



Natural Resources Conservation Service  
P.O. Box 2890  
Washington, D.C. 20013

**Date: March 26, 2013 (Updated)**

**Subject: March 1, 2013 Western Snowpack Conditions and Water Supply Forecasts**

The following information is provided for your use in describing western climate and water supply conditions as of March 1, 2013.

## OVERVIEW

February was cooler than normal across much of the West. Northern Utah experienced negative departures up to -12°F whereas the only positive departures were found over part of the Montana Rockies (+9°F) and the northernmost tier of the western states (ranging from 1°F to 5°F). Normally colder than average temperatures would have helped maintain the snowpack, however, precipitation was below to much below normal over a large portion of the western states (Fig. 1). Parts of central Montana, the northeastern Great Basin and eastern Wyoming had the largest surpluses. Nearer normal amounts fell over the Washington Cascades. Alaska precipitation percent of normal showed wetter conditions over the Kenai Peninsula, the Alaska Range, and parts of the Tanana Drainage and Panhandle, but much drier amounts over the Northern Slope and Steward Peninsula (Fig. 1a). Because of an unusually dry February from a climatological perspective, projected seasonal water supplies in the West have declined in nearly every state and basin, compared to the [February 1 forecasts](#).

## SNOWPACK

March opened with the least amount of snowpack in the West over the central and southern Rockies and over the Sierra Nevada (Fig. 2). The most snowpack include the Cascades, an isolated drainage in central Nevada, scattered drainages in Arizona, the Upper Columbia River, and southeast Alaska. Much of the West had decreases in snowpack during February as noted in Fig. 3.

A map containing a daily update of the westwide snowpack is available at the following URL - <http://www.wcc.nrcs.usda.gov/gis/snow.html>

## SEASONAL SNOW WATER EQUIVALENT

Despite being in a neutral El Niño Southern Oscillation (ENSO) oceanographic pattern, the atmosphere is behaving more in line with a typical La Niña winter, with the western states north of latitude 41°N experiencing above normal amounts of precipitation and below normal amounts south of 41°N (the central mountains in Arizona are an exception) (Fig. 4). For Alaska, normal to above normal values have occurred across the state with the Panhandle experiencing the largest surplus and the Upper Tanana and Kuparuk Drainages having the largest deficits.

Monthly and seasonal precipitation maps are available from the following locations - <http://www.wcc.nrcs.usda.gov/gis/precip.html> and <http://www.cbrfc.noaa.gov/ws/wsup/westwide/westwide.cgi>.

## SPRING AND SUMMER STREAMFLOW FORECASTS

Seasonal water supply projections by the USDA-NRCS National Water and Climate Center indicate worsening drought conditions which are currently plaguing the western half of the U.S. (Fig. 5). Snowmelt forecasts over much of the West have decreased by 15% to 30% since February 1 (Fig. 6). Except for small areas in the Bighorn Mountains and Colorado's Front Range, February precipitation was less than 50% of average. The hardest hit areas were eastern Oregon, southern Idaho, and nearly all of Nevada, Utah, Wyoming and Colorado. The largest forecast declines are in the Snake River and Great Basin regions. Significant forecast reductions (10%-15%) are also noted for the Canadian portion of the Columbia Basin, Oregon Cascades, and the Yellowstone, Colorado and the Platte River basins.

Forecasts over the Washington Cascades, the upper Missouri, Clark Fork and the Rio Grande basins held their own with respect to last month. Forecasts, although still below normal, actually increased in the Four Corners area of the West.

The [Climate Prediction Center](#) projections for the remainder of the winter season indicate drier than normal weather over most of the West. If this verifies, the drought conditions in the West will only get worse.

**Alaska** - Generally, the snowpack increased across Alaska during February with the eastern Interior and Southcentral making the biggest gains. Snowpacks in the Norton Sound and Bristol Bay areas remain below median as does the snowpack in the Koyukuk, Copper and Susitna Basins. Snowpack in most of the Yukon and Tanana basins are near median while the upper Tanana basin, the lower Kenai Peninsula and southeast Alaska are above median.

Most watersheds across the state are expected to have average or slightly above average runoff. These include drainages in the southeast panhandle, the Kenai Peninsula and the Yukon, Tanana and Kuskokwim drainages. Streamflow near Anchorage and in the Susitna Valley are expected to be below average and the streamflows in the Koyukuk River basin are expected to be much below average.

**Arizona** - As of March 1, snowpack levels are below median to nearly median in the major basins. Precipitation for February was well below average throughout the basins. The Salt and Verde River reservoir system stands at 57% of capacity, whereas San Carlos Reservoir is at less than 1% of capacity. The forecasts continue to call for well below median to below median runoff in the basins for the spring runoff period.

**California** – Snowpack conditions in California were far above median in November and December. Since then, snowpack conditions have been decreasing due to one of the driest January and February periods on record. Currently, the snowpack level has moved to below median for this time of year, and continues to decrease due to the lack of significant snowfall.

**Colorado** – Colorado experienced a dry month during February. However, in most basins, snowpack percentages have remained relatively constant from last month. There were increases in the South Platte and Arkansas River basins due to storms along the Front Range in the last half of February. The Arkansas and South Platte snowpack increased with respect to median, but even with the increase, the South Platte remains at 63% of median.

As expected, seasonal runoff forecasts have decreased from those issued a month ago. The state can expect below average runoff this spring and summer across all of the major basins. Reservoir storage percentages across the state continue to decline.

**Idaho** – Abundant fall rains and above median early snow through December produced a strong start to the 2013 Water Year. Now, after two months of below average precipitation, Idaho's snowpack is below median across most of the state.

The majority of Idaho's streams are forecast to produce below average spring and summer runoff, with the Bear River forecast, in southeastern part of the state, at only 14% of the 1981-2010 average.

As expected, seasonal runoff forecasts have decreased from those issued a month ago. At this time, the state can expect below average runoff this spring and summer across all of the major basins. Reservoir storage percentages across the state continue to decline.

**Montana** – A minimal decrease in snowpack best describes the trend this month in statewide snowpack, which is currently at 93% of median. The current snowpack levels are in good standing, considering only 20% of the typical snow accumulation season remains. Although slightly below median, Montana snowpack is one of the largest compared to other states across the West.

State-wide, spring and summer streamflow volumes are forecast to be 90% of average. West of the Continental Divide, streamflows are forecast to be 92% of average; east of the divide, seasonal volumes are forecast to be 89% of average.

**Nevada** - What began as a wet start to the water year has failed to deliver in the main snow producing months of January and February. Dry conditions dominate over the bulk of the state. This has led to declining snowpack numbers.

Streamflow forecasts for the first of March reflect the drying conditions, with expected spring runoff to be below to well below average for the entire state. Nevada would need a series of very wet storms in order to have a chance of reaching median conditions for the year. Areas with little or no upstream storage will face the biggest challenges this coming spring and summer. Meeting all water user requirements will be difficult and users should work closely with their water providers to make the best use of what will be limited availability in many parts of the state.

**New Mexico** - Intermittent February storms passing through New Mexico provided most northern mountain locations with enough snow to keep the snowpack levels close to last month's levels. However, this still left most basins with snowpacks 20 to 40% below median as of March 1. At what would typically be peak snowpack time for the year, conditions remain low virtually statewide. Possibilities for a near average spring snowmelt continues to decrease with each stretch of dry and mild weather.

Forecast flows for the Rio Grande include 55% of average into Cochiti Lake and 39% at Elephant Butte Lake. Other Rio Grande Basin reservoir forecast inflows range from 55% of average at El Vado Lake to 29% of average at Jemez Canyon Reservoir. Inflow to Santa Rosa Lake is expected to be 36% of average while in the San Juan Basin, Navajo Reservoir is expecting 63% of average inflow. If these forecasts are accurate, there will be major impacts on water users throughout the runoff season.

**Oregon** – As of March 1, most of Oregon's mountain snowpack continues to hover near median. However, the snowpack in the southern and eastern basins of the state remains below median. The month of February brought about half of the average precipitation allotment for most of the state. As of March 1, most of Oregon's summer streamflow forecasts fall in the 90 to 100% of average range, while forecasts for southern and eastern Oregon streams are between 60 to 85% of average.

**Utah** – Snowpacks are not increasing as normal for this time of year and have declined anywhere from 10% to 40% since January 1. The season started well but now snowpack medians are declining. With only four weeks left in the snow accumulation season, there is little

## March 1, 2013 Water Supply Forecast Summary

probability that northern Utah will get sufficient snowpack to bring current conditions back to normal. Southern Utah is in better shape with snowpacks close to 90% of median.

Statewide, reservoir storage is nearly 20% less than last year. Overall, the water supply outlook is below average. Given the poor and declining climate conditions, coupled with the forecast potential of a dry spring...water users are advised to prepare accordingly.

**Washington** – February precipitation was near average in northwestern Washington, 50% to 60% over the central portions and 70% to 75% along the eastern edge. Even though Washington's snowpack is still holding up fairly well (near to above median in most areas of the state), the snowpack conditions in the central region of the state have declined by over 30% of median. Elsewhere in the state, the snowpack has decreased 5% to 25% of median.

Seasonal streamflow volume predictions have fallen 10% to 25% over the north central portion of the state, but there are only minor decreases elsewhere. Most rivers are expected to produce near normal to slightly below average runoff this spring and summer.

**Wyoming** - The March 1 snowpack for Wyoming is quite variable, ranging from 66% of median over the lower North Platte Basin to 100% of median over the Powder River Basin. The statewide snowpack is currently at 85% of median. Monthly precipitation over the state was also quite variable, with values from 40% to 162% of average being reported. As a result, the expected spring and summer streamflow forecasts vary from 15% in the North Platte River drainage to 105% in the Powder River drainage.

State Basin Outlook Reports can be accessed at: <http://www.wcc.nrcs.usda.gov/cgibin/bor.pl>.

### **RESERVOIR STORAGE**

Statewide (average) reservoir levels (Fig. 7) show Idaho, Montana, Utah and Wyoming near normal. The remainder of the western states are below normal, especially Nevada and New Mexico. California data will be available soon.

### **FOR MORE INFORMATION**

The USDA-NRCS National Water and Climate Center Homepage provides the latest available snowpack and water supply information. Please visit us at <http://www.wcc.nrcs.usda.gov>

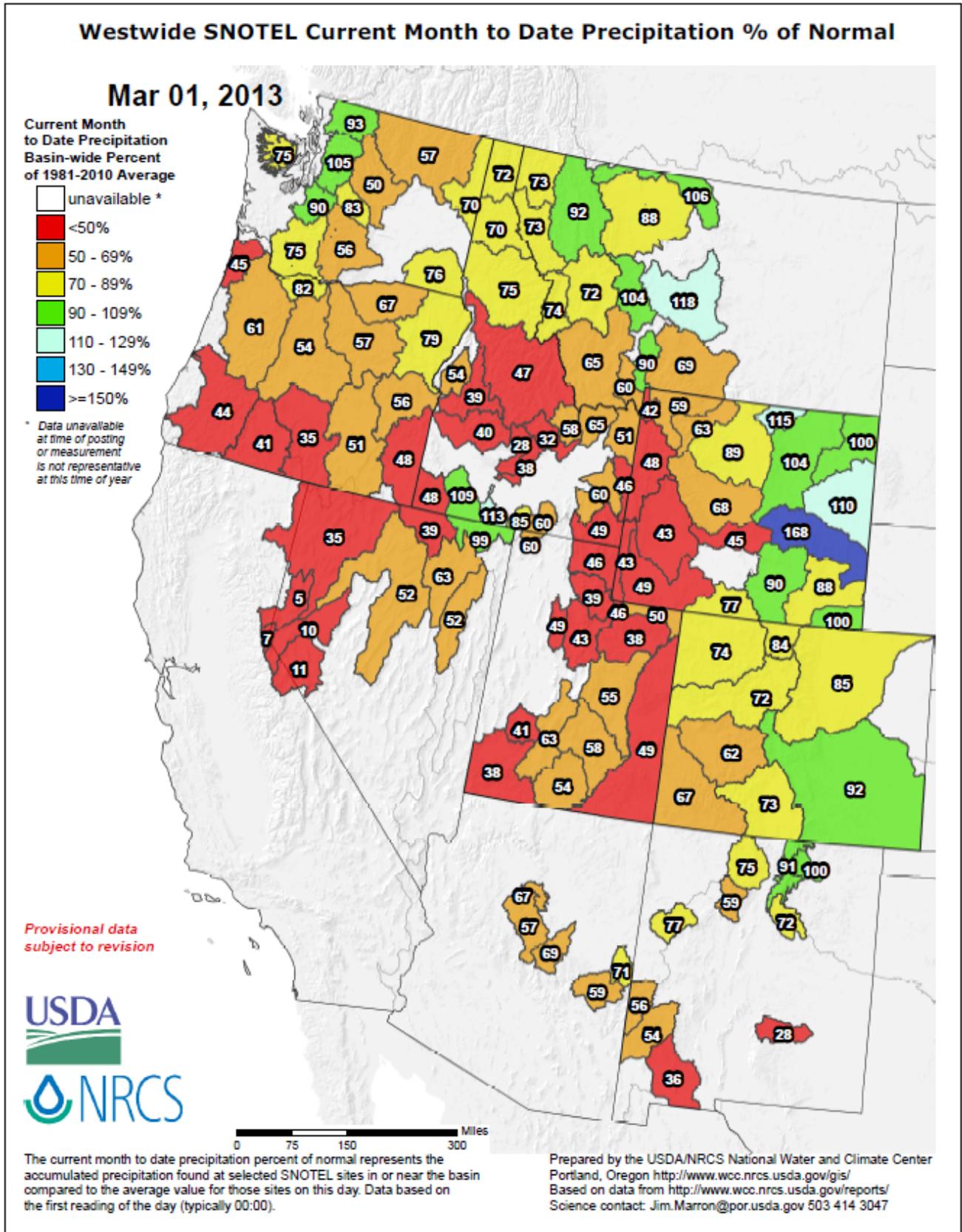
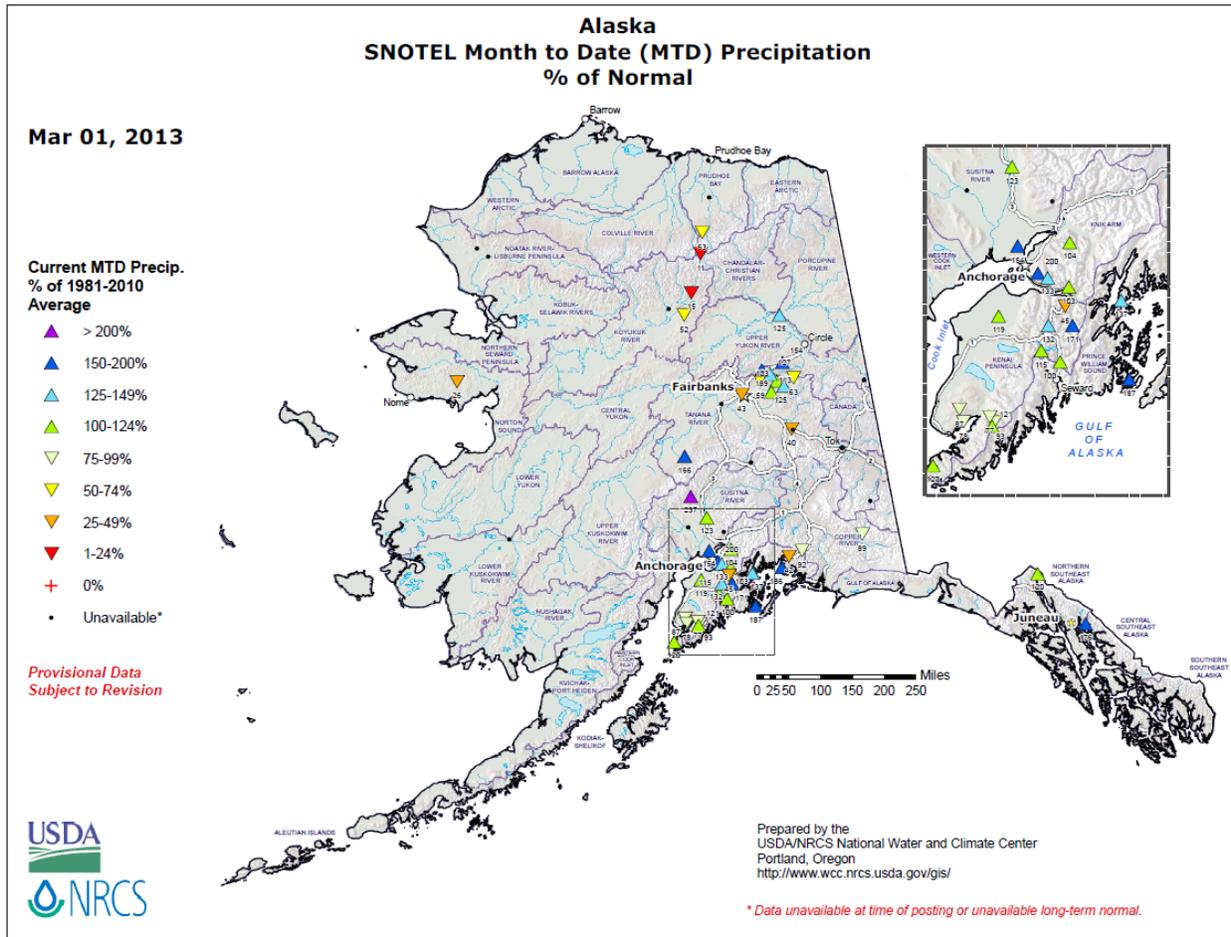


Fig. 1: For [February 2013](#), precipitation was generally below average west-wide, with the exception of the Washington Cascades, Northeastern Great Basin and some river basins along the eastern slope of the Rockies in Montana and Wyoming.

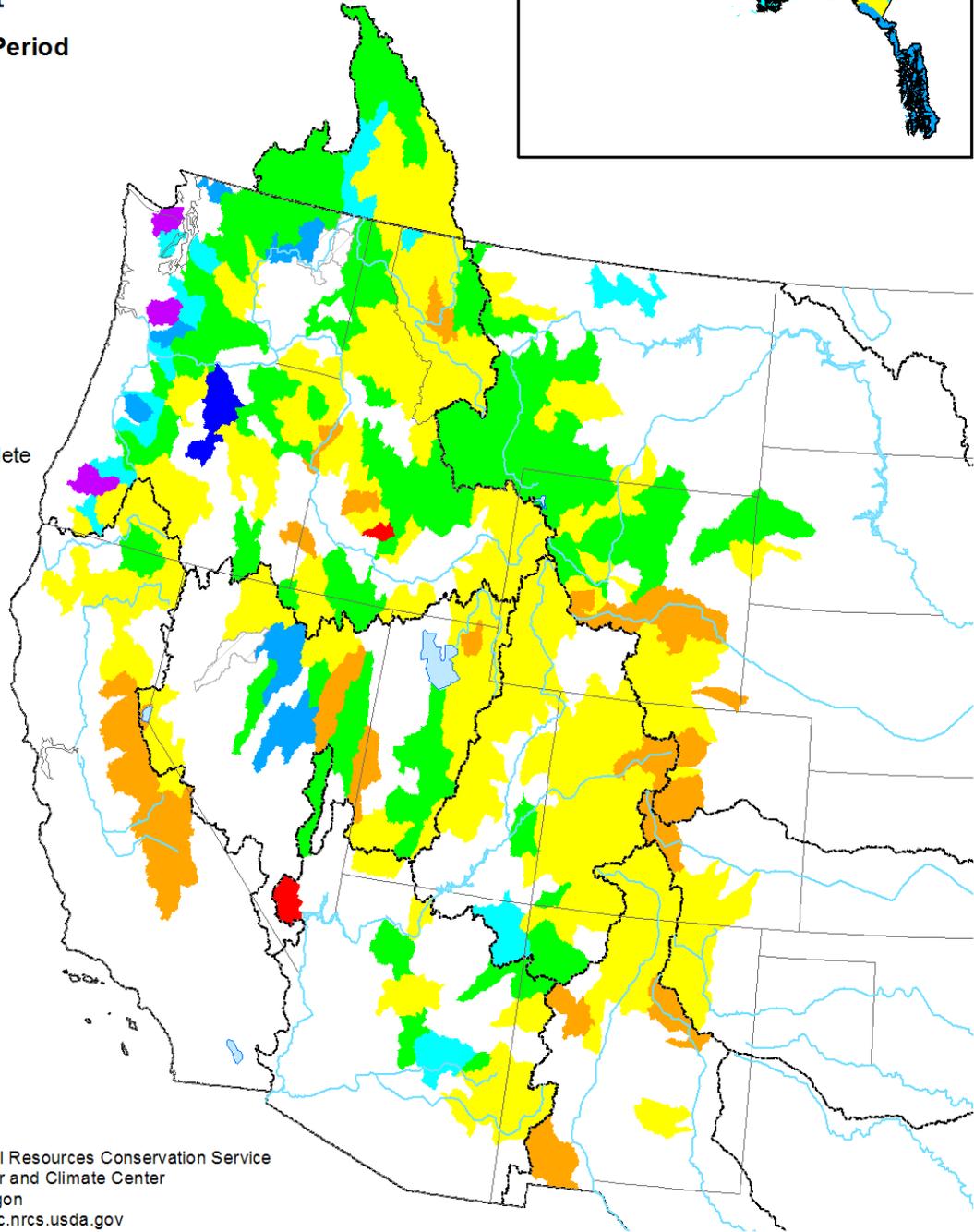
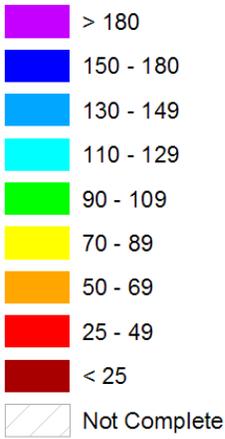


**Fig. 1a: For February 2013, [Alaska](#) precipitation percent of normal saw wetter conditions over the Kenai Peninsula, the Alaska Range and parts of the Tanana Drainage and Panhandle, but much drier amounts over the Northern Slope and Stewart Peninsula.**

# Mountain Snowpack as of March 1, 2013

Manual snow course data are no longer available in some regions due to program decisions to meet reduced budgets. As a result, this map may have additional unrepresented areas and some regions may not be directly comparable to previous years.

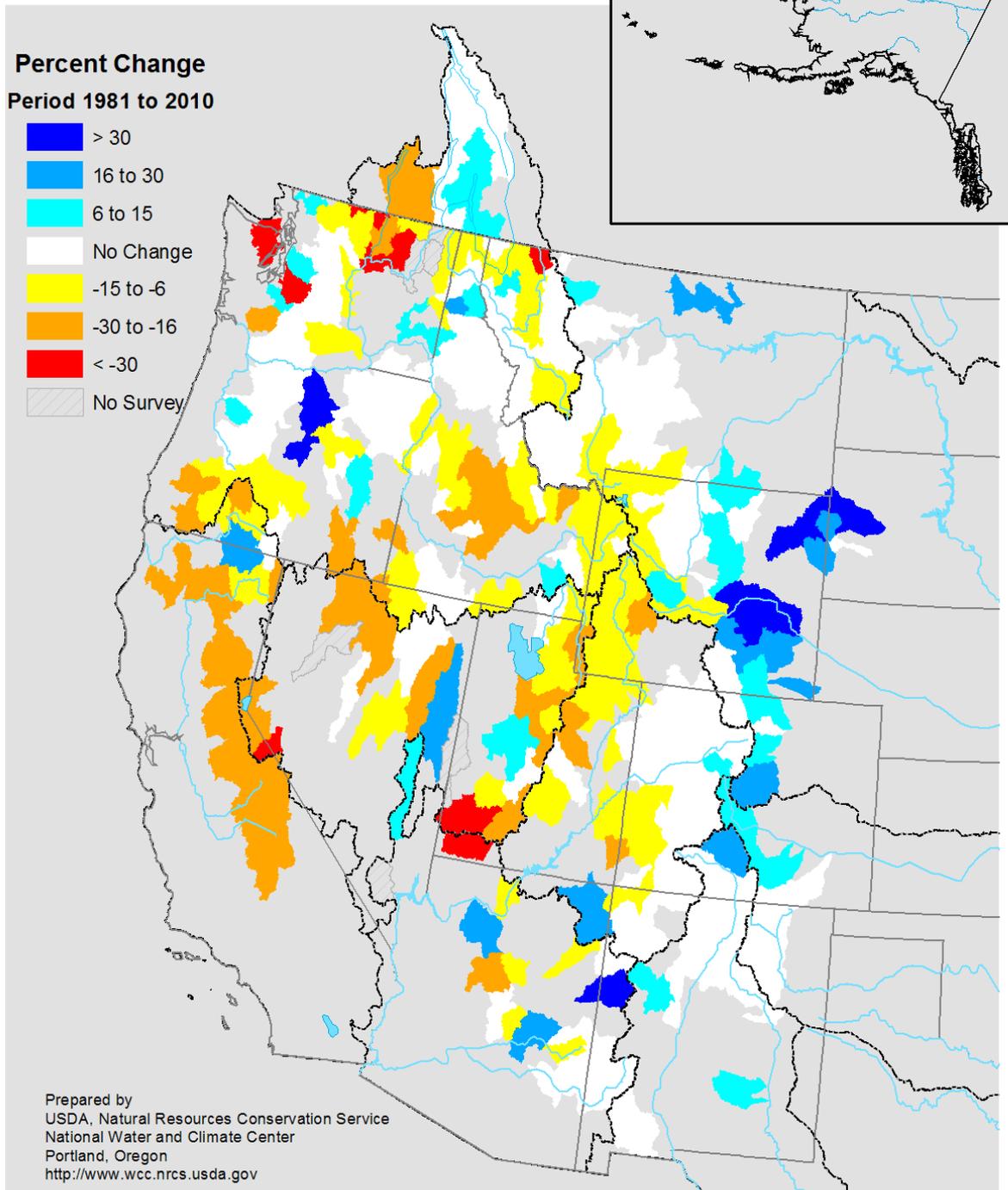
**Percent**  
**1981 to 2010 Period**



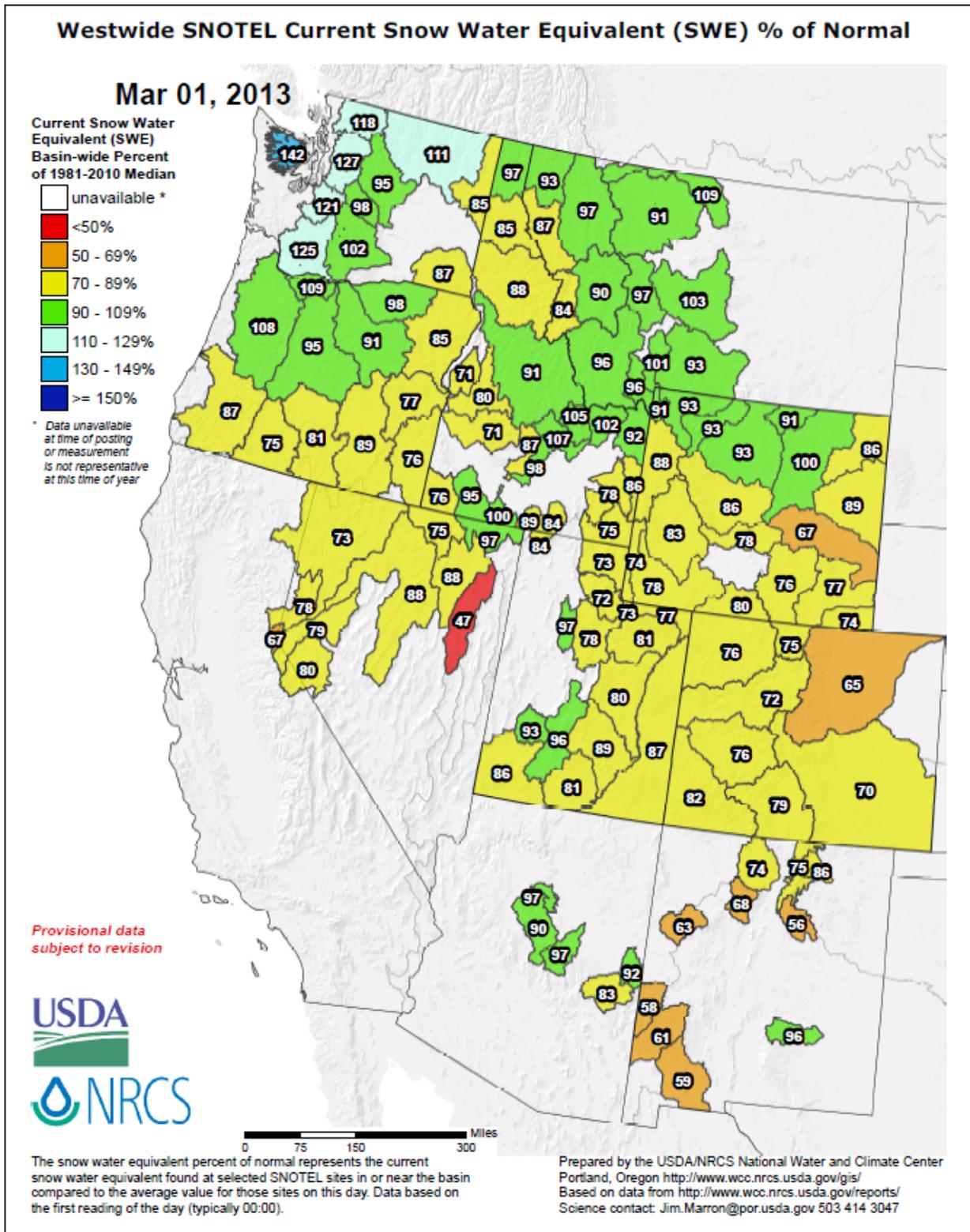
Prepared by  
USDA, Natural Resources Conservation Service  
National Water and Climate Center  
Portland, Oregon  
<http://www.wcc.nrcs.usda.gov>

**Fig. 2: Snowpack values on 1 March 2013.** Note the alternating pattern of surpluses and deficits across the West and Alaska.

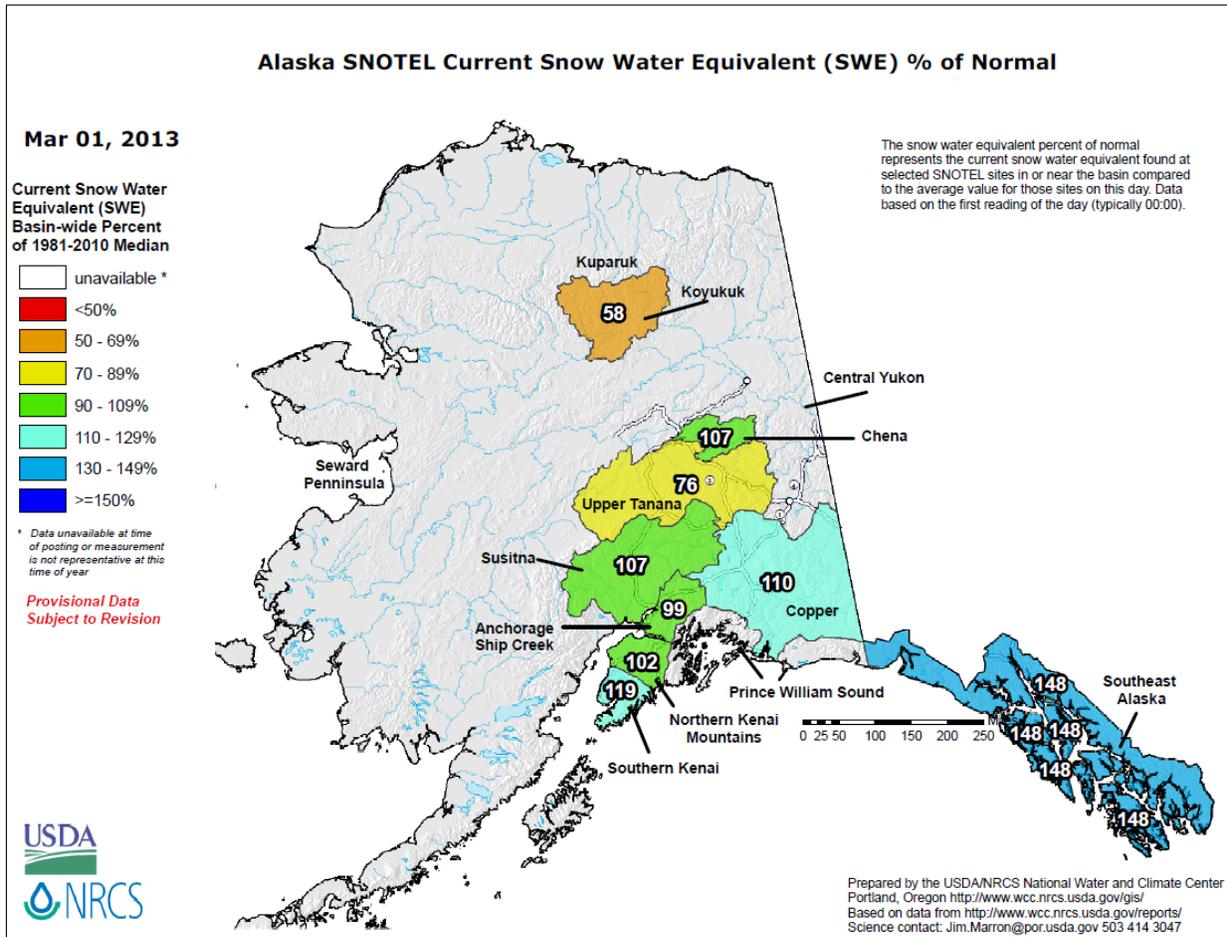
# Mountain Snowpack Change between February 1 and March 1



**Fig. 3: Mountain snowpack changes between February 1 and March 1, 2013. While some drainages have increased over the eastern slope of the Rockies and Arizona, these increases have not been substantial enough to raise snowpack to above average values. The Sierra Nevada saw limited accumulating snowpack this past month, as did some basins over the Cascades. Alaska data will be available soon.**

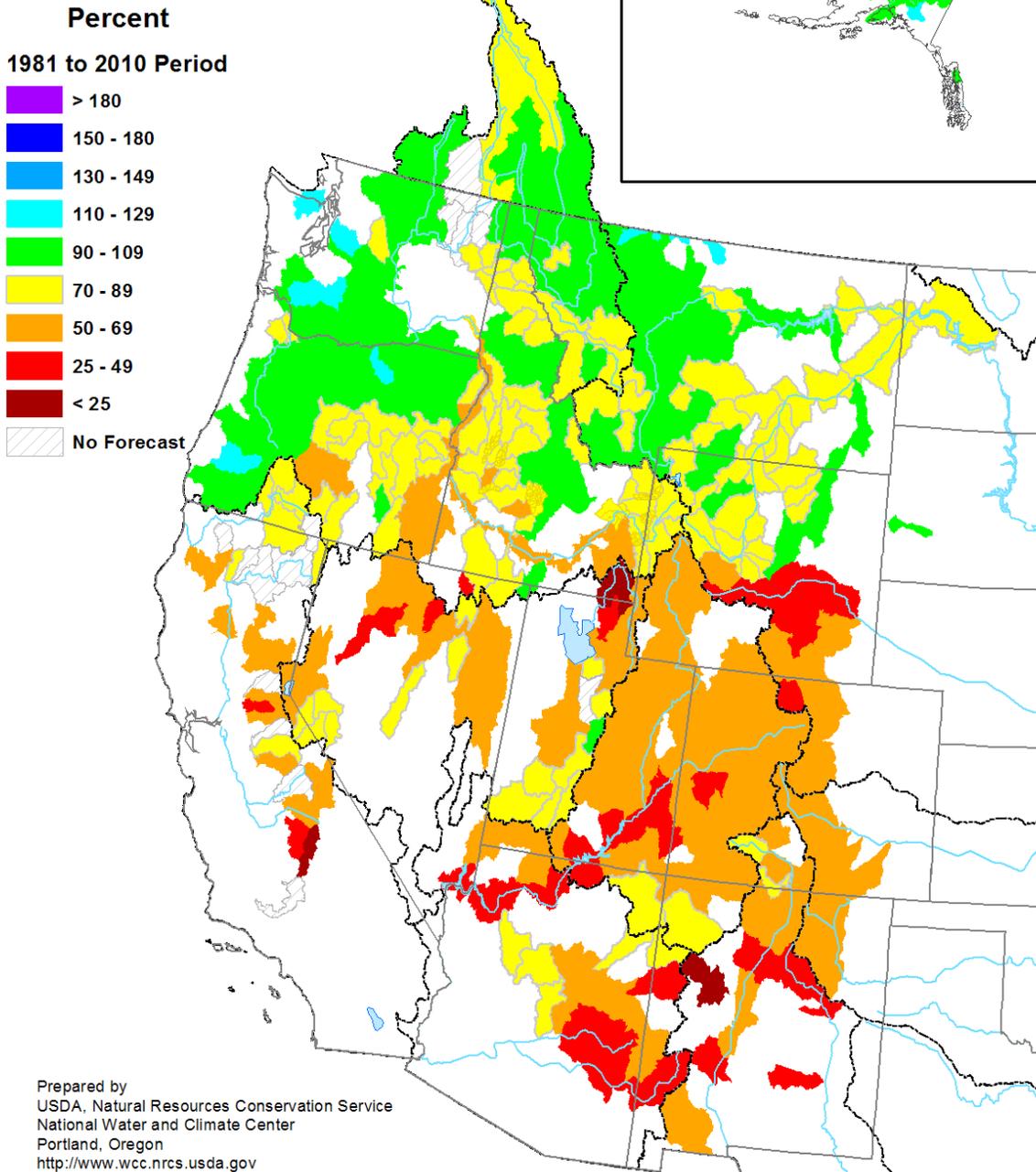


**Fig. 4:** As of [March 1, 2013](#), Snow Water Equivalent (SWE) percent of normal map reveals surplus values over the Pacific Northwest. Near average conditions exist over the Northern Rockies, Oregon Cascades, northeastern Great Basin, some western ranges in Utah and the central Arizona ranges. Elsewhere, SWE deficits increased over the Sierra Nevada, Great Basin, Lower Snake River and Bear River drainages, the southern half of Wyoming, Colorado and New Mexico. Select this [link](#) for an up-to-date version of this map.



**Fig. 4a:** As of March 1, 2013, the [Alaska](#) Snow Water Equivalent (SWE) map indicates that much of Alaska has normal to above normal values especially over the Alaskan Panhandle. The Upper Tanana and Kuparuk Basins have the greatest deficits thus far this Water Year. Select this [link](#) for an up-to-date enlarged version of this map.

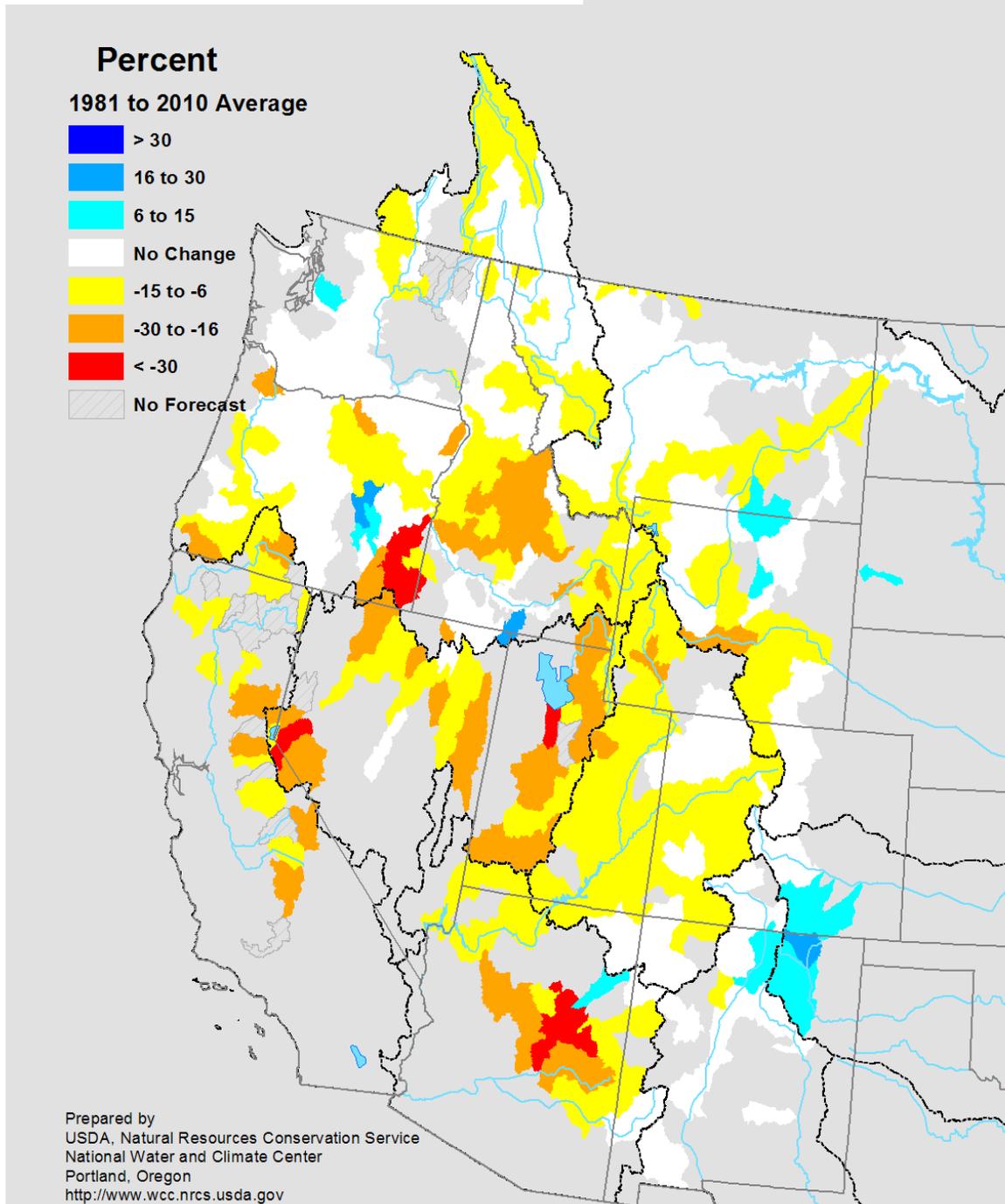
## Spring and Summer Streamflow Forecasts as of March 1, 2013



Prepared by  
USDA, Natural Resources Conservation Service  
National Water and Climate Center  
Portland, Oregon  
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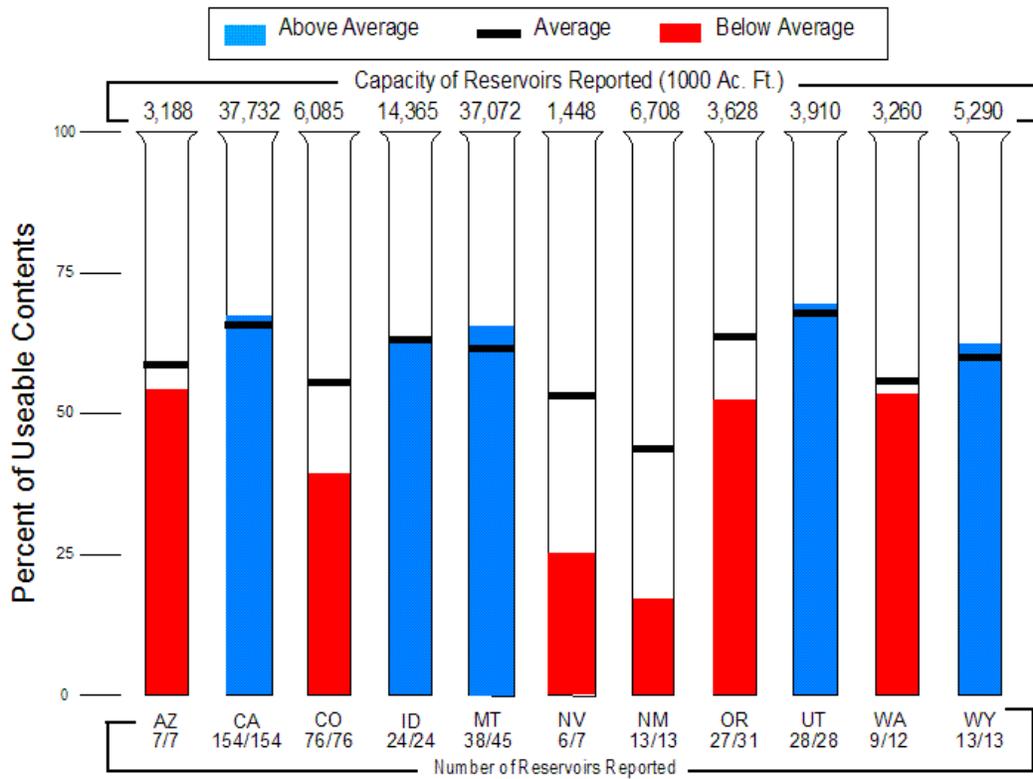
**Fig. 5: Seasonal Water Supply Forecasts - March 1, 2013.** While about half of the northern tier of the West is expected to have near normal spring and summer streamflow, the opposite conditions are expected over the southern tier with the preponderance of drainages at significantly below values. Alaska is faring well with near normal forecasts. California data is now included in this update.

## Change in Spring and Summer Streamflow Forecasts from February 1 to March 1, 2013



**Fig. 6:** Change in streamflow forecast between February 1 and March 1, 2013. Most basins continue to show a decline in their streamflow forecasts. The exceptions noted in blue shading are increases, but in most cases, they will not be enough to reach the long-term average. California data is now included in this update.

Reservoir Storage as of March 1, 2013



Prepared by: USDA, Natural Resources Conservation Service, National Water and Climate Center, Portland, OR  
<http://www.wcc.nrcs.usda.gov>

**Fig. 7: Reservoir Storage - March 1, 2013.** No significant changes since last month. California, Idaho, Montana, Utah and Wyoming near normal. The remainder of the western states are below normal, especially Nevada and New Mexico. This update reflects the additional of California data.