

# National Drought Summary for May 30, 2023

## Summary

The upper-level circulation over the contiguous U.S. (CONUS) during this U.S. Drought Monitor (USDM) week (May 24-30) was dominated by three features: a trough over the West, a ridge that extended from the southern Plains to the Great Lakes, and a cutoff low over the Southeast. This pattern resulted in targeted areas of precipitation, some of it heavy, while large parts of the CONUS received little to no precipitation. Pacific weather systems moved across the West, but their fronts stalled out when they ran into the ridge over the Plains. The northwesterly flow associated with the trough inhibited precipitation across parts of the West, so the week was wetter than normal only from the Great Basin to northern Rockies. A southerly flow over the Plains was created between the western trough and eastern ridge. This flow funneled Gulf of Mexico moisture across the Plains. The moisture fed thunderstorms and weather complexes that developed along the stalled-out fronts and dry lines, resulting in above-normal precipitation across western portions of the Great Plains from Texas to Montana. Several inches of rain fell with some of these thunderstorms, resulting in localized flooding. The ridge inhibited precipitation, so a large part of the country from the Mississippi River to the Northeast received little to no precipitation. The exception to this was the Southeast, where the cutoff low pulled in Gulf and Atlantic moisture to spread above-normal precipitation across much of Florida and the Carolinas to Appalachians. Weekly temperatures averaged cooler than normal from the southern Plains to East Coast, but they were warmer than normal across the northern Plains and northern parts of the West. Abnormal dryness or drought spread across a large part of the Midwest and Northeast, and in parts of the Pacific Northwest, Puerto Rico, and Hawaii. Drought or abnormal dryness contracted across the Florida peninsula, across large areas in the western Great Plains, and in northwest Puerto Rico.

## Northeast

Some rain fell across the far southern parts of the Northeast region and in northern New England this week. But most of the region received less than a fourth of an inch, and the rain that fell was mostly below normal. Temperatures averaged near to below normal. With soils drying, low streamflow, and very low precipitation for the month of May, D0 (abnormal dryness) was expanded across much of the region, from Delaware, Maryland and West Virginia to southern New York, and from western Maine to western Massachusetts. Large 90-day precipitation deficits prompted expansion of D1 (moderate drought) in Maryland and eastern Pennsylvania. Soils rapidly dried this week. According to May 28 data from the U.S. Department of Agriculture (USDA), 80% of the topsoil moisture in Pennsylvania was rated short or very short (dry or very dry), an increase of 48% from last week. The values were 100% for New Jersey, 78% for Maryland, and 52% for New York.

## **Southeast**

A coastal low-pressure system, generated by a cutoff upper-level low, slowly moved across parts of the Southeast this USDM week. Weekly precipitation totals across the Southeast region ranged from less than a tenth of an inch over parts of Alabama and Georgia to over 2 inches across the southern half of Florida and parts of the Carolinas and Virginia. Nearly 9 inches of rain fell near Mulberry, Florida for the week, over 8 inches was recorded near Harbour Heights, Florida, and 5 inches fell near Englehard in eastern North Carolina. The rain prompted a 1-category improvement across most of the Florida peninsula, leaving behind moderate to severe drought along the west coast. D0 was eliminated in southern coastal South Carolina and trimmed in coastal North Carolina and western and eastern parts of Virginia. D1 expanded in northern Virginia where 90-day dryness was intensifying. But in general, outside of Florida and Virginia, there was no drought in the Southeast region.

## **South**

Western parts of the South region were wet, while eastern parts were mostly dry. Extreme eastern Tennessee received some rain from the Southeast's cutoff low, but dry conditions dominated across Arkansas, Louisiana, Mississippi, and Tennessee. D0 expanded in parts of these states. Heavy rain inundated parts of western Texas and Oklahoma, causing contraction of abnormal dryness and moderate (D1) to exceptional (D4) drought. Over 5 inches of rain was recorded at several stations in the Texas panhandle. Soils were wet, streamflow was high, and 6-month precipitation deficits were erased across much of the Texas panhandle. D3 (extreme drought) expanded in Oklahoma just east of where it rained. May 28 USDA data revealed 40% of the winter wheat crop in Texas was in poor to very poor condition.

## **Midwest**

Some rain fell at the northwest and southeast ends of the Midwest region this week, but most of the region received no precipitation. The Southeast's cutoff low dropped 2 inches of rain over extreme eastern Kentucky, while thunderstorms gave parts of Minnesota up to an inch of rain. But the story for the Midwest was continued drying of soils, low streamflow, and mounting precipitation deficits over the last 1 to 3 months. Reports have been received in Indiana of lawns in yards becoming stressed and going dormant, pond levels dropping, some stress in pastures, and mesonet stations reporting soils becoming drier. In Illinois, there were reports of dry/dormant lawns, cracked soil, visibly stressed young trees and shrubs, and unusually low stream and pond levels; corn and beans were doing okay for now, but there were more widespread emergence

issues developing from soil crusting. D0 expanded across most of the region; D1 grew in Illinois, Iowa, and Missouri; D2 (severe drought) expanded in Iowa and Missouri; and D3 grew in Missouri. Soils rapidly dried across the Midwest. As of May 28, USDA data revealed more than half of the topsoil moisture was short or very short in Iowa (50%), Missouri (62%), and Michigan (68%), and 40% or more was short or very short in Wisconsin (45%), Ohio (45%), Illinois (42%), and Indiana (40%).

## **High Plains**

Locally heavy rain fell over western parts of the High Plains region while eastern parts had a dry week. Several stations in southwest Nebraska received over 5 inches of rain during this USDM week, with 10 inches reported near McCook. The rain replenished soil moisture, but caused extensive flooding. The rain caused a 2-category improvement in drought conditions in southwest Nebraska. Two inches or more of rain fell in localized parts of northeast Colorado, western Kansas, northeast Wyoming, and the western Dakotas, prompting pullback of abnormal dryness or moderate to exceptional drought. But continued dry conditions in the eastern portions of the region resulted in expansion of abnormal dryness or moderate drought in the Dakotas, abnormal dryness to extreme drought in eastern Kansas, and severe to exceptional drought in eastern Nebraska. Based on May 28 USDA data, 69% of the winter wheat crop in Kansas and 51% in Nebraska was in poor to very poor condition, and more than 40% of the topsoil moisture was short or very short in Nebraska (57%), Kansas (50%), and South Dakota (46%). More than two-thirds of the subsoil moisture was short or very short in Nebraska (75%) and Kansas (68%).

## **West**

Half an inch of rain fell over parts of northern California and from Nevada to the northern Rockies, with much of Montana receiving 2 or more inches. Eastern parts of New Mexico were soaked by 2 to locally over 4 inches of rain, with over 7 inches recorded near Texico. But the rest of the southern third of the West region, and most of Oregon and Washington, received little to no precipitation. D1-D3 were pulled back in eastern New Mexico, and D0-D2 were trimmed in Montana. But D0 expanded in parts of Oregon and Washington where the last 30 days have been unusually warm and dry, soils were drying, and streamflow was decreasing, and D0-D1 expanded in Yellowstone National Park and adjacent southwest Montana. May 28 USDA data revealed 60% of the topsoil moisture in Oregon, 52% in New Mexico, and 48% in Washington was short or very short.

## **Caribbean**

Northwestern and southeastern parts of Puerto Rico were wetter than normal this week, but a large swath from the northeast to southwest was drier than normal. The last 30 days were drier than normal in the northeast, with low streamflow and dry soils. D0 was added in the northeast to reflect these conditions and also to the southwest coast where soils were dry. Above-normal precipitation in the northwest shrank the D0 and D1 that were there.

Conditions in the U.S. Virgin Islands remained drier-than-normal this week. The satellite data (i.e., National Weather Service's seven-day quantitative precipitation estimates) and station observations show that the rainfall amount received over most parts of the islands was less than an inch. Standardized Precipitation Index (SPI) maps showed that conditions remain dry at St. Thomas, St. John and St. Croix this week.

Specifically, St. John (Rafe Boulon/Windswept Beach) reported 0.95 inch of rain this week. The depth to water level at Susannaberg DPW 3 well (St. John, USVI) on May 30 was 16.79 ft below land surface. The analysis showed a significant decrease in water level (about 9 ft) since November 25, when it was 7.54 ft below land surface. This week's 1-month, 3-month and 6-month SPI also confirms dry conditions persist on the island, so St. John remained in short-term moderate drought (D1-S) this week.

St. Croix (Henry Rohlsen AP) reported 0.14 inch of rain this week. The depth to water level at Adventure 28 Well (St. Croix, USVI) on May 30 was 31.50 ft below land surface. The analysis showed a significant decrease in water level (more than 6 ft) since November 25, when it was 25.04 ft below land surface. This week's 1-month, 3-month, 6-month and 9-month SPI also confirms dry conditions persist on the island, so St. Croix remained in short- and long-term extreme drought (D3-SL) this week.

St. Thomas (Cyril E. King Airport) received 0.23 inch of rain this week. The depth to water level at Grade School 3 well (St. Thomas, USVI) on March 30 was 11.30 ft below land surface. This is a decrease of 2.3 feet over the past week. This week's 3-month and 6-month SPI also confirms dry conditions persist on the island, so St. Thomas remained in short-term severe drought (D2-S) this week.

## **Pacific**

The week was drier and warmer than normal in northwest Alaska, and wetter and cooler than normal in the southeast. Alaska remained free of drought and abnormal dryness.

In Hawaii, the last 7 days to 4 months have been drier than normal in Maui, with below-normal streamflow and stressed vegetation detected by satellite. D0 was added to much of Maui to reflect these conditions.

American Samoa remained free of drought this week. Weekly rainfall amounts of 3.55 inches at Siufaga Ridge, 2.61 inches at Toa Ridge and 5.25 inches at Pago Pago.

Drought is not currently a concern in Palau, as rainfall totaled 9.26 inches at Koror COOP and 9.36 inches at Palau IAP (Airai).

Typhoon Mawar brought heavy precipitation to much of the Mariana Islands. Guam reported 26.61 inches of precipitation while Rota reported a total of 2.09 inches of rain for the week. On Saipan, rainfall amounts observed at Saipan (IAP, manual gauge), Saipan (ASOS) and Saipan (NPS) were 4.41, 1.68 and 2.10 inches, respectively. Abnormal dryness (D0) was removed from Guam and Saipan, while Rota remained drought free this week.

Wet weather continued across parts of Micronesia. Pohnpei received 7.84 inches of rainfall while Pingelap, Kosrae and Chuuk reported rainfall totals of 3.01, 2.40 and 2.38 inches, respectively. These locations remained drought free this week. Fananu received 1.55 inches of precipitation this week while Nukuoro received 1.50 inches, Woleai reported 1.38 inches, Kapingamarangi received 0.63 inch and Lukunoch reported 0.02 inch of precipitation this week. These locations were below the weekly threshold but remained drought free due to previous weeks and/or month being wet. With 3 days missing, Ulithi reported 1.37 inches while Yap reported 1.69 inches for the week. SPORT Quantitative Precipitation Estimate (QPE) maps were used to supplement the missing data at these locations. QPE data showed both locations received approximately 4 inches of precipitation over the past 7 days. This additional precipitation puts Ulithi and Yap above the weekly and monthly precipitation thresholds. For this reason, abnormal dryness (D0) was removed from both locations this week.

Wet conditions were observed across much of the Marshall Islands this week. Kwajalein, Jaluit, Ailinglapalap and Wotje reported rainfall amounts of 4.00 inches, 3.86 inches, 2.84 inches and 2.05 inches this week, respectively. Majuro received 1.60 inches while Mili received 1.45 inches of rainfall. Both locations were below the weekly threshold but remained free of drought due to above-normal precipitation from previous weeks and months. No depiction was made for Utirik due to missing data.

## ***Looking Ahead***

For June 1-6, an upper-level ridge will dominate the middle part of North America, bringing above-normal temperatures to the north central states and Pacific Northwest. Upper-level troughs and closed lows will cover much of the West and New England, bringing cooler-than-normal temperatures to New England and southern parts of the West to the southern Plains. Like the last 7 days, a southerly flow of Gulf of Mexico moisture will feed showers and storms that develop from the Rockies to the Mississippi River during the next 7 days. An inch or more of rain is forecast from the southern Plains to northern Rockies, with locally 4 inches or more from the Texas panhandle to southern Kansas, and locally 2 inches or more in parts of Colorado to Montana. A fourth of an inch or more can be expected from California's Sierra Nevada to the Great Basin, across the northern Plains to Mississippi Valley, in the Tennessee Valley, across

the Gulf of Mexico coast, and along the Appalachians to Northeast. New England may see over an inch of rain, while much of the Florida peninsula will be inundated with another 2+ inches of rain. Little to no precipitation is predicted for the eastern Great Lakes to Ohio Valley, the interior Southeast, and southern and western portions of the West.

For June 6-14, a warmer-than-normal pattern is likely for the Pacific Northwest to western Great Lakes, the northern half of Alaska, and the Alaska panhandle, with cooler-than-normal temperatures across southern portions of the West, the southern Plains, and from the Appalachians to New England. Odds favor wetter-than-normal conditions across the West, southern Plains, western portions of the central to northern Plains, and the southwest half of Alaska, with drier-than-normal conditions across the Great Lakes, Upper Mississippi Valley, Ohio Valley, and northeast Alaska.

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