

National Drought Summary for December 19, 2023

Summary

Moderate or heavy precipitation amounts fell in three main areas this week: central and northern California, parts of the southwestern Great Plains (especially southwest Kansas through the Oklahoma and Texas Panhandles), and along the East Coast. Warmer-than-normal temperatures occurred this week across much of the central and northern contiguous United States. For areas in drought or abnormal dryness that received heavy precipitation amounts, improvements occurred locally due to lessening precipitation deficits and increased streamflow and/or soil moisture. In areas between the southern Great Plains heavy rain and the East Coast heavy rain, deficits in streamflow, soil moisture, and precipitation worsened, leading to widespread degrading conditions. Heavier rains fell on the northeast half of Puerto Rico this week, and scattered moderate drought and abnormal dryness continued on the island. A mix of degradations and improvements occurred in Hawaii this week, with a wet trade wind pattern bringing needed rainfall to windward slopes of Oahu and Molokai. Alaska remained free of drought and abnormal dryness this week.

Northeast

Heavy rains and some mountain snows fell in the Northeast region this week, especially in the eastern two-thirds of the region. Two-inch precipitation amounts were common, and according to radar estimates, amounts locally exceeded 5 inches. From Pennsylvania northward, temperatures were mostly above normal for the week, with most spots checking in from 4 to 12 degrees warmer than normal.

While much of the region went into the week free of drought, this week's rains brought widespread improvements to drought or abnormal dryness in Maryland, southeast Pennsylvania, and New Jersey, where precipitation deficits were alleviated. In western New York, where precipitation amounts were lighter, a combination of improvements and degradation occurred, depending on changes in soil moisture, groundwater, and streamflow. Likewise, in Nantucket and Martha's Vineyard, short-term moderate drought developed where precipitation deficits grew and groundwater lowered.

Southeast

Heavy rains fell this week in eastern parts of Virginia, the Carolinas, Georgia, and central and eastern Florida. At least one location in coastal South Carolina received over 14 inches of rain, resulting in a two-category improvement from moderate drought

to no dryness this week. West of these areas, precipitation amounts were either very little or nothing, with a tight gradient between this and the heavier rain amounts.

Due to improving streamflow and lessening precipitation shortfalls, improvements to the drought and dryness picture were widespread in the eastern Carolinas and Virginia, with improvements also occurring locally in Georgia and the Big Bend of Florida. Meanwhile, in Georgia and Alabama, deficits in soil moisture and precipitation worsened, leading to degrading conditions. Temperatures this week were mostly within 4 degrees of normal, with below-normal temperatures most common in areas that received heavier rainfall.

South

A soaking rain event occurred this week in parts of the western Great Plains, especially in the Texas and Oklahoma Panhandles and adjacent western Oklahoma and western north Texas. In these areas, precipitation deficits and soil moisture improved enough for widespread improvement to abnormal dryness or drought. Recent rains from before this week led to a reassessment of conditions and some localized improvements in eastern Tennessee. Drier weather occurred in between these locations, with the exception of some rain across Louisiana (which did little to improve the situation but prevented worsening of conditions). Deficits in soil moisture, streamflow, and short- and long-term precipitation continued to locally worsen in northeast Texas, Arkansas, northern Mississippi, and western Tennessee, leading to degrading conditions in some of these areas. Other than parts of Mississippi and Louisiana, most of the region experienced warmer-than-normal temperatures this week, with western Oklahoma and parts of western north Texas and the Texas Panhandle coming in at 4 to 8 degrees above normal.

Midwest

A mix of dry and wet weather occurred across the Midwest region this week. Temperatures were mostly above- or well-above-normal, except for eastern Kentucky. Temperatures in parts of Minnesota soared to at least 12 degrees above normal for this week. Mostly drier-than-normal weather in Missouri led to degrading conditions northwest of St. Louis and in south-central Missouri, where deficits in streamflow, soil moisture, and precipitation grew. The same occurred in central and southwest Iowa, western Kentucky, parts of Indiana, northwest Ohio, southern Lower Michigan, and along the Ohio-Kentucky-West Virginia border area. In the Kansas City area, recent rains improved streamflow and soil moisture enough for improvements in drought and abnormal dryness, which extended into Kansas just east of Emporia.

High Plains

In parts of southern Colorado, south-central and eastern Nebraska, and much of Kansas, moderate to heavy precipitation amounts fell this week. Improvements to ongoing drought and abnormal dryness occurred in a north-to-south band across central and western Kansas, where this weeks precipitation lessened precipitation deficits and improved soil moisture. Localized improvements to drought also occurred in south-central Nebraska, where this weeks rain was enough to alleviate precipitation and soil moisture deficits somewhat. Low snowpack and dry conditions for the past few months continued in northern Colorado, leading to a southward expansion of moderate drought and abnormal dryness in high elevations.

The wet weather in southern Colorado led to some improvements to drought conditions. Dryness from the past couple of months increased in eastern South Dakota and in the Black Hills, leading to abnormal dryness expanding or developing in both areas. Temperatures in Nebraska, Colorado, and Kansas were mostly 3 to 9 degrees above normal, with a few local cooler exceptions. In the Dakotas, temperatures ranging from 6 to locally 15 degrees warmer than normal were common.

West

Coastal central and northern California, and parts of the northern Central Valley and northern Sierra Nevada, received heavier precipitation this week, exceeding 2 inches in some places. Lighter precipitation amounts fell in coastal portions of Oregon and Washington. In parts of northern and southeast New Mexico, precipitation this week was enough to improve streamflow, soil moisture and precipitation deficits sufficiently for localized improvements to drought conditions. Short-term drying in parts of east-central Utah led to a small expansion of abnormal dryness. In southwest and south-central Montana, low snowpack amounts, short-term precipitation deficits, and soil moisture deficits led to localized expansion in drought and abnormal dryness. A reassessment of short- and long-term conditions in northwest Montana, the northern Idaho Panhandle, and parts of central and western Washington led to localized improvements to ongoing drought and abnormal dryness.

Caribbean

Heavier rain amounts of 1.5 to 3 inches fell across the northeast half of Puerto Rico this week, while the southwest half of the island was drier. A couple sites recorded below-normal temperatures for the week, while most others came in either near normal or 2 to 5 degrees above normal. Drought and abnormal dryness remained unchanged this week.

Beneficial rain fell across the U.S. Virgin Islands (USVI) during this U.S. Drought Monitor (USDM) week (December 13-19), the result of the remnants of a frontal boundary combined with trade-wind showers. Weekly rainfall totals ranged from 1 to 1.5 inches on St. Thomas, half an inch to 2 inches on St. John, and a fourth to two-thirds of an inch on St. Croix. According to USGS well data, groundwater responded favorably with rising levels this week on St. Thomas and St. John, while groundwater levels rose at first then began falling again on St. Croix. The depth to water level was 5.00 feet on St. John and 6.74 feet on St. Thomas, both of which are in the top third of the recent historical record, but 32.83 feet on St. Croix, which is in the lowest third of the historical record. Satellite observations (VHI) showed little stressed vegetation on the three USVI islands.

With year-to-date precipitation totals still well below normal, and December rainfall totals below normal, long-term moderate drought (D1-L) was changed to short- and long-term moderate drought (D1-SL) on St. Croix. A wet (so far) December has reduced short-term dryness on St. Thomas, but long-term precipitation deficits continue, so short- and long-term severe drought (D2-SL) was changed to long-term severe drought (D2-L) on St. Thomas. St. John continued with a D-Nothing status (no drought or abnormal dryness).

Pacific

Temperatures from 2 to 8 degrees above normal occurred in southeast Alaska and on the Arctic Coast. Near-normal or colder-than-normal temperatures occurred in other parts of the state. Generally, east-central and southeast Alaska were wetter than normal this week, while the North Slope and northwest Alaska were drier than normal. The state remained free of drought and abnormal dryness this week.

Temperatures across Hawaii this week were mostly a degree or two below normal, with a few local exceptions. Abnormal dryness expanded across the rest of southern Kauai this week after dry weather in the Lihue area continued. On Oahu, a wet trade wind pattern continued, leading to improving conditions in the northeast facing half of the island. On Molokai, improvements occurred in the west owing to the wet trade wind pattern. On Maui, recent rainfall led to lessening severe drought coverage in the central valley area. Elsewhere, conditions remained the same. On the Big Island, conditions locally improved or degraded, based on stock pond reports and recent rainfall.

In the U.S.-Affiliated Pacific Islands (USAPI), a near-equatorial trough, with circulations moving through it, brought rain to southern portions of Micronesia during this U.S. Drought Monitor (USDM) week (December 13-19), while a dry trade-wind pattern dominated northern portions, except for a shear line/cold front that eventually reached the Marianas. South of the equator, the South Pacific Convergence Zone (SPCZ) moved over American Samoa, bringing heavy rains that ended the abnormally dry conditions on Tutuila.

Weekly rainfall totals were above the 1- or 2-inch weekly minimum needed to meet most water needs in southern portions of the Federated States of Micronesia (FSM), in central and northern parts of the Marianas, in Palau, and in most of the Marshall Islands. They were below the weekly minimum in Guam, western and eastern parts of the FSM, and parts of the Marshalls. In American Samoa, the heavy rains inundated Tutuila and caused flash flood conditions, with Pago Pago reporting over 13 inches of rain for the week and the automated station at Siufaga Ridge recording over 14 inches. Most locations in the USAPI, that were dry this week, were wet (above corresponding mins) either for December so far this month or during previous weeks.

In the FSM, abnormally dry (D0-S) conditions developed at Yap where the last 4 weeks have been dry (below the weekly minimum) and November and December were dry. Based on data available at the time of this report, less than an inch (0.86 inch) of rain was reported at Yap for this week and only 1.67 inches has fallen so far in December. Moderate drought (D1-S) continued at Ulithi, where the last 7 weeks, and November and December, have been dry. Ulithi reported only 0.25 inch of rain this week and 1.76 inches for so far this month.

In the Marshall Islands, moderate drought (D1-S) continued at Wotje, where the last 5 weeks, November, and December have been dry, while abnormal dryness (D0-S) developed at Ailinglaplap, where the last 4 weeks and December to date have been below corresponding minimums.

The remaining reporting locations in the USAPI had no drought or abnormal dryness issues.

Looking Ahead

From Wednesday, December 20 to Christmas evening, the National Weather Service Weather Prediction Center is forecasting three areas of heavier precipitation accumulations. The first, where amounts are likely to be between 0.75 to 3 inches of precipitation, is forecast for far western Oregon and Washington. In the Southwest, 0.75 to 2 inches of precipitation is forecast from Arizona into southern California, with higher amounts possible near and northwest of Los Angeles. From the central Gulf Coast northward to the middle Missouri and Mississippi River Valleys, precipitation amounts are forecast to range from a half inch to 2 inches, with locally higher amounts possible from northeast Texas into western Arkansas, and along the Louisiana, Mississippi, and Alabama coasts.

From December 26-30, the NWS Climate Prediction Center forecast favors below-normal precipitation for most of the region from the Mississippi River and Great Lakes west to the Great Basin. Above-normal precipitation is favored along the West and East Coasts and in deep south Texas. Below-normal temperatures are favored in areas near the Louisiana and Texas coasts. Elsewhere, near- or warmer-than-normal temperatures

are forecast for much of the rest of the contiguous United States. Except for southwest Alaska, above-normal precipitation is favored for much of the state. Colder-than-normal temperatures are more likely in the western third of Alaska, while the eastern third is more likely to see warmer-than-normal weather. Drier-than-normal weather is favored across Hawaii, and cooler-than-normal temperatures are favored on the Big Island and the eastern half of Maui.

Author(s)

Richard Heim, NOAA/NCEI

Curtis Riganti, National Drought Mitigation Center