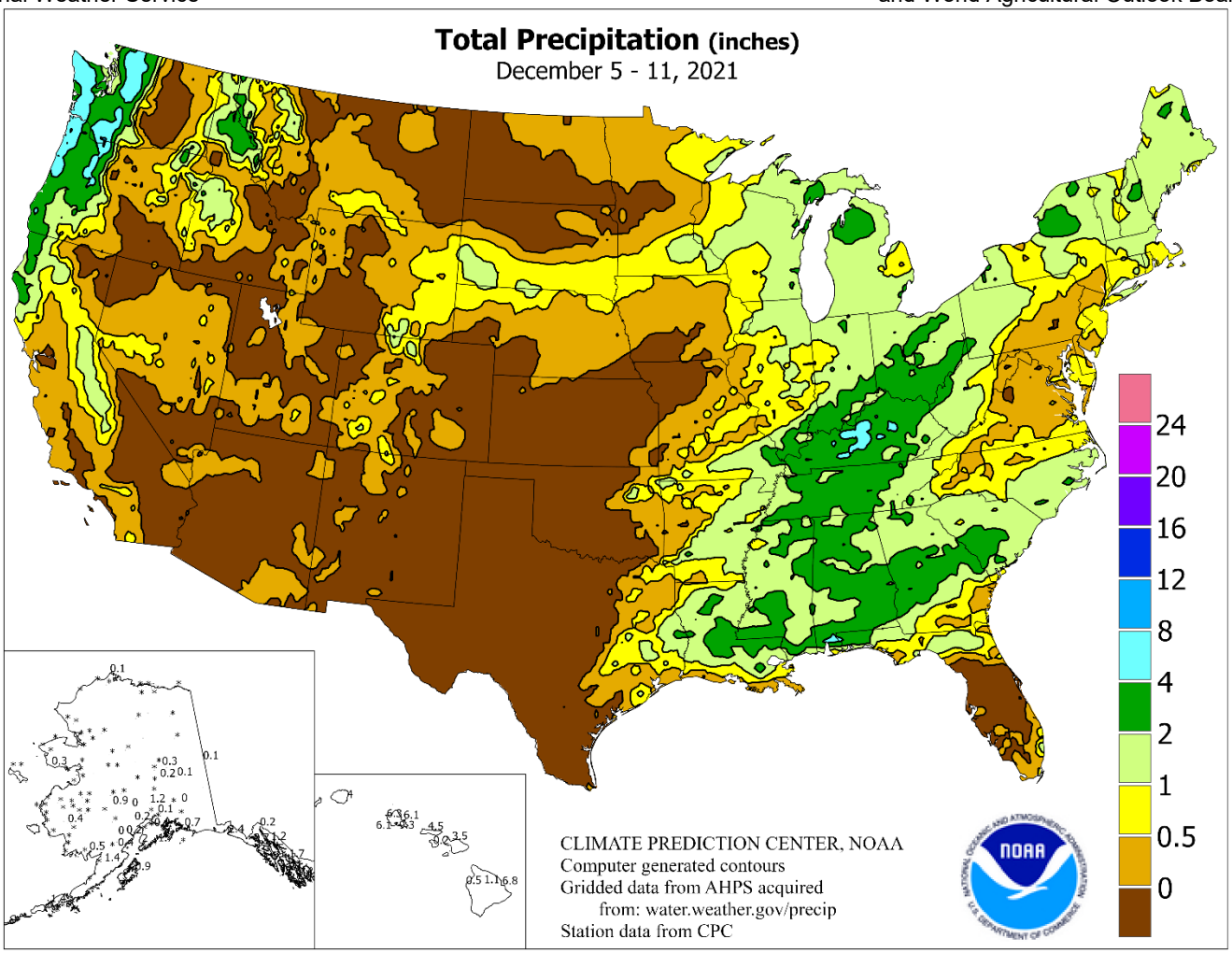
Volume 108, No. 50 www.usda.gov/oce/weather-drought-monitor December 14, 2021

WEEKLY WEATHER AND CROP BULLETIN

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Weather Service

U.S. DEPARTMENT OF AGRICULTURE
National Agricultural Statistics Service
and World Agricultural Outlook Board



HIGHLIGHTS
December 5 – 11, 2021

Highlights provided by USDA/WAOB

A tragic and deadly tornado outbreak struck the **mid-South** and **lower Midwest** on Friday evening, December 10. Catastrophic damage occurred along a primary path extending more than 200 miles from **northeastern Arkansas into Kentucky**, clipping the **Bootheel of Missouri** and **northwestern Tennessee**, with scientists still trying to determine whether the tornado track was continuous or broken. Deadly tornadoes also struck **Illinois** and **Missouri**. A broader area from the **Mississippi Valley to the East Coast** experienced

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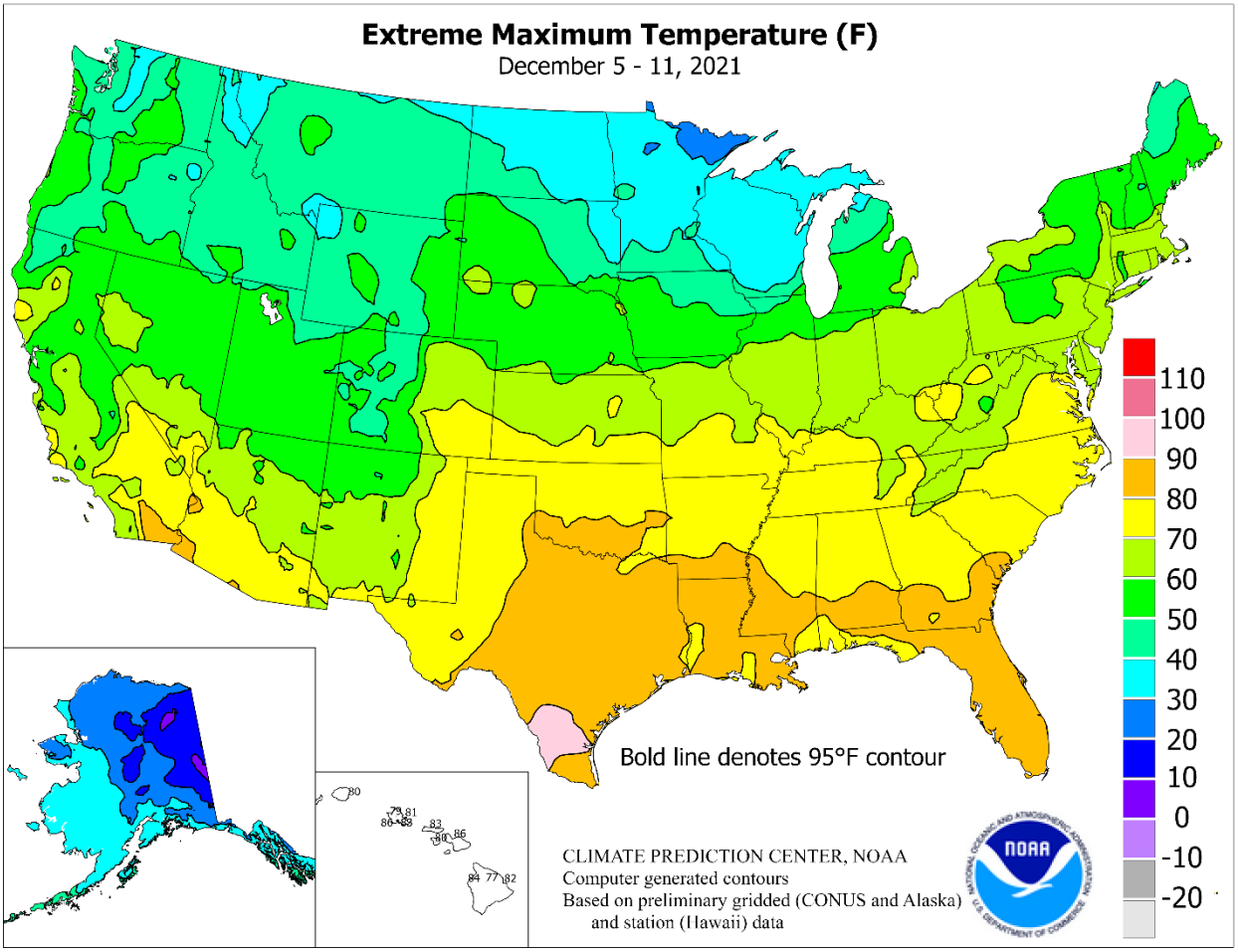
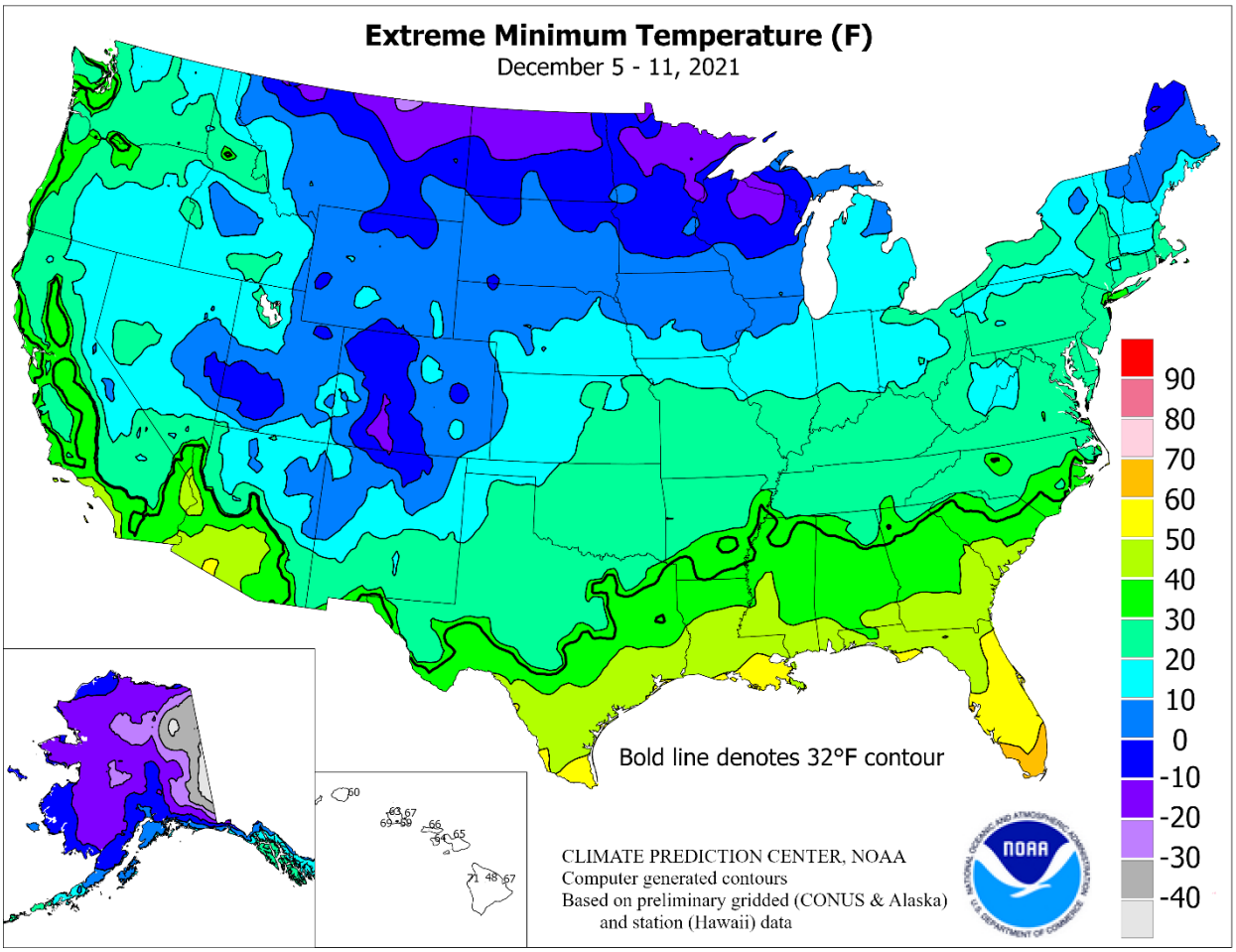
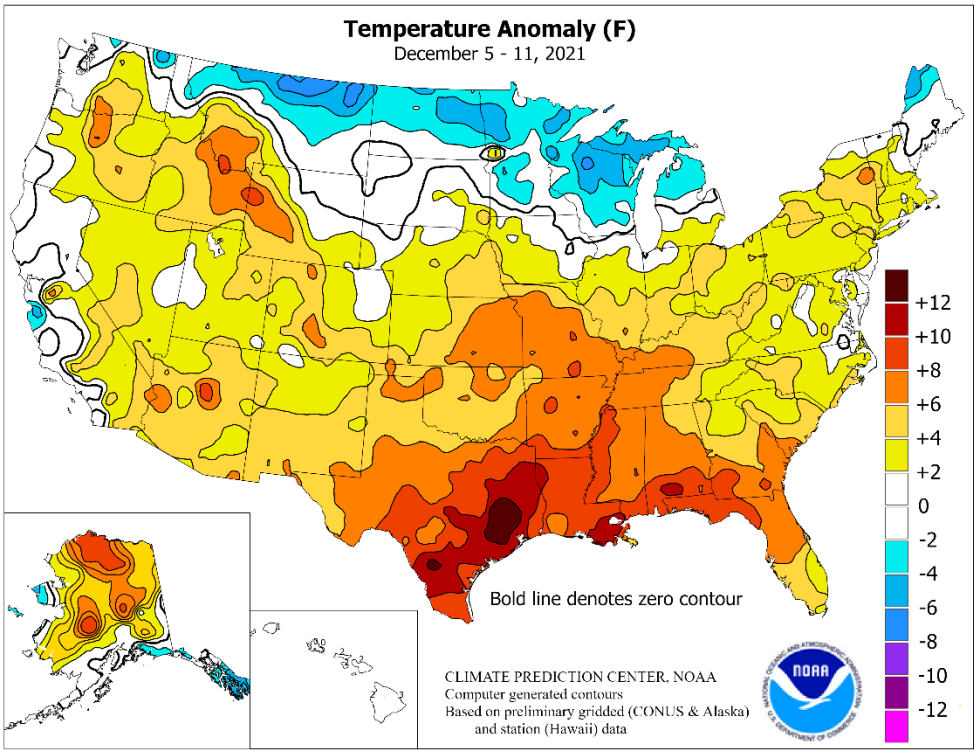
Contents


Extreme Maximum Temperature (F)
December 5 - 11, 2021
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
Bold line denotes 95°F contour
CLIMATE PREDICTION CENTER, NOAA
Computer generated contours
Based on preliminary gridded (CONUS and Alaska)
and station (Hawaii) data
NOAA


Extreme Minimum Temperature (F)
December 5 - 11, 2021
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
Bold line denotes 32°F contour
CLIMATE PREDICTION CENTER, NOAA
Computer generated contours
Based on preliminary gridded (CONUS & Alaska)
and station (Hawaii) data
NOAA

(Continued from front cover)

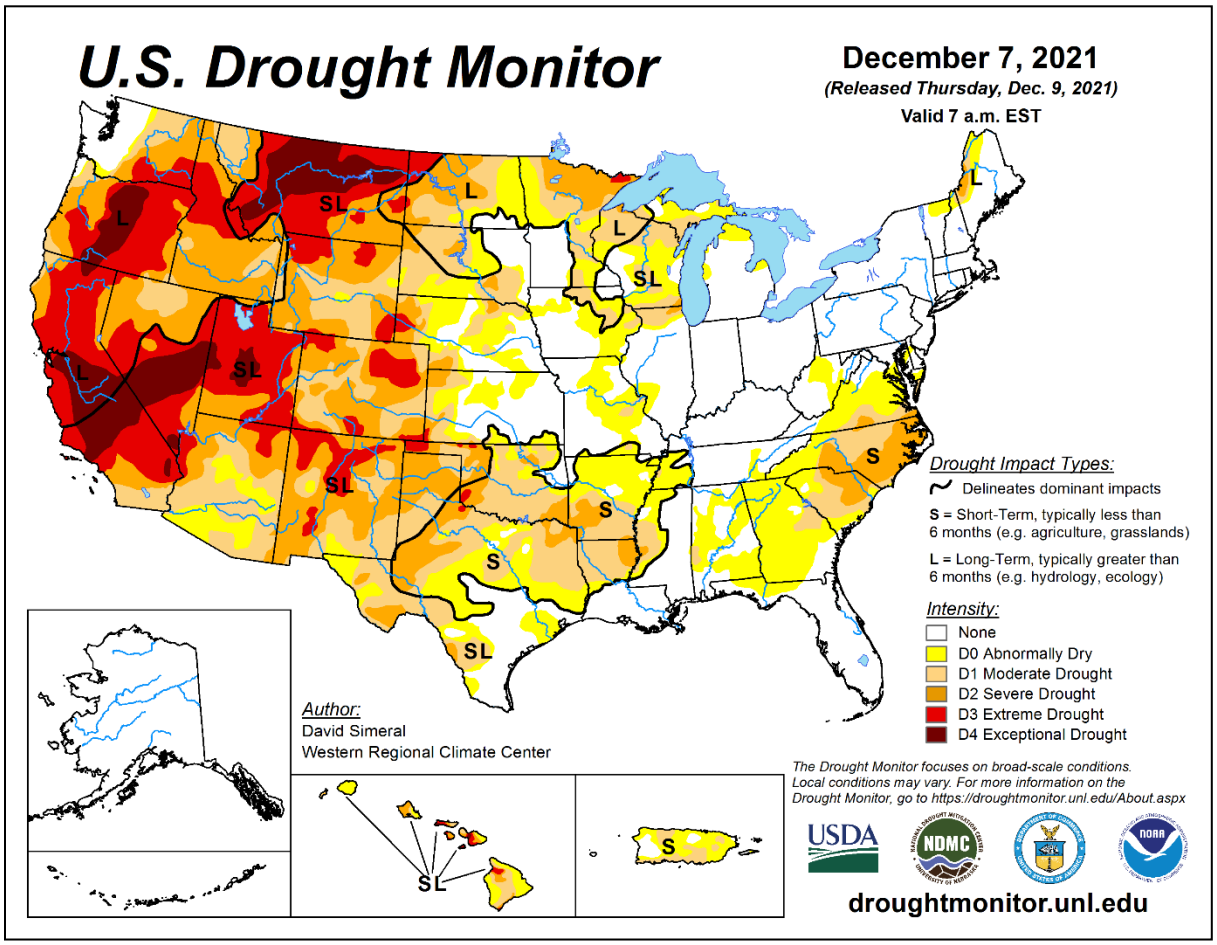
showers and thunderstorms, with late-week rainfall totaling 2 to 4 inches in parts of the **Southeast** and **lower Midwest**. However, significant rain bypassed **Florida's peninsula** and the **middle Atlantic States**. The storm responsible for the tornadoes also produced a stripe of heavy snow from **Wyoming into the upper Great Lakes region**, mainly on December 9-10. However, warm, dry, breezy weather led to further drought intensification across the **southern half of the Great Plains**, maintaining stress on winter wheat. Elsewhere, generally beneficial rain and snow showers dotted the **West**, although heavy precipitation was mostly confined to parts of the **Pacific Northwest** and **northern Rockies**. Despite the stormy weather, coast-to-coast warmth covered the country, except for cooler-than-normal conditions across the **nation's northern tier**. Weekly temperatures averaged as much as 5°F below normal along and near the **Canadian border** from **northern Montana to northern Wisconsin**. In contrast, readings averaged at least 10°F above normal across much of the **Deep South** and in scattered locations as far north as the **middle Mississippi Valley**. Temperatures were up to 15°F above normal in the **western Gulf Coast region**. In fact, record-setting warmth pushed temperatures to 80°F or higher from **southern Oklahoma and central and eastern Texas to the southern Atlantic Coast**. A few readings above 90°F were reported in **southern Texas**.

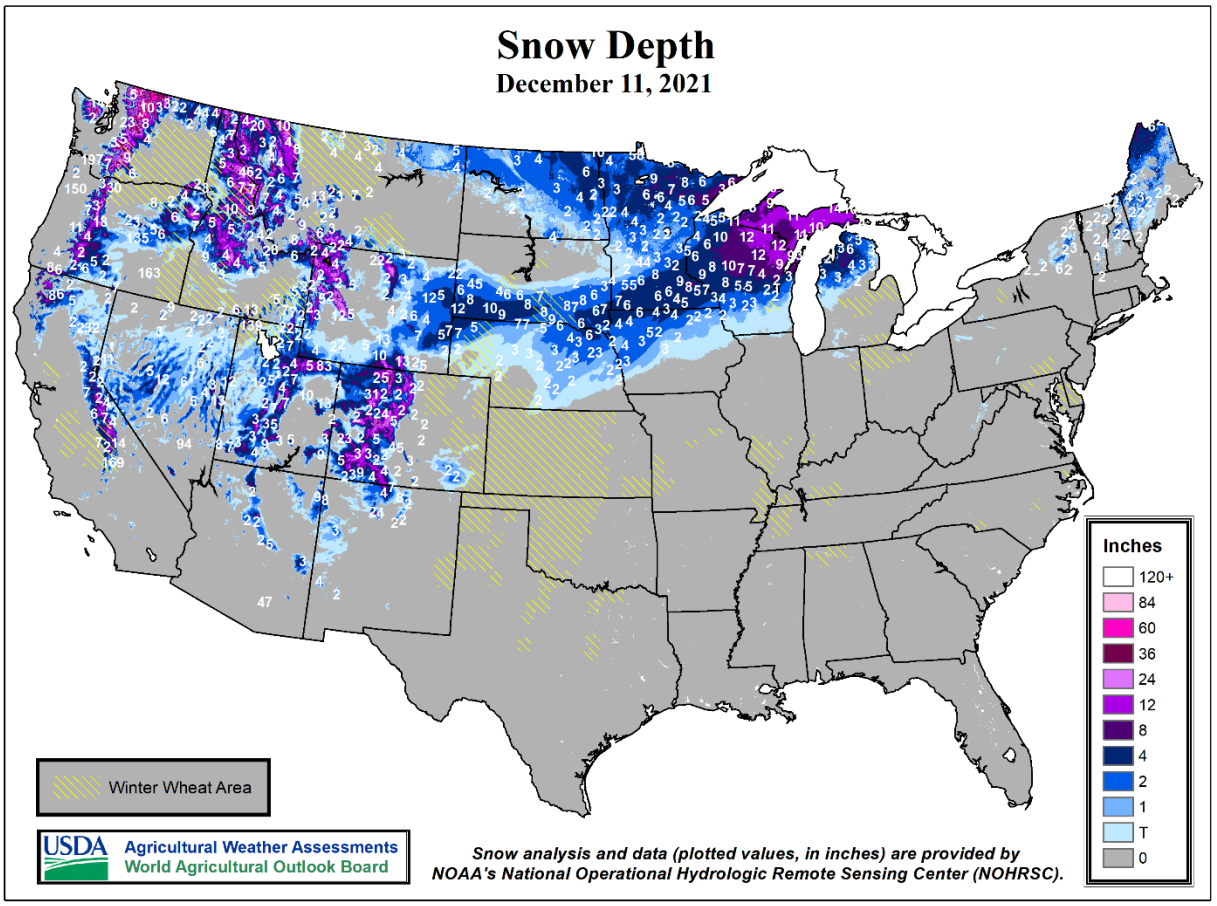


On December 5-6, a precursor to the major tornado outbreak occurred across the **mid-South** and **lower Midwest**. In the earlier outbreak, more than a dozen tornadoes were spotted across five states, mostly in **Kentucky** and **Tennessee**. Daily-record rainfall totals were set on December 6 in locations such as **Cape Girardeau, MO** (1.72 inches), and **Columbus, OH** (1.44 inches). Farther north, the week opened with snow falling in parts of the **north-central U.S.** Record-setting snowfall totals for December 5 reached 7.8 inches in **Rhinelander, WI**, and 6.9 inches in **Grand Forks, ND**. In **Montana**, **Billings** received 6.3 inches of snow on December 5-6. Later, showers along the **southern Atlantic Coast** resulted in a daily-record sum (1.91 inches) for December 8 in **Charleston, SC**. At mid-week, unsettled weather arrived across the **West**. Daily-record amounts for December 9 totaled exactly 0.57 inch in **Ely, NV**, and **Grand Junction, CO**. **Salt Lake City, UT**, received its first measurable snow of the season (1.4 inches) on December 9, followed by 0.8 inch on the 10th. In **Colorado**, **Denver's** first measurable snow (0.3 inch) occurred on December 10, breaking the record for latest first accumulation originally set when 1.0 inch fell on November 21, 1934. Snow returned across parts of the **north-central U.S.** on December 9-10. **Valentine, NE**, noted daily-record snowfall both days, totaling 2.0 and 6.7 inches, respectively. Record-setting snowfall amounts in **South Dakota** for December 10 included 9.5 inches in **Sioux Falls**, 8.3 inches in **Mitchell**, and 6.5 inches in **East Rapid City**. From December 9-11, **Marquette, MI**, received precipitation totaling 1.53 inches, including 11.8 inches of snow. Farther south, tragedy unfolded on December 10 across the **mid-South** and **lower Midwest**, with preliminary reports indicating as many as five dozen tornadoes. The **Kentucky** communities of **Mayfield (Graves County)** and **Dawson Springs (Hopkins and Caldwell Counties)** were particularly devastated. Other hard-hit cities and towns included **Monette, AR**; **Defiance, MO**; **Edwardsville, IL**; and **Bowling Green, KY**. **Kentucky** Mesonet stations recorded wind gusts to 120 mph in **Caldwell County** and 107 mph in **Graves County**.

On December 5, a surge of warmth in advance of a cold front resulted in daily-record highs of 82°F in **Hobart, OK**, and **Childress, TX**. Very warm weather also covered the **Desert Southwest**, where **Thermal, CA**, posted a daily-record high (89°F) for the 5th. Farther north, however, the temperature in **Denver, CO**, fell 43°F (from 64 to 21°F) in a little over 8 hours on December 5, accompanied by blowing dust and a northeasterly wind gust to 46 mph. On the same date, wind gusts in **New Mexico** were clocked to 62 mph at **Cannon AFB** and 60 mph in **Clovis**. Meanwhile, **Galveston, TX**, reported highs of 80°F or greater on December 4, 6, and 9. Prior to this year, **Galveston** had reached or exceeded the 80-degree mark in December once apiece in 1918, 2007, 2016, and 2018. During the second half of the week, high temperatures soared in advance of a new **Western** storm system. On December 9 and 10, **Houston, TX**, tied a monthly record with highs of 85°F. Daily-record highs in **Texas** on the 9th included 89°F in **Laredo** and 88°F in **Brownsville**. **Del Rio, TX**, posted a daily-record high of 90°F on December 10. Elsewhere in **Texas**, consecutive daily-record highs occurred on December 9-10 in **Abilene** (83 and 84°F); **Waco** (82 and 84°F); and **Wichita Falls** (79 and 84°F). On December 10, the day of the tornado outbreak, daily-record highs surged to 85°F in **Vicksburg and Greenwood, MS**, and to 80°F in **Pine Bluff, AR**, and **Memphis, TN**. Warmth spread into the **East** on December 11, when daily-record high surged to 87°F in **Fort Myers, FL**; 82°F in **Montgomery, AL**; 77°F in **New Bern, NC**; 70°F in **Washington, DC**; and 69°F in **Newark, NJ**. High winds accompanied the **Northeastern** warmth; in **New York**, peak gusts of 74 mph in **Niagara Falls** and 66 mph in **Buffalo** were recorded on December 11.

Following more than a month of very cold weather in **Alaska**, near- or above normal temperatures returned—except in the southeastern part of the state. Weekly temperatures averaged at least 5 to 10°F above normal in some locations across **northern and western Alaska**. December 4 was the first day in nearly a month with a low temperature above 0°F in locations such as **Bethel** (first since November 12) and **King Salmon** (first since November 10). Significant precipitation accompanied the transition to mild weather; **King Salmon's** daily totals topped one-half inch on December 6 and 9. **Fairbanks** received 9.4 inches of snow from December 7-11. **Bettles** was blanketed by 10.1 inches of snow on December 6-7. Substantial snow also fell in parts of **southeastern Alaska**, where **Juneau** reported 15.9 inches during the first 10 days of December. Farther south, a record-setting "Kona low" resulted in snow, high winds, and blizzard conditions on **Hawaii's Big Island summits of Mauna Loa and Mauna Kea**, while flash flooding struck several islands. On December 4, a wind gust to 105 mph was clocked on the **Mauna Kea summit**. December 6 was the second-wettest day on record in **Honolulu, Oahu**, behind only 15.32 inches on March 5, 1958. **Honolulu's** daily sum, 7.92 inches, represented its wettest-ever December day (previously, 7.89 inches on December 12, 1987). Other **Hawaiian** daily-record totals included 3.27 inches (on December 6) in **Lihue, Kauai**, and 2.40 inches (on December 5) in **Kahului, Maui**. A southerly wind gust to 52 mph accompanied **Kahului's** rain.


U.S. Drought Monitor
December 7, 2021
(Released Thursday, Dec. 9, 2021)
Valid 7 a.m. EST
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)
Intensity:
None
D0 Abnormally Dry
D1 Moderate Drought
D2 Severe Drought
D3 Extreme Drought
D4 Exceptional Drought
Author:
David Simeral
Western Regional Climate Center
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx
droughtmonitor.unl.edu


Snow Depth
December 11, 2021
Inches
120+
84
60
36
24
12
8
4
2
1
T
0
Winter Wheat Area
USDA Agricultural Weather Assessments
World Agricultural Outlook Board
Snow analysis and data (plotted values, in inches) are provided by NOAA's National Operational Hydrologic Remote Sensing Center (NOHRSC).

National Weather Data for Selected Cities

Weather Data for the Week Ending December 11, 2021

Data Provided by Climate Prediction Center

STATES AND STATIONS		TEMPERATURE ˚F						PRECIPITATION							RELATIVE HUMIDITY PERCENT		NUMBER OF DAYS TEMP. ˚F		NUMBER OF DAYS PRECIP	
		AVERAGE MAXIMUM	AVERAGE MINIMUM	EXTREME HIGH	EXTREME LOW	AVERAGE	DEPARTURE FROM NORMAL	WEEKLY TOTAL, IN.	DEPARTURE FROM NORMAL	GREATEST IN 24-HOUR, IN.	TOTAL, IN., SINCE DEC 1	PCT. NORMAL SINCE DEC 1	TOTAL, IN., SINCE JAN 1	PCT. NORMAL SINCE JAN 1	AVERAGE MAXIMUM	AVERAGE MINIMUM	90 AND ABOVE	32 AND BELOW	.01 INCH OR MORE	.50 INCH OR MORE
AK	ANCHORAGE	29	17	37	8	23	3	0.19	-0.08	0.08	4.80	73	14.22	89	78	54	0	7	4	0
	BARROW	14	2	24	-9	8	0	0.07	0.03	0.03	3.00	201	6.47	136	83	73	0	7	3	0
	FAIRBANKS	18	0	27	-14	9	0	0.30	0.17	0.12	2.44	85	12.96	122	80	67	0	7	5	0
	JUNEAU	34	28	36	18	31	0	1.24	-0.17	0.37	27.14	106	72.55	123	88	75	0	5	6	0
	KODIAK	37	26	42	11	31	0	0.89	-1.10	0.75	5.17	20	49.55	68	78	51	0	6	4	1
	NOME	15	1	32	-9	8	-3	0.29	0.05	0.23	4.59	81	19.90	122	83	68	0	7	3	0
AL	BIRMINGHAM	66	44	76	35	55	8	0.00	-1.11	0.00	9.18	65	61.73	120	98	58	0	0	0	0
	HUNTSVILLE	64	39	73	30	51	6	2.09	0.69	1.02	13.01	90	60.18	118	94	56	0	2	4	2
	MOBILE	72	54	78	42	63	9	3.72	2.60	2.11	16.76	106	80.07	127	100	72	0	0	4	2
	MONTGOMERY	71	48	82	37	60	10	2.29	1.13	0.82	14.48	108	51.17	102	93	60	0	0	6	1
AR	FORT SMITH	64	39	80	30	51	8	0.19	-0.63	0.16	13.23	93	44.96	103	86	40	0	3	2	0
	LITTLE ROCK	64	41	78	30	53	8	0.70	-0.50	0.46	7.88	51	38.74	83	90	50	0	1	3	0
AZ	FLAGSTAFF	46	21	62	4	33	3	0.77	0.37	0.62	3.74	58	21.37	103	92	42	0	7	3	1
	PHOENIX	72	51	77	44	62	5	0.35	0.14	0.27	1.43	64	5.64	73	65	24	0	0	2	0
	PRESCOTT	54	31	66	18	42	4	0.44	0.22	0.35	3.52	93	12.05	89	77	34	0	4	2	0
	TUCSON	72	45	80	40	58	6	0.37	0.15	0.37	1.11	35	12.09	107	63	22	0	0	1	0
CA	BAKERSFIELD	55	42	60	36	48	0	0.15	-0.07	0.15	1.10	78	3.07	51	95	66	0	0	1	0
	EUREKA	50	42	53	33	46	-2	0.63	-1.17	0.31	8.37	74	22.17	63	95	78	0	0	3	0
	FRESNO	54	43	61	38	49	1	0.41	0.05	0.41	1.97	80	7.08	67	98	69	0	0	1	0
	LOS ANGELES	64	51	69	46	58	1	0.04	-0.36	0.03	0.51	19	3.84	33	88	53	0	0	2	0
	REDDING	57	39	72	33	48	2	0.30	-0.99	0.27	8.88	96	18.07	60	95	53	0	0	2	0
	SACRAMENTO	53	40	57	32	46	-1	0.26	-0.43	0.19	7.70	174	12.19	74	99	69	0	1	3	0
	SAN DIEGO	64	50	70	44	57	0	0.10	-0.22	0.10	1.58	69	5.32	56	94	60	0	0	1	0
	SAN FRANCISCO	57	48	60	41	52	1	0.08	-0.73	0.07	6.48	135	11.91	66	88	63	0	0	2	0
	STOCKTON	55	41	58	31	48	2	0.11	-0.35	0.06	4.40	124	10.31	81	93	65	0	1	3	0
CO	ALAMOSA	45	7	57	-9	26	7	0.01	-0.08	0.01	0.71	33	5.56	77	84	30	0	7	1	0
	CO SPRINGS	53	20	69	7	37	6	0.00	-0.09	0.00	1.24	47	14.43	87	55	17	0	7	0	0
	DENVER INTL	49	21	64	9	35	5	0.03	-0.06	0.03	0.47	16	11.37	79	61	22	0	7	1	0
	GRAND JUNCTION	42	26	51	17	34	4	0.68	0.54	0.56	4.12	127	8.28	89	91	55	0	5	5	1
	PUEBLO	55	19	73	5	37	6	0.12	0.02	0.12	1.22	56	16.17	129	65	20	0	7	1	0
CT	BRIDGEPORT	47	36	58	29	42	4	0.79	-0.01	0.50	15.33	131	43.57	107	88	46	0	2	3	1
	HARTFORD	46	30	62	26	38	4	0.96	0.13	0.49	14.31	106	52.42	120	89	47	0	6	3	0
DC	WASHINGTON	55	37	70	31	46	4	0.17	-0.59	0.16	8.45	73	41.89	111	73	38	0	1	2	0
DE	WILMINGTON	51	33	67	27	42	4	0.76	-0.11	0.35	17.84	146	43.11	105	82	44	0	4	4	0
FL	DAYTONA BEACH	80	59	84	54	69	7	0.00	-0.54	0.00	12.73	86	43.58	91	98	60	0	0	0	0
	JACKSONVILLE	77	53	83	45	65	8	0.23	-0.38	0.23	12.24	80	49.45	98	100	63	0	0	1	0
	KEY WEST	82	72	84	70	77	5	0.00	-0.56	0.00	8.60	58	28.44	73	97	74	0	0	0	0
	MIAMI	84	69	85	65	76	5	0.21	-0.26	0.21	20.28	100	54.76	90	98	63	0	0	1	0
	ORLANDO	83	61	85	57	72	8	0.00	-0.56	0.00	12.99	104	42.81	87	97	52	0	0	0	0
	PENSACOLA	75	58	80	50	67	12	0.92	-0.19	0.43	25.53	144	85.95	137	98	75	0	0	4	0
	TALLAHASSEE	74	54	81	47	64	10	0.48	-0.42	0.23	14.54	113	47.39	83	100	72	0	0	4	0
	TAMPA	81	66	83	61	74	9	0.02	-0.50	0.02	12.18	111	48.09	107	91	61	0	0	1	0
	WEST PALM BEACH	82	65	84	62	74	5	0.63	-0.09	0.47	22.69	116	49.95	83	100	64	0	0	2	0
GA	ATHENS	59	42	76	35	51	4	0.77	-0.08	0.33	10.01	79	45.63	103	97	70	0	0	5	0
	ATLANTA	60	43	75	36	52	5	1.91	0.99	0.65	10.31	76	49.29	104	93	69	0	0	5	1
	AUGUSTA	66	46	77	38	56	7	1.96	1.25	0.98	10.22	98	50.74	122	95	61	0	0	3	2
	COLUMBUS	68	46	79	36	57	6	1.68	0.65	0.73	17.02	149	53.94	122	97	64	0	0	4	2
	MACON	67	44	78	34	56	6	3.00	2.10	1.57	14.41	130	48.44	112	99	68	0	0	5	2
	SAVANNAH	71	50	82	45	61	8	0.32	-0.32	0.29	15.33	132	47.98	104	99	67	0	0	2	0
HI	HILO	80	71	82	67	76	3	6.80	3.99	3.94	31.56	79	119.46	99	92	66	0	0	7	2
	HONOLULU	79	68	83	59	73	-2	9.31	8.65	8.39	9.82	165	19.42	130	89	64	0	0	3	2
	KAHULUI	82	69	86	65	76	2	3.47	2.76	3.33	5.28	106	19.82	126	92	60	0	0	3	1
	LIHUE	79	71	80	60	75	1	3.98	2.83	2.10	8.58	70	31.68	94	94	70	0	0	5	2
IA	BURLINGTON	44	25	59	12	35	3	0.27	-0.26	0.24	7.65	77	37.23	100	82	46	0	7	2	0
	CEDAR RAPIDS	37	18	50	2	27	2	0.30	-0.08	0.26	8.68	102	21.04	62	93	50	0	7	2	0
	DES MOINES	43	24	56	13	33	5	0.03	-0.34	0.03	8.62	102	26.59	75	77	43	0	7	1	0
	DUBUQUE	34	19	44	5	27	2	0.57	0.07	0.47	6.91	75	28.07	79	88	51	0	7	3	0
	SIOUX CITY	43	20	64	5	31	7	0.17	-0.05	0.17	5.48	81	21.67	79	80	39	0	7	1	0
	WATERLOO	37	20	50	5	28	4	0.23	-0.09	0.12	6.69	87	23.36	68	80	46	0	7	3	0
ID	BOISE	43	30	50	20	36	5	0.28	-0.07	0.22	3.39	103	10.52	96	90	54	0	5	3	0
	LEWISTON	43	33	52	29	38	4	0.09	-0.13	0.02	3.47	108	6.91	58	86	55	0	3	4	0
	POCATELLO	41	27	49	22	34	8	0.01	-0.28	0.01	3.30	98	9.69	84	77	47	0	6	1	0
IL	CHICAGO/O_HARE	44	26	60	13	35	5	1.08	0.48	0.82	8.76	84	27.75	78	79	46	0	5	2	1
	MOLINE	44	24	55	11	34	5	0.65	0.09	0.64	6.89	72	33.54	91	79	43	0	5	2	1
	PEORIA	48	26	62	15	37	6	0.74	0.10	0.56	11.91	118	42.59	122	81	44	0	6	2	1
	ROCKFORD	40	22	52	9	31	3	1.35	0.83	1.19	7.51	80	22.71	64	81	47	0	6	3	1
	SPRINGFIELD	51	27	65	17	39	7	0.49	-0.16	0.42	10.85	106	43.78	122	81	45	0	5	2	0
IN	EVANSVILLE	56	30	69	26	43	6	1.76	0.82	1.28	11.46	95	42.51	99	92	52	0	5	4	1
	FORT WAYNE	48	26	62	17	37	6	1.69	1.05	0.86	13.78	141	40.88	111	89	65	0	6	3	2
	INDIANAPOLIS	53	28	66	17	40	6	1.24	0.52	0.66	15.06	136	45.80	113	88	51	0	5	4	1
	SOUTH BEND	44	25	61	18	35	4	2.12	1.49	1.68	11.84	107	40.09	110	86	53	0	6	3	1
KS	CONCORDIA	50	28	63	21	39	8	0.00	-0.24	0.00	4.27	67	22.67	82	75	34	0	6	0	0
	DODGE CITY	56	25	70	15	40	6	0.00	-0.19	0.00	5.25	117	18.59	88	76	24	0	6	0	0
	GOODLAND	49	19	64	10	34	4	0.02	-0.10	0.02	0.51	14	12.18	64	77	30	0	7	1	0
	TOPEKA	55	31	67	23	43	9	0.00	-0.36	0.00	9.20	101	36.26	101	79	34	0	4	0	0

Based on 1981-2010 normals ***** Not Available**

Weather Data for the Week Ending December 11, 2021

STATES AND STATIONS		TEMPERATURE ˚F						PRECIPITATION							RELATIVE HUMIDITY PERCENT		NUMBER OF DAYS TEMP. ˚F		NUMBER OF DAYS PRECIP	
		AVERAGE MAXIMUM	AVERAGE MINIMUM	EXTREME HIGH	EXTREME LOW	AVERAGE	DEPARTURE FROM NORMAL	WEEKLY TOTAL, IN.	DEPARTURE FROM NORMAL	GREATEST IN 24-HOUR, IN.	TOTAL, IN., SINCE DEC 1	PCT. NORMAL SINCE DEC 1	TOTAL, IN., SINCE JAN 1	PCT. NORMAL SINCE JAN 1	AVERAGE MAXIMUM	AVERAGE MINIMUM	90 AND ABOVE	32 AND BELOW	.01 INCH OR MORE	.50 INCH OR MORE
	WICHITA	56	30	70	22	43	8	0.00	-0.30	0.00	8.43	108	30.07	94	78	33	0	4	0	0
KY	LEXINGTON	56	31	67	24	44	6	3.33	2.37	2.08	15.00	136	55.28	129	90	52	0	5	4	3
	LOUISVILLE	60	35	70	29	47	8	2.09	1.20	0.88	12.12	108	45.52	107	87	48	0	4	4	2
	PADUCAH	62	35	73	26	48	9	1.31	0.20	0.91	9.68	70	44.76	96	90	48	0	5	4	1
LA	BATON ROUGE	74	54	83	48	64	5	1.56	0.51	1.07	12.24	81	75.24	132	98	70	0	0	4	1
	LAKE CHARLES	72	55	80	48	64	8	0.46	-0.56	0.36	12.13	74	67.96	124	97	70	0	0	3	0
	NEW ORLEANS	76	59	82	54	68	11	1.86	0.69	1.17	14.16	95	81.38	137	100	67	0	0	5	1
	SHREVEPORT	73	50	84	34	62	12	0.79	-0.34	0.79	6.61	45	43.65	90	84	47	0	0	1	1
MA	BOSTON	48	33	64	26	40	3	0.54	-0.37	0.28	13.98	109	47.75	115	84	43	0	3	3	0
	WORCESTER	43	28	61	23	36	4	1.25	0.31	0.77	17.78	123	55.05	120	87	54	0	6	3	1
MD	BALTIMORE	53	34	70	26	44	5	0.13	-0.69	0.12	12.70	106	39.61	99	77	40	0	4	2	0
ME	CARIBOU	30	10	49	0	20	-1	1.74	0.95	1.22	12.86	110	34.16	94	80	59	0	7	3	2
	PORTLAND	42	24	57	17	33	1	1.27	0.28	0.77	16.22	107	41.66	93	89	52	0	6	4	1
MI	ALPENA	34	18	50	8	26	-2	1.64	1.22	0.69	7.63	92	25.70	95	95	67	0	7	6	2
	GRAND RAPIDS	40	24	58	15	32	1	0.91	0.30	0.47	12.57	104	35.54	97	97	68	0	6	6	0
	HOUGHTON LAKE	31	18	47	9	25	-1	1.77	1.35	0.73	8.93	114	27.88	104	91	66	0	7	6	1
	LANSING	42	26	60	19	34	4	1.02	0.56	0.48	11.04	116	33.26	109	85	59	0	6	5	0
	MUSKEGON	41	27	57	18	34	2	1.35	0.71	0.85	8.30	73	29.70	93	86	56	0	5	5	1
	TRAVERSE CITY	33	23	40	16	28	-1	1.17	0.62	0.44	6.71	65	27.06	86	90	62	0	6	5	0
MN	DULUTH	25	9	31	-7	17	-1	0.52	0.23	0.48	7.99	83	23.24	76	88	62	0	7	2	0
	INT_L FALLS	23	0	30	-16	12	-1	0.25	0.05	0.23	8.06	119	18.30	77	88	63	0	7	2	0
	MINNEAPOLIS	29	16	40	3	22	1	0.80	0.53	0.65	5.28	68	24.86	83	86	61	0	7	4	1
	ROCHESTER	29	16	40	2	22	0	0.71	0.38	0.55	6.06	74	26.78	82	88	62	0	7	4	1
	ST. CLOUD	28	10	37	-6	19	1	0.39	0.19	0.22	8.14	106	24.30	89	87	63	0	7	4	0
MO	COLUMBIA	55	34	68	26	44	10	0.33	-0.29	0.33	10.72	94	48.49	117	72	44	0	4	1	0
	KANSAS CITY	53	30	67	24	42	9	0.00	-0.40	0.00	8.41	79	39.89	105	75	37	0	4	0	0
	SAINT LOUIS	57	33	68	24	45	8	0.93	0.25	0.92	6.91	60	38.63	98	75	43	0	3	2	1
	SPRINGFIELD	56	33	71	24	45	8	0.26	-0.50	0.24	9.77	71	45.45	103	81	45	0	4	2	0
MS	JACKSON	68	48	81	41	58	9	2.28	1.05	1.14	7.02	51	47.79	93	94	60	0	0	3	2
	MERIDIAN	69	48	81	37	58	10	1.35	0.10	0.68	11.35	80	65.44	123	91	61	0	0	5	1
	TUPELO	66	42	79	33	54	9	1.91	0.35	1.01	9.33	63	67.19	131	88	51	0	0	3	2
MT	BILLINGS	37	18	47	7	27	0	0.39	0.26	0.23	2.22	66	9.49	70	76	51	0	7	2	0
	BUTTE	37	16	43	3	26	8	0.09	-0.03	0.07	0.95	36	5.87	46	77	42	0	7	2	0
	CUT BANK	32	6	44	-11	19	-4	0.04	-0.02	0.03	0.71	32	5.34	48	87	56	0	7	2	0
	GLASGOW	29	1	45	-14	15	-3	0.12	0.04	0.10	0.99	42	5.64	48	82	61	0	7	2	0
	GREAT FALLS	39	14	52	3	26	1	0.01	-0.12	0.01	0.76	25	10.46	72	78	40	0	7	1	0
	HAVRE	28	5	43	-10	17	-4	0.09	0.00	0.05	1.43	61	7.15	64	89	65	0	7	2	0
	MISSOULA	37	25	45	20	31	6	0.25	0.02	0.14	2.80	80	10.15	74	89	54	0	7	4	0
NC	ASHEVILLE	56	32	67	25	44	3	0.26	-0.64	0.26	9.13	77	53.60	123	93	57	0	4	1	0
	CHARLOTTE	60	43	75	29	51	8	0.97	0.25	0.50	5.74	52	33.88	86	89	45	0	1	3	1
	GREENSBORO	58	39	72	31	49	6	0.59	-0.10	0.59	7.20	62	37.80	94	80	42	0	1	1	1
	HATTERAS	64	51	72	42	58	6	1.73	0.78	1.05	14.54	80	58.39	105	91	66	0	0	3	1
	RALEIGH	59	40	73	27	49	4	0.51	-0.17	0.39	11.56	98	42.46	103	91	46	0	2	2	0
	WILMINGTON	67	46	80	36	57	6	0.94	0.12	0.86	13.17	80	58.30	105	94	56	0	0	3	1
ND	BISMARCK	30	8	41	2	19	1	0.03	-0.07	0.03	4.72	125	11.34	64	88	61	0	7	1	0
	DICKINSON	33	11	43	-5	22	3	0.00	-0.06	0.00	3.35	98	12.89	81	82	52	0	7	0	0
	FARGO	25	4	34	-8	15	-2	0.26	0.07	0.26	7.35	122	17.04	77	85	67	0	7	1	0
	GRAND FORKS	23	-3	33	-13	10	-4	0.30	0.17	0.29	6.39	123	18.21	89	87	70	0	7	2	0
	JAMESTOWN	27	5	36	-7	16	0	0.03	-0.06	0.03	4.30	99	11.35	61	85	63	0	7	1	0
NE	GRAND ISLAND	45	25	57	16	35	7	0.07	-0.10	0.07	3.98	71	26.51	100	75	38	0	6	1	0
	LINCOLN	47	26	60	18	36	8	0.04	-0.21	0.04	5.17	76	25.75	90	74	37	0	7	1	0
	NORFOLK	41	22	54	11	32	6	0.20	-0.01	0.20	4.14	63	24.66	91	75	38	0	6	1	0
	NORTH PLATTE	46	17	59	9	31	5	0.04	-0.07	0.04	3.29	86	22.04	109	82	36	0	7	1	0
	OMAHA	45	26	59	16	35	7	0.06	-0.22	0.05	7.69	111	32.27	107	79	39	0	6	2	0
	SCOTTSBLUFF	47	17	59	5	32	5	0.22	0.10	0.12	2.46	78	9.85	63	80	37	0	7	2	0
	VALENTINE	42	16	61	2	29	5	0.57	0.47	0.45	5.63	152	21.17	106	79	42	0	7	2	0
NH	CONCORD	42	21	57	12	32	2	1.26	0.48	0.98	10.99	89	39.44	102	94	52	0	6	4	1
NJ	ATLANTIC_CITY	52	31	64	23	41	2	0.29	-0.56	0.21	10.04	90	45.18	115	91	46	0	5	3	0
	NEWARK	53	37	69	32	45	6	0.46	-0.45	0.25	16.61	133	52.94	120	77	41	0	1	3	0
NM	ALBUQUERQUE	53	29	63	16	41	4	0.00	-0.12	0.00	1.29	44	5.16	55	61	27	0	5	0	0
NV	ELY	43	13	54	0	28	2	0.58	0.46	0.57	2.06	73	6.68	69	90	43	0	7	2	1
	LAS VEGAS	61	46	74	32	54	5	0.02	-0.08	0.02	0.21	17	1.35	32	58	25	0	1	1	0
	RENO	50	29	63	22	39	3	0.14	-0.07	0.09	3.42	163	5.16	74	89	44	0	6	3	0
	WINNEMUCCA	47	20	58	16	33	3	0.13	-0.08	0.13	3.30	138	8.13	102	83	44	0	7	1	0
NY	ALBANY	44	29	60	25	37	5	0.72	0.01	0.52	15.48	136	42.50	113	89	54	0	6	3	1
	BINGHAMTON	39	26	56	17	33	3	0.78	0.08	0.50	12.96	119	47.52	128	89	61	0	6	3	1
	BUFFALO	46	30	67	24	38	5	0.77	-0.11	0.25	14.88	116	35.17	93	82	57	0	5	5	0
	ROCHESTER	44	29	64	24	37	4	0.47	-0.17	0.21	12.68	126	32.54	100	87	56	0	6	5	0
	SYRACUSE	47	31	64	27	39	7	0.08	-0.71	0.08	13.23	111	43.24	119	89	52	0	4	1	0
OH	AKRON-CANTON	48	29	64	21	38	6	1.23	0.54	0.55	9.96	93	38.61	102	83	57	0	6	5	2
	CINCINNATI	54	29	66	19	42	6	1.86	1.07	0.81	11.96	113	47.23	117	88	51	0	5	6	2
	CLEVELAND	49	30	64	22	39	5	1.17	0.45	0.66	10.27	88	39.06	105	80	53	0	4	4	1
	COLUMBUS	50	28	65	20	39	3	2.13	1.43	1.44	9.58	99	37.69	101	92	55	0	5	6	2
	DAYTON	52	28	65	19	40	7	2.07	1.35	0.83	11.66	109	38.07	97	82	50	0	6	4	3
	MANSFIELD	48	26	63	18	37	5	3.35	2.57	2.24	10.14	90	37.74	89	91	61	0	6	4	2

Based on 1981-2010 normals ***** Not Available**

Weather Data for the Week Ending December 11, 2021

STATES AND STATIONS		TEMPERATURE ˚F						PRECIPITATION							RELATIVE HUMIDITY PERCENT		NUMBER OF DAYS TEMP. ˚F		NUMBER OF DAYS PRECIP	
		AVERAGE MAXIMUM	AVERAGE MINIMUM	EXTREME HIGH	EXTREME LOW	AVERAGE	DEPARTURE FROM NORMAL	WEEKLY TOTAL, IN.	DEPARTURE FROM NORMAL	GREATEST IN 24-HOUR, IN.	TOTAL, IN., SINCE DEC 1	PCT. NORMAL SINCE DEC 1	TOTAL, IN., SINCE JAN 1	PCT. NORMAL SINCE JAN 1	AVERAGE MAXIMUM	AVERAGE MINIMUM	90 AND ABOVE	32 AND BELOW	.01 INCH OR MORE	.50 INCH OR MORE
	TOLEDO	50	28	63	22	39	7	1.74	1.11	0.88	16.59	180	40.37	124	81	55	0	5	3	2
	YOUNGSTOWN	47	28	64	19	37	5	1.30	0.59	0.80	10.89	101	42.90	116	88	55	0	5	5	1
OK	OKLAHOMA CITY	61	33	79	24	47	5	0.00	-0.46	0.00	4.57	43	28.18	79	77	28	0	4	0	0
	TULSA	61	37	76	28	49	8	0.82	0.21	0.79	8.67	72	36.46	92	80	35	0	3	2	1
OR	ASTORIA	50	39	54	31	44	2	3.69	1.40	1.86	30.52	132	68.76	112	96	76	0	1	6	1
	BURNS	41	24	48	15	32	7	0.33	-0.02	0.20	3.13	105	8.78	86	91	55	0	7	3	0
	EUGENE	50	38	58	32	44	4	2.57	0.70	1.31	12.93	84	27.32	66	96	72	0	1	5	2
	MEDFORD	45	37	49	31	41	1	0.43	-0.37	0.31	5.54	92	11.90	73	98	76	0	2	3	0
	PENDLETON	46	33	51	28	39	5	0.21	-0.12	0.11	3.19	86	7.44	62	86	58	0	3	4	0
	PORTLAND	48	40	51	34	44	3	1.72	0.44	0.84	15.67	128	30.30	92	90	67	0	0	5	2
	SALEM	50	40	57	32	45	4	2.00	0.41	1.30	12.91	96	31.96	90	91	68	0	1	7	2
PA	ALLENTOWN	47	31	63	25	39	5	0.31	-0.60	0.19	10.86	80	39.50	91	82	49	0	4	2	0
	ERIE	48	32	67	25	40	6	1.72	0.85	0.96	15.19	108	39.58	99	80	53	0	4	4	2
	MIDDLETOWN	49	33	68	24	41	6	0.08	-0.72	0.05	15.24	129	44.79	116	78	44	0	4	2	0
	PHILADELPHIA	53	37	68	30	45	5	0.26	-0.60	0.18	9.97	88	41.81	106	76	39	0	1	3	0
	PITTSBURGH	48	28	63	21	38	3	1.33	0.64	0.86	9.50	98	35.70	98	86	53	0	5	4	1
	WILKES-BARRE	46	32	65	24	39	6	0.37	-0.30	0.26	15.63	144	42.76	119	80	50	0	4	3	0
	WILLIAMSPORT	45	32	59	25	38	5	0.35	-0.43	0.28	16.37	130	43.36	109	79	47	0	4	2	0
RI	PROVIDENCE	49	33	63	27	41	4	0.58	-0.46	0.37	13.51	96	44.97	100	89	52	0	4	3	0
SC	CHARLESTON	69	49	79	43	59	6	1.91	1.28	1.90	14.01	105	55.74	114	98	60	0	0	2	1
	COLUMBIA	62	43	74	34	52	4	1.73	1.02	0.81	7.54	71	45.28	106	96	57	0	0	3	1
	FLORENCE	65	44	79	32	55	6	1.46	0.83	1.18	5.13	49	40.41	99	90	48	0	1	3	1
	GREENVILLE	57	40	71	30	49	3	1.05	0.06	0.51	8.26	68	41.44	93	86	52	0	1	3	1
SD	ABERDEEN	31	9	42	-1	20	2	0.11	-0.01	0.10	6.91	134	18.37	86	86	57	0	7	2	0
	HURON	34	17	47	3	26	5	0.12	0.00	0.12	8.39	157	18.70	82	81	55	0	7	1	0
	RAPID CITY	38	13	57	3	25	0	0.56	0.46	0.52	4.16	121	15.69	97	92	48	0	7	2	1
	SIOUX FALLS	44	19	108	8	32	11	0.55	0.38	0.52	6.27	95	25.93	100	77	45	1	7	2	1
TN	BRISTOL	58	33	74	24	45	6	0.78	-0.02	0.56	7.40	78	38.83	100	91	49	0	4	3	1
	CHATTANOOGA	60	39	71	31	49	5	1.20	0.00	0.62	13.29	93	58.95	119	89	59	0	1	4	1
	KNOXVILLE	57	36	72	28	46	4	1.61	0.53	0.83	8.57	74	43.70	96	94	62	0	4	5	2
	MEMPHIS	67	44	80	32	55	10	2.56	1.16	1.85	11.35	77	50.23	100	86	47	0	1	3	2
	NASHVILLE	64	38	73	29	51	9	1.44	0.35	1.26	11.44	92	55.56	124	79	43	0	3	3	1
TX	ABILENE	74	39	84	27	57	10	0.00	-0.29	0.00	4.31	61	20.66	86	73	23	0	3	0	0
	AMARILLO	60	30	74	20	45	7	0.00	-0.16	0.00	1.29	28	14.36	72	62	17	0	5	0	0
	AUSTIN	77	53	85	39	65	11	0.01	-0.54	0.01	8.26	83	32.92	103	83	43	0	0	1	0
	BEAUMONT	73	57	81	48	65	10	0.12	-1.03	0.06	18.22	102	64.12	112	96	68	0	0	2	0
	BROWNSVILLE	82	66	88	57	74	11	0.16	-0.13	0.16	17.67	148	35.39	132	92	58	0	0	1	0
	CORPUS CHRISTI	80	60	89	47	70	10	0.00	-0.38	0.00	12.71	113	42.74	140	97	50	0	0	0	0
	DEL RIO	78	52	90	44	65	12	0.00	-0.13	0.00	0.96	17	13.96	74	78	35	1	0	0	0
	EL PASO	65	42	73	36	53	8	0.01	-0.19	0.01	0.92	31	11.55	122	54	21	0	0	1	0
	FORT WORTH	70	46	83	35	58	10	0.00	-0.60	0.00	7.27	70	32.59	94	86	40	0	0	0	0
	GALVESTON	76	64	81	54	70	11	0.14	0.00	0.07	12.49	0	40.88	0	90	68	0	0	2	0
	HOUSTON	77	60	85	48	69	13	0.34	-0.55	0.34	16.15	103	48.53	102	89	56	0	0	1	0
	LUBBOCK	66	35	78	29	50	9	0.00	-0.20	0.00	1.59	28	19.92	106	55	15	0	4	0	0
	MIDLAND	69	38	77	28	54	8	0.00	-0.14	0.00	0.16	3	13.59	95	64	18	0	3	0	0
	SAN ANGELO	75	40	86	26	58	10	0.00	-0.20	0.00	4.02	60	22.93	110	76	22	0	3	0	0
	SAN ANTONIO	75	53	83	39	64	10	0.00	-0.43	0.00	10.17	101	32.59	105	92	45	0	0	0	0
	VICTORIA	79	59	85	46	69	13	0.03	-0.47	0.02	8.02	62	54.37	136	93	54	0	0	2	0
	WACO	74	46	84	27	60	10	0.01	-0.62	0.01	5.69	53	28.57	87	91	42	0	2	1	0
	WICHITA FALLS	67	35	84	24	51	7	0.00	-0.40	0.00	3.13	38	24.75	88	75	30	0	4	0	0
UT	SALT LAKE CITY	45	29	55	22	37	5	0.56	0.24	0.52	4.40	92	13.65	89	84	48	0	6	2	1
VA	LYNCHBURG	56	32	70	23	44	5	0.29	-0.50	0.28	6.66	57	32.37	82	80	39	0	4	2	0
	NORFOLK	56	40	74	30	48	2	0.77	0.04	0.39	6.56	52	36.03	81	94	58	0	1	3	0
	RICHMOND	57	35	71	25	46	3	0.15	-0.61	0.13	12.18	105	46.02	110	91	42	0	4	2	0
	ROANOKE	56	34	70	27	45	5	0.39	-0.33	0.32	9.29	82	37.17	94	77	41	0	3	2	0
	WASH/DULLES	53	33	69	23	43	5	0.04	-0.71	0.04	9.85	84	33.93	85	79	40	0	4	1	0
VT	BURLINGTON	39	24	56	18	32	3	0.63	0.04	0.28	12.45	110	32.85	93	88	53	0	6	5	0
WA	OLYMPIA	46	37	50	33	41	3	2.59	0.81	1.87	22.67	127	50.77	111	98	79	0	0	6	1
	QUILLAYUTE	47	34	50	26	40	0	2.80	-0.22	0.92	56.98	164	100.63	110	100	83	0	2	6	2
	SEATTLE-TACOMA	46	37	49	33	42	1	0.81	-0.44	0.56	20.13	148	39.94	117	93	76	0	0	5	1
	SPOKANE	35	26	44	22	31	3	0.12	-0.43	0.07	5.11	101	10.01	65	93	60	0	6	2	0
	YAKIMA	44	29	51	19	37	7	0.00	-0.33	0.00	2.71	105	5.45	72	87	53	0	5	0	0
WI	EAU CLAIRE	28	11	34	-6	19	-2	0.01	-0.25	0.01	4.47	54	22.09	72	89	61	0	7	1	0
	GREEN BAY	30	15	36	-3	23	-1	1.02	0.63	0.38	3.98	48	27.53	96	88	60	0	7	5	0
	LA CROSSE	33	19	38	7	26	2	0.50	0.13	0.34	4.76	57	34.80	107	85	50	0	6	3	0
	MADISON	33	20	39	6	27	1	0.90	0.43	0.74	5.52	64	21.87	65	88	55	0	7	3	1
	MILWAUKEE	38	24	48	10	31	2	1.37	0.85	1.03	7.24	77	18.78	56	80	48	0	6	3	1
WV	BECKLEY	52	28	68	21	40	4	0.90	0.21	0.48	6.74	70	36.59	93	92	51	0	6	4	0
	CHARLESTON	57	31	71	22	44	5	1.72	0.94	1.42	8.80	81	36.41	86	92	51	0	5	3	1
	ELKINS	53	26	71	17	39	5	0.58	-0.20	0.30	9.94	90	35.85	81	85	49	0	5	3	0
	HUNTINGTON	57	33	72	24	45	6	2.28	1.49	1.12	9.10	89	47.09	116	88	51	0	4	5	2
WY	CASPER	39	15	49	1	27	3	0.34	0.22	0.20	4.22	133	14.43	117	81	43	0	6	3	0
	CHEYENNE	44	18	54	12	31	3	0.09	-0.03	0.08	1.19	36	10.50	66	74	30	0	7	2	0
	LANDER	43	17	55	10	30	9	0.01	-0.14	0.01	4.18	119	14.47	116	83	29	0	7	1	0
	SHERIDAN	36	12	46	-1	24	1	0.63	0.49	0.37	3.46	91	12.28	88	83	52	0	7	5	0

Based on 1981-2010 normals ***** Not Available**

November Weather Summary

Weather

Weather summary provided by USDA/WAOB

Highlights: November warmth from the Pacific Coast to the Plains promoted late-season fieldwork but reduced moisture availability for winter wheat establishment. Monthly temperatures averaged at least 5°F above normal in several locations across northern sections of the Rockies and High Plains. Above-normal temperatures also extended into the western Corn Belt, allowing corn and soybean harvest efforts to near completion west of the Mississippi River. In the eastern Corn Belt, however, lingering wetness limited fieldwork. By November 28, the corn harvest was 89 percent complete in Michigan and Ohio—the only major reporting states with more than one-tenth of the crop remaining in the field on that date.

Except in the northernmost Rockies and Pacific Northwest, general dryness accompanied the warmth. By November 28, topsoil moisture was rated at least one-third very short to short in each state across the Rockies and Plains, along with Washington and Oregon. On that date, Montana led the nation with topsoil moisture rated 96 percent very short to short, followed by Colorado (84 percent), New Mexico (81 percent), Texas (64 percent), and Oklahoma (59 percent). Meanwhile, more than one-quarter of the winter wheat was rated in very poor to poor condition in Montana (56 percent), Oregon (48 percent), Texas (45 percent), Colorado (33 percent), and South Dakota (26 percent). Nationally, more than one-fifth (23 percent) of the winter wheat was rated in those two categories in late November for the first time since 2012, when 26 percent of the crop was rated very poor to poor.

During November, short-term dryness began to develop in parts of the Southeast, particularly in the southern Atlantic States. The dryness was a concern with respect to the establishment of winter grains and cover crops—but favored a rapid harvest pace for Southern crops such as cotton and peanuts. Forty percent of the U.S. cotton was harvested during the 4-week period ending November 28, compared to the 5-year average of 31 percent; the national harvest was 85 percent complete on that date. By the 28th, topsoil moisture was rated more than one-half very short to short in the Carolinas, along with 46 percent in Georgia. In contrast, persistently wet weather in the Pacific Northwest culminated in mid-November flooding along several rivers in western Washington. Although some precipitation spilled east of the Cascades, drought lingered in many agricultural areas across the interior Northwest.

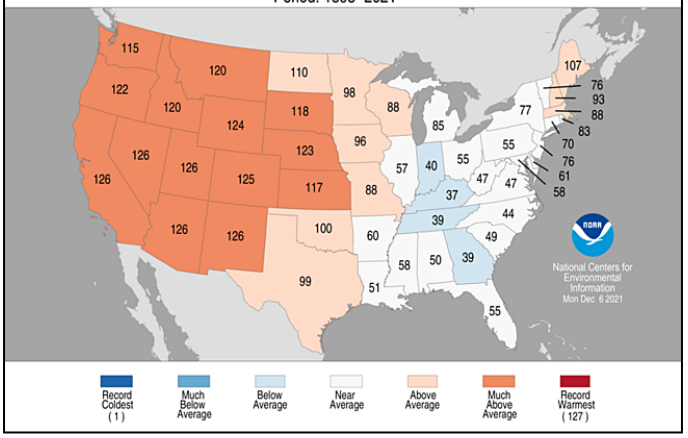
Elsewhere, drier-than-normal November conditions were common across the central and eastern U.S. Notable exceptions included Florida's peninsula and Deep South Texas, with both areas receiving significant rain. Parts of the north-central U.S., including eastern North Dakota and northern Minnesota, also received above-normal precipitation. However, unlike the western half of the country, cooler-than-normal conditions were common from the middle and lower Mississippi Valley to the middle and southern Atlantic States.

During the 4-week period ending November 30, drought coverage in the contiguous U.S. increased from 47.8 to 53.4 percent, according to the U.S. Drought Monitor. By November 23, national drought coverage crept above the 50-percent mark for the first time since September 10, 2013. Indeed, national drought coverage has been significantly elevated for more than a year—and was last below 40 percent in late-September 2020. Since the beginning of the 21st century, the only other periods when U.S. drought coverage continuously exceeded 40 percent for more than a year were March 12, 2002 – June 3, 2003, and June 19, 2012 – October 1, 2013.

Historical Perspective: According to preliminary data provided by the National Centers for Environmental Information, the contiguous U.S. experienced its seventh-warmest, eighth-driest November during the 1895-2021 period of record. The nation's monthly average temperature of 45.2°F was 3.5°F above the 20th century mean, while precipitation averaged 1.28 inches—57 percent of normal. The November average temperature was higher in 5 recent years (1999, 2001, 2009, 2016, and 2020), along with 1949. Meanwhile, it was the nation's driest November since 1976, when an average of 1.11 inches fell.

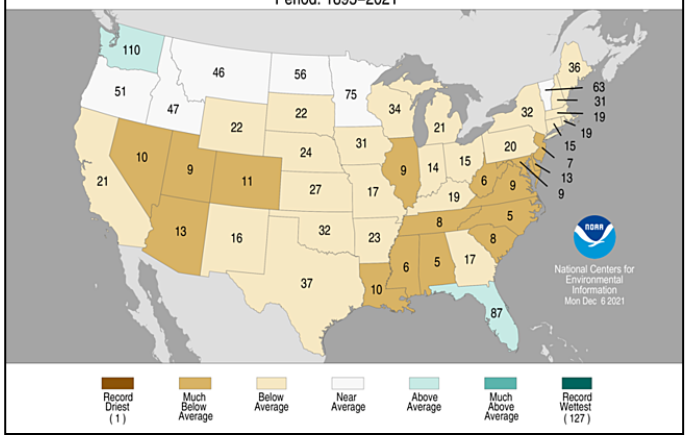
State temperature rankings ranged from the 37th-coolest November in Kentucky to top-ten warmth in ten of eleven Western States, along with Nebraska and South Dakota (figure 1). Meanwhile, top-ten dryness was reported during November in Nevada, Utah, Illinois, and ten mid-Atlantic and Southeastern States (figure 2). In contrast, Washington State experienced its 18th-wettest November.

Figure 1 Statewide Average Temperature Ranks
November 2021
Period: 1895–2021



Summary: Although widespread Midwestern and Northeastern freezes occurred on multiple days in early November, few records were set. On November 7, however, Allentown, PA,

Figure 2 Statewide Precipitation Ranks
November 2021
Period: 1895–2021



posted a daily record-tying low of 23°F. When a coastal storm affected the southern Atlantic States, temperatures on November 5 remained below the 50-degree mark in locations such as Charleston, SC (high of 49°F), and Savannah, GA (48°F). Elsewhere in Georgia, Alma's November 5 high of 49°F represented its earliest-ever maximum temperature below the 50-degree mark (previously, 47°F on November 12, 1968). Farther west, record-setting warmth developed in the Southwest and surged across the High Plains. In Colorado, consecutive daily-record highs occurred on November 6-7 in Colorado Springs (77°F both days) and Alamosa (68 and 70°F, respectively). Other daily-record highs for November 6 included 80°F in Denver, CO, and Winslow, AZ. Later, temperatures surged across the central and southern Plains, with daily-record highs reported on November 7 in locations such as Borger, TX (87°F); Garden City, KS (84°F); and North Platte, NE (81°F). Warmth soon reached the East, where, Lynchburg, VA, tied a daily record for November 9 with a high of 79°F. Eastern warmth continued for several days, with West Virginia locations such as Clarksburg (78°F) and Morgantown (77°F) notching daily-record highs for November 11. In the Northeast, record-setting highs for November 12 reached 69°F at New York's LaGuardia Airport and 67°F in Bridgeport, CT. Record-setting warmth also developed across southern California. On November 11-12, consecutive daily-record highs were established in California locations such as Burbank (90 and 94°F, respectively), Camarillo (93 and 95°F), and Santa Ana (92 and 96°F). Starting on the 11th, Burbank reported four consecutive November highs of 90°F or greater for the first time since November 2-5, 1997. With a daily-record high of 92°F on November 12, San Diego, CA, reported its first reading above the 90-degree mark since October 2, 2020. Similarly, Los Angeles International Airport (LAX) tallied highs of 91°F on November 12 and 13, marking the first 90-degree readings in that location since November 16, 2020—and first consecutive highs of 90°F or greater since October 1-2, 2020.

In early November, snow showers downwind of the Great Lakes produced a daily-record total of 11.7 inches on the 2nd in Gaylord, MI. It was also Gaylord's highest November daily snowfall of the 21st century, surpassing 10.7 inches on November 18, 2014. Meanwhile, showers in the south-central U.S. resulted in a daily-record sum for November 3 in Austin (Bergstrom), TX, where 2.03 inches fell. Elsewhere in Texas, Harlingen netted a daily-record total (1.28 inches) for November 4. The following day, heavy rain overspread Florida, where record-setting amounts for November 5 reached 5.44 inches in Daytona Beach, 3.26 inches in Tampa, 2.70 inches in Leesburg, and 2.46 inches in Orlando. For Daytona Beach, it was the wettest day since October 9, 2019, when 5.57 inches fell—and the wettest November day since November 25, 2014, when rainfall totaled 6.22 inches. Along the southern Atlantic Coast, November 5-6 rainfall included 3.27 inches in Gainesville, FL, and 3.53 inches on Saint Simons Island, GA, with a northerly wind gust clocked to 43 mph in the latter location on the 6th. Early on November 7, just off the North Carolina coastline, a gust to 67 mph was reported at a buoy in Onslow Bay.

Meanwhile, increasingly stormy weather prevailed in the Pacific Northwest, where Astoria, OR, collected a daily-record amount (2.61 inches) for November 11. Astoria received measurable rain on each of the first 16 days of November, totaling 9.84 inches. Similarly, Quillayute, WA, reported a November 1-16 total of 19.09 inches, with rain falling each day. One of the Northwestern disturbances later evolved into an impressive upper Midwestern storm system. On November 11, International Falls, MN, reported daily records for precipitation and snowfall—1.30 and 4.5 inches, respectively—along with a wind gust to 42 mph. Peak wind gusts on the 11th were clocked to 78 mph in Buffalo, SD, and 71 mph in Valentine, NE. From November 11-13, South Dakota locations such as Watertown, Sisseton, and Huron reported peak wind gusts from 55 to 60 mph, along with 1.2 to 1.7 inches of snow. During the same period, Grand Forks, ND, received 5.2 inches of snow, along with a November 12 peak wind gust to 60 mph. Later, heavy showers briefly swept across the Northeast, where daily-record amounts for November 12 included 1.94 inches in Williamsport, PA; 1.57 inches in Augusta, ME; and 1.40 inches in Syracuse, NY. Farther south, Cape Hatteras, NC, measured 4.18 inches, a record for the 12th. Marquette, MI, tied a daily record with 4.0 inches of snow on November 13. By mid-month, high winds were observed on both sides of the Continental Divide. In Glacier County, MT, a gust to 117 mph was recorded at Deep Creek on November 14, while Two Medicine set an all-time record with 96 mph. On November 15, wind gusts were clocked to 63 mph in Pullman, WA; 62 mph in Spokane, WA; and 61 mph in Coeur d'Alene, ID. The following day, Glasgow, MT, set a monthly record with a gust to 69 mph (previously, 68 mph on November 13, 2007). Elsewhere in Montana, November 16 peak gusts included 87 mph in Cut Bank; 76 mph in Jordan; and 63 mph in Helena. On the same date in neighboring Wyoming, gusts reached 82 mph in Buffalo and 67 mph in Lander.

Farther west, river flooding peaked at mid-month in western Washington, following relentless rainfall. Major flooding occurred along the Skagit River, where the gauge near Mount Vernon, WA, was destroyed by debris. However, supplemental data indicated that the Skagit River near Mount Vernon crested at least 8.81 feet above flood stage on November 15, representing the highest water level since November 30, 1995. Farther upstream, the Skagit River near Concrete, WA, also crested on November 15, rising 10.93 feet above flood stage to achieve its highest level since November 6, 2006. Near La Push, WA, a record crest (7.93 feet above flood stage) was established along the Bogachiel River (previously, 5.64 feet on November 6, 2006). Finally, the Nooksack River at Ferndale, WA, climbed to its highest level since November 27, 1963, rising 5.76 feet above flood stage on the 15th. In contrast, only light precipitation fell farther inland. In the Colorado Rockies, the 147-acre Kruger Rock Fire was sparked on November 16

when high winds downed a tree which struck a power line. Meanwhile, occasional snow accompanied surges of cool air downwind of the Great Lakes. From November 13-15, snowfall in Marquette, MI, totaled 9.1 inches. Elsewhere, mid-month rain showers occurred generally along and east of a line from southern Texas to the lower Great Lakes region. On November 18, Brownsville, TX, collected a daily-record rainfall of 2.25 inches. Showers also dotted Florida, where Daytona Beach measured a daily-record sum (0.55 inch) for November 18.

Record-setting warmth lingered in mid-November across southern California. Burbank, CA, achieved a daily-record high on November 14 with a reading of 93°F. Elsewhere in California, daily-record highs for the 14th included 96°F in Woodland Hills and 93°F in Palm Springs. Warmth also developed across Northwest, where consecutive daily-record highs occurred on November 14-15 in locations such as Yakima, WA (72 and 67°F), and Helena, MT (66 and 69°F). Farther south, consecutive daily-record highs were set on November 15-16 in San Angelo, TX (86 and 87°F, respectively), and Roswell, NM (86 and 84°F). Other record-setting highs for November 15 included 79°F in Burlington, CO, and Goodland, Russell, and Salina, KS. On November 16, highs soared to daily-record levels in Texas locations such as Childress (91°F), Lubbock (88°F), and Wichita Falls (87°F). Prior to 2021, Childress had reported single November days of 90-degree heat in only 8 other years: 1934, 1945, 1952, 2001, 2005, 2012, 2016, and 2017. The only later observance of a 90-degree reading in Childress was November 17, 2017, when the high reached 92°F. Warmth also briefly spread into the Midwest and East, where daily-record highs surged to 78°F (on November 16) in Springfield, MO, and 78°F (on November 18) in Danville, VA. About a week later, a return of chilly weather in the eastern U.S. led to freezes deep into the South, including parts of northern Florida and southern sections of Alabama and Mississippi. Tallahassee, FL, reported a low of 27°F (not a record for the date) on November 24. In southern Georgia, the first freeze of the autumn occurred on the 24th in Valdosta (30°F) and Albany (32°F). Farther north, temperatures dipped below 0°F for the first time this season in parts of North Dakota and northern Minnesota. Sub-zero lows on November 25 included -5°F in International Falls, MN, and -1°F in Grand Forks, ND. In contrast, highs soared to daily-record levels on November 21 in southern California locations such as Vista (89°F) and Newport Beach (85°F). Another surge of warmth across the Plains and Midwest resulted in record-setting highs for November 23 in Valentine, NE (77°F); Burlington, CO (75°F); Goodland, KS (74°F); Sioux Falls, SD (68°F); and Sioux City, IA (68°F). Several days later, yet another round of impressive, late-season warmth overspread the western and central U.S. On November 27-28, consecutive daily-record highs were established in Northwestern locations such as Portland, OR (63°F both days), and Olympia, WA (58°F both days). Elsewhere on the 27th, Topeka, KS, logged a daily-record high of 71°F—their sixth of 7 days in November with a reading of 70°F or greater. For much of the late-month period, southern California's coastal ranges were plagued by gusty, offshore winds, accompanied by warm weather and low humidity levels. Some of the highest winds (locally 70 to 90 mph) were observed on Thanksgiving Day, November 25. For example, a pre-dawn gust to 89 mph was clocked on the 25th in Browns Canyon, near Chatsworth, CA.

Late in the month, showers in Deep South Texas resulted in a record-setting total (2.11 inches) for November 22 in McAllen. Another round of rain arrived in the western Gulf Coast region on Thanksgiving Day, November 25, when Houston, TX, netted a daily-record sum of 1.87 inches—the first measurable total in that location since November 11. Meanwhile, periodic heavy rain continued to affect the western Washington, where daily-record totals for the 25th included 3.16 inches in Quillayute and 1.43 inches in Bellingham. Another daily-record sum (1.63 inches) occurred in Bellingham on the 28th, helping to boost its monthly total to a November record-high 14.57 inches (previously, 11.60 inches in 1990). Quillayute (2.85 inches) collected a record-setting amount for November 30; that location's monthly sum of 27.56 inches represented its second-highest November total, behind 29.14 inches in 1983. Meanwhile, high winds raked the northern High Plains. In Montana, the winds fanned several winter wildfires, including the powerline-sparked West Wind Fire, which burned 10,644 acres of vegetation in and near Denton between November 30 and December 4. Farther south, November featured no measurable precipitation in locations such as San Diego, CA; Phoenix, AZ; Cedar City, UT; Las Vegas, NV; Roswell, NM; and Amarillo and Midland, TX. San Diego last received no measurable rainfall during November in 1980. In Cedar City, this year marked only the second November on record—along with 2006—without measurable precipitation. In addition, Denver, CO, headed into December having not received measurable snow for the first time on record; previously, the latest first accumulating snowfall had been November 21, 1934.

Historically warm weather prevailed across the western and central U.S. in late November. Hundreds of daily-record highs were established in late November and early December, with many sites setting records on multiple days. On November 29, highs surged to the 80-degree mark or higher as far north as Kansas, where Medicine Lodge posted a reading of 82°F. On the same date, Woodland Hills, CA, notched a high of 90°F. Woodland Hills collected another daily-record high (88°F) on November 30, while Palm Springs, CA, noted 91°F on the 30th and again on December 1. Ephrata, WA, closed November with three consecutive daily-record highs (61, 62, and 60°F), followed by a monthly record high of 69°F on December 1.

Alaska experienced its second-coldest November (tied with 1989; only 2011 was colder) in the last 4 decades, as frigid air settled across the mainland and the Aleutians. Early-November storminess preceded the Arctic outbreak. In the Aleutians, Cold Bay netted a daily-record precipitation total of 1.22 inches on November 2. Another winter storm struck Cold Bay on November 9, when precipitation—all snow—totaled 1.04 inches and the high temperature was 32°F. Inland, Bettles received 10.9 inches of snow during the first 7 days of November, followed by four consecutive lows ranging from -30 to -35°F from November 13-16. Earlier, a long-duration precipitation event had struck portions of south-central Alaska, starting in late October. The visitor center at Portage Lake received precipitation totaling 27.27 inches from October 29 – November 3, with 10- to 18-inch amounts noted at several neighboring sites. Later, Anchorage received 11.9 inches of snow from November 10-12, aided by a daily-record sum of 8.0 inches on the 11th. Soon, cold air became deeply entrenched across interior, western, and southern Alaska. Fairbanks reported its first sub-zero reading of the season on November 10, with a low of -10°F. In fact, lows in Fairbanks fell to 0°F or below on each of the last 21 days of the month, bottoming out at -32°F on November 28 and 29. King Salmon reported sub-zero minimum temperatures

each day starting November 11; Bethel accomplished the same feat each day from November 13-30. The cold spell peaked in many communities on November 28, when King Salmon's low of -28°F tied a monthly record previously set on November 28, 1917, and November 22, 1988. Bethel (-28°F on November 28) endured its second-lowest November reading, tied with November 20, 1939, behind only -31°F on November 30, 1939. Elsewhere on the 28th, Kotzebue (-31°F) reported its lowest November reading since November 15, 1956, when the minimum reading was -32°F. Meanwhile, relatively mild weather prevailed in southeastern Alaska, although snow was periodically heavy. Juneau received 17.1 inches of snow from November 18-21 and 31.4 inches (228 percent of normal) for the month. On November 24, Ketchikan received rainfall totaling 2.75 inches and clocked a peak wind gust to 56 mph.

Warm, tranquil weather prevailed for much of the month in Hawaii, leading to an increase in drought coverage during November from 38 to 57 percent, according to the *U.S. Drought Monitor*. In part due to the dry conditions, minimum temperatures occasionally dipped to unusually low levels. From October 31 – November 2, for example, Lihue, Kauai, tallied a trio of daily-record lows (61, 63, and 62°F). Later, on November 25, Kahului, Maui, posted a daily record-tying low of 60°F. However, there were also several daily-record highs, including maxima of 90°F in Kahului on November 5, 6, 10, and 20. Kahului achieved at least four 90-degree readings during November each year from 2018 to 2021, after only attaining the feat sporadically (1968, 1984, 1990, 1995, and 1996) in earlier years. Meanwhile, November rainfall at the state's major airport observation sites ranged from 0.09 inch (4 percent of normal) in Honolulu, Oahu, to 5.89 inches (41 percent) in Hilo, on the Big Island. At month's end, rainfall increased in coverage and intensity, with Hilo reporting 2.48 inches—nearly half of its monthly total—from November 28-30.

Fieldwork

Fieldwork summary provided by USDA/NASS

Most of the western half of the nation recorded above-normal November temperatures. Parts of the Great Plains, Rockies, and Southwest noted temperature 6°F or more above normal. In contrast, most of the eastern half of the U.S. was cooler than normal. Some locations in the Delta and Southeast recorded temperatures 4°F or more below normal. Meanwhile, most of the nation was drier than normal, although twice the normal precipitation was recorded in parts of Florida, Georgia, the upper Midwest, Deep South Texas, and Washington. Portions of coastal Washington received more than 30 inches of rain.

Seventy-four percent of the corn was harvested by October 31, seven percentage points behind last year but 8 points ahead of the 5-year average. Ninety-one percent of the corn was harvested by November 14, three percentage points behind last year but 5 points ahead of average. Ninety-five percent of the corn was harvested by November 21, two percentage points behind last year but 3 points ahead of average.

Soybean harvest across the nation was 79 percent complete by October 31, seven percentage points behind last year and 2 percentage points behind the 5-year average. Soybean harvest was 92 percent complete by November 14, three percentage points behind last year and 1 point behind average. Soybean harvest was 95 percent complete by November 21, three percentage points behind last year and 1 point behind average.

Nationwide, producers had sown 87 percent of the intended 2022 winter wheat acreage by October 31, one percentage point behind last year but 1 point ahead of the 5-year average. Nationally, 67 percent of the winter wheat had emerged by October 31, three percentage points behind last year and 1 point behind average. Producers had sown 94 percent of the intended 2022 winter wheat acreage by November 14, two percentage points behind last year but equal to the 5-year average. Nationwide, 81 percent of the winter wheat had emerged by November 14, three percentage points behind last year and 2 points behind average. Nationwide, 92 percent of the winter wheat had emerged by November 28, equal to last year but 1 percentage point ahead of average. On November 28, forty-four percent of the 2022 winter wheat acreage was reported in good to excellent condition, 2 percentage points below the same time last year.

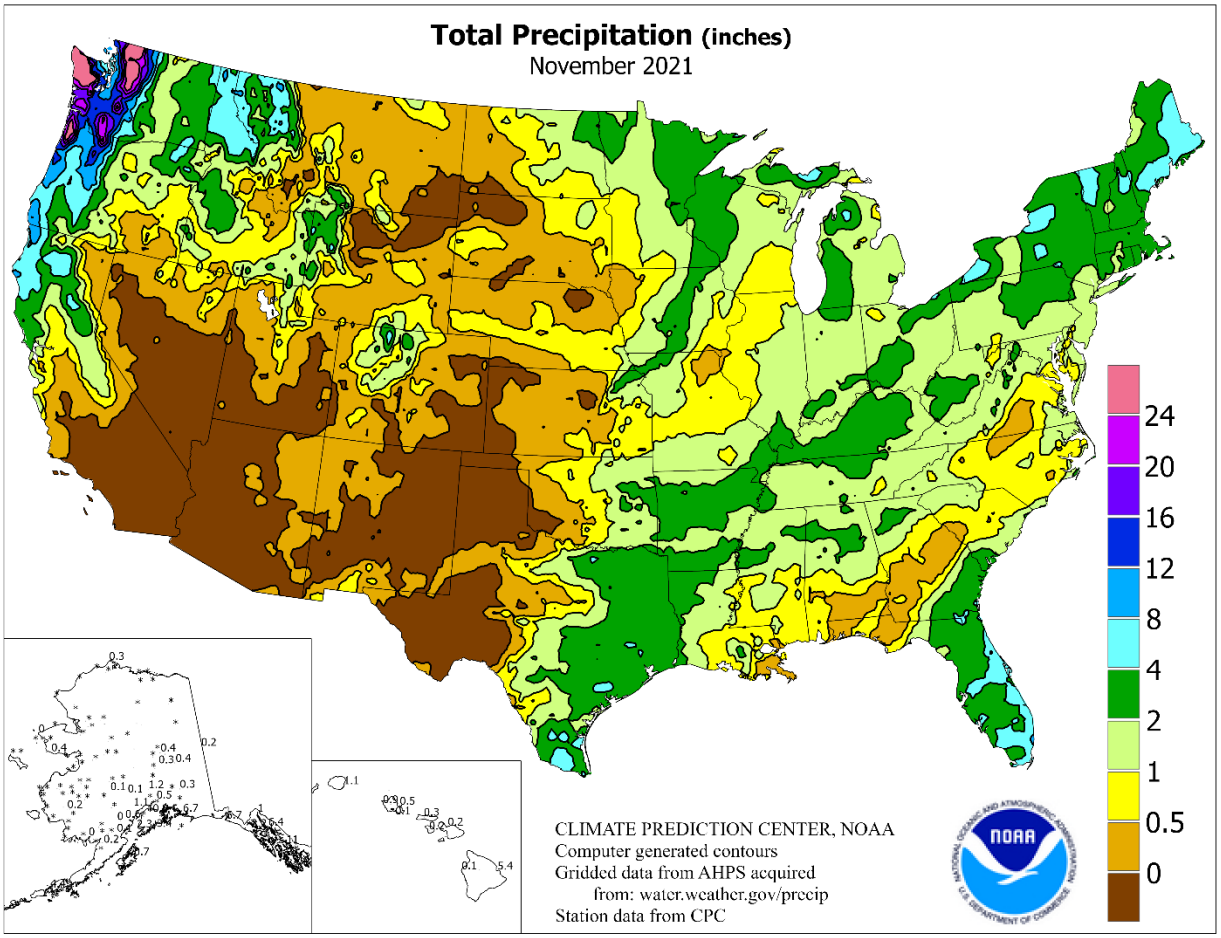
By October 31, ninety-four percent of the nation's cotton had open bolls, 4 percentage points behind last year and 1 point behind the 5-year average. On the same date, forty-five percent of the cotton had been harvested, 6 percentage points behind last year and 3 points behind average. On October 31, sixty-two percent of the cotton acreage was rated in good to excellent condition, 25 percentage points above the same time last year. By November 14, sixty-five percent of the cotton had been harvested, 3 percentage points behind last year but 1 point ahead of average. By November 28, eighty-five percent of the cotton acreage had been harvested, 2 percentage points ahead of last year and 6 points ahead of average.

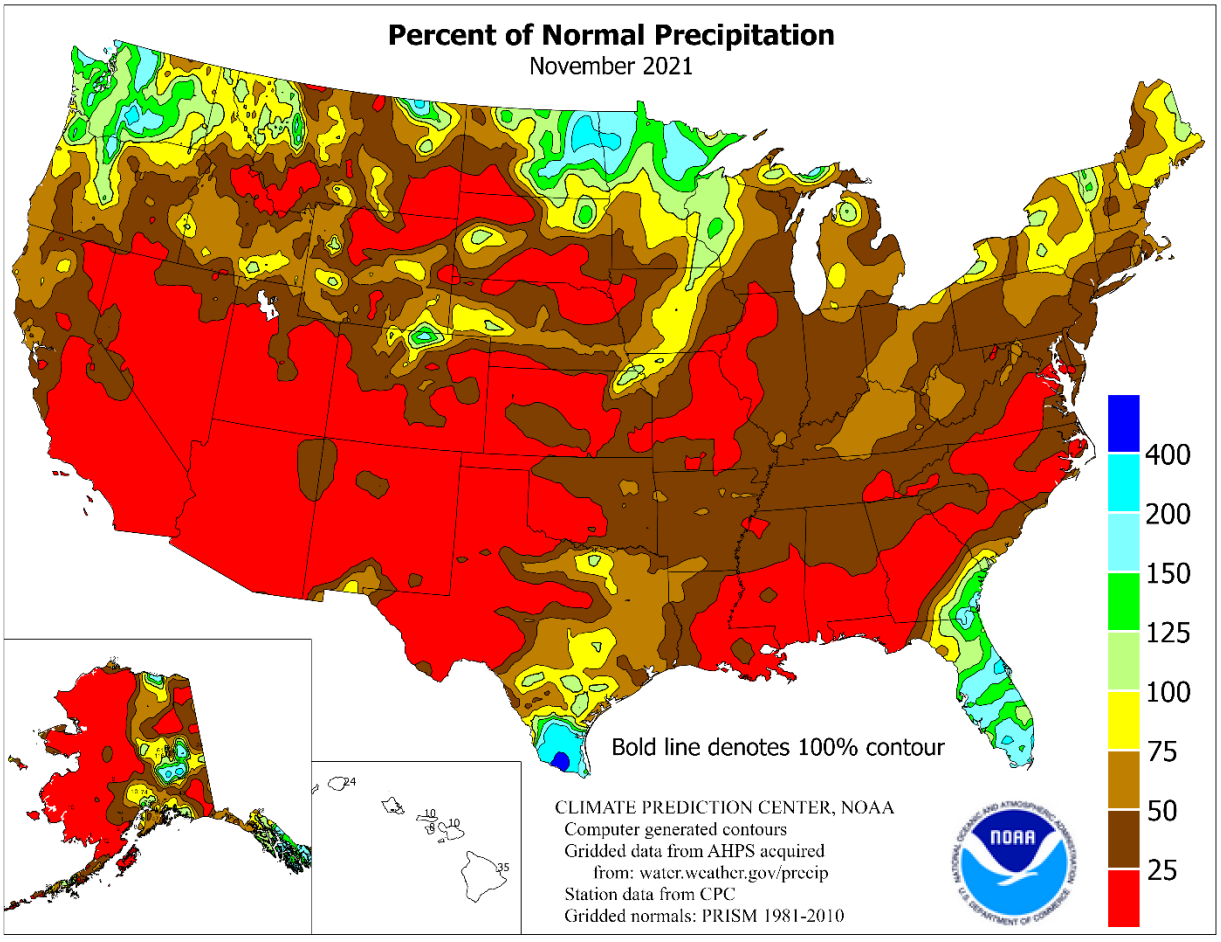
Eighty percent of the 2021 sorghum acreage had been harvested by October 31, one percentage point behind last year but 10 points ahead of the 5-year average. Eighty-nine percent of the sorghum had been harvested by November 14, four percentage points behind last year but 2 points ahead of average. Ninety-seven percent of the sorghum had been harvested by November 28, two percentage points behind last year but 1 point ahead of average.

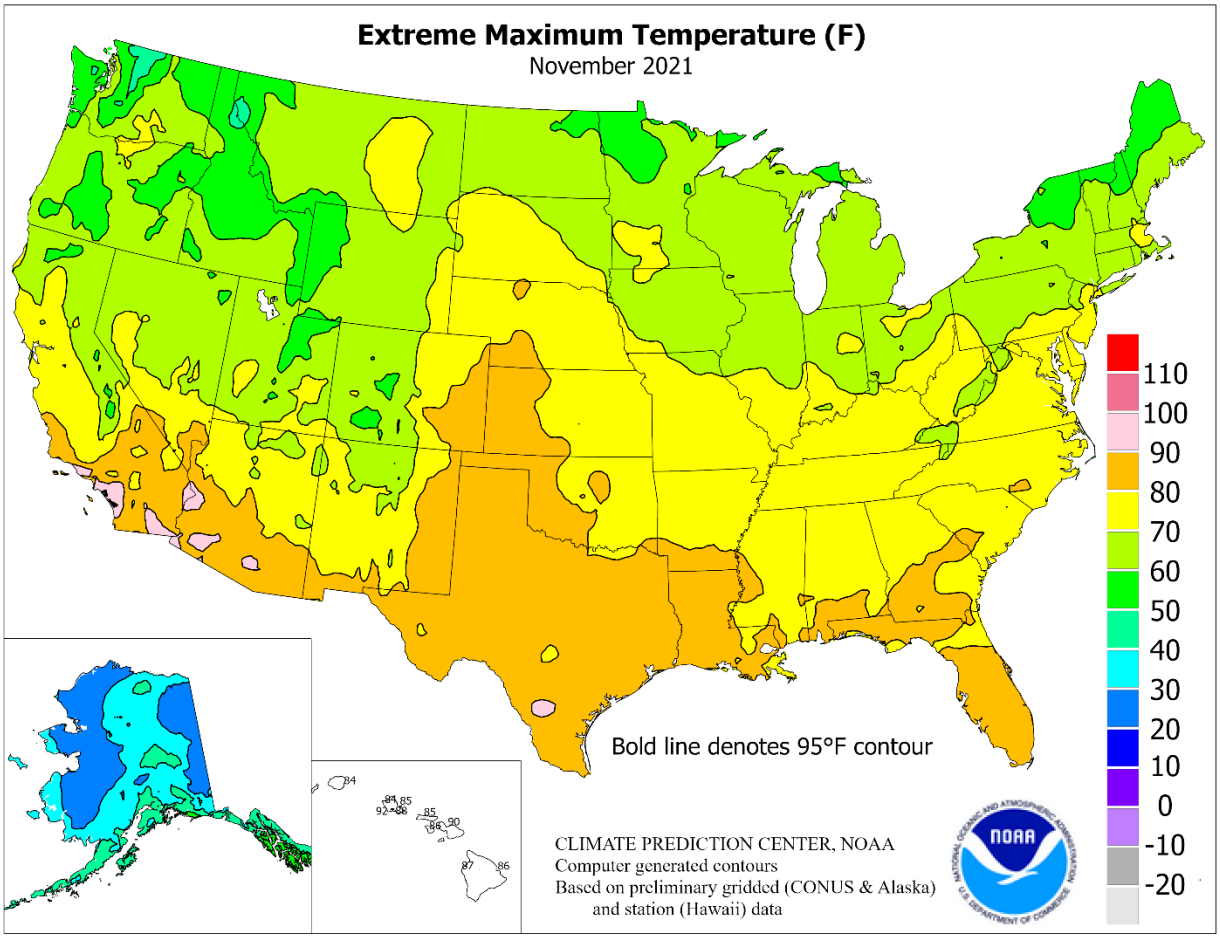
Sixty-seven percent of the nation's peanut acreage was harvested by October 31, two percentage points ahead of last year but 7 points behind the 5-year average. Eighty-six percent of the peanut acreage was harvested by November 14, two percentage points ahead of last year but 3 points behind average. Ninety-six percent of the peanuts were harvested by November 28, equal to both last year and the 5-year average.

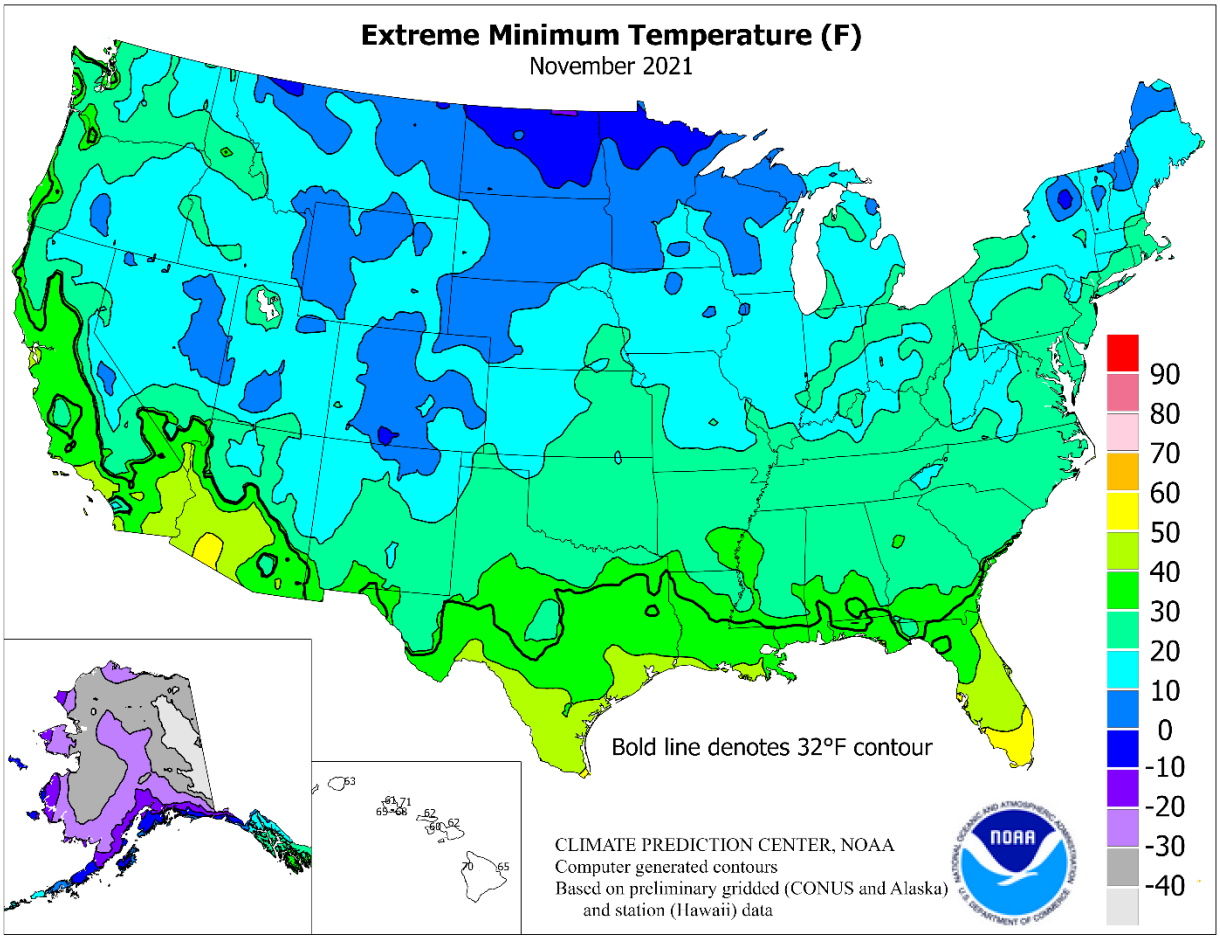
By October 31, sugarbeet producers had harvested 87 percent of the nation's crop, 7 percentage points behind last year but 3 points ahead of the 5-year average. By November 7, sugarbeet producers had harvested 96 percent of the crop, 2 percentage points behind last year but 4 points ahead of average.

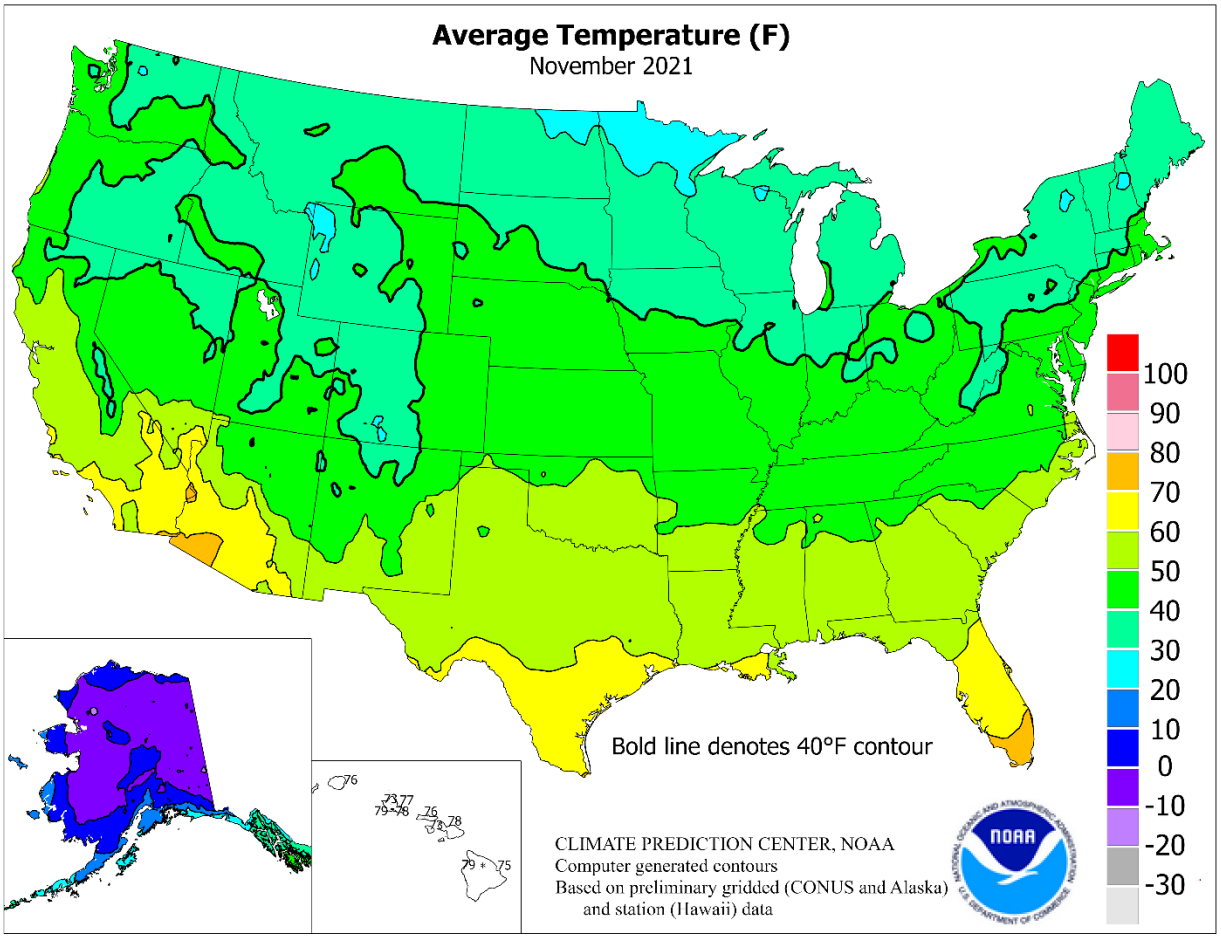
By October 31, fifty-three percent of this year's sunflower crop was harvested, 6 percentage points behind last year but 3 points ahead of the 5-year average. By November 14, eighty-three percent of the sunflower crop was harvested, 4 percentage points behind last year but 9 points ahead of average. By November 28, ninety-four percent of the sunflower crop was harvested, 2 percentage points behind last year but 8 points ahead of average.

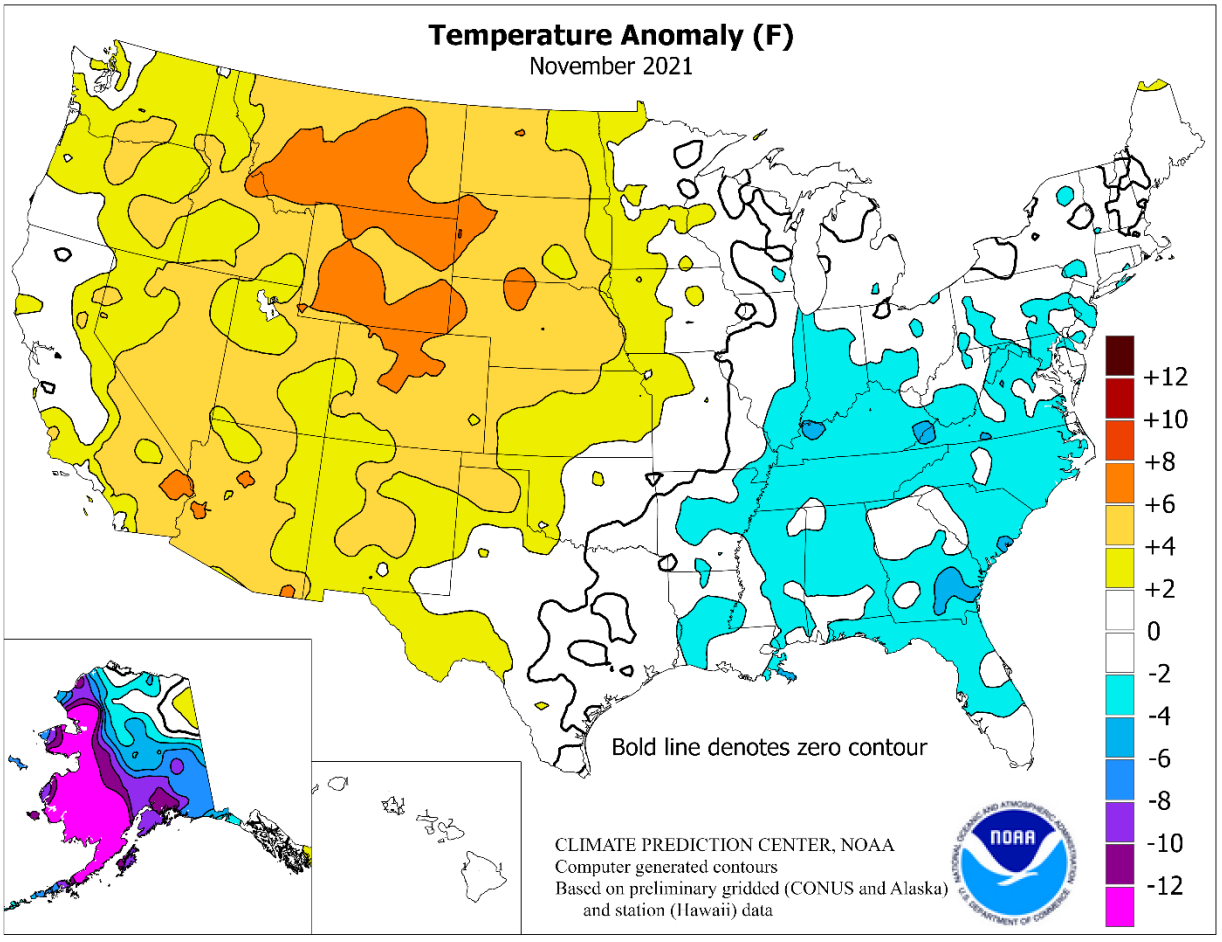

Total Precipitation (inches)
November 2021
24
20
16
12
8
4
2
1
0.5
0
CLIMATE PREDICTION CENTER, NOAA
Computer generated contours
Gridded data from AHPS acquired
from: water.weather.gov/precip
Station data from CPC
NOAA


Percent of Normal Precipitation
November 2021
400
200
150
125
100
75
50
25
Bold line denotes 100% contour
CLIMATE PREDICTION CENTER, NOAA
Computer generated contours
Gridded data from AHPS acquired
from: water.weather.gov/precip
Station data from CPC
Gridded normals: PRISM 1981-2010
NOAA


Extreme Maximum Temperature (F)
November 2021
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
Bold line denotes 95°F contour
CLIMATE PREDICTION CENTER, NOAA
Computer generated contours
Based on preliminary gridded (CONUS & Alaska)
and station (Hawaii) data
NOAA


Extreme Minimum Temperature (F)
November 2021
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
Bold line denotes 32°F contour
CLIMATE PREDICTION CENTER, NOAA
Computer generated contours
Based on preliminary gridded (CONUS and Alaska)
and station (Hawaii) data
NOAA


Average Temperature (F)
November 2021
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
Bold line denotes 40°F contour
CLIMATE PREDICTION CENTER, NOAA
Computer generated contours
Based on preliminary gridded (CONUS and Alaska)
and station (Hawaii) data
NOAA


Temperature Anomaly (F)
November 2021
+12
+10
+8
+6
+4
+2
0
-2
-4
-6
-8
-10
-12
Bold line denotes zero contour
CLIMATE PREDICTION CENTER, NOAA
Computer generated contours
Based on preliminary gridded (CONUS and Alaska)
and station (Hawaii) data
NOAA

National Weather Data for Selected Cities

November 2021

Data Provided by Climate Prediction Center

STATES AND STATIONS	TEMP, °F		PRECIP.		STATES AND STATIONS	TEMP, °F		PRECIP.		STATES AND STATIONS	TEMP, °F		PRECIP.	
	AVERAGE	DEPARTURE	TOTAL	DEPARTURE		AVERAGE	DEPARTURE	TOTAL	DEPARTURE		AVERAGE	DEPARTURE	TOTAL	DEPARTURE
AK ANCHORAGE	16	-6	1.13	-0.02	WICHITA	48	2	0.45	-0.98	TOLEDO	42	1	1.32	-1.51
BARROW	7	4	0.25	0.00	KY LEXINGTON	42	-4	2.05	-1.46	YOUNGSTOWN	40	-2	1.89	-1.27
FAIRBANKS	1	-4	0.41	-0.27	LOUISVILLE	46	-3	1.46	-2.12	OK OKLAHOMA CITY	51	0	0.35	-1.63
JUNEAU	35	1	6.43	0.44	PADUCAH	45	-3	1.72	-2.59	TULSA	52	1	1.54	-1.25
KODIAK	26	-8	0.69	-6.18	LA BATON ROUGE	58	-7	0.69	-2.72	OR ASTORIA	49	2	13.80	2.63
NOME	5	-12	0.42	-0.80	LAKE CHARLES	59	-2	1.26	-3.19	BURNS	39	6	0.98	-0.19
AL BIRMINGHAM	52	-2	0.00	-4.86	NEW ORLEANS	61	-1	0.50	-4.01	EUGENE	49	4	5.14	-2.59
HUNTSVILLE	49	-4	1.61	-3.35	SHREVEPORT	56	0	1.76	-2.79	MEDFORD	47	3	0.98	-2.02
MOBILE	56	-3	0.78	-4.36	MA BOSTON	44	0	1.31	-2.69	PENDLETON	45	3	1.33	-0.22
MONTGOMERY	54	-2	1.43	-3.19	WORCESTER	40	0	1.68	-2.62	PORTLAND	50	4	6.41	0.78
AR FORT SMITH	51	0	2.26	-2.19	MD BALTIMORE	45	-1	1.31	-1.97	SALEM	50	4	5.41	-1.09
LITTLE ROCK	50	-2	2.02	-3.28	ME CARIBOU	34	2	2.53	-1.06	PA ALLENTOWN	40	-3	1.38	-2.10
AZ FLAGSTAFF	41	4	0.16	-1.59	PORTLAND	40	0	3.40	-1.54	ERIE	43	0	3.79	-0.14
PHOENIX	70	6	0.00	-0.66	MI ALPENA	36	1	1.05	-1.06	MIDDLETOWN	43	-1	1.22	-1.99
PRESCOTT	50	4	0.03	-0.92	GRAND RAPIDS	38	-2	1.93	-1.55	PHILADELPHIA	47	-1	0.46	-2.52
TUCSON	67	7	0.01	-0.57	HOUGHTON LAKE	35	1	1.11	-0.64	PITTSBURGH	40	-3	0.71	-2.50
CA BAKERSFIELD	57	2	0.01	-0.63	LANSING	39	-1	1.42	-1.35	WILKES-BARRE	40	-1	1.87	-1.25
EUREKA	51	1	3.27	-2.34	MUSKEGON	41	0	1.83	-1.50	WILLIAMSPORT	40	-1	2.34	-1.40
FRESNO	57	3	0.30	-0.78	TRAVERSE CITY	39	2	1.16	-1.54	RI PROVIDENCE	44	-1	2.29	-2.25
LOS ANGELES	64	3	0.00	-1.12	MN DULUTH	31	2	1.81	-0.27	SC CHARLESTON	54	-5	1.03	-1.38
REDDING	55	3	2.48	-1.98	INT_L FALLS	28	2	1.80	0.41	COLUMBIA	52	-3	0.28	-2.45
SACRAMENTO	54	1	0.68	-1.39	MINNEAPOLIS	37	3	0.82	-0.94	FLORENCE	52	-3	0.44	-2.23
SAN DIEGO	64	3	0.00	-1.02	ROCHESTER	35	0	1.89	-0.02	GREENVILLE	49	-4	1.18	-2.52
SAN FRANCISCO	58	3	0.62	-1.75	ST. CLOUD	34	4	0.87	-0.53	SD ABERDEEN	36	7	0.26	-0.49
STOCKTON	54	1	0.44	-1.24	MO COLUMBIA	47	2	1.15	-2.09	HURON	38	5	0.36	-0.53
CO ALAMOSA	35	6	0.05	-0.40	KANSAS CITY	46	3	1.53	-0.62	RAPID CITY	40	6	0.19	-0.35
CO SPRINGS	46	8	0.03	-0.40	SAINT LOUIS	47	0	0.34	-3.57	SIOUX FALLS	39	6	0.24	-1.13
DENVER INTL	46	8	0.07	-0.55	SPRINGFIELD	47	1	1.09	-3.15	TN BRISTOL	43	-3	0.97	-2.12
GRAND JUNCTION	43	4	0.22	-0.53	MS JACKSON	53	-2	1.24	-3.54	CHATTANOOGA	49	-3	0.76	-4.24
PUEBLO	45	6	0.02	-0.47	MERIDIAN	54	-1	0.70	-4.26	KNOXVILLE	46	-4	1.09	-2.92
CT BRIDGEPORT	44	-1	1.14	-2.22	TUPELO	51	-2	2.00	-2.70	MEMPHIS	51	-2	2.08	-3.41
HARTFORD	41	-1	1.94	-1.95	MT BILLINGS	44	8	0.34	-0.29	NASHVILLE	48	-2	1.38	-2.93
DC WASHINGTON	48	-2	0.98	-2.18	BUTTE	36	8	0.23	-0.37	TX ABILENE	57	3	0.24	-1.17
DE WILMINGTON	44	-2	2.30	-0.78	CUT BANK	37	6	0.09	-0.31	AMARILLO	51	5	0.00	-0.81
FL DAYTONA BEACH	65	-2	6.87	4.20	GLASGOW	37	8	0.24	-0.20	AUSTIN	61	0	1.17	-1.68
JACKSONVILLE	58	-4	3.04	0.94	GREAT FALLS	41	7	0.30	-0.29	BEAUMONT	60	-2	2.35	-2.07
KEY WEST	74	-2	2.81	0.52	HAVRE	37	7	0.41	-0.05	BROWNSVILLE	71	2	3.81	1.99
MIAMI	73	-2	4.13	0.86	MISSOULA	38	5	0.98	-0.06	CORPUS CHRISTI	65	-1	0.66	-1.31
ORLANDO	68	-1	4.17	2.00	NC ASHEVILLE	45	-3	0.88	-2.77	DEL RIO	66	5	0.62	-0.33
PENSACOLA	60	-1	0.33	-4.41	CHARLOTTE	49	-1	0.96	-2.15	EL PASO	57	4	0.34	-0.17
TALLAHASSEE	57	-3	0.57	-2.90	GREENSBORO	47	-3	0.30	-2.79	FORT WORTH	58	1	3.09	0.41
TAMPA	68	-1	3.50	1.94	HATTERAS	56	-1	0.74	-4.21	GALVESTON	67	2	1.26	0.00
WEST PALM BEACH	72	-1	6.52	1.77	RALEIGH	49	-4	0.73	-2.36	HOUSTON	61	-1	3.84	-0.52
GA ATHENS	52	-1	0.79	-3.02	WILMINGTON	54	-3	0.69	-2.58	LUBBOCK	53	3	0.38	-0.49
ATLANTA	53	-1	1.31	-2.78	ND BISMARCK	35	6	0.26	-0.47	MIDLAND	55	2	0.00	-0.70
AUGUSTA	53	-3	0.26	-2.54	DICKINSON	36	6	0.04	-0.53	SAN ANGELO	58	2	1.02	-0.13
COLUMBUS	54	-3	0.58	-3.52	FARGO	33	4	0.87	-0.15	SAN ANTONIO	61	0	1.12	-1.15
MACON	53	-3	0.29	-3.01	GRAND FORKS	30	4	1.12	0.16	VICTORIA	62	-1	2.32	-0.89
SAVANNAH	55	-4	2.93	0.58	JAMESTOWN	34	6	0.46	-0.18	WACO	58	0	0.96	-1.84
HI HILO	75	1	5.43	-10.07	NE GRAND ISLAND	45	7	0.45	-0.72	WICHITA FALLS	55	2	0.28	-1.37
HONOLULU	78	1	0.08	-2.33	LINCOLN	45	6	0.49	-0.94	UT SALT LAKE CITY	45	5	0.32	-1.15
KAHULUI	78	1	0.21	-1.98	NORFOLK	43	7	0.16	-1.22	VA LYNCHBURG	45	-2	0.96	-2.43
LIHUE	76	1	1.07	-3.41	NORTH PLATTE	43	7	0.20	-0.45	NORFOLK	50	-3	1.12	-2.01
IA BURLINGTON	41	-1	0.17	-2.31	OMAHA	44	6	0.57	-1.07	RICHMOND	48	-3	0.69	-2.54
CEDAR RAPIDS	37	0	0.77	-1.35	SCOTTSBLUFF	44	8	0.17	-0.49	ROANOKE	46	-2	0.96	-2.42
DES MOINES	42	2	1.50	-0.68	VALENTINE	44	9	0.10	-0.54	WASH/DULLES	44	-2	0.91	-2.47
DUBUQUE	37	1	0.77	-1.56	NH CONCORD	38	0	1.78	-1.92	VT BURLINGTON	38	0	3.17	0.06
SIOUX CITY	40	5	0.14	-1.17	NJ ATLANTIC_CITY	45	-2	0.95	-2.31	WA OLYMPIA	46	2	11.71	3.07
WATERLOO	39	3	1.37	-0.64	NEWARK	47	0	0.87	-2.76	QUILLAYUTE	46	2	24.01	8.48
ID BOISE	44	4	0.98	-0.39	NM ALBUQUERQUE	50	6	0.12	-0.46	SEATTLE-TACOMA	48	2	10.12	3.57
LEWISTON	46	5	1.88	0.70	NV ELY	41	7	0.03	-0.68	SPOKANE	40	4	2.60	0.31
POCATELLO	40	6	0.62	-0.49	LAS VEGAS	63	7	0.00	-0.40	YAKIMA	42	5	1.49	0.43
IL CHICAGO/O_HARE	40	0	0.71	-2.42	RENO	48	5	0.11	-0.73	WI EAU CLAIRE	35	2	1.03	-0.80
MOLINE	41	1	0.44	-2.11	WINNEMUCCA	42	5	0.20	-0.71	GREEN BAY	36	1	0.61	-1.52
PEORIA	41	0	0.57	-2.53	NY ALBANY	39	-1	2.28	-1.00	LA CROSSE	39	3	1.57	-0.44
ROCKFORD	39	0	0.39	-2.18	BINGHAMTON	36	-2	2.30	-0.98	MADISON	36	0	0.37	-2.00
SPRINGFIELD	41	-2	0.52	-2.67	BUFFALO	42	1	2.95	-1.07	MILWAUKEE	40	1	0.43	-2.28
IN EVANSVILLE	43	-4	1.61	-2.72	ROCHESTER	41	0	1.65	-1.26	WV BECKLEY	41	-3	1.18	-1.74
FORT WAYNE	39	-2	1.04	-2.04	SYRACUSE	41	0	3.14	-0.35	CHARLESTON	44	-3	1.38	-2.33
INDIANAPOLIS	40	-3	1.21	-2.47	OH AKRON-CANTON	41	-1	1.98	-1.30	ELKINS	39	-3	1.16	-2.19
SOUTH BEND	40	-1	1.81	-1.44	CINCINNATI	42	-3	1.93	-1.48	HUNTINGTON	44	-2	1.58	-1.83
KS CONCORDIA	48	6	0.09	-1.04	CLEVELAND	41	-3	1.93	-1.65	WY CASPER	40	7	0.48	-0.30
DODGE CITY	47	4	0.26	-0.51	COLUMBUS	41	-3	1.89	-1.28	CHEYENNE	43	7	0.25	-0.33
GOODLAND	46	6	0.02	-0.70	DAYTON	41	-2	1.62	-1.74	LANDER	40	9	0.10	-0.79
TOPEKA	47	3	0.89	-0.97	MANSFIELD	39	-2	1.87	-1.92	SHERIDAN	42	9	0.13	-0.59

Based on 1981-2010 normals

***** Not Available**

November 11 ENSO Diagnostic Discussion

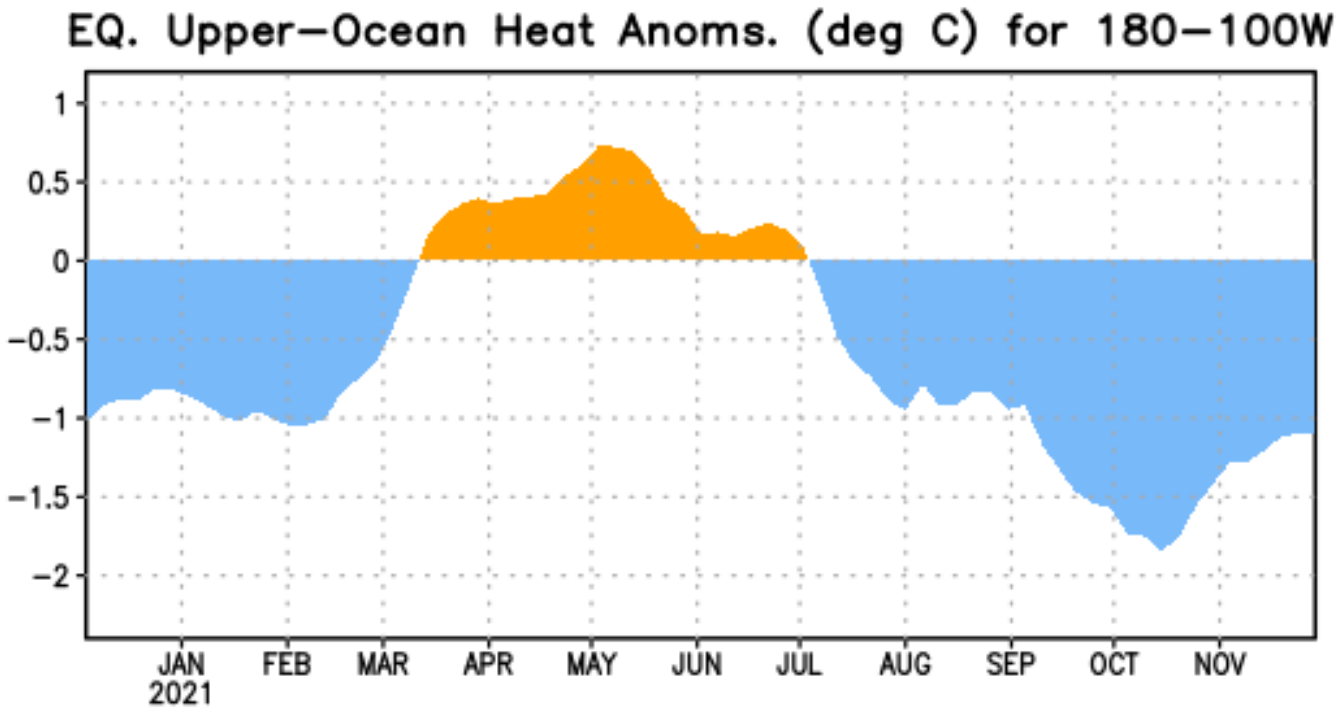


Figure 1: Area-averaged upper-ocean heat content anomaly (°C) in the equatorial Pacific (5°N-5°S, 180º-100ºW). The heat content anomaly is computed as the departure from the 1991-2020 base period pentad means.

ENSO Alert System Status: La Niña Advisory

Synopsis: La Niña is favored to continue through the Northern Hemisphere winter 2021-22 (~95% chance) and transition to ENSO-neutral during the spring 2022 (~60% chance during April-June).

In November, the continuation of La Niña was reflected in the below-average sea surface temperatures (SSTs) extending across the equatorial Pacific Ocean. In the last week, all of the Niño indices were between -0.7ºC and -1.2ºC, with the largest departures occurring in the easternmost regions of Niño-1+2 and Niño-3. Below-average subsurface temperatures weakened slightly compared to the previous month (Fig. 1), but a large pool of negative temperature anomalies still extended across the central and eastern Pacific, down to ~200m depth. Low-level easterly and upper-level westerly wind anomalies persisted over most of the equatorial Pacific. Enhanced convection and rainfall were observed over Indonesia and convection was suppressed over the central and western equatorial Pacific. The Southern Oscillation Index and Equatorial Southern Oscillation Index were more positive than the previous month. Overall, the coupled ocean-atmosphere system was consistent with La Niña.

The IRI/CPC plume average of forecasts for the Niño-3.4 SST index indicates La Niña will continue through the February-April 2022 season. The forecaster consensus anticipates a transition to ENSO-neutral sometime during the Northern Hemisphere spring, with chances for La Niña declining below 50% after March-May 2022. The chance of a moderate-strength La Niña declined slightly from last month's update, but there is still a 59% chance of the Niño-3.4 index reaching a value less than -1.0ºC for the November 2021 – January 2022 season. In summary, La Niña is favored to continue through the Northern Hemisphere winter 2021-22 (~95% chance) and transition to ENSO-neutral during the spring 2022 (~60% chance during April-June; click CPC/IRI consensus forecast for the chances in each 3-month period).

La Niña is anticipated to affect temperature and precipitation across the United States during the upcoming months (the 3-month seasonal temperature and precipitation outlooks will be updated on **16 December 2021**).

This discussion is a consolidated effort of the National Oceanic and Atmospheric Administration (NOAA), NOAA's National Weather Service, and their funded institutions. Oceanic and atmospheric conditions are updated weekly on the Climate Prediction Center web site (El Niño/La Niña Current Conditions and Expert Discussions). Additional perspectives and analysis are also available in an ENSO blog. A probabilistic strength forecast is available here. The next ENSO Diagnostics Discussion is scheduled for **13 January 2022**. To receive an e-mail notification when the monthly ENSO Diagnostic Discussions are released, please send an e-mail message to: ncep.list.enso-update@noaa.gov.

International Weather and Crop Summary

December 5-11, 2021

International Weather and Crop Highlights and Summaries provided by USDA/WAOB

HIGHLIGHTS

EUROPE: Chilly, unsettled weather maintained overall favorable conditions for dormant winter crops over much of the continent.

MIDDLE EAST: Additional rain further improved soil moisture for winter grain establishment in much of Turkey, though drought concerns lingered along the eastern Mediterranean Coast.

NORTHWESTERN AFRICA: Dryness renewed drought in Morocco after recent sorely needed rainfall.

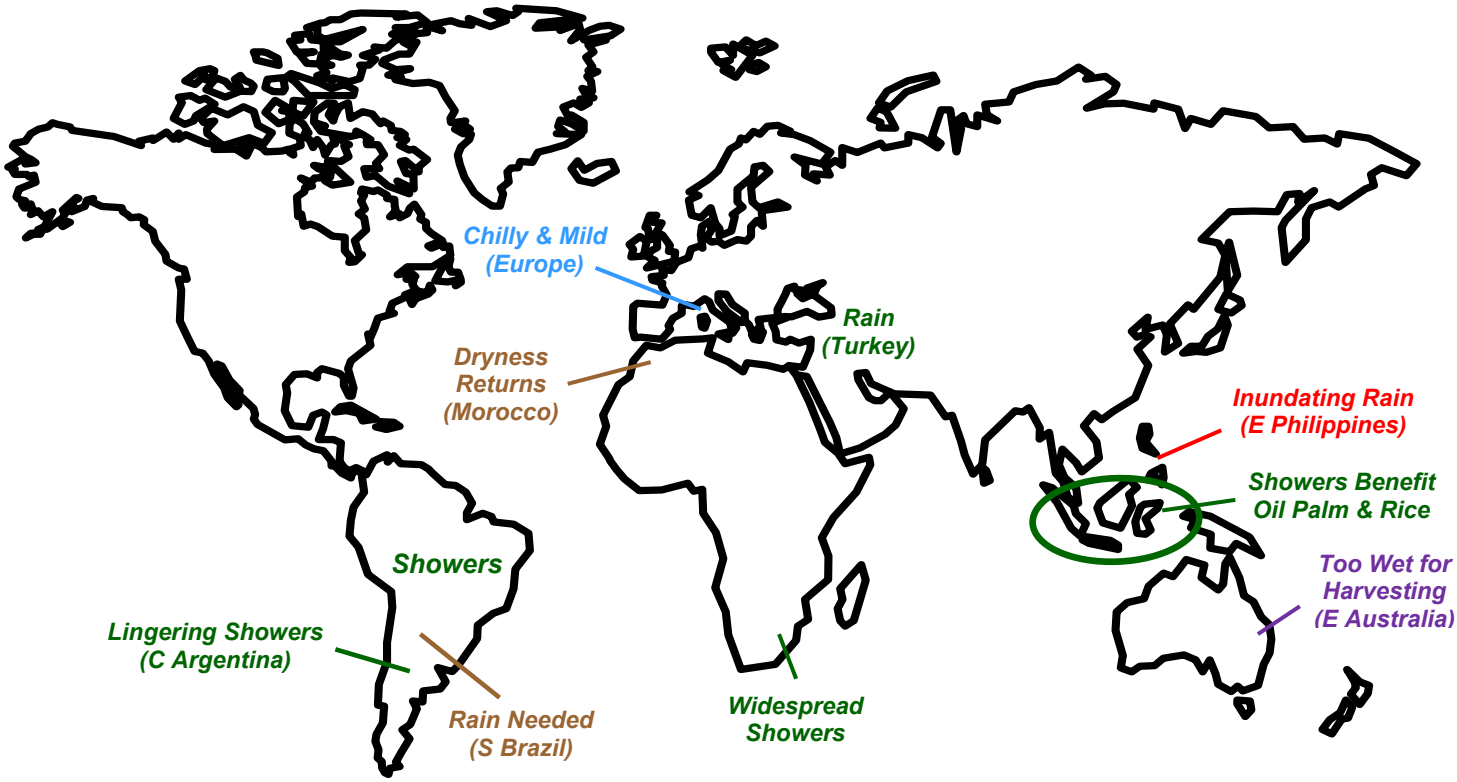
SOUTHEAST ASIA: Heavy showers continued in southern sections of the region, benefiting rice and oil palm, while parts of the eastern Philippines were drenched by intense downpours.

AUSTRALIA: Rain continued to hamper winter crop harvesting in the east.

SOUTH AFRICA: Widespread showers maintained overall favorable prospects for rain-fed summer crops.

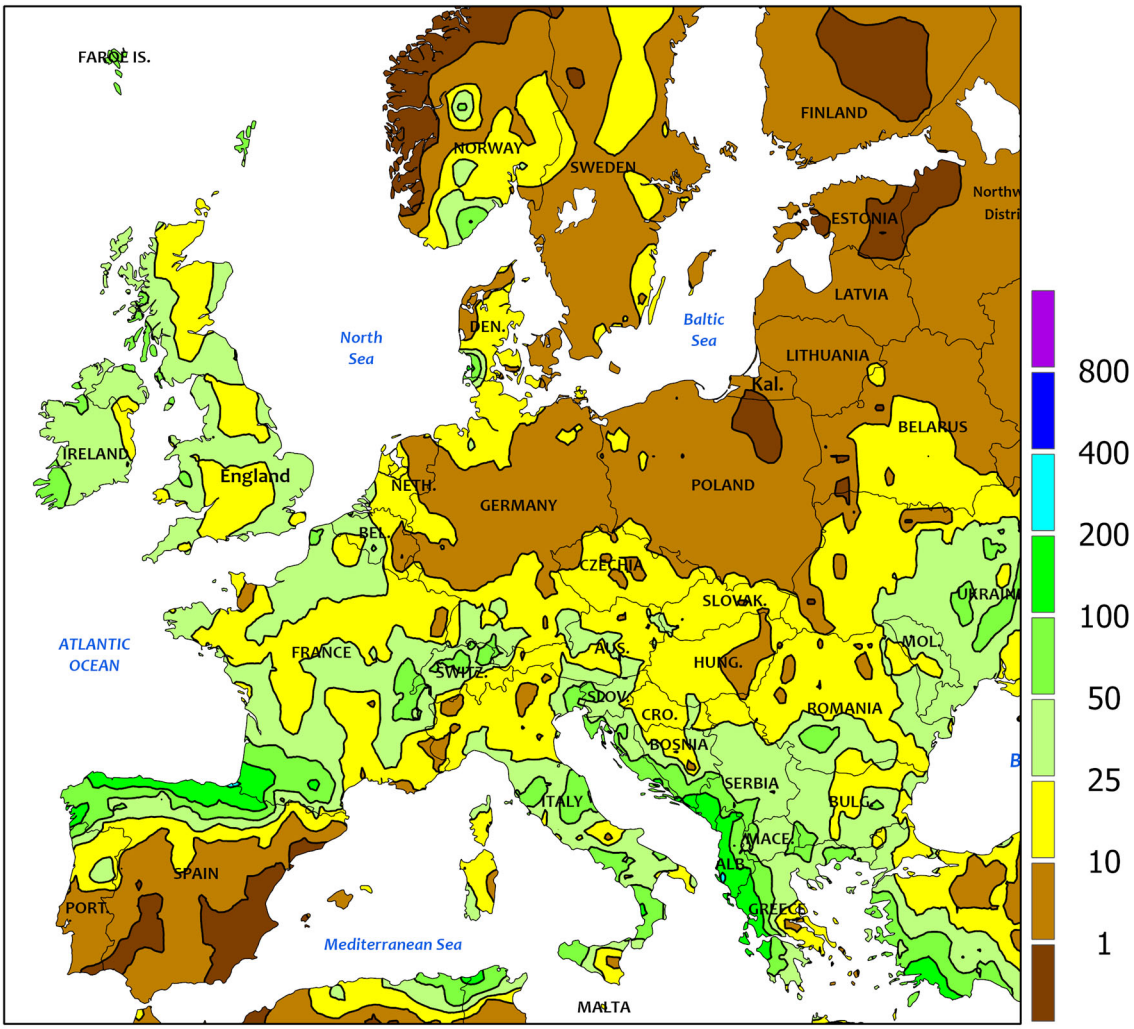
ARGENTINA: Showers lingered over sections of central Argentina, as drier weather dominated the northwest.

BRAZIL: Unseasonable dryness persisted throughout the south, further limiting moisture for first-season summer crops.



For additional information contact: mark.brusberg@usda.gov

EUROPE
Total Precipitation(mm)
December 5 - 11, 2021



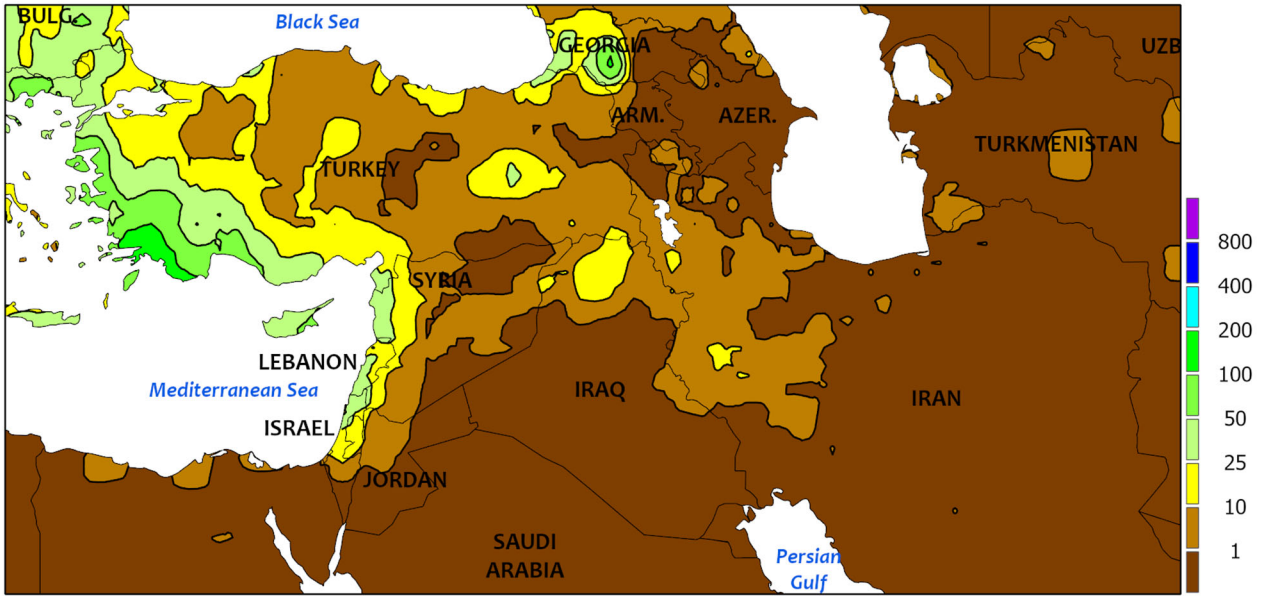
CLIMATE PREDICTION CENTER, NOAA
Computer generated contours
Based on preliminary data

EUROPE

Unsettled weather prevailed across much of Europe, maintaining overall favorable conditions for dormant winter crops. Storms continued to sweep across the continent, producing widespread rain and snow (5-50 mm liquid equivalent, locally more) from England and France eastward. Winter wheat, barley, and rapeseed have gone dormant over most of these crop areas save for western-most portions of France. Farther south, moderate to heavy rain and mountain snow (10-100 mm, locally more) continued to boost soil moisture, reservoirs, and mountain snowpacks for spring runoff from Italy into the western Balkans. However, for the second consecutive week Spain and Portugal were mostly dry (5 mm or less) outside of heavy downpours on the northern coast of the Iberian Peninsula (25-170 mm). Temperatures averaged near normal over most of Europe's primary crop areas, though northeastern portions of the continent were quite cold (2-10°C below normal).

For additional information contact: mark.brusberg@usda.gov

MIDDLE EAST
Total Precipitation(mm)
December 5 - 11, 2021



CLIMATE PREDICTION CENTER, NOAA
Computer generated contours
Based on preliminary data

MIDDLE EAST

Additional rain across much of Turkey contrasted with localized drought in southeastern portions of the country. Another in a series of slow-moving disturbances generated moderate to heavy showers across western and northern Turkey (10-100 mm) as well as the Anatolian Plateau (5-40 mm), further improving soil moisture for winter grain establishment. Conversely, isolated light showers (1-5 mm) in southeastern Turkey did little to ease drought or improve prospects for wheat and barley establishment. Season-to-date precipitation (since September 1) in Turkey has averaged 85 percent of normal on the Anatolian Plateau but a meager 30 percent of average (deficits over 75 mm) across the GAP Region in the southeast. Unlike previous weeks, much-needed rain (10-60 mm) reached the eastern Mediterranean Coast, moistening soils for winter grain planting and establishment from Syria into northern Jordan. The stormy weather was also beginning to spread into northern Iraq and northwestern Iran (locally up to 25 mm), though more widespread and consistent rain is needed to ease the dry start to the 2021-22 Water Year in these locales. Conversely, northeastern Iran (Khorasan) continued to miss out on the rain and snow. Warmer-than-normal weather (2-6°C above normal) prevailed across the entire region, with 7-day average temperatures greater than 5°C indicating winter crops were still not yet dormant in climatologically colder northern growing areas.

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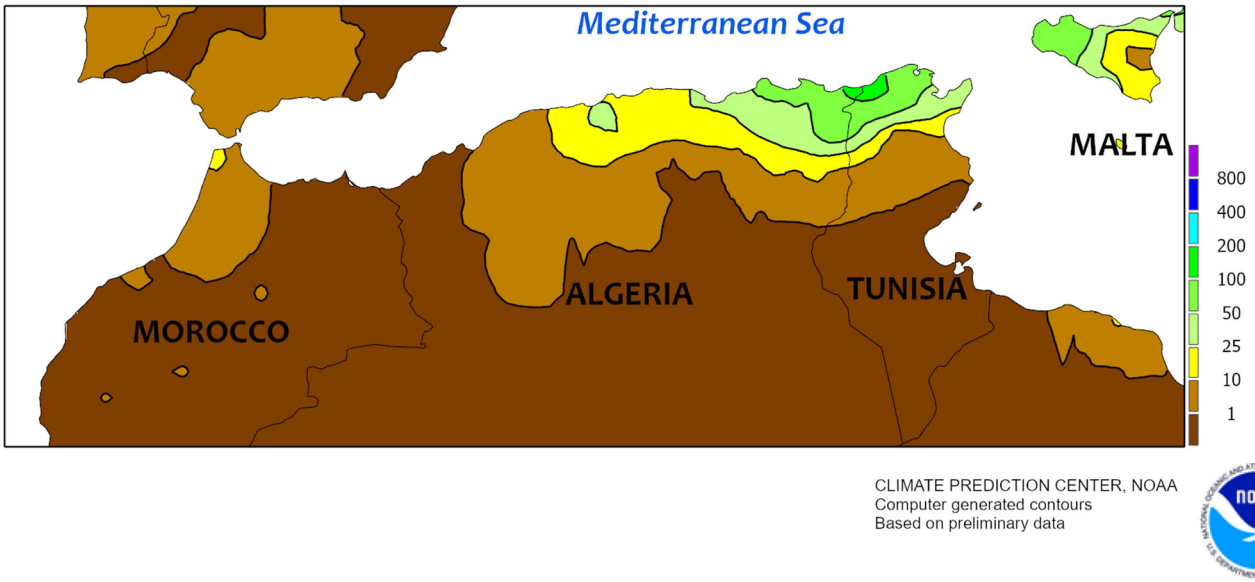
NORTHWESTERN AFRICA
Total Precipitation(mm)
December 5 - 11, 2021

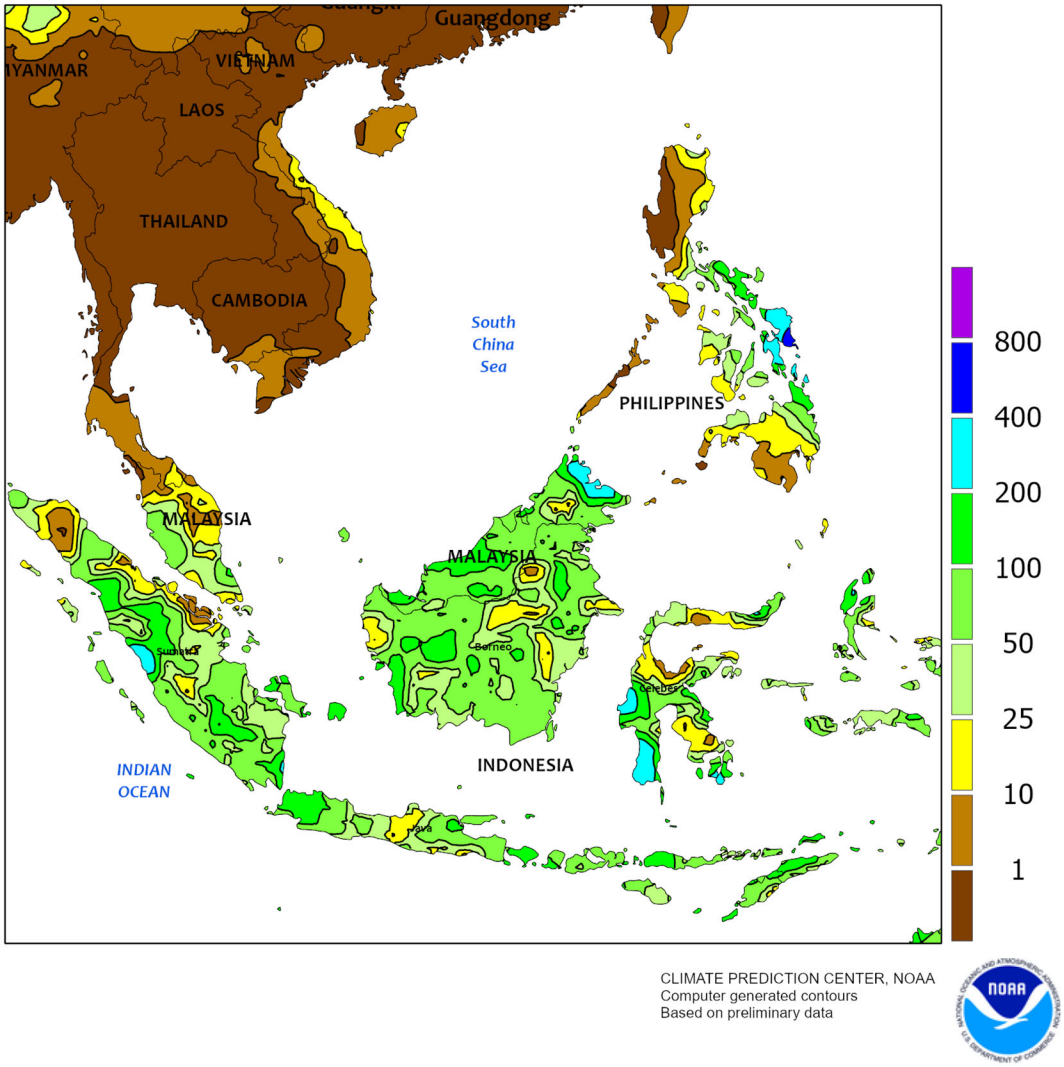


NORTHWESTERN AFRICA

Continued wet weather over most central and eastern growing areas contrasted with renewed dryness and drought in Morocco. After recent sorely needed rain in Morocco, drought conditions resumed with the return of mostly sunny skies. Morocco's regional-average rainfall since September 1 remained 35 percent of normal (deficit approaching 120 mm) across the lowlands between the coast and the Atlas Mountains. Furthermore, the latest satellite-derived Vegetation Health Index continued to depict either bare soils or very poor crop establishment in Morocco. Farther east, a series of slow-moving storms sweeping across the central Mediterranean Sea maintained wet weather over central and eastern Algeria (10-120 mm). In particular, the 2021-22 Water Year continued to place as the second wettest of the past 30 years in central Algeria's Tell Region, with season-to-date rainfall creeping ever closer to 200 percent of normal. In Tunisia, the very sharp gradient between good (north) to very poor (south) conditions continued. This week's 30 to 175 mm in northern Tunisia's Tell Region pushed season-to-date rainfall over 110 percent of normal. Conversely, a dearth of precipitation farther south over the country's Steppe Region further entrenched this barley area into drought; regional-average rainfall in the Steppe since September 1 has averaged less than 25 mm (20 percent of average), by far the lowest of the past 30 years and more than 25 mm less than the second driest (1994).

For additional information contact: mark.brusberg@usda.gov

SOUTHEAST ASIA
Total Precipitation(mm)
December 5 - 11, 2021



SOUTHEAST ASIA

Wetter-than-normal weather continued across southern and eastern portions of the region. To the south, over 50 mm of rain was recorded in Malaysia and Indonesia, benefiting oil palm and rice. Indeed, 30-day rainfall totals in southern Indonesia (Java) were at a 30-year high. Meanwhile, an intense area of convection drenched the eastern Philippines with upwards of 500 mm of rain, causing flooding in sections of the eastern Visayas but generally outside most major rice areas. Elsewhere in the region, drier weather in central Vietnam eased the excessive wetness brought on by constant downpours, while seasonably dry weather prevailed for irrigated rice in the remainder of Indochina and Thailand.

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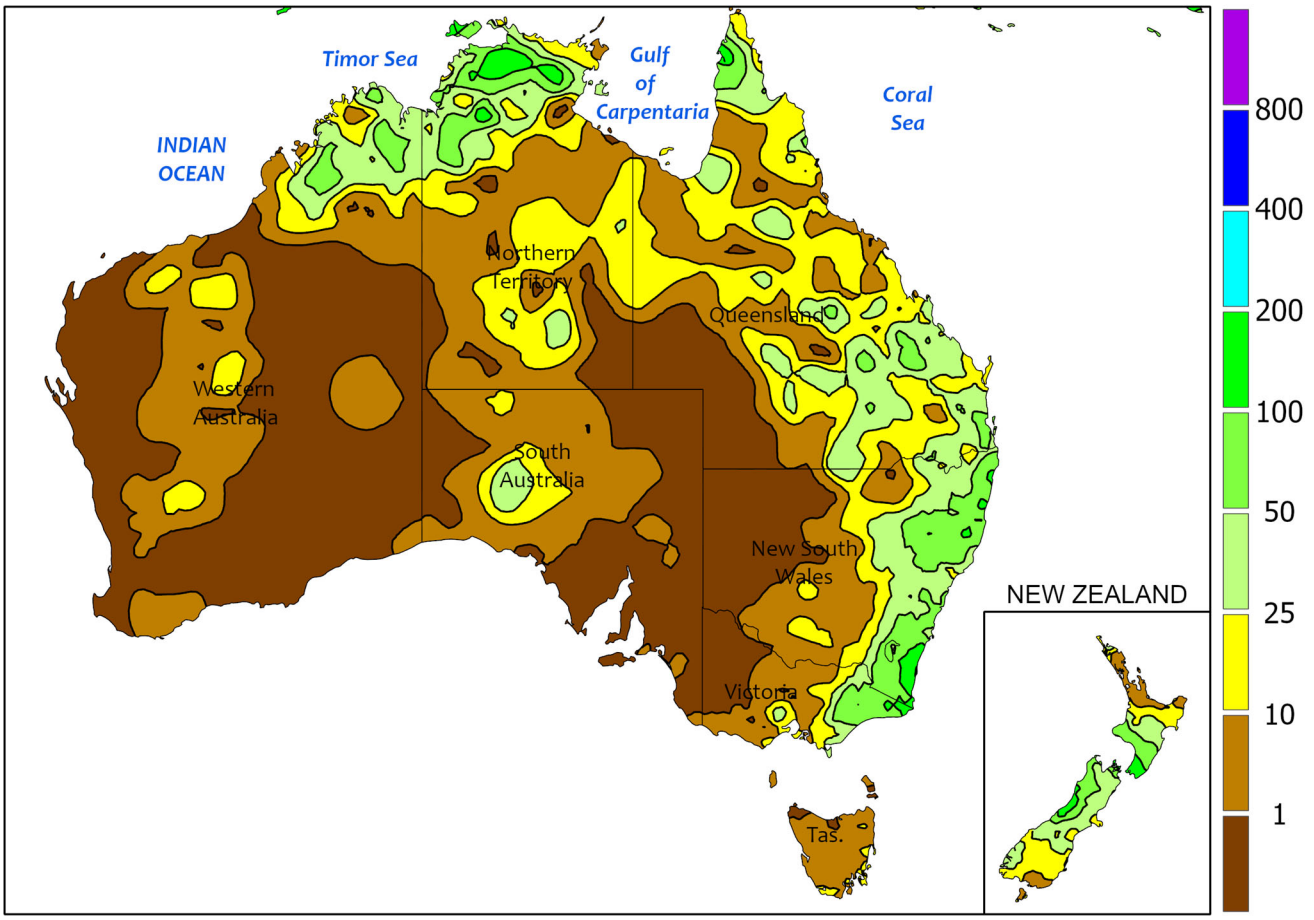
AUSTRALIA
Total Precipitation(mm)
December 5 - 11, 2021



Gridded data from the Australian Bureau of Meteorology: www.bom.gov.au/
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https://creativecommons.org/licenses/by/3.0/au/legalcode

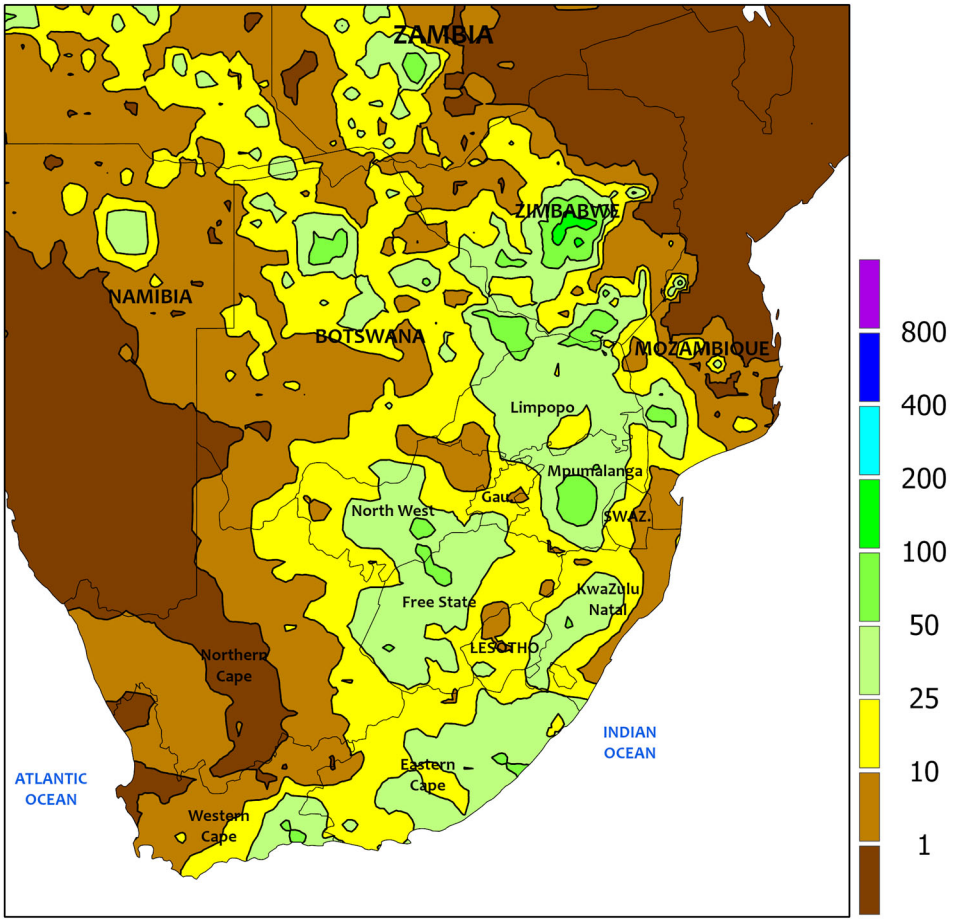
CLIMATE PREDICTION CENTER, NOAA
Computer generated contours
Based on preliminary data

AUSTRALIA

Widespread showers continued to fall across a large portion of eastern Australia, maintaining abundant to locally excessive soil moisture for vegetative summer crops while further delaying winter crop harvesting in many areas. The heaviest rain fell across southern Queensland and northern New South Wales, where amounts of 25 to 50 mm or more were common and local flooding persisted. Farther south, the heaviest rain (25 mm or more) was confined primarily to coastal areas. Rainfall amounts were generally in the 5 to 25 mm range in major crop producing areas of southern New South Wales and eastern Victoria. Elsewhere in the wheat belt, mostly dry weather prevailed in western Victoria, South Australia, and Western Australia, allowing winter crop harvesting to proceed without delay. Warmer-than-normal weather (temperatures averaging 2ºC above normal) helped accelerate winter crop drydown in Western Australia, with maximum temperatures in the middle to upper 30s (degrees C). In contrast, temperatures averaged 2 to 5ºC below normal in southern and eastern Australia, slowing summer crop development.

For additional information contact: mark.brusberg@usda.gov

SOUTH AFRICA
Total Precipitation(mm)
December 5 - 11, 2021

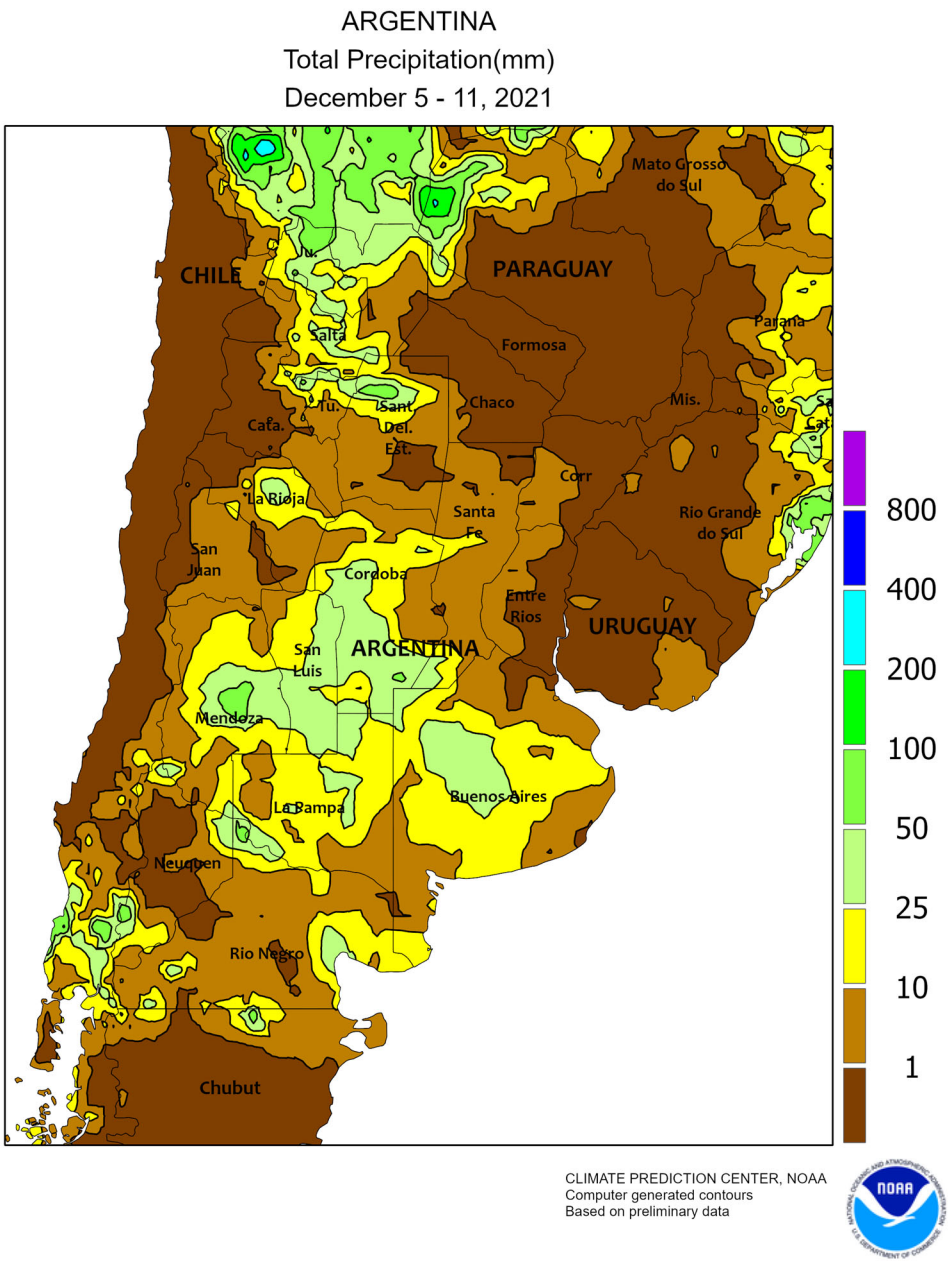


CLIMATE PREDICTION CENTER, NOAA
Computer generated contours
Based on preliminary data

SOUTH AFRICA

Conditions remained overall favorable for corn and other commercial crops in key production areas. Rainfall totaled 10 to 50 mm over much of the region stretching from North West and Limpopo southward to the Indian Coast. In western sections of the corn belt (notably North West and western production areas of Free State), moderate to heavy rain (locally greater than 50 mm) further helped to increase moisture levels for white corn, typically planted during the month of December. Weekly average temperatures ranged from 2°C below normal at the western edge of the corn belt to 2°C above normal farther east, with daytime highs reaching the middle and upper 30s (degrees C) in traditionally warmer locations. Elsewhere, the rain falling in watersheds of the Orange River helped to ensure a continued supply of sufficient moisture for corn, cotton, and other irrigated commercial crops. In Western Cape, however, scattered showers (5-25 mm, locally higher) were untimely for wheat harvesting and treatment for pests and diseases in tree and vine crops.

For additional information contact: mark.brusberg@usda.gov

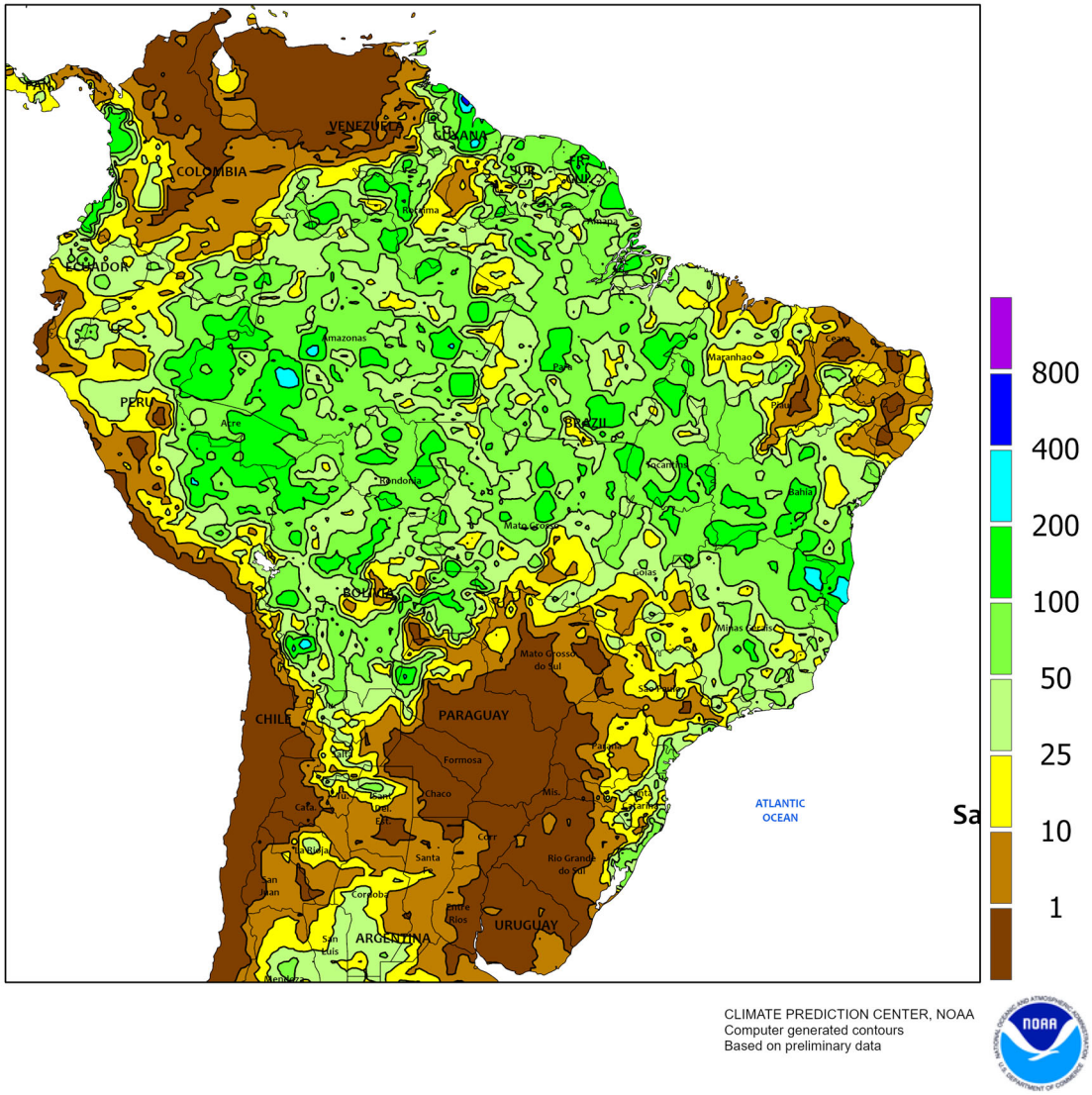


ARGENTINA

Locally heavy showers lingered over many southern and western farming areas, while drier weather returned to the northeast. The heaviest rainfall (25-50 mm) was concentrated in and around southern Cordoba, with similar totals in outlying farming areas north of Salta. In contrast, dry weather dominated a large section of the northeast, with near complete dryness reported from the lower Parana River Valley (Entre Rios and environs) northward to southern Paraguay. The northeastern dryness followed several weeks of beneficial rainfall that provided timely moisture for germination of summer grains, oilseeds, and cotton. Weekly temperatures averaged near to slightly above normal throughout the region, with highest daytime temperatures ranging from the upper 20s (degrees C) in southeastern Buenos Aires to 40°C in Formosa. While conditions are currently favorable for emerging to vegetative summer crops, a return to seasonable rainfall and temperatures will be needed in upcoming weeks as earlier planted summer grains and oilseeds enter reproduction. According to the government of Argentina, cotton was 58 percent planted as of December 9, equaling last year's pace. Corn and soybeans were 62 and 59 percent planted, respectively, while wheat was 56 percent harvested, also comparable to last year.

For additional information contact: mark.brusberg@usda.gov

BRAZIL
Total Precipitation(mm)
December 5 - 11, 2021



CLIMATE PREDICTION CENTER, NOAA
Computer generated contours
Based on preliminary data

BRAZIL

Unseasonable dryness continued to dominate key southern farming areas, increasing concerns for potential damage to reproductive summer crops. Aside from some light showers (5-25 mm) extending from São Paulo to Santa Catarina, little to no rain fell in the region's main farming areas, with complete dryness recorded in southern Mato Grosso do Sul and western Paraná southward through Uruguay. Summer warmth (daytime highs reaching the lower and middle 30s degrees C) exacerbated the impacts of the dryness on agriculture. According to the Government of Paraná, first-crop corn and soybeans were 61 and 44 percent, respectively, in reproductive to filling stages of development as of December 6. Corn in Rio Grande do Sul was 90 percent planted as of December 9, with over 60 percent of the emerged crop ranging from flowering to mature; soybeans were 1 percent flowering, on par with last year. Elsewhere, while pockets of dryness extended northward into Goiás and western Minas Gerais, moderate to heavy showers (25-100 mm, locally higher) maintained favorable conditions for soybeans and cotton from Mato Grosso eastward. The rain also helped to hold temperatures to seasonable levels, with most locations recording highest daytime temperatures in the lower 30s.

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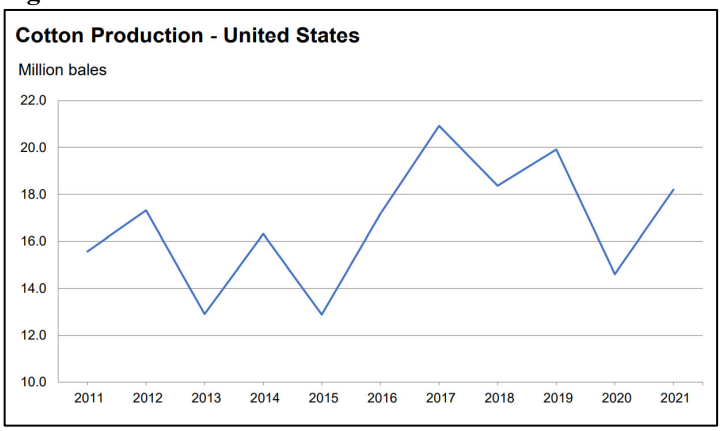
U.S. Crop Production Highlights

The following information was released by USDA's Agricultural Statistics Board on December 9, 2021. Forecasts refer to December 1.

All cotton production is forecast at 18.3 million 480-pound bales, up less than 1 percent from the previous forecast and up 25 percent from 2020 (figure 1). U.S. yields are expected to average 885 pounds per harvested acre, up 5 pounds from the previous forecast and up 38 pounds from last year. Upland cotton production is forecast at 17.9 million 480-pound bales, up less than 1 percent from the previous forecast and up 27 percent from 2020. Pima cotton production is forecast at 374,000 bales, up 8 percent from the previous forecast but down 32 percent from last year. All cotton area harvested is forecast at 9.92 million acres, unchanged from the previous forecast, but up 20 percent from 2020.

Figure 1



The **U.S. all orange** forecast for the 2021-2022 season is 3.83 million tons, down 1 percent from the previous forecast and down 13 percent from the 2020-2021 final utilization. The Florida all orange forecast, at 46.0 million boxes (2.07 million tons), is down 2 percent from the previous forecast and down 13 percent from last season's final utilization. In Florida, early, midseason, and Navel varieties are forecast at 18.0 million boxes (810,000 tons), down 5 percent from the previous forecast and down 21 percent from last season's final utilization. The Florida Valencia orange forecast, at 28.0 million boxes (1.26 million tons), is unchanged from the previous forecast but down 7 percent from last season's final utilization. California and Texas orange production forecasts were carried forward from the previous forecast.

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