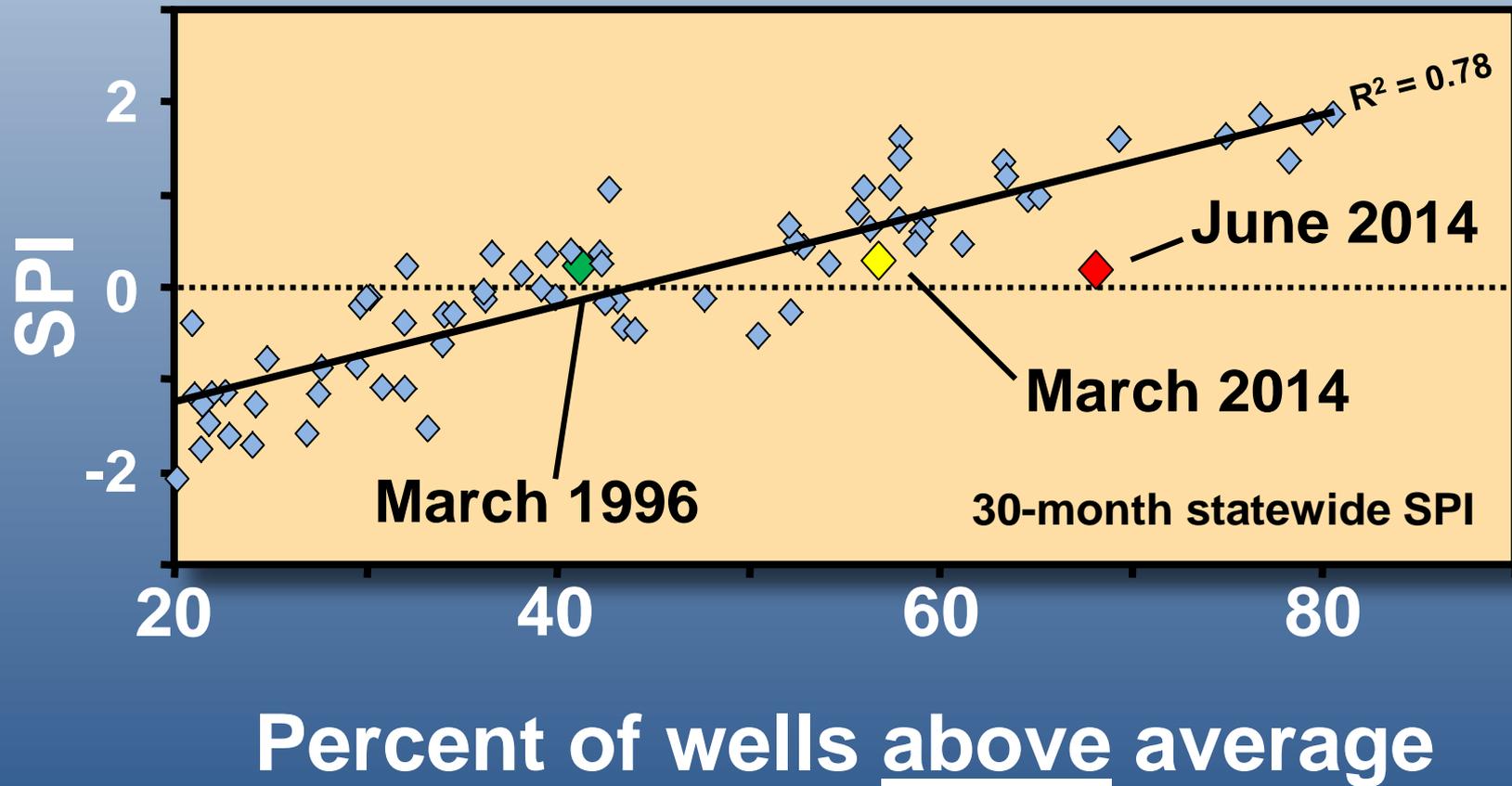


Departures from quarterly average water level: climate-sensitive wells

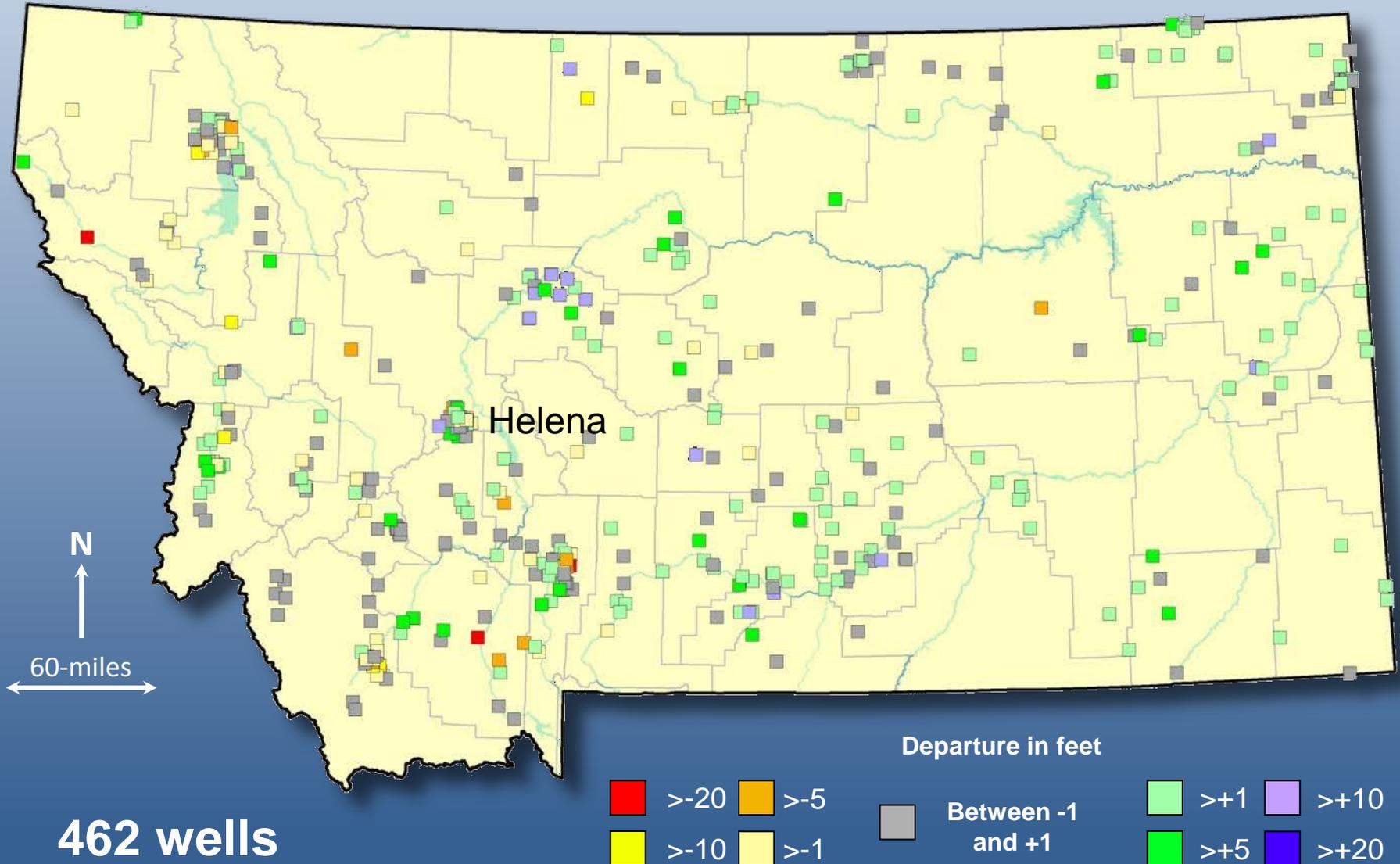




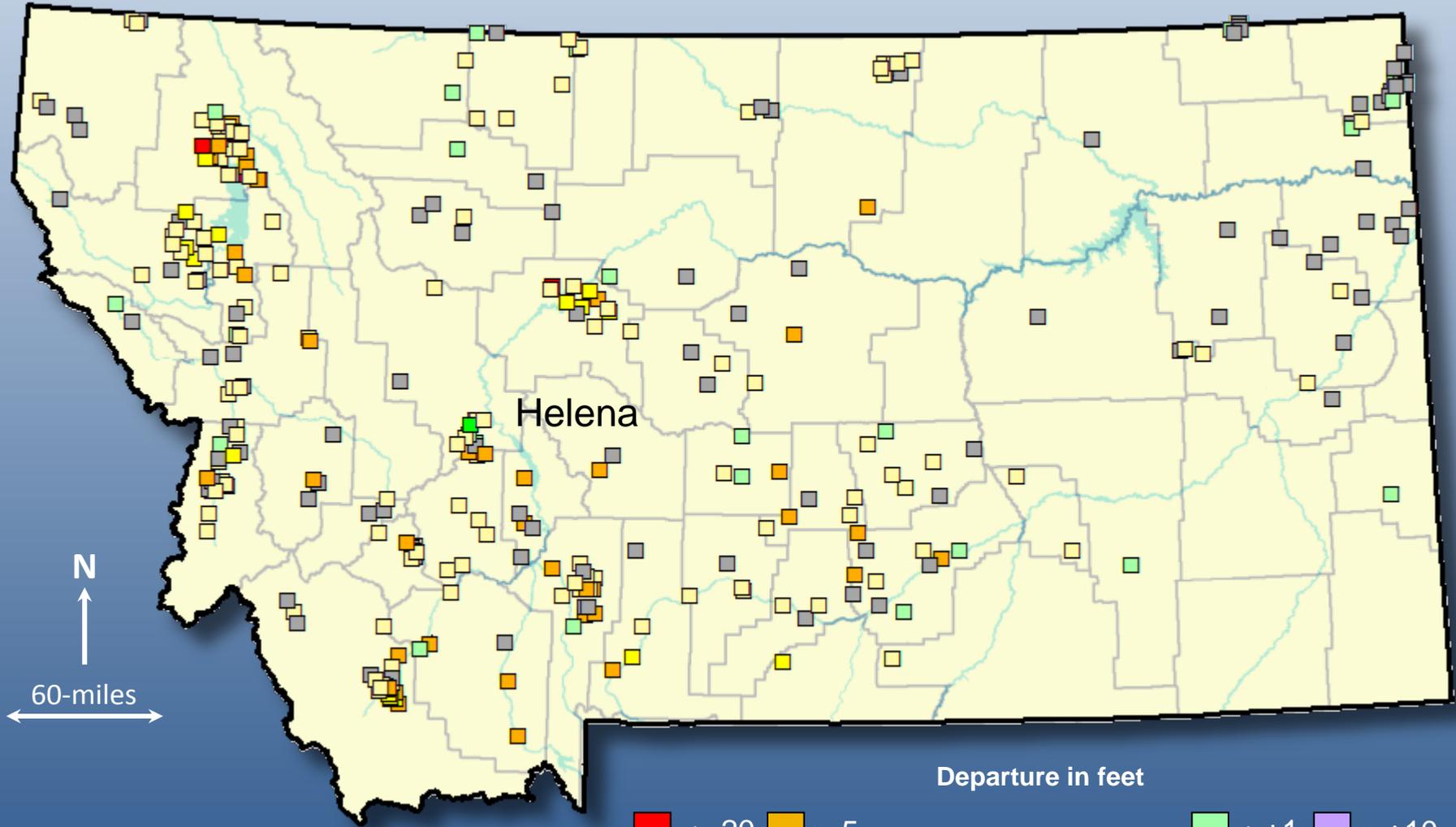
Statewide monitoring network: Percentage of wells above average and SPI: 1996-2014



April – June 2014: groundwater-level departures from average



Jan-March 2003: groundwater-level departures from average



344 wells



Summary

- At a statewide scale, water levels correlate to climate by generally rising or falling, dependent on how wet or dry it has been for the preceding 30+/- months.
- Groundwater levels were strongly impacted by the very wet (at the 30-month time scale) years 2011-2012. In June 2011 the 30-month statewide SPI was the wettest it had been in the last 60 years. Through most of 2011 and during part of 2012, the percentage of wells with above-average water levels had not been this high since 1997-1998.



MBMG mapper

<http://data.mbmg.mtech.edu/mapper/mapper.asp>

MBMG
Montana Bureau of Mines and Geology

Montana Bureau of Mines and Geology
Natural Resources Building
1300 West Park Street
Butte, MT 59701

Lon: -114.335548 Lat: 49.624667 Scale: 1:4,622,324

▼ Welcome
Welcome to the online web mapping application of the Montana Bureau of Mines and Geology.

▼ Layers
Geology: 1:500,000 geologic map (STATEMAP).
Transparency
GWIC Wells: Available well and borehole records from the Ground Water Information Center database. Visible at scales greater than 1:288,895.
Statewide Network: Wells noted as green triangles are part of the MBMG statewide groundwater monitoring network.

▼ Switch Basemap
Click on any of the basemaps below to change the map area. Maps are provided by ESRI and MBMG has no responsibility for their content.

Imagery Imagery with Labels
Streets Topographic
Terrain with Labels Light Gray Canvas

14 Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri Chi... esri

Ground Water Information Center

File Edit View Favorites Tools Help
X Convert Select

Groundwater Information Center
Montana Bureau of Mines and Geology
Montana Tech of The University of Montana
1300 West Park Street - Natural Resources Building Room 329
Butte Montana 59701-8997
Ph: (406) 496-4336 Fx: (406) 496-4343

4/3/2013

[Home](#) | [Well Data](#) | [Reports](#) | [DrillerWeb](#) | [DNRC](#) | [Help!](#)

Mapper Release

March 1, 2013

The Montana Bureau of Mines and Geology has released its online web mapping application. Click the image to the right to start using the mapper. Currently displayed are statewide monitoring network wells, GWIC wells and 1:500K geologic maps.

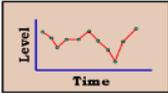


Drought Reports

[more reports](#)

[Download](#) an Adobe Acrobat file that discusses how aquifers respond to climatic conditions. The statistics about how wells in Montana's network are responding to the current drought conditions.

Statewide Monitoring Network



GWIC features current hydrographs for wells that are being measured regularly by MBMG and its cooperators. Click the picture to the left to view data collected by the Statewide Monitoring Program. Data from other MBMG projects are available through the [SWL Menu](#) after you sign in.

[View a list](#) of statewide monitoring network wells. The listing is by number of wells per county.

County-wide Statistics

[more reports](#)

View statistical overviews of the well _____

Coalbed Methane GW Monitoring Network

MBMG has been monitoring groundwater levels in the Powder River Regional aquifer network of Montana since 2008. The monitoring program plus site visits, water-level measurements at various wells for methane infiltration and groundwater flow. Data were downloaded from GWIC. Click on the picture to access the MBMG coalbed methane project data.



A little about us

The Ground-Water Information Center (GWIC) at the Montana Bureau of Mines and Geology (MBMG) is the central repository for information on the ground-water resources of Montana. The data include well-completion reports from drillers, measurements of well performance and water quality based on site visits, water-level measurements at various wells for periods of up to 60 years, and water-quality reports for thousands of samples. The databases at GWIC are continually updated with new data from driller's logs, MBMG research projects, and research projects from other agencies.

Other sites of interest

- [DNRC](#) - Department of Natural Resources and Conservation
- [NRIS](#) - Natural Resource Information System (Montana State Library)

100%

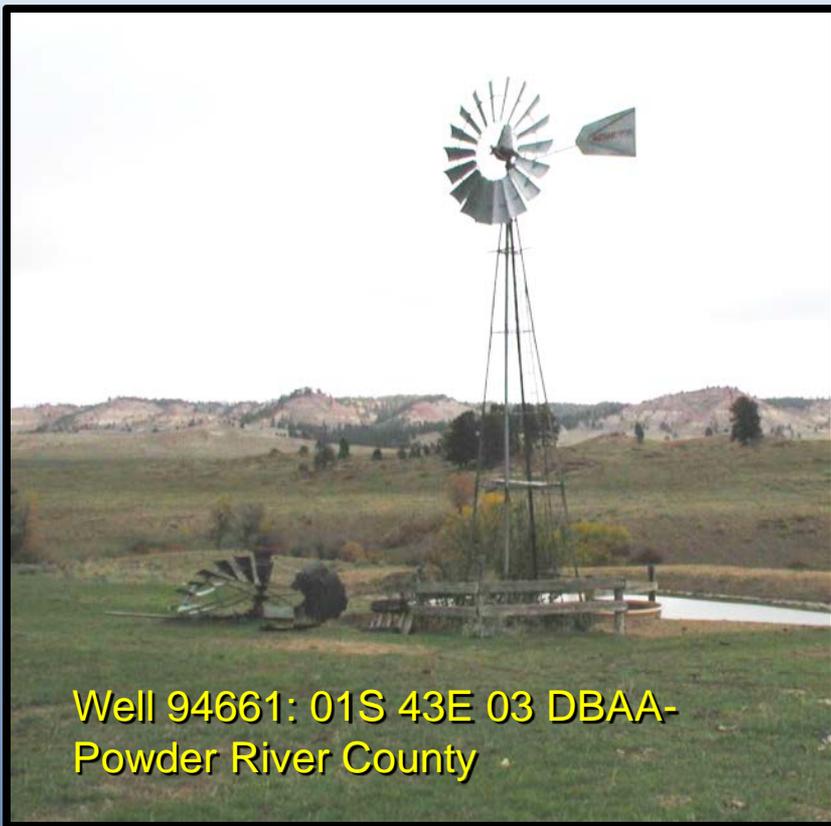
<http://mbmggwic.mtech.edu>



Ground Water Assessment:

2014-2015 funding issue

- 
- On July 19, 2014 MBMG was notified that about \$65K in 2014 revenue had not materialized. The program ended the year over-expended by \$65K.
 - There was a shortfall in RIT interest, and the reduction is expected to continue through FY2015. The total impact is at least \$128K.
 - FY2015 operations were budgeted at \$138K. MBMG will suspend field operations and coop. agreements. Without a short term solution, no report in 2015.



Climate 2014: Groundwater- level response in wells

Thomas Patton
August 14, 2014



Touring: Flathead Valley

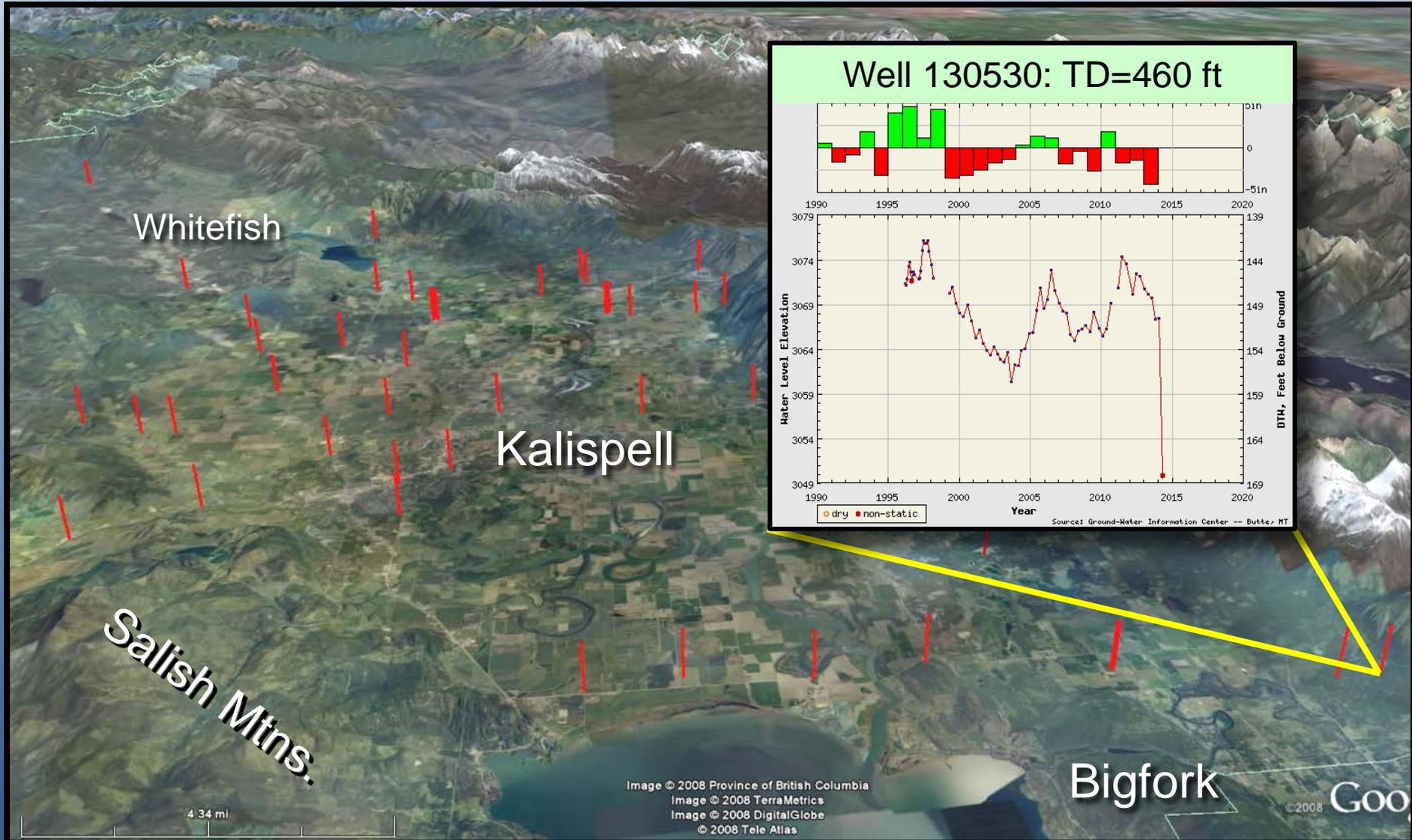


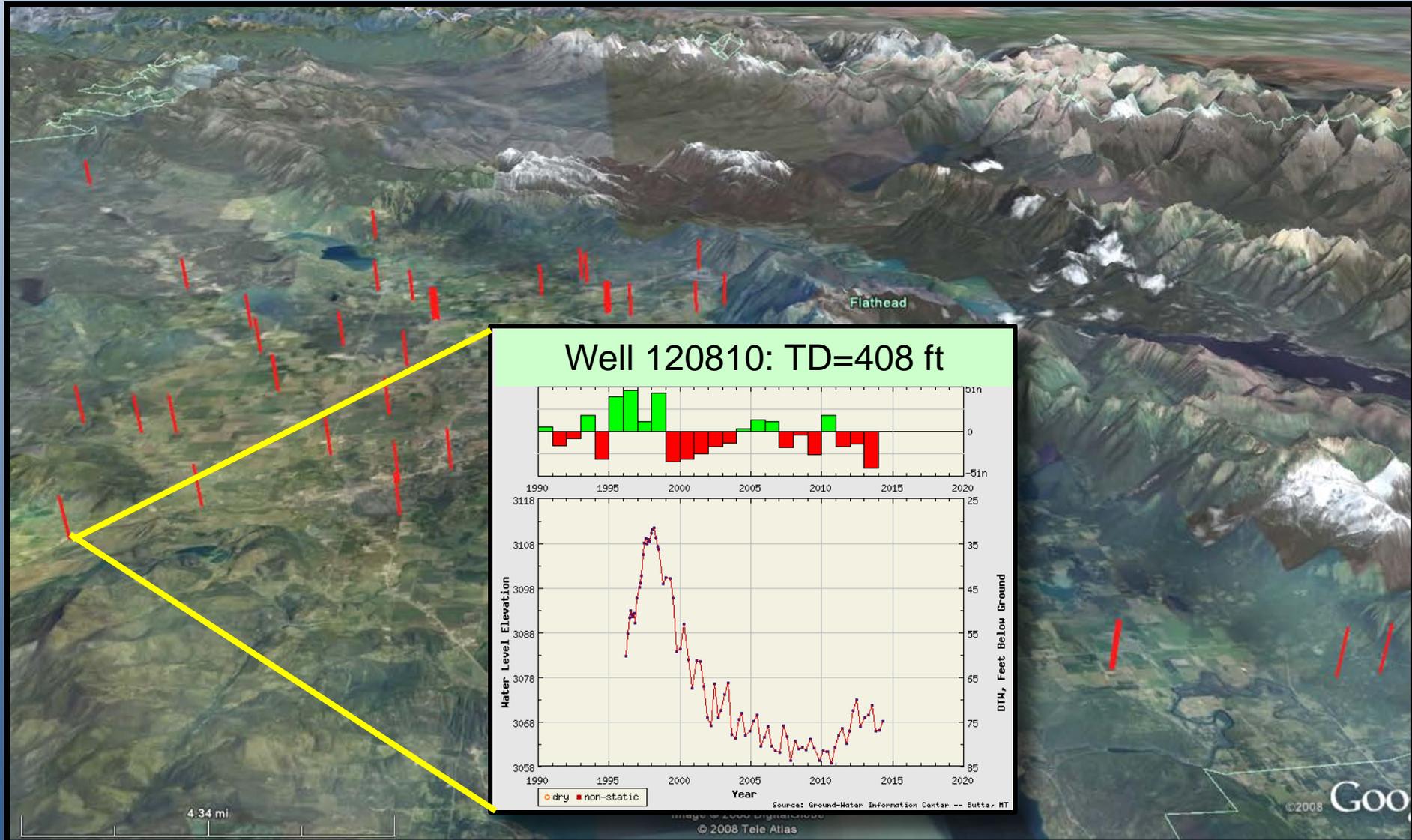
Image © 2008 Province of British Columbia
Image © 2008 TerraMetrics
Image © 2008 DigitalGlobe
© 2008 Tele Atlas

Bigfork

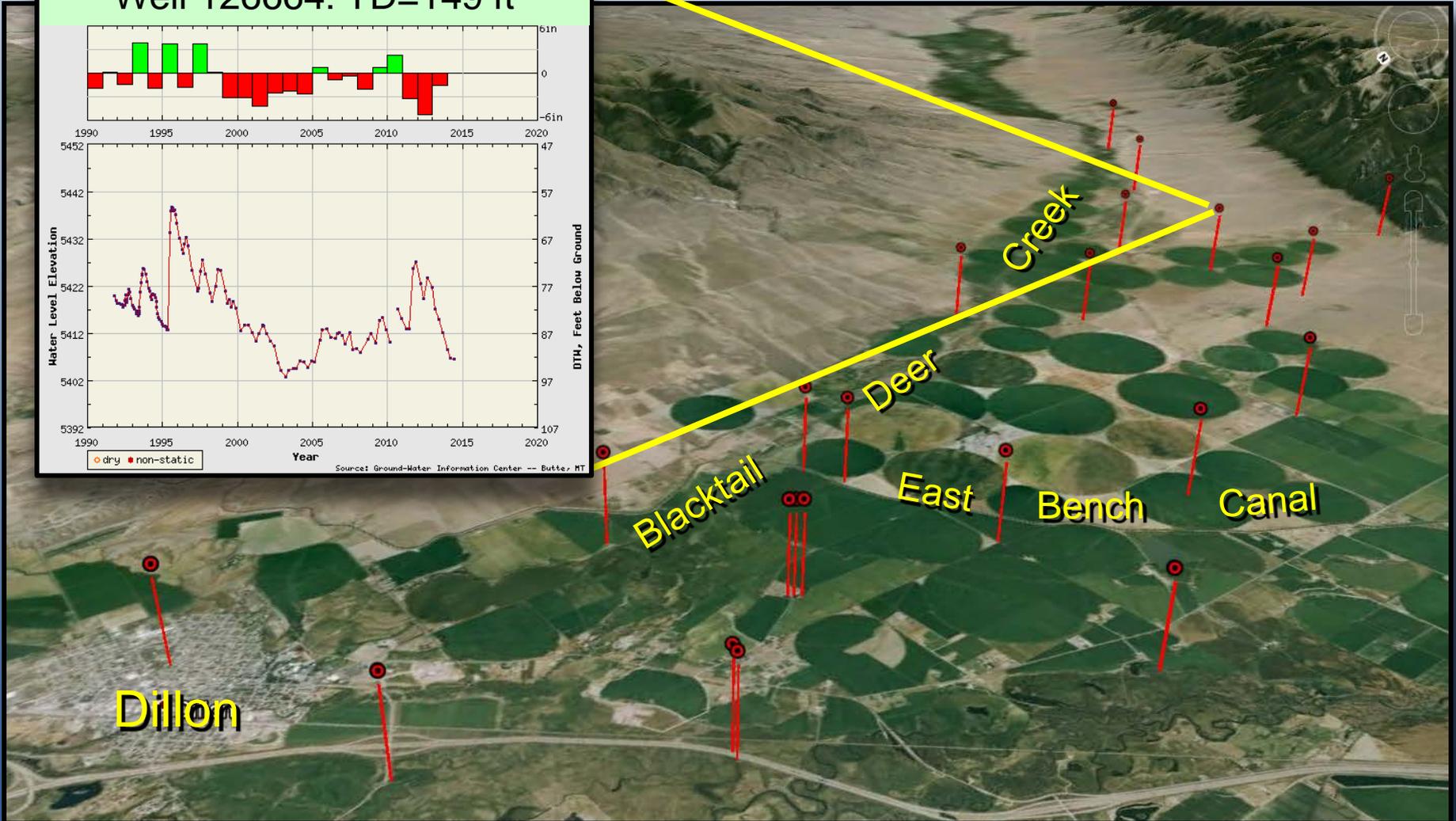
©2008 Goo

4.34 mi

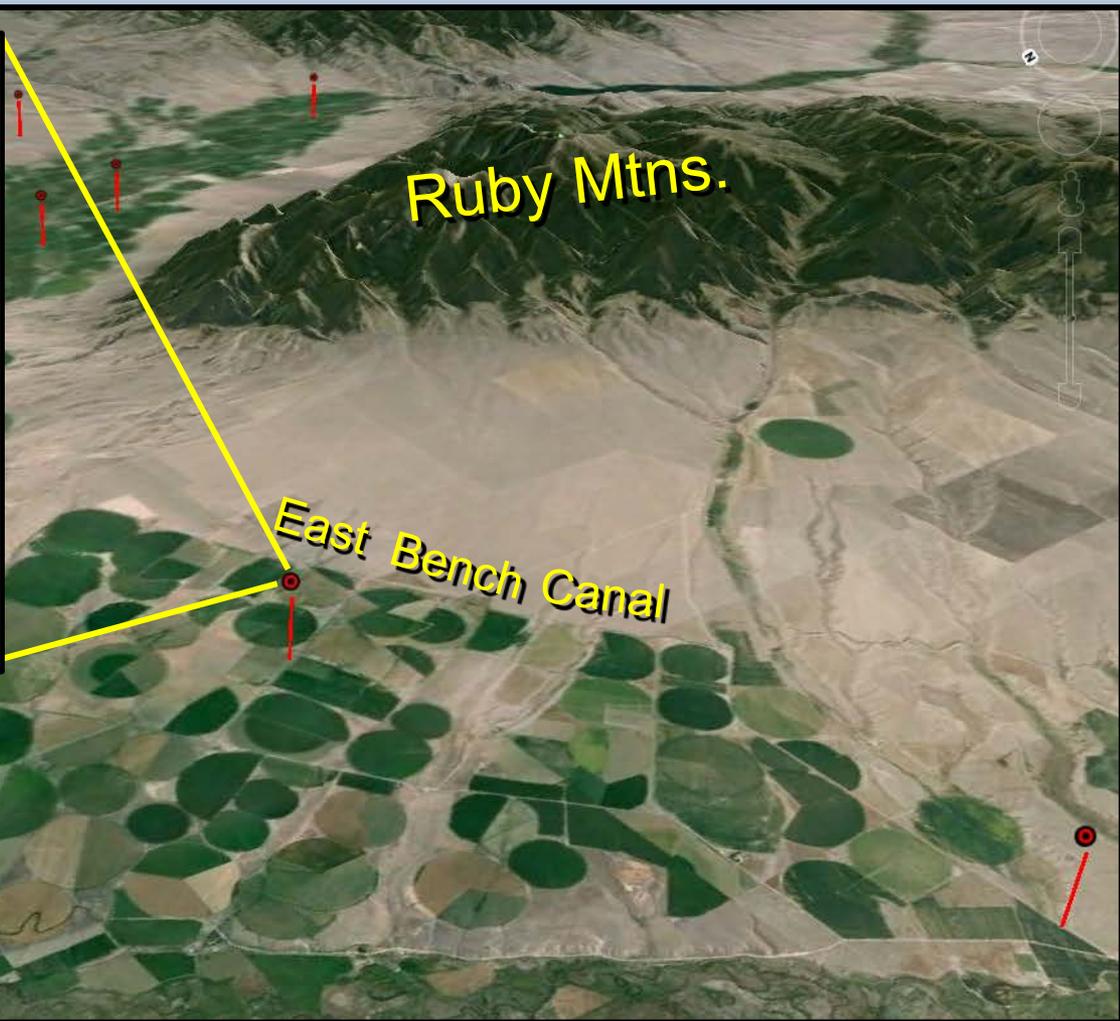
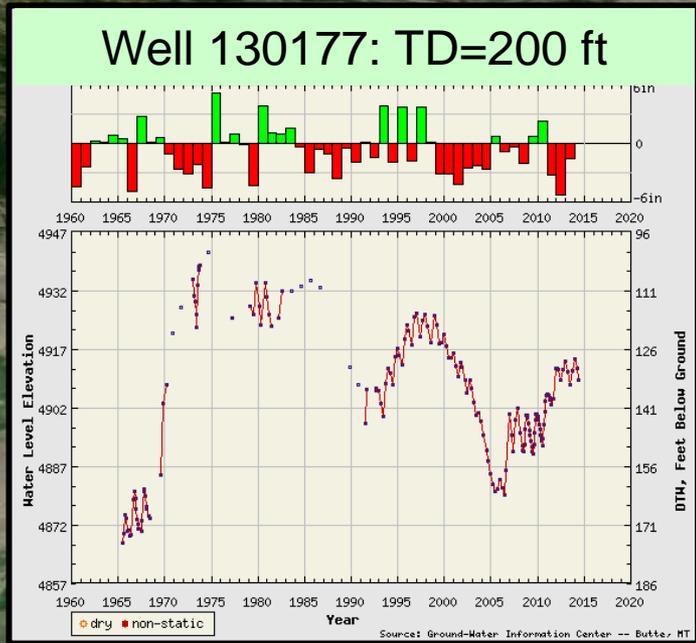
Touring: Flathead Valley



Touring: Blacktail Deer Creek



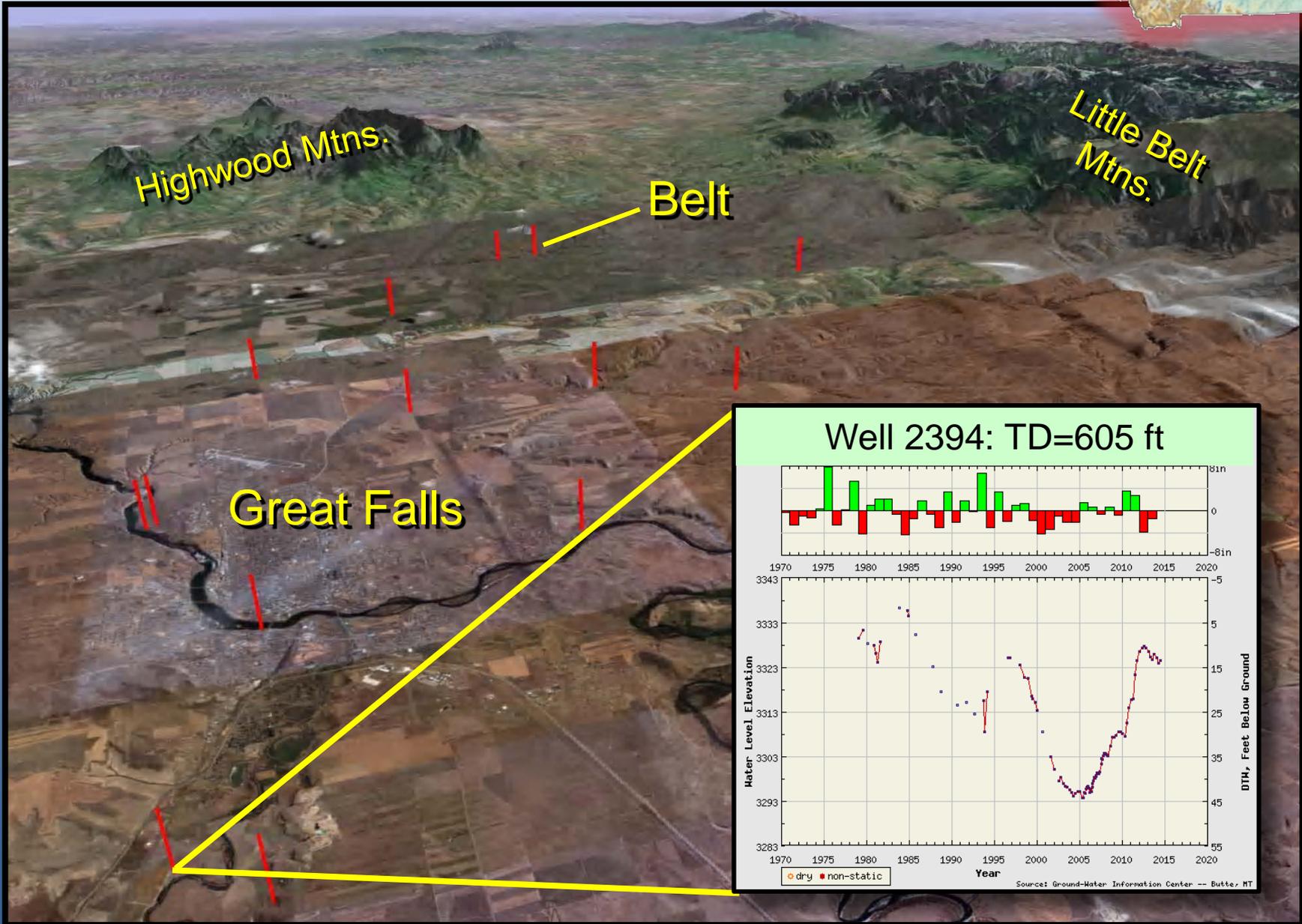
Touring: Jefferson Valley



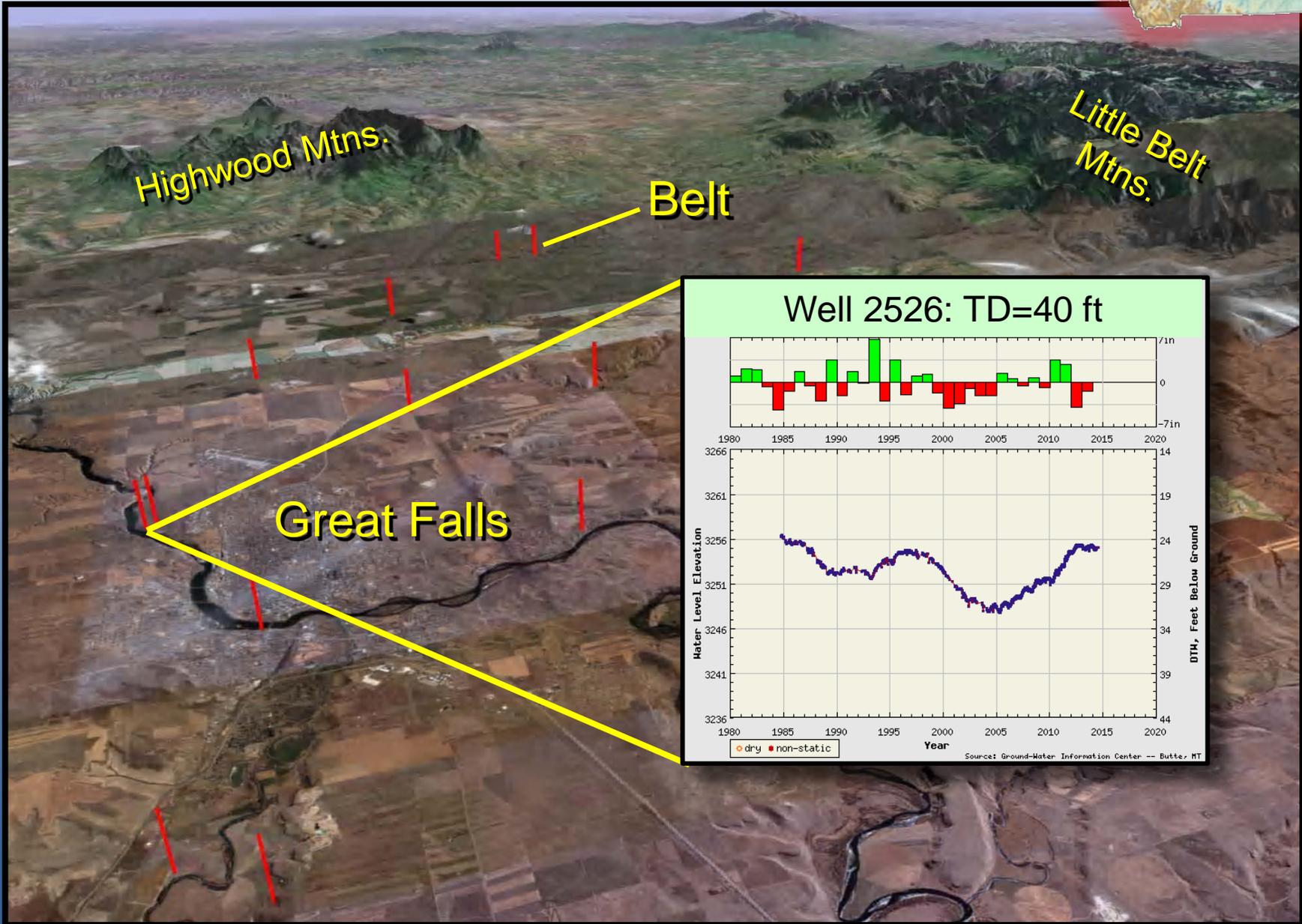
Ruby Mtns.

East Bench Canal

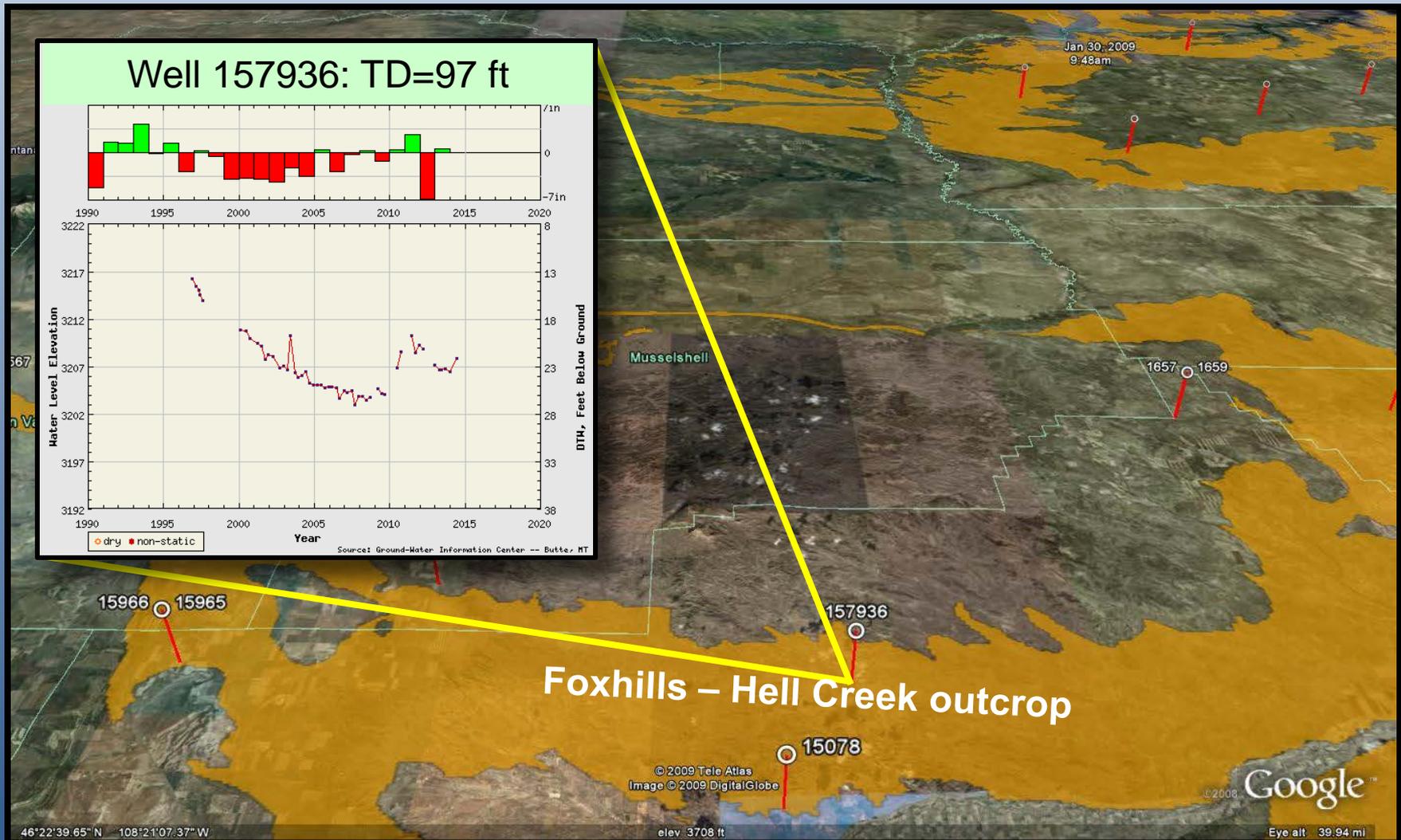
Touring: Madison Limestone



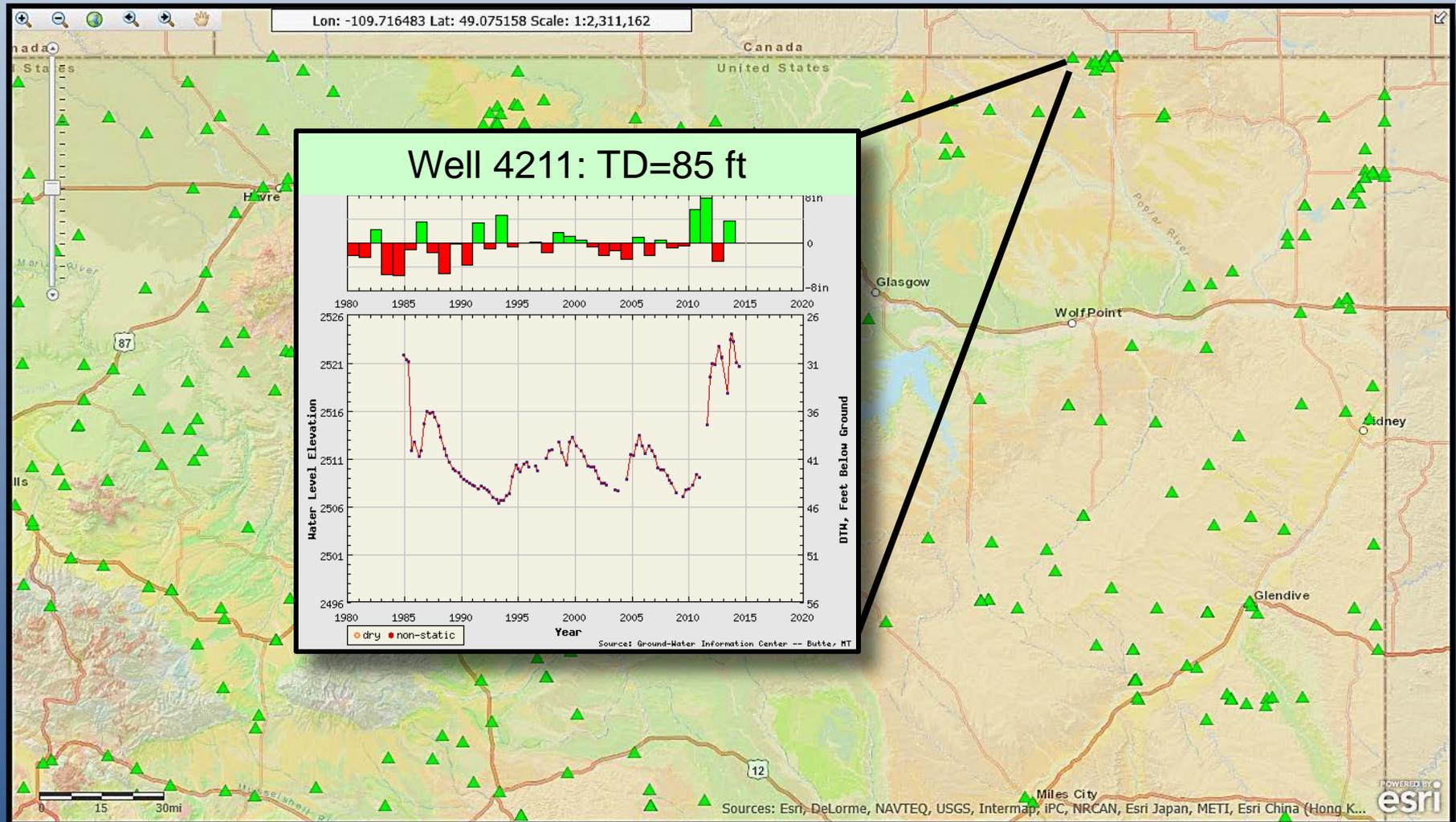
Touring: Madison Limestone



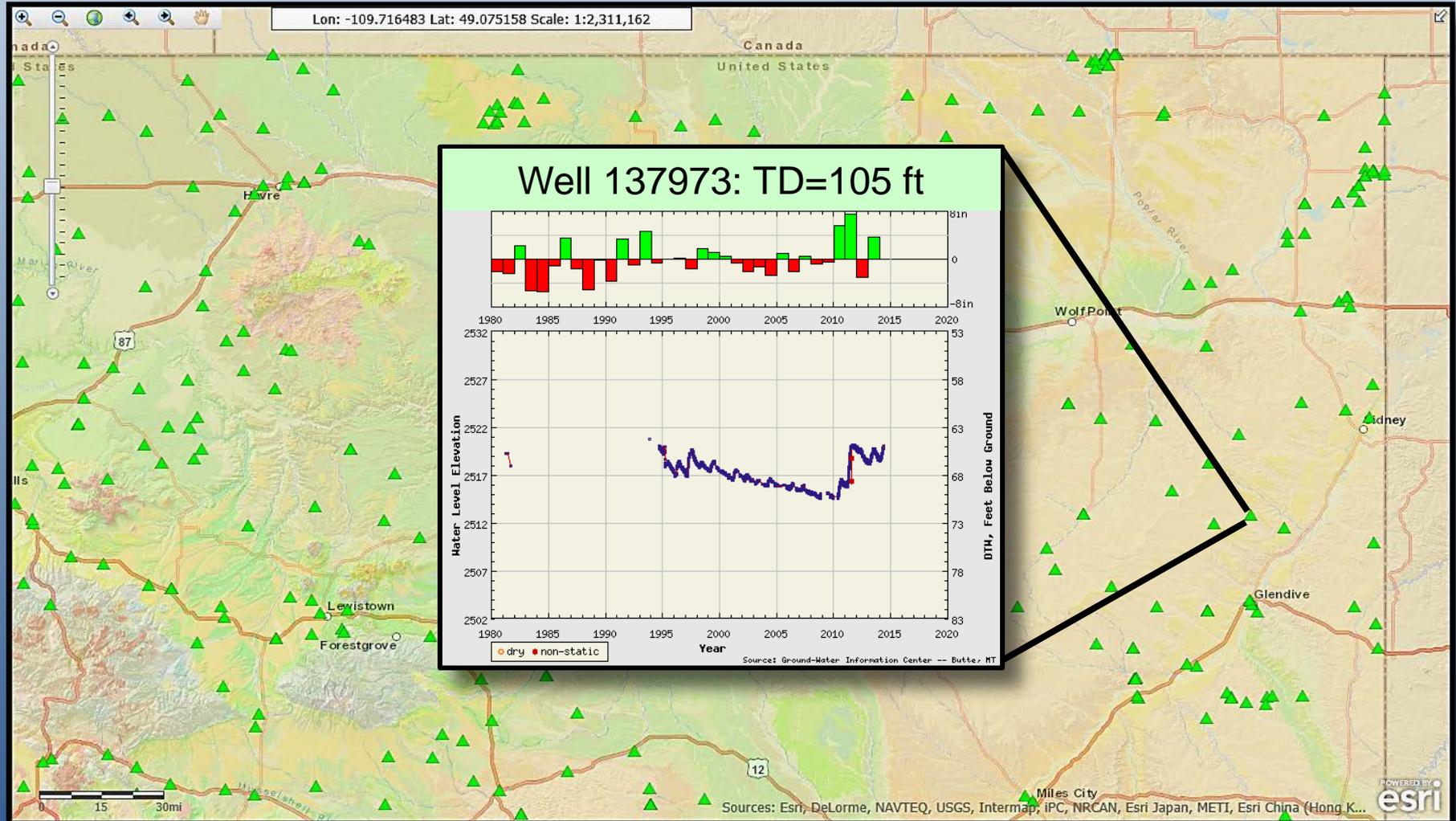
Touring: Musselshell Basin



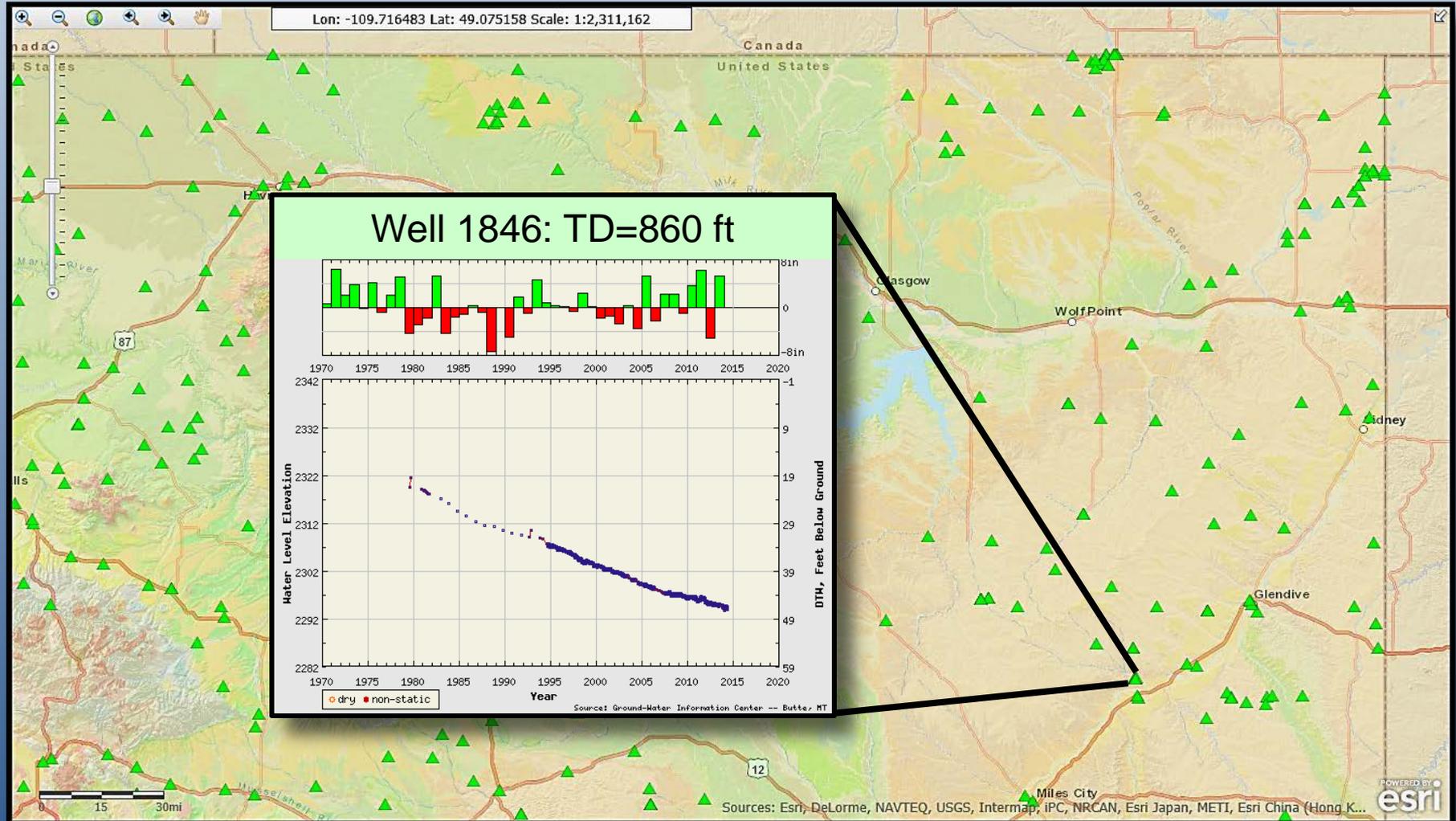
Touring: northeast Montana



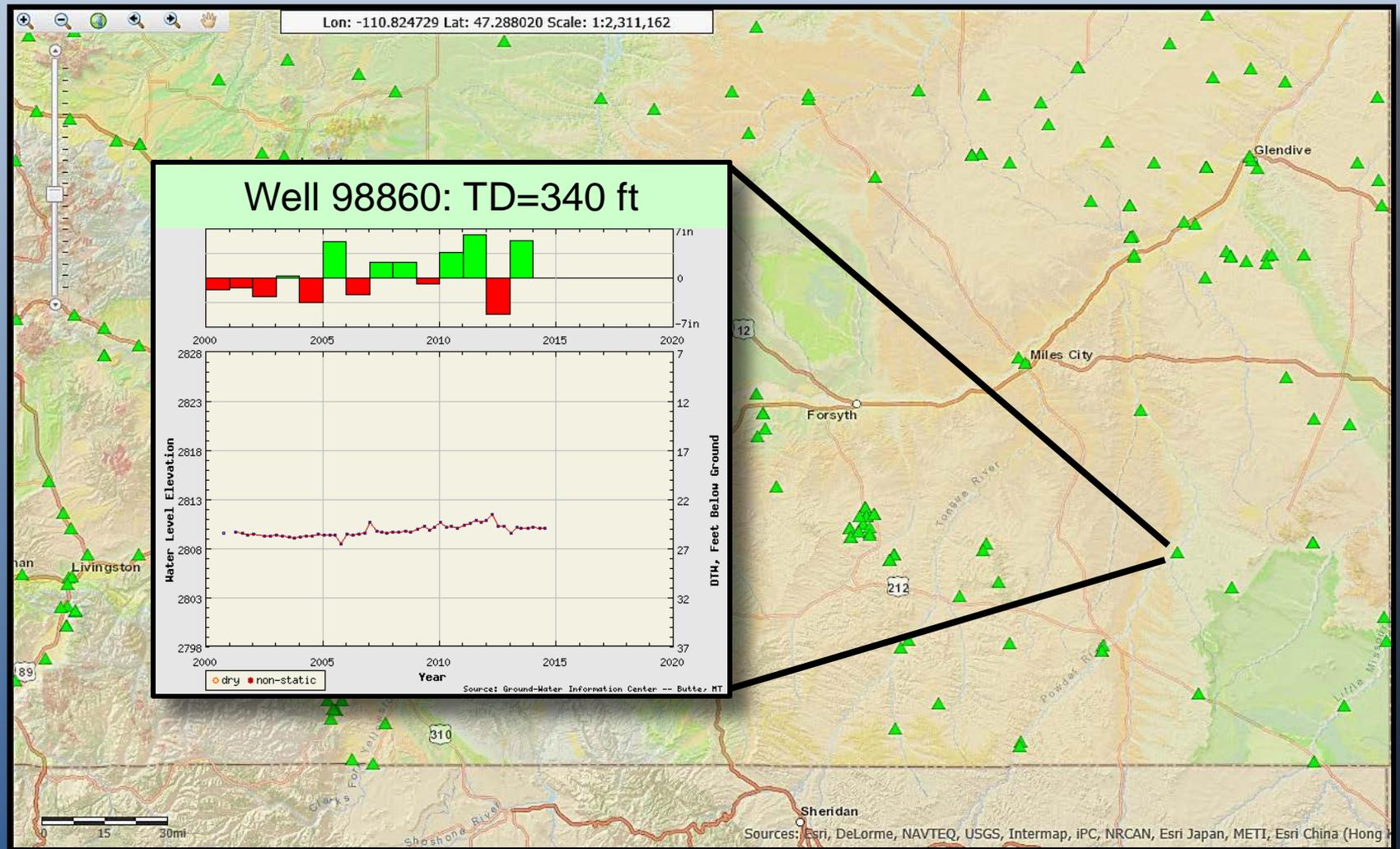
Touring: Lower Yellowstone River



Touring: Lower Yellowstone River



Touring: southeast Montana



A small white and red biplane is flying over a dense forest, dropping a large amount of orange fire retardant. The forest is thick with green trees, and the sky is hazy. The text is overlaid on the upper part of the image.

Governor's Drought & Water Supply Advisory Committee August NRCC Update

Harold Gemmell, Direct Fire Protection Coordinator
DNRC

hgemmell@mt.gov 406 329-4996



COLORADO GULCH FIRE



COLORADO GULCH FIRE



COLT LAKE FIRE



COLT LAKE FIRE



JET A
1863



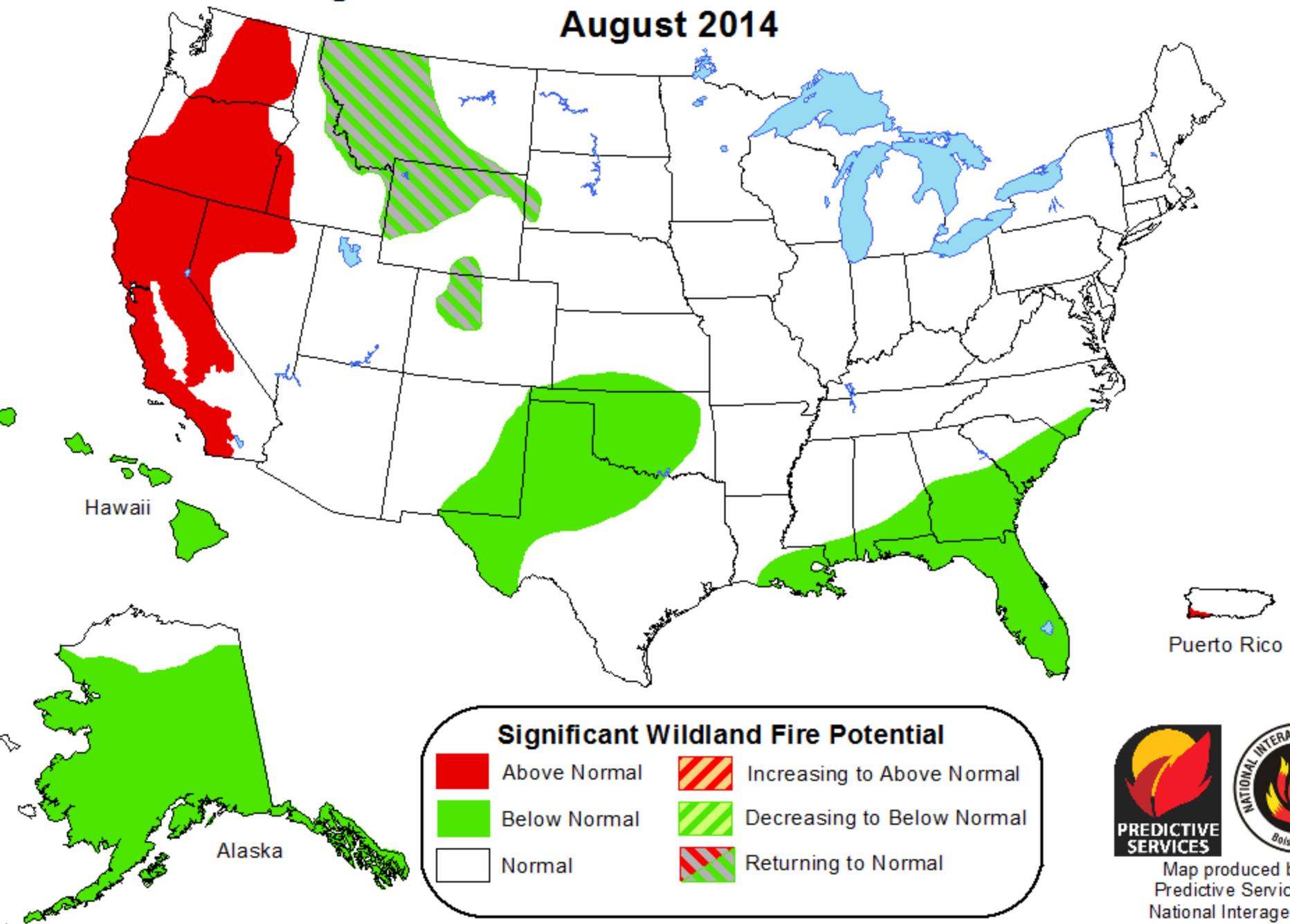




NORTHERN ROCKIES PRIORITIES

- ▣ Initial Attack
- ▣ Extended Attack
- ▣ Johnson Bar – 3051 acres, 0% containment
- ▣ Big Cougar – 65,200, 80% containment
- ▣ Thompson River Complex – 1310 acres
- ▣ Seepay – 800 acres
- ▣ High Range – 4748 acres, 97% containment
- ▣ Upper Mica – 265 acres, 98% containment
- ▣ Blazier – 591 acres, 80% containment

Significant Wildland Fire Potential Outlook August 2014

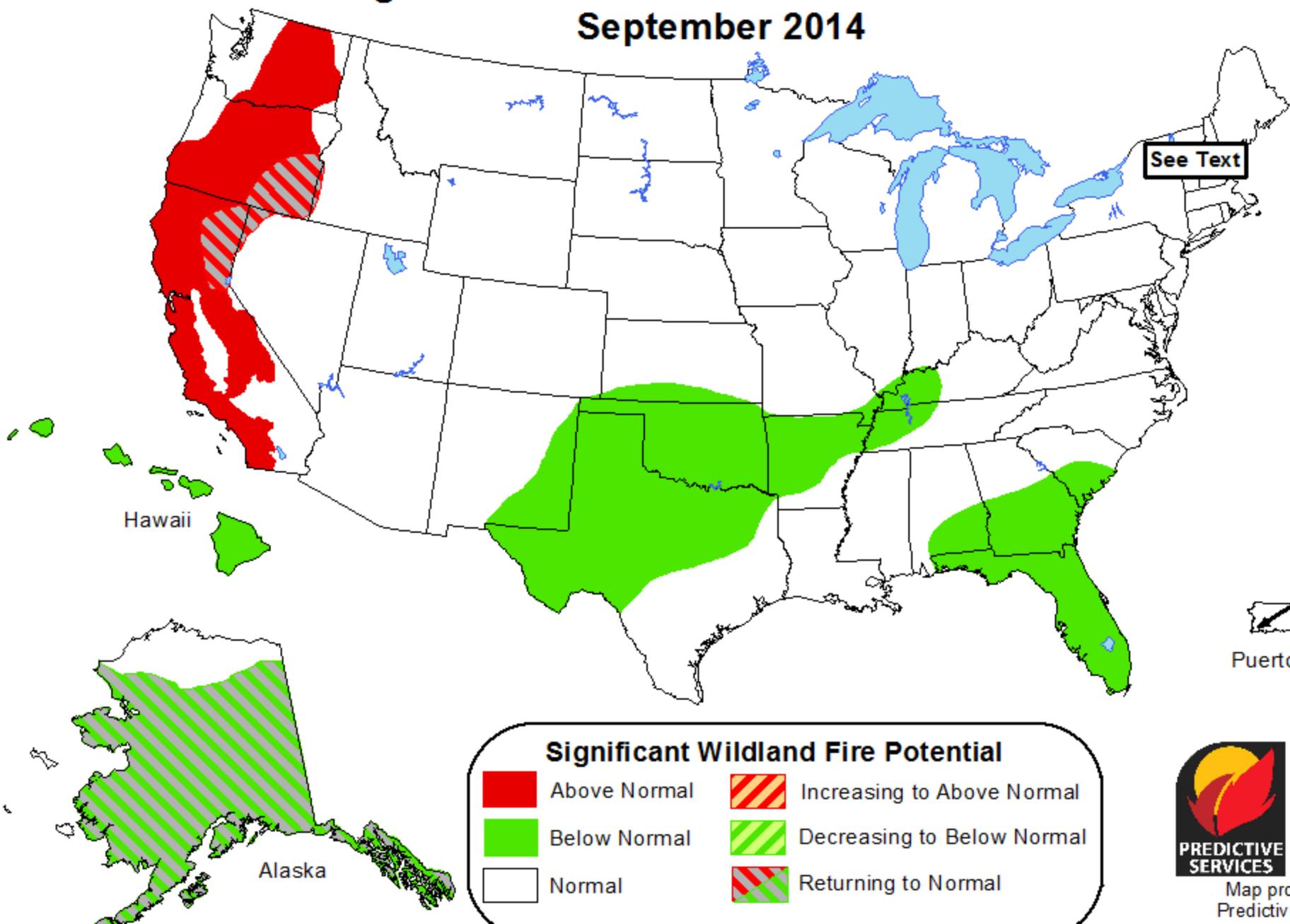


Below normal significant wildland fire potential indicates a higher than usual likelihood that wildland fires will occur and/or become

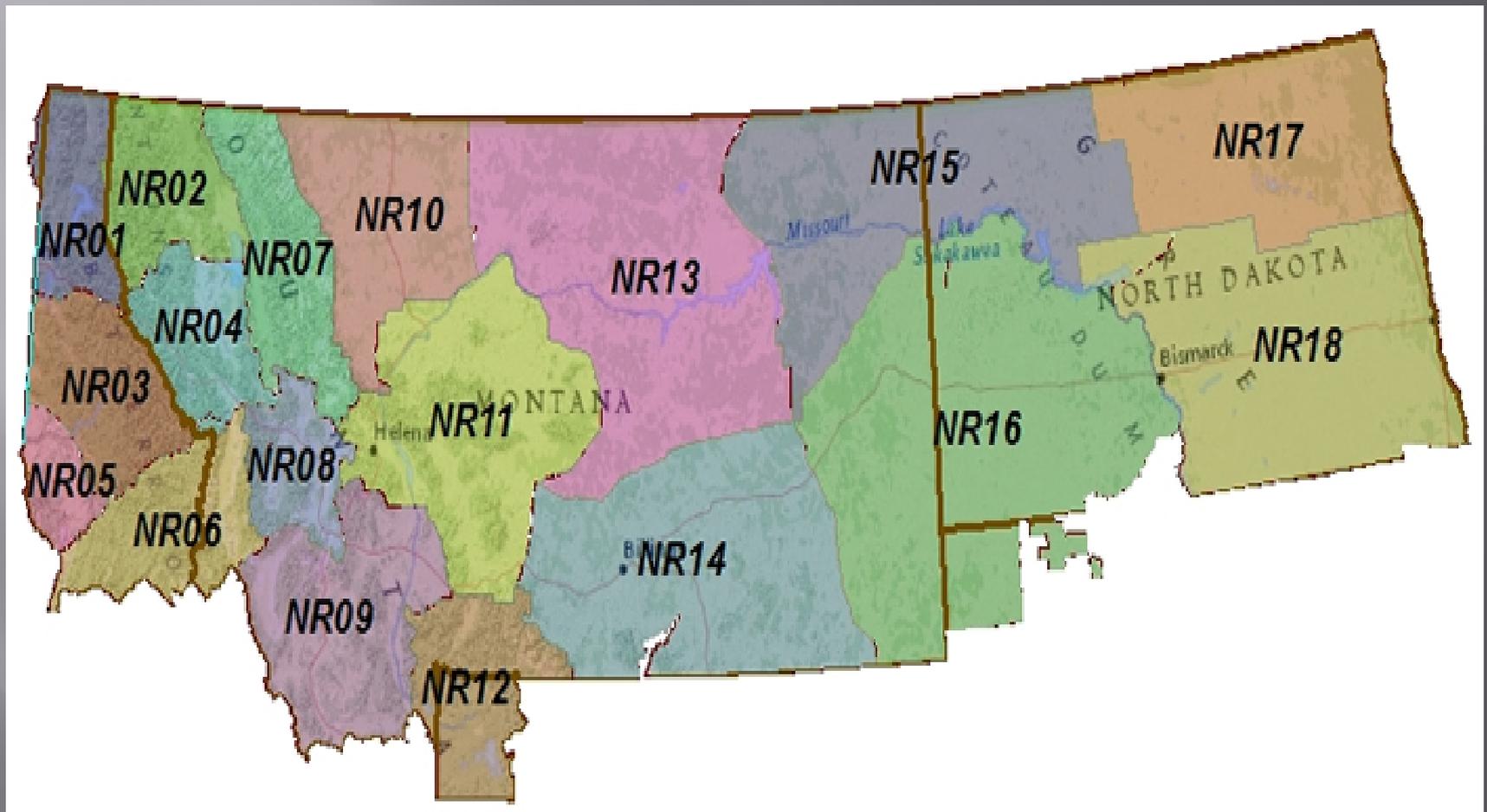


Map produced by
Predictive Services,
National Interagency
Coordination Center
Boise, Idaho

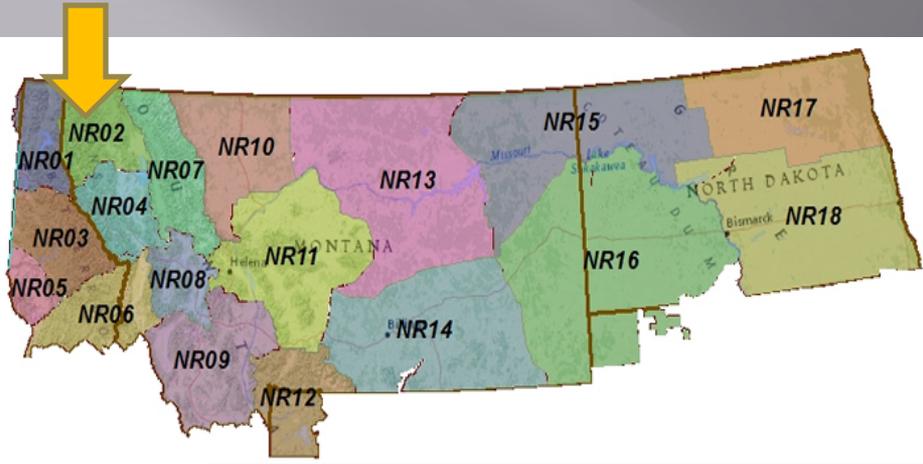
Significant Wildland Fire Potential Outlook September 2014



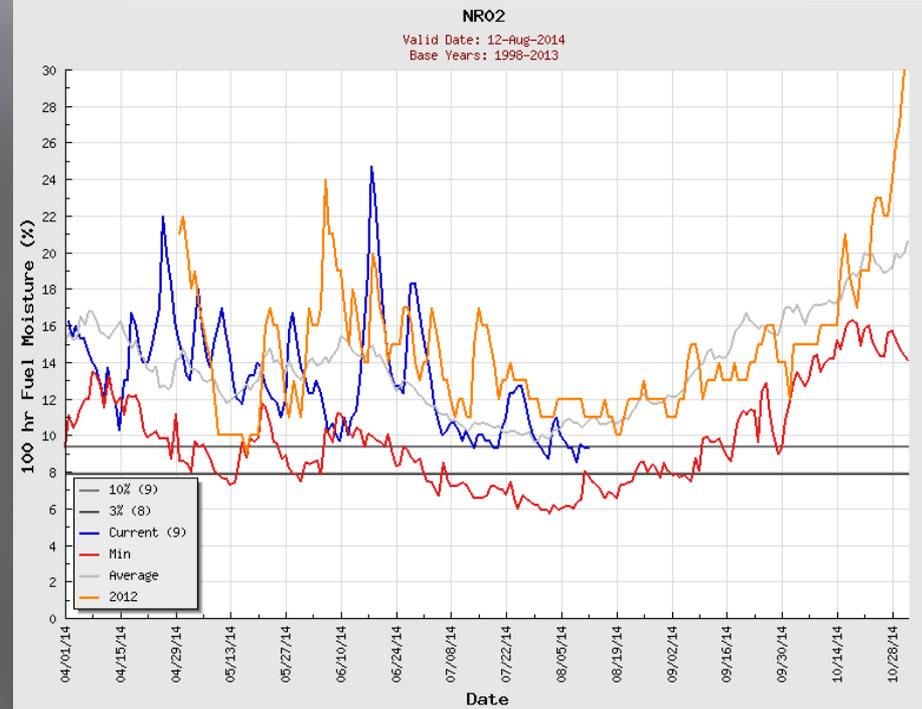
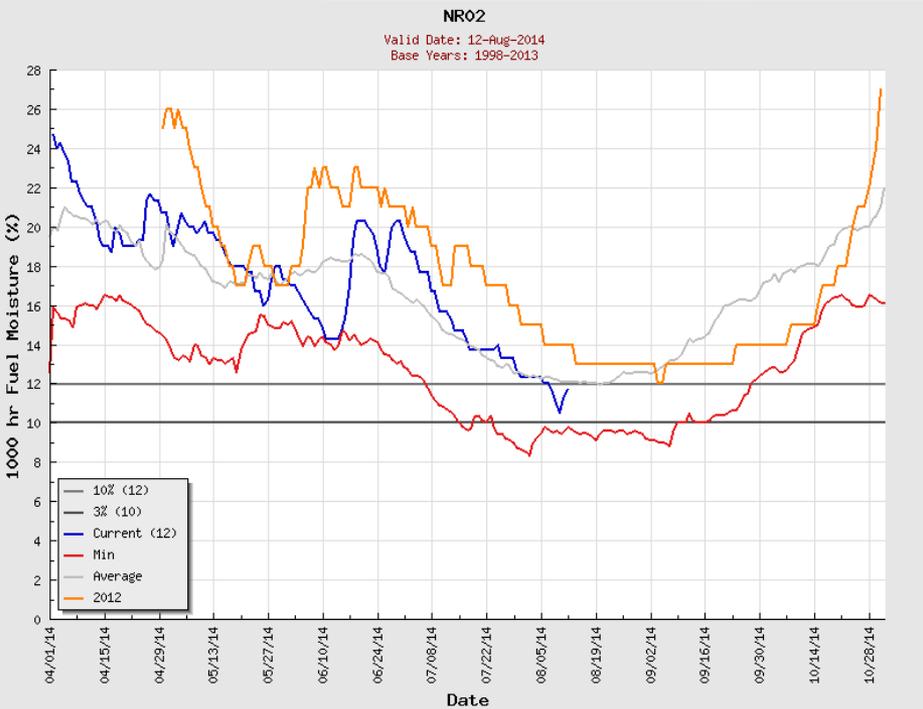
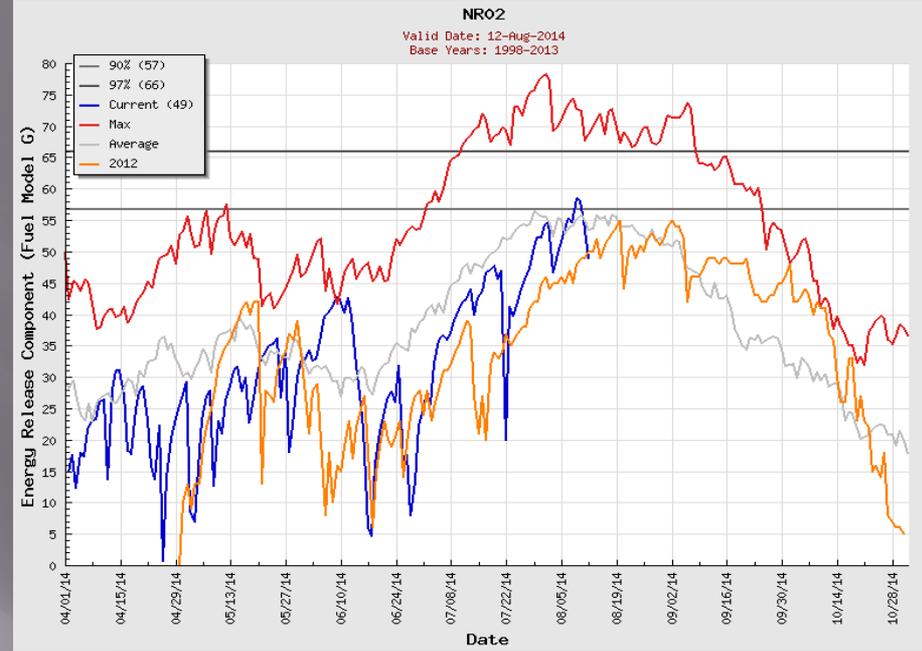
NRCC PREDICTIVE SERVICE AREAS (PSA'S)



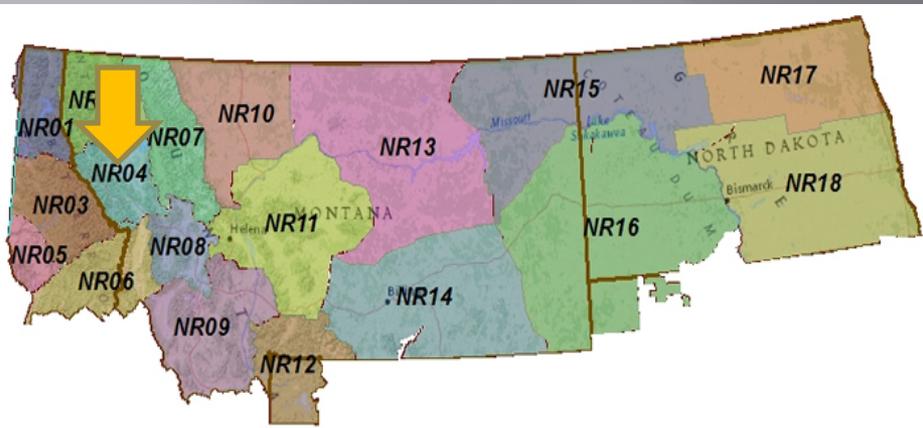
NR02 - Northwestern Montana



Libby Ranger Station
 Troy Ranger Station
 Eureka Ranger Station

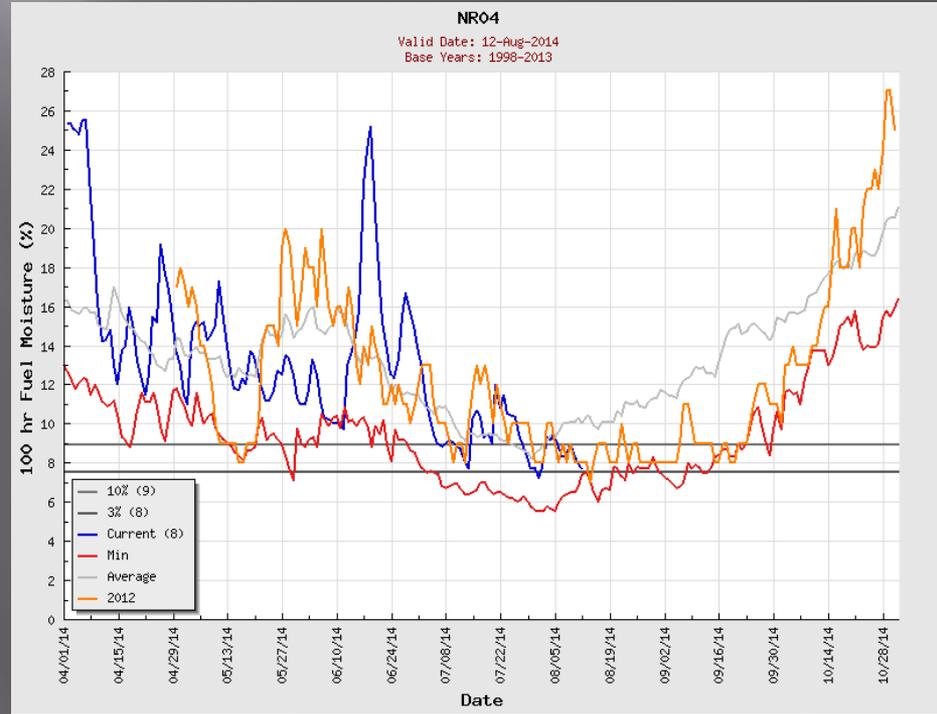
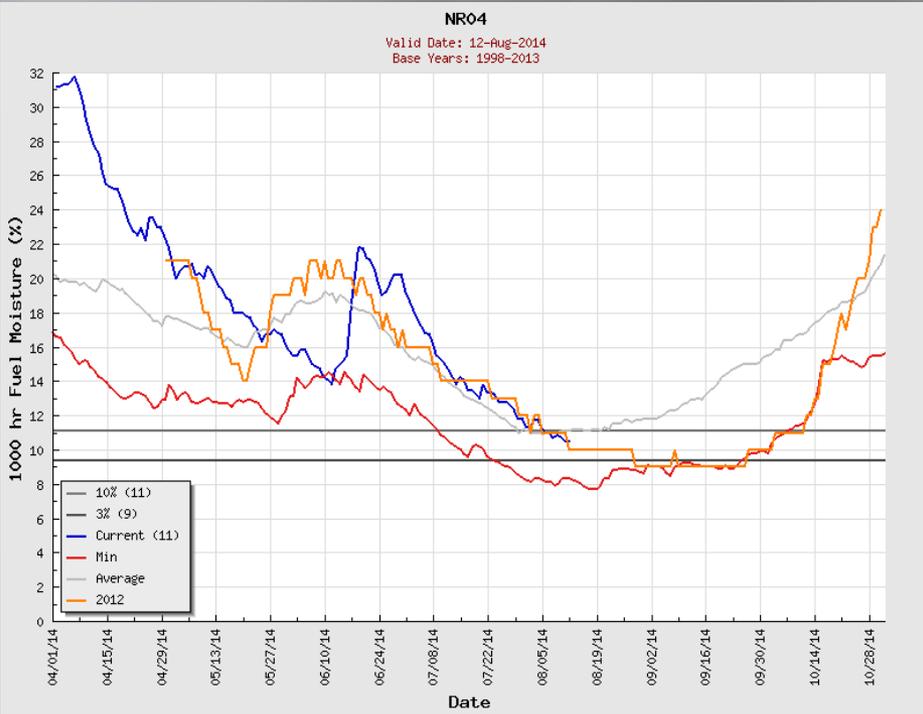
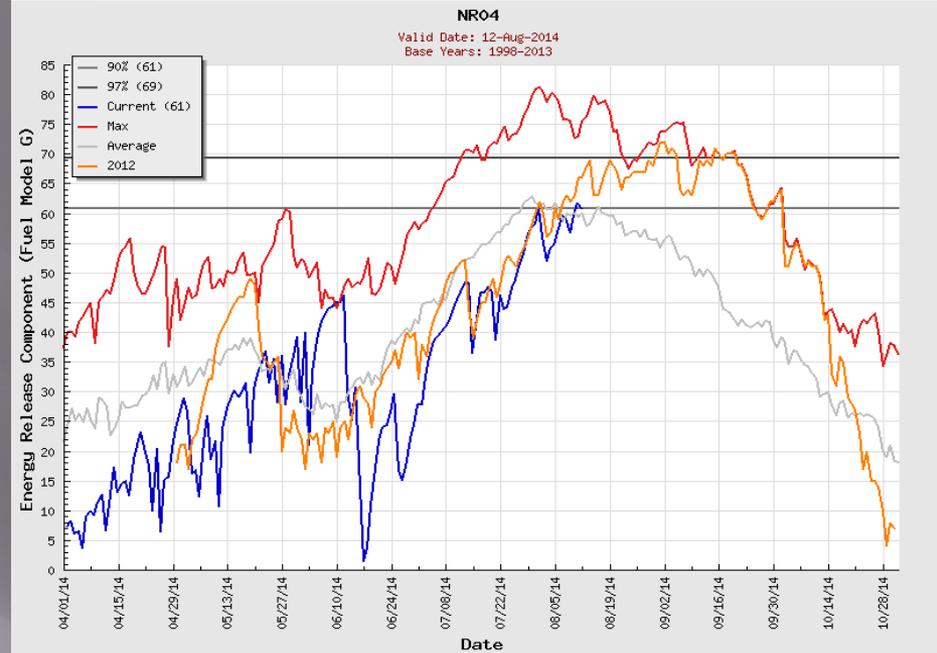


NR04 – Western Montana

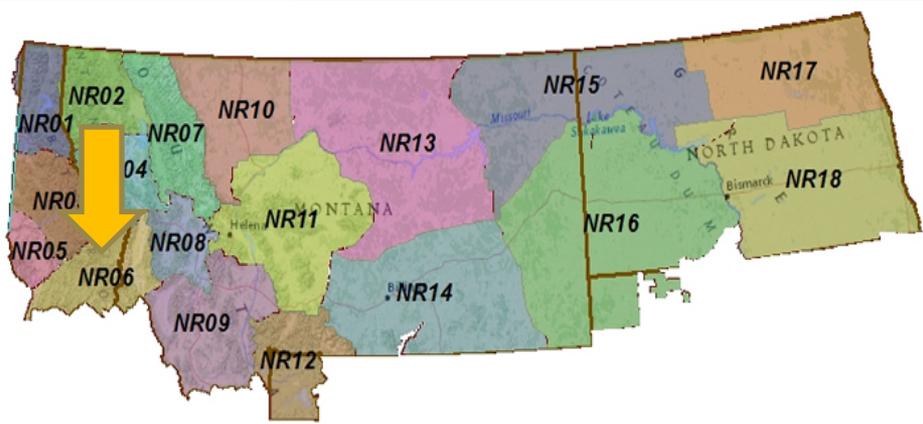


Plains
Missoula
St. Regis

Hot Springs
Nine Mile

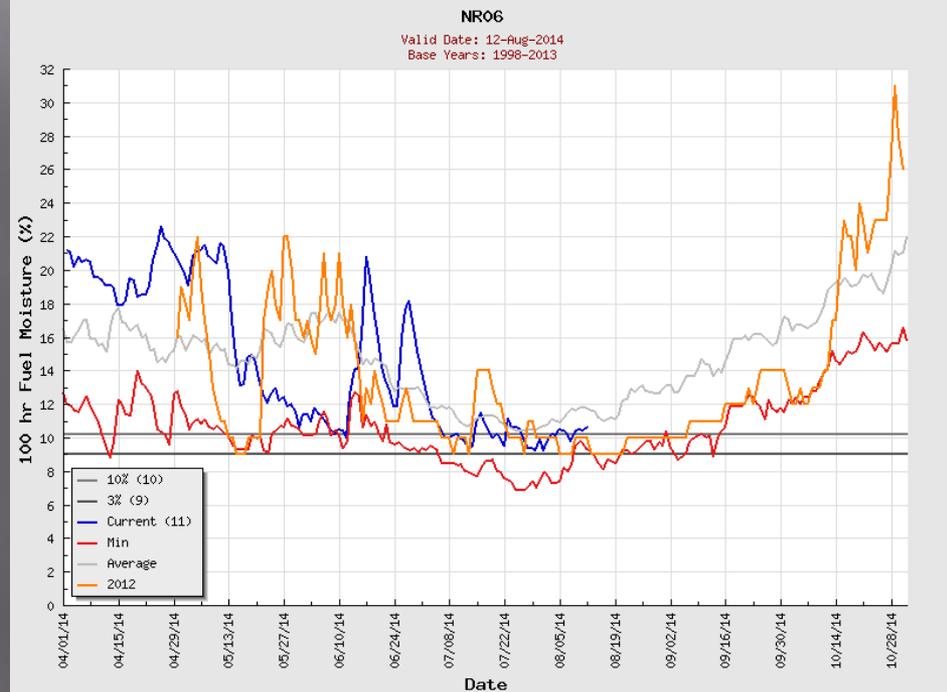
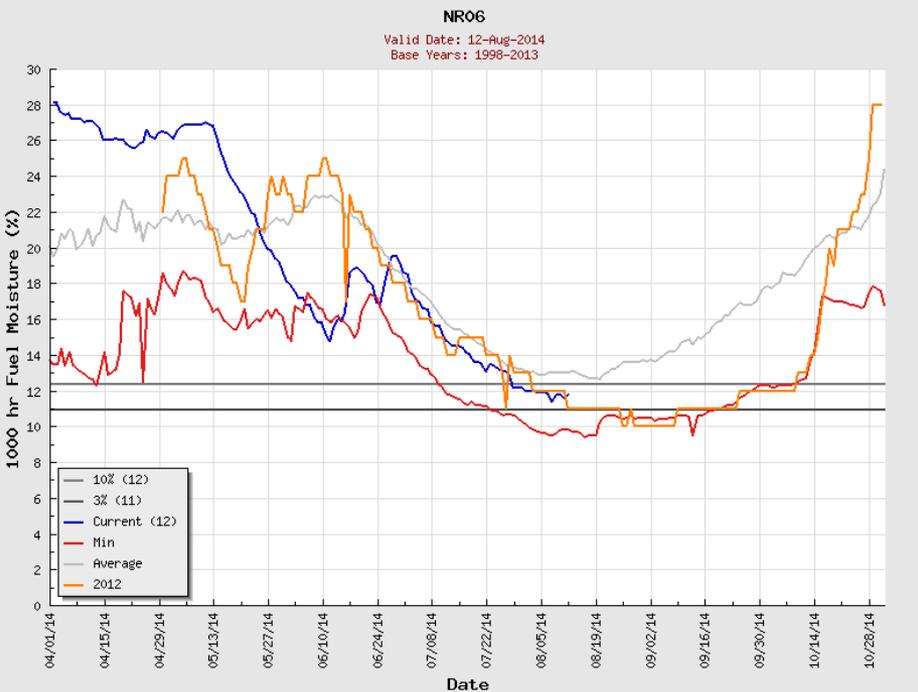
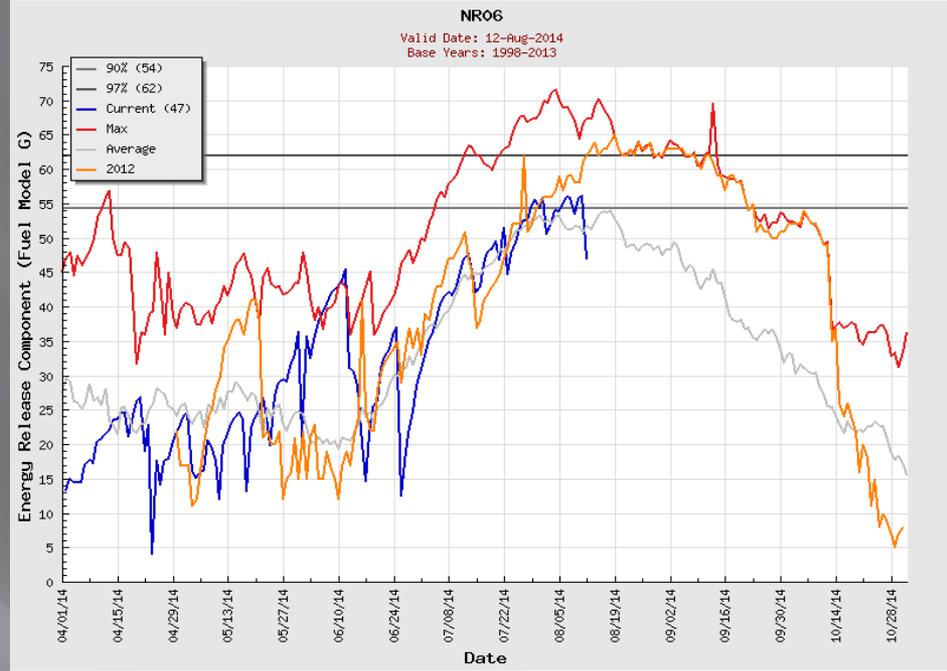


NR06 – North Central Idaho and Bitterroot/Sapphire Mtns

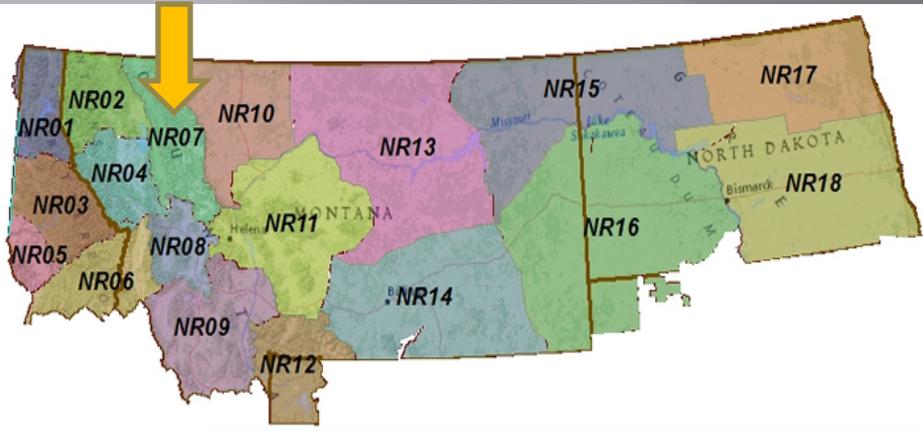


Fenn
Powell
Stevi

Moose Creek
Red River
West Fork

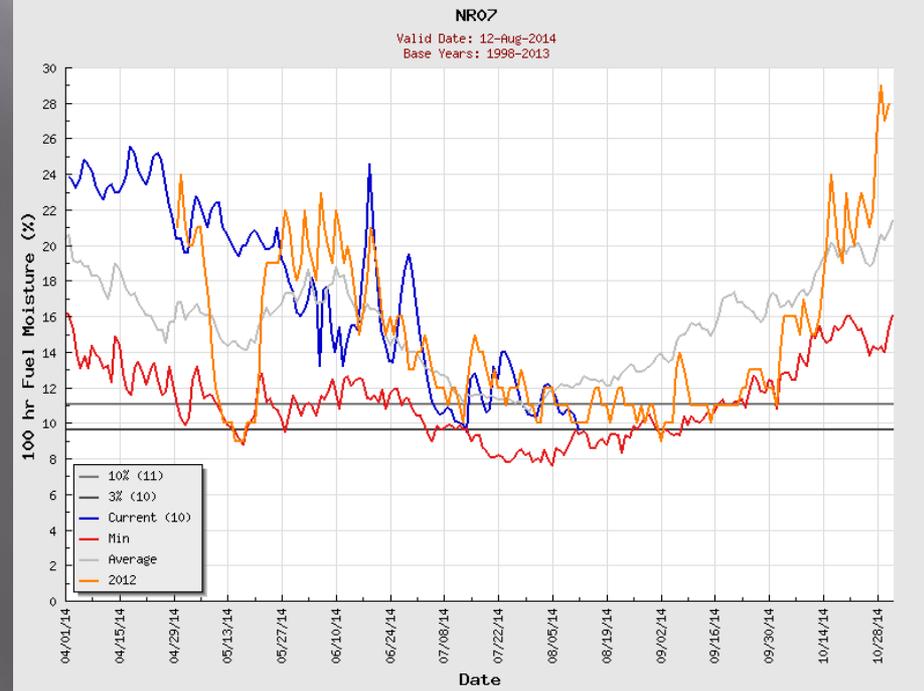
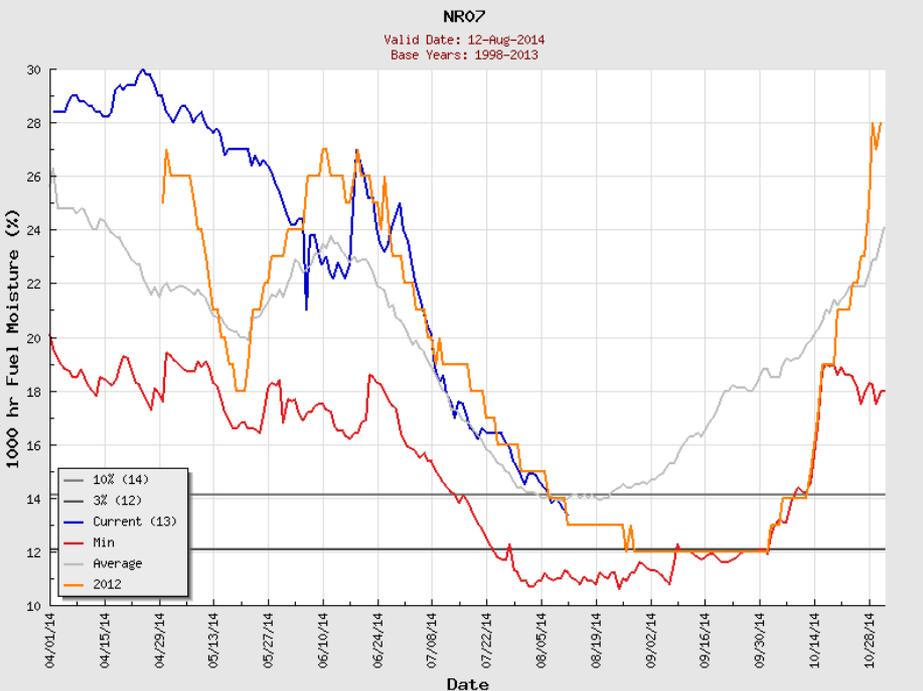
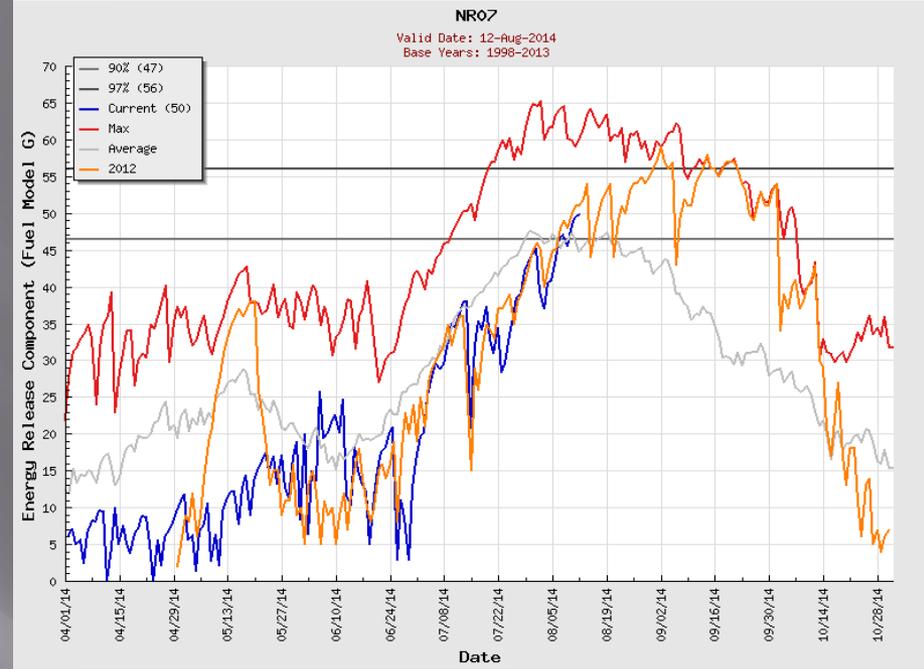


NR07 - Glacier National Park and Wilderness Areas

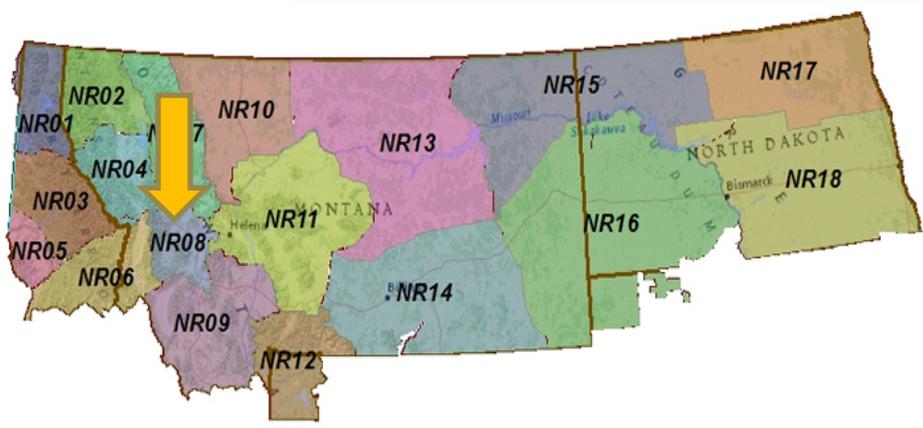


West Glacier
Cyclone
Condon Work Center

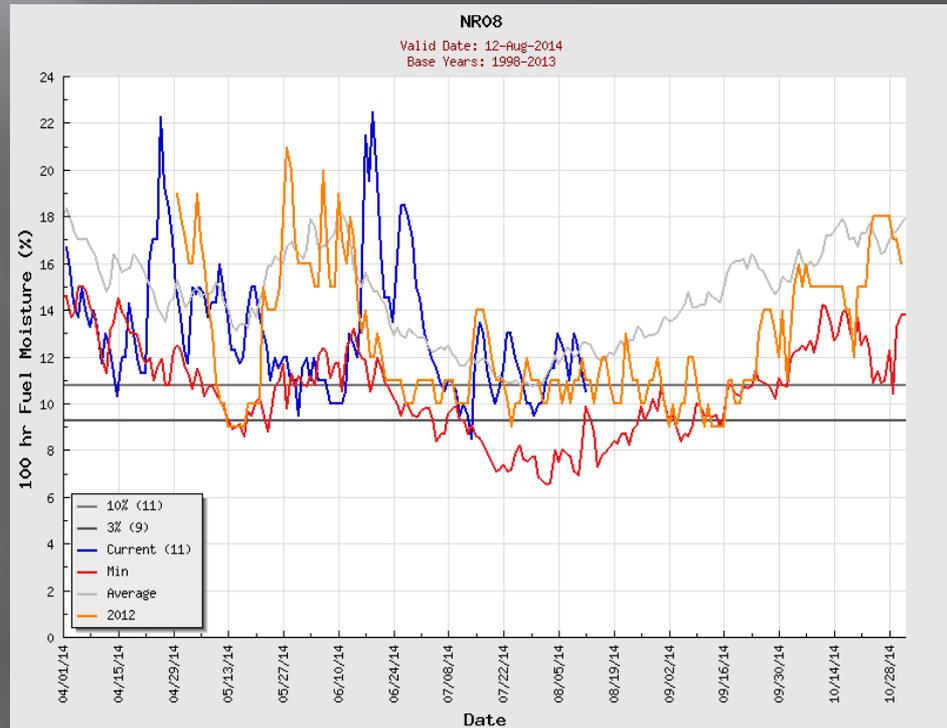
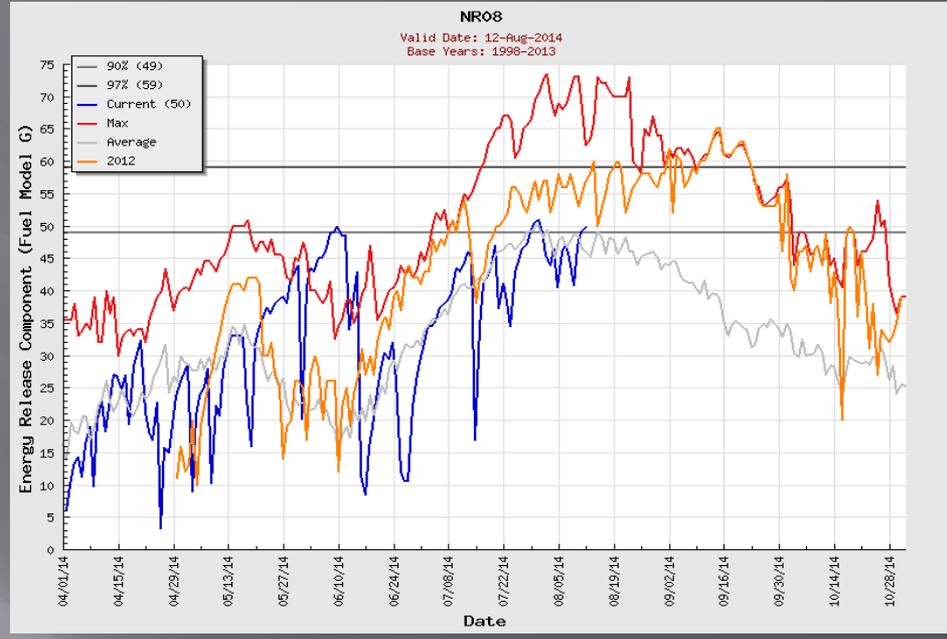
Hungry Horse
Benchmark



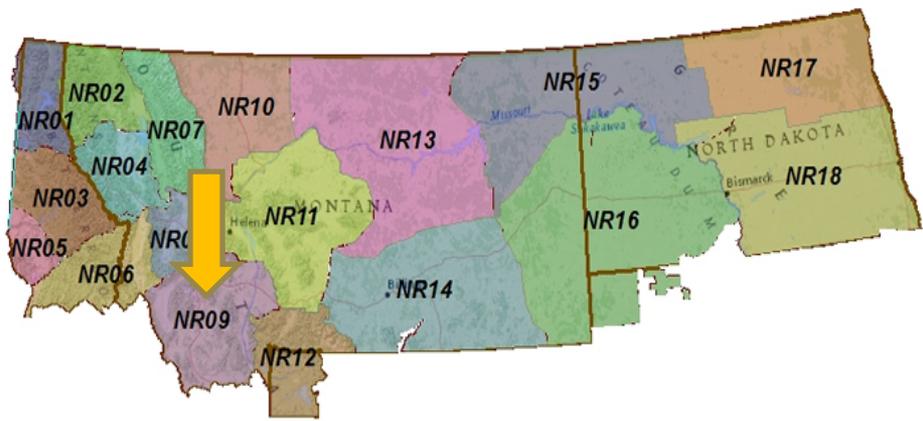
NR08 – Southwest Montana, West of Continental Divide



Lincoln
Phillipsburg

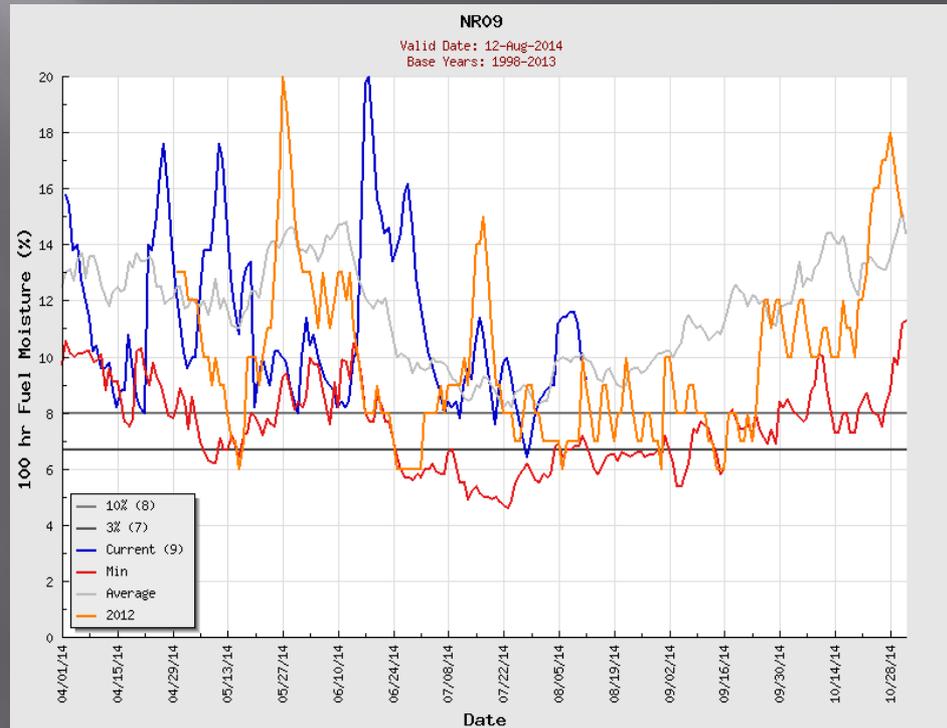
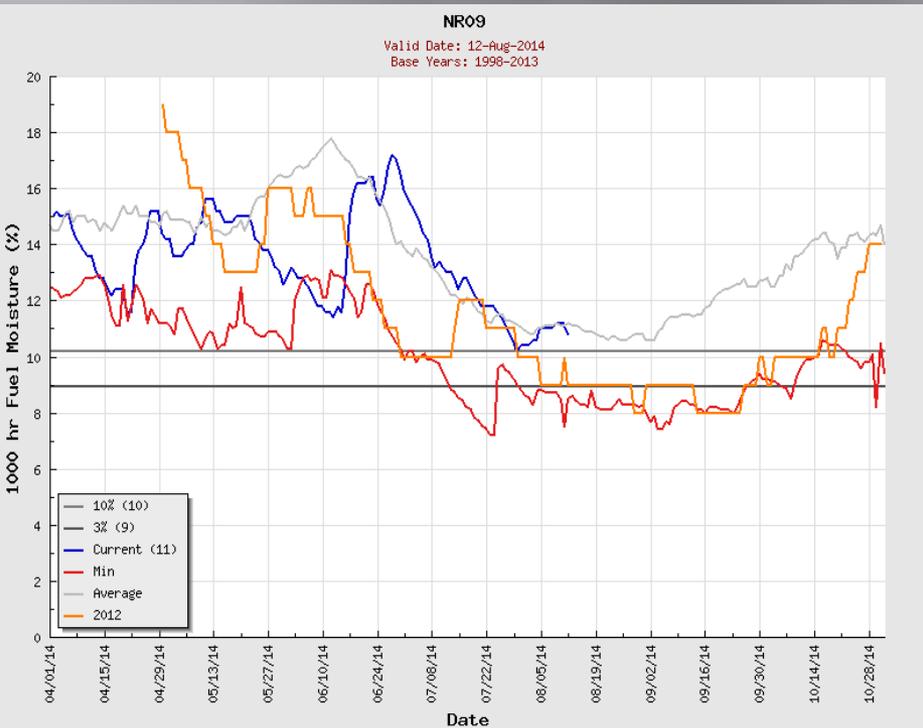
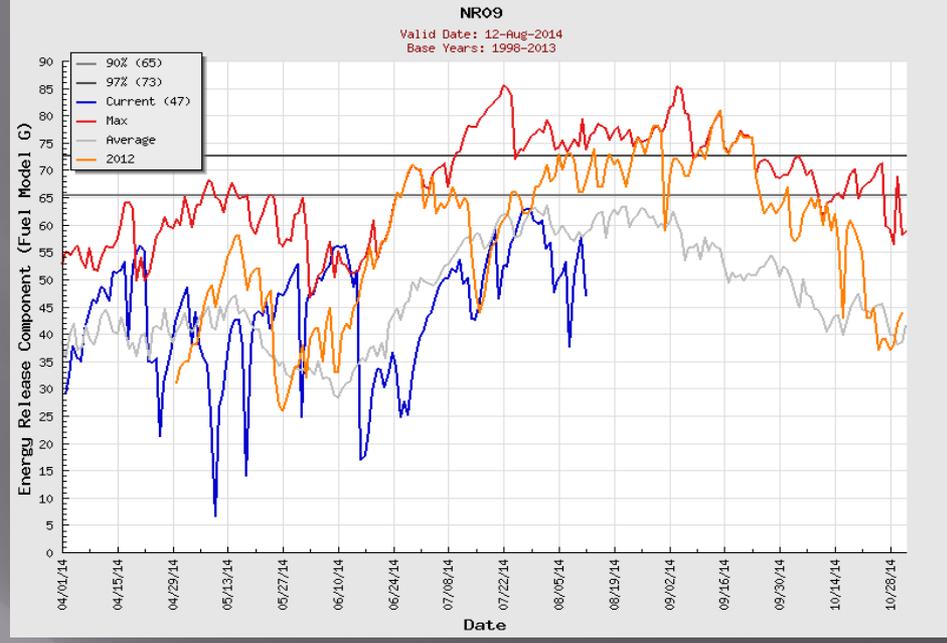


NR09 – Big Hole, Southwest Montana East of Continental Divide

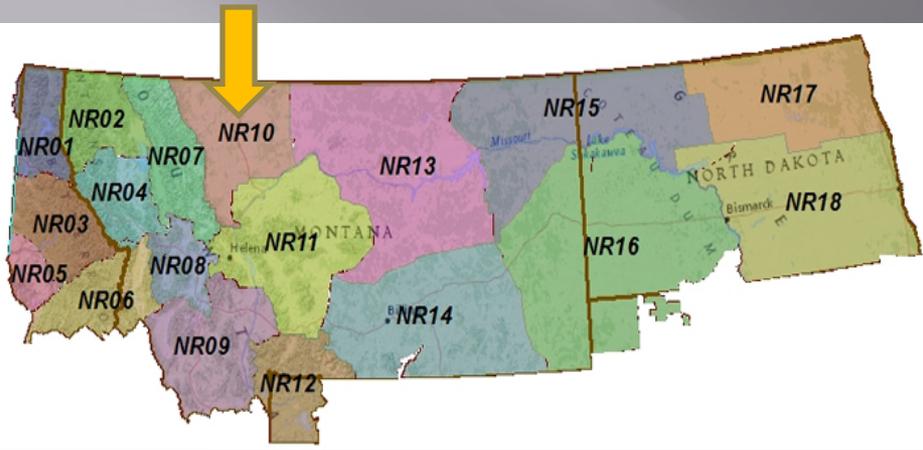


Jefferson
Brenner

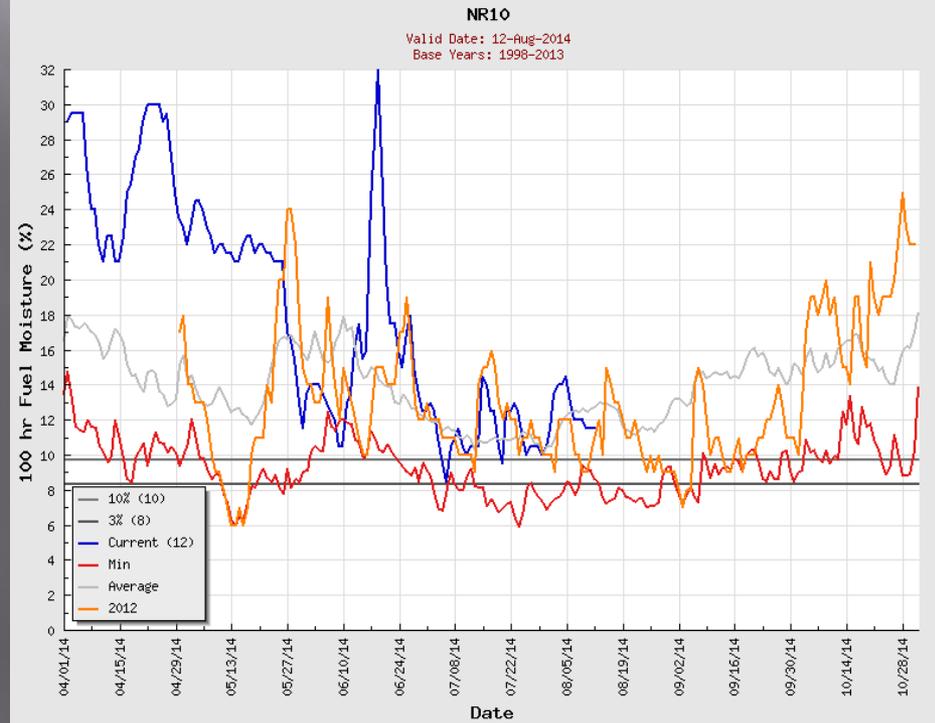
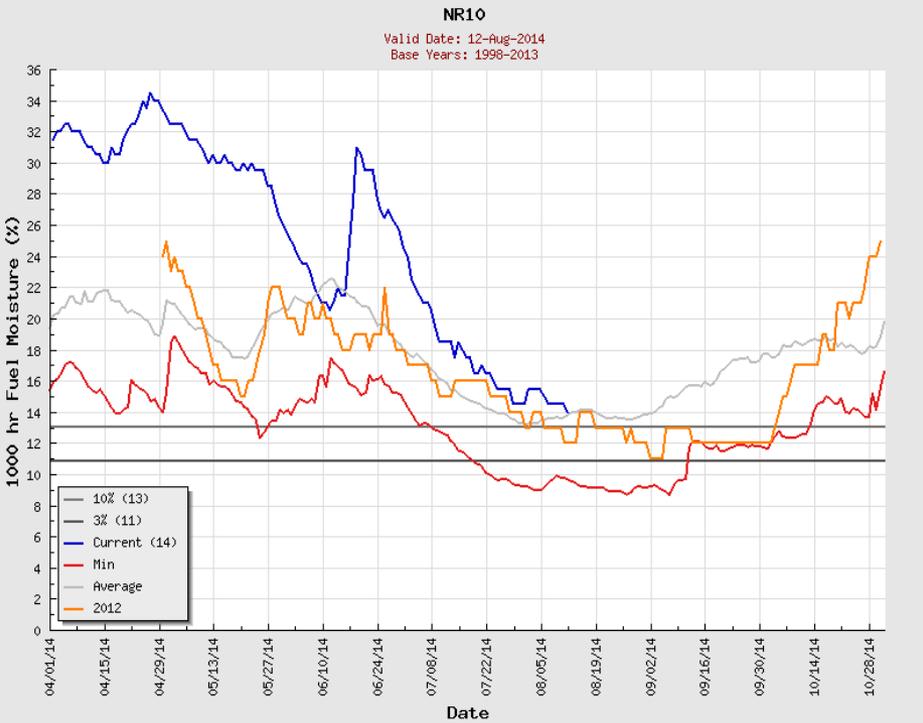
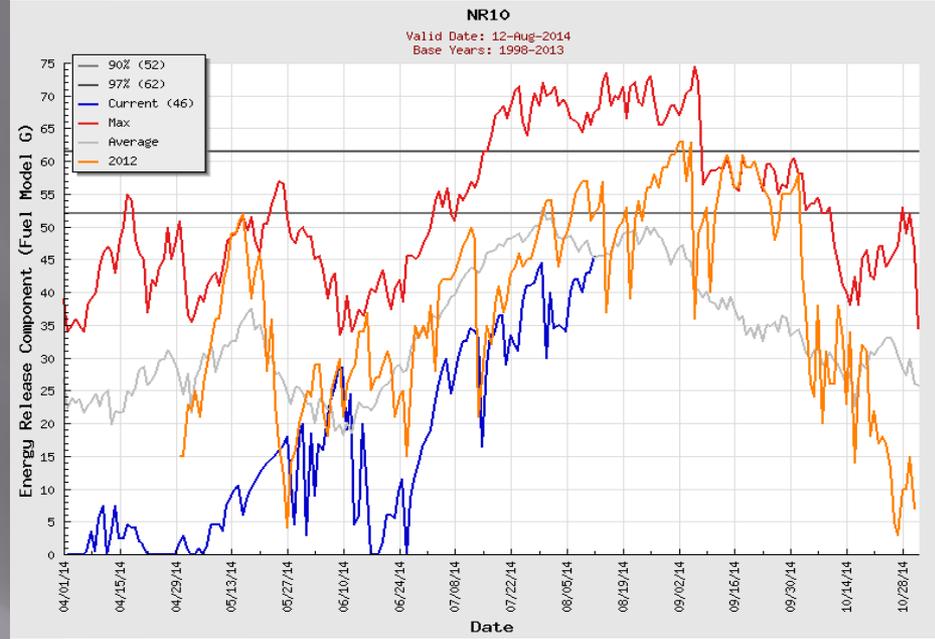
Ennis
Wise River



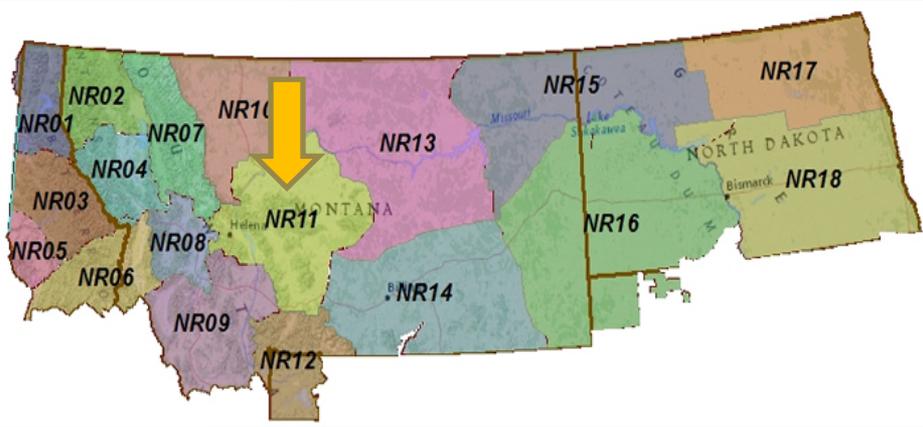
NR10 – Northern Front Range



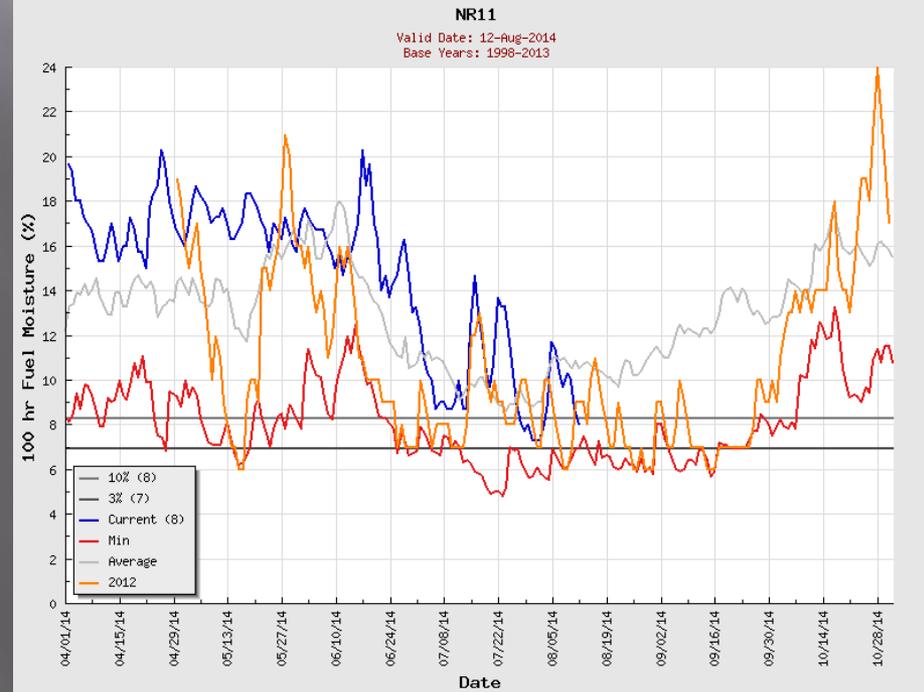
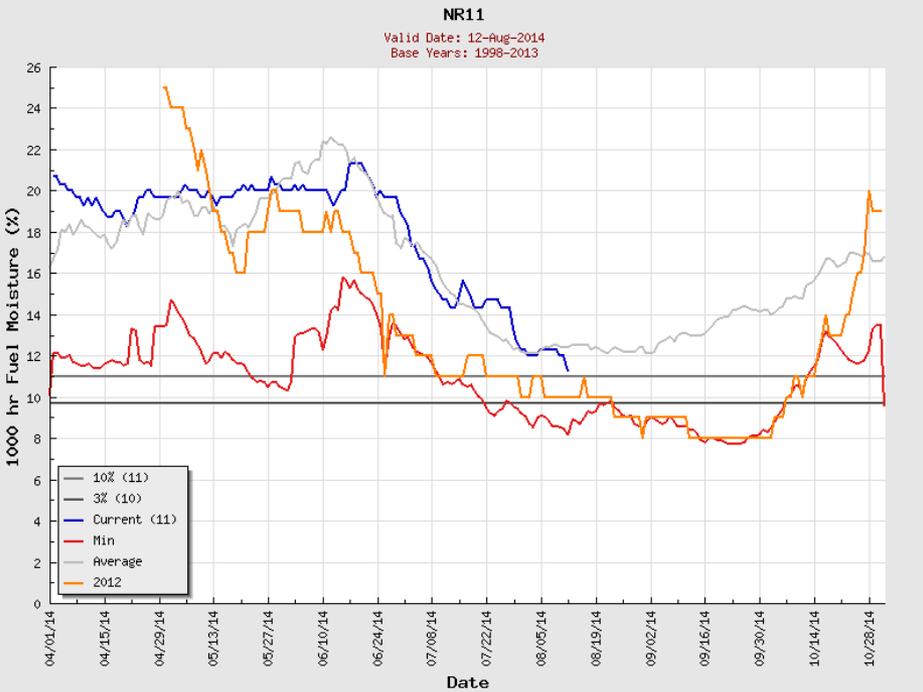
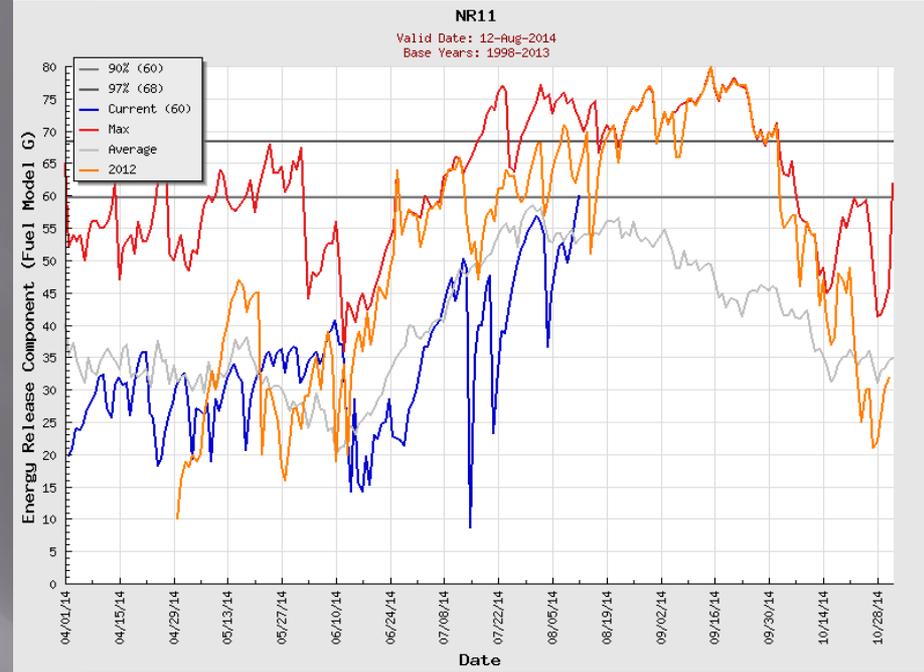
St. Mary
Gleason



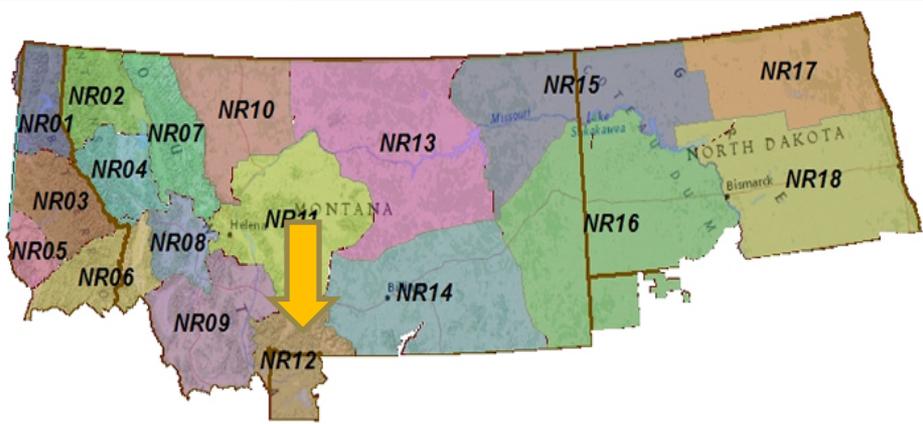
NR11 – West Central Montana



Helena
Porphyry
White Sulphur Springs

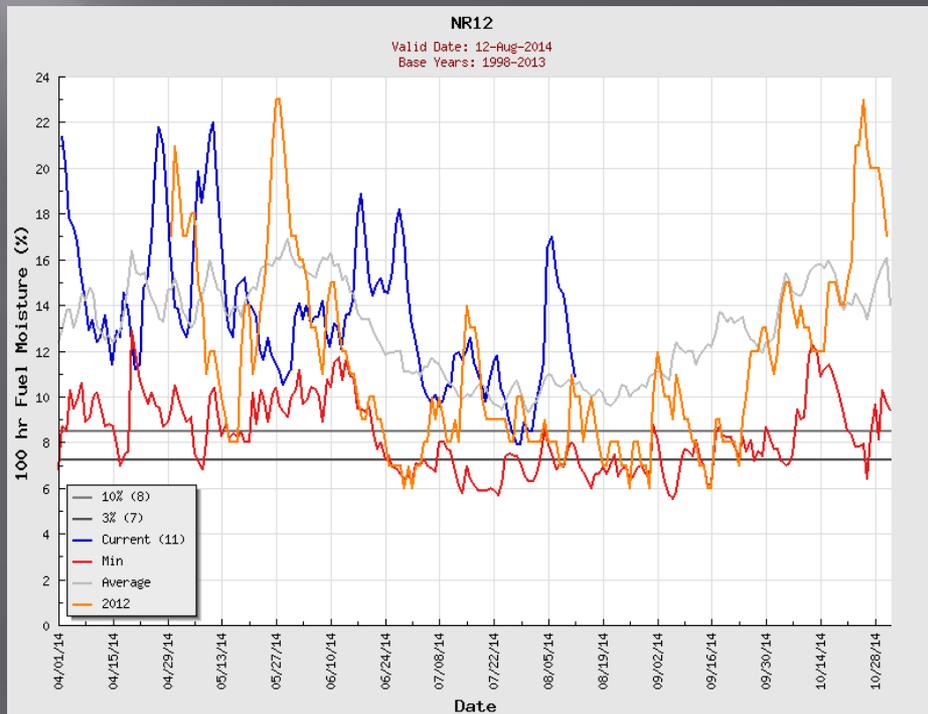
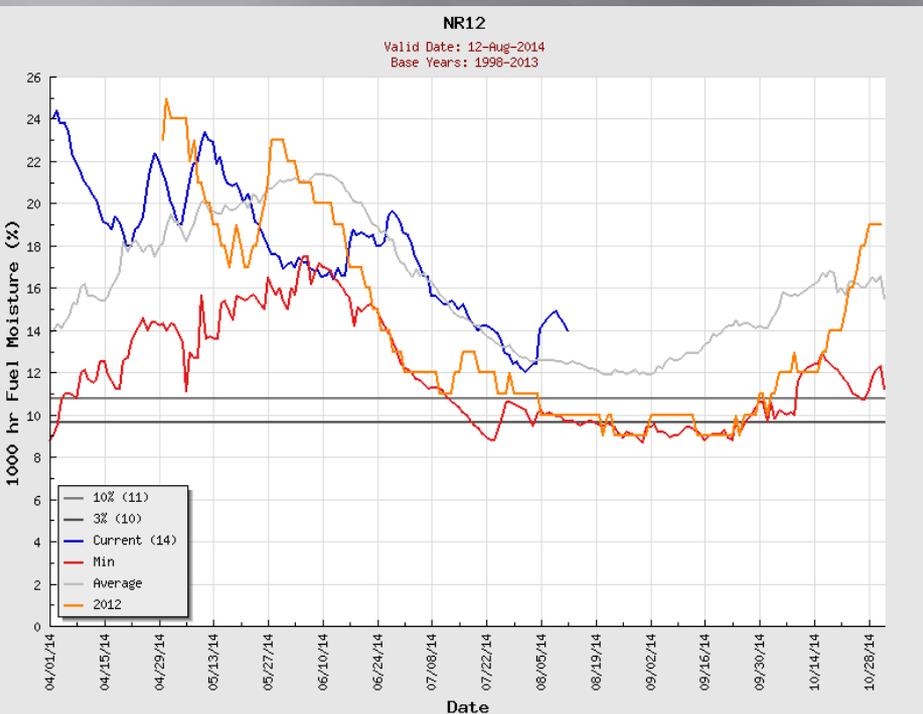
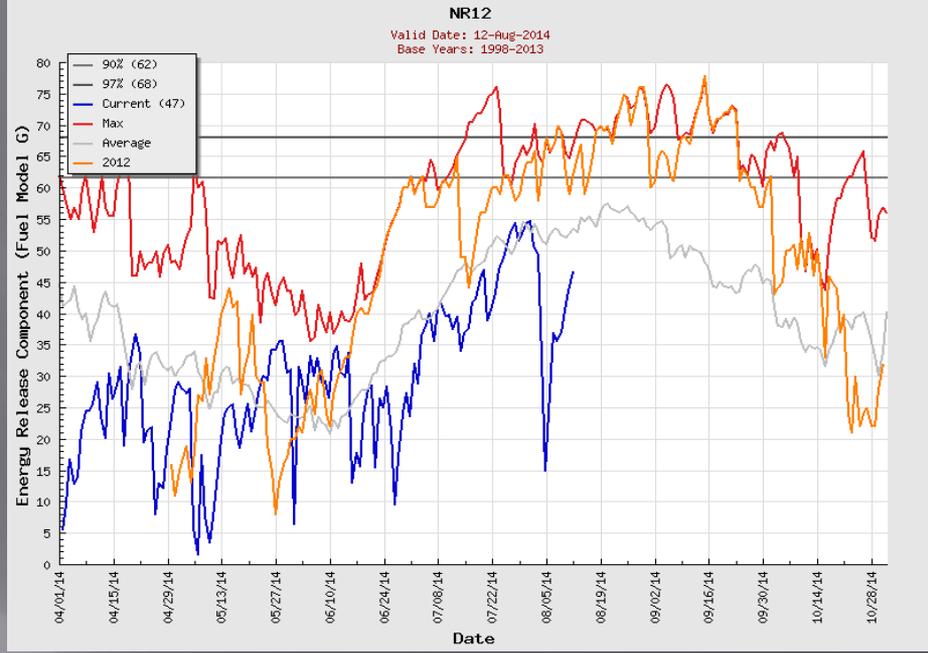


NR12 – South Central Montana and Yellowstone YP

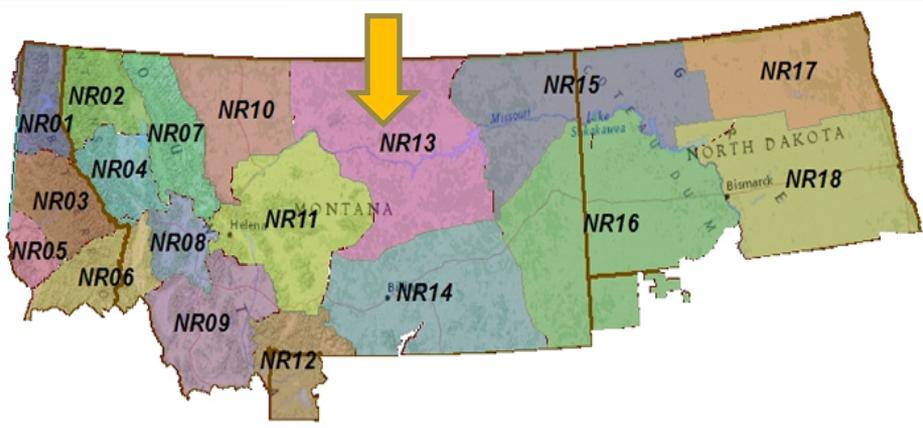


Shenango
Fishtail
Bechler

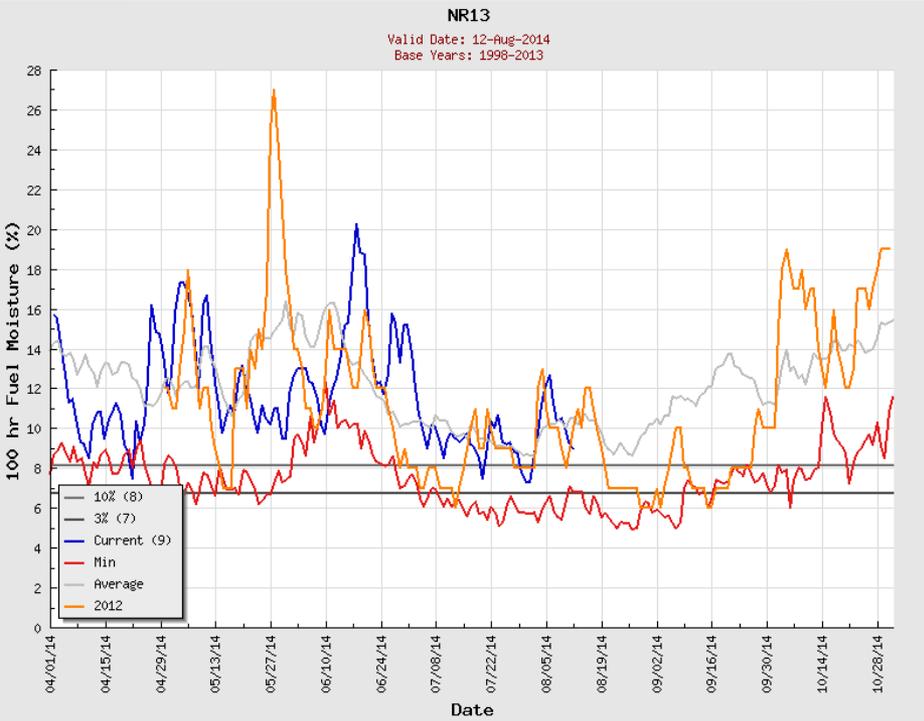
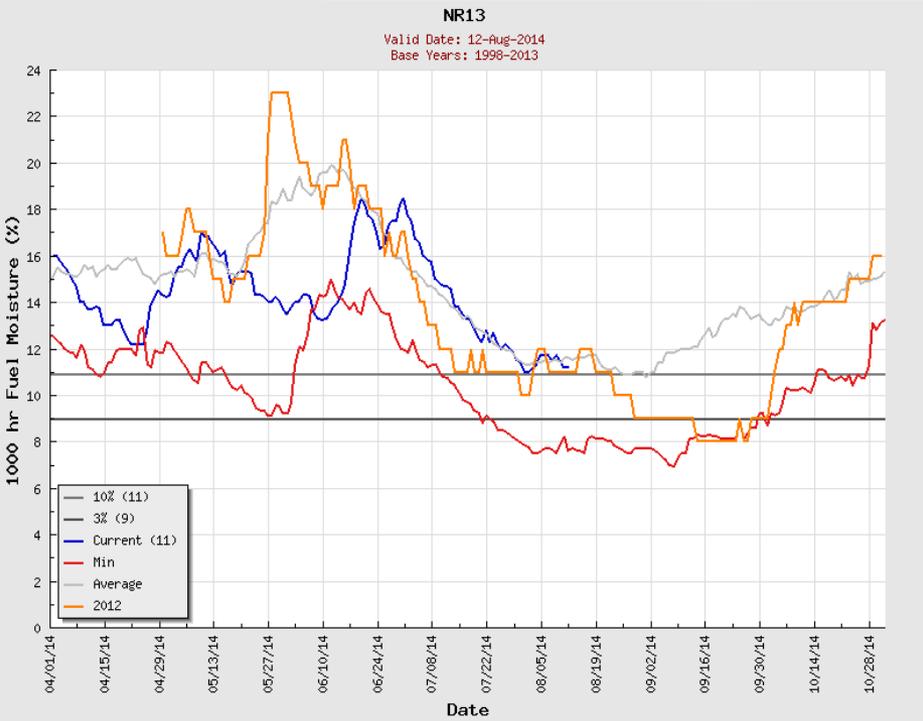
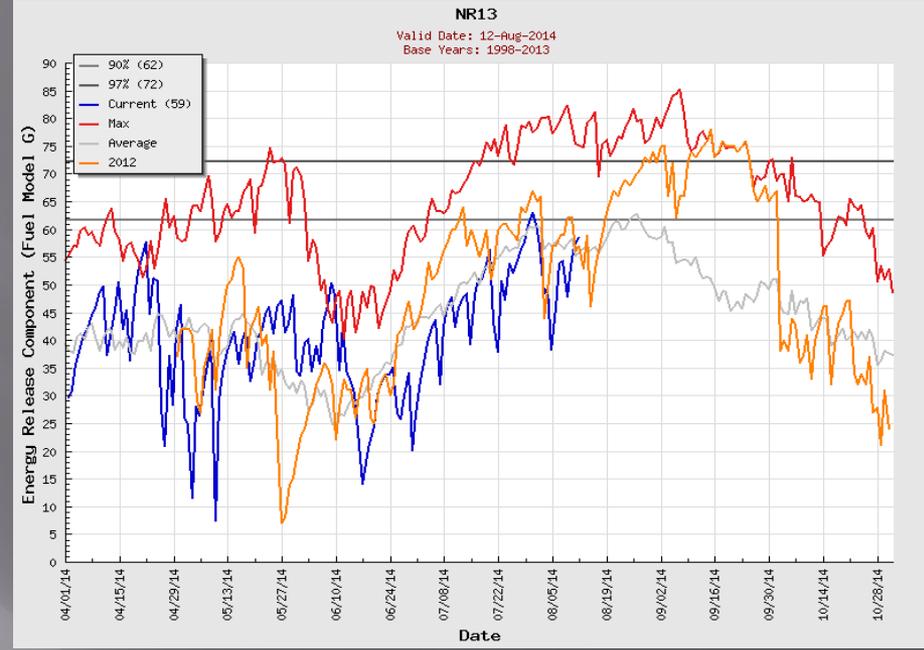
Hebgen Lake
Timbercrest
Quadrant



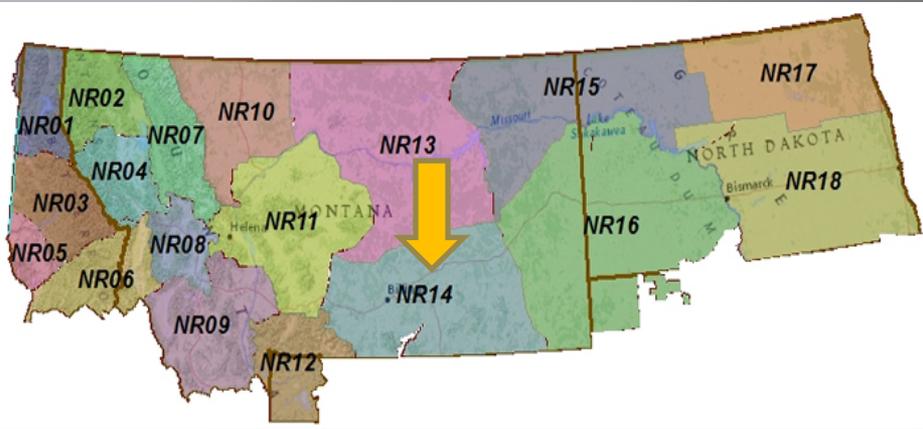
NR13 – Northern Plains and Missouri Breaks



Rocky Boy Little Bullwhacker
 Bluff Creek King Coulee
 Armells Creek South Sawmill Creek

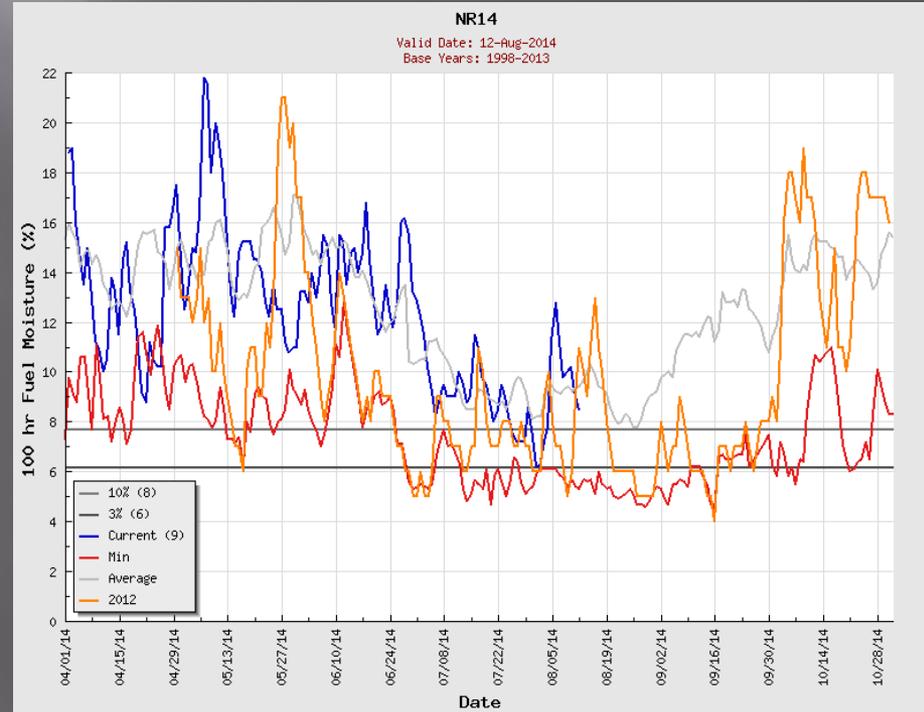
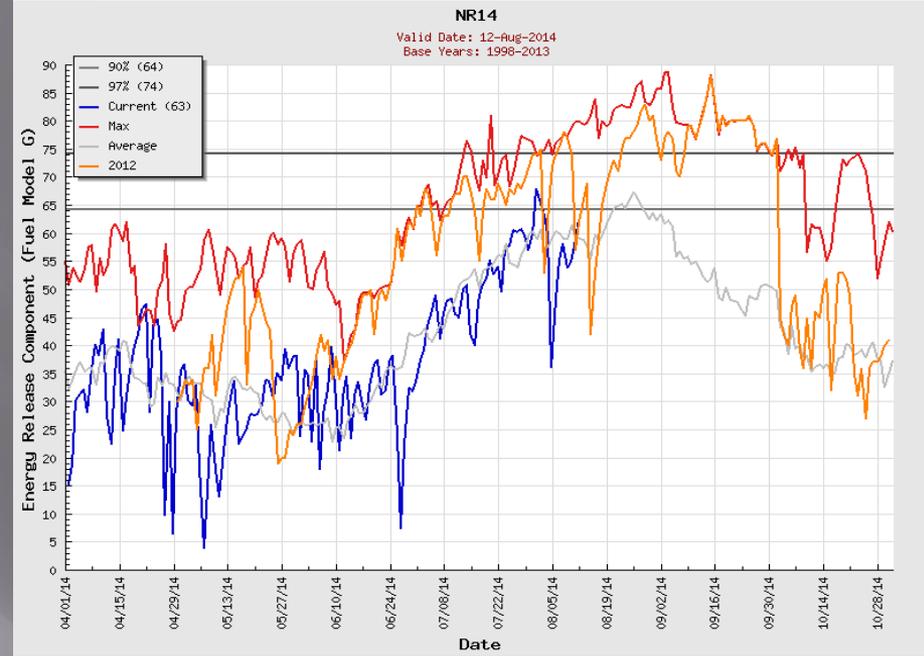


NR14 – Southern Montana (Big Horn/Powder River)

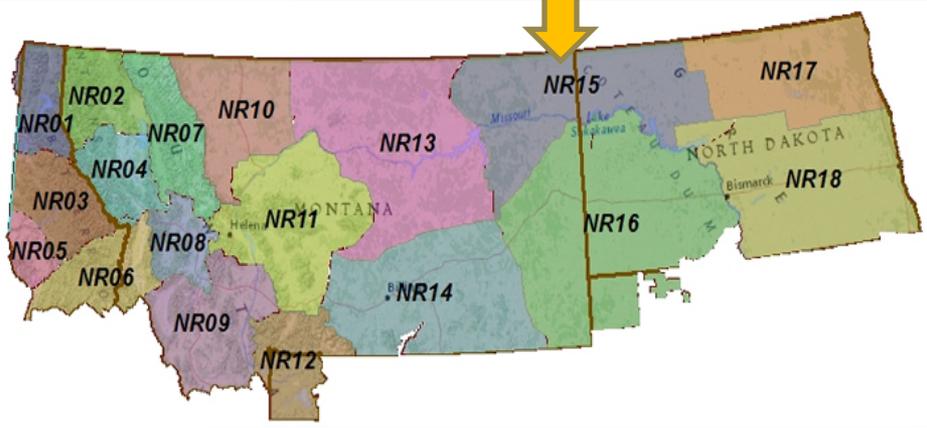


Wolf Mountain
Bighorn Mountain
Fort Howes

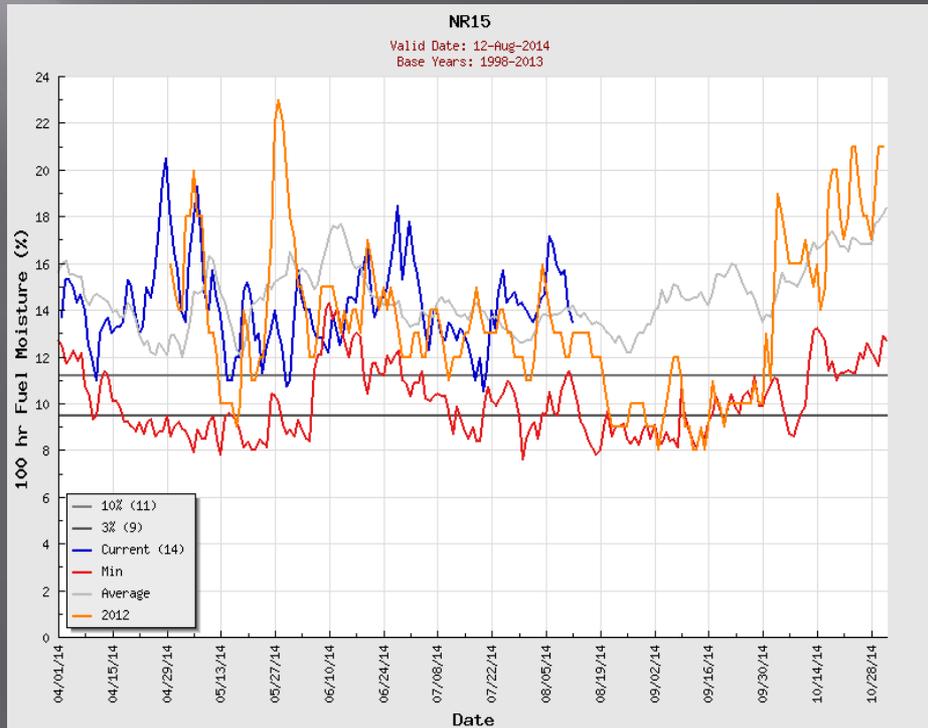
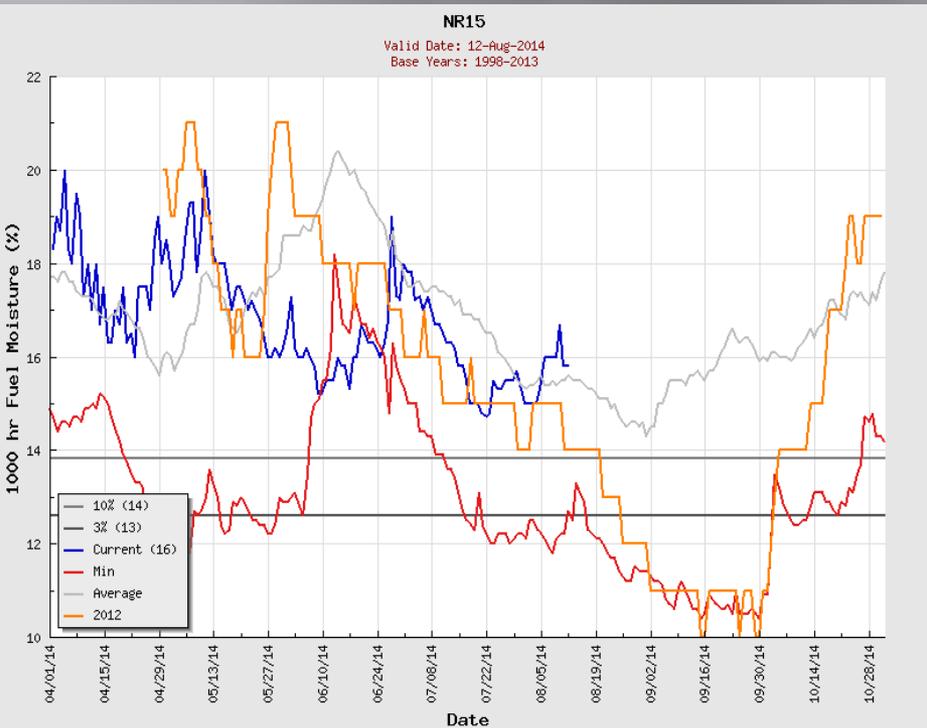
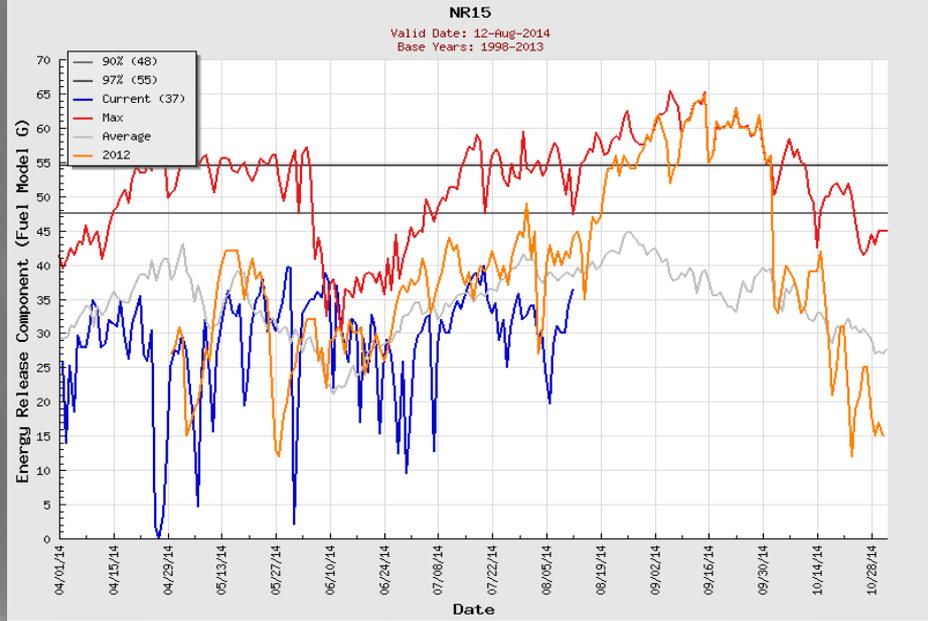
Pryor Mountain
Badger Peak



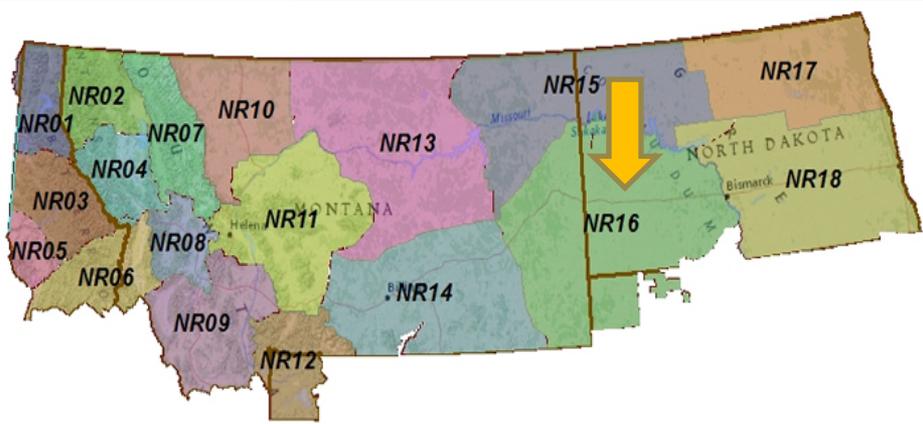
NR15 – Northeast Montana/Northwest North Dakota



Poplar
Lostwood
Crosby
Watford City

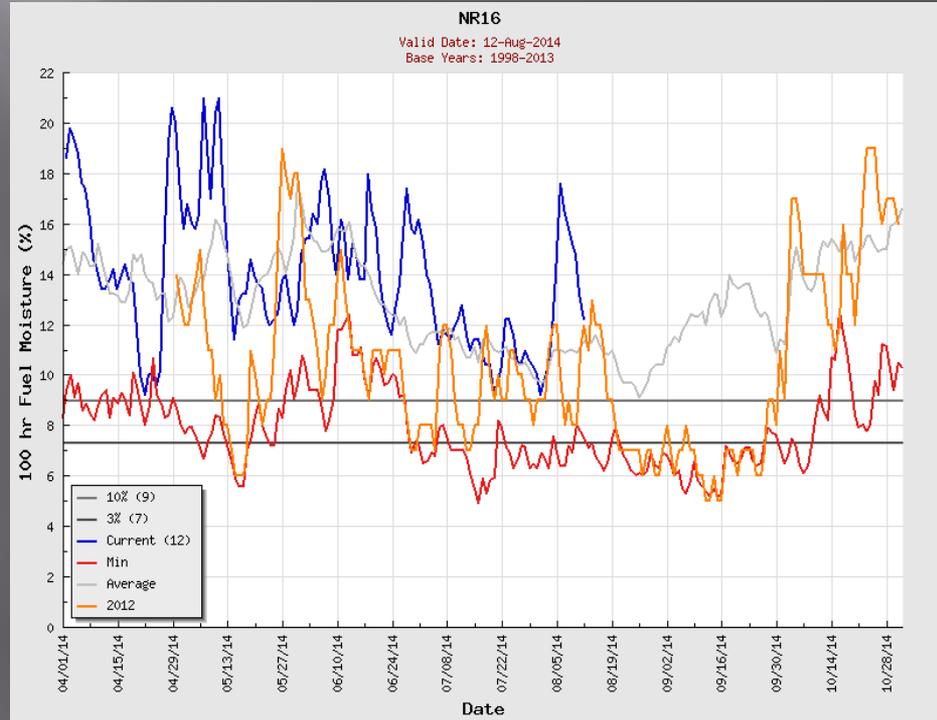
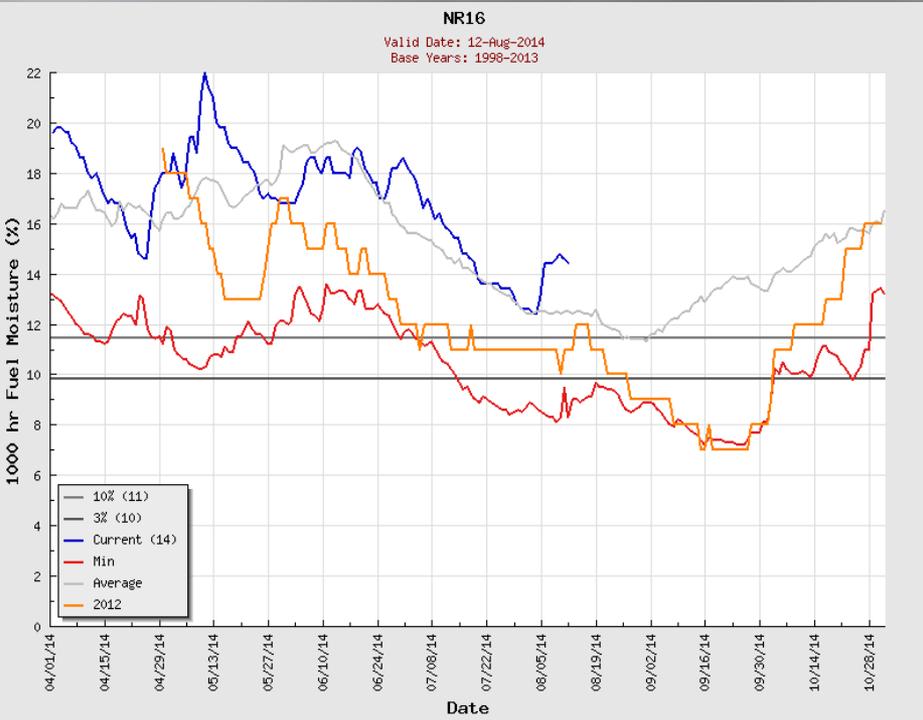
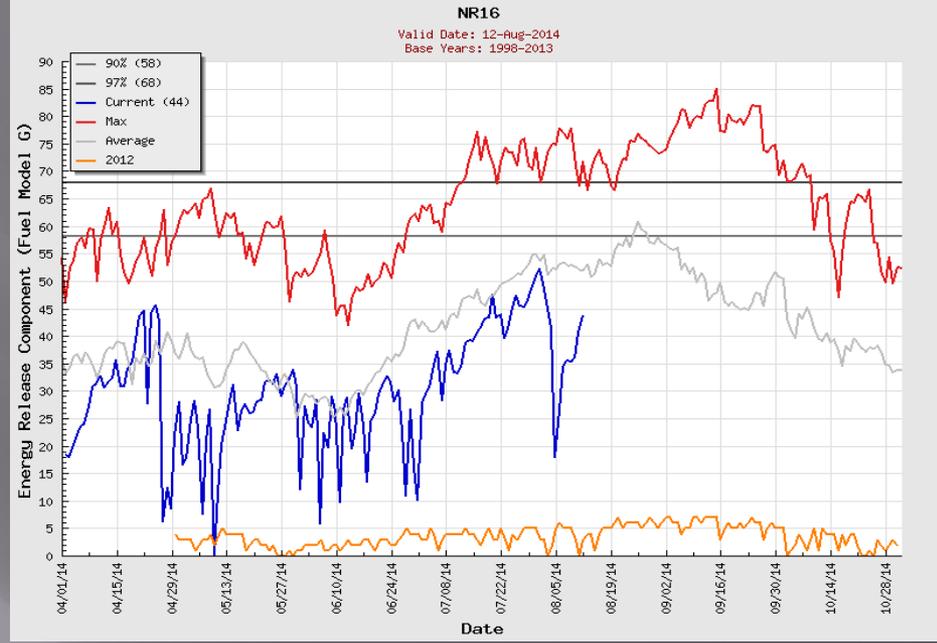


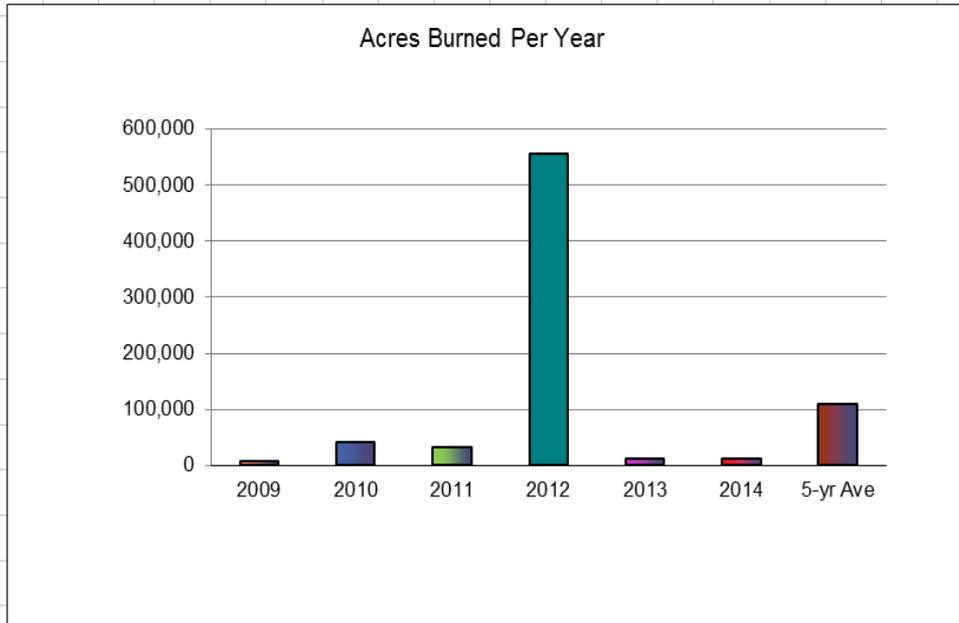
NR16 – Southeastern Montana/Southwestern South Dakota



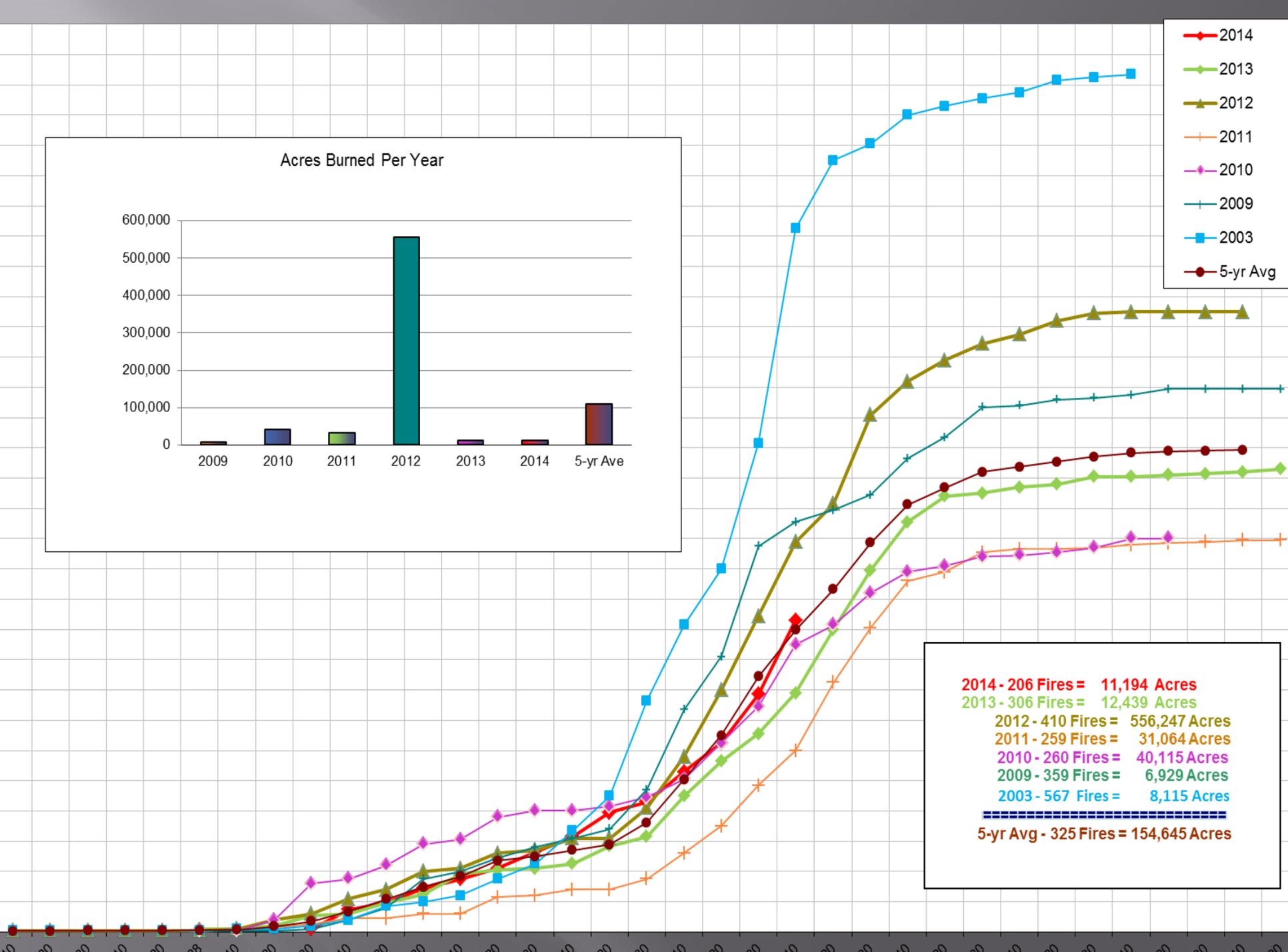
Big Sheep Mountain
Cannonball Creek

Knowlton
Sand Creek





- ◆ 2014
- ◆ 2013
- ▲ 2012
- + 2011
- ◆ 2010
- + 2009
- 2003
- 5-yr Avg



2014 - 206 Fires = 11,194 Acres

2013 - 306 Fires = 12,439 Acres

2012 - 410 Fires = 556,247 Acres

2011 - 259 Fires = 31,064 Acres

2010 - 260 Fires = 40,115 Acres

2009 - 359 Fires = 6,929 Acres

2003 - 567 Fires = 8,115 Acres

5-yr Avg - 325 Fires = 154,645 Acres

Montana Drought and Water Supply Status by County

Change from July to August 2014 – Assessed 8/14/2014

(All changes one category unless noted otherwise)

No Change

Drier

Big Horn Blaine

Broadwater

Carbon

Carter

Cascade

Chouteau

Daniels

Dawson

Fergus

Flathead

Gallatin

Garfield

Glacier

Golden Valley

Hill

Jefferson

Judith Basin

Lake

Lewis and Clark

Liberty

Lincoln

Madison

McCone

Meagher

Mineral

Park

Petroleum

Phillips

Pondera

Powder River

Richland

Roosevelt

Rosebud

Sanders

Stillwater

Sweetgrass

Teton

Toole

Valley

Wheatland

Wibaux

Beaverhead

Custer

Deer Lodge

Fallon

Granite

Missoula

Musselshell

Powell

Prairie

Ravalli

Sheridan

Silver Bow

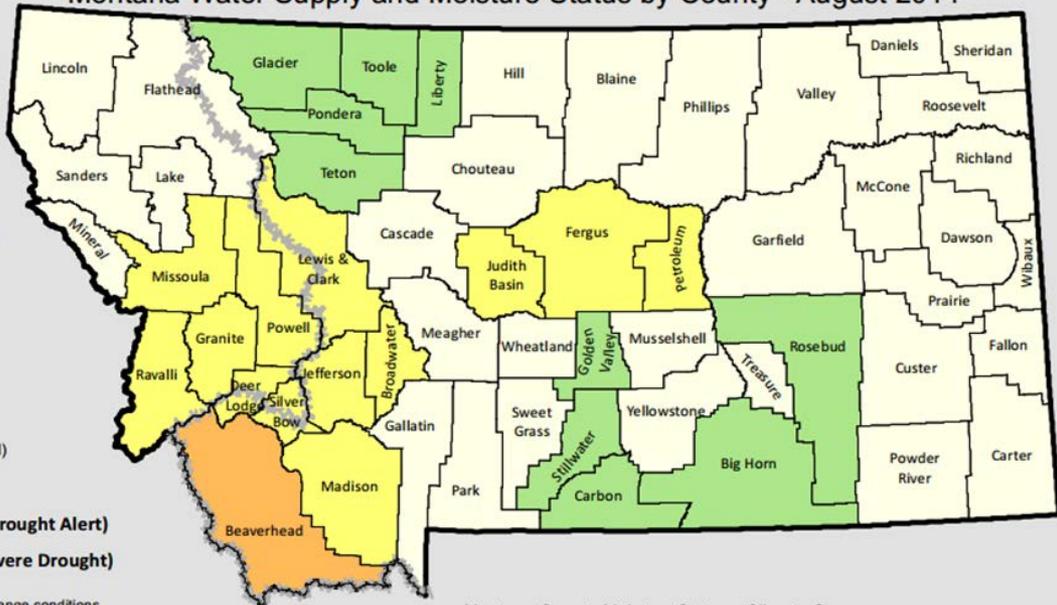
Treasure

Yellowstone



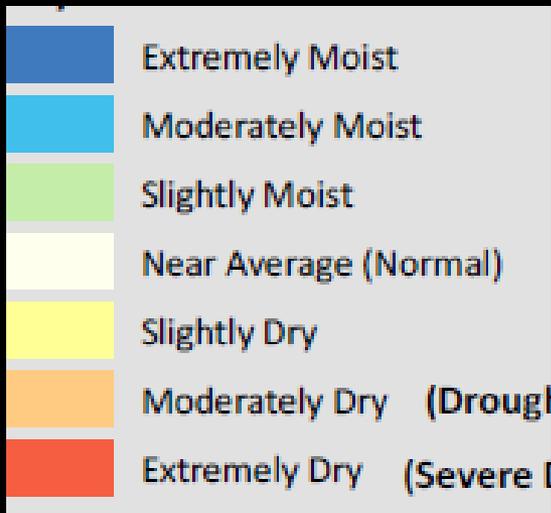
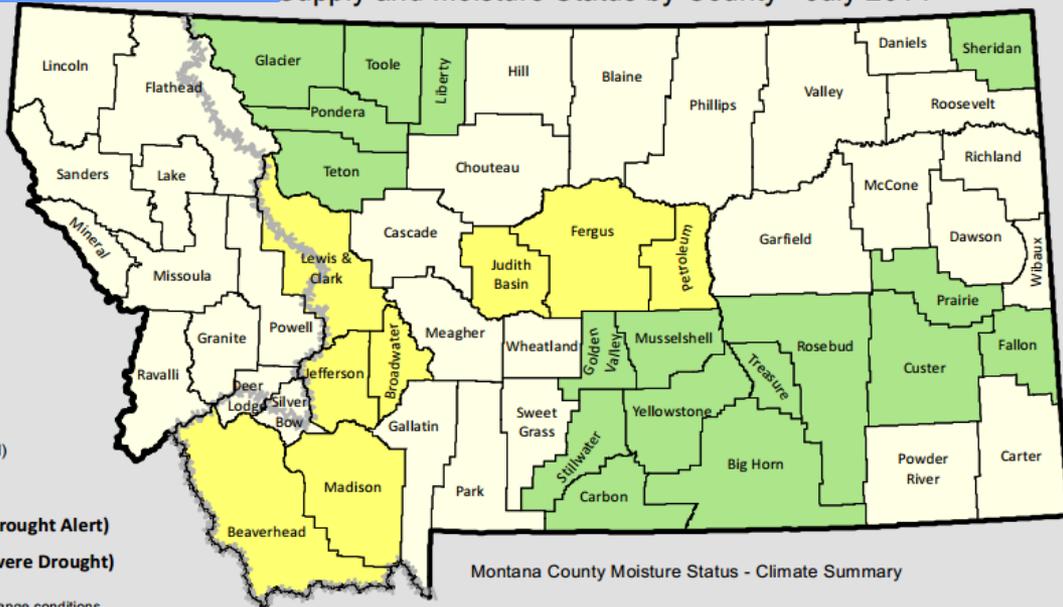
NOAA - National Weather Service

Montana Water Supply and Moisture Status by County - August 2014



Montana Drought Status August 2014 vs. July 2014

Supply and Moisture Status by County - July 2014



Montana Drought & Water Supply Advisory Committee

August 14, 2014

National Weather Service

Gina Loss – Service Hydrologist



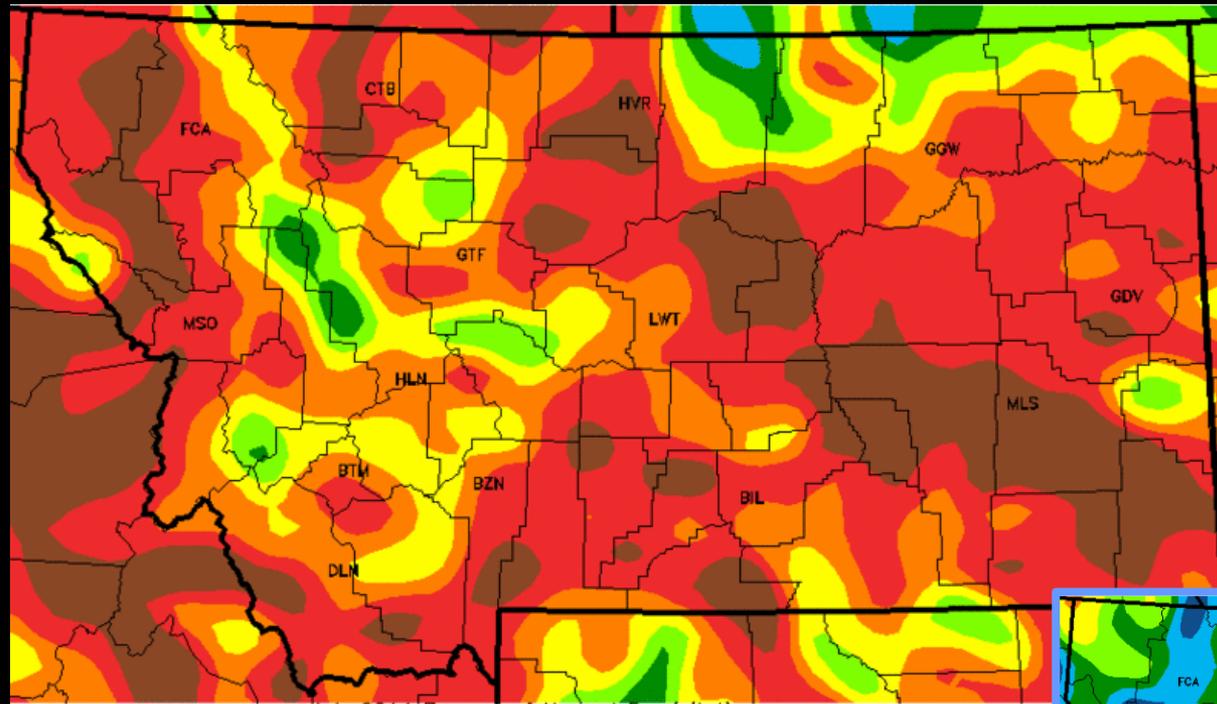
NOAA - National Weather Service

Percent of Normal Precipitation

July 2014

- Most of Montana well below normal
- Isolated areas near to above normal

June 2014

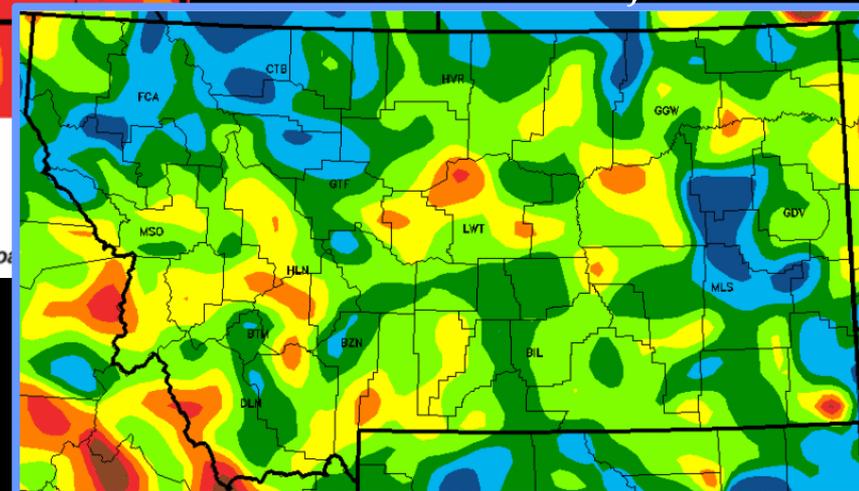


July 2014 Percent of Normal Precipitation
Period of Normal: 1981–2010

20 40 60 85 115 150 200 400

NOTE: Data used to generate this image are
PROVISIONAL AND SUBJECT TO CHANGE.

<http://www.wrh.noaa.gov>



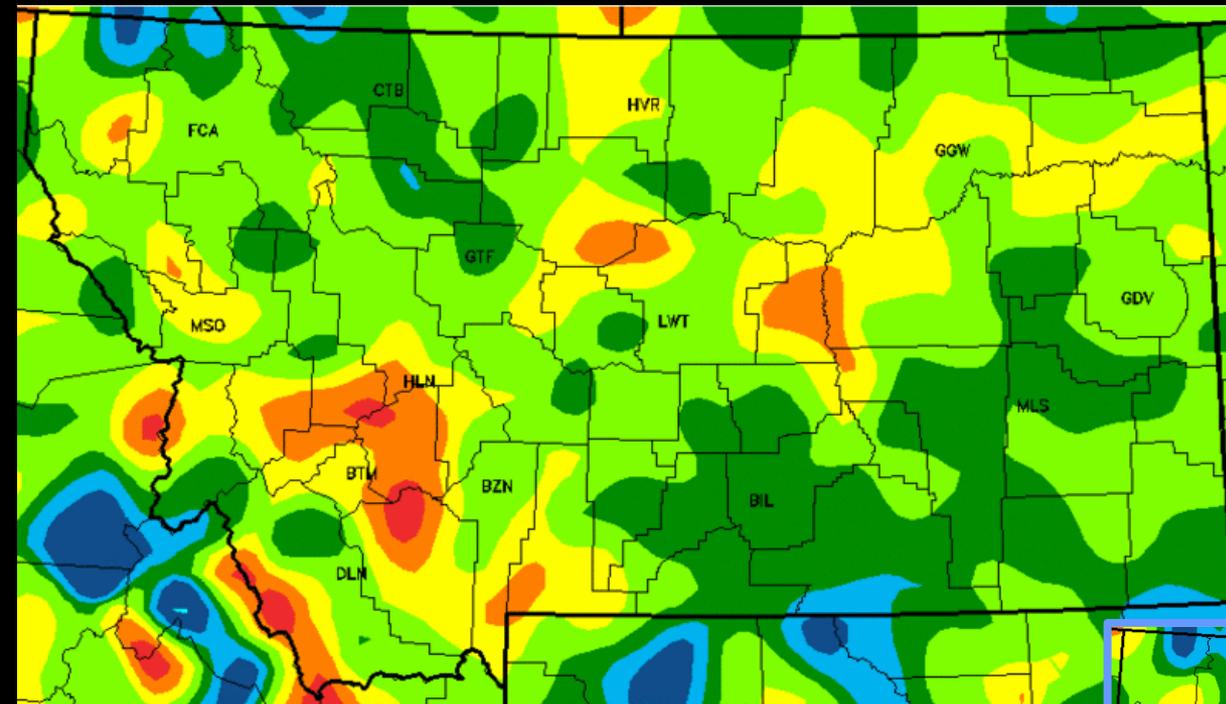
NOAA - National Weather Service

Percent of Normal Precipitation

Water Year 2014

- October - July
- Below to well below normal portions of southwest and central
- Above normal northwest and south-central

October - June 2014



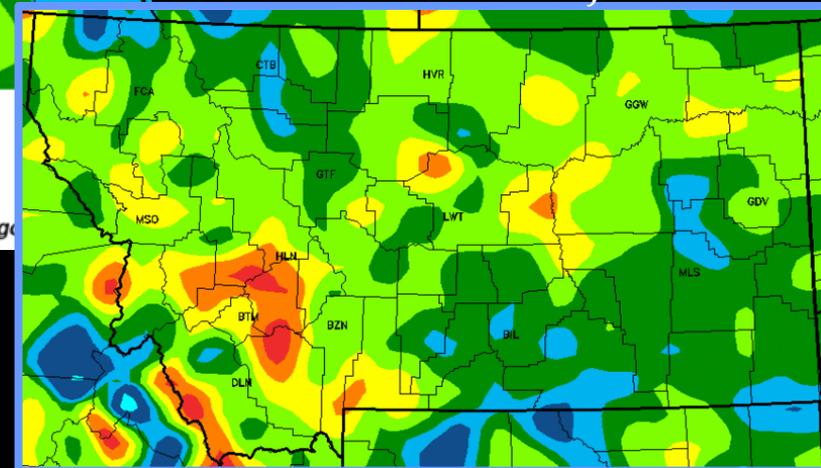
Oct 2013-Jul 2014 Percent of Normal Precipitation

Period of Normal: 1981-2010

20 40 60 85 115 150 200 400

NOTE: Data used to generate this image are PROVISIONAL AND SUBJECT TO CHANGE.

<http://www.wrh.noaa.gov>



NOAA - National Weather Service

Percent of Normal Precipitation

Crop Year

- ◆ April - July
- ◆ Below to well below normal west, southwest, central
- ◆ Near normal east of RMF, northeast, and east

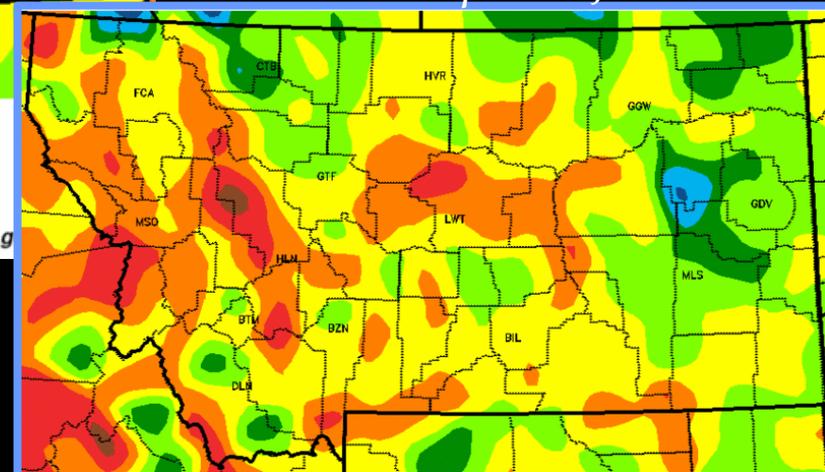
April - June 2014

Apr-Jul 2014 Percent of Normal Precipitation
Period of Normal: 1981-2010

20 40 60 85 115 150 200

NOTE: Data used to generate this image are
PROVISIONAL AND SUBJECT TO CHANGE.

<http://www.wrh.noaa.gov>



NOAA - National Weather Service

Temperature Anomalies

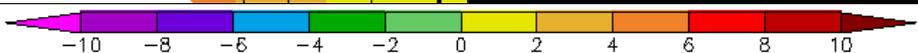
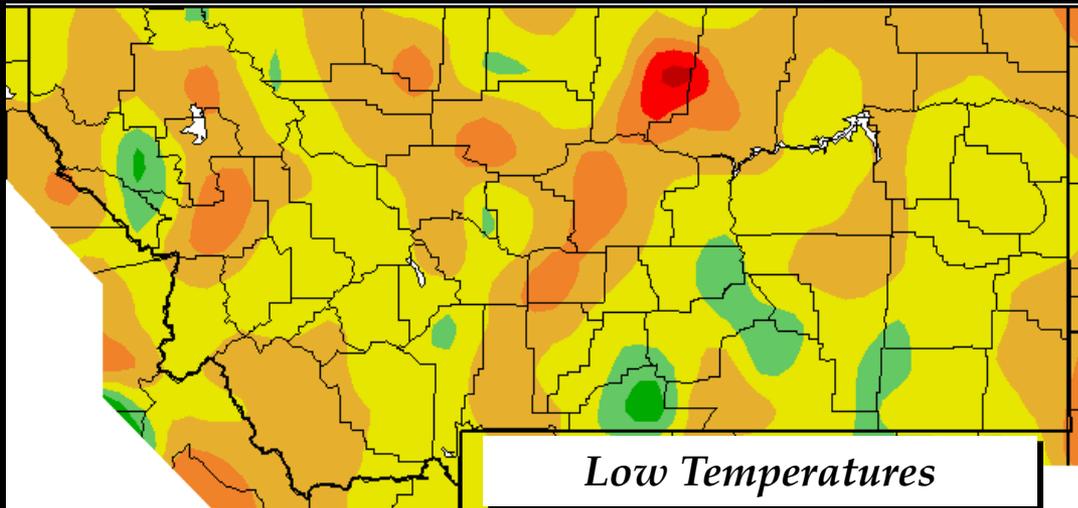
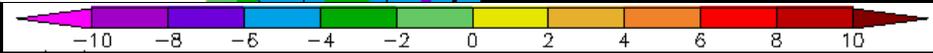
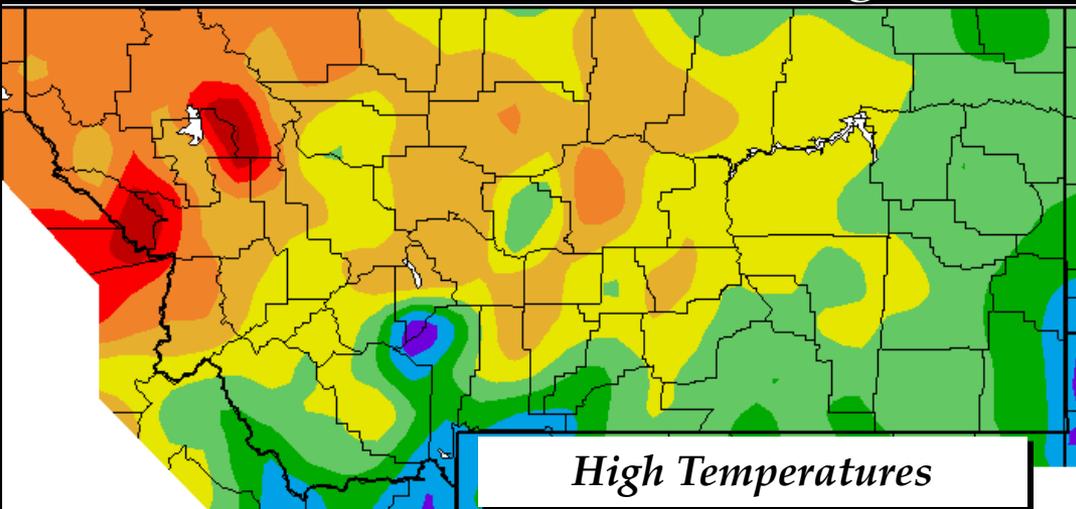
August 1 - 12

Highs

- 4 to 10 degrees above normal west of Divide
- Near normal east of Divide

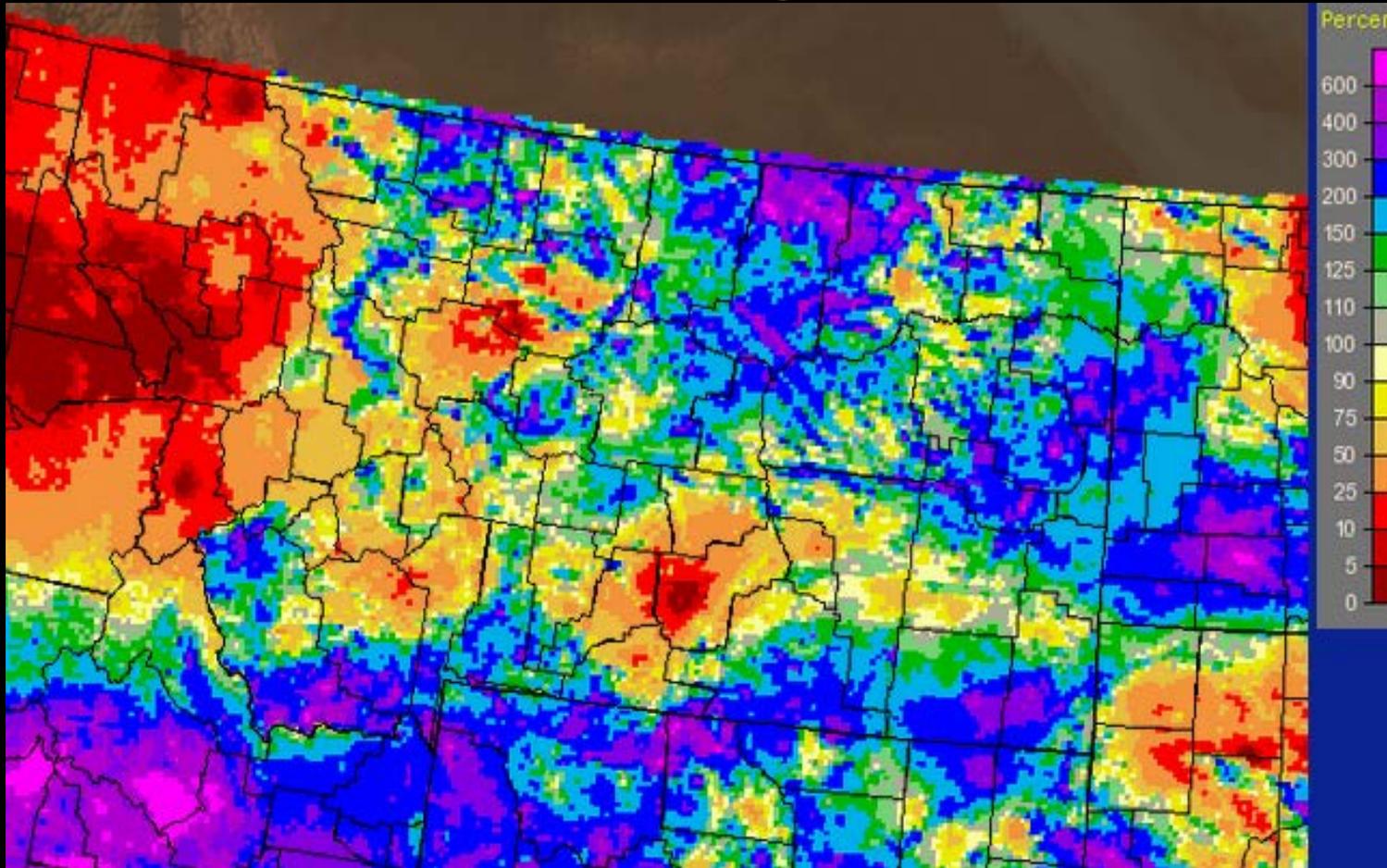
Lows

- Near to 6 degrees above normal most of the state



NOAA - National Weather Service

Percent of Average Precipitation *August 1 - 12*



- ◆ Below to well below normal west of the Divide
- ◆ Above to well above normal south, north central, and east

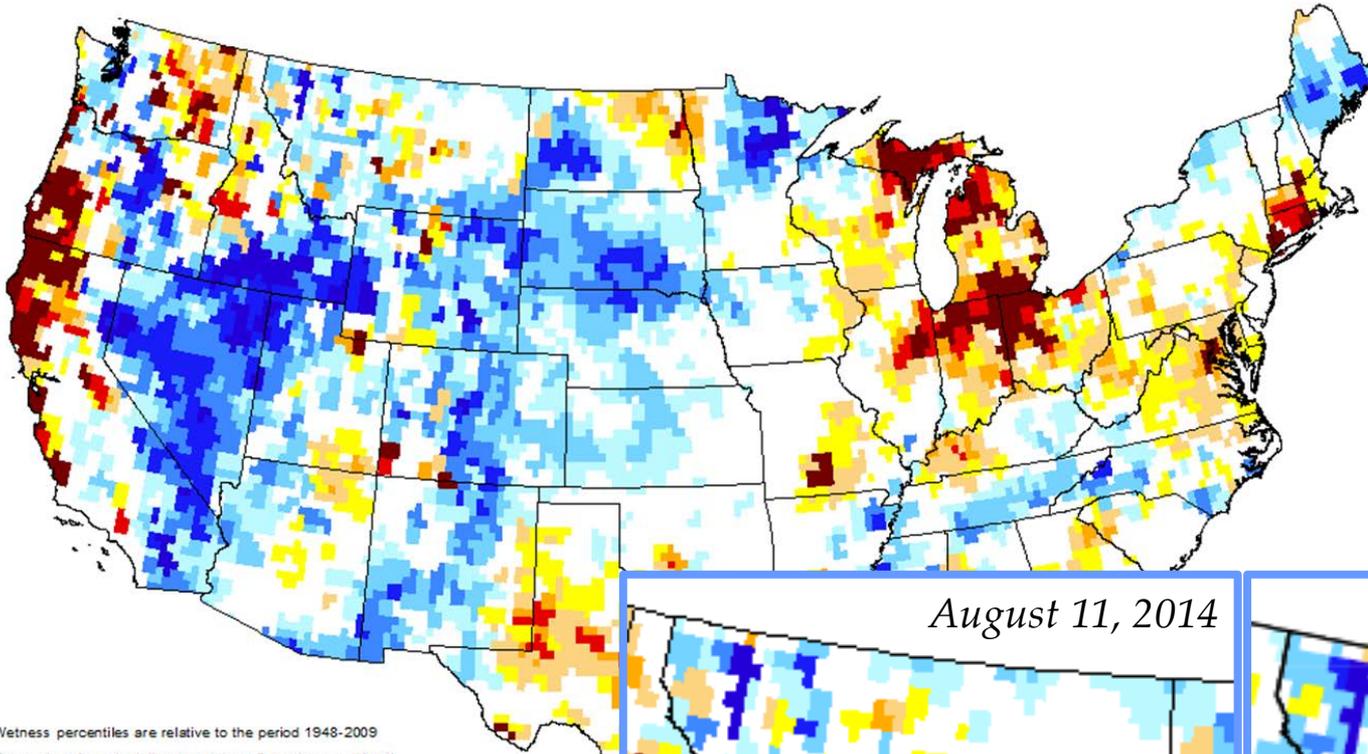


Soil Moisture – Upper 1 Meter

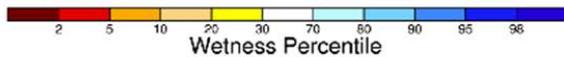


GRACE-Based Surface Soil Moisture Drought Indicator

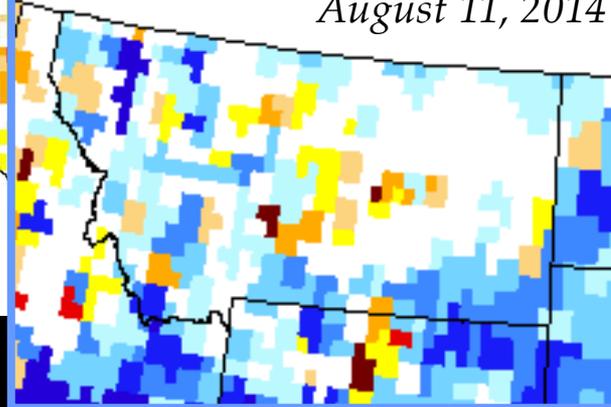
August 11, 2014



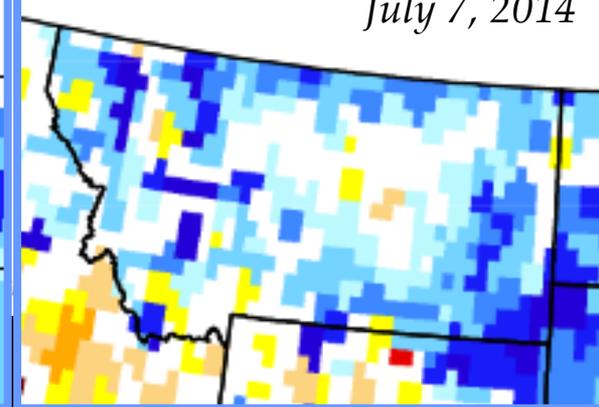
Wetness percentiles are relative to the period 1948-2009
The surface layer is defined as the top 2 centimeters of soil
Cell Resolution 0.25 degrees
Projection of this document is Lambert Azimuthal Equal Area



August 11, 2014



July 7, 2014



NOAA - National Weather Service

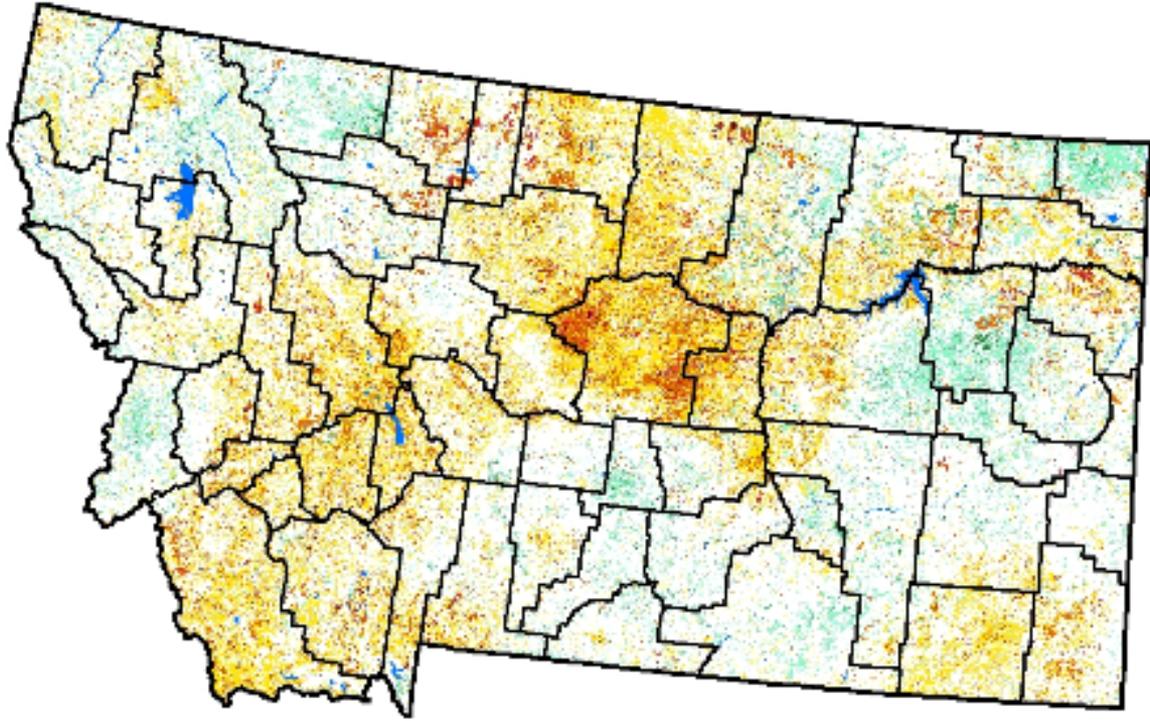
Vegetation Drought Response Index

Complete: Montana

July 28, 2014

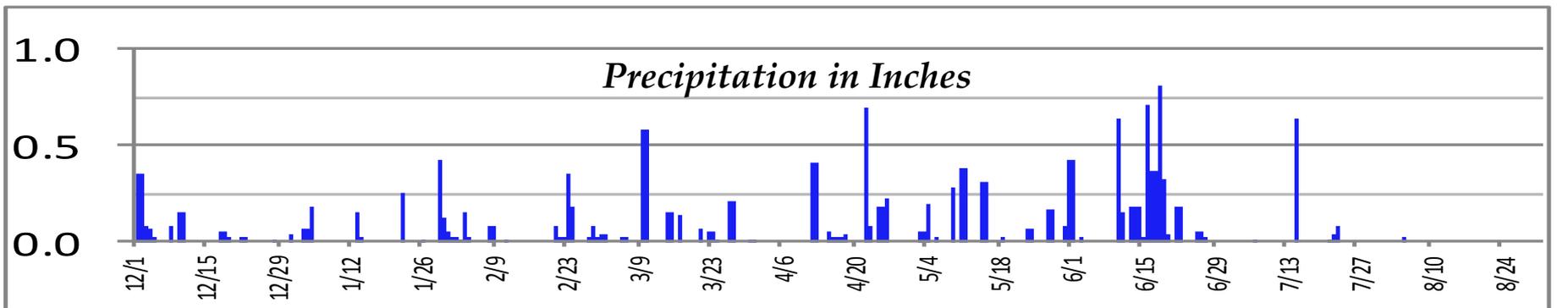
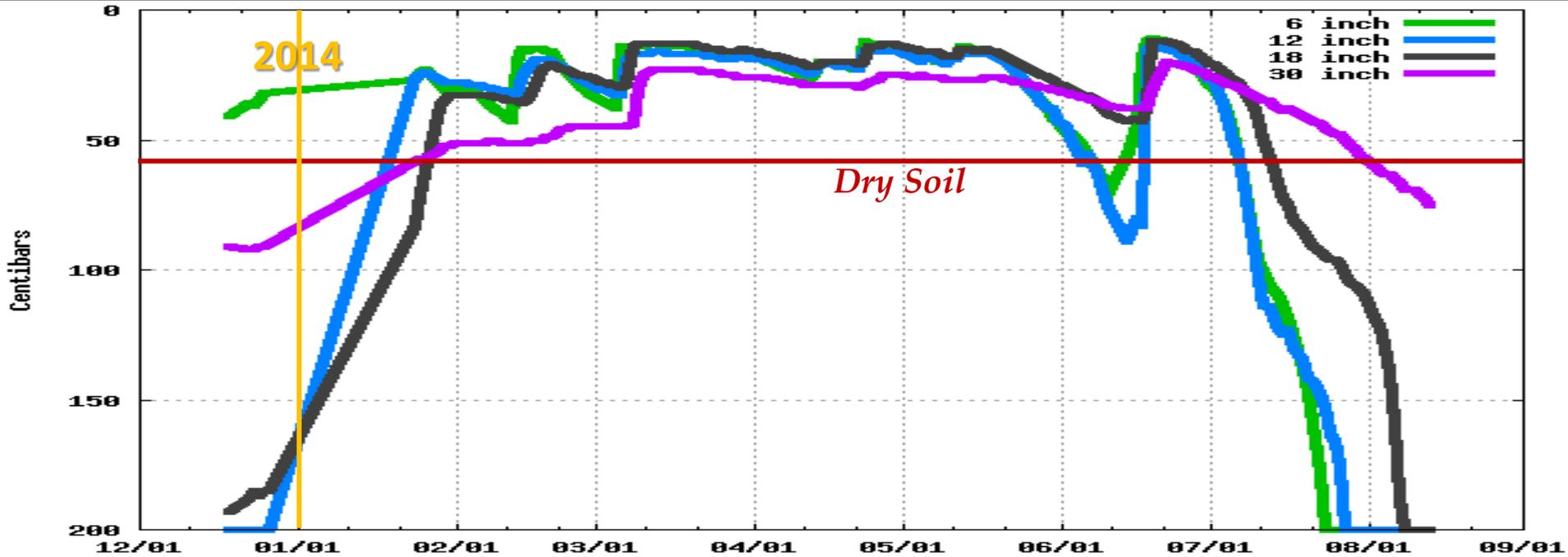
Vegetation Condition

-  Extreme Drought
-  Severe Drought
-  Moderate Drought
-  Pre-Drought
-  Near Normal
-  Unusually Moist
-  Very Moist
-  Extremely Moist
-  Out of Season
-  Water



NOAA - National Weather Service

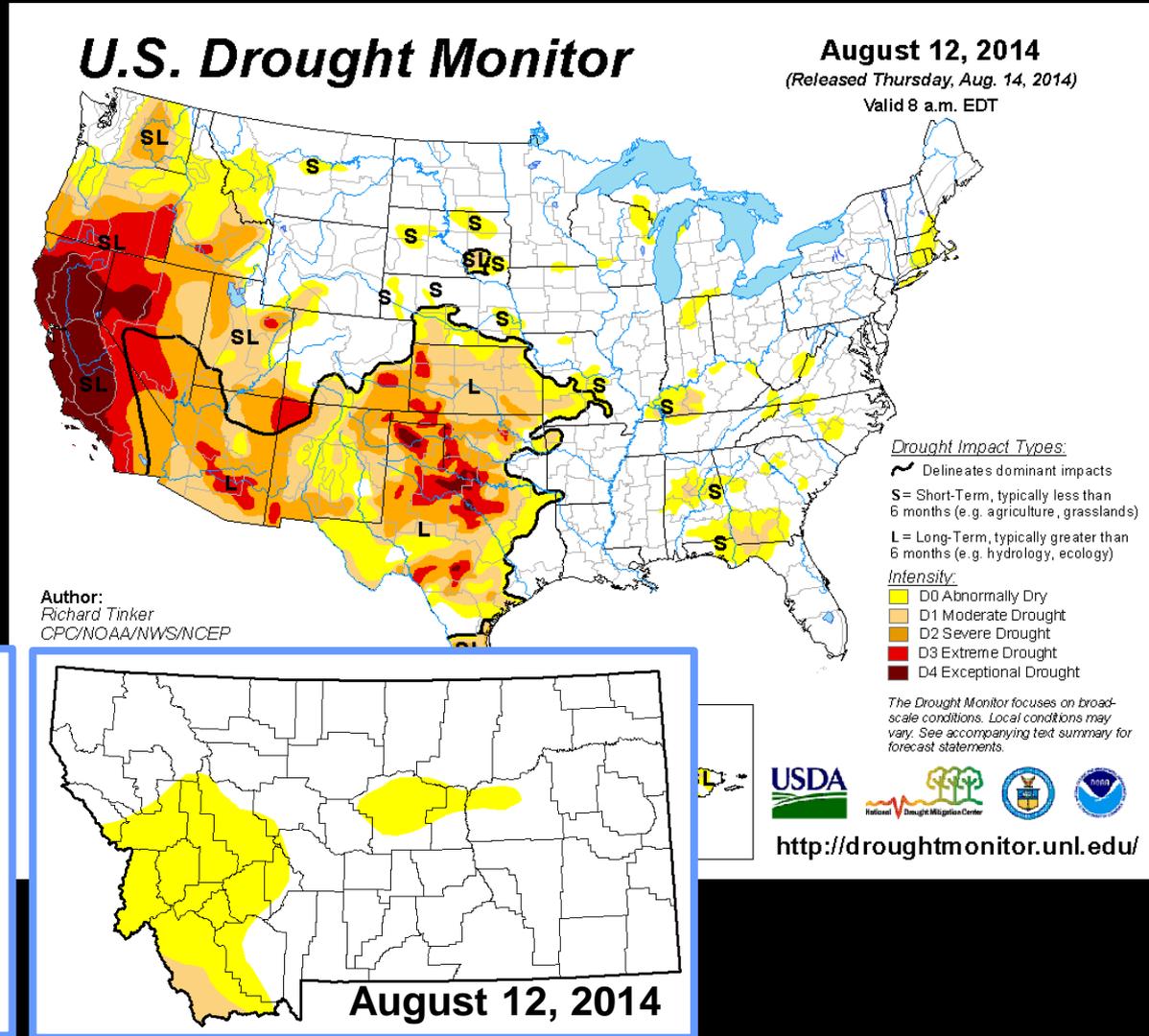
Great Falls Soil Moisture



National Drought Monitor

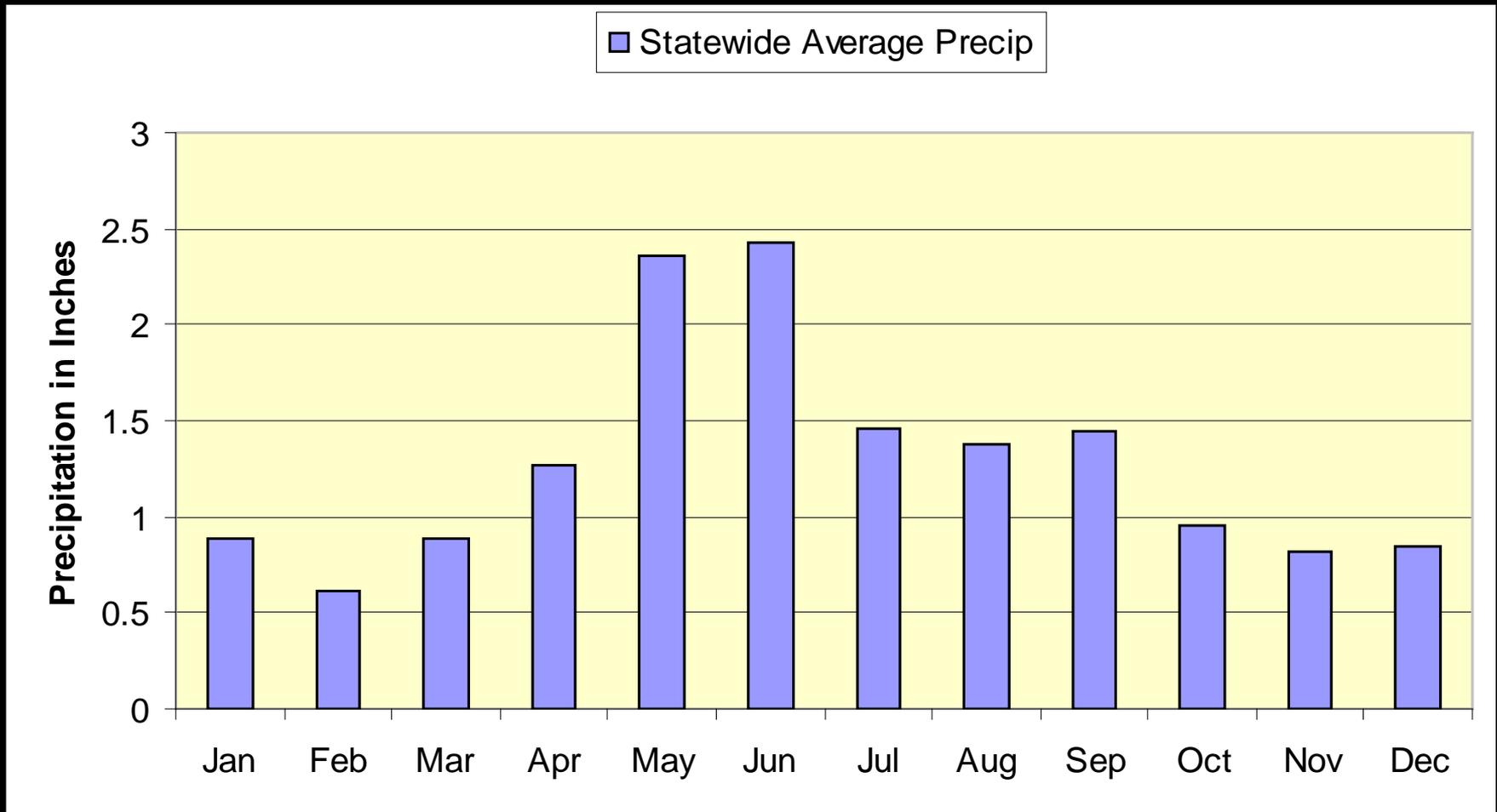
Conditions as of August 12, 2014

- Introduction of D1 – Moderate Drought – in southwest Montana
- Expansion of D0 - Abnormally Dry - in west and central Montana



Statewide Average Precipitation

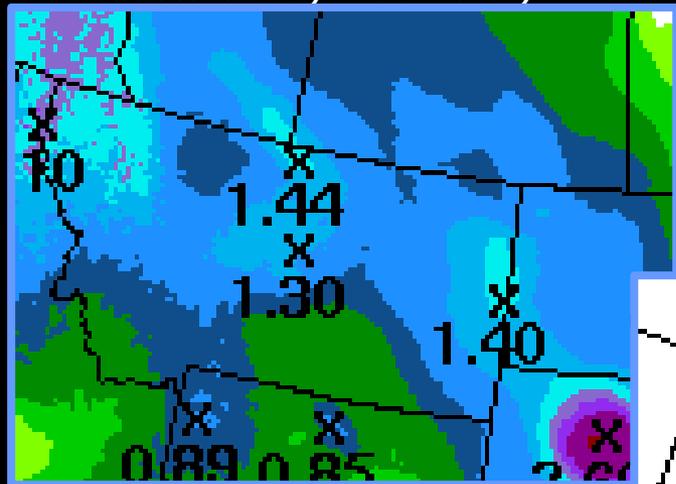
August brings less than 1.5 inches on average



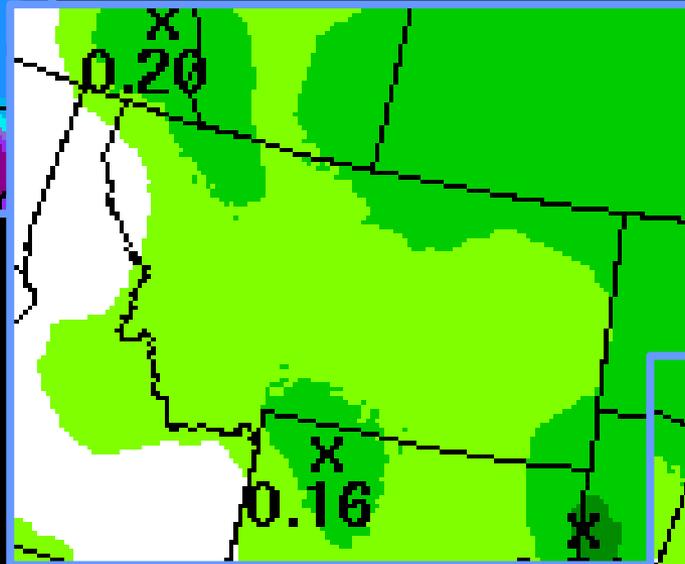
NOAA - National Weather Service

Precipitation Forecast

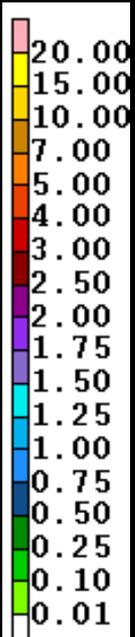
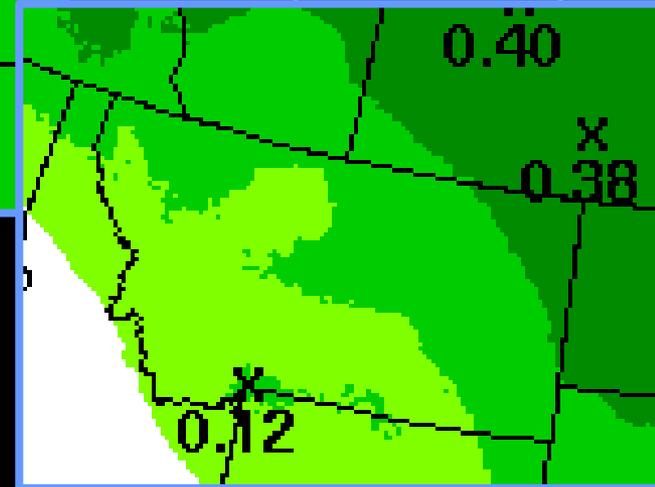
Thursday - Saturday



Sunday - Monday



Tuesday - Wednesday

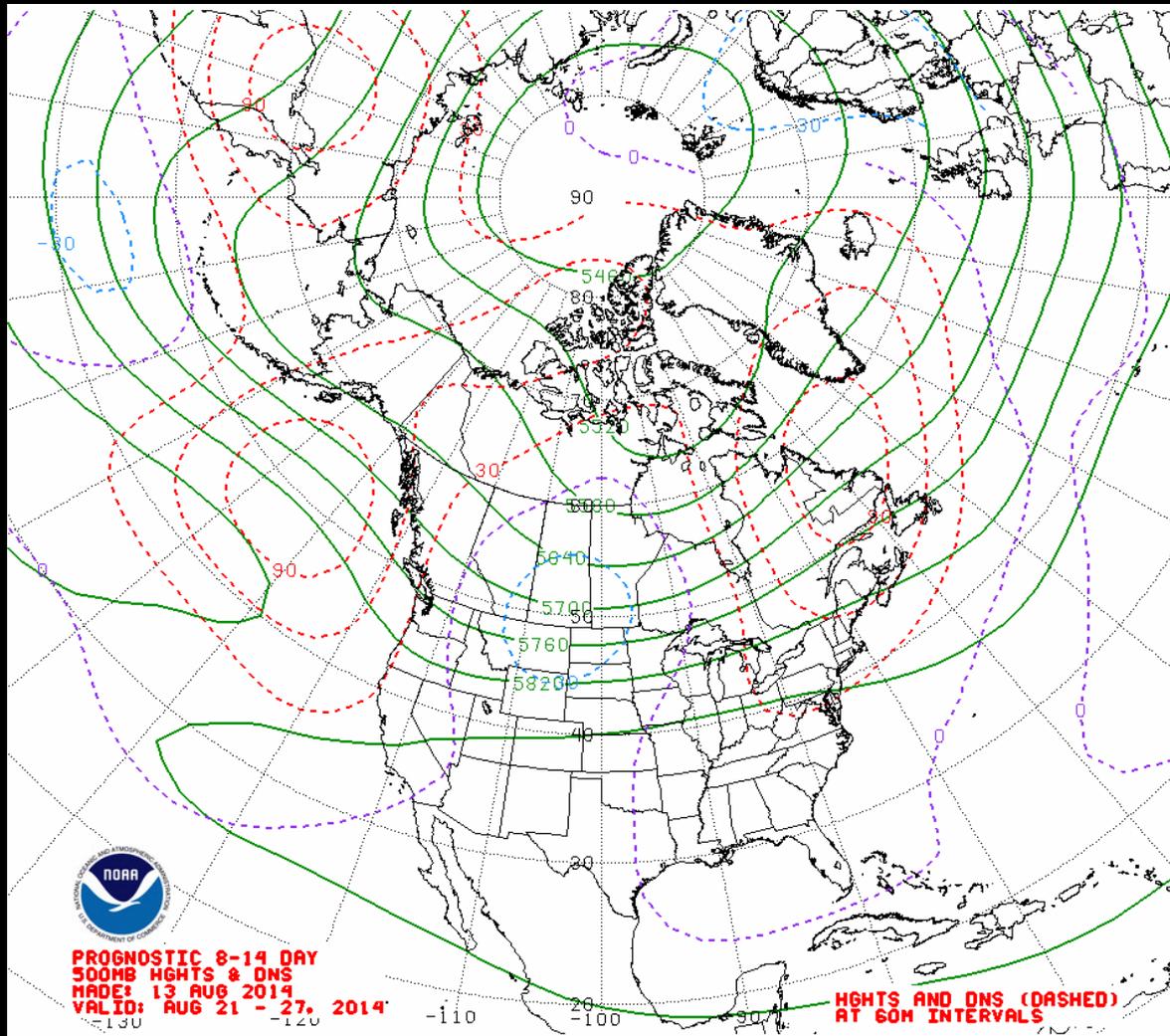


NOAA - National Weather Service



8 to 14 Day Outlook

500mb Heights and Anomalies



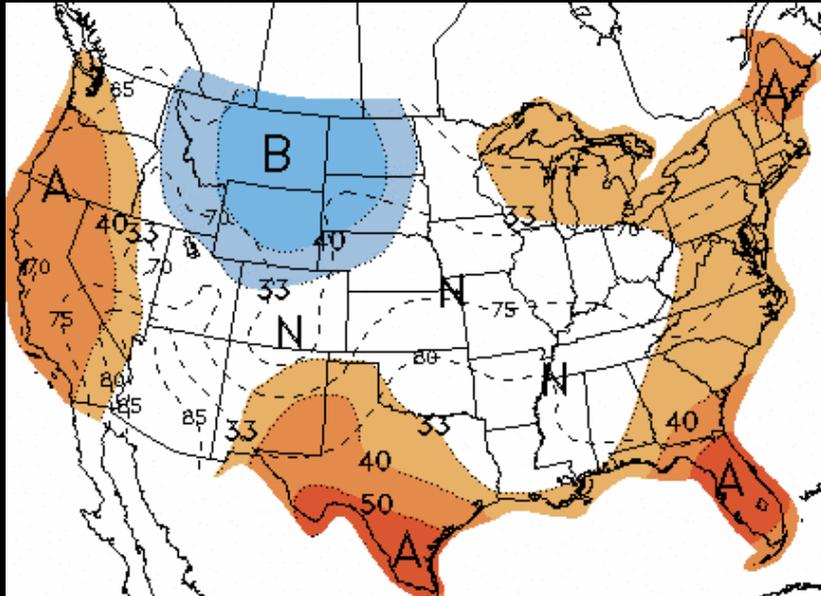
- August 21-27
- Low pressure trough along Pacific Coast
 - High pressure ridge over west weakened -- at least temporarily



8 to 14 Day Outlook

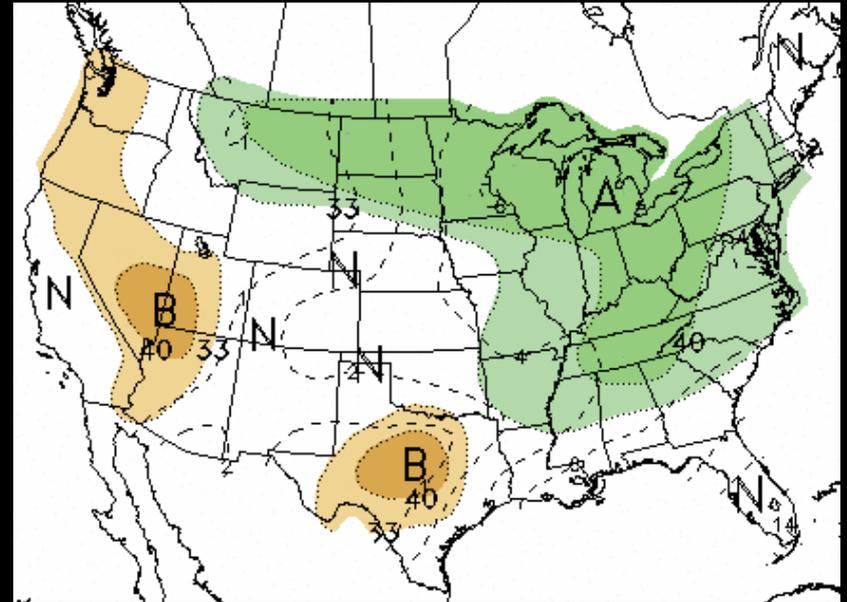
August 21-27

Temperature



- 33% to 50% chance temperatures will be below normal across Montana

Precipitation

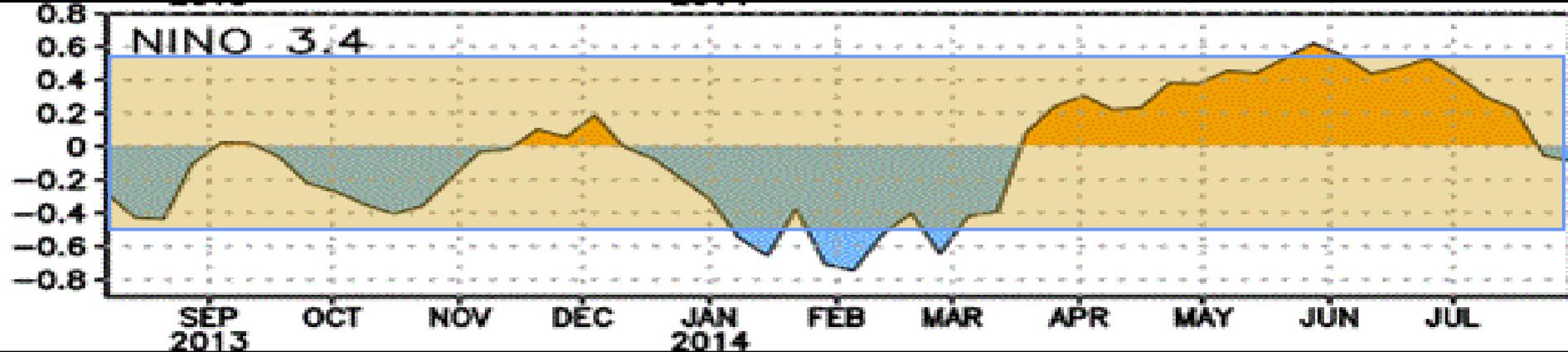


- 33% to 50% chance precipitation will be above normal across Montana

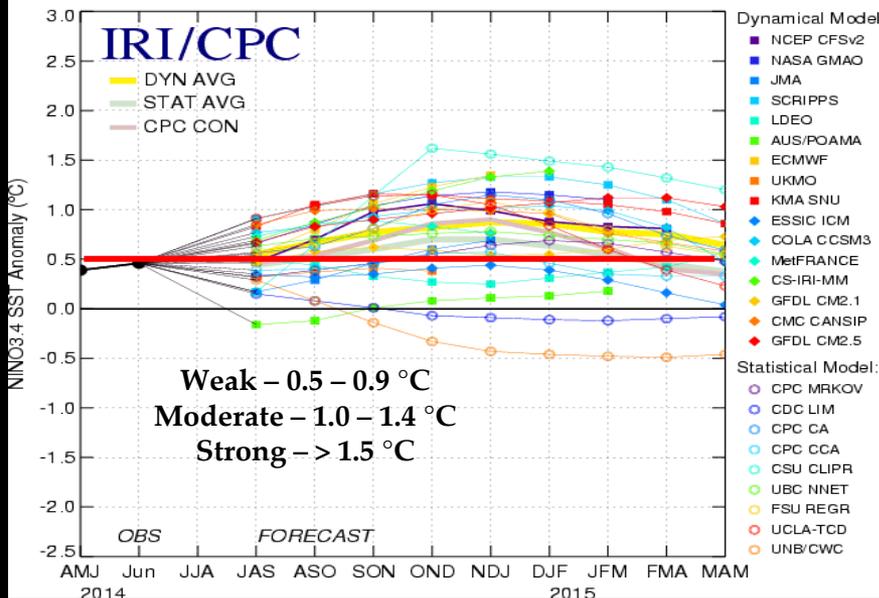


El Niño / La Niña

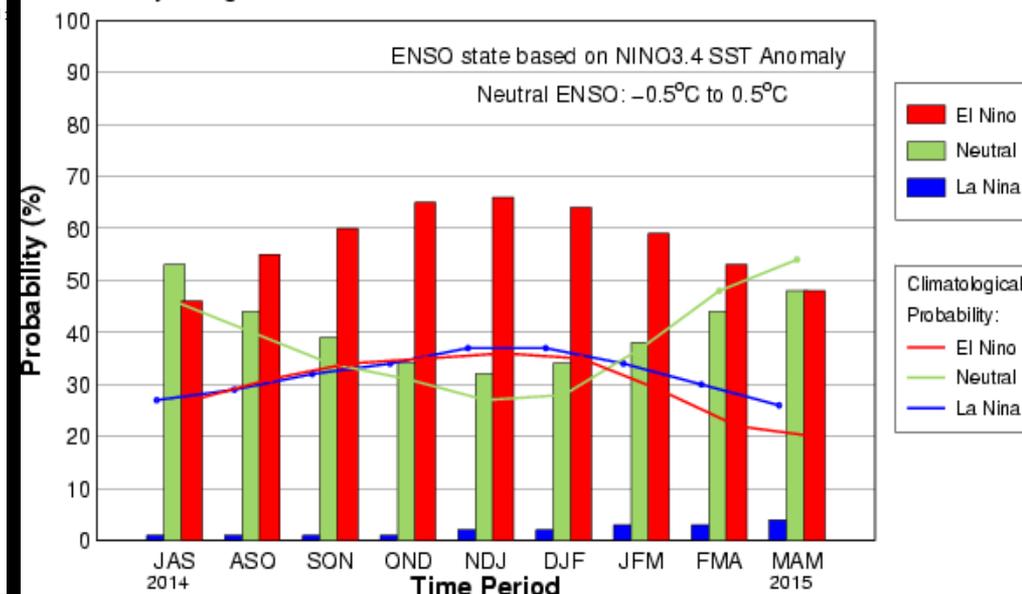
El Niño Watch – 60%-70% chances of El Niño through early winter



Mid-Jul 2014 Plume of Model ENSO Predictions



Early-Aug CPC/IRI Consensus Probabilistic ENSO Forecast

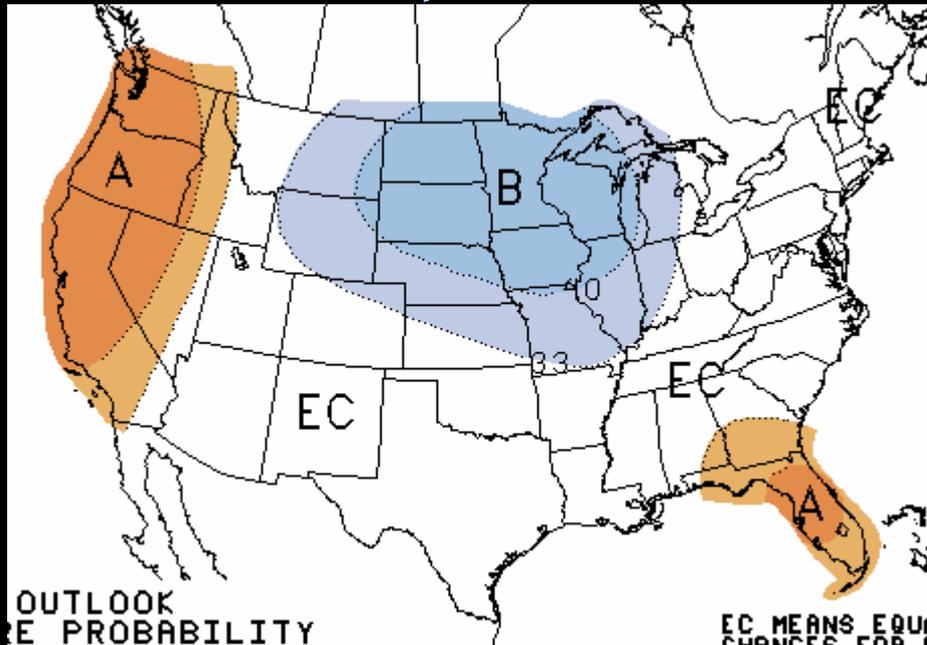


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August Outlook

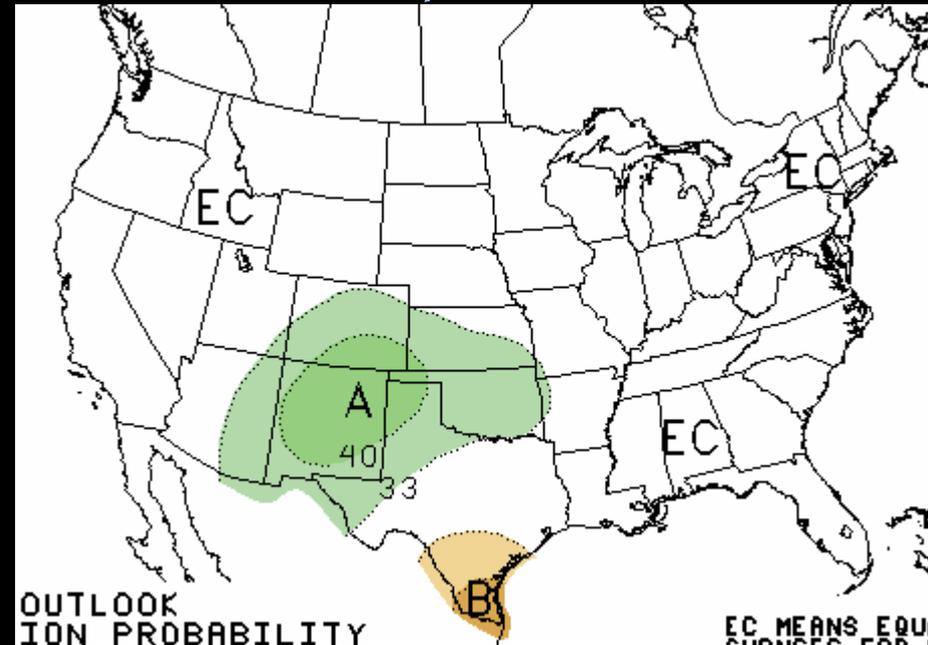
Updated July 31

Temperature



- 33% to 40% chance temperatures will be above normal extreme northwest
- 33% to 50% chance temperatures will be below normal eastern half

Precipitation



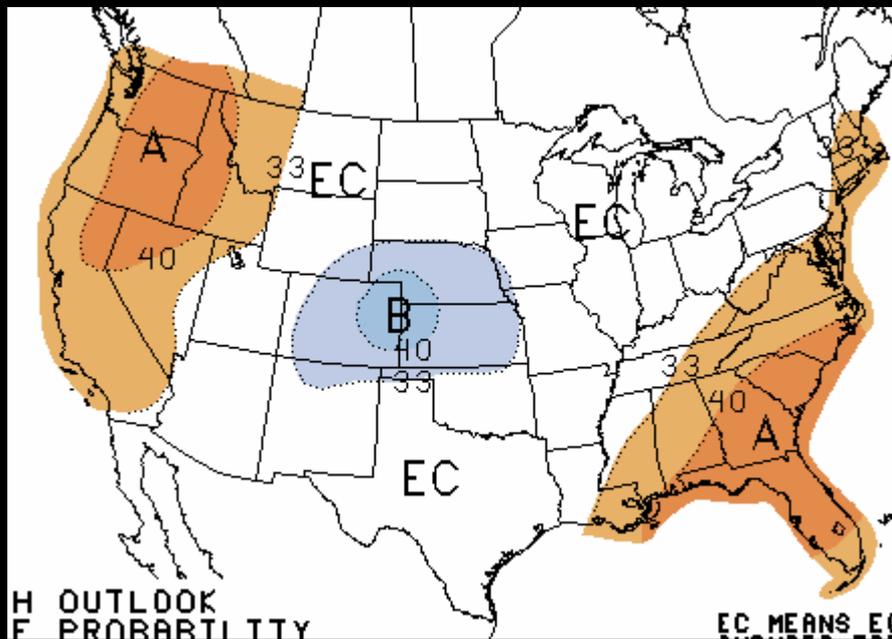
- Equal chances precipitation will be above, below or near normal across Montana



September – November Outlook

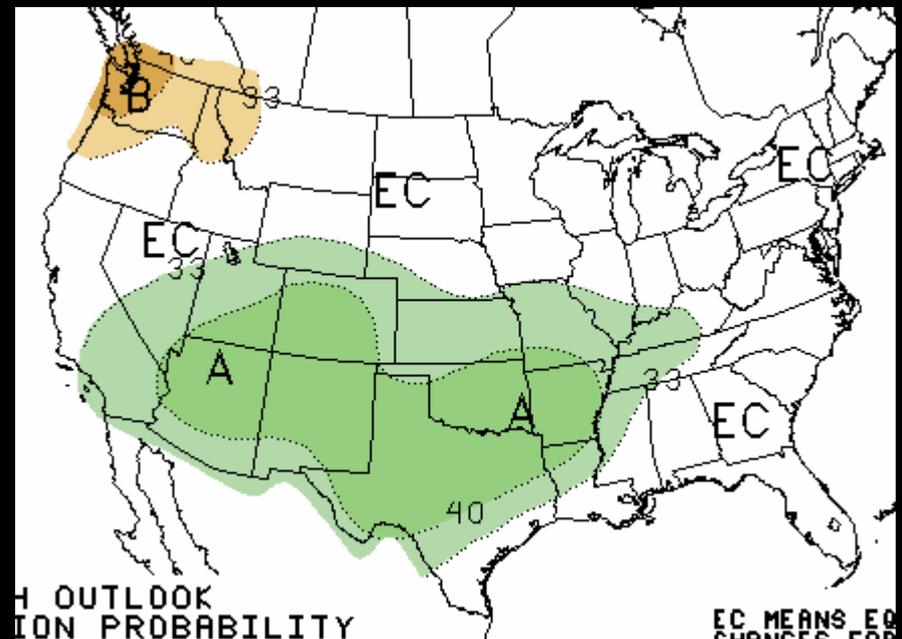
Updated July 17 – Next update August 21

Temperature



- 33% to 40% chance temperatures will be above normal western half of Montana

Precipitation

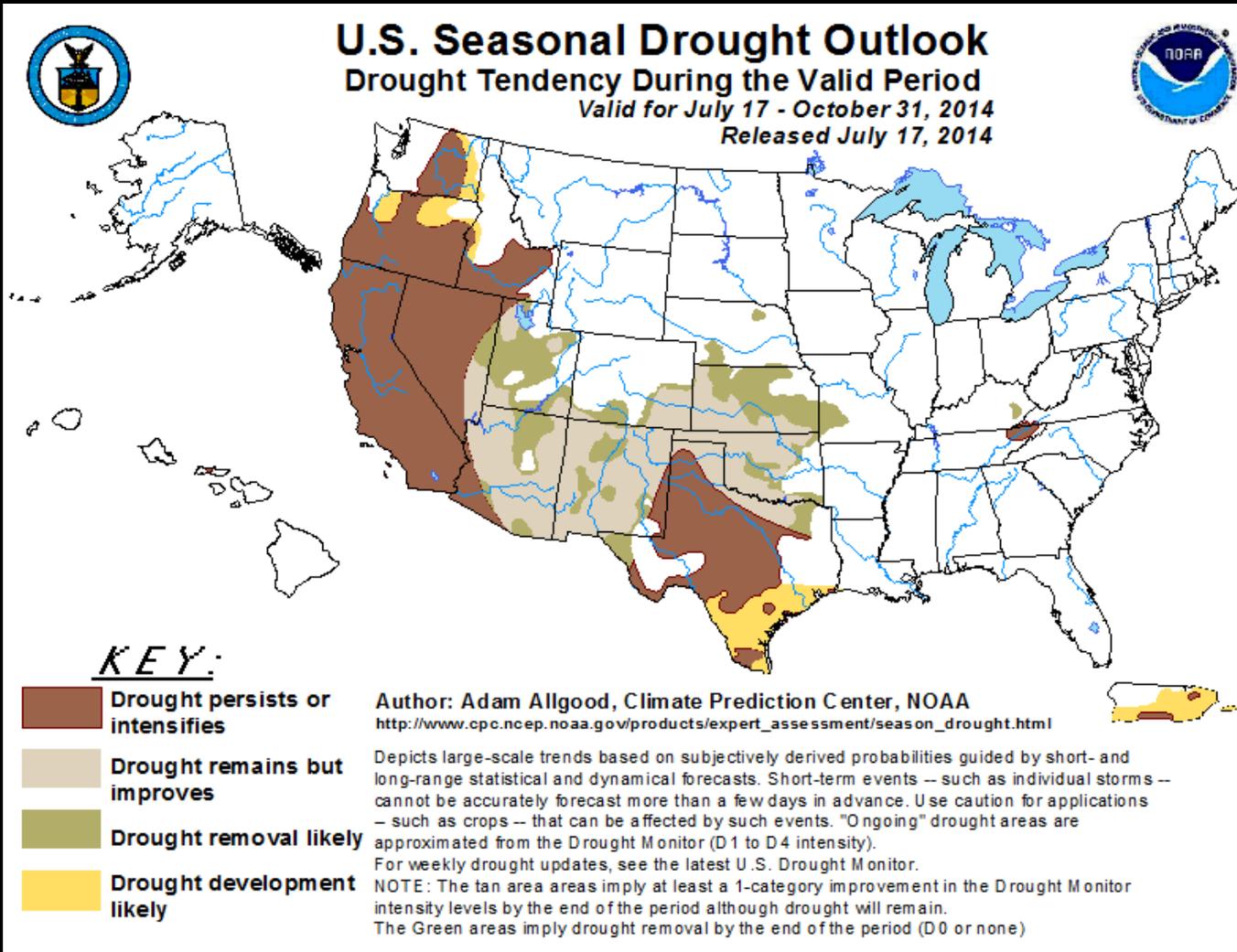


- 33% to 40% chance precipitation will be below normal west of the Divide



Drought Outlook through October

Issued July 17 – Next update August 21



- Drought area just to southwest of Montana expected to persist or intensify



NOAA - National Weather Service

In Summary...

- 💧 Mostly below to well below normal precipitation in July
 - *Prompted the expansion of drought conditions on both Montana and National Drought Monitor maps*
- 💧 Have see some increase in precipitation during August
 - *Convective precipitation (thunderstorms) so not widespread*
 - *More possible with shift in weather pattern*
- 💧 Climate Outlook for August (updated July 31) shows equal chances for above, below, or near normal precipitation across Montana.
- 💧 The September through November outlook (updated July 15) shows better chances for below normal precipitation west of the Divide
 - *Now 60% to 70% chance of El Niño developing through early winter*



weather.gov

weather.gov/billings

weather.gov/glasgow

weather.gov/missoula

weather.gov/greatfalls

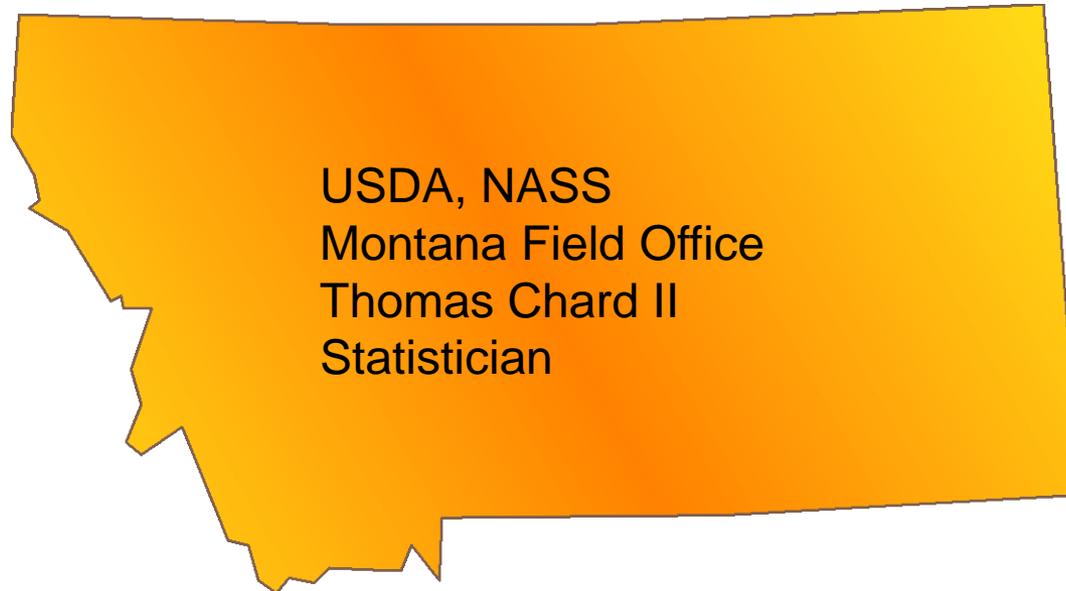


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Montana Drought & Water Supply Advisory Committee



Winter Wheat August 1 Montana Production Forecast

Total Production

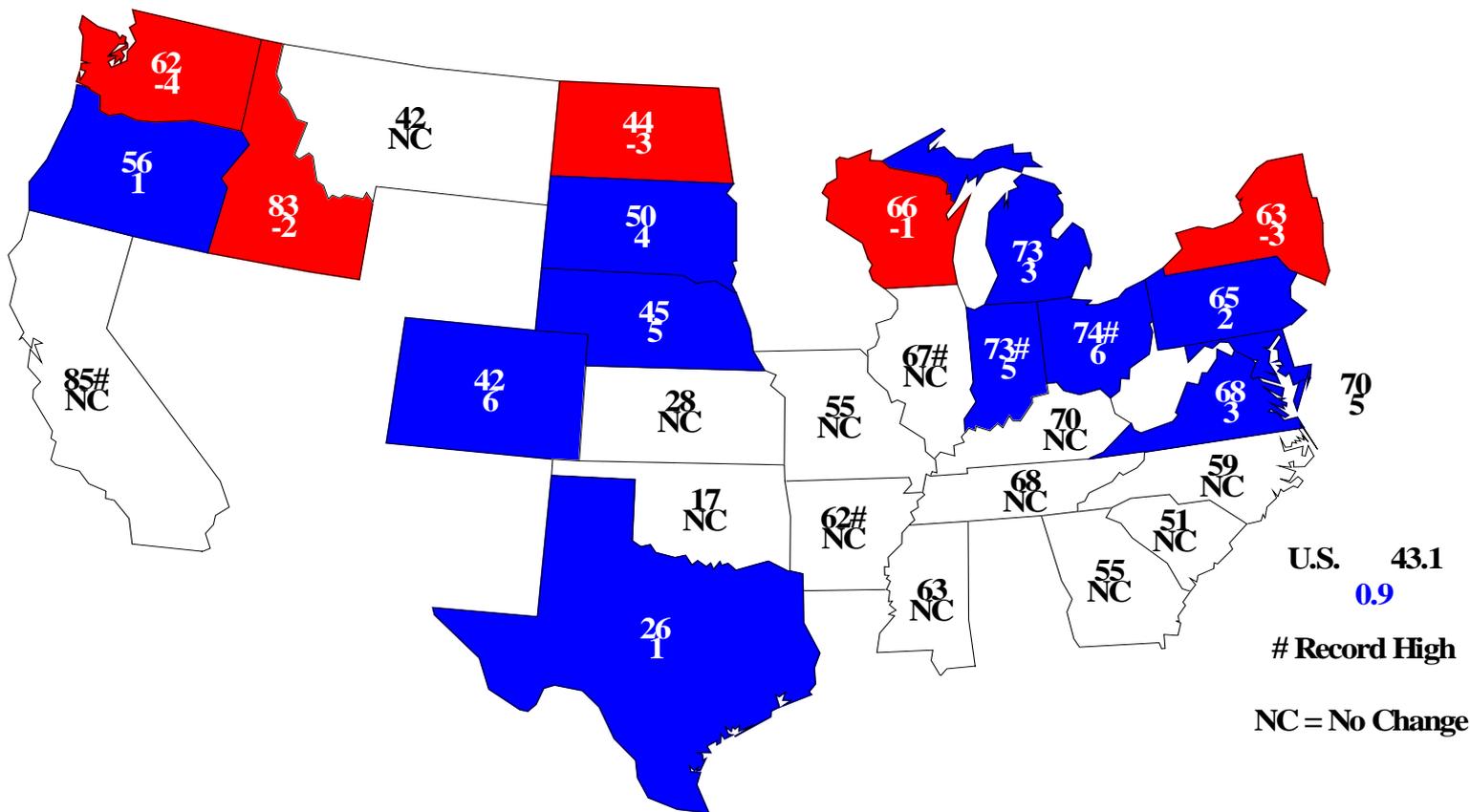
- 94.5 million bushels
- Up 16 percent from last year due higher harvested acreage

Yield

- Yield forecast is 42.0 bushels per acre
- Unchanged from July 1 forecast
- Down 1 bushel from last year

USDA Winter Wheat Yield - August 1, 2014

Bushels and Change From Previous Month



Spring Wheat August 1 Montana Production Forecast

Total Production

- 96.90 million bushels
- Down 7 percent from last year due to lower yield

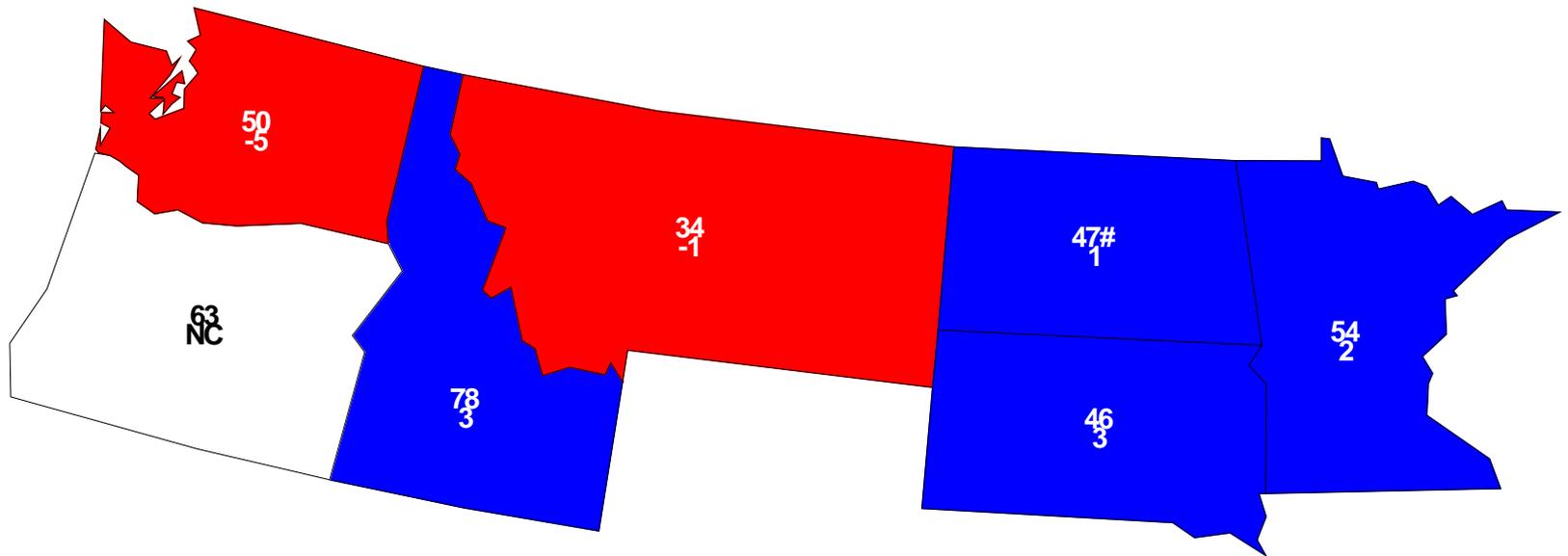
Yield

- 34.0 bushels per acre
- Down 1 bushel from July 1 forecast
- Down 3 bushels from last year



Other Spring Wheat Yield - August 1, 2014

Bushels and Change From Previous Month



U.S. 46.1
0.6

Record High

NC = No Change

Durum Wheat August 1 Montana Production Forecast

Total Production

- 14.79 million bushels
- Down 11 percent from last year due to lower acreage

Yield

- 34.0 bushels per acre
- Up 2 bushels from July 1 forecast
- Unchanged from last year

Barley August 1 Montana Production Forecast

Total Production

- 51.03 million bushels
- Up 14 percent due to higher yield

Yield

- 63.0 bushels per acre
- Up 3 bushels from July 1 forecast
- Up 9 bushels from last year

August 1, 2014 Montana Crop Production

Crop	Unit	Aug '14	% Chg from prev year
All Hay			
Harvested	(000) Ac	2,750	-2
Yield	Tons	1.97	+1
Production	(000)Tons	5,415	-1
Alfalfa Hay			
Harvested	(000) Ac	1,850	+3
Yield	Tons	2.1	-5
Production	(000)Tons	3,885	-2
Other Hay			
Harvested	(000) Ac	900	-10
Yield	Tons	1.7	+13
Production	(000)Tons	1,530	+2

August 1, 2014 Montana Crop Production

Crop	Unit	Aug '14	% Chg from prev year
Dry Beans			
Harvested	(000) Ac	39	+65
Yield	Lbs	2,200	+15
Production	(000)Cwt	858	+89
Sugarbeets			
Harvested	(000) Ac	44.5	+4
Yield	Tons	32.6	+12
Production	(000)Tons	1,451	+16

Crop Weather Report

Week Ending August 10, 2014

- Hot weather during the week with isolated thunderstorms
- Topsoil and subsoil moisture conditions are lower than last year and the five-year average.
- Summer range and pasture conditions lower than last year and the five-year average

Topsoil Moisture

Week Ending August 10, 2014

	This week	Last week	Last year	5-yr Avg
Very short	13%	11%	8%	14%
Short	40%	41%	36%	34%
Adequate	42%	42%	53%	49%
Surplus	5%	6%	3%	3%

Adequate and surplus condition is 47 percent. Below the 5 year average and last year.

Subsoil Moisture

Week Ending August 10, 2014

	This week	Last week	Last year	5-yr Avg
Very short	8%	8%	8%	13%
Short	41%	38%	32%	33%
Adequate	47%	49%	56%	52%
Surplus	4%	5%	4%	2%

Adequate and surplus condition is 51 percent. Below the 5 year average and last year.

Crop Progress Percent

Week Ending August 10, 2014

	This week	Last week	Last year	5-yr Avg
Winter Wheat harvested	65%	40%	50%	45%
Durum Wheat turning	49%	22%	49%	56%

Winter Wheat Crop Condition

Week Ending August 10, 2014

	Very poor	Poor	Fair	Good	Excellent
This week	1%	6%	27%	51%	15%
Last week	1%	7%	27%	50%	15%
Last year	2%	6%	23%	58%	11%
5-yr Avg	3%	9%	27%	48%	13%

Good and excellent condition is 66 percent. Above the 5 year average, but below last year.

Crop Progress Percent

Week Ending August 10, 2014

	This week	Last week	Last year	5-yr Avg
Spring Wheat				
turning	90%	73%	64%	66%
harvested	6%	na	3%	7%
Barley				
turning	94%	82%	96%	79%
harvested	21%	1%	22%	13%

Spring Wheat Crop Condition

Week Ending August 10, 2014

	Very poor	Poor	Fair	Good	Excellent
This week	1%	4%	38%	46%	11%
Last week	1%	4%	39%	45%	11%
Last year	3%	6%	24%	58%	9%
5-yr Avg	4%	8%	29%	49%	10%

Good and excellent condition is 57 percent. Below the 5 year average and last year.

Barley Crop Condition

Week Ending August 10, 2014

	Very poor	Poor	Fair	Good	Excellent
This week	0%	4%	41%	43%	12%
Last week	0%	4%	41%	43%	12%
Last year	4%	6%	29%	43%	18%
5-yr Avg	3%	8%	29%	45%	15%

Good and excellent condition is 55 percent. Below the 5 year average and last year.

Hay – Second Cutting

Week Ending August 10, 2014

	This week	Last week	Last year	5-yr Avg
Alfalfa				
Second Cutting	39%	19%	41%	35%
Other Hay				
Second Cutting	21%	6%	27%	23%

Range & Pasture Condition Percent Week Ending August 10, 2014

	Very poor- poor	Fair	Good	Excellent
This week	20%	35%	36%	9%
Last week	18%	35%	36%	11%
Last year	14%	29%	46%	11%
5-yr Avg	23%	29%	37%	11%

Good and excellent condition is 45 percent. Below the 5 year average and last year.

Summary

Week Ending August 10, 2014

- Winter wheat harvest is in full swing.
 - Spring small grain harvest is underway.
 - The second cutting of hay is well underway
 - Soil moisture and range conditions are down from last year and the 5 year average.
-
- The final Small Grains Summary will be released September 30, 2014.

USDA, NASS, Mountain Region: Montana Field Office

Thomas Chard II, Statistician

1-800-835-2612 or 406-441-1240

Email: nass-mt@nass.usda.gov

Montana Data available at following address:

http://www.nass.usda.gov/Statistics_by_State/Montana/index.asp

Governor's Drought & Water Supply Advisory Committee

Mountain Precipitation and Water Supply Report
August 14th, 2014

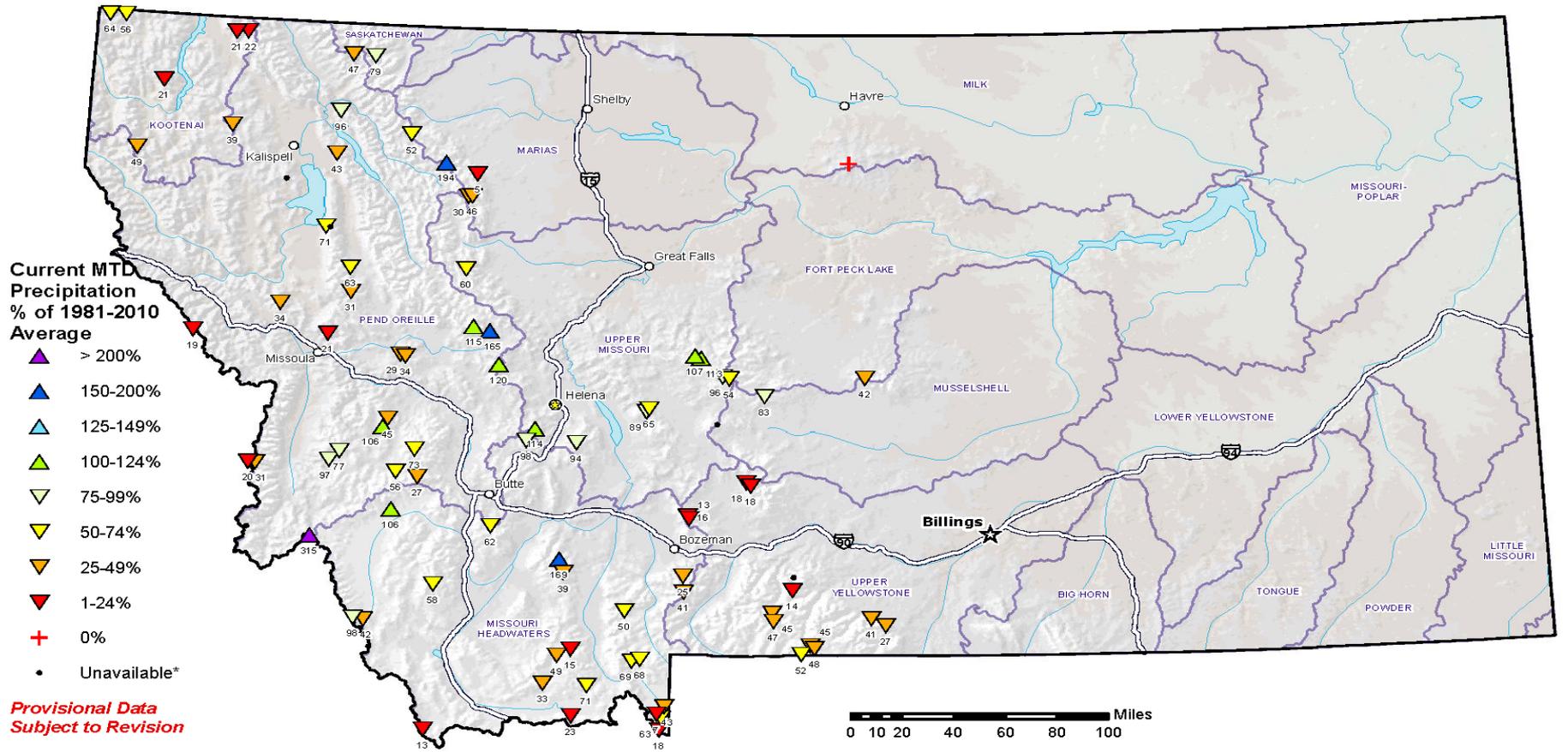
A man with a beard and sunglasses is sitting on the back of a dark utility vehicle. The vehicle's bed is filled with various pieces of equipment, including a large roll of orange corrugated pipe, a silver tarp, and several wooden poles. The vehicle is parked on a dirt road next to a field of tall green grass. In the background, there are trees and mountains under a cloudy sky.

Lucas Zukiewicz
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USDA NRCS Montana Snow Surveys
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(406) 587-6843
<http://www.nrcs.usda.gov/wps/portal/nrcs/main/mt/snow/>

Photo: SNOTEL system
annual maintenance
Wind River Range, WY

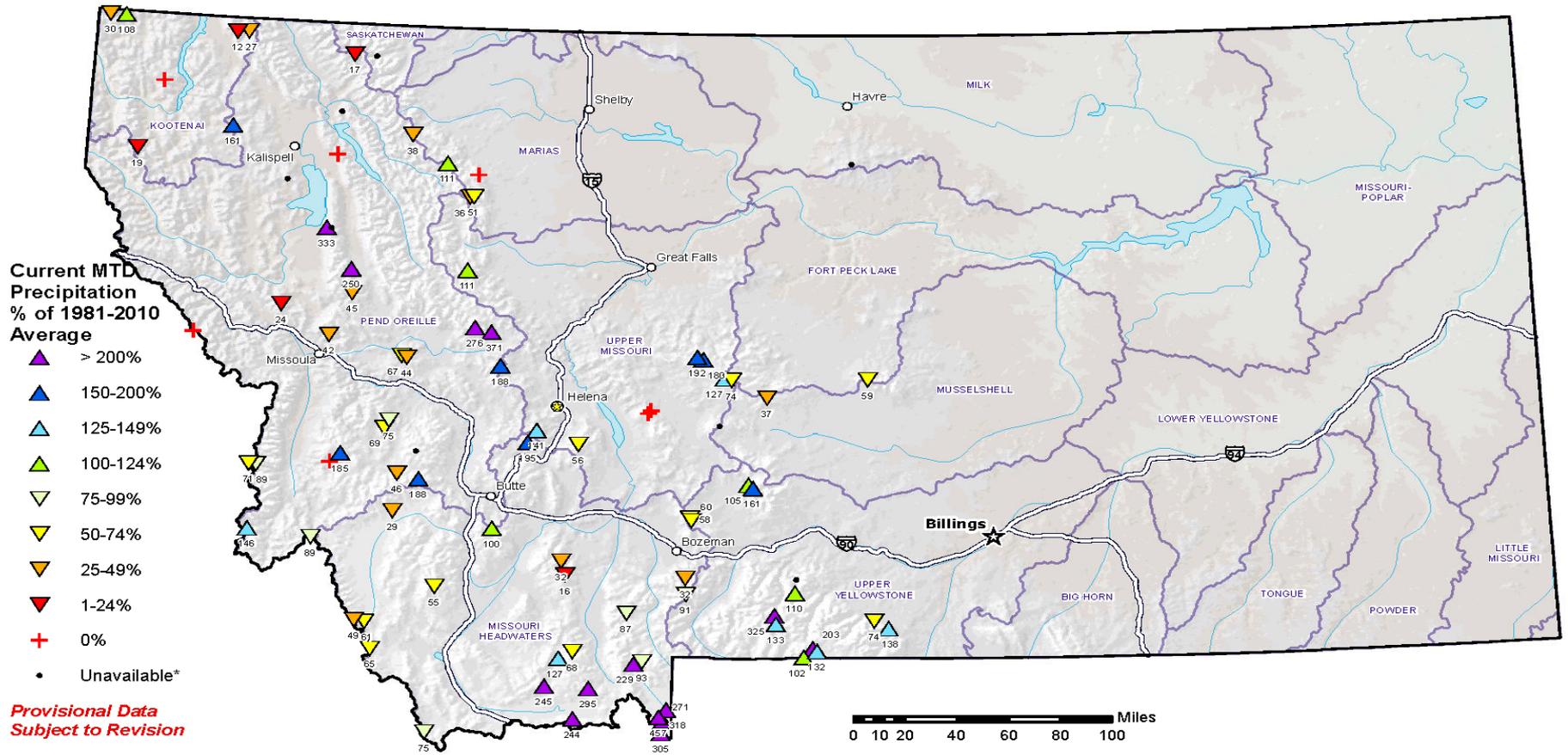
Montana SNOTEL Month to Date (MTD) Precipitation % of Normal

Aug 01, 2014



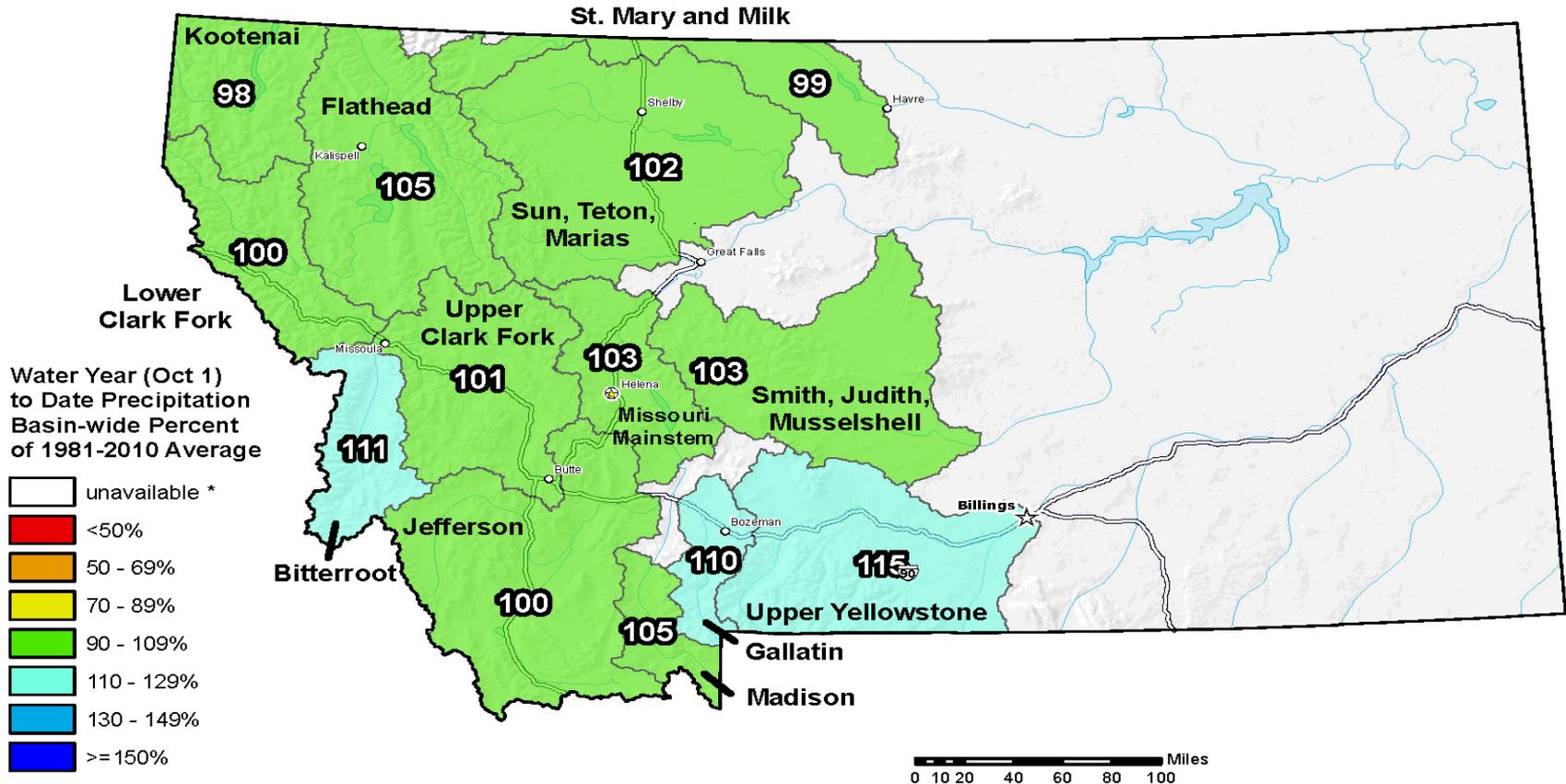
Montana SNOTEL Month to Date (MTD) Precipitation % of Normal

Aug 13, 2014



Montana SNOTEL Water Year (Oct 1) to Date Precipitation % of Normal

Aug 13, 2014



* Data unavailable at time of posting or measurement is not representative at this time of year

*Provisional Data
Subject to Revision*

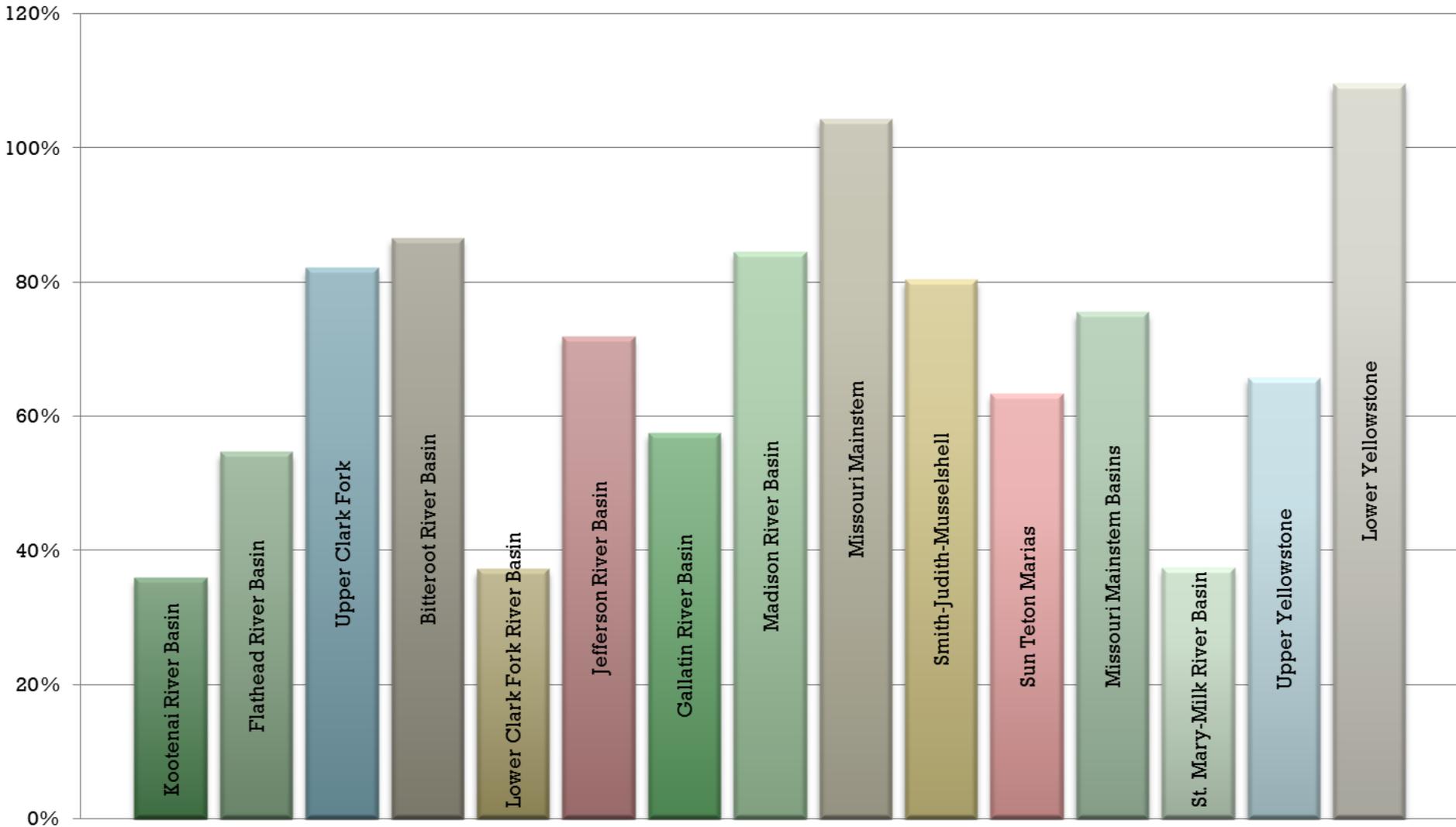
Montana Snow Survey



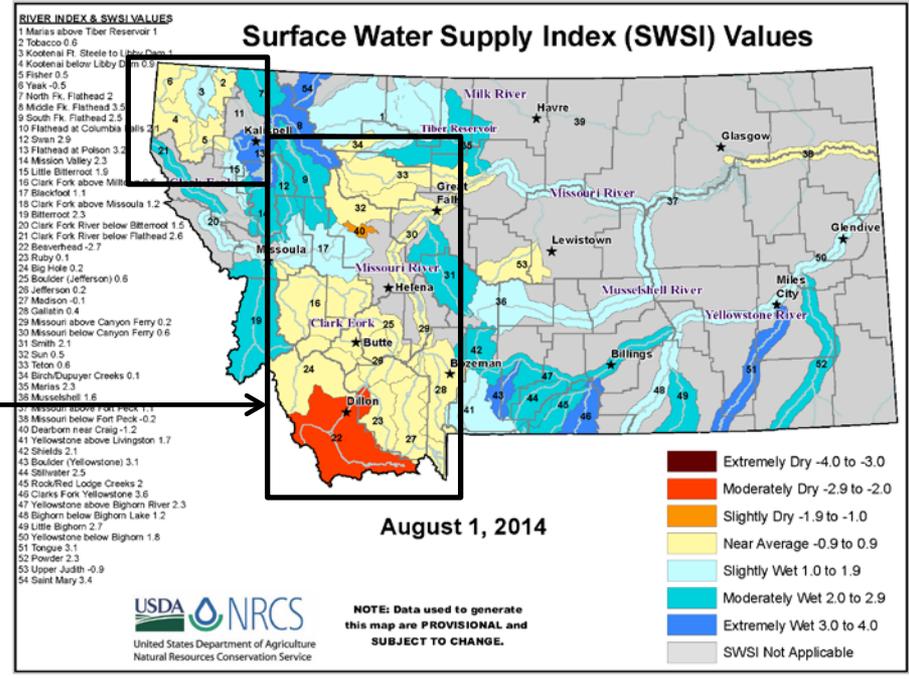
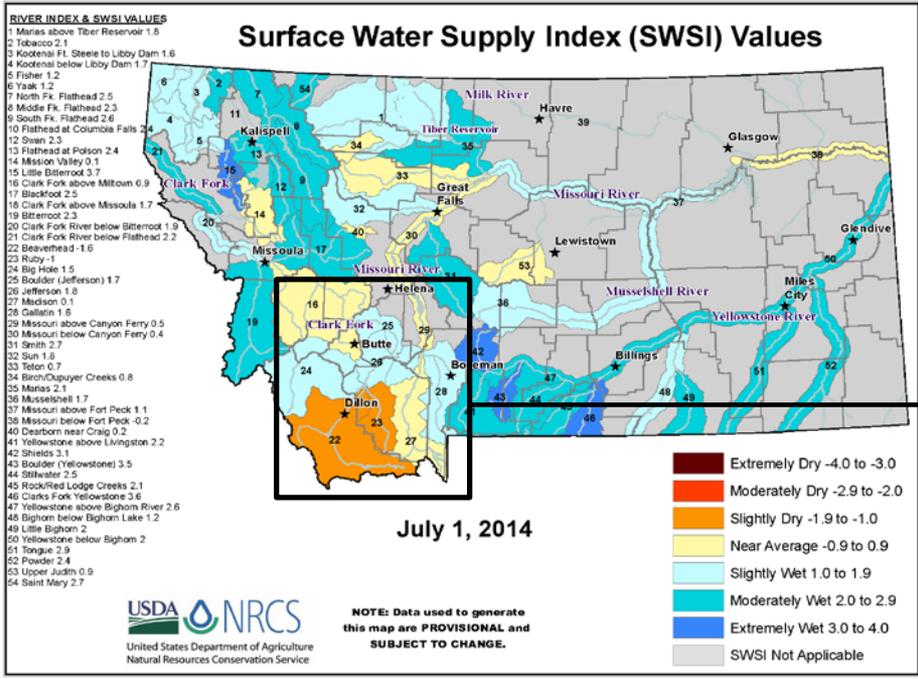
Percentage of Average Precipitation

Data from SNOTEL sites only

7/1/2014 to 8/13/2014



Montana Snow Survey



SWSI Trends

- Moderately dry conditions are being experienced in the headwaters of the Jefferson River basin in the Beaverhead drainage.
- Overall, surface water supply and storage has been adequate this summer.
- Some rivers are approaching low flows thresholds in some areas.

Low Flow Forecasts

Blackfoot River at Bonner Updated August 4th, 2014.

Future Precipitation Conditions	Well Below Average	Below Average	Average	Above Average	Well Above Average
Expected to reach 700 cfs on	17-Aug	26-Aug	1-Sep	7-Sep	16-Sep

Big Hole River near Wisdom Updated August 4th, 2014.

Future Precipitation Conditions	Well Below Average	Below Average	Average	Above Average	Well Above Average
Expected to reach 60 cfs on	30-Jul	4-Aug	7-Aug	11-Aug	15-Aug

Big Hole River near Melrose Updated August 4th, 2014.

Future Precipitation Conditions	Well Below Average	Below Average	Average	Above Average	Well Above Average
Expected to reach 250 cfs on	11-Aug	21-Aug	26-Aug	1-Sep	9-Sep

Smith River Below Eagle Creek near Fort Logan Updated August 4th, 2014.

Future Precipitation Conditions	Well Below Average	Below Average	Average	Above Average	Well Above Average
Expected to reach 100 cfs on	17-Jul	5-Aug	17-Aug	30-Aug	17-Sep

Dearborn River near Craig Updated August 11th, 2014.

Future Precipitation Conditions	Well Below Average	Below Average	Average	Above Average	Well Above Average
Expected to reach 40 cfs on	14-Aug	20-Aug	24-Aug	28-Aug	2-Sep

Gallatin River near Gateway Updated August 6th, 2014.

Future Precipitation Conditions	Well Below Average	Below Average	Average	Above Average	Well Above Average
Expected to reach 600 cfs on	7-Aug	14-Aug	18-Aug	23-Aug	30-Aug

Jefferson River near Twin Bridges Updated August 4th, 2014..

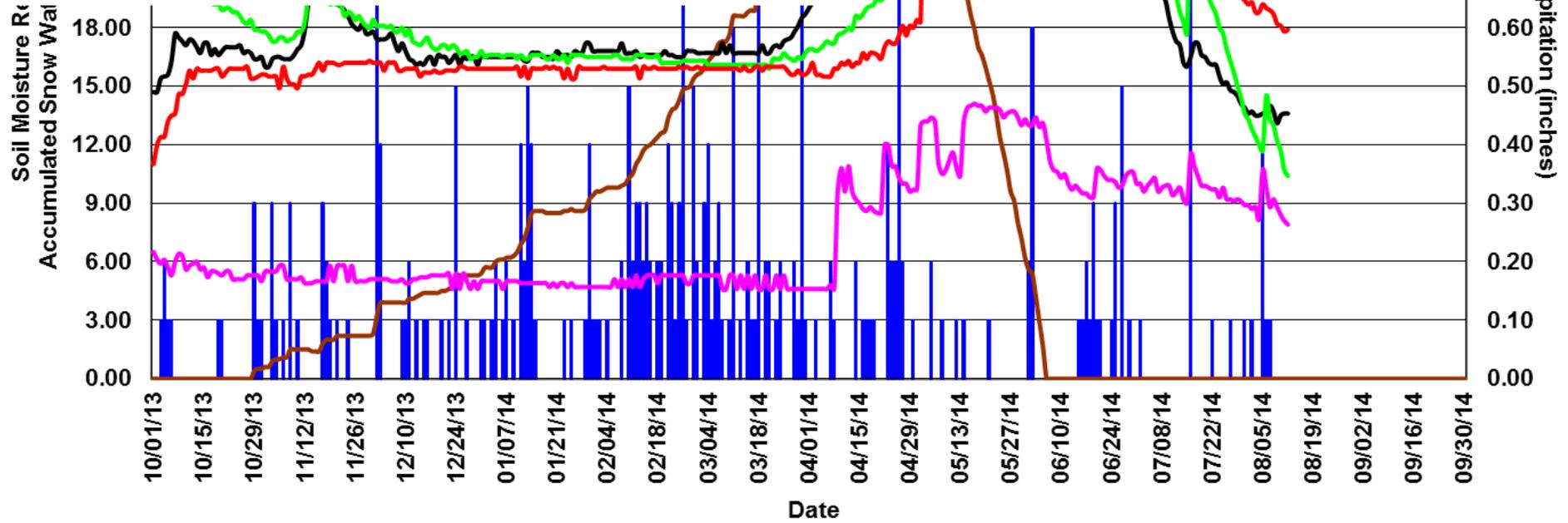
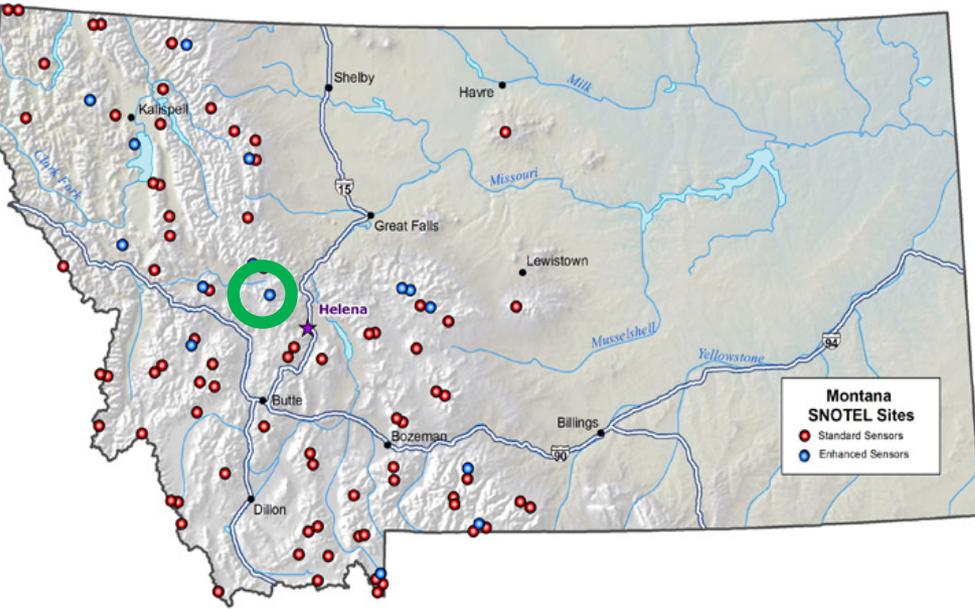
Future Precipitation Conditions	Well Below Average	Below Average	Average	Above Average	Well Above Average
Expected to reach 600 cfs on	31-Jul	8-Aug	13-Aug	18-Aug	26-Aug

Montana Snow Survey

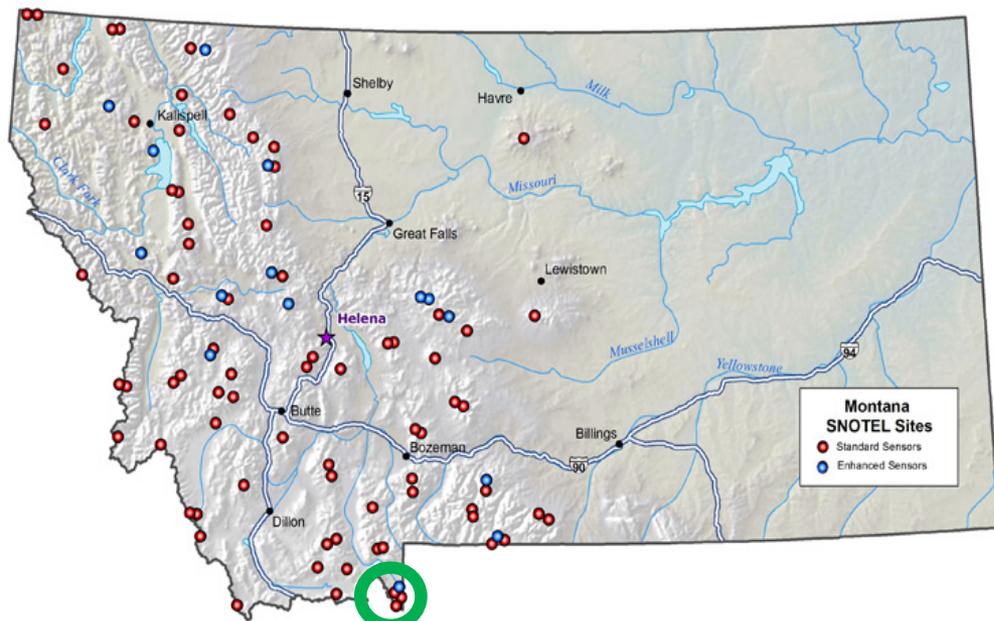


Water Year 2014
ponse Data

— Avg 8" SMR
 — Avg 20" SMR
 — Avg 40" SMR

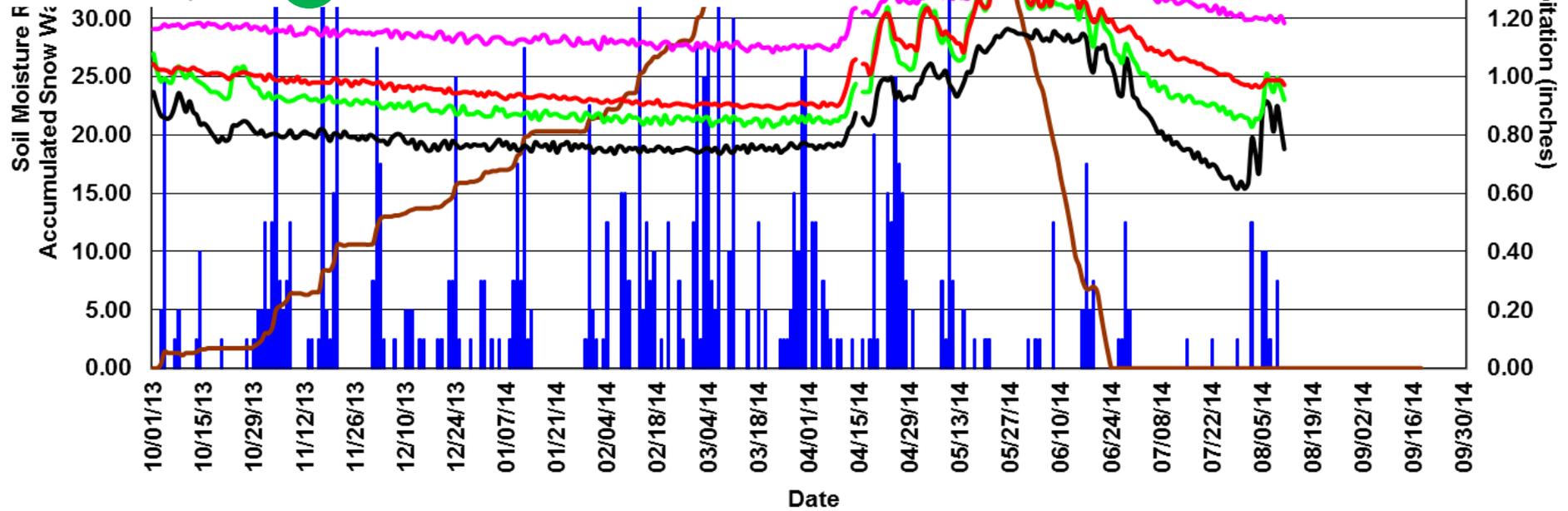


Montana Snow Survey

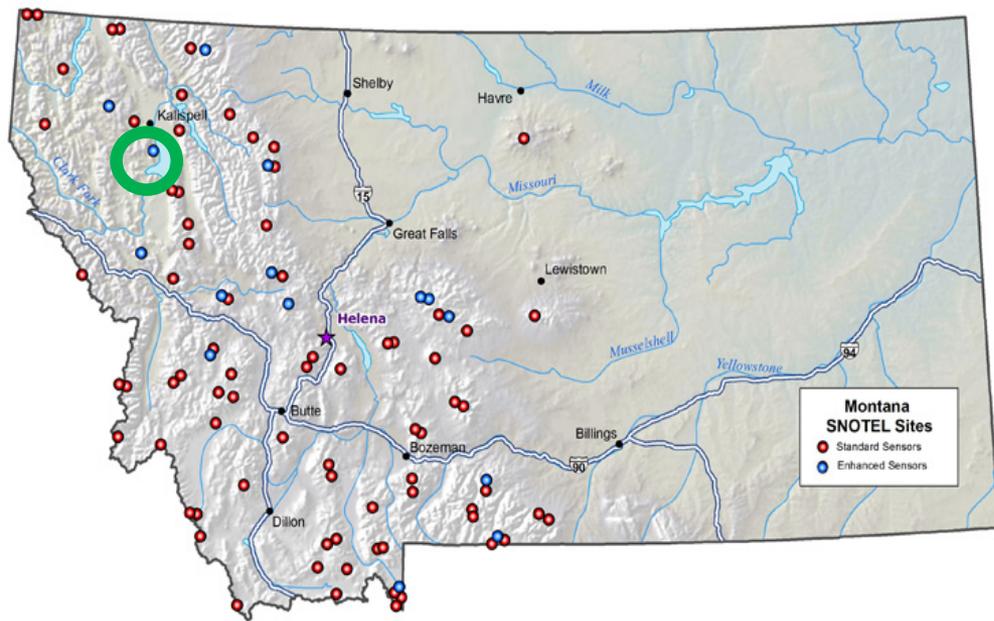


Vater Year 2014
ponse Data

— Avg 8" SMR
 — Avg 20" SMR
 — Avg 40" SMR

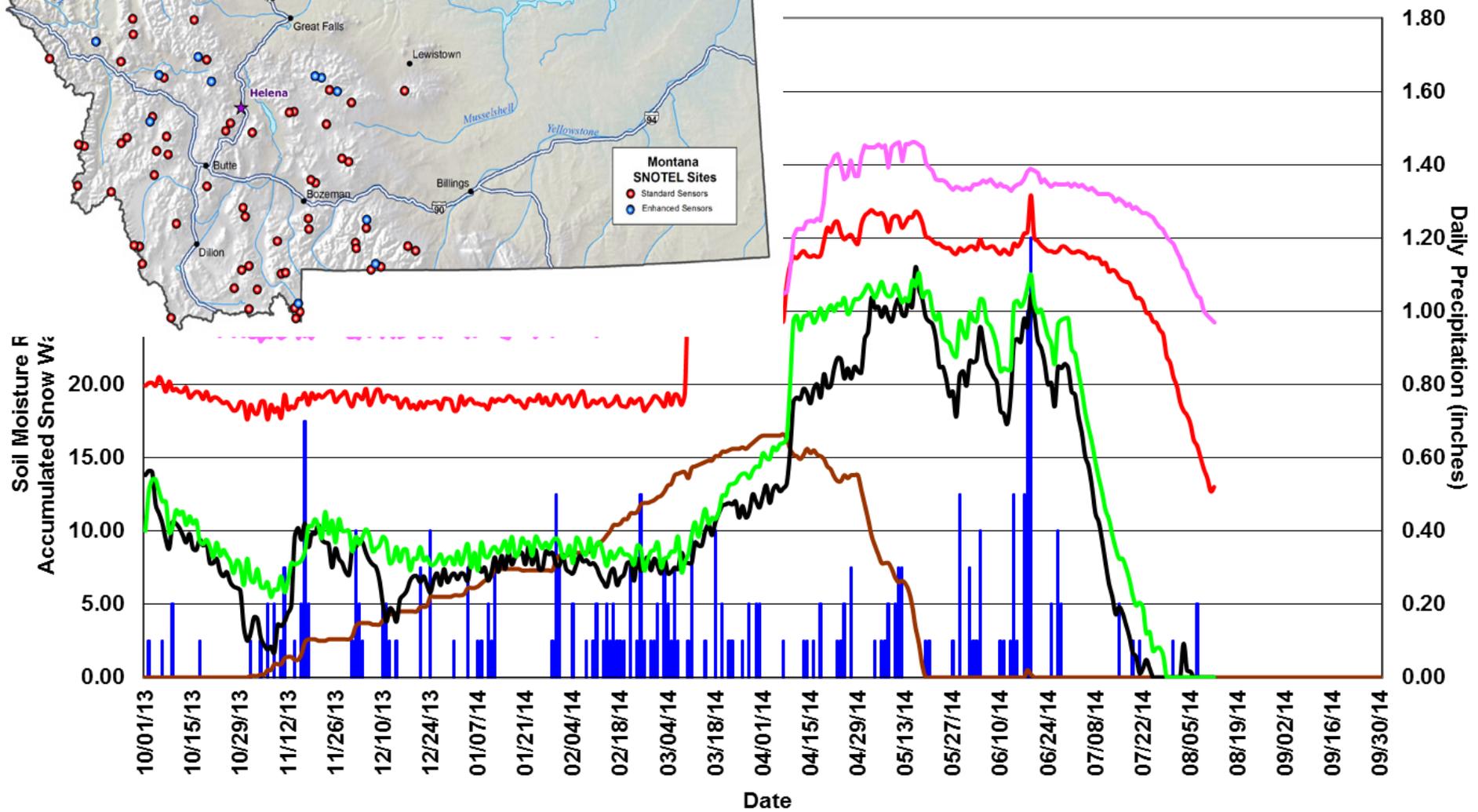


Montana Snow Survey

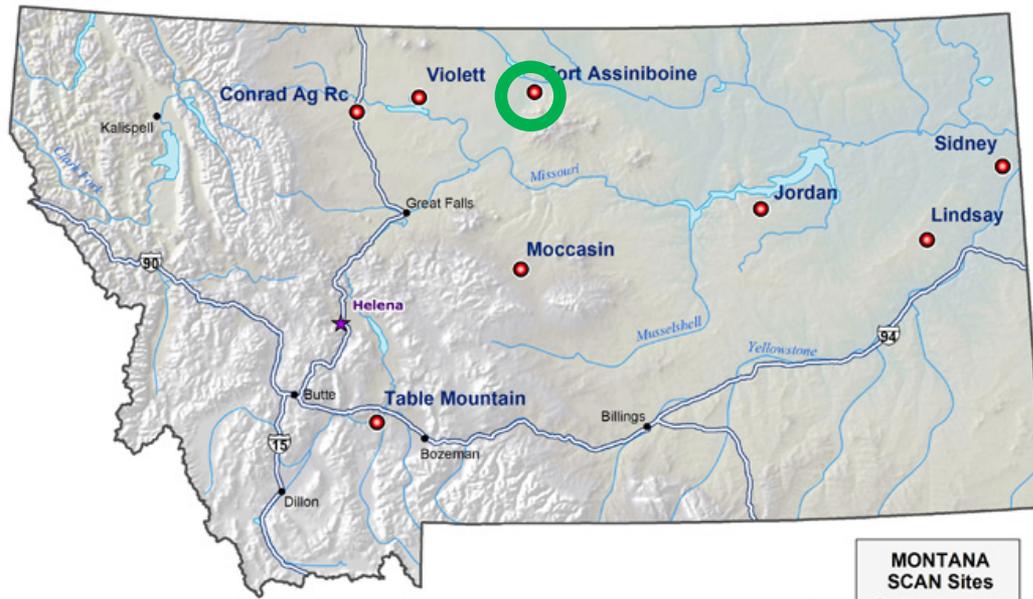


- Water Year 2014
 sponse Data

— Avg 8" SMR — Avg 20" SMR — Avg 40" SMR



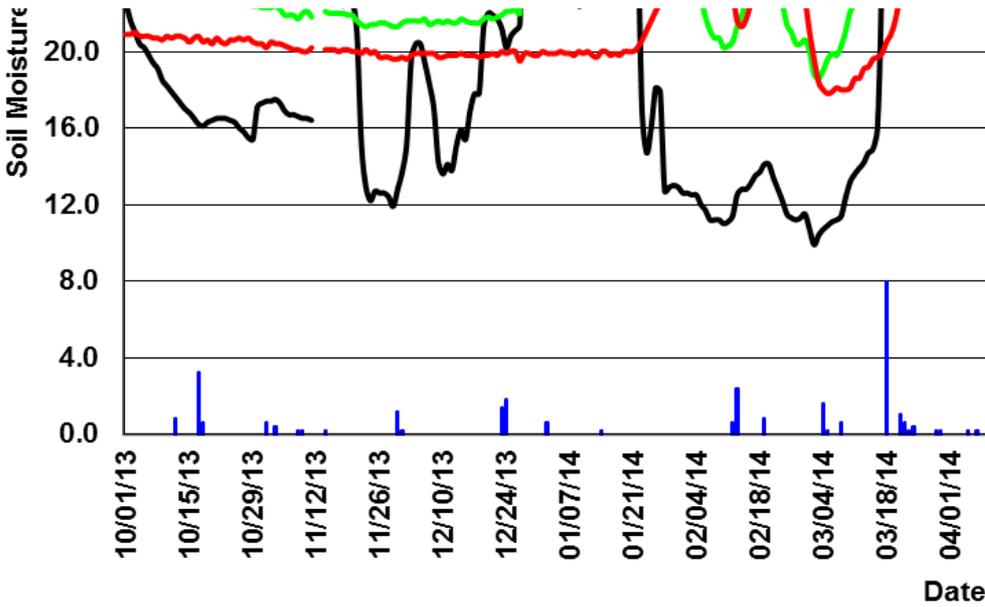
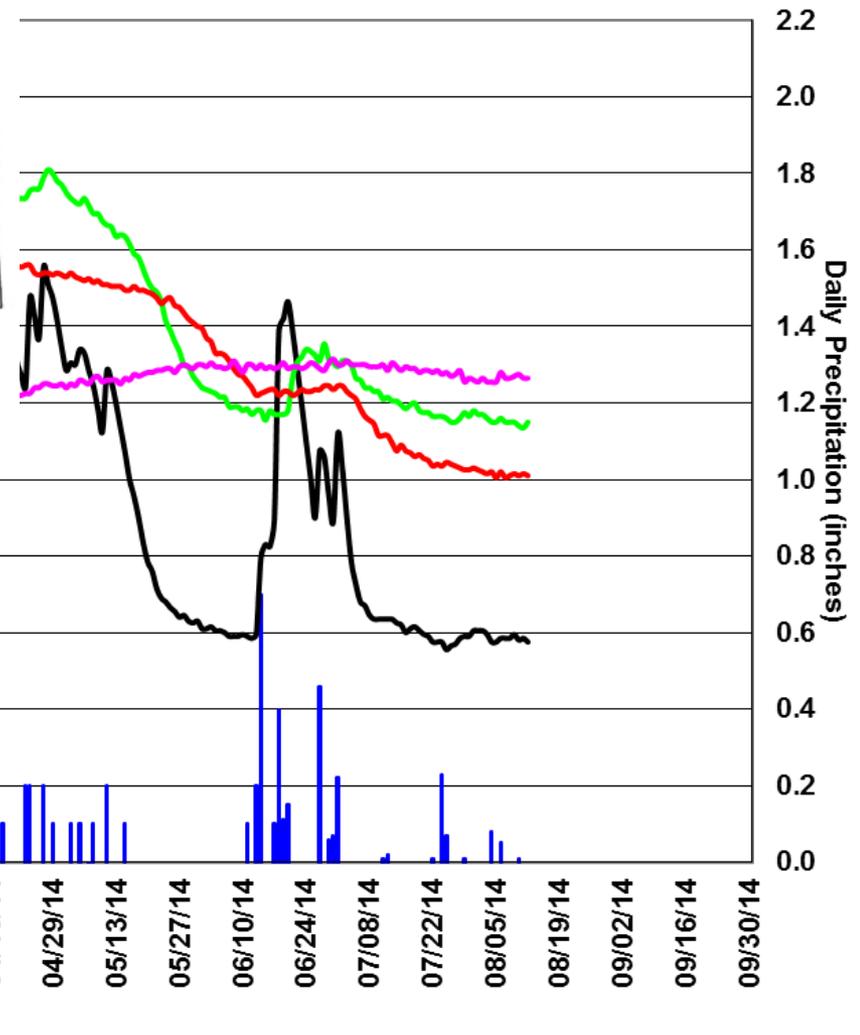
Montana Snow Survey



MONTANA SCAN Sites
 ● Real-time Data

Winter Year 2014
 Base Data

— Avg 20" SMR — Avg 40" SMR

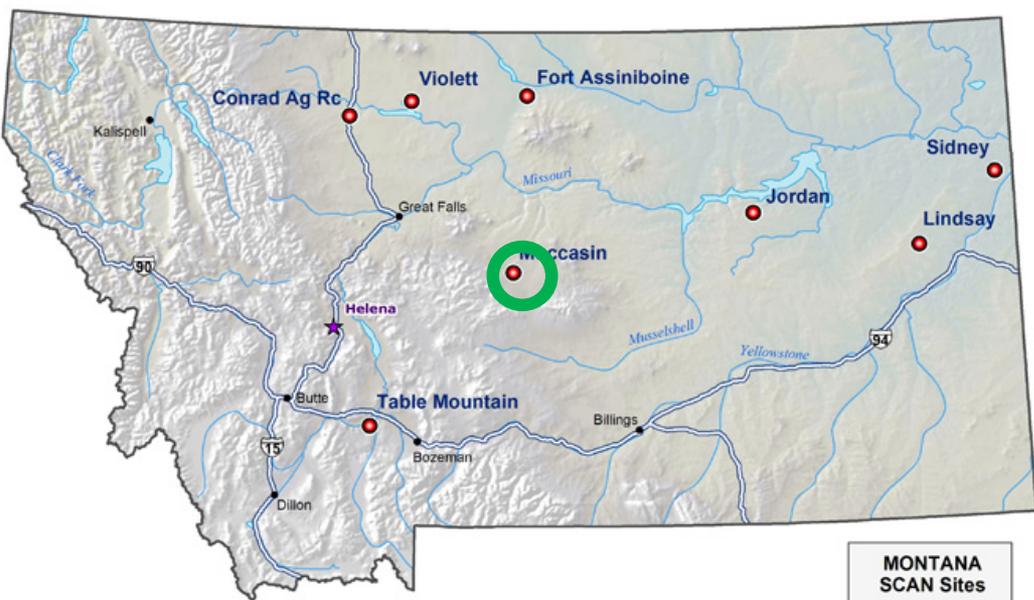


Montana Snow Survey

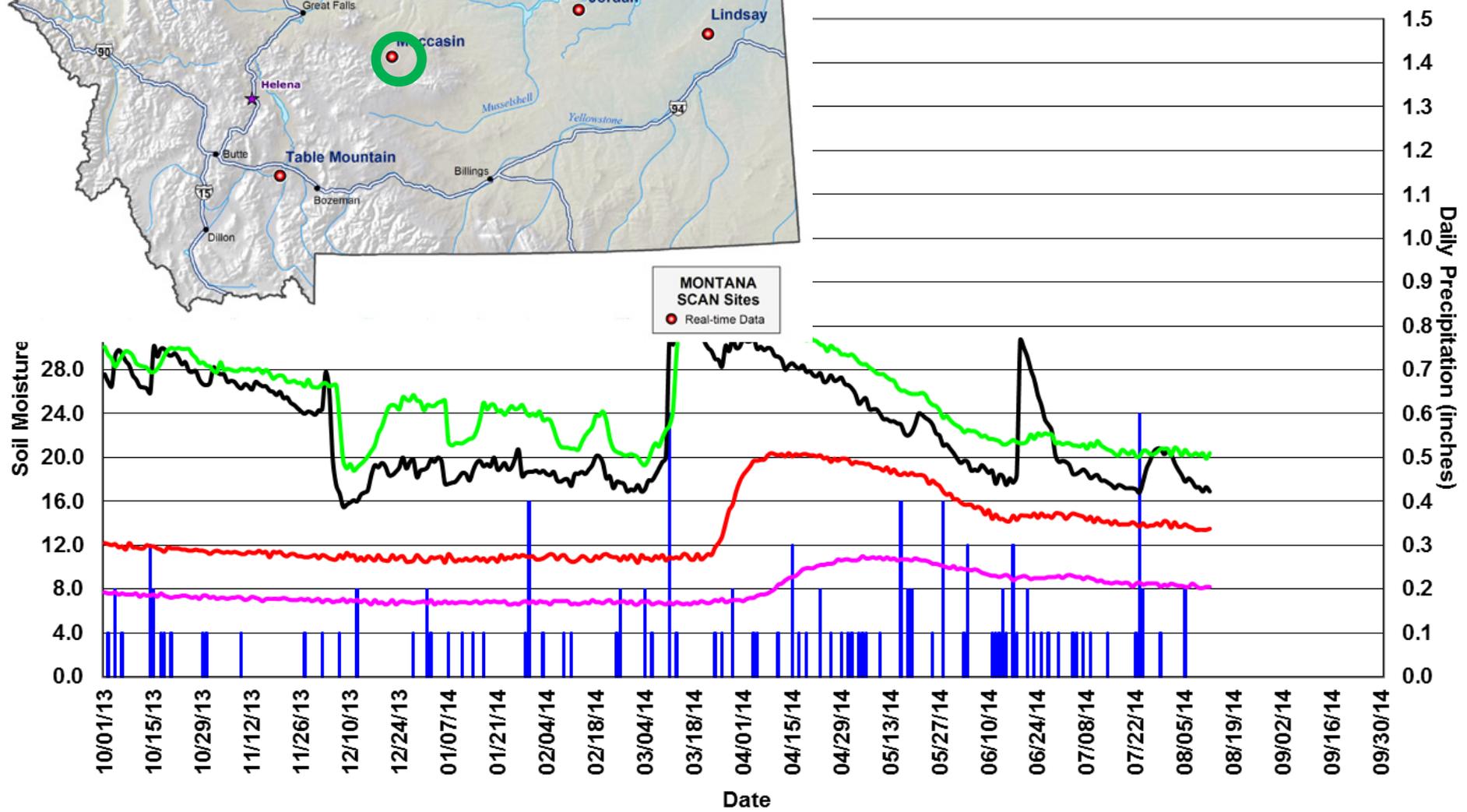


Year 2014
Real-time Data

— Avg 20" SMR — Avg 40" SMR



MONTANA
SCAN Sites
● Real-time Data

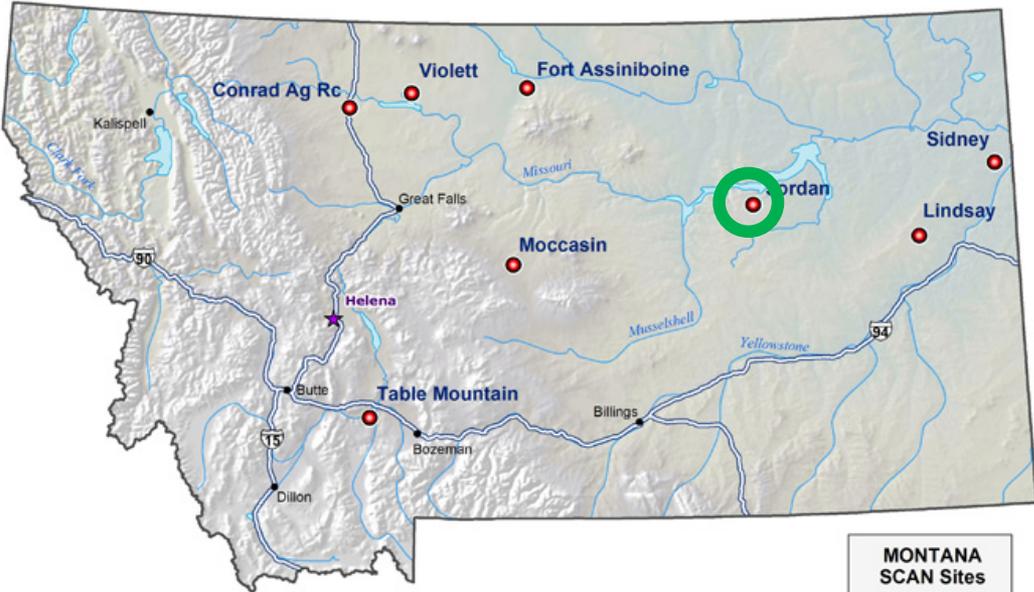


Montana Snow Survey

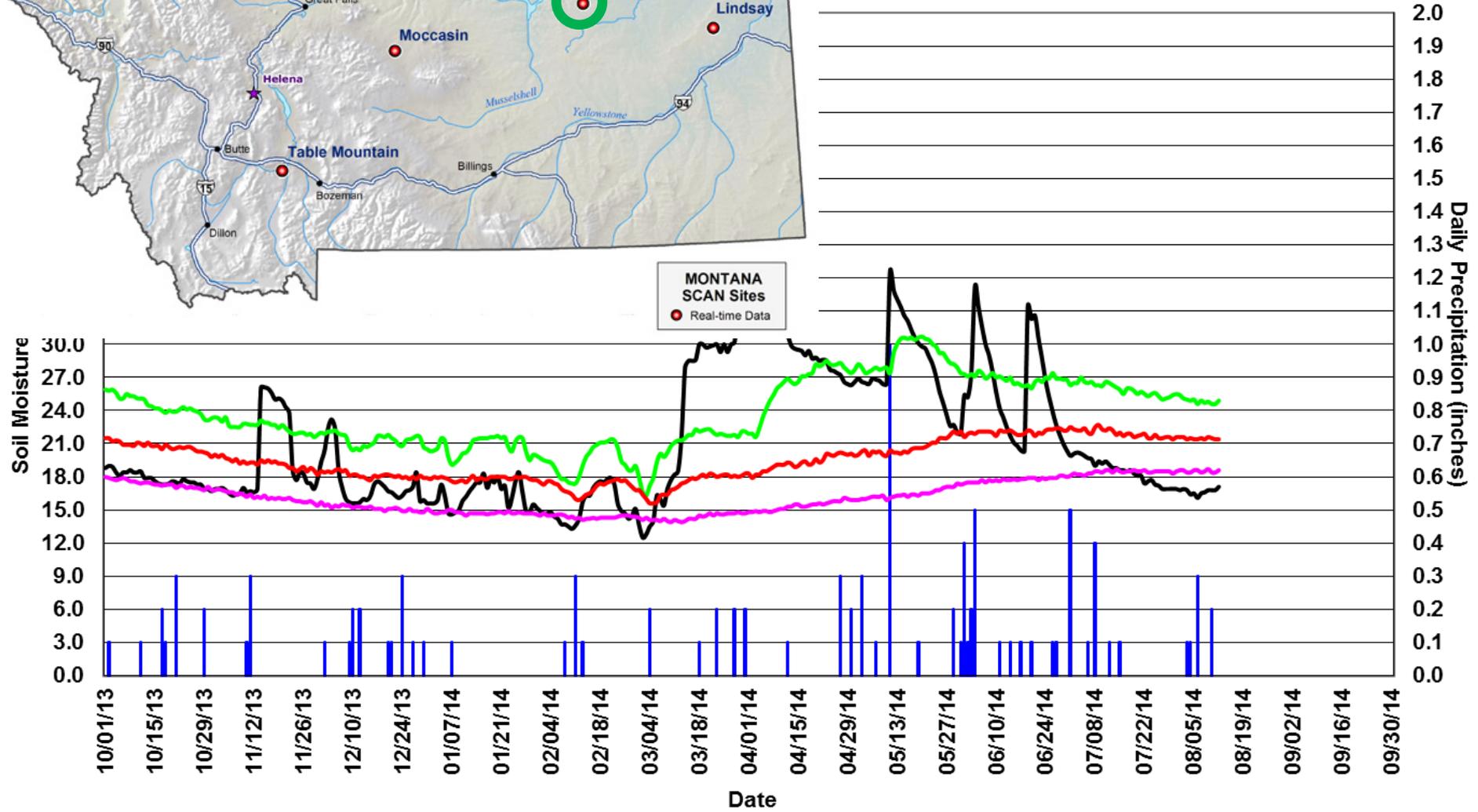


Year 2014
Real-time Data

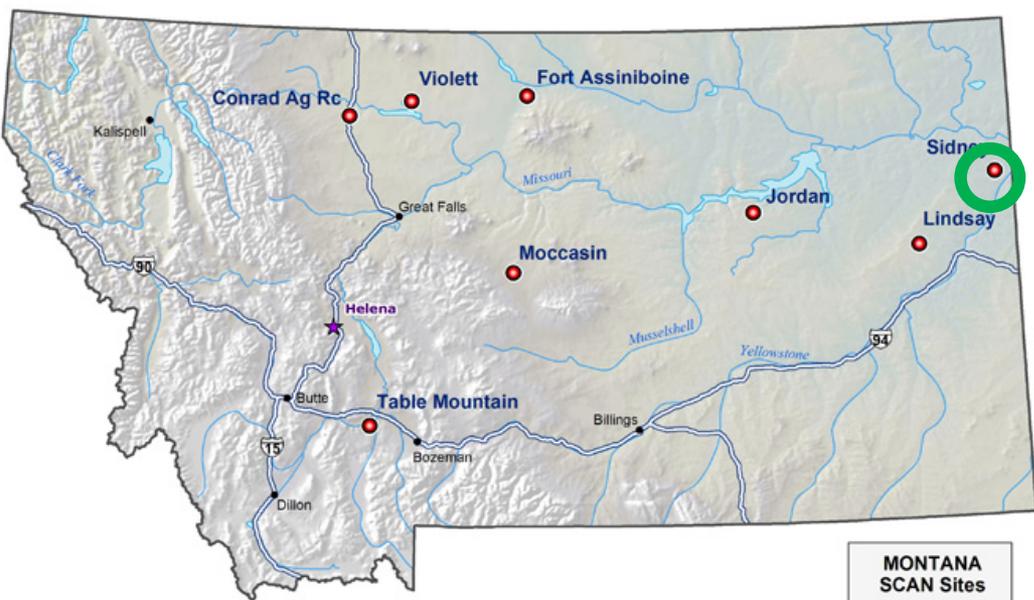
— Avg 20" SMR — Avg 40" SMR



MONTANA SCAN Sites
● Real-time Data

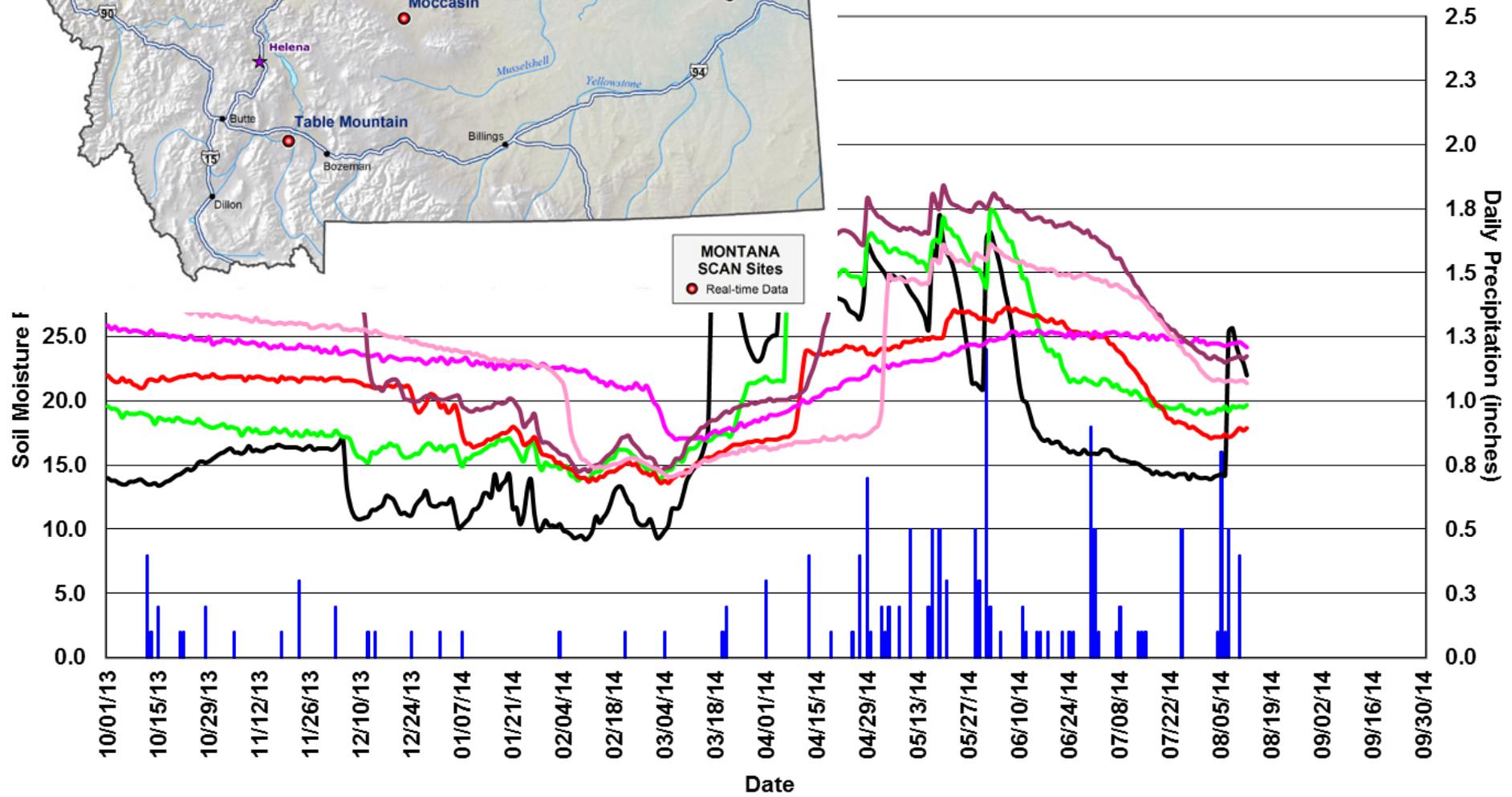


Montana Snow Survey



Year 2014
Real-time Data

Grass Avg 8" SMR (Green line)
Grass Avg 20" SMR (Red line)
Field Avg 40" SMR (Black line)



Summary

- Mountain precipitation has been well below average in most mountain locations since July 1st, 2014.
- Water year to date precipitation values have stayed near average due to abundance of winter precipitation
 - Summer months are not climatologically favored for precipitation in the mountains
- Surface Water Supply Indices (SWSI) have dropped since July 1st due to the lack of precipitation, reduction in reservoir storage due to demand, and in stream flows reaching their annual low flows on natural river and stream systems
 - Beaverhead River basin in SW MT has been dropped to the “Moderately Dry” category and should be monitored
- Soil moisture has peaked in the mountains and valleys and has been declining due to lack of precipitation.

Governor's Drought & Water Supply Advisory Committee

Snow Survey and Water Supply Report
August 14th, 2014

For More Information on Mountain Precipitation, Water Supply and SCAN

USDA-NRCS Montana Snow Survey

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/mt/snow/>

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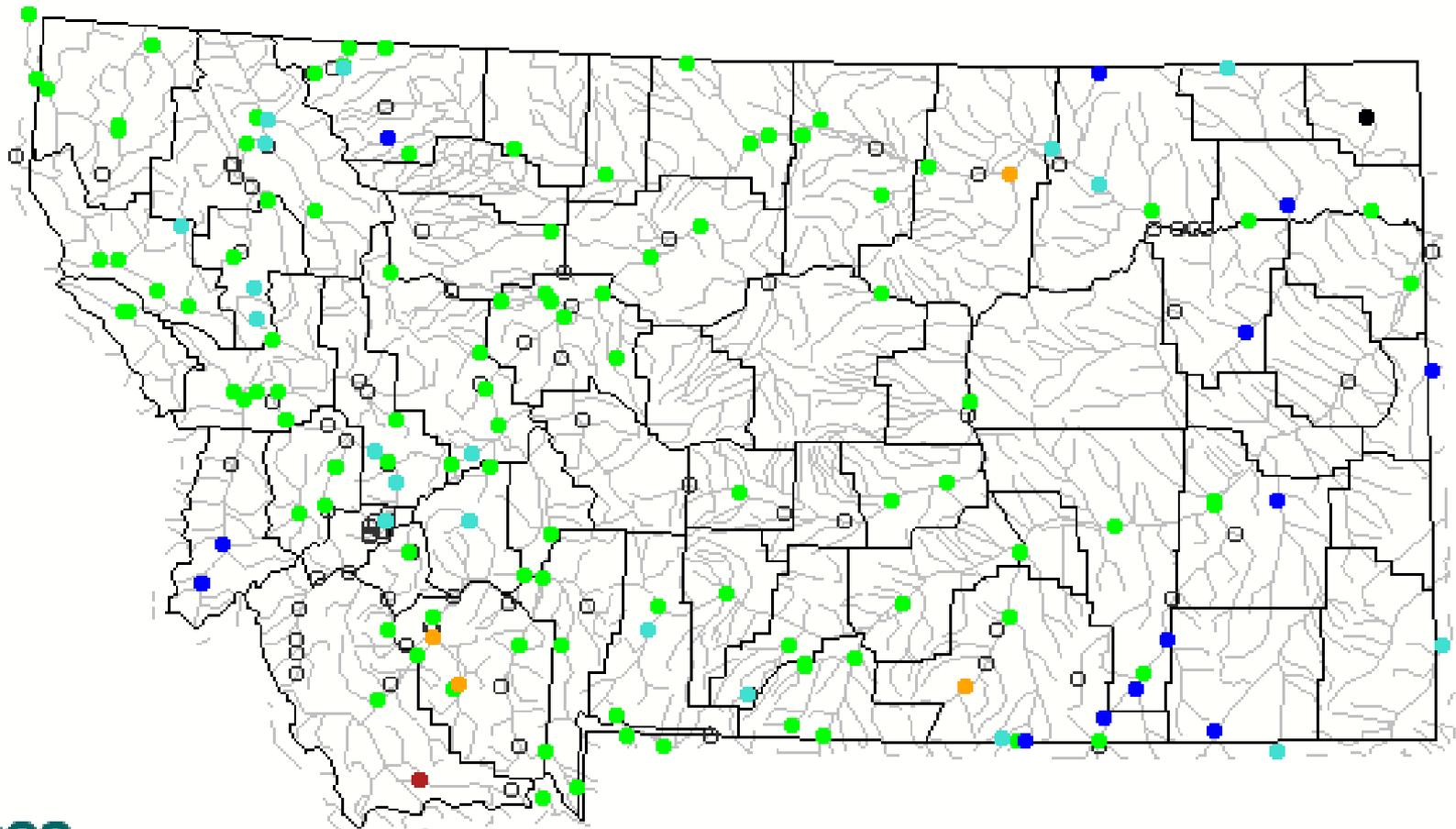
Individuals who are deaf, hard of hearing or have speech disabilities and you wish to file either an EEO or program complaint please contact USDA through the Federal Relay Service at (800) 877-8339 or (800) 845-6136 (in Spanish). Persons with disabilities, who wish to file a program complaint, please see information above on how to contact us by mail or by email. If you require alternative means of communication for program information (e.g., Braille, large print, audiotape, etc.), please contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

USGS Streamflows, August 2014



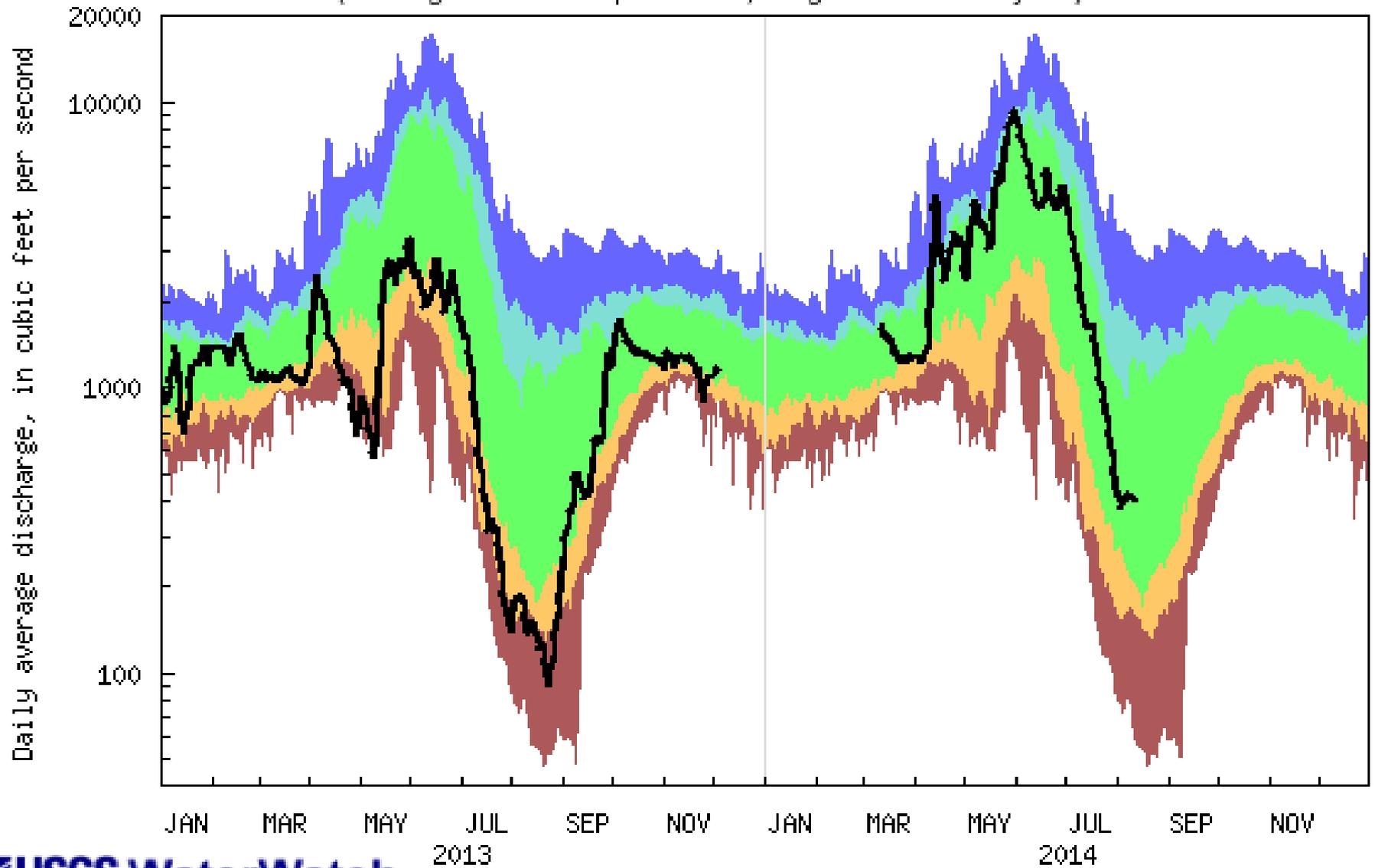
DAILY STREAMFLOW CONDITIONS

Wednesday, August 13, 2014 11:30ET



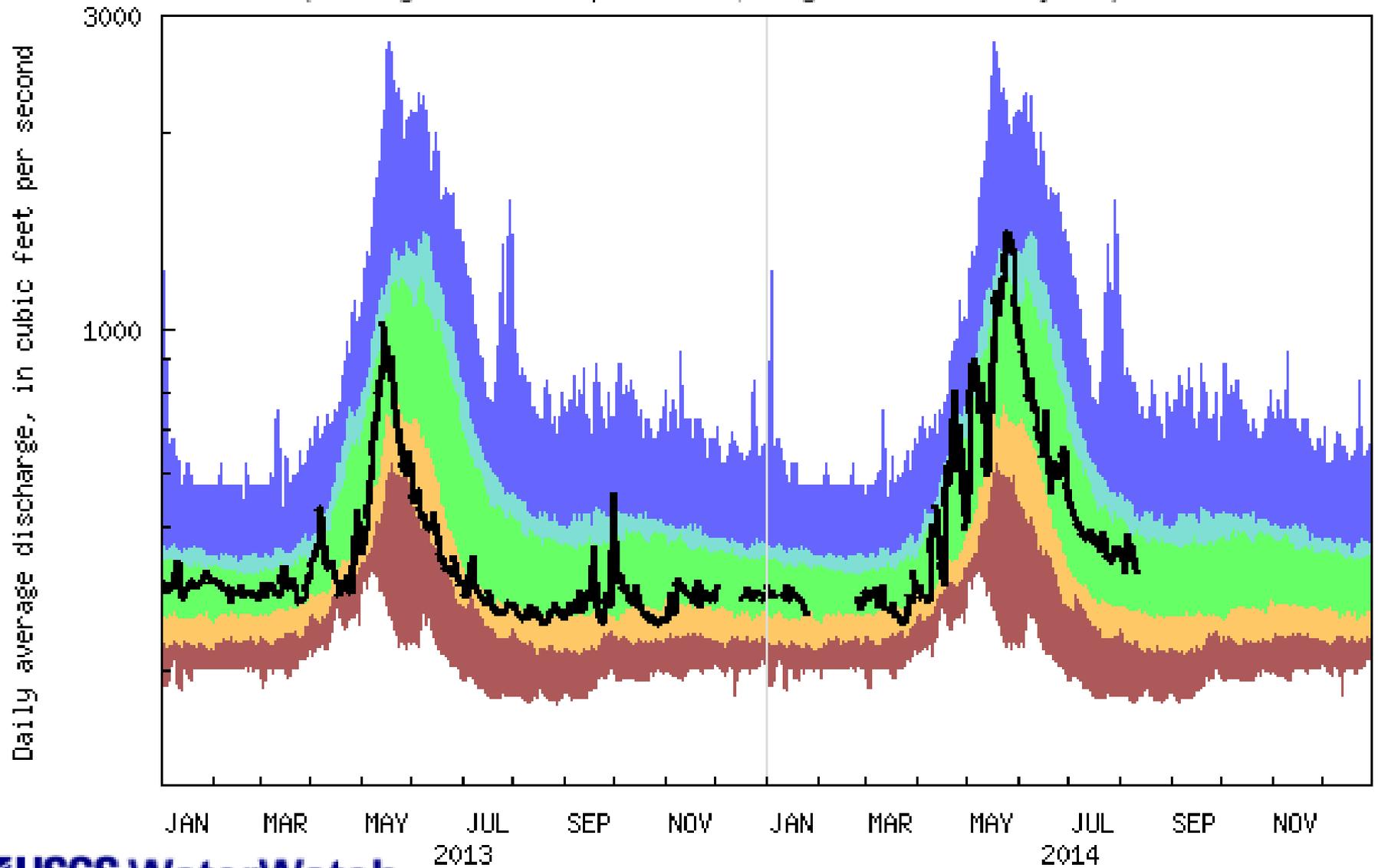
Dry Normal Wet

USGS 06036650 Jefferson River near Three Forks MT
 (Drainage Area: 9532 square miles, Length of Record: 35 years)



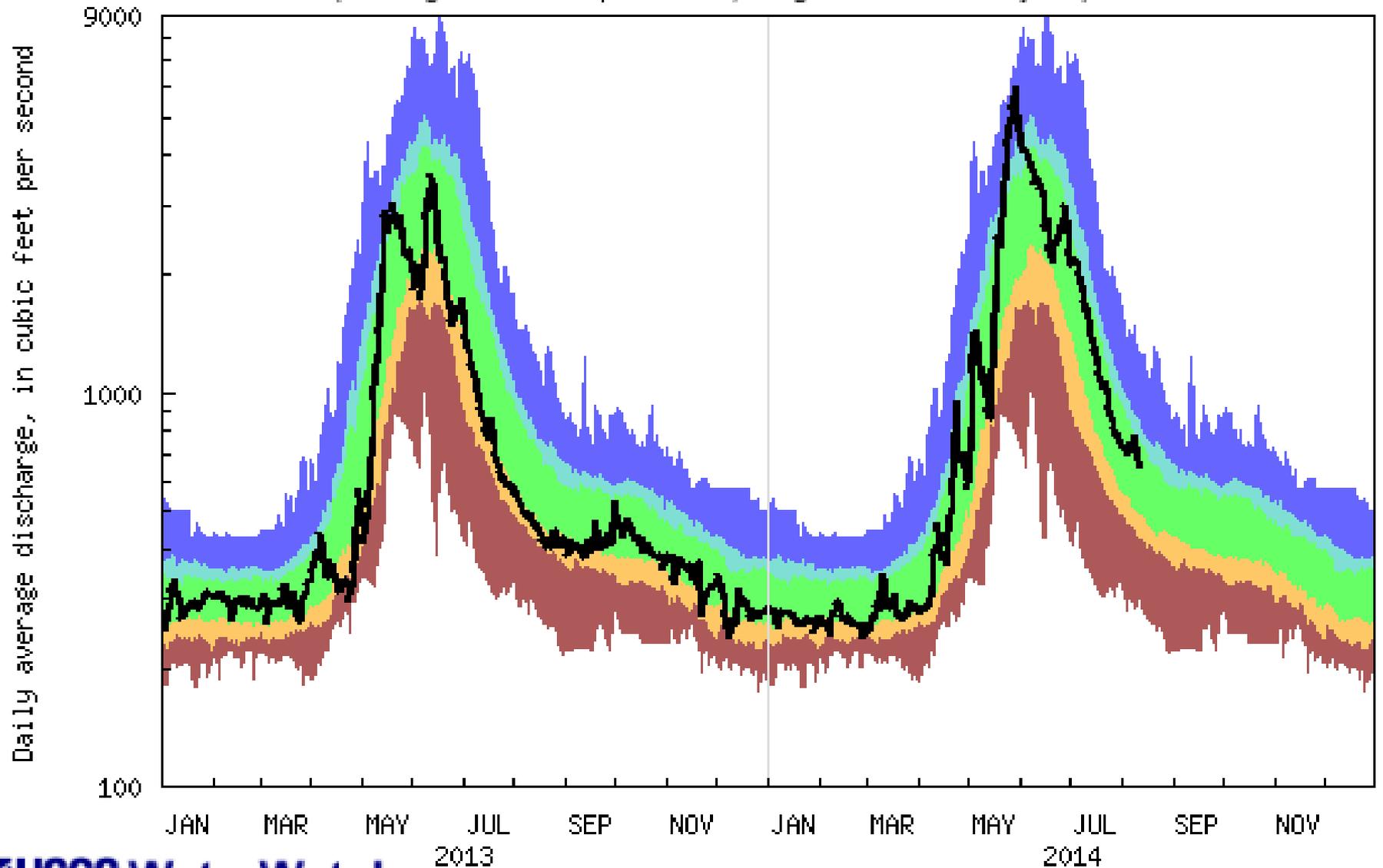
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 06037500 Madison River near West Yellowstone MT
 (Drainage Area: 420 square miles, Length of Record: 100 years)



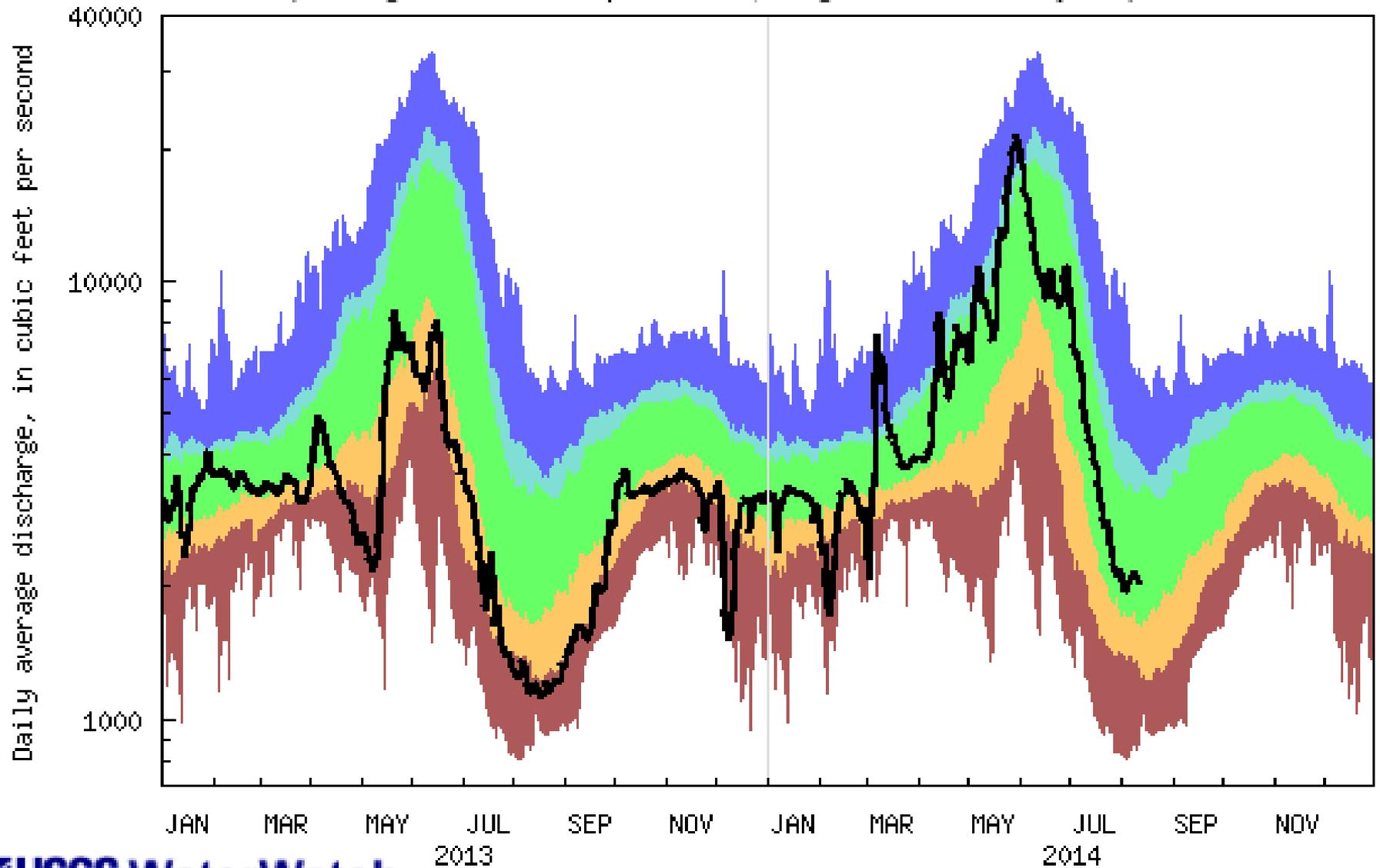
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	—
Much below normal	Below normal	Normal	Above normal	Much above normal	Flow

USGS 06043500 Gallatin River near Gallatin Gateway MT
 (Drainage Area: 825 square miles, Length of Record: 124 years)



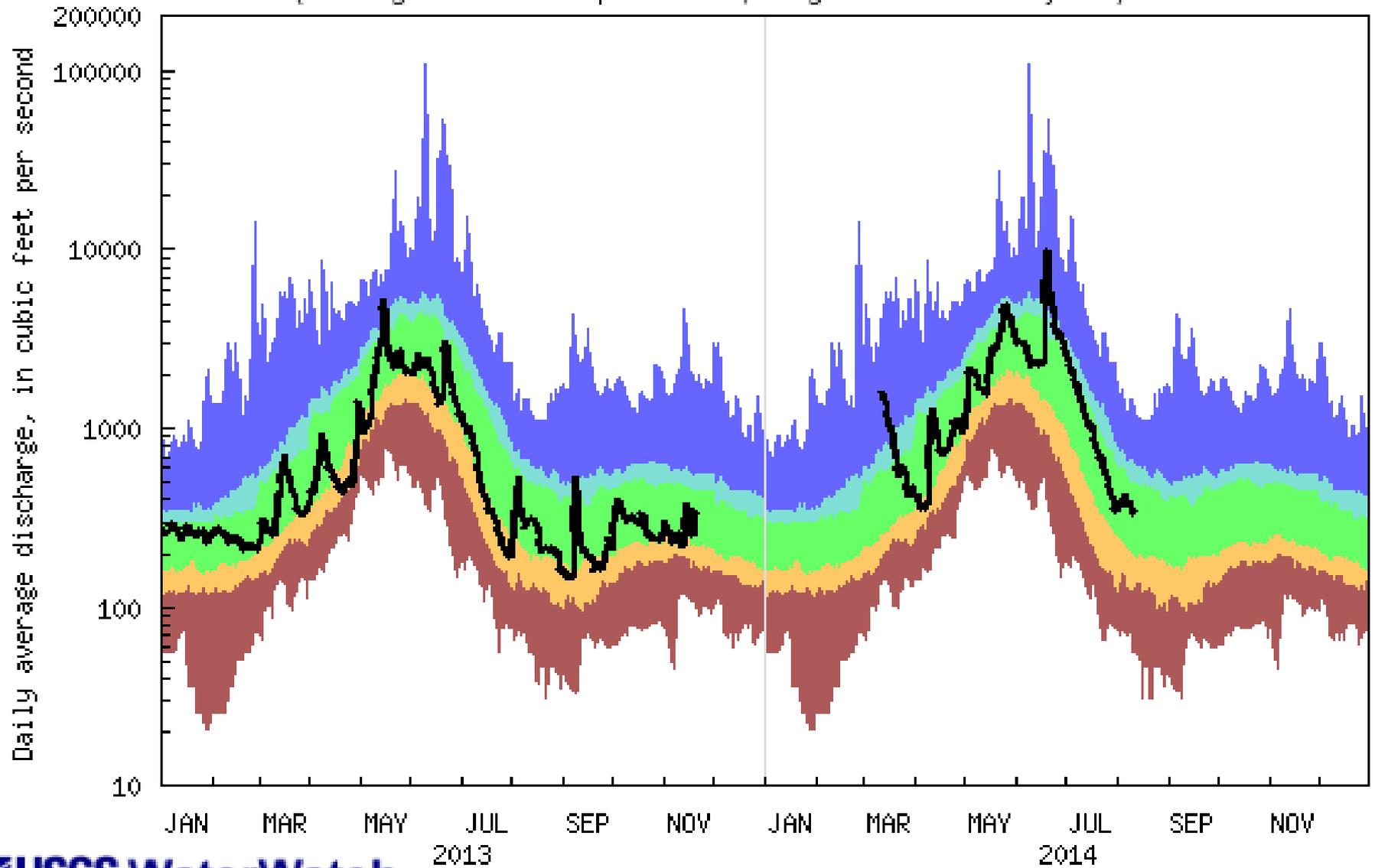
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile - highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 06054500 Missouri River at Toston MT
 (Drainage Area: 14669 square miles, Length of Record: 123 years)



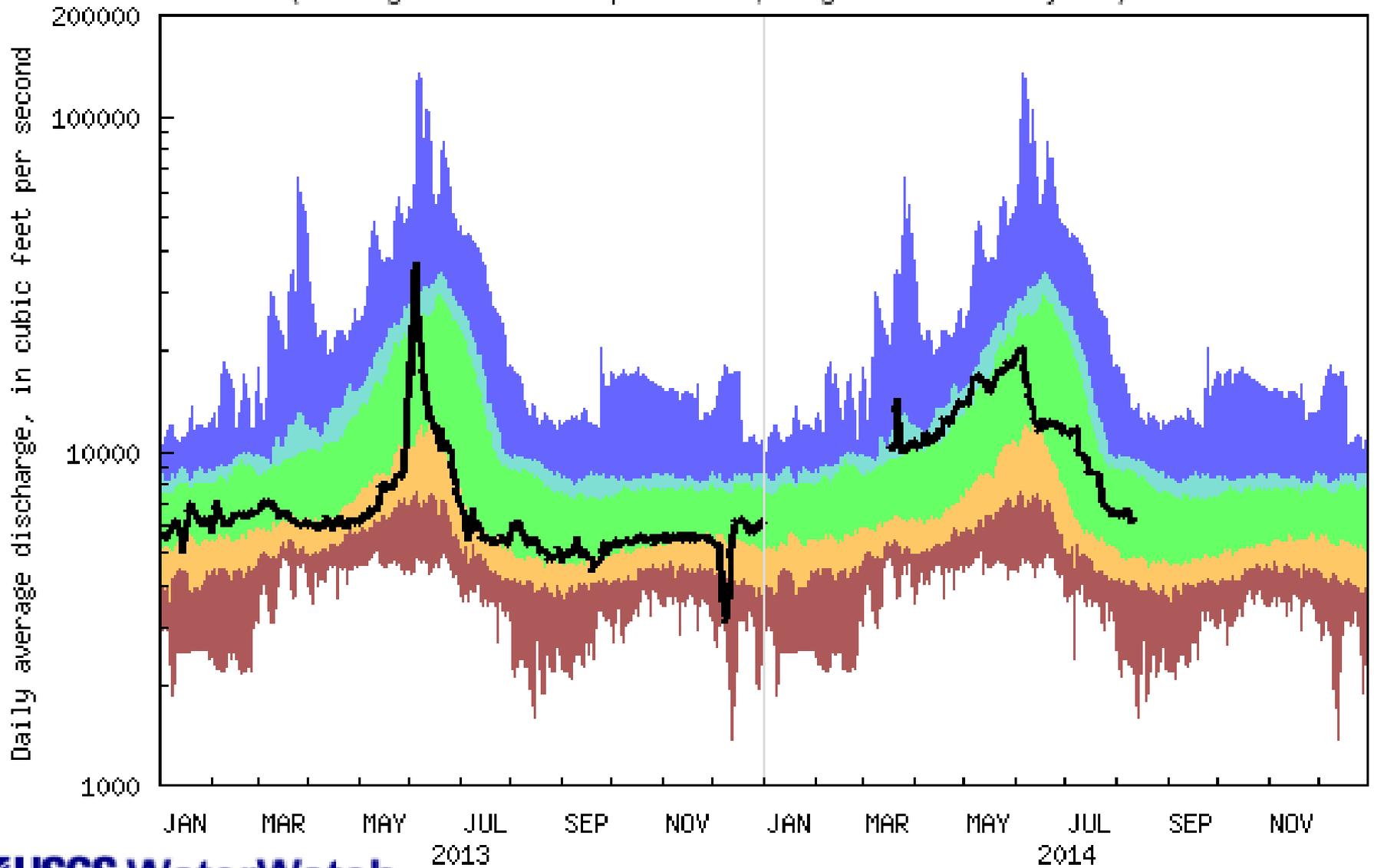
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 06099500 Marias River near Shelby MT
 (Drainage Area: 3242 square miles, Length of Record: 111 years)



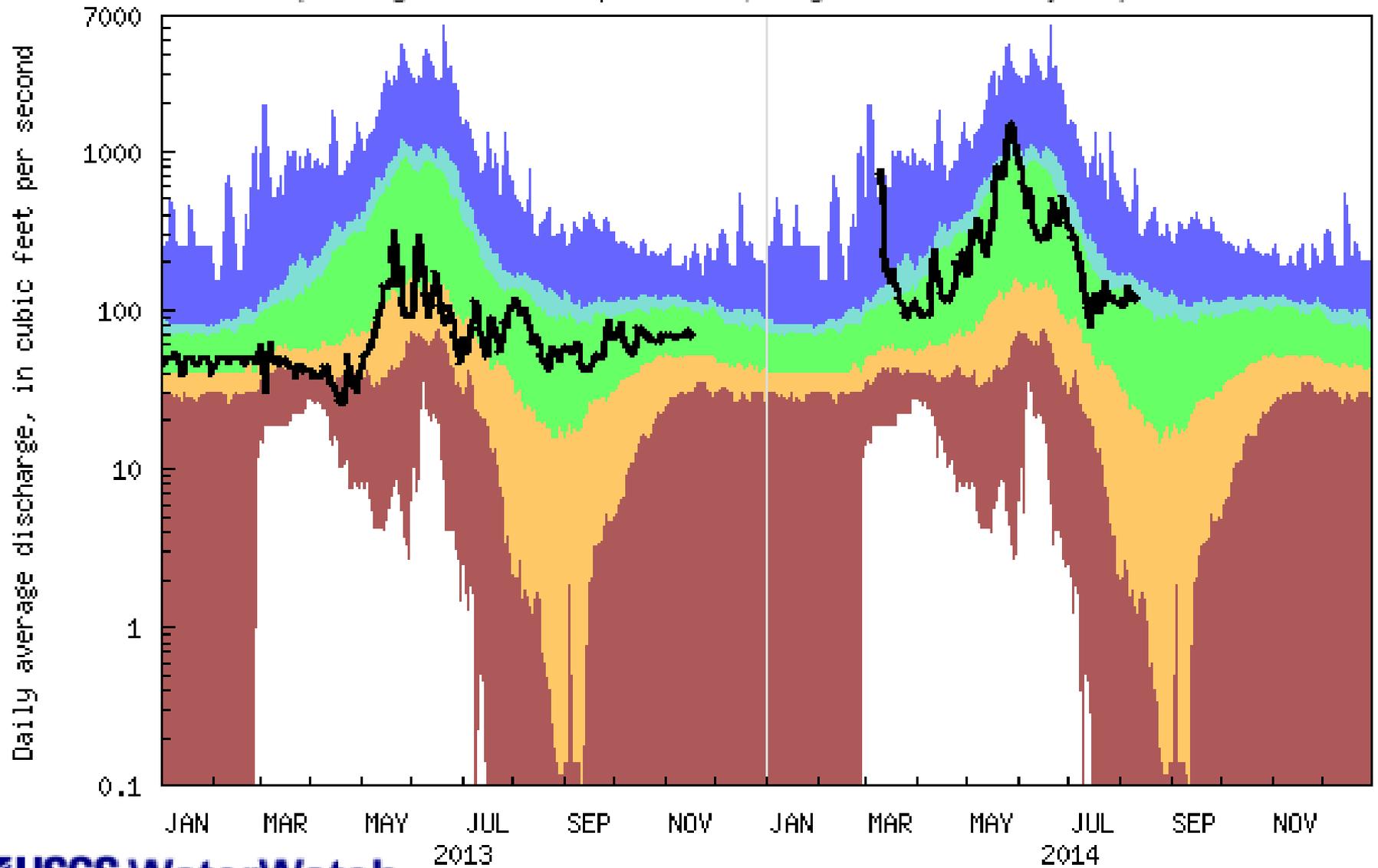
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 06115200 Missouri River near Landusky MT
 (Drainage Area: 40987 square miles, Length of Record: 79 years)



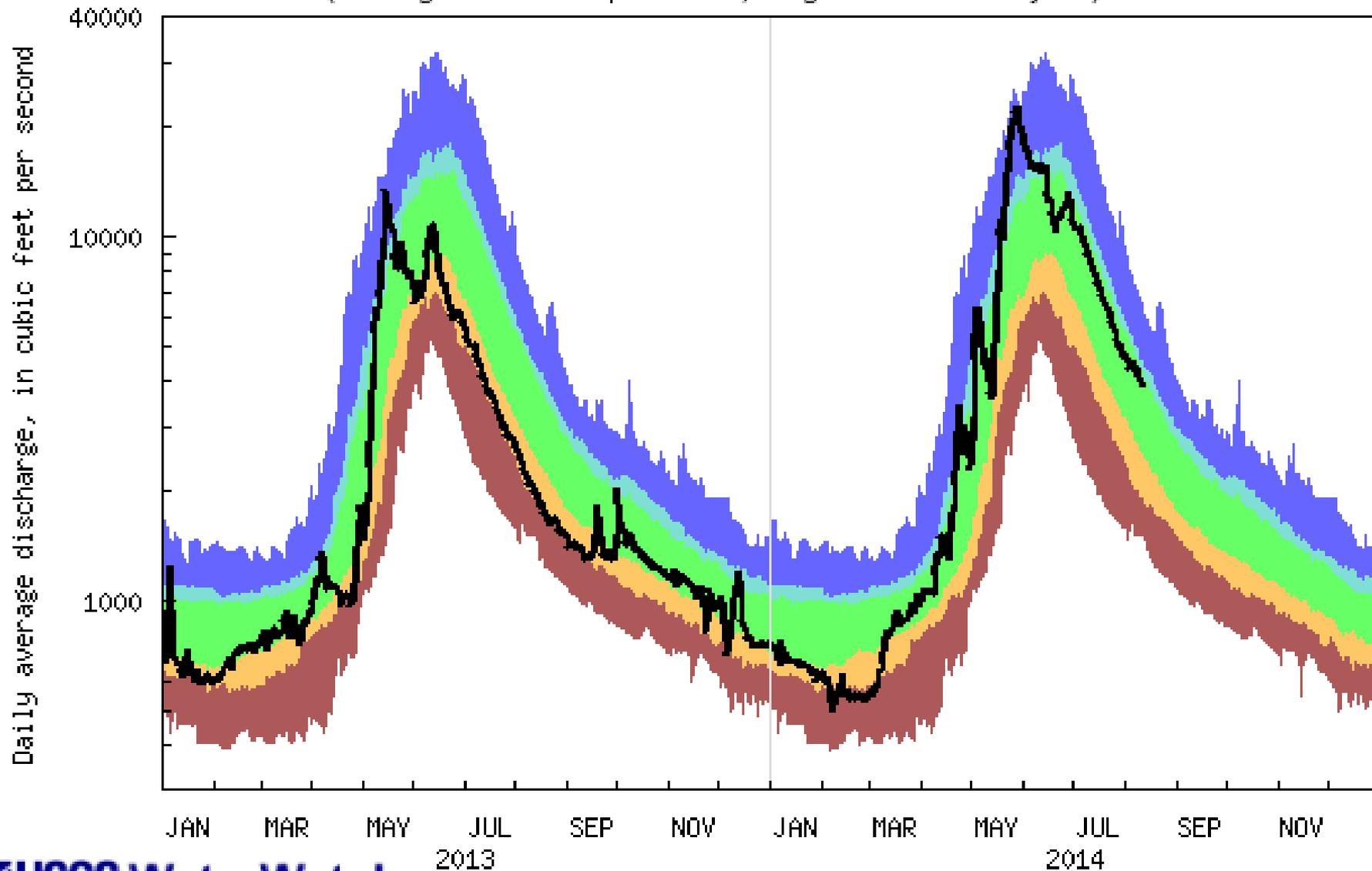
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 06120500 Musselshell River at Harlowton MT
 (Drainage Area: 1125 square miles, Length of Record: 106 years)



Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

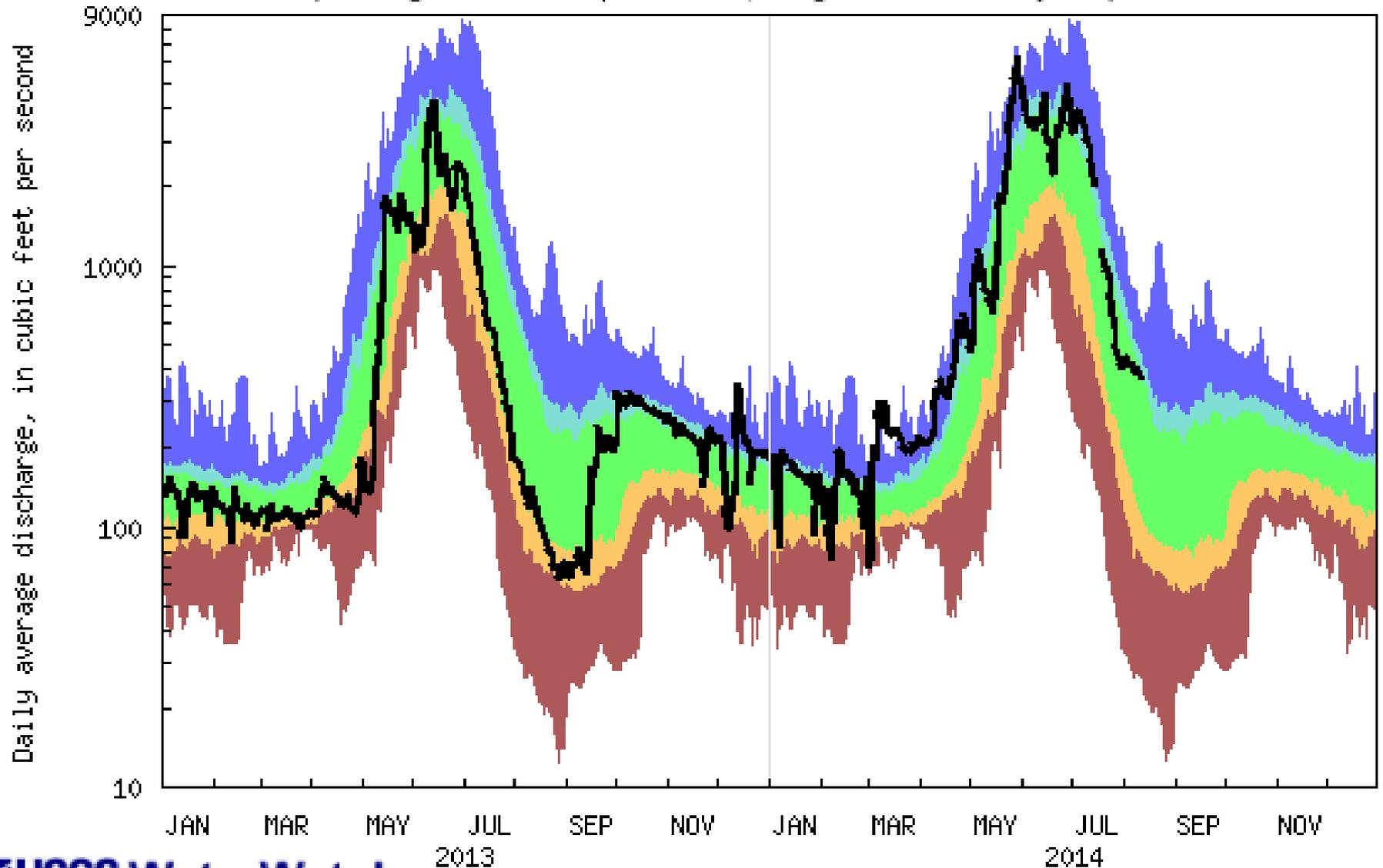
USGS 06191500 Yellowstone River at Corwin Springs MT
 (Drainage Area: 2619 square miles, Length of Record: 124 years)



Explanation - Percentile classes				
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest
Much below normal	Below normal	Normal	Above normal	Much above normal

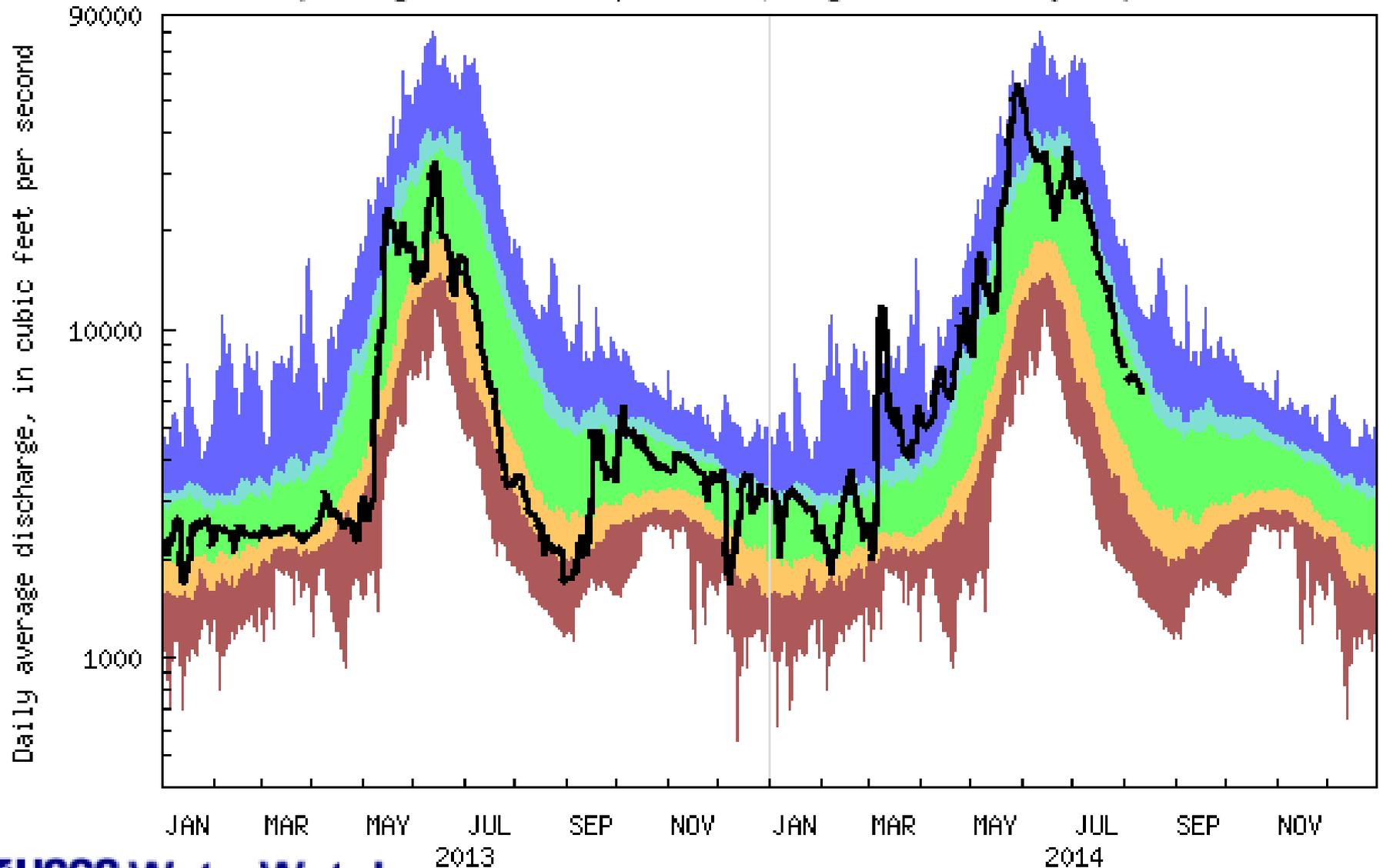
— Flow

USGS 06200000 Boulder River at Big Timber MT
 (Drainage Area: 523 square miles, Length of Record: 66 years)



Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

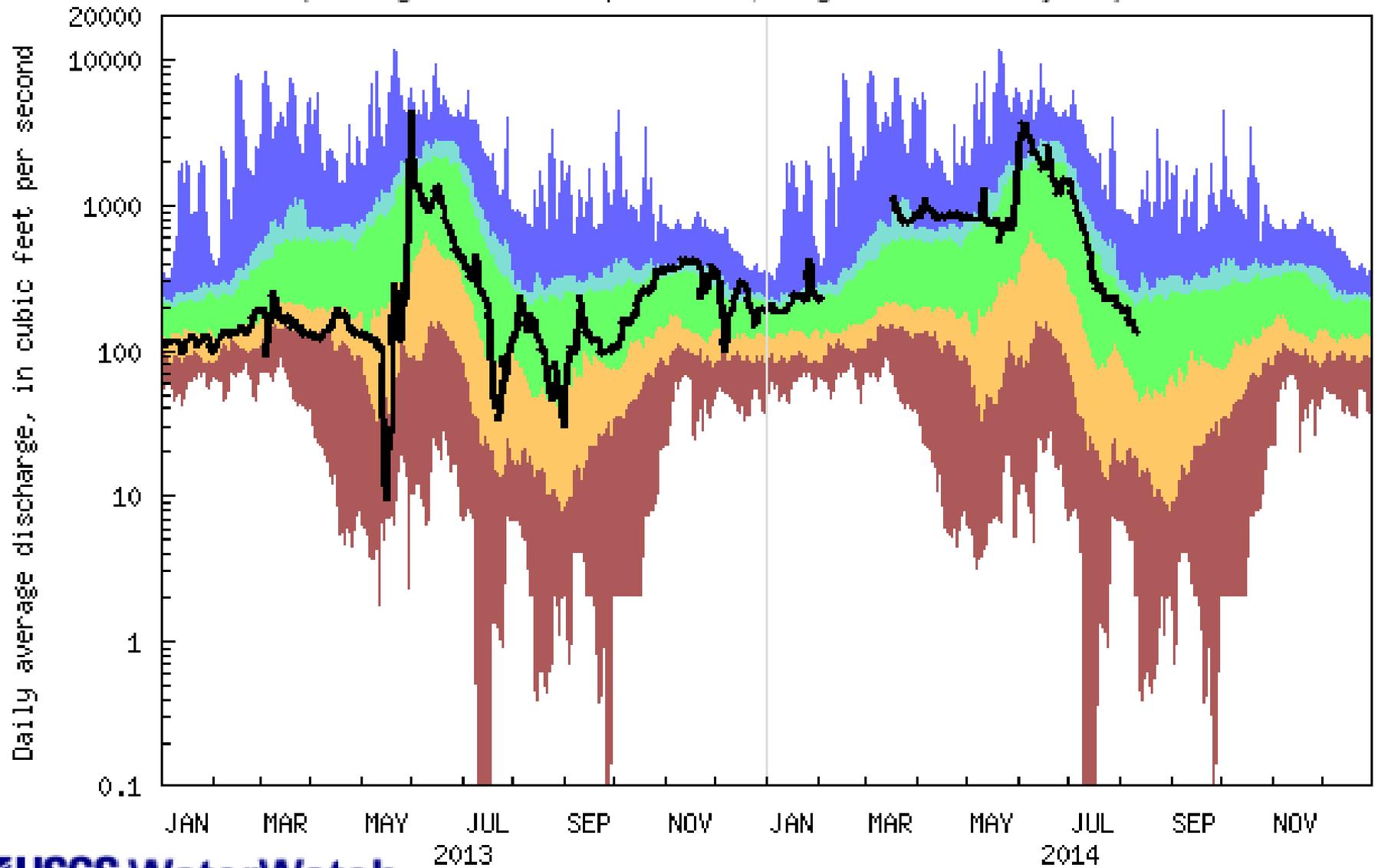
USGS 06214500 Yellowstone River at Billings MT
 (Drainage Area: 11805 square miles, Length of Record: 85 years)



Explanation - Percentile classes				
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest
Much below normal	Below normal	Normal	Above normal	Much above normal

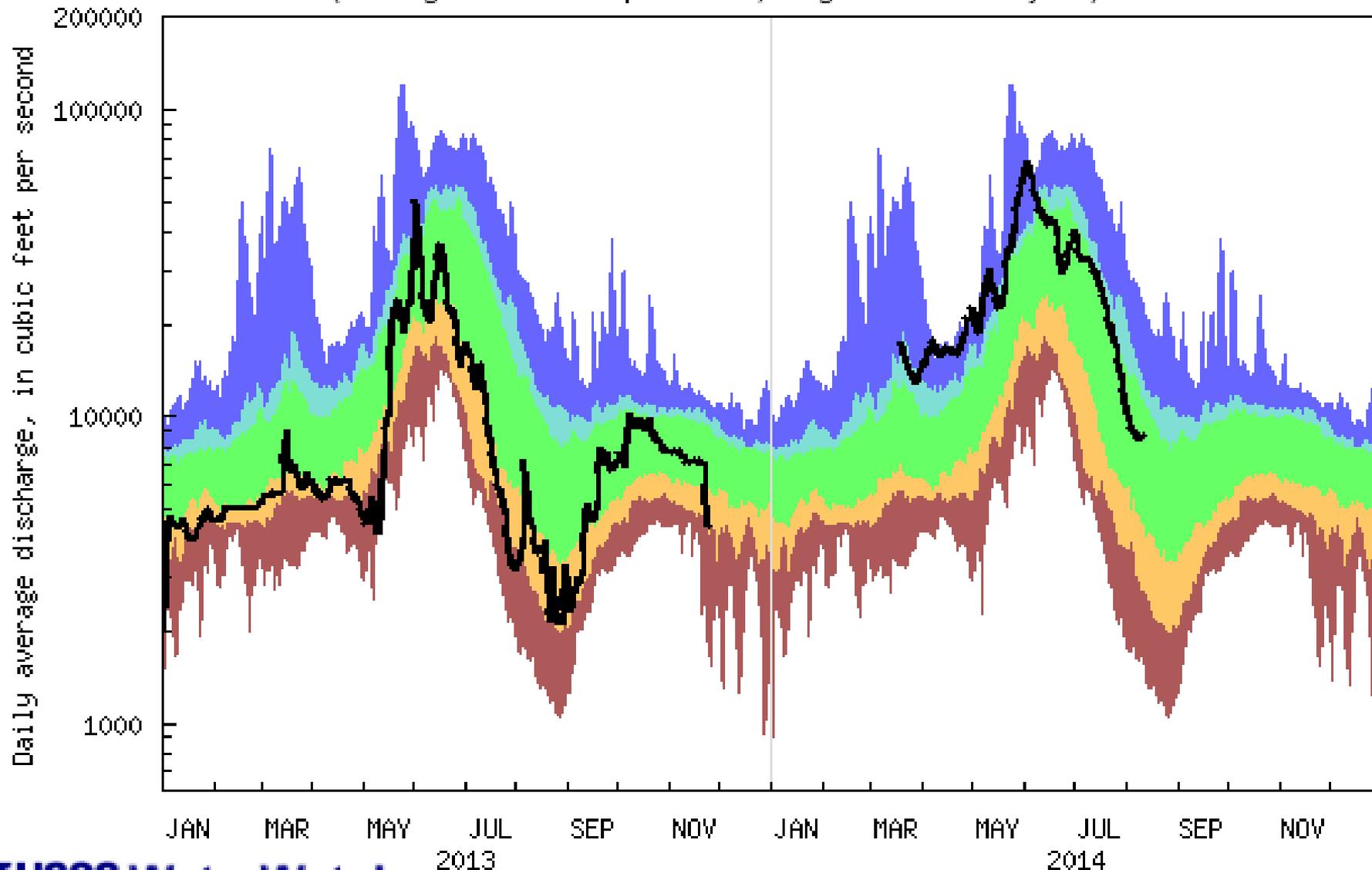
— Flow

USGS 06308500 Tongue River at Miles City MT
 (Drainage Area: 5397 square miles, Length of Record: 75 years)



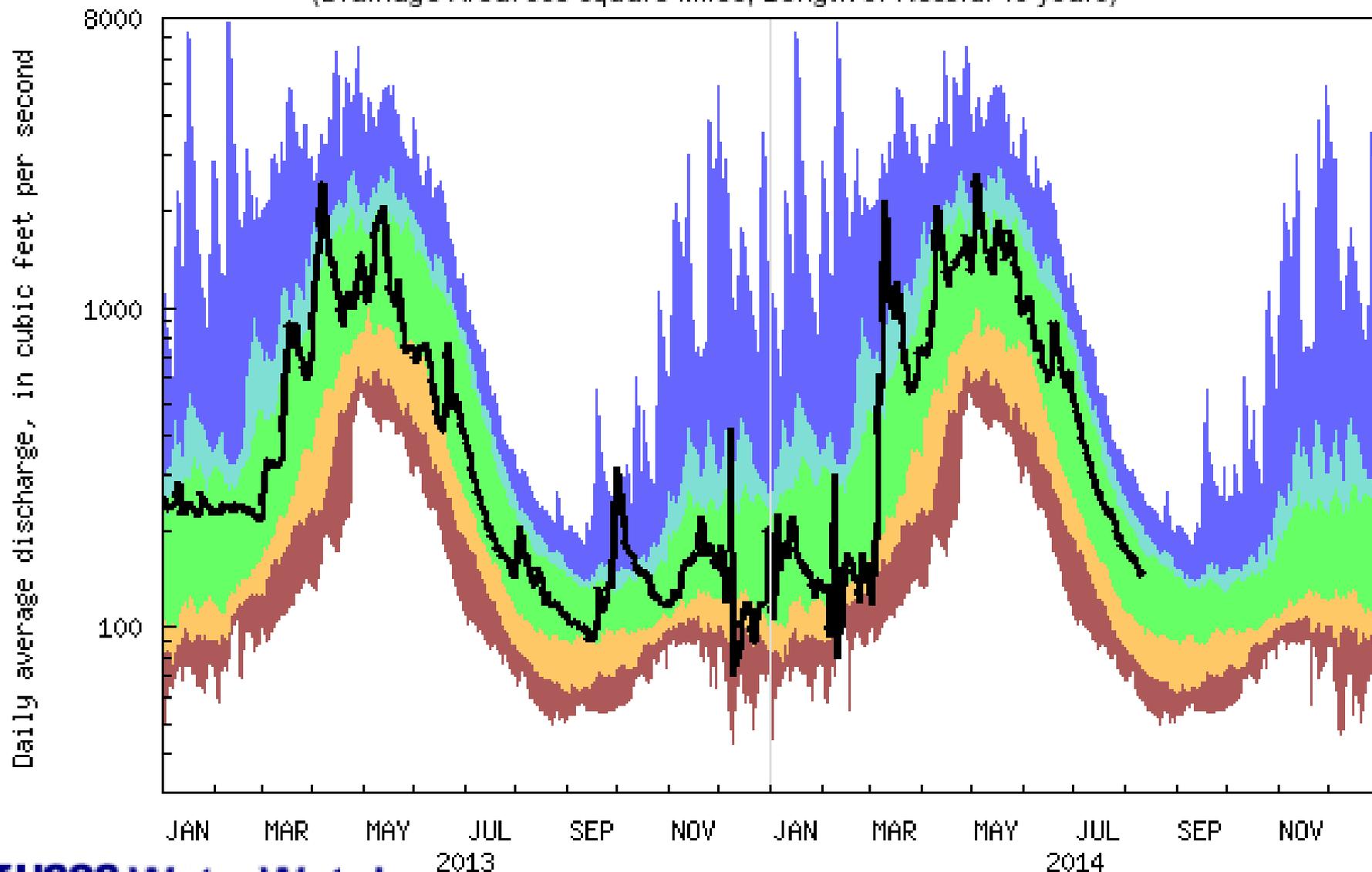
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 06329500 Yellowstone River near Sidney MT
 (Drainage Area: 69083 square miles, Length of Record: 47 years)



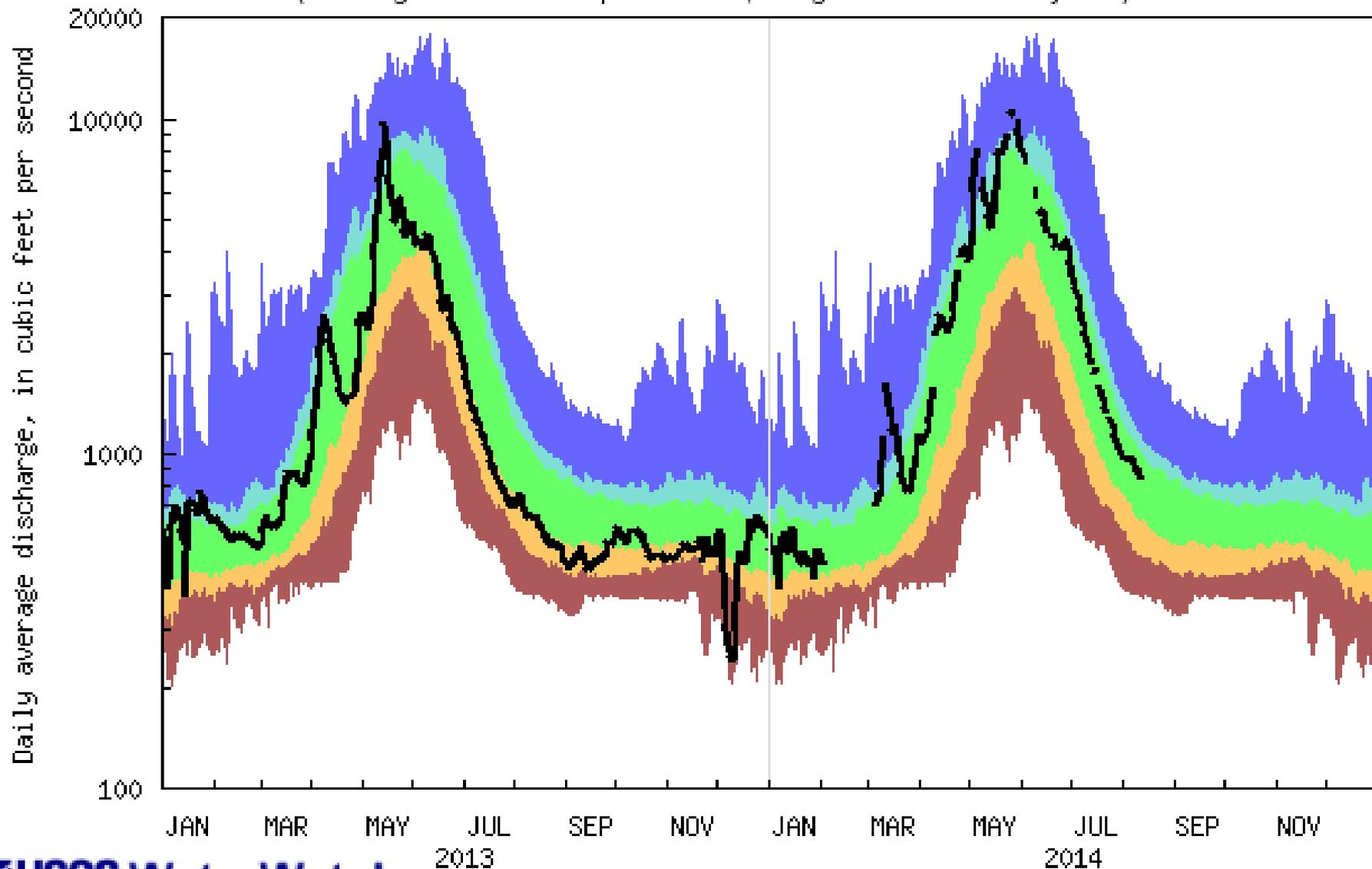
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 12302055 Fisher River near Libby MT
 (Drainage Area: 838 square miles, Length of Record: 46 years)



Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

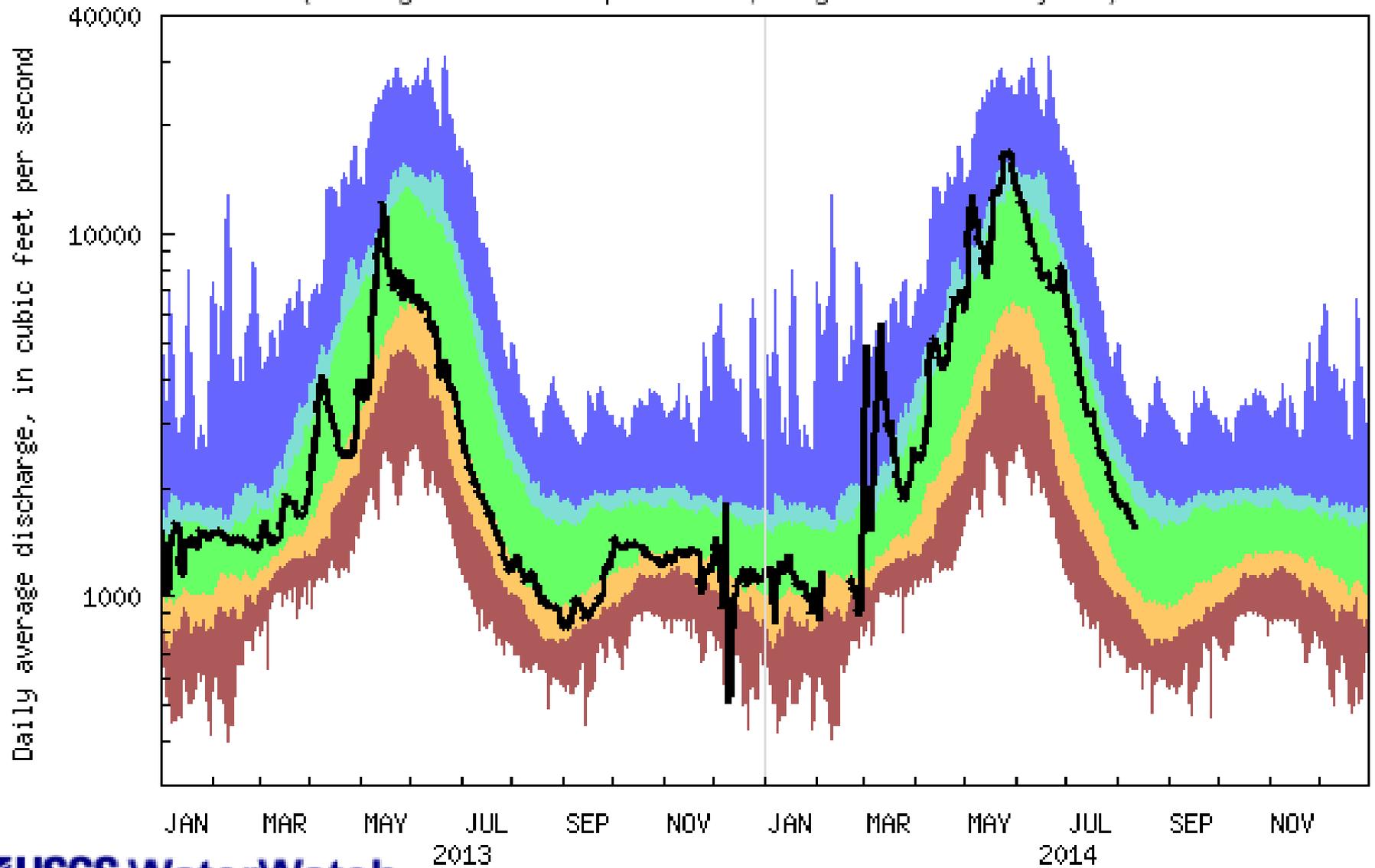
USGS 12340000 Blackfoot River near Bonner MT
 (Drainage Area: 2290 square miles, Length of Record: 115 years)



Explanation - Percentile classes				
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest
Much below normal	Below normal	Normal	Above normal	Much above normal

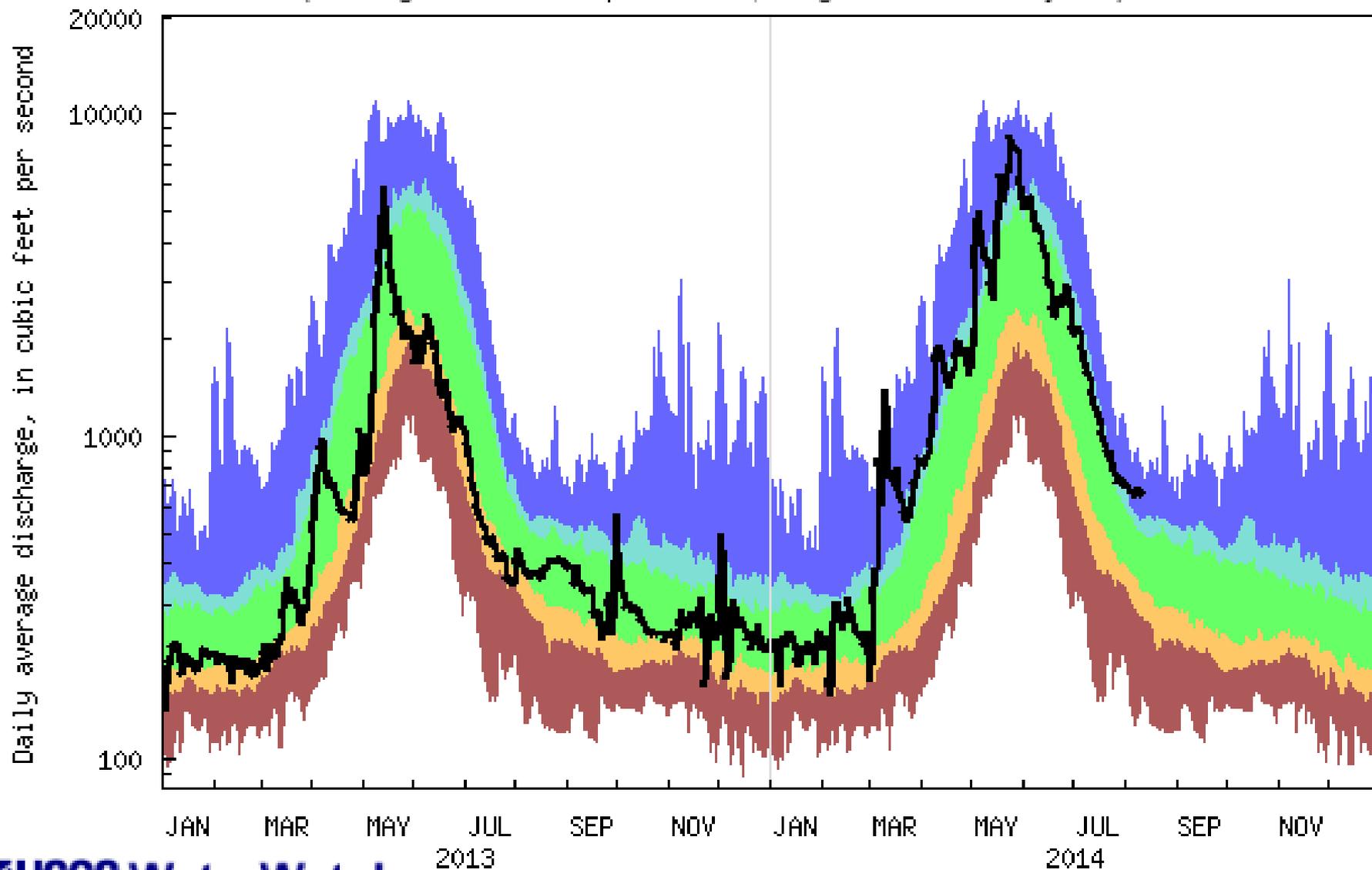
— Flow

USGS 12340500 Clark Fork above Missoula MT
 (Drainage Area: 5999 square miles, Length of Record: 84 years)



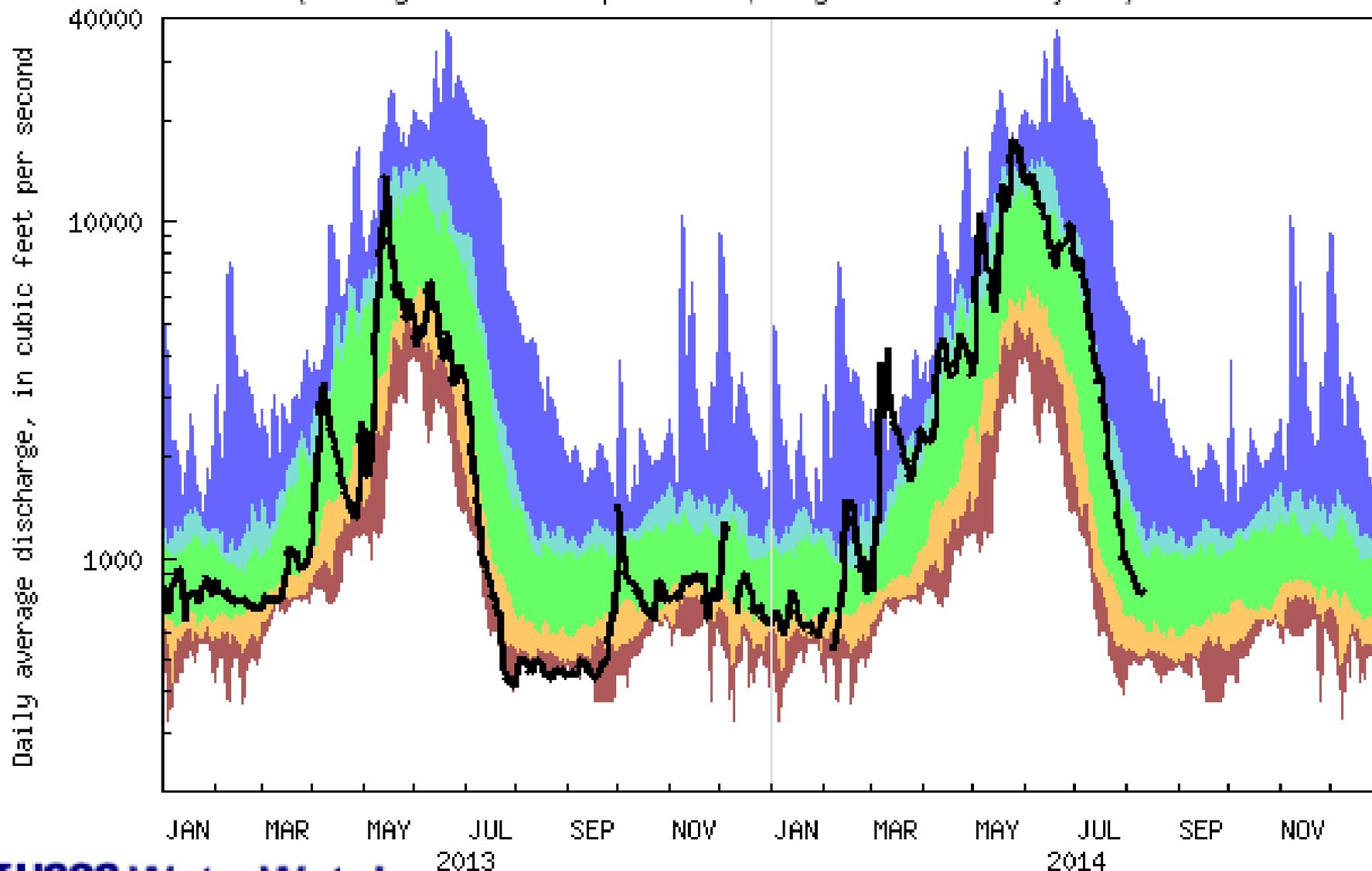
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 12344000 Bitterroot River near Darby MT
 (Drainage Area: 1049 square miles, Length of Record: 76 years)



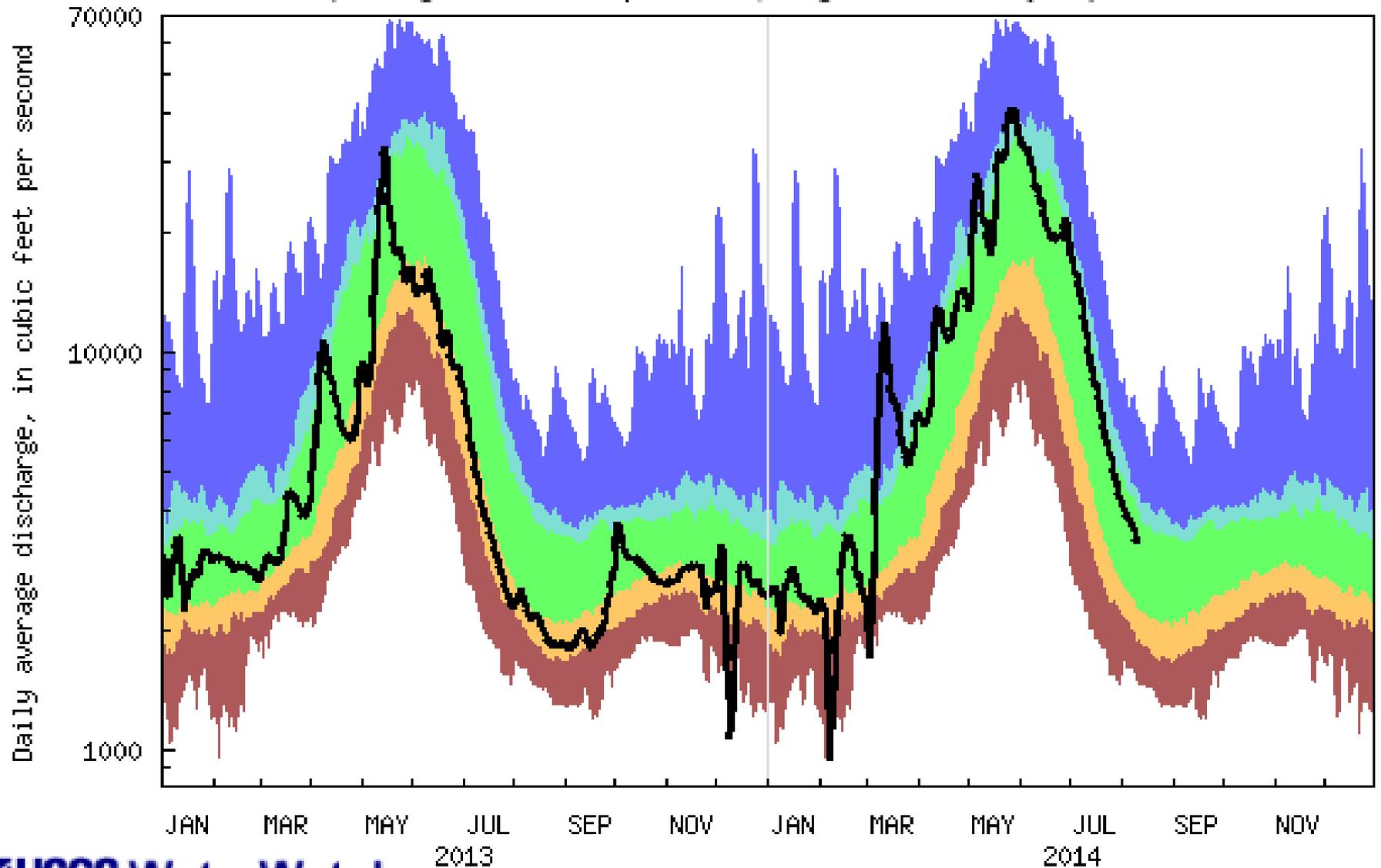
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 12352500 Bitterroot River near Missoula MT
 (Drainage Area: 2814 square miles, Length of Record: 115 years)



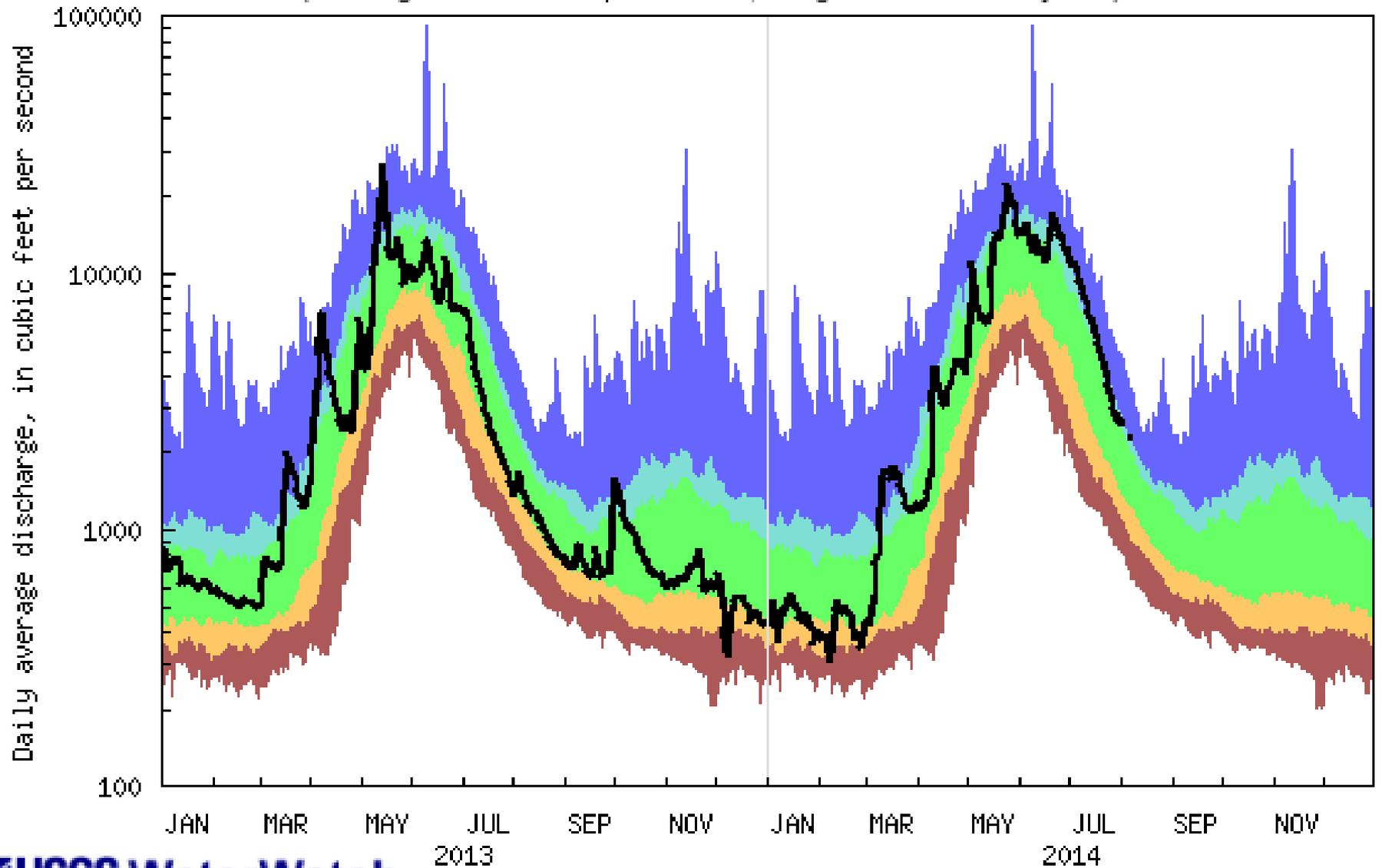
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 12354500 Clark Fork at St. Regis MT
 (Drainage Area: 10709 square miles, Length of Record: 84 years)



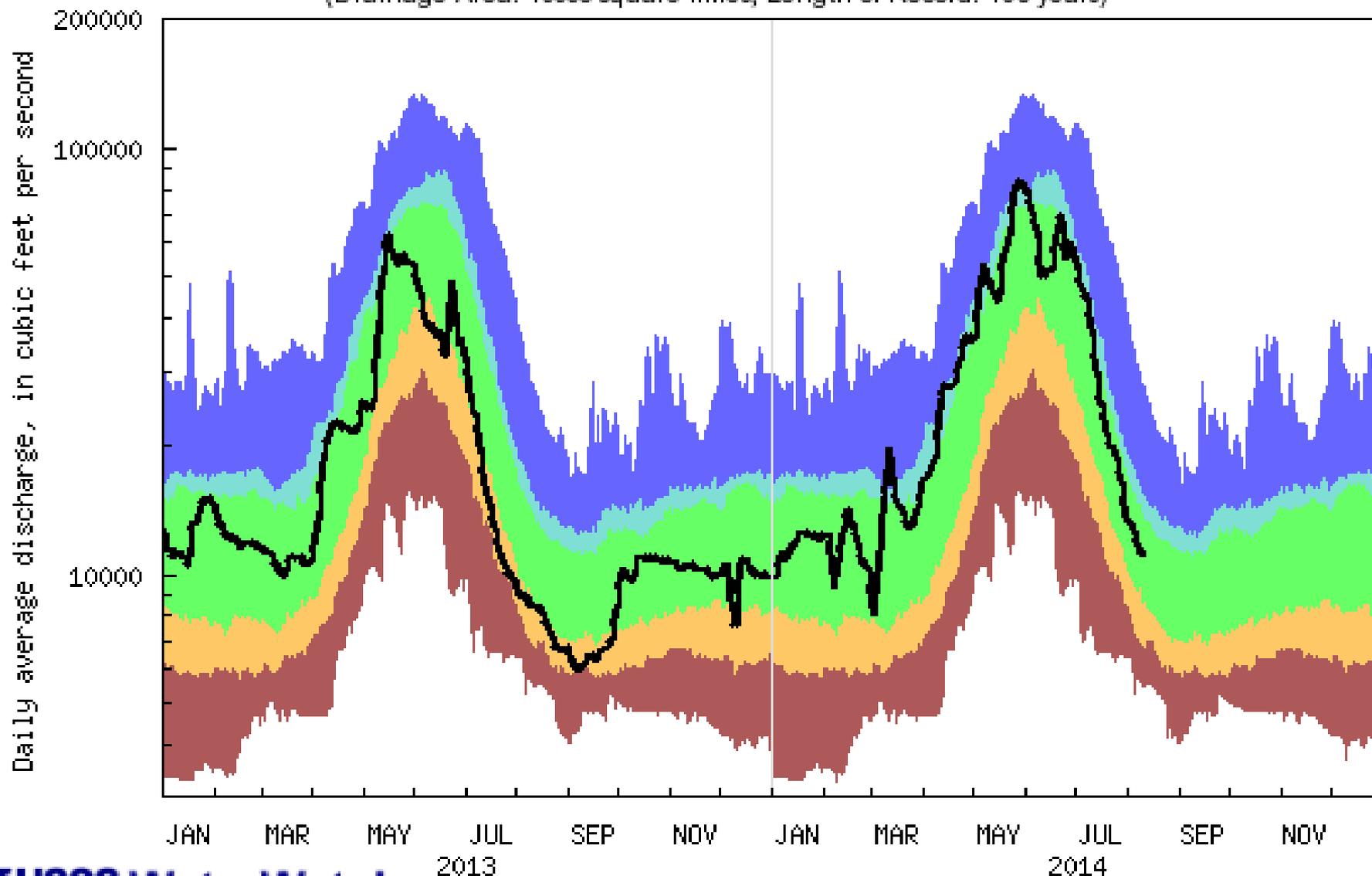
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 12358500 M F Flathead River near West Glacier MT
 (Drainage Area: 1128 square miles, Length of Record: 74 years)



Explanation - Percentile classes				
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest
Much below normal	Below normal	Normal	Above normal	Much above normal
— Flow				

USGS 12389000 Clark Fork near Plains MT
 (Drainage Area: 19958 square miles, Length of Record: 103 years)



Explanation - Percentile classes				
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest
Much below normal	Below normal	Normal	Above normal	Much above normal



USGS Home Page: <http://usgs.gov>

NwisWeb: <http://water.usgs.gov/mt/nwis>
Access to streamflow (realtime and historical), water quality,
and ground water information.

Montana District Home Page: <http://mt.usgs.gov>
Montana Current Streamflow Conditions