NAVAJO NATION DROUGHT STATUS REPORT

NN Dept. of Water Resources, Water Management Branch

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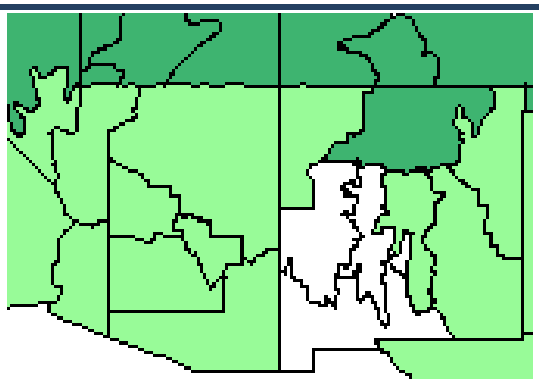


- +3.00 and above (exceptionally wet)
- +2.00 to +2.99 (extremely wet)
- +1.25 to +1.99 (very wet)
- +0.75 to +1.24 (moderately wet)
- -0.74 to +0.74 (near normal)
- -1.24 to -0.75 (moderately dry)
- -1.99 to -1.25 (very dry)
- -2.99 to -2.00 (extremely dry)
- -3.00 and below (exceptionally dry)

Navajo Nation Drought Stage

Location	6 month SPI March	Stage as of March
NE AZ	1.08	Normal
NW NM	1.02	Normal
SE UT	1.91	Normal

Drought Intensity Category

NN Drought	*US Drought*	
Normal	Normal	D0
Alert	Moderate	D1
Warning	Severe	D2
Emergency	Extreme/Exceptional	D3 & D4

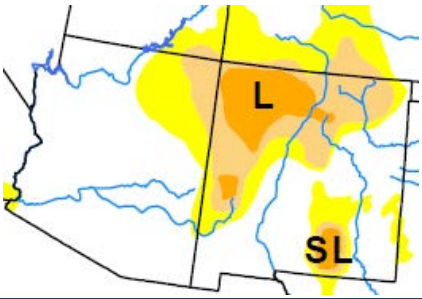
Intensity:
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

Drought Impact Types:

Delineates dominant impacts

S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)



National Drought Summary for March 26, 2019

Summary: Dryness and drought intensified across parts of the South, while the overall trend toward drought recovery continued in the Four Corners region. Elsewhere, dryness concerns increased in the Northwest where drought expanded slightly; rain and snow will be needed soon across the northwestern quarter of the nation to prevent the region from slipping further into drought. Most of the nation from the central and northern Plains to the Mid-Atlantic and Northeast remained free of drought, with severe flooding the primary concern in the nation's heartland.

West: Increasingly dry conditions in the Northwest contrasted with additional recovery from long-term drought from the Great Basin into the central and southern Rockies.

Across central and southern portions of the region, moderate to heavy precipitation (0.5 to more than 1 inch) fell from Nevada east-southeastward into Colorado and northeastern New Mexico. This week's precipitation—on top of last week's rain and snow—as well as input from local experts led to widespread reduction of the southern High Plains' Abnormal Dryness (D0). Across northern New Mexico and southern Colorado, precipitation over the past two weeks has totaled an impressive 1 to 5 inches (liquid equivalent), pushing mountain Snow Water Equivalents (SWE) toward record levels (80-100th percentile) and begetting notable reductions in drought intensity and coverage. Similar SWE were reported across Utah and Nevada, with corresponding decreases to the lingering D0 and Moderate Drought (D1). Note the drought over much of the Four Corners is almost exclusively now long-term (L), with deficits most pronounced at 24 months (50-80 percent of normal) and beyond.

Farther north, a drought-free California contrasted with increasingly dry conditions across the Northwest and northern Rockies. Changes to the Northwestern drought depiction were minor and confined to small increases of D0 and D1 in northern and western Washington. However, local experts are becoming concerned as water-year precipitation (70-80 percent of-normal) has been subpar in the central and northern Cascade Range and environs, exacerbated by acute short-term dryness (60-day precipitation totaling 30 to 50 percent of normal in Washington, slightly more in northwestern Oregon). Furthermore, snowpacks remained much lower than those seen farther south, with SWE in the 10th to 30th percentile over much of Washington, northern Idaho, and western Montana.

Outlook: An unsettled weather pattern will continue over much of the nation. A pair of Pacific storms are expected to bring much-needed rain and mountain snow to the Northwest and northern Rockies. As the lead system marches east, it will produce rain and snow from the central Plains into the Midwest, though the Upper Midwest will remain dry. Increasingly stormy weather is also in the offing for the East Coast States, with the greatest chances for heavy rain noted along Florida's eastern coast and from the Carolinas into the Mid-Atlantic region. Mostly dry weather is expected from the lower Four Corners into central Texas, while showers may return to southern Texas. The NWS 6- to 10-day outlook for April 2–6 calls for near- to above-normal precipitation across most of nation, save for pockets of dryness in the Southwest and central Gulf Coast region; drier-than-normal conditions are also expected over Alaska. Colder-than-normal weather over northern portions of the Plains and Upper Midwest will contrast with above-normal temperatures in northern- and southern-most portions of the Atlantic Coast States and from the Four Corners into the Northwest and Alaska.

For further enquires contact Mr. Carlee McClellan, Senior Hydrologist, Ph. (928) 729-4125, Email: cmcclellan@navajo-nsn.gov

Southwest Drought At Glance

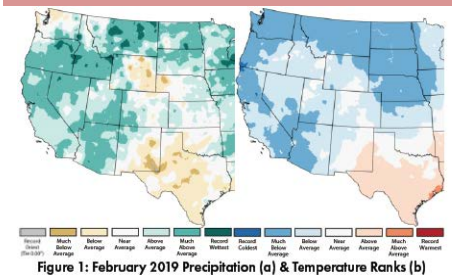


Figure 1: February 2019 Precipitation (a) & Temperature Ranks (b)

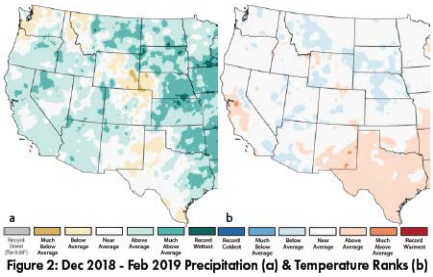


Figure 2: Dec 2018 - Feb 2019 Precipitation (a) & Temperature Ranks (b)

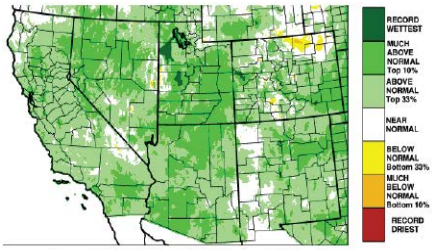


Figure 3: Oct 2018 - Feb 2019 - Precipitation Rankings

Climate Summary by CLIMAS March 2019

February Precipitation and Temperature: February precipitation was above-average across most of Arizona and northwestern New Mexico (and much of the western United States), but quickly transitioned to below-average in southern and eastern New Mexico, a pattern that extended into western Texas (Fig. 1a). February temperatures were below-average in most of Arizona and northwestern New Mexico, and average to above-average in central and eastern New Mexico (Fig. 1b).

Seasonal Precipitation and Temperature: Dec-Feb precipitation was mostly above-average across Arizona and northwestern New Mexico, while southern and eastern New Mexico ranged from average to below-average (Fig. 2a). Dec-Feb temperature rankings were mostly average to below-average in Arizona, and average to above-average in New Mexico (Fig. 2b). Water year precipitation includes a particularly wet October, and most of the Southwest recorded above-normal precipitation since Oct. 1 (Fig. 3). Twelve month totals highlight above-normal precipitation in much of Arizona and portions of southern and eastern New Mexico, and persistent precipitation deficits in the four corners region (Fig. 4).

Drought: The Mar. 12 U.S. Drought Monitor (USDM) shows widespread improvements in regional drought conditions in much of the western U.S. (Fig. 5). Persistent drought conditions remain in the Four Corners region, although characterizations of drought extent and intensity are further reduced on this map compared to last month. Accumulated precipitation deficits built up over seasons and years, and in terms of drought recovery, above-normal precipitation in the short term is likely insufficient to make up for years of drought.

Snowpack & Water Supply: Snow water equivalent (SWE) increased considerably since last month. SWE values (as of Mar. 17) in Arizona and New Mexico are mostly above average, ranging from 110-200 percent of average across most of the region, with only south-central NM at less than 25-percent of average (Fig. 6). Reservoir storage remains a persistent concern with long-term drought and accumulated precipitation deficits. Most of the reservoirs are at or below their long-term averages and a few of the Rio Grande reservoirs are especially low, while central Arizona reservoirs (Verde and Salt River) have recorded large increases over the last month.

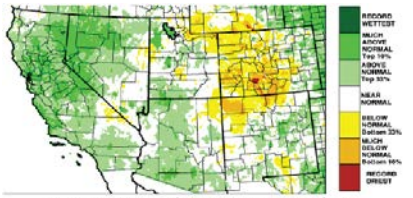


Figure 4: Mar 2018 - Feb 2019 - Precipitation Rankings

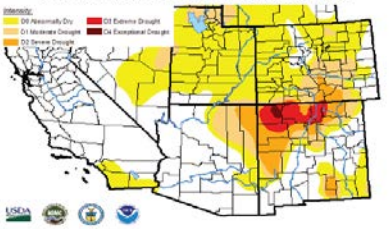


Figure 5: US Drought Monitor - Mar 12, 2019

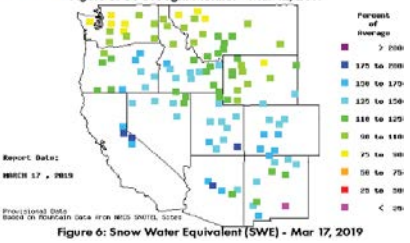
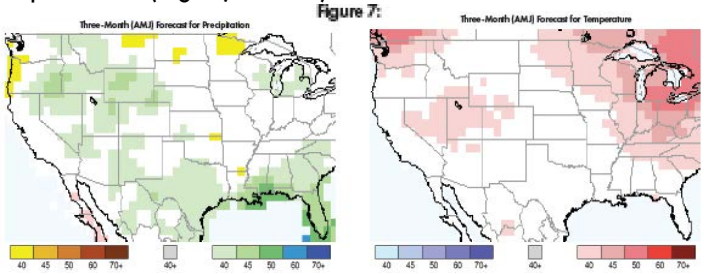


Figure 6: Snow Water Equivalent (SWE) - Mar 17, 2019

El Niño Tracker: Atmospheric conditions finally caught up with the ocean, with both indicating weak El Niño conditions. The current forecasts indicate a strong likelihood of a weak El Niño lasting through spring, and a moderate likelihood it will persist through summer and into fall. This raises the possibility of a second year of El Niño (i.e. continuing next fall into winter 2020), but spring and early summer introduce considerable uncertainty into forecasts, so this is more speculative than certain.

Precipitation and Temperature Forecast: The three-month outlook for April through June calls for increased chances of above-normal precipitation in most of Arizona, New Mexico, Texas, and northern Sonora and Chihuahua, Mexico (Fig. 7, top). The three-month temperature outlook calls for slightly increased chances of above-normal temperatures in pockets of northern Arizona, but otherwise suggests equal chances of above, below, and near normal temperatures (Fig. 7, bottom).

Figure 7:



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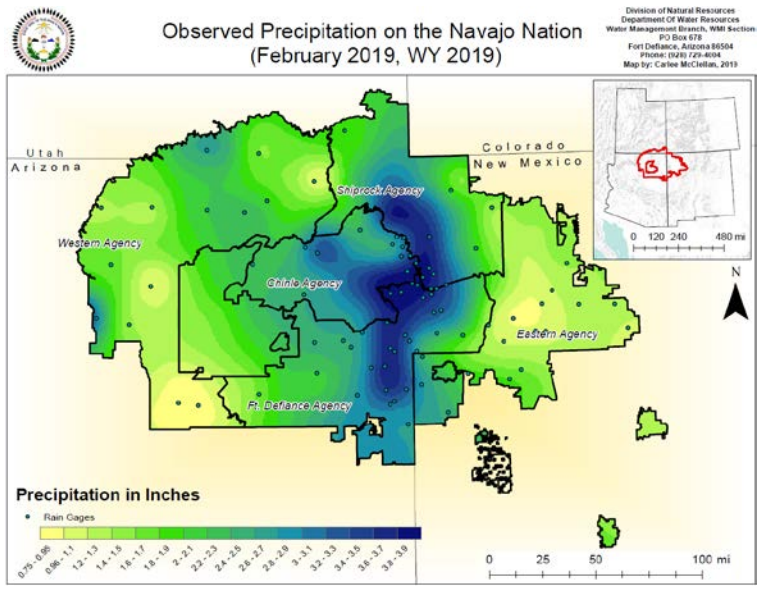
Navajo Nation Precipitation Summary

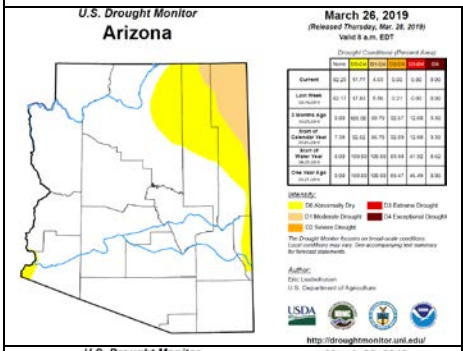


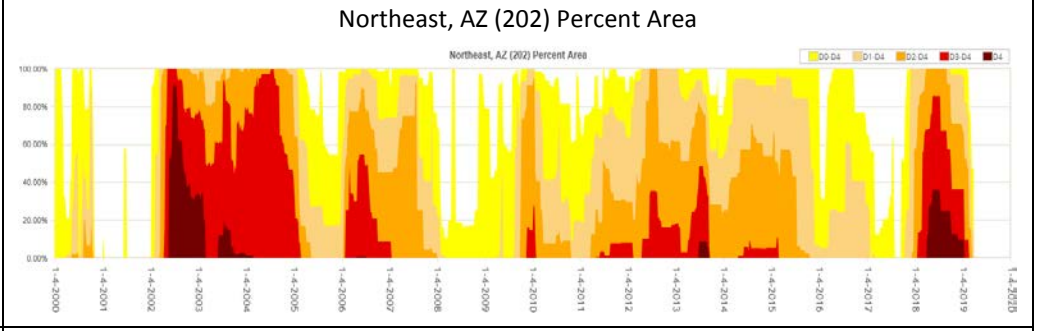
Agency	February	Avg	% of Avg
Chinle	3.20	1.40	229%
Eastern	1.49	0.72	207%
Fort Defiance	2.99	1.19	251%
Shiprock	2.84	1.16	245%
Western	1.58	0.75	211%

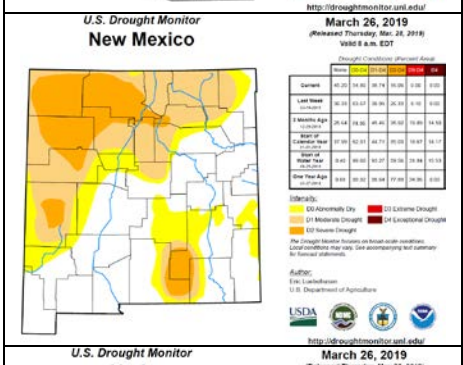
Useful Drought Related Sites:

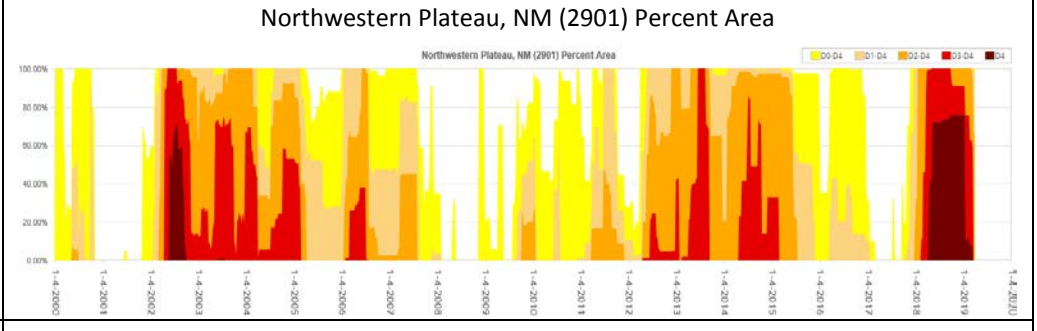
NWS-CPC Seasonal Outlook
www.drought.unl.edu
USGS Daily Stream Flow
www.usgs.gov/water/
Western Regional Climate Center
www.wrcc.dri.edu
CLIMAS Southwest Climate Outlook
www.climas.arizona.edu

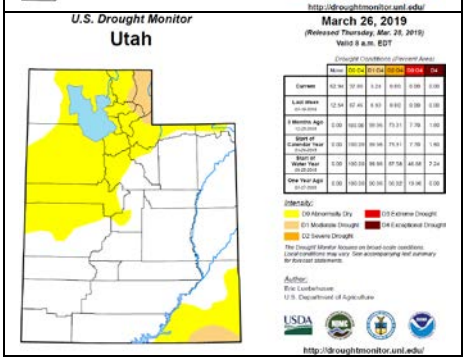
New Mexico Governor's Drought Task Force
http://www.ose.state.nm.us/DroughtTask Force/index.html
ADWR Drought Program
http://www.azwater.gov/azdwr/StatewidePlanning/Drought
Utah Division of Water Resources
http://www.water.utah.gov/DroughtConditions/
Navajo DWR-Water Management Branch
http://www.frontiernet.net/~nndwr_wmb/

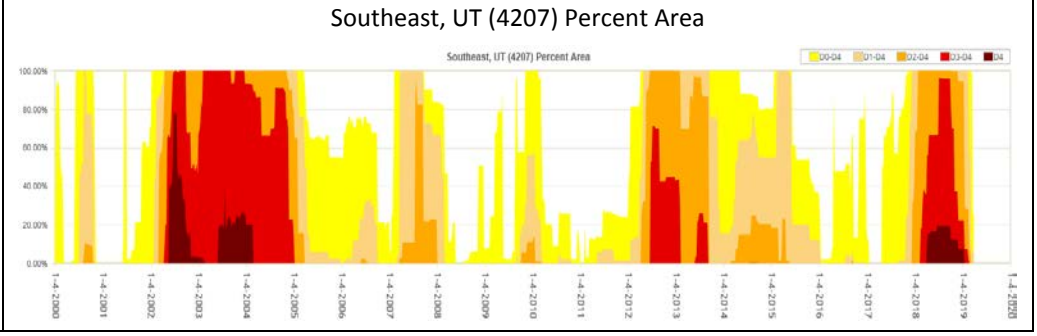












March 2019