

# National Drought Summary for November 22, 2022

## Summary

Cold, dry weather prevailed nearly nationwide, with a few exceptions. Notably, mid-November snow squalls developed downwind of the Great Lakes, resulting in localized totals of 2 to 6 feet or more. In addition, precipitation fell in parts of the South, East, and Midwest, primarily early in the drought-monitoring period, although most liquid-equivalent totals were under 2 inches. Snow broadly blanketed the Midwest and interior Northeast, especially on November 15-16, although amounts were mostly light to moderately heavy. Meanwhile, deep snow from a previous storm remained on the ground in much of Montana and North Dakota. As the period progressed, rain lingered in the western Gulf Coast region. Elsewhere, negligible precipitation fell across the western half of the country. On the Plains, the combination of cold weather and soil moisture shortages maintained significant stress on rangeland, pastures, and winter wheat. Weekly temperatures averaged at least 10°F below normal nationwide, except in the Desert Southwest and along the Atlantic and Pacific Coasts.

## Northeast

Widespread precipitation (rain and wet snow) fell in much of the Northeast in mid-November, providing limited additional drought relief. Still, a pocket of extreme drought (D2) lingered in northeastern Massachusetts, while patchy moderate drought (D1) persisted in the Atlantic Coast States from New Jersey to New Hampshire. In Boston, Massachusetts, year-to-date precipitation of 26.19 inches (69% of normal) through November 21 was nearly a foot below normal.

## Southeast

Cold, dry weather dominated the Southeast, except early in the drought-monitoring period when some showers occurred. Overall, only small changes were introduced, although modest expansion of abnormal dryness (D0) and moderate to severe drought (D1 to D2) was noted, mainly across Alabama and Georgia. According to the U.S. Department of Agriculture, Alabama led the region on November 20 with topsoil moisture rated 48% very short to short, followed by Georgia at 41%.

## South

Significant rain fell in parts of the western Gulf Coast region, but most of the remainder of the South experienced cold, dry weather. According to the U.S. Department of Agriculture, Oklahoma and Texas were tied for the regional lead on November 20 with topsoil moisture rated 67% very short to short. On the same date, very poor to poor ratings were observed in Texas for 58% of the rangeland and pastures; 52% of the oats; and 49% of the winter wheat. Similarly in Oklahoma, 41% of the winter wheat and 75% of the rangeland and pastures were rated very poor to poor. Amid the cold, dry regime, generally minor changes were introduced, except where heavy rain fell near the Gulf Coast.

## **Midwest**

Light snow broadly fell across the Midwest in mid-November, followed by cold, mostly dry weather. Record-setting snowfall totals for November 15 included 6.6 inches in Alpena, Michigan; 3.5 inches in Waterloo, Iowa; and 2.8 inches in Madison, Wisconsin. Heavier snow lingered downwind of the Great Lakes. In Michigan, daily-record amounts for November 17 reached 7.6 inches in Grand Rapids and 3.3 inches in Lansing. From November 15-19, snowfall in Grand Rapids totaled 26.9 inches, with at least 7 inches falling on each of the last 3 days of the event. Any Midwestern changes in the drought depiction were relatively minor, although separate areas of extreme drought (D2) were bridged in western Kentucky. A few other areas experienced a slight increase in drought coverage, while a few spots in the vicinity of the Great Lakes had minor reductions of abnormal dryness (D0) and moderate drought (D1). On the Ohio River, runoff from the remnants of Hurricane Nicole reached Cairo, Illinois, where the peak gauge reading of 18.62 feet on November 18 was nearly 14 feet higher than last month's low-water mark. At that time, the Ohio River at Cairo had not been so low since November 1901.

## **High Plains**

Following the previous week's storm, snow and ice remained on the ground in parts of Montana and the Dakotas. In Bismarck, North Dakota, where the snow depth peaked at 17 inches on November 11, nine inches remained on the ground 10 days later. The freezing and frozen precipitation provided beneficial moisture for rangeland, pastures, and winter grains. Still, drought concerns persisted, especially in drier areas across the southern half of the region. On November 20, the U.S. Department of Agriculture noted topsoil moisture ranging from 63% very short to short in North Dakota to 87% in Nebraska. On the same date, at least 40% of the winter wheat was rated in very poor to poor condition in Colorado (52%), Kansas (40%), and Nebraska (40%). Although any changes in the drought depiction were relatively minor, worsening conditions were noted in a few areas. Drought stress on vegetation was aggravated by very cold weather, which led to several record lows. In Kansas, for example, record-setting lows for November 19 plunged to 8°F in Garden City and 11°F in Medicine Lodge.

## **West**

Like much of the rest of the country, the West experienced a full week of cold, dry weather, leading to minimal changes in the drought depiction. Fog, air stagnation, and low temperatures plagued the Northwest. Daily-record lows for November 17 included -16°F in Butte, Montana, and -3°F in Burns, Oregon. On November 18-19, Big Piney, Wyoming, collected consecutive daily-record lows of -15°F. Other Northwestern locations reporting a pair of daily-record lows on November 18-19 were Eugene, Oregon (21 and 18°F); Olympia, Washington (17 and 18°F); and Montana's Bozeman Airport (-14 and -16°F). On the 18th, lows plunged to -22°F in Butte, Montana, and -21°F at Lake Yellowstone, Wyoming. Early-season snowpack remained mostly favorable west of the Continental Divide, but a return to stormy weather will soon be needed to sustain the promising start to the water year that began on October 1.

## **Caribbean**

In Puerto Rico, showery weather—heaviest in eastern areas—maintained drought-free conditions. From September 1 – November 21, rainfall in San Juan, Puerto Rico, totaled 25.85 inches (151% of normal).

Patches of moisture embedded in the trade wind flow alternated with a dry air mass over the U.S. Virgin Islands (USVI) during this USDM week (November 16-22). Weekly rainfall totals ranged from 0.16 inch to 0.59 inch on St. Croix, 0.40 to 0.82 inch on St. Thomas, and 1.13 to 1.50 inches on St. John. Month-to-date and year-to-date totals were above normal, and the Standardized Precipitation Index (SPI) indicated no drought or abnormal dryness at the 1- to 12-month time scales. USGS data shows that the groundwater level increased slightly this week at St. Croix and has fully recovered on St. Thomas. The USDM status on the three USVI islands was unchanged from last week, with no drought or abnormal dryness occurring.

## **Pacific**

Much of Alaska experienced mild, mostly dry weather during the drought-monitoring period, although ample precipitation in recent months kept the Last Frontier free of dryness and drought. By November 16, temperatures rose to daily-record levels in Sitka (54°F) and King Salmon (50°F). Later in western Alaska, daily-record highs included 38°F (on November 17) in Nome and 32°F (on November 18) in Kotzebue. On the Arctic Coast, Utqiagvik collected a trio of daily-record highs (34, 35, and 28°F) from November 17-19.

In Hawaii, there were again no changes to the drought depiction, with just over 30% of the Aloha State experiencing drought for the third consecutive week. From September 1 – November 21, season-to-date rainfall at Hawaii's major airport observation sites ranged from 1.31 inches (33% of normal) in Honolulu, Oahu, to 25.95 inches (90%) in Hilo, on the Big Island.

Winds in the tropics typically converge in an Inter-Tropical Convergence Zone (ITCZ), and the ITCZ generates convective showers along its length. The ITCZ and trade-wind troughs spread rain across the middle third of Micronesia during this USDM week (November 16-22). The weather was drier to the north and south of this band. As of the time of this analysis, weekly rainfall totals in the wet band ranged from 2.09 inches at Ailinglaplap to 6.50 inches at Pingelap. In the dry areas north and south, rainfall totals ranged from zero inches at Kapingamarangi to 1.75 inches at Nukuoro. In these areas, 2 inches is the minimum weekly rainfall total required to meet most water needs. Dry high pressure alternated with moist surface troughs to bring around an inch of rain to American Samoa, which is enough to meet weekly water needs in this region.

November rainfall totals for the month to date are generally wet (above the minimum needed to meet most water needs) in American Samoa, the Republic of Palau, the Marianas, and most of the Marshall Islands and the Federated States of Micronesia (FSM). There is no drought or abnormal dryness in these areas. Monthly totals were below the monthly minimum in parts of the Marshalls and FSM. Severe drought (D2-SL) continued at Kapingamarangi where no rain was measured this week and 17 of the last 18 weeks have been dry (below the 2-inch weekly minimum). Lingering long-term dryness was reflected in the driest January-October on record at Kapingamarangi, which also had the driest April-October and March-October. This week was wet at Fananu and Lukunor (in the FSM) and Wotje (in the Marshalls), but D0-S (short-term abnormal dryness) continued at these locations to reflect below-minimum monthly totals. Lukunor had the driest August-October through May-October on record.

## ***Looking Ahead***

Across much of the country, milder weather will replace previously cold conditions. By November 24, Thanksgiving Day, a storm system will begin to take shape across the south-central U.S. Late in the week, portions of the southern Plains should receive much-needed precipitation, including possible wet snow. Farther east, 5-day rainfall totals from the southeastern Plains to the southern Appalachians could total 2 to 4 inches or more. Late-week rain (locally 1 to 2 inches) may also spread into portions of the East and lower Midwest, including the Ohio Valley. Meanwhile, periodic precipitation will spread inland from the Pacific Northwest to the northern Rockies. Much of the remainder of the country, including an area stretching from California to the northwestern half of the Plains and the upper Midwest, will receive little or no precipitation during the next 5 days.

The NWS 6- to 10-day outlook for November 28 – December 2 calls for the likelihood of below-normal temperatures across the northern Plains and much of the West, while warmer-than-normal weather will prevail east of a line from the southern Rockies to Lake Michigan. Meanwhile, near- or below-normal precipitation in much of the southern and eastern U.S. should contrast with wetter-than-normal conditions from the Pacific Coast to the northern half of the Plains, Midwest, and mid-South.

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