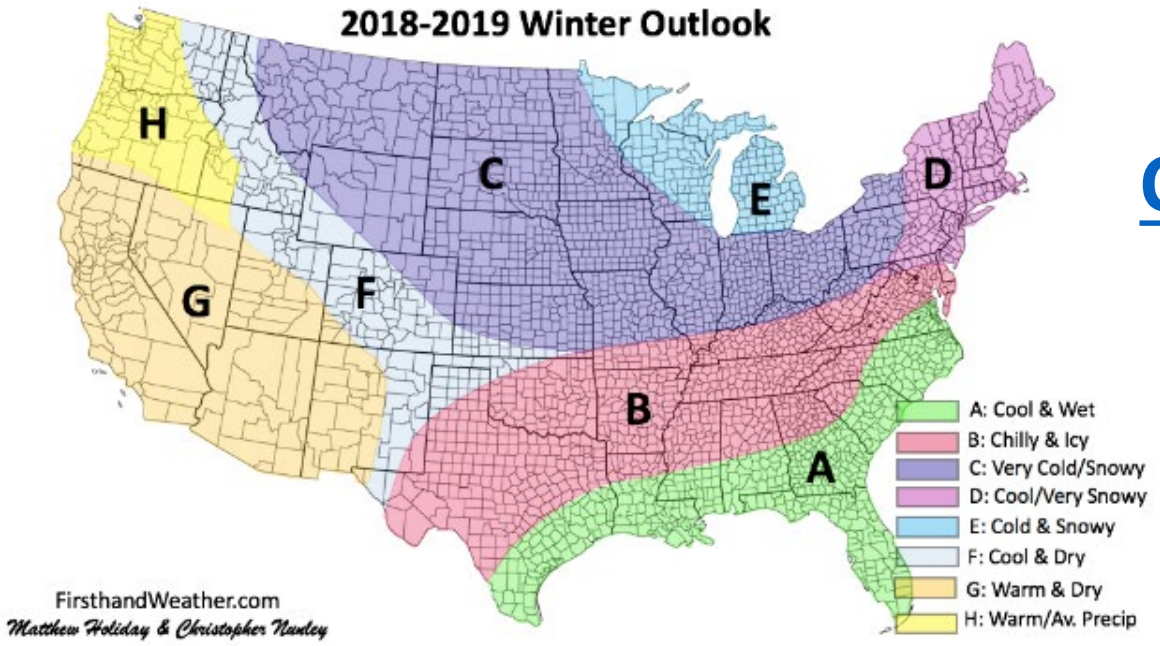
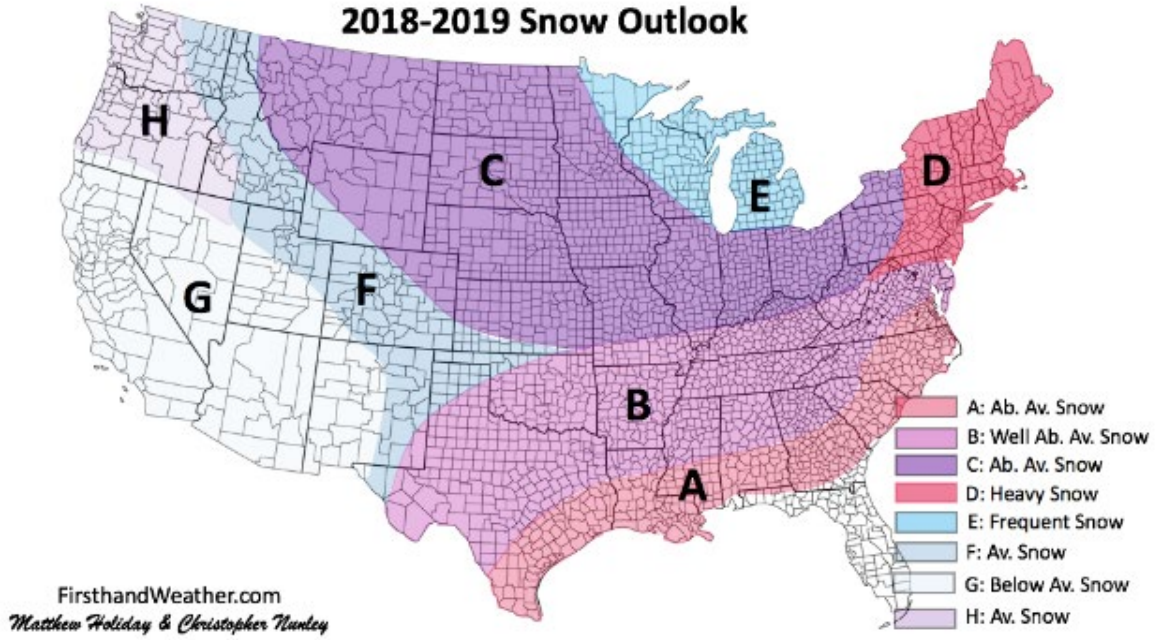
2019 Review and Outlook for 2020

Presented by: Danny Tappa, NRCS Snow Survey





2019 SLIDE

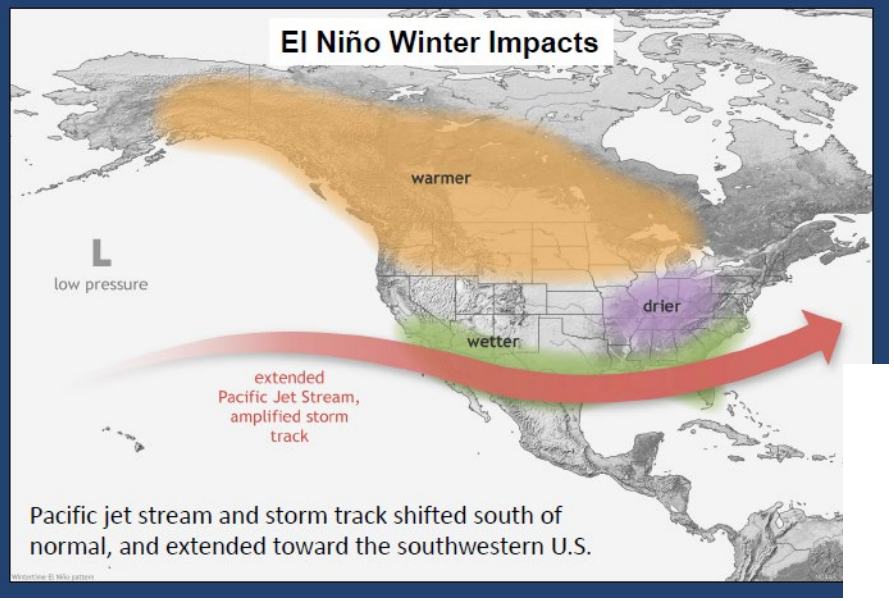
Christopher Nunley | October 29, 2018

C (Kansas City, KS; Omaha, NE; Rapid City, SD; Casper, WY; Billings, MT; Fargo, ND; Des Moines, IA; Chicago, IL; Columbus, OH): This region will be characterized by temperatures well below normal and snowy conditions. Several winter storms and brutal cold are possible.

F (Denver, CO; Salt Lake City, UT; Twin Falls, ID; Spokane, WA): This region will be characterized by temperatures slightly below average and near normal precipitation. A few winter storms moving in from the Pacific Northwest are possible in this region.

H (Portland, OR; Seattle, WA; Boise ID): This region will be characterized by temperatures above average and precipitation near average to slightly below average. There will be a few winter storms that move in from the northern Pacific, thus, providing beneficial snow to ski resorts in the region.

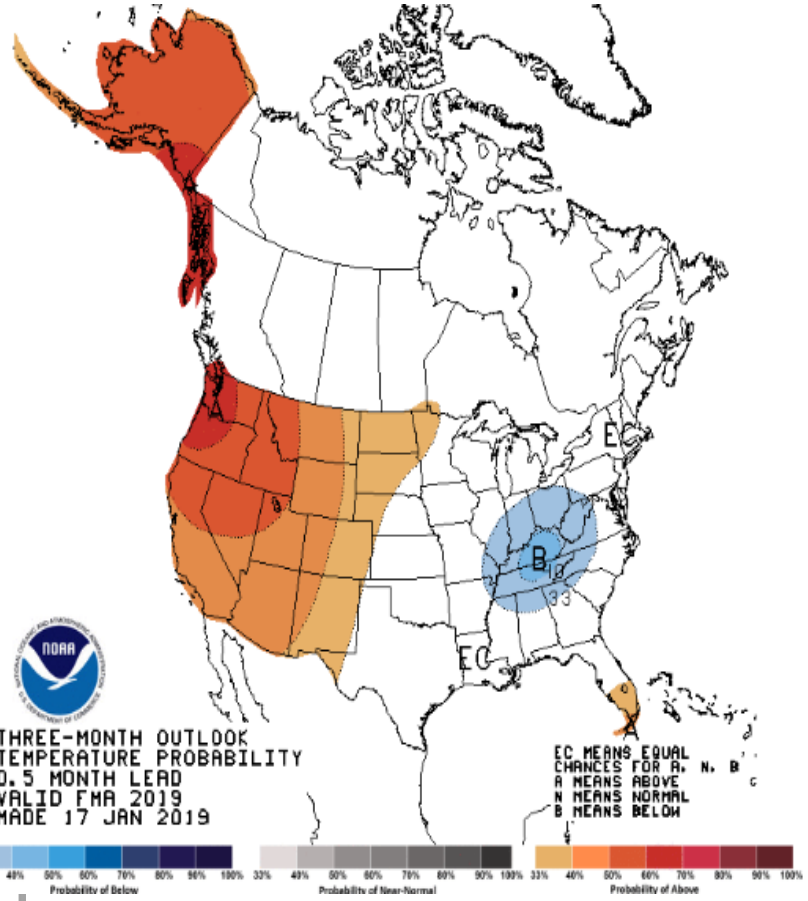
Winter Outlook

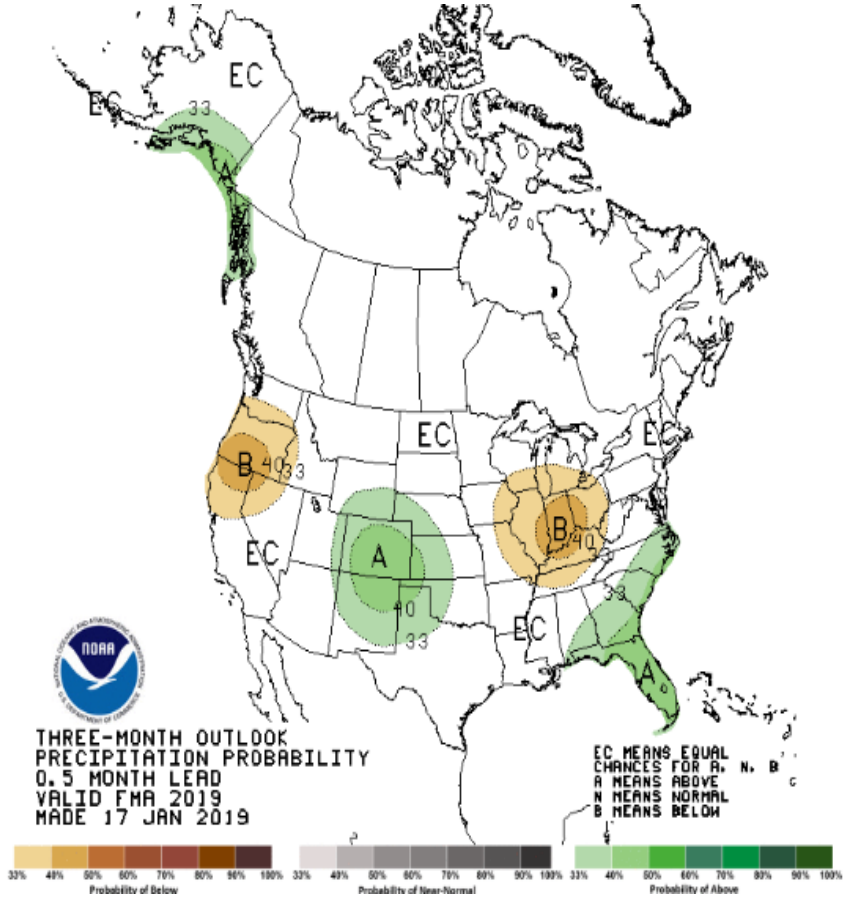


2019 SLIDE

NOAA Feb – Mar – Apr Outlook from 17 Jan 2019

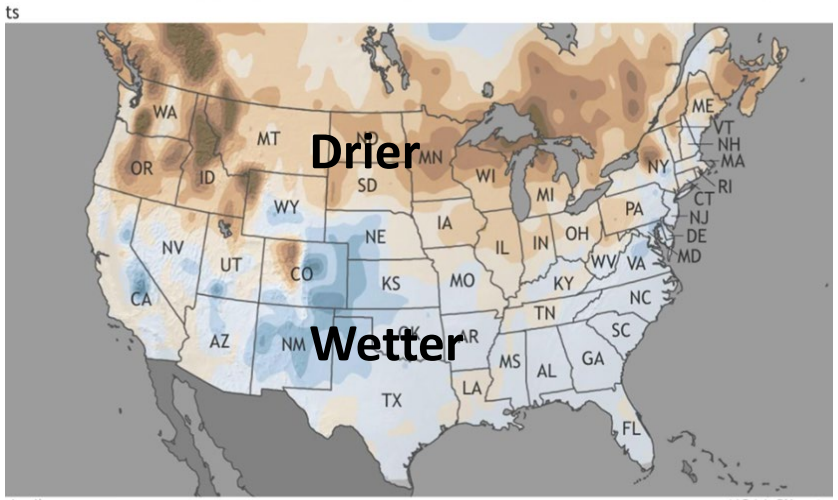
Temperature **Precipitation**





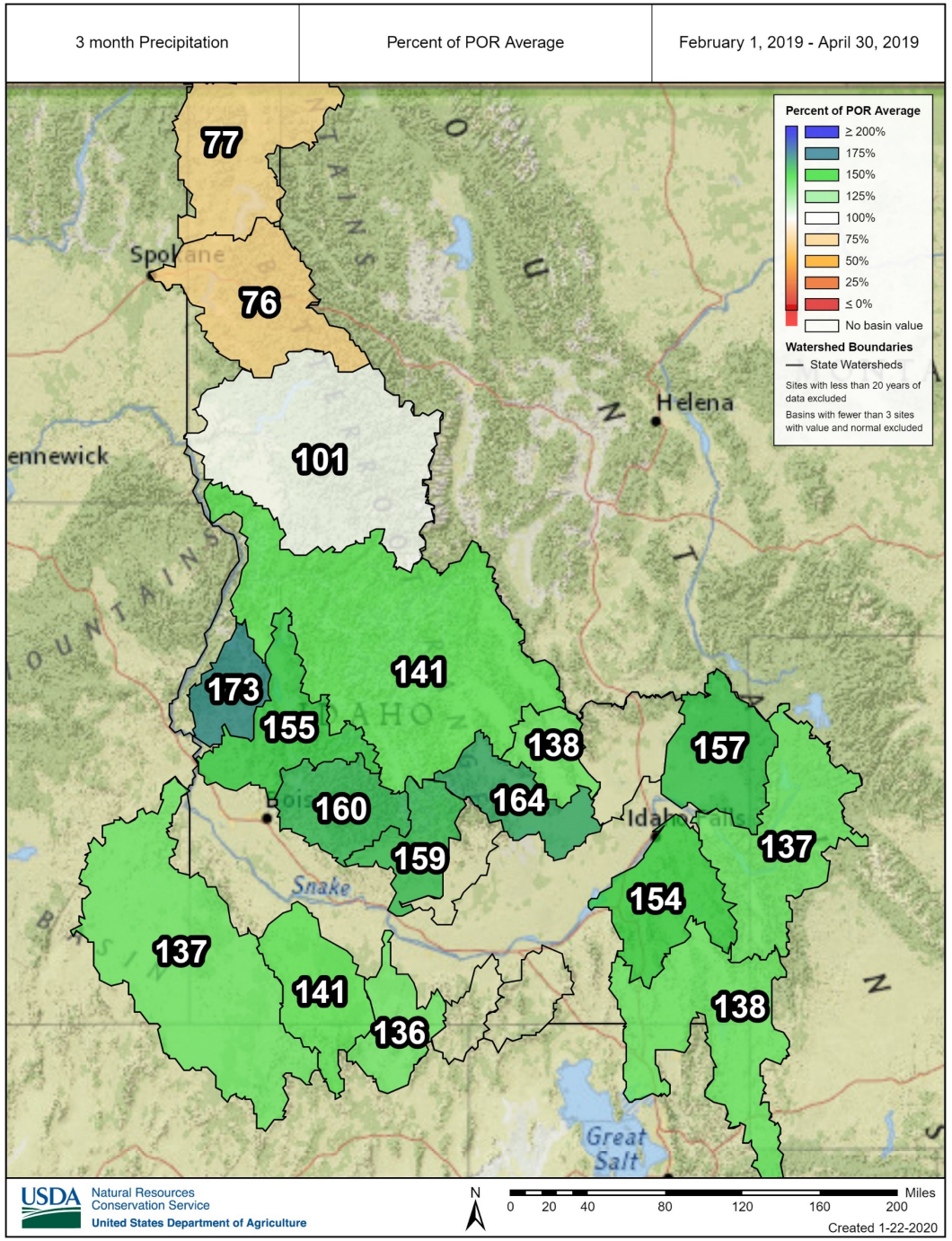
Snowfall Anomalies: El Niño years

All (21) years

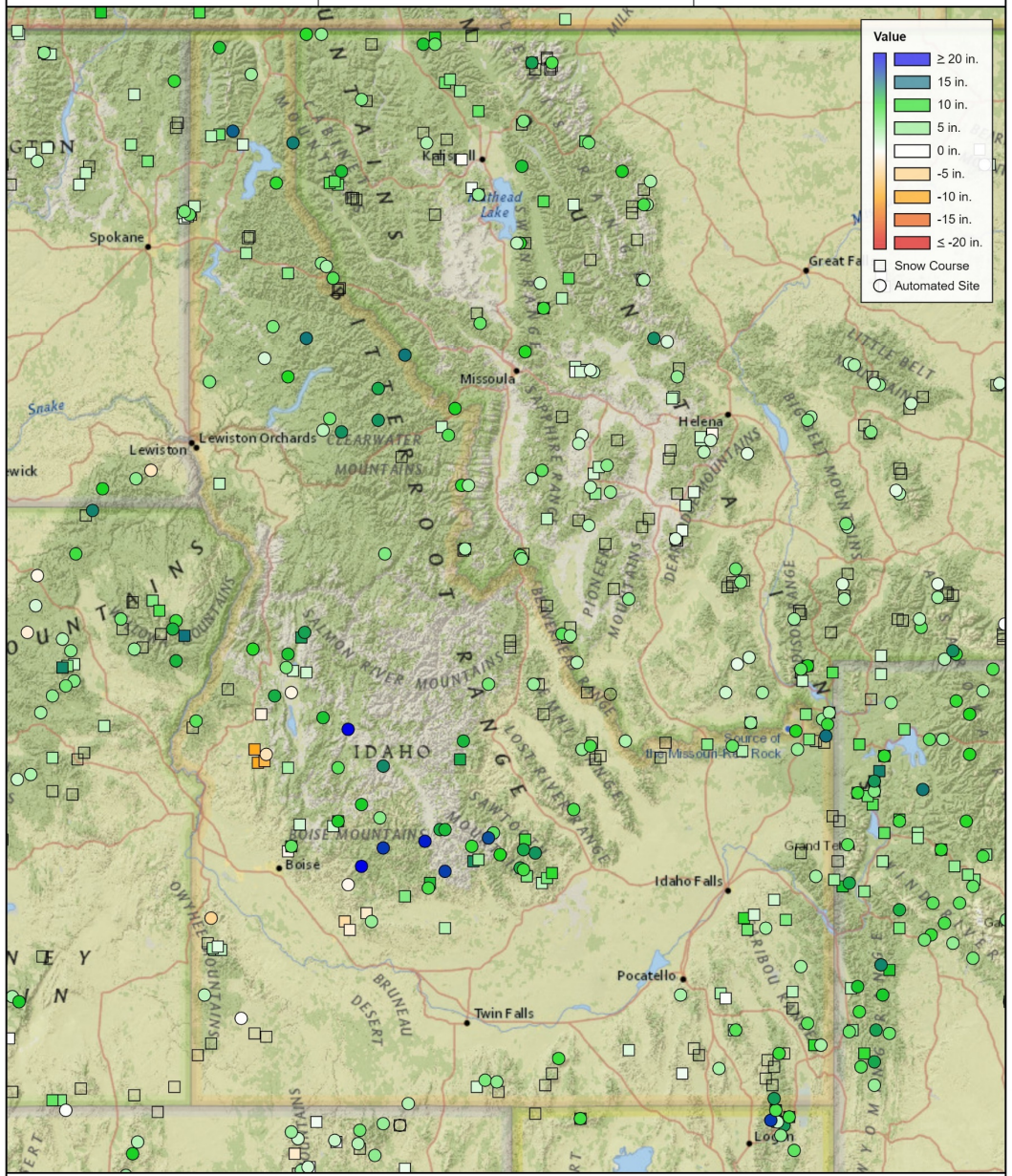


- 2019 February – April precipitation

- 140 – 180% of normal for all basins south of Clearwater



Snow Water Equivalent Delta	2017	End of February, 2017 - End of January, 2017



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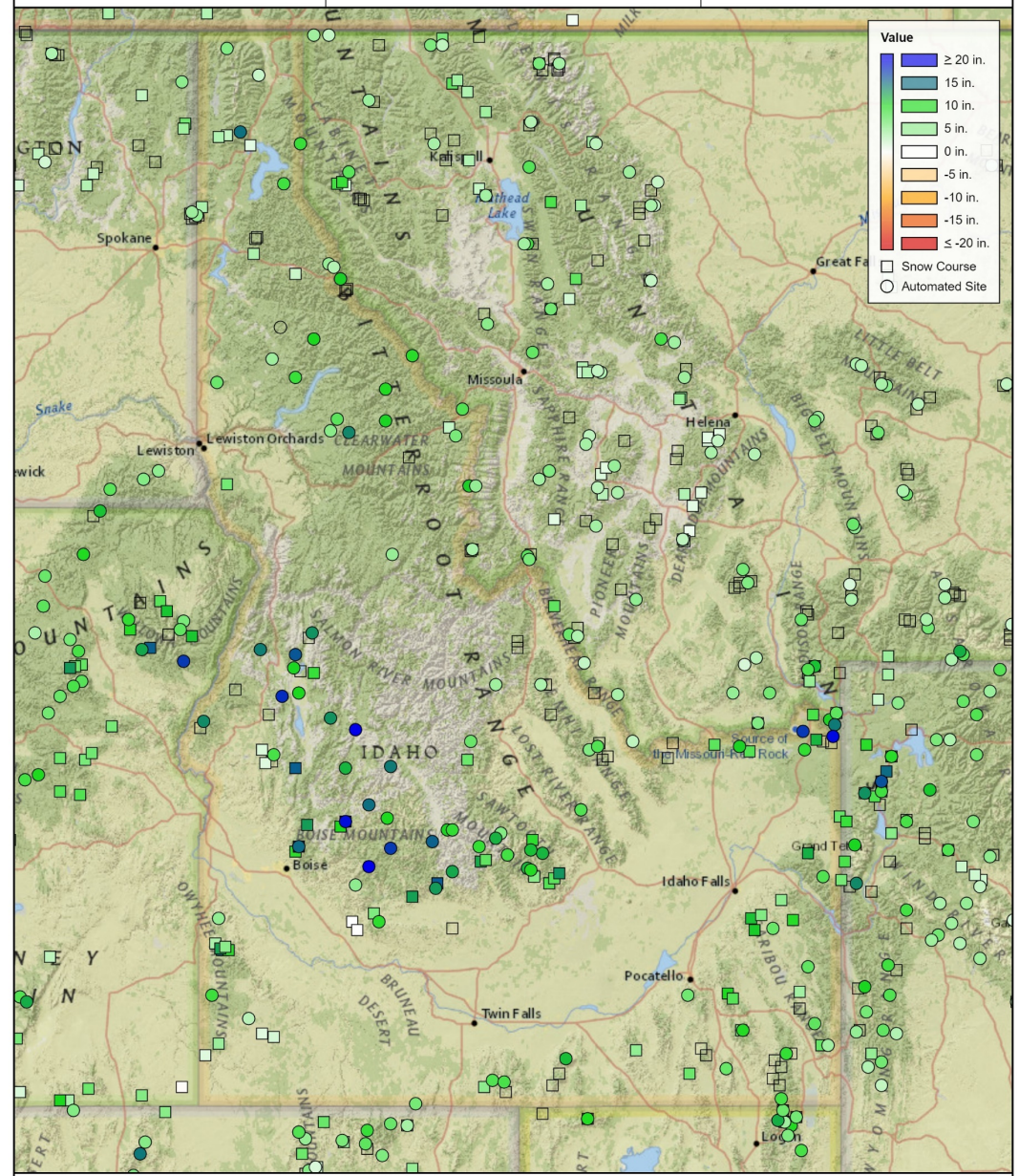
Snow Water Equivalent Delta	2019	End of February, 2019 - End of January, 2019



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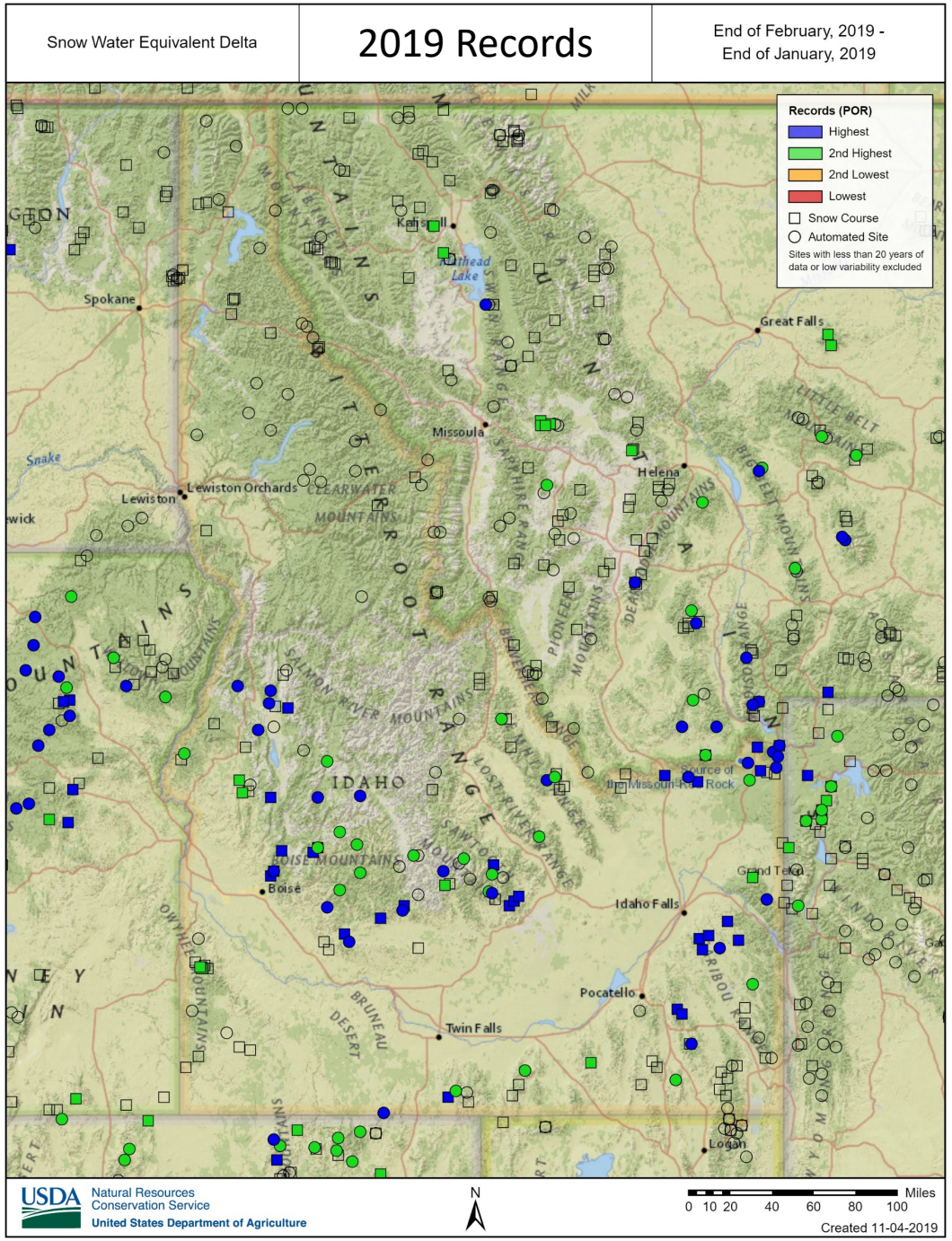
Historical Perspective – February SWE Increase Records

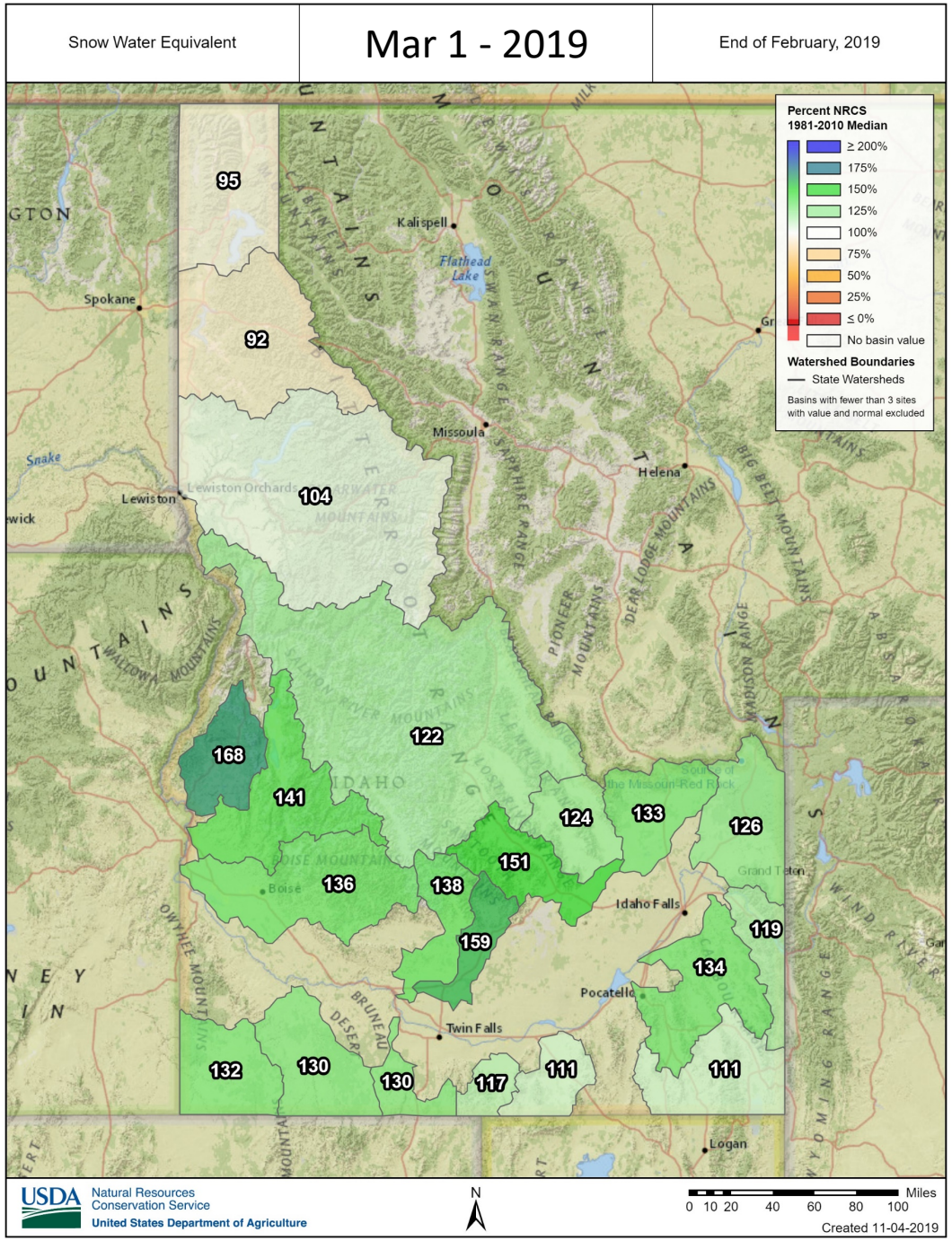
50+ years: Bad Bear, Cooper Basin, Couch Summit, Tripod Summit, Blue Ridge, Bone

60+ years: Lake Fork, Bogus Road, Pebble Creek

70+ years: Bogus Basin, Mores Creek Sum., Valley View

80+ years: Camp Creek, Kilgore, Big Springs



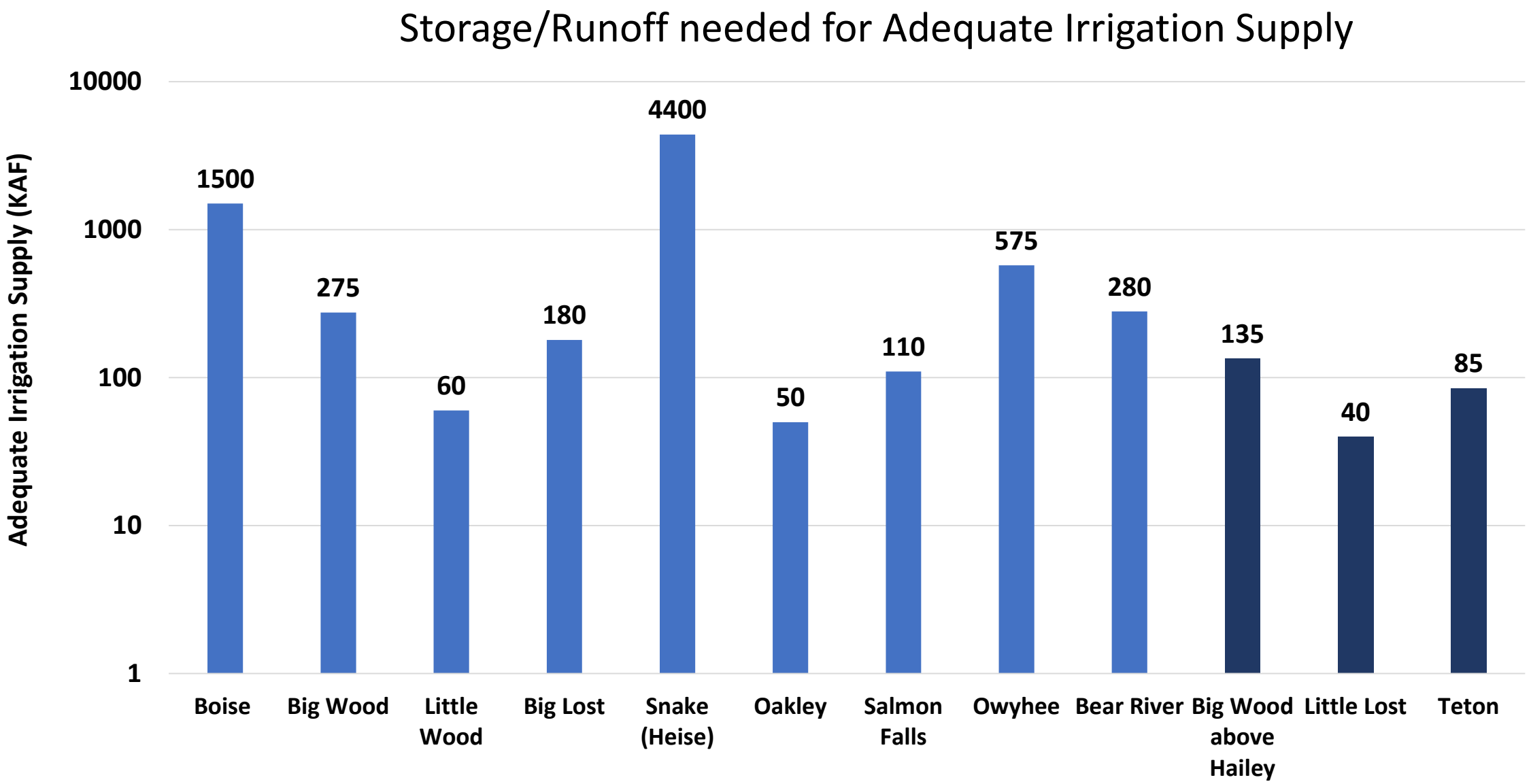


February 1st Snowpack Percent by Basin

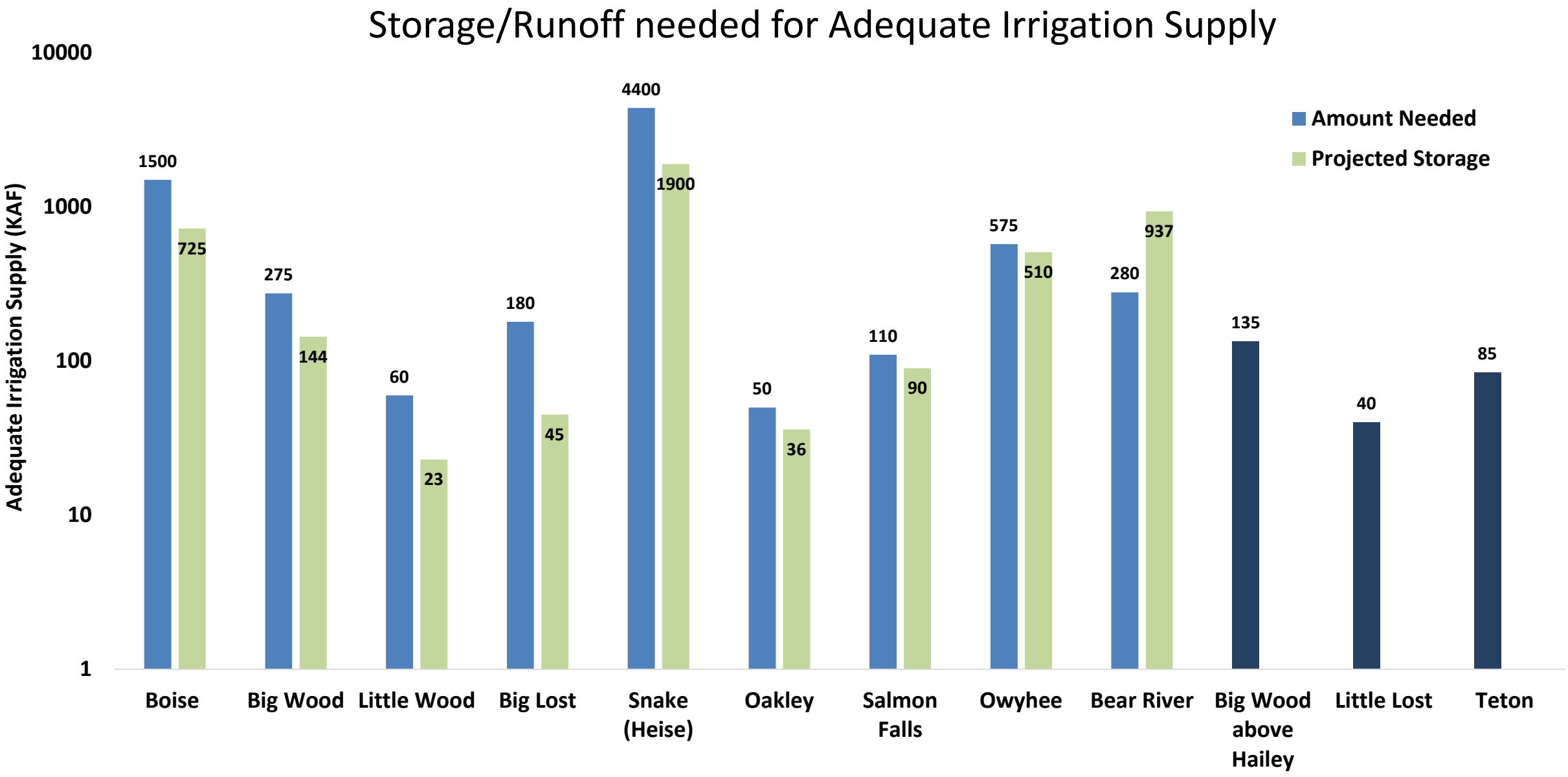
2019 Amount Needed Recap

Basin	Runoff needed for adequate water supply KAF	% of average streamflow needed	2019 Observed Streamflow KAF	% of average
Boise	870	64%	1723	127%
Big Wood above Hailey	135	51%	369	140%
Big Wood	155	58%	424	160%
Little Wood	37	40%	168	183%
Big Lost	140	93%	170	113%
Little Lost	40	118%	37	109%
Teton	85	44%	201	104%
Snake (Heise)	2600	69%	3929	104%
Oakley	27	87%	44	143%
Salmon Falls	41	48%	143	168%
Owyhee	295	44%	729	110%
* Bear River	35	17%	210	102%

2020 Amount Needed (log scale)



2020 Amount Needed



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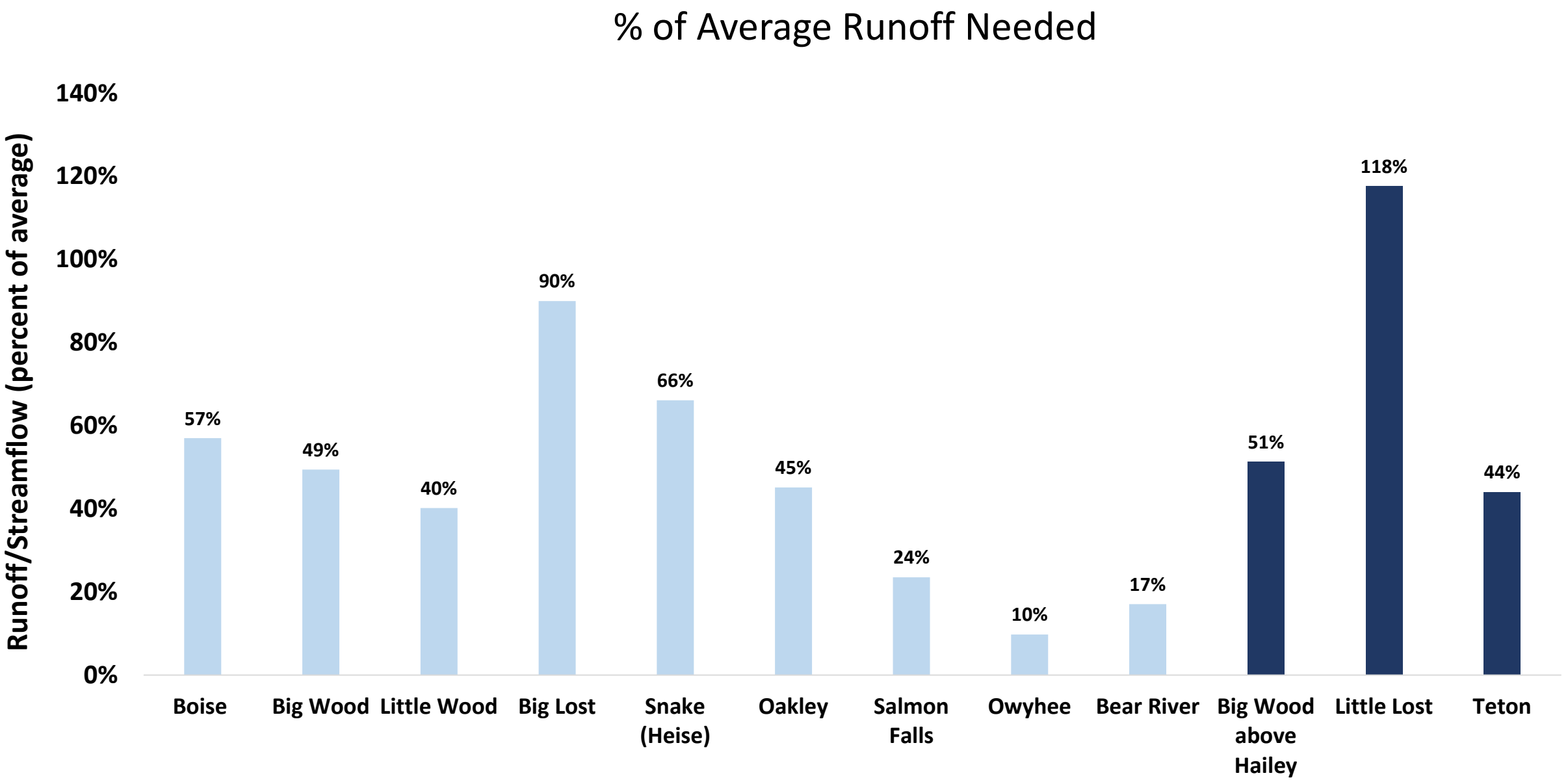
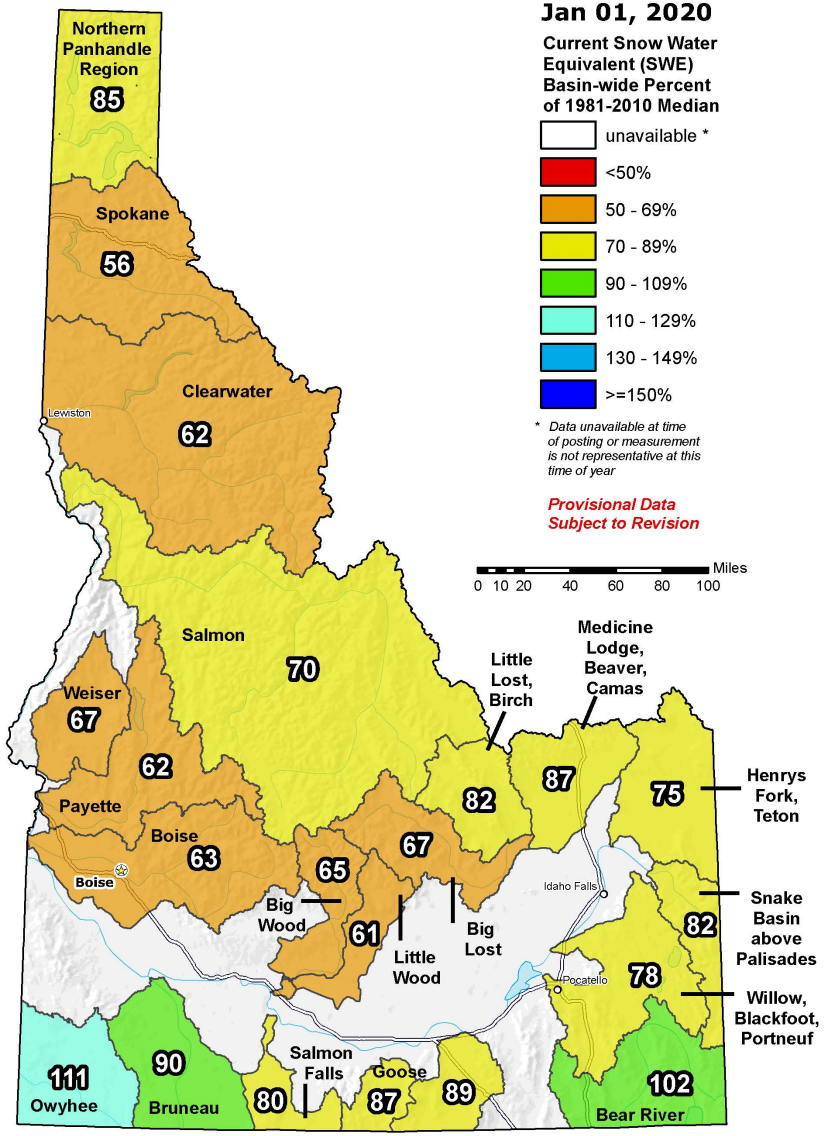


Jan. 1st vs Current Snowpack

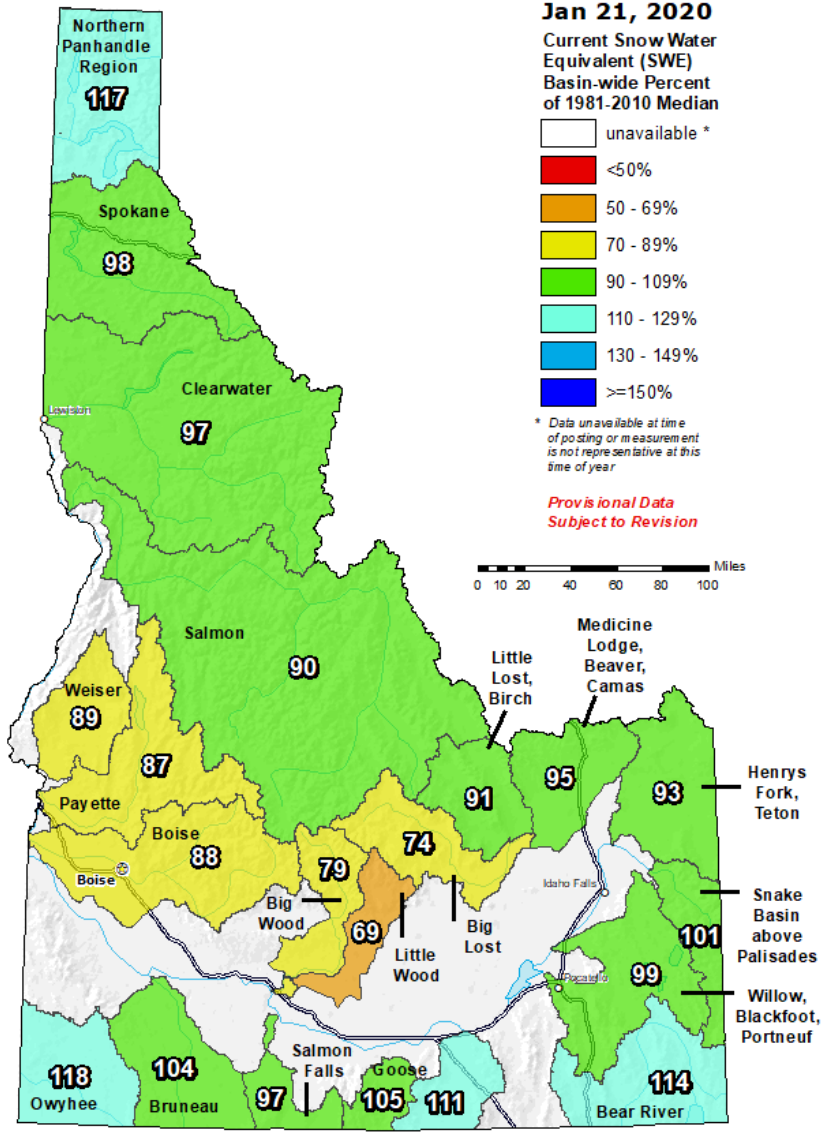
Idaho SNOTEL Current Snow Water Equivalent (SWE) % of Normal



The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by:
USDA/NRCS National Water and Climate Center
Portland, Oregon
http://www.wcc.nrcs.usda.gov

Idaho SNOTEL Current Snow Water Equivalent (SWE) % of Normal



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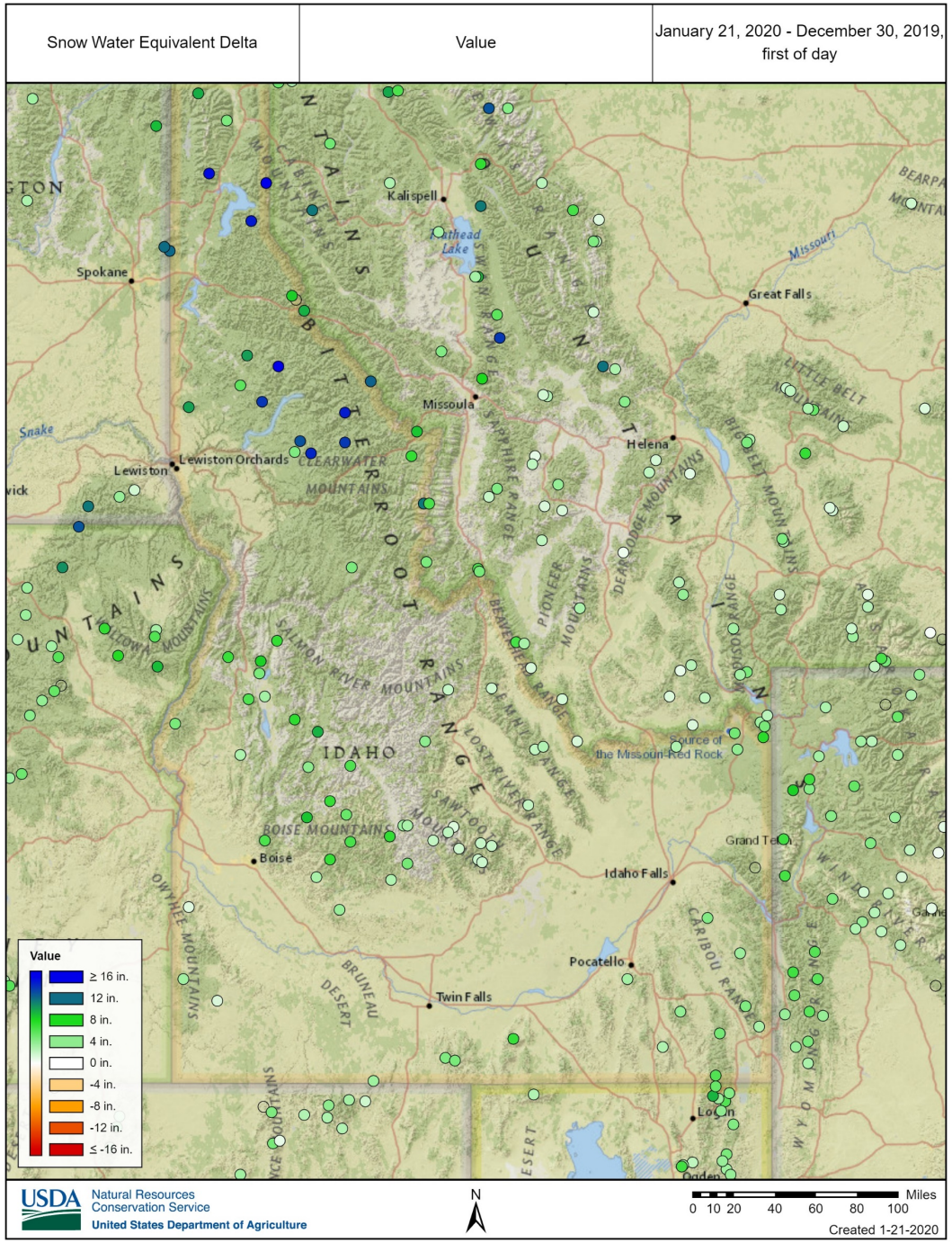
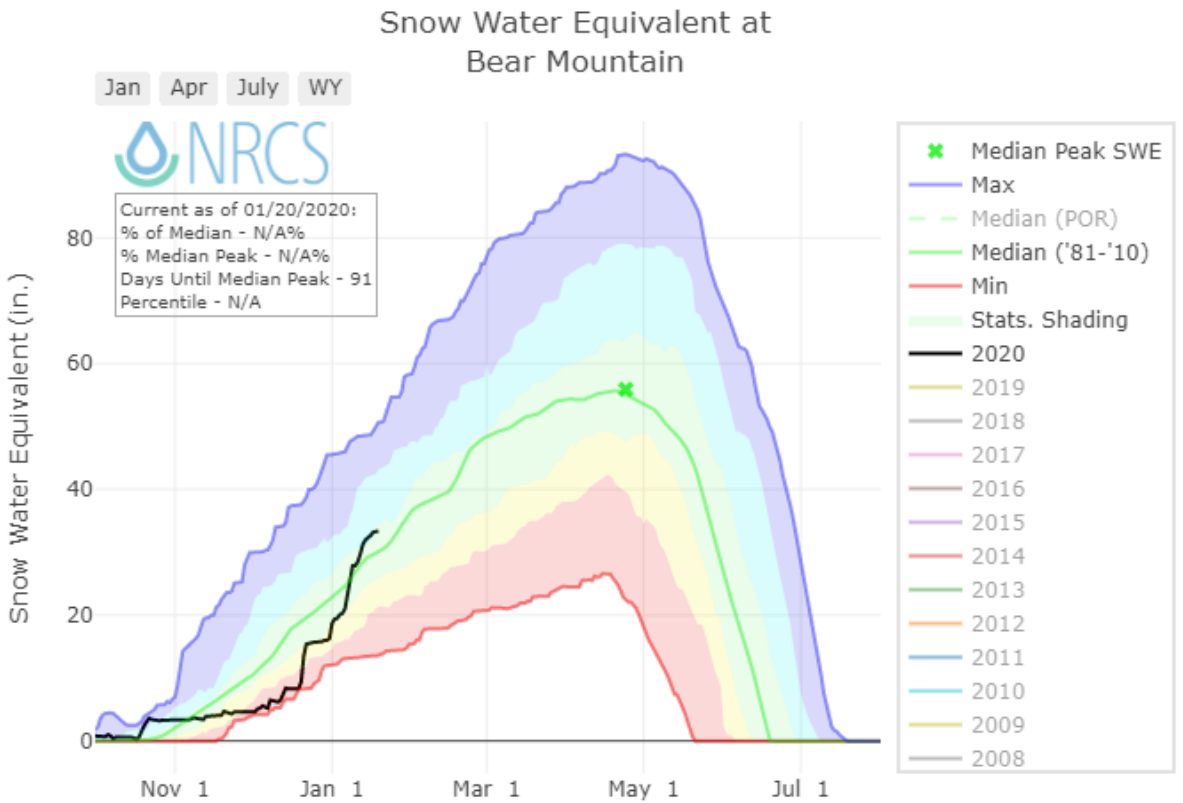
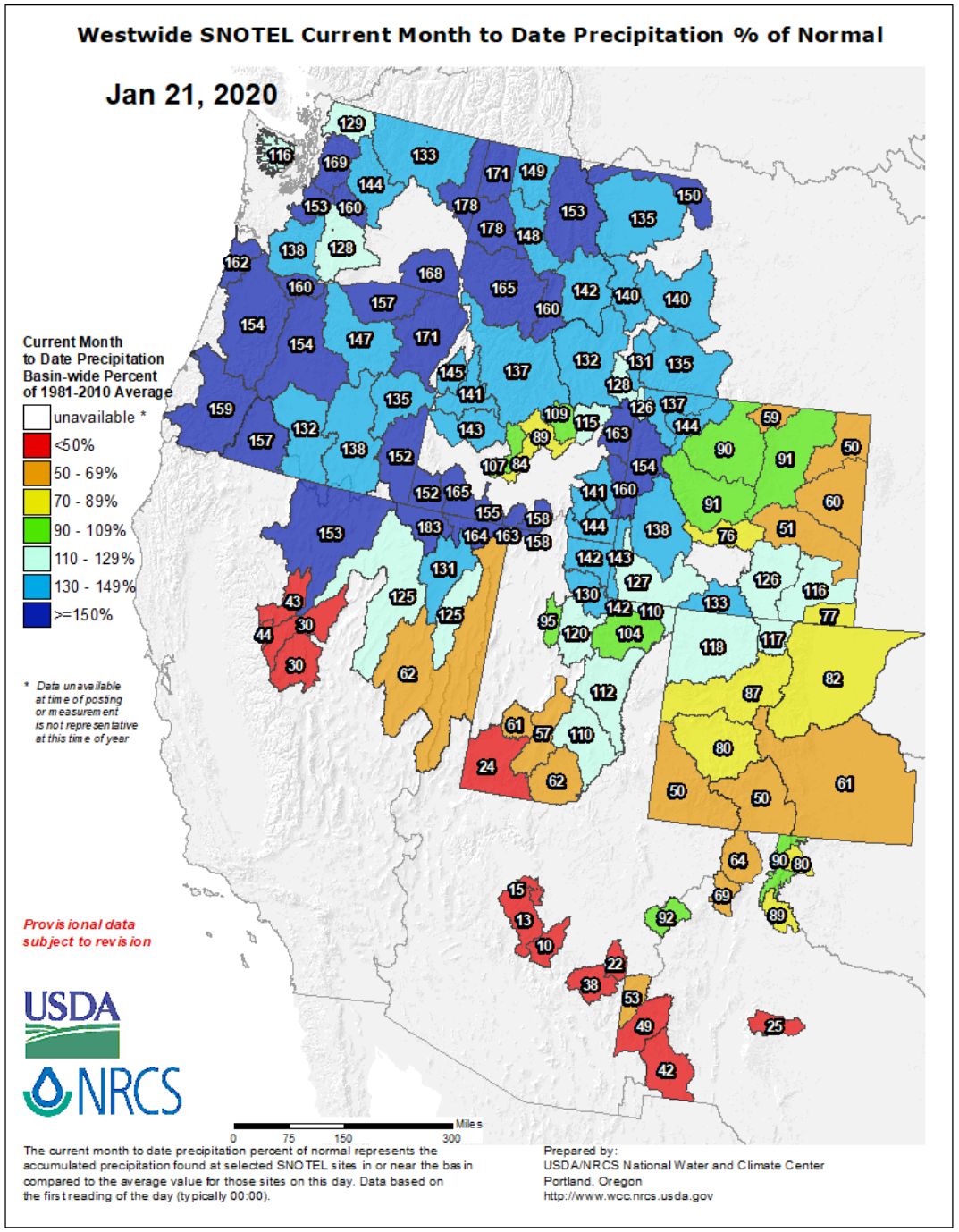


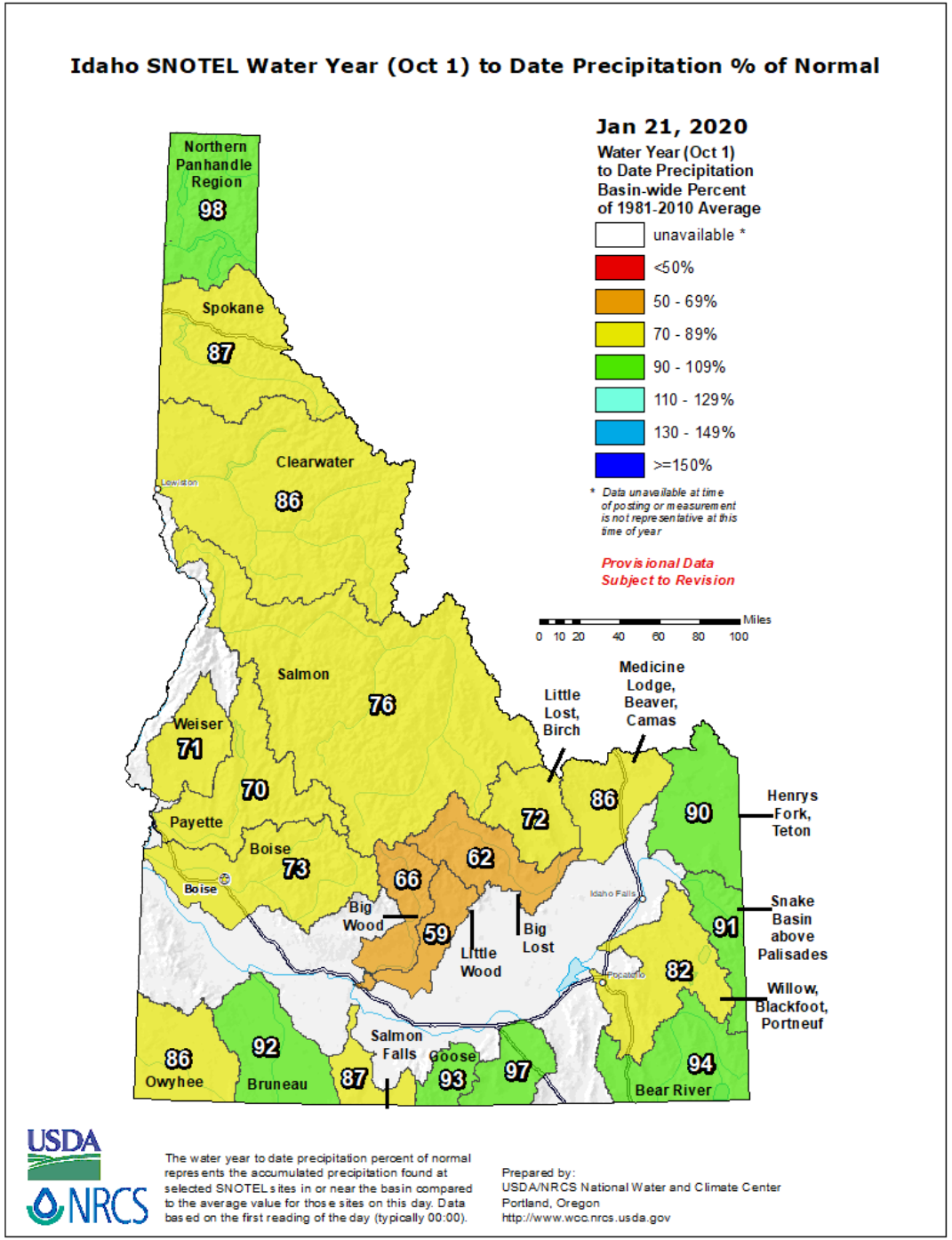
Snowpack (SWE) Increases since New Year's Eve Storm

- 10 to 18" in Clearwater & Panhandle
- 5 to 10" in West-Central Idaho & Upper Snake
- 2 to 4" in Southside Snake & Wood-Lost

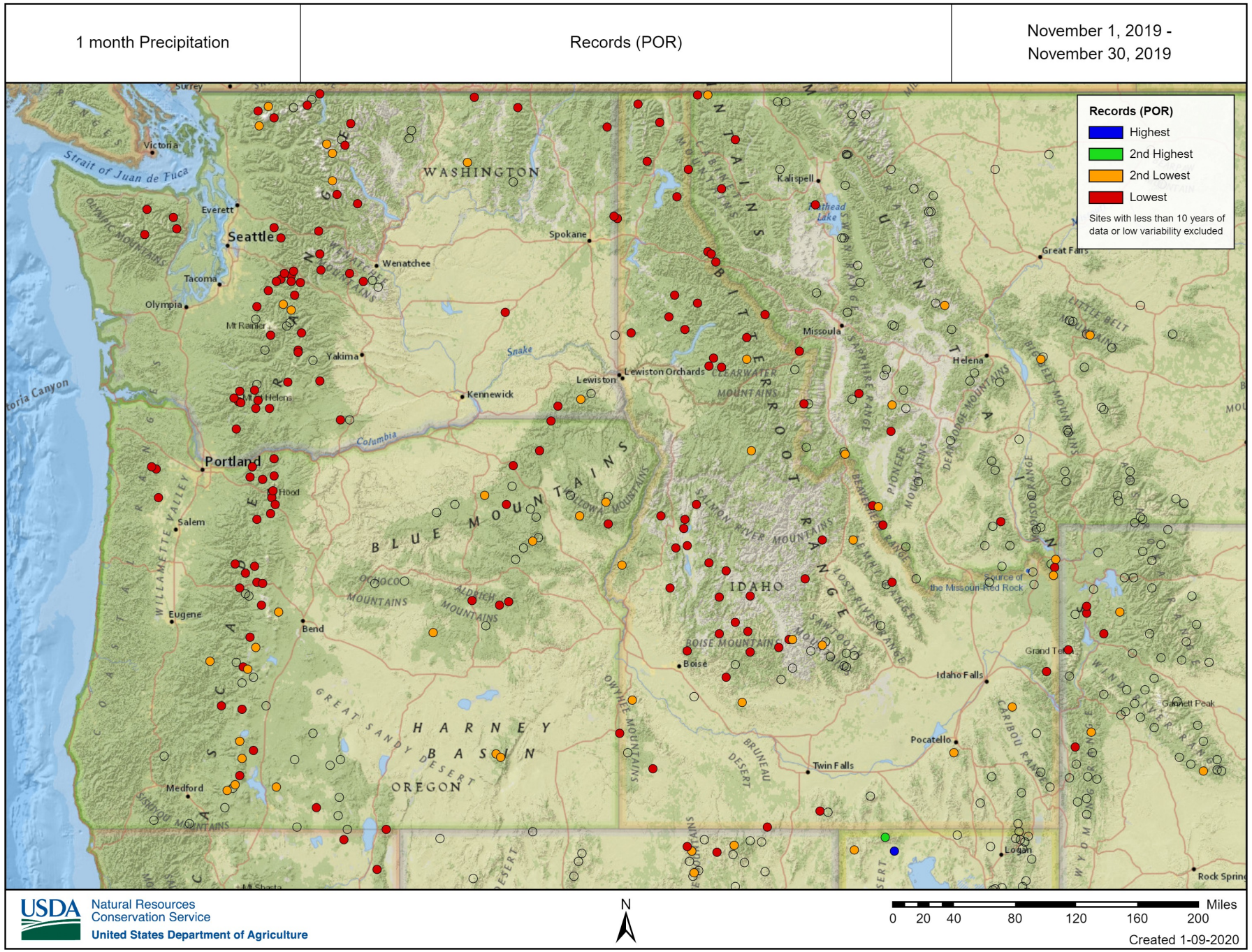




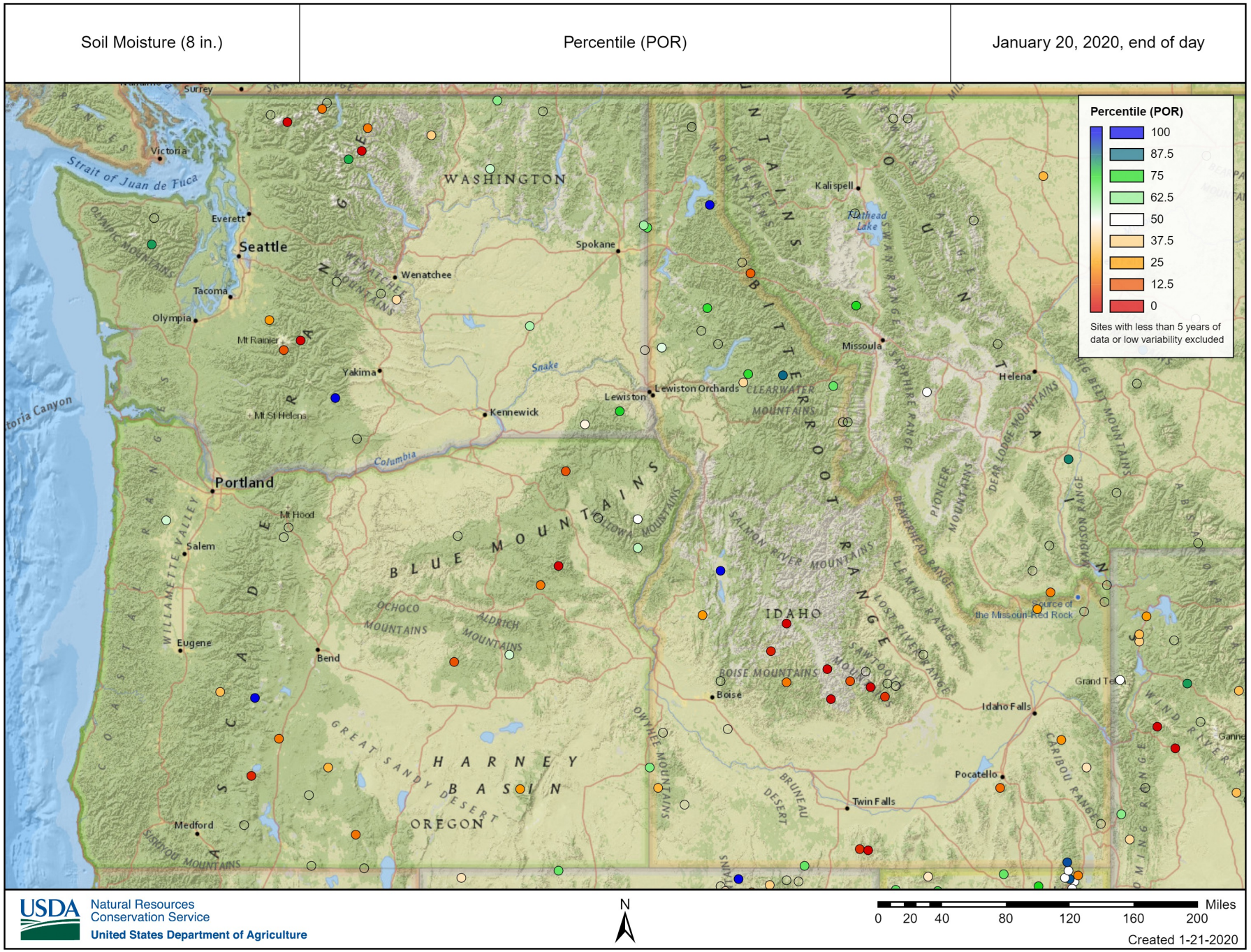
Monthly & Water-Year Precipitation



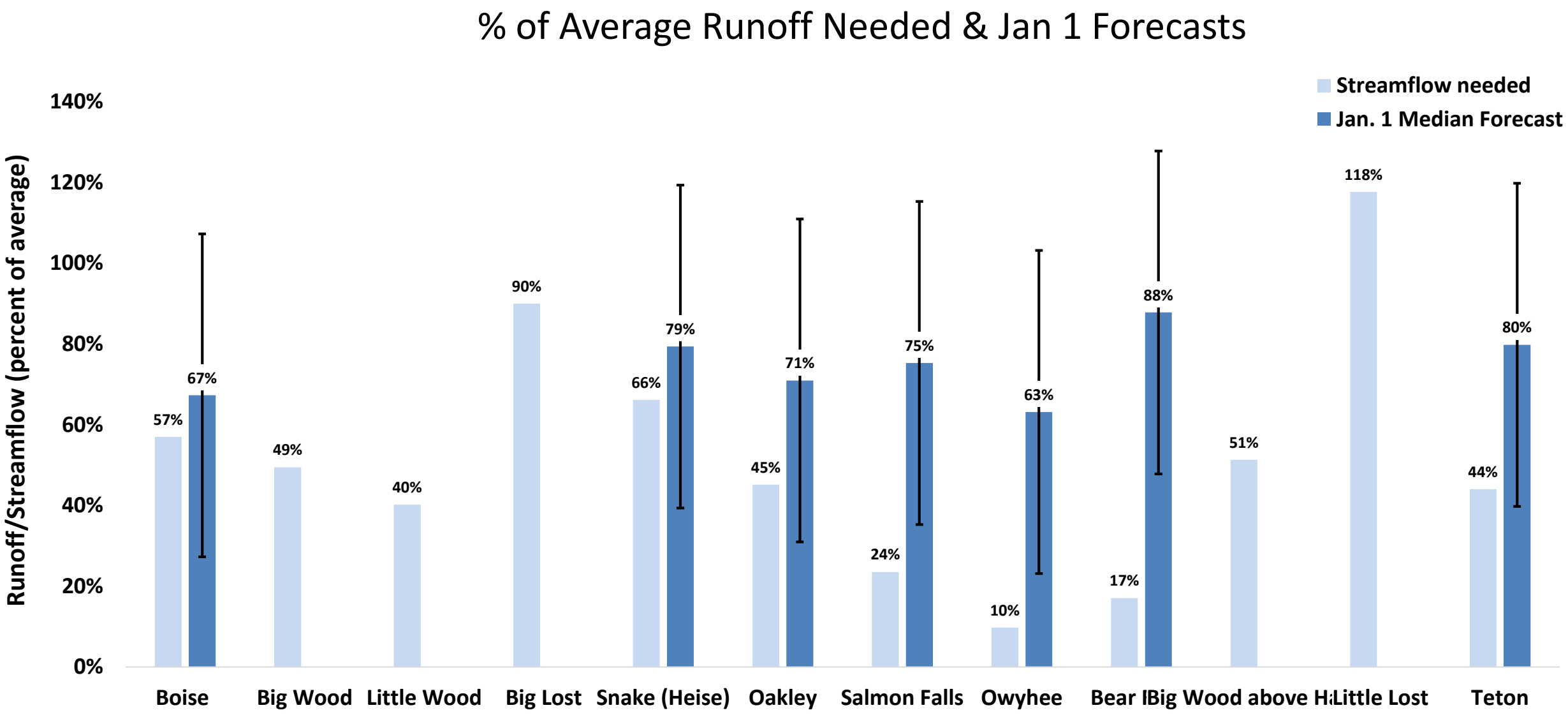
November: Record low (SNOTEL) precipitation



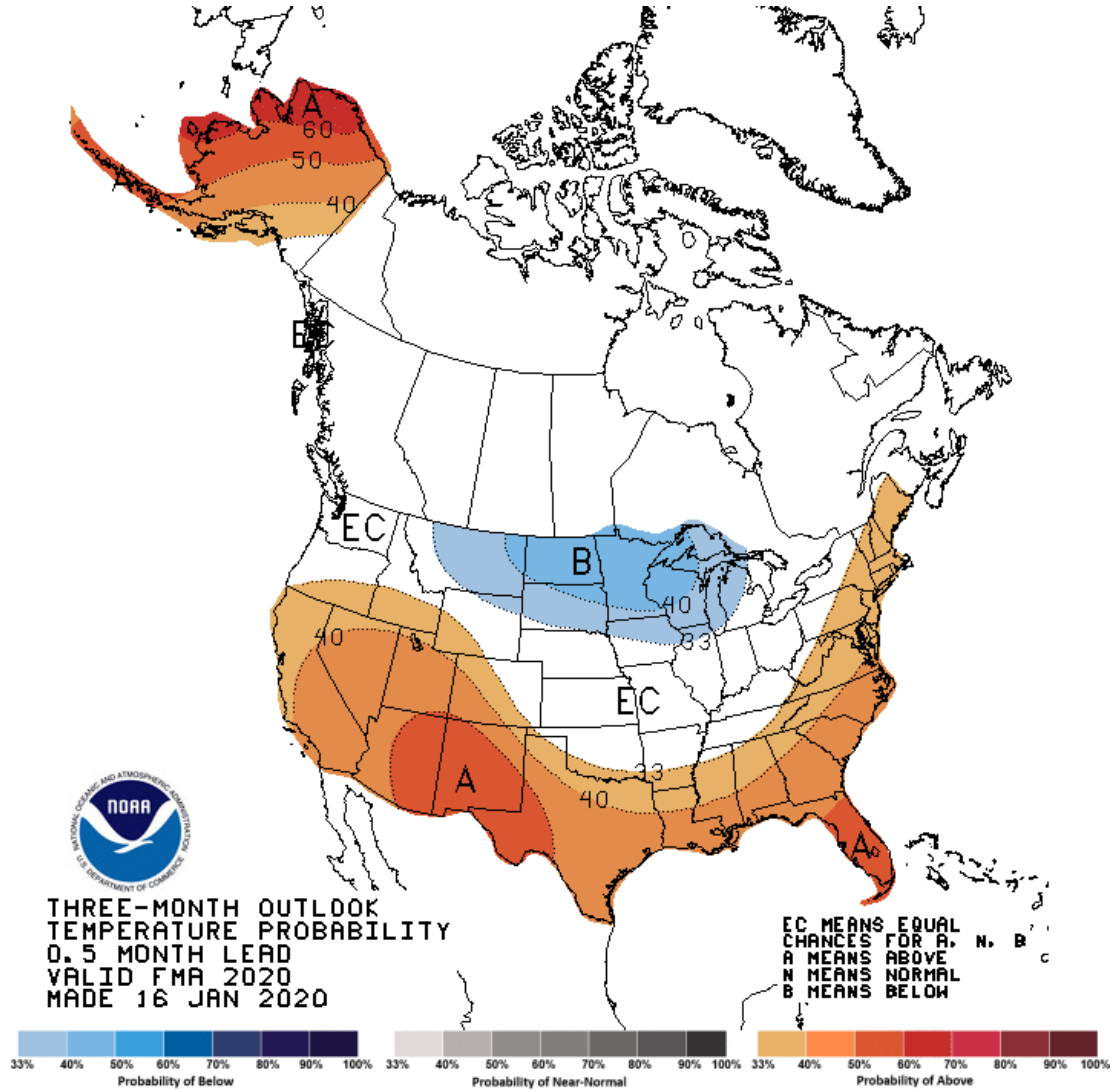
Soil Moisture: soils are dry in Central Mountains & Upper Snake…. runoff implications?

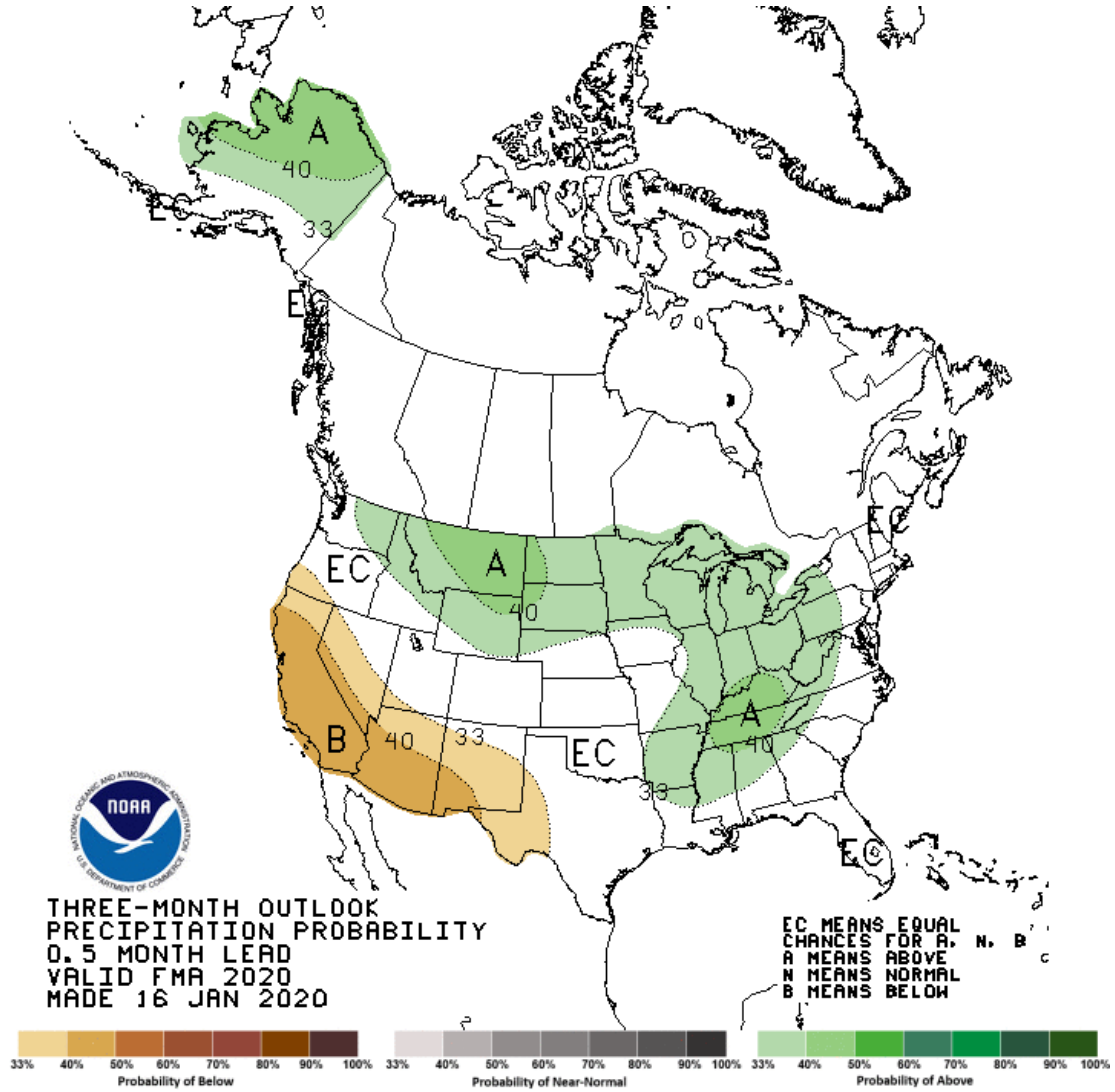


2020 Amount Needed & Jan. 1 Forecasts

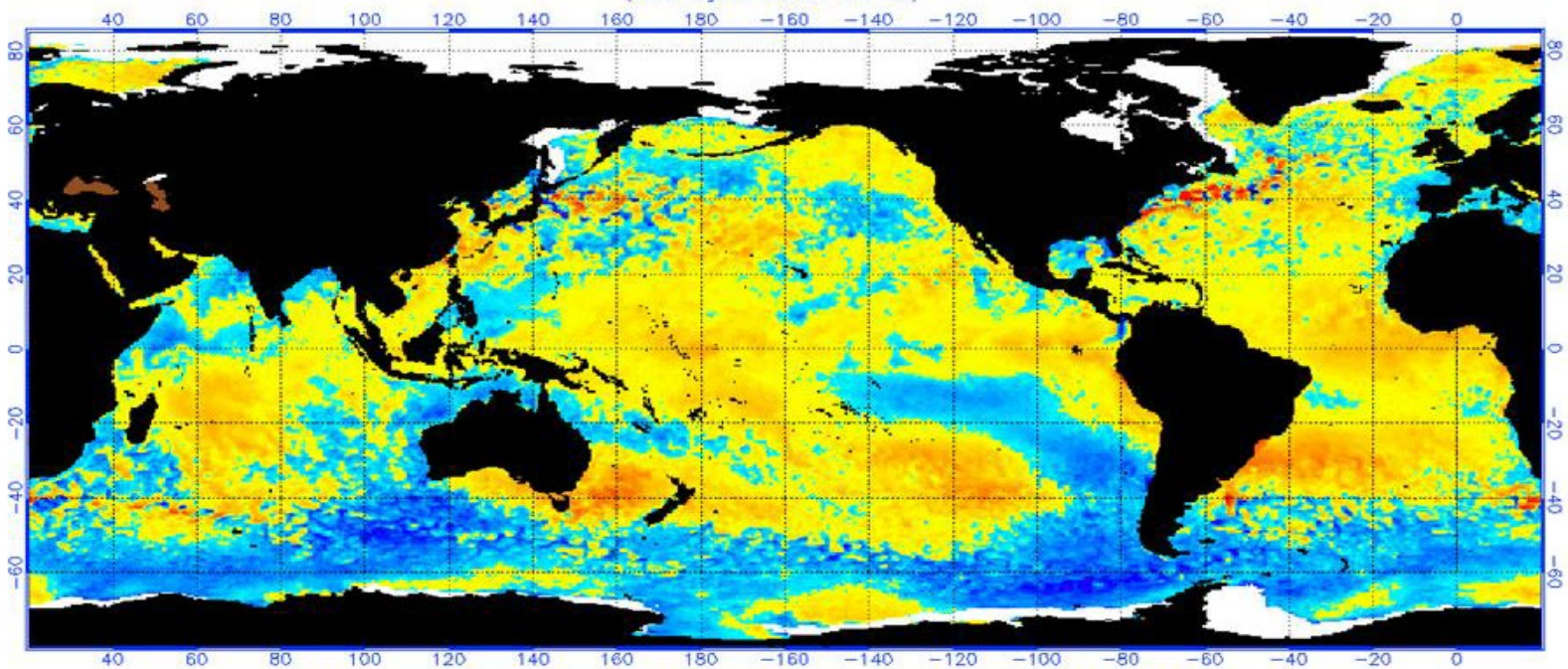


Feb-Mar-Apr 2020 Outlook

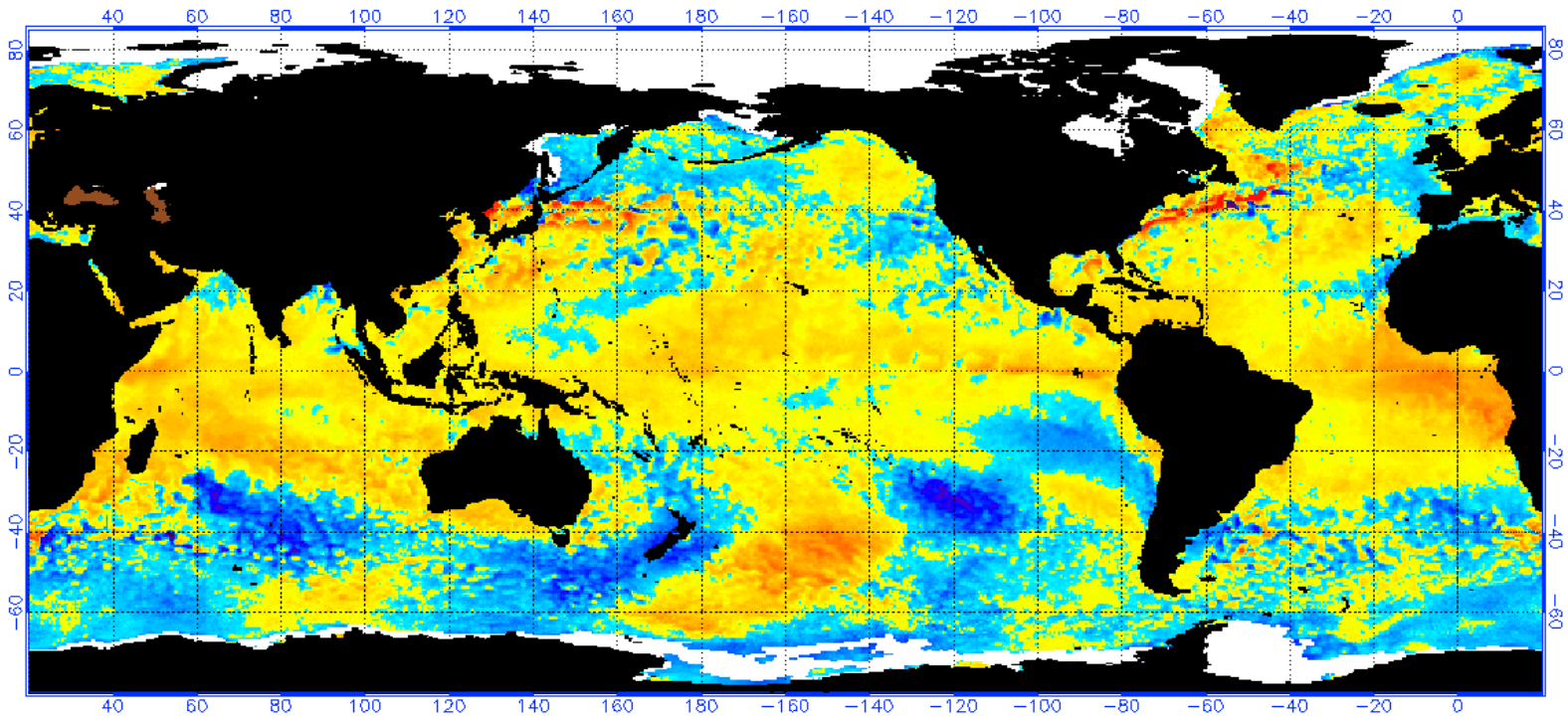


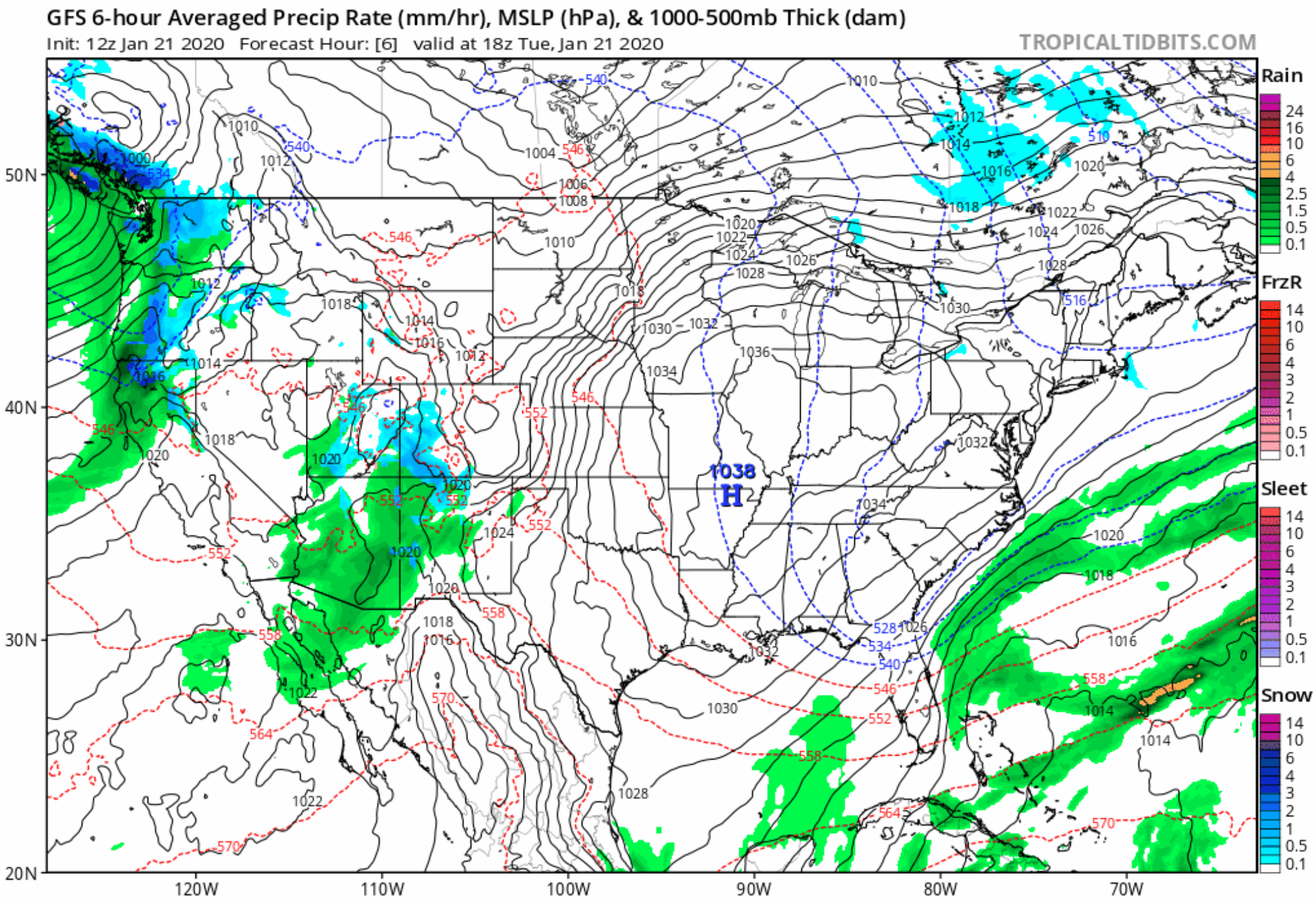


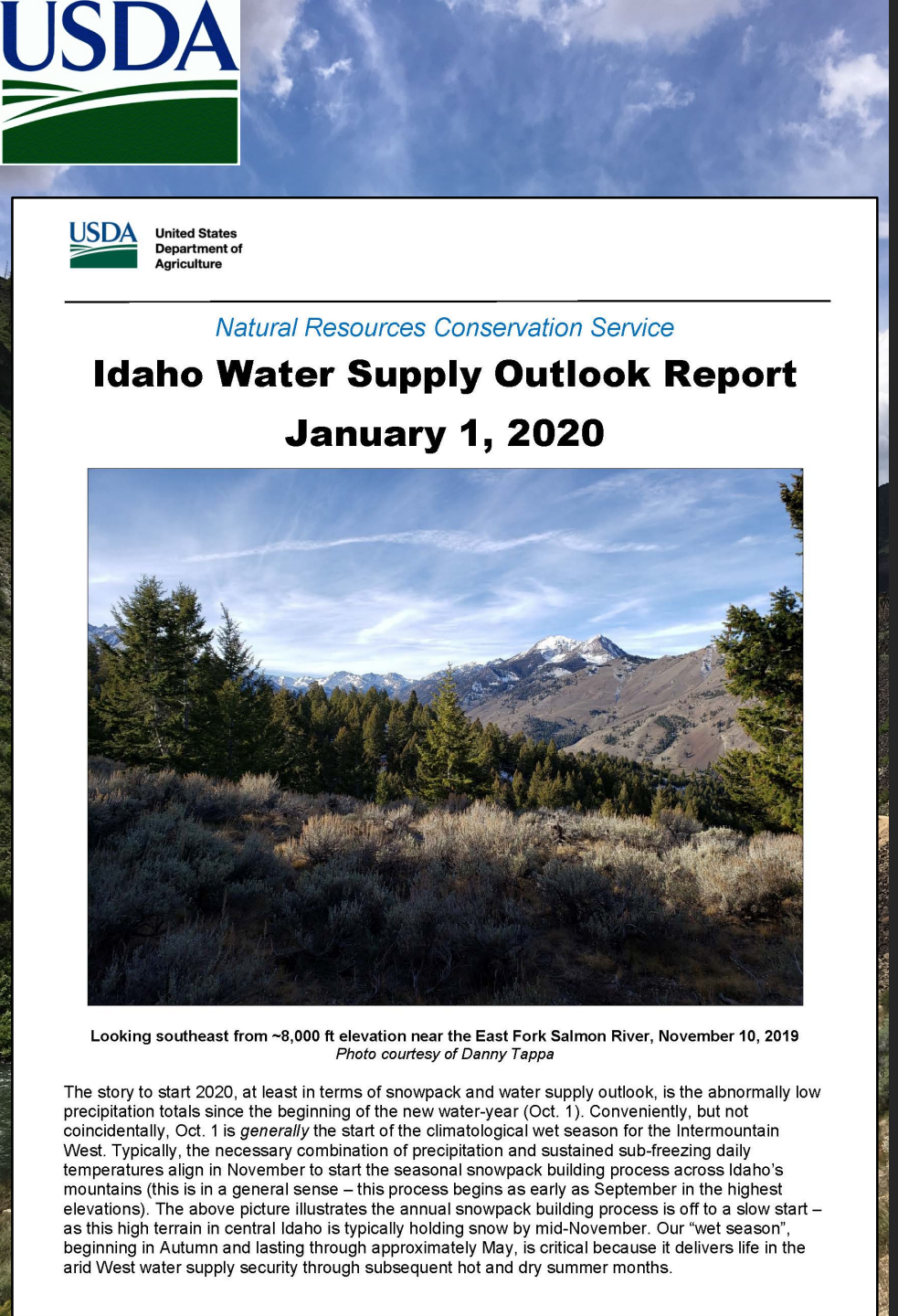
February 4, 2019



January 9, 2020




GFS 6-hour Averaged Precip Rate (mm/hr), MSLP (hPa), & 1000-500mb Thick (dam)
Init: 12z Jan 21 2020 Forecast Hour: [6] valid at 18z Tue, Jan 21 2020
TROPICALTIDBITS.COM
Rain
FrzR
Sleet
Snow
1038
H
50N
40N
30N
20N
120W
110W
100W
90W
80W
70W



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Idaho Water Supply Outlook Report

January 1, 2020

Looking southeast from ~8,000 ft elevation near the East Fork Salmon River, November 10, 2019
Photo courtesy of Danny Tappa

The story to start 2020, at least in terms of snowpack and water supply outlook, is the abnormally low precipitation totals since the beginning of the new water-year (Oct. 1). Conveniently, but not coincidentally, Oct. 1 is *generally* the start of the climatological wet season for the Intermountain West. Typically, the necessary combination of precipitation and sustained sub-freezing daily temperatures align in November to start the seasonal snowpack building process across Idaho's mountains (this is in a general sense – this process begins as early as September in the highest elevations). The above picture illustrates the annual snowpack building process is off to a slow start – as this high terrain in central Idaho is typically holding snow by mid-November. Our "wet season", beginning in Autumn and lasting through approximately May, is critical because it delivers life in the arid West water supply security through subsequent hot and dry summer months.

NRCS Natural Resources Conservation Service

Contact Information:

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…or just internet search "Idaho Snow Survey"

Email: Daniel.Tappa@usda.gov

Phone: (208) 378-5740

Recent ‘Winter’ Storage Increases Vs. Average

Or increased early snowmelt & mid-winter rain events?