

National Drought Summary for October 10, 2023

Summary

A strong cold front resulted in moderate to heavy precipitation across the Great Plains, Ozarks, and western Gulf Coast during the first week of October. The most widespread improvements were made to southern Arkansas, northwestern Louisiana, southeastern Oklahoma, and eastern to central Texas where more than 2 inches of precipitation was observed this past week. Following anomalous heat across the central U.S. to start October, the cold front ushered in much cooler temperatures from October 5 to 7. The first frost or freeze of the fall affected the Northern to Central Great Plains on October 7. As the cold front progressed eastward, drought-easing rainfall overspread parts of Illinois, northern Indiana, southern Michigan, and western New York. Further to the south, short-term drought continued to expand north and east across the Southeast. Following a wet September, minor improvements were warranted for parts of Washington. Heavy rainfall, associated with Tropical Storm Philippe, resulted in improving drought for eastern Puerto Rico. Drought continues to intensify across parts of Maui and the Big Island.

Northeast

Increasing short-term precipitation deficits led to a slight increase in D0 (abnormal dryness) and D1 (moderate drought) across western West Virginia. Conversely, heavy precipitation (1 to 2.5 inches) led to a 1-category improvement across western New York. No changes were made to the Mid-Atlantic, while heavy rainfall this past week maintained excessive wetness across New England.

Southeast

Another week of 1-category degradations were necessary for parts of Alabama, Georgia, and the Carolinas. The drought expansion and intensification was based on 30 to 60-day SPI/SPEI, NDMCs short-term blend, and soil moisture. Based on these short-term indicators, severe drought (D2) coverage was increased across parts of Alabama and added to the northwest corner of Georgia. Given the lack of precipitation during the past 4 to 6 weeks, abnormal dryness (D0) expanded north into southwestern and south-central Virginia. Severe drought (D2) was expanded southwest across western Virginia based on 6-month SPI and river levels below the 10th percentile. D2 was expanded slightly east across the Florida Panhandle, while moderate short-term drought (D1) was added to north-central Florida with support from the 30-day SPI, soil moisture, and 28-day average streamflow.

South

A broad 1-category improvement was made to southern Arkansas, northwestern Louisiana, southeastern Oklahoma, and eastern to central Texas where more than 1.5 inches of precipitation occurred this past week. SPIs at multiple time scales, soil moisture, and 28-day average streamflows were also factors in determining where to depict the improvements. For areas that received more than 3 inches of precipitation and there was support from the NDMCs drought blends, a 2-category improvement was justified across southwestern Arkansas, northeastern Texas, and the Texas Gulf Coast. Drought coverage and intensity across Texas peaked in early September when 85.68 percent of the state was covered with drought (D1 or higher) and two-thirds of the state was designated with severe (D2) to exceptional (D4) drought. Based on 90-day SPEI, an expansion of D2-D4 was made to parts of Mississippi. Impacts in Mississippi include poor pasture conditions, soybean and peanut losses, and cattle sell offs. The 90-day SPEI also supported an expansion of D4 across northeastern Louisiana. Increasing short-term dryness led to an expansion of abnormal dryness (D0) and moderate drought (D1) across Tennessee.

Midwest

Abnormal dryness (D0) and moderate short-term drought (D1) were increased to the east of Lake Michigan, while recent precipitation (more than 2 inches) resulted in a 1-category improvement across southern lower Michigan. This heavy precipitation extended south into northwestern Indiana and northeastern Illinois where a 1-category improvement was also made. A slight reduction in D0 and D1 occurred in parts of central Illinois that received 0.5 to 2 inches of precipitation. D1 was slightly expanded across southwestern Indiana due to increasing short-term dryness. D1 was expanded across central and eastern Kentucky along with southwestern Ohio based on 30 to 90-day SPI and soil moisture. Widespread precipitation amounts of more than 0.5 inch along with much cooler temperatures resulted in improvements throughout Minnesota. Parts of northeast Minnesota were removed from abnormal dryness since Duluth had its second wettest September on record. These improvements extended east to include northwestern Wisconsin. Closer to the Green Bay area, a 1-category degradation was made due to increasing short-term precipitation deficits and declining soil moisture. NDMCs long-term drought blend and 6-month SPI supported a 1-category degradation to parts of northwestern and central Missouri.

High Plains

A 1-category improvement was made to northwestern North Dakota and northeastern South Dakota where more than 1 inch of precipitation occurred this past week. Small improvements were also warranted in central Nebraska with the wet start to October. Although parts of eastern Nebraska also received heavier precipitation, NDMCs long-term blend supports D2+ levels of drought. Based on drier-than-normal conditions during the past 60 days and soil moisture, abnormal dryness (D0) was expanded across the southwestern corner of Nebraska. 60-day SPI, soil moisture, and NDMCs short-term blend supported an increase in D0 and the addition of D1 across southern Wyoming. The suppressed 2023 Monsoon and the 6-month SPEI supported an expansion of D2 in southwestern Colorado, while increasing short-term dryness led to increasing D0 coverage across northwestern Colorado.

West

A 1-category improvement was made to northeastern Montana where more than 1 inch of precipitation occurred this past week. Precipitation during the past two weeks along with long-term SPIs supported the removal of extreme drought (D3) in north-central Montana. Based on SPI at multiple time scales, severe drought (D2) was added to eastern Arizona while there was an expansion of moderate drought (D1) in western Arizona. Improving 28-day streamflows along with support from NDMCs short to long-term blends led to a 1-category improvement for the Puget Sound of Washington along with southeastern parts of the state. Abnormal dryness (D0) was expanded across northeastern Utah due to increasing short-term dryness during the past one to three months and this was also consistent with changes made to adjacent Colorado and Wyoming.

Caribbean

Tropical Storm Philippe tracked to the northeast of Puerto Rico, and heavy rainfall (more than 3 inches) resulted in a 1-category improvement across eastern parts of Puerto Rico.

Tropical Storm Philippe brushed the northeast portion of the USVI at the start of the drought week (Wed, Oct 4 - Tue, Oct 10), bringing mostly beneficial rains to the drought-stricken islands, though for some spots rainfall amounts were locally excessive. In the aftermath of Philippe, precipitation totals ranged from about 2-4 inches at St. Croix, 1.5-5.0 inches at St. Thomas, with the heaviest rains (8-10 inches) observed over St. John. Groundwater well sites located on the three islands experienced significant rises in water levels, ranging from about 1.0-4.5 feet higher than pre-Philippe levels.

Accordingly, one-category improvements in drought class were made for St. Croix and St. Thomas, with an unusual two-category improvement for St. John.

On St. Thomas, a sampling of precipitation amounts included CoCoRaHS observing sites VI-ST-5 (1.44 inches) and VI-ST-13 (2.47 inches) in Charlotte Amalie, and VI-ST-1 (Annas Retreat, 4.66 inches). The rainfall observation reported by the Cyril E. King Airport for the drought week appears to be way underdone, and is being looked into. The Grade School 3 well water level rose to within 7.32 feet of the surface, up from 11.48 feet on Oct 3. Based on these factors, and the latest SPI numbers, the drought classification at St. Thomas was improved by one-category, from D4 (SL) to D3 (SL). On St. John, the island which received the heaviest precipitation this drought week from Tropical Storm Philippe, Cruz Bay (VI-SJ-5) reported 8.10 inches of rain, Windswept Beach (VI-SJ-3, 8.81 inches), and Trunk Bay (VI-SJ-9) observed 9.51 inches of rain. The heavy rain helped to fill up cisterns and was very good news for vegetation. The Susannaberg DPW-3 well water rose to within 16.33 feet of the surface, up from 20.65 feet on Oct 3. This weeks depiction for St. John was improved by two categories, from D2 (SL) to D0 (L), since shorter-term precipitation deficits were largely erased by Philippe. On St. Croix, a sampling of rainfall totals included VI-SC-29 (1.95 inches), VI-SC-34 (2.26 inches), VI-SC-18 (2.67 inches), and VI-SC-20 (3.14 inches), all in the vicinity of Frederiksted. Rainfall observations in the vicinity of Christiansted included VI-SC-31 (1.46 inches), East Hill (2.32 inches), VI-SC-10 (3.03 inches), VI-SC-30 (3.66 inches), and VI-SC-25 (3.86 inches). The rainfall observation reported by the Henry E. Rohlsen Airport for the drought week appears to be way underdone, similar to the King airport on St. Thomas. The Adventure 28 well water level rose to within 33.79 feet of the surface, up from 34.92 feet on Oct 3. This rise in well water level is not as dramatic as on the other islands, but is significant nonetheless. The drought class for St. Croix was therefore improved this week from D4 (SL) to D3 (SL).

Pacific

No changes were made this week to the abnormal dryness (D0) area on the western Yukon Flats.

Hawaii received little to no precipitation this past week due to light winds. A 1-category degradation was made to parts of Maui County (Lanai and Kahoolawe) along with the west side of the Big Island.

During this past drought week (Wed, Oct 4 - Tue, Oct 10), a series of surface troughs and weak circulation centers helped to generate precipitation across the USAPI. During the second half of the drought week, an area of disturbed weather developed into Typhoon 15W (Bolaven) as it approached the heart of the Commonwealth of the Northern Mariana Islands (CNMI). At the end of the period, Bolaven underwent very rapid intensification, becoming a Supertyphoon with maximum sustained winds of about 150 kts with higher gusts, as noted by the Joint Typhoon Warning Center in Pearl

Harbor, HI. Bolaven tracked very close to Tinian Island, and this morning's satellite imagery reveals a spectacular eye. For the week as a whole across the USAPI, the satellite-based QPE (SPoRT IMERG) estimated a broad swath of 2-4 + of rain that fell across much of the western tropical North Pacific, with extensive coverage of embedded 4-8 amounts of precipitation. South of the equator, surface troughs also influenced American Samoa, although satellite-based QPE amounts were generally under one inch.

The Republic of Palau continued its drought-free status this week, with the International Airport (IAP, Airai) reporting 6.36 inches of rain, and the Koror COOP, 4.44 inches. The CNMI also secured its drought-free status this week, thanks in large part to the passage of Bolaven. Selected rainfall measurements included Guam (8.59 inches), Rota (4.59 inches, 1 day missing), Saipan (ASOS, 3.39 inches), and Saipan (IAP, manual gauge, 1.43 inches). At Guam, the minimum thresholds for meeting most water needs (1-inch per week/4 inches per month) were exceeded for 11 of the past 12 weeks, and for 12 of the past 12 months. Across the Federated States of Micronesia (FSM), drought-free conditions persisted. Precipitation amounts for this past drought week included Lukunor (7.63 inches, 1 day missing), Pingelap (5.65 inches), Chuuk (5.09 inches, 1 day missing), Kapingamarangi (4.66 inches), Ulithi (4.32 inches), Woleai (4.24 inches, 1 day missing), Pohnpei (3.80 inches, most water needs met for past 12 consecutive weeks), Yap (3.20 inches), Fananu (2.93 inches, 2 days missing), Kosrae (2.21 inches), and Nukuoro (1.25 inches).

Across the Republic of the Marshall Islands (RMI), a one-category improvement was rendered to the drought depiction at Ailinglaplap and Majuro, based on weekly rainfall amounts and/or reservoir status, with both stations now drought and dryness-free. Ailinglaplap received 5.46 inches of rain this week, while Majuro reported 3.46 inches. The latest available reservoir data from Majuro indicates the individual and private storage tanks in the past two weeks have been at 80-100% full. Mili reported 5.59 inches of rain for the week, Jaluit 3.36 inches, Kwajalein 2.74 inches (1 day missing), and Wotje 1.75 inches. No analysis was performed at Utirik this week, due to lack of data. South of the equator, American Samoa reported rainfall amounts of 2.94 inches at Siufaga Ridge, 1.52 inches at Toa Ridge, and only a third of an inch at Pago Pago. The drought designation at Tutuila was kept at D1 (S) this week.

Looking Ahead

During the next five days (October 12-16, 2023), an intense low pressure system is forecast to track from the Central Rockies and Great Plains eastward to the Midwest and Central Appalachians. A swath of heavy precipitation (1 to 3 inches) is likely to accompany this surface low. On October 12th, a vigorous area of mid-level low pressure is expected to bring heavy snow (6 to 12 inches) to the higher elevations of Wyoming. A low pressure system is forecast to move offshore of the Southeast by October 13th after it brings widespread precipitation to parts of the Southeast. Mostly

dry weather is forecast to persist across the Tennessee Valley, while much drier weather prevails across the Southern Great Plains. Periods of light to moderate precipitation are expected for the coastal Pacific Northwest.

The Climate Prediction Centers 6-10 day outlook (valid October 17-21, 2023) favors near to below-normal precipitation throughout much of the contiguous U.S. with above-normal precipitation most likely across southeastern Alaska. Increased probabilities for above-normal temperatures are forecast across the West and Northern to Central Great Plains, while below-normal temperatures are likely for the Mid-Atlantic and Southeast.

Author(s)

Brad Pugh, NOAA/CPC

Anthony Artusa, NOAA/NWS/NCEP/CPC