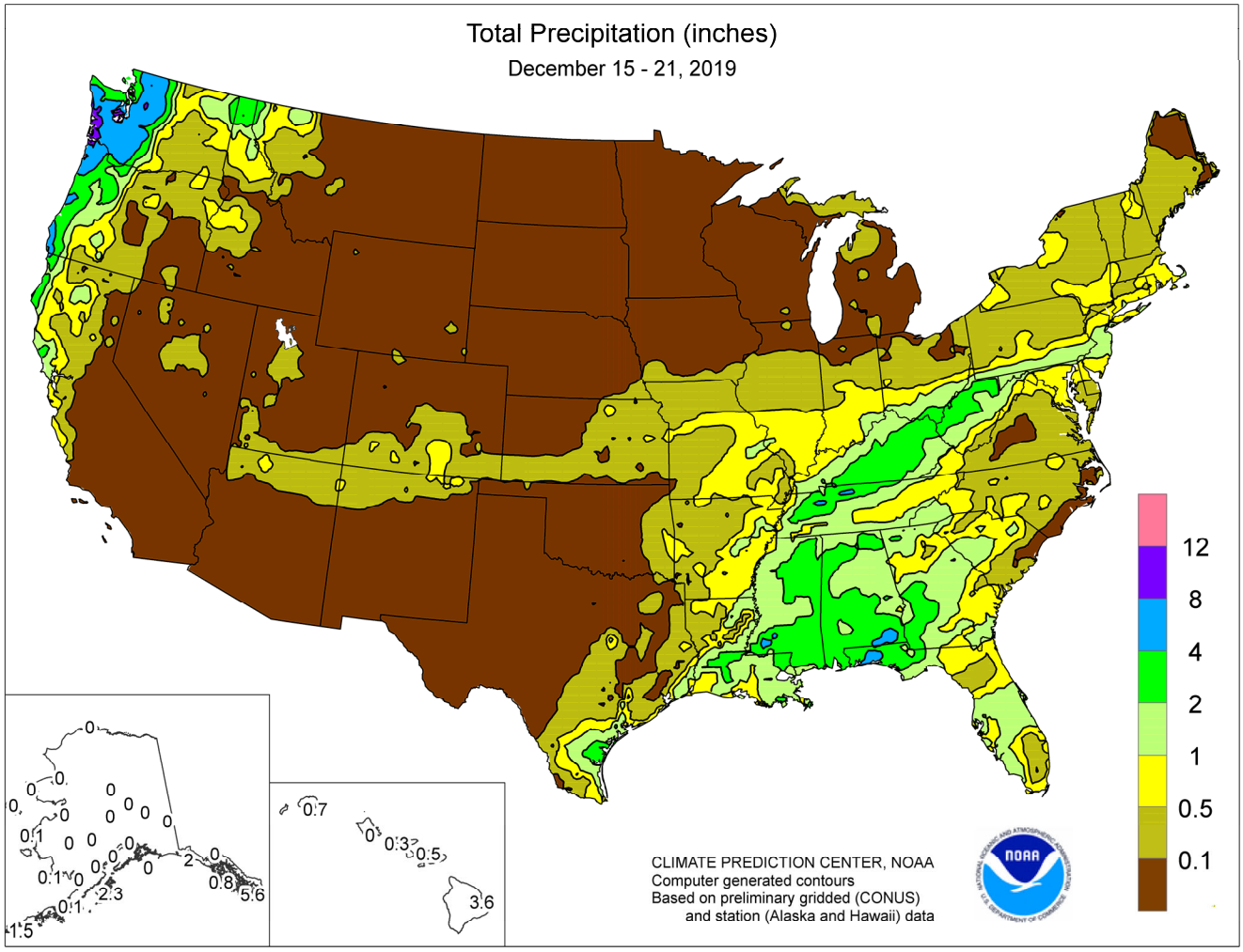
Volume 106, No. 52 http://www.usda.gov/oce/weather December 26, 2019

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 15 – 21, 2019

Highlights provided by USDA/WAOB

In advance of a cold outbreak, early-week snow blanketed areas from the **central Plains into the Northeast**. On the **central Plains**, the snow provided winter wheat with beneficial moisture and insulation. The snow also insulated wheat across the **lower Midwest**. Farther south, a severe weather outbreak peaked on December 16, when numerous tornadoes swept across **Louisiana**, **Mississippi**, and **Alabama**. Heavy rain, totaling 2 inches or more in many locations from the **Tennessee Valley southward to the Gulf Coast**, accompanied the early-week

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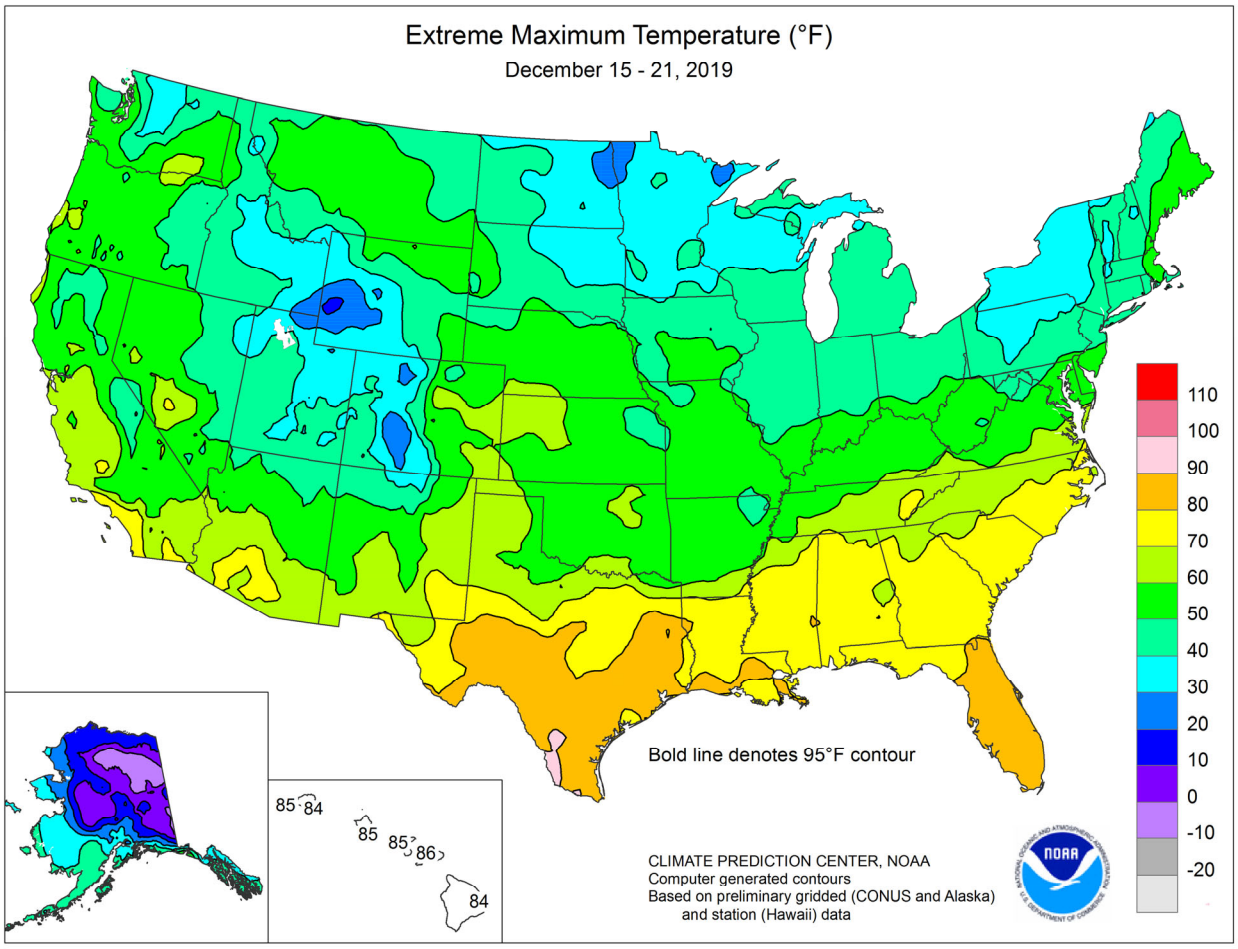
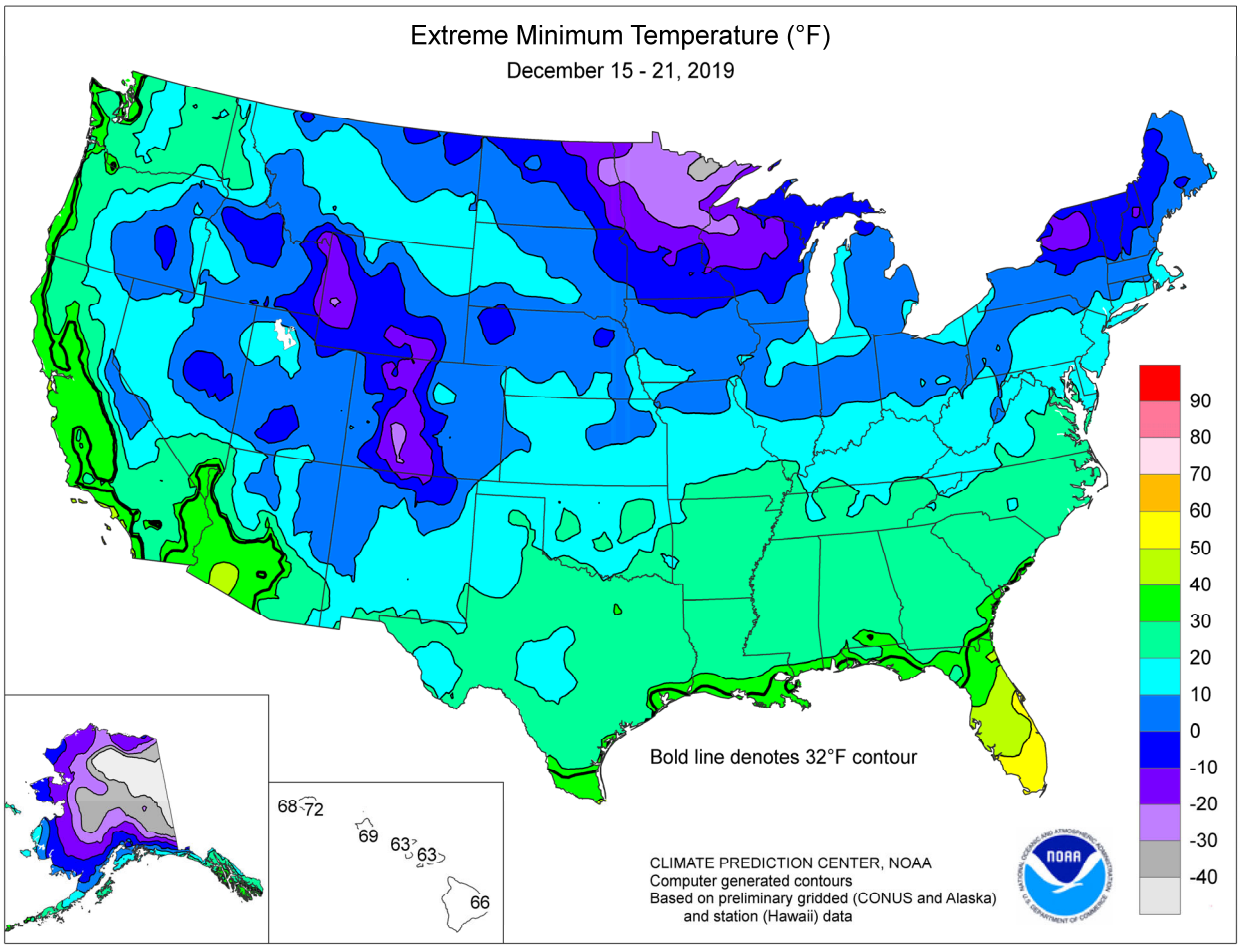
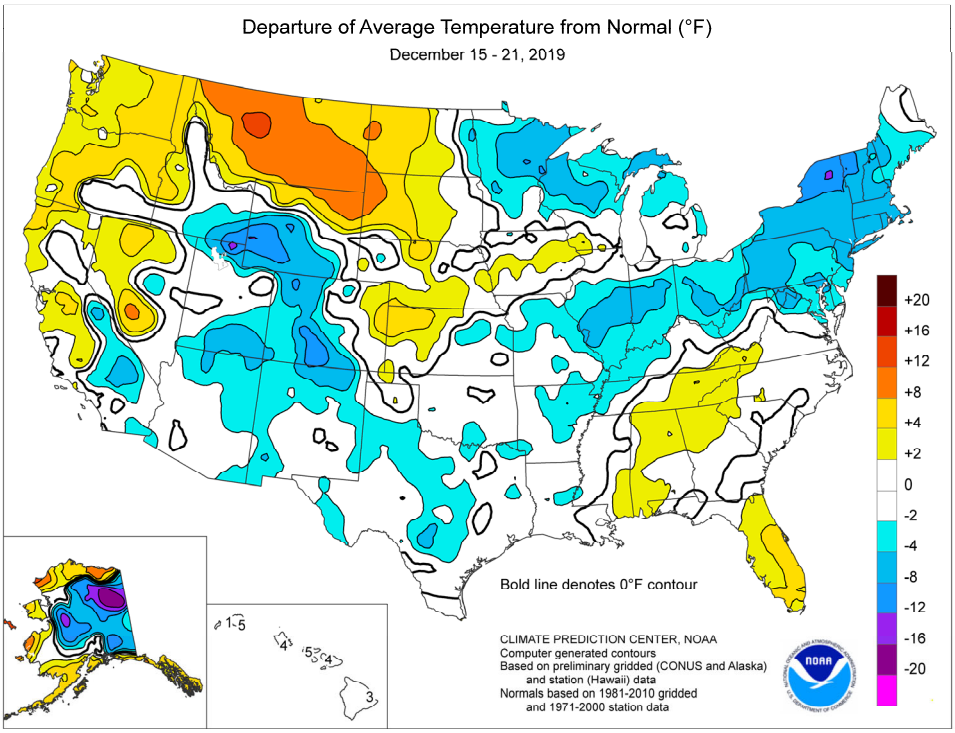

Extreme Maximum Temperature (°F)
December 15 - 21, 2019
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
Bold line denotes 95°F contour
85 84
85
85 86
84
CLIMATE PREDICTION CENTER, NOAA
Computer generated contours
Based on preliminary gridded (CONUS and Alaska)
and station (Hawaii) data


Extreme Minimum Temperature (°F)
December 15 - 21, 2019
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
Bold line denotes 32°F contour
68 72
69
63 63
66
CLIMATE PREDICTION CENTER, NOAA
Computer generated contours
Based on preliminary gridded (CONUS and Alaska)
and station (Hawaii) data

(Continued from front cover)

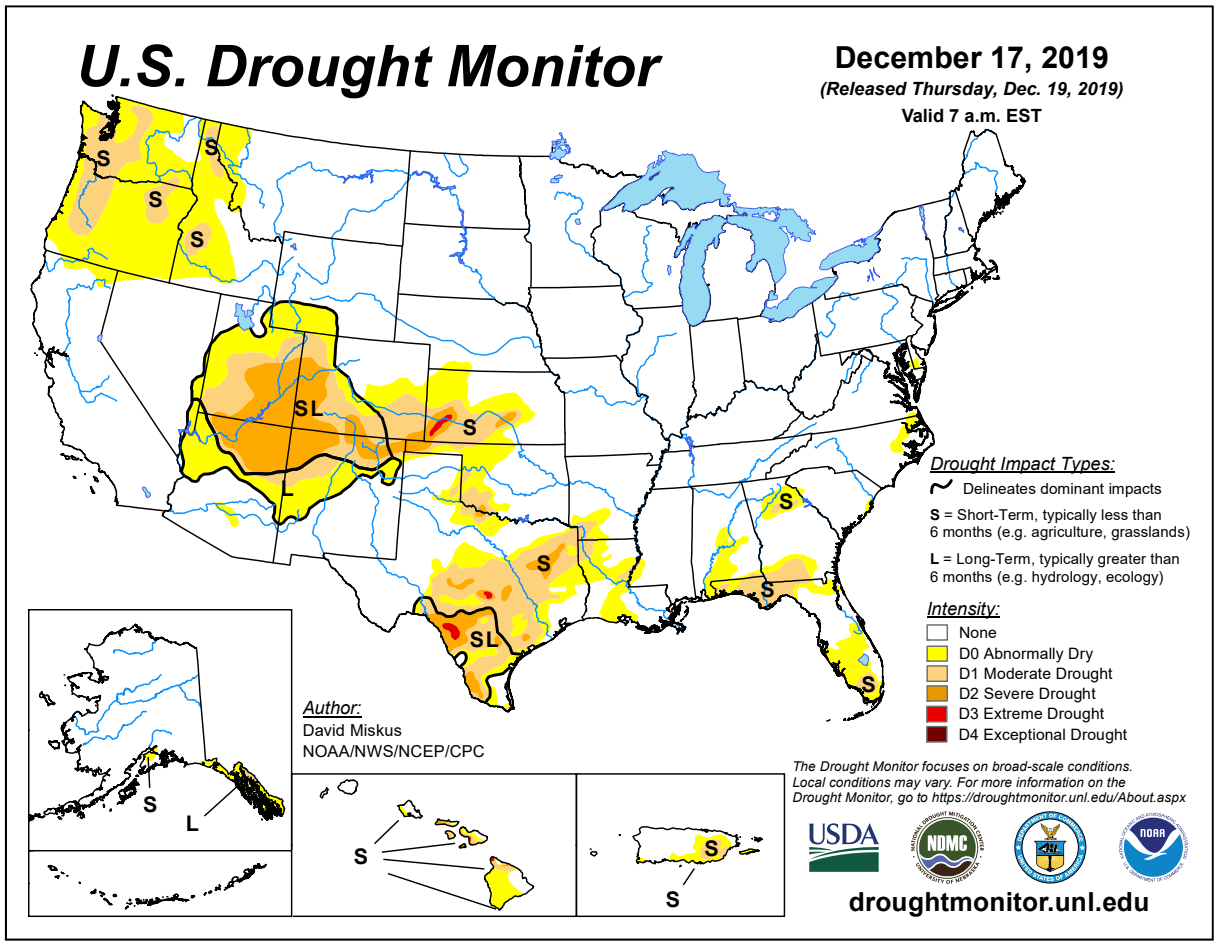


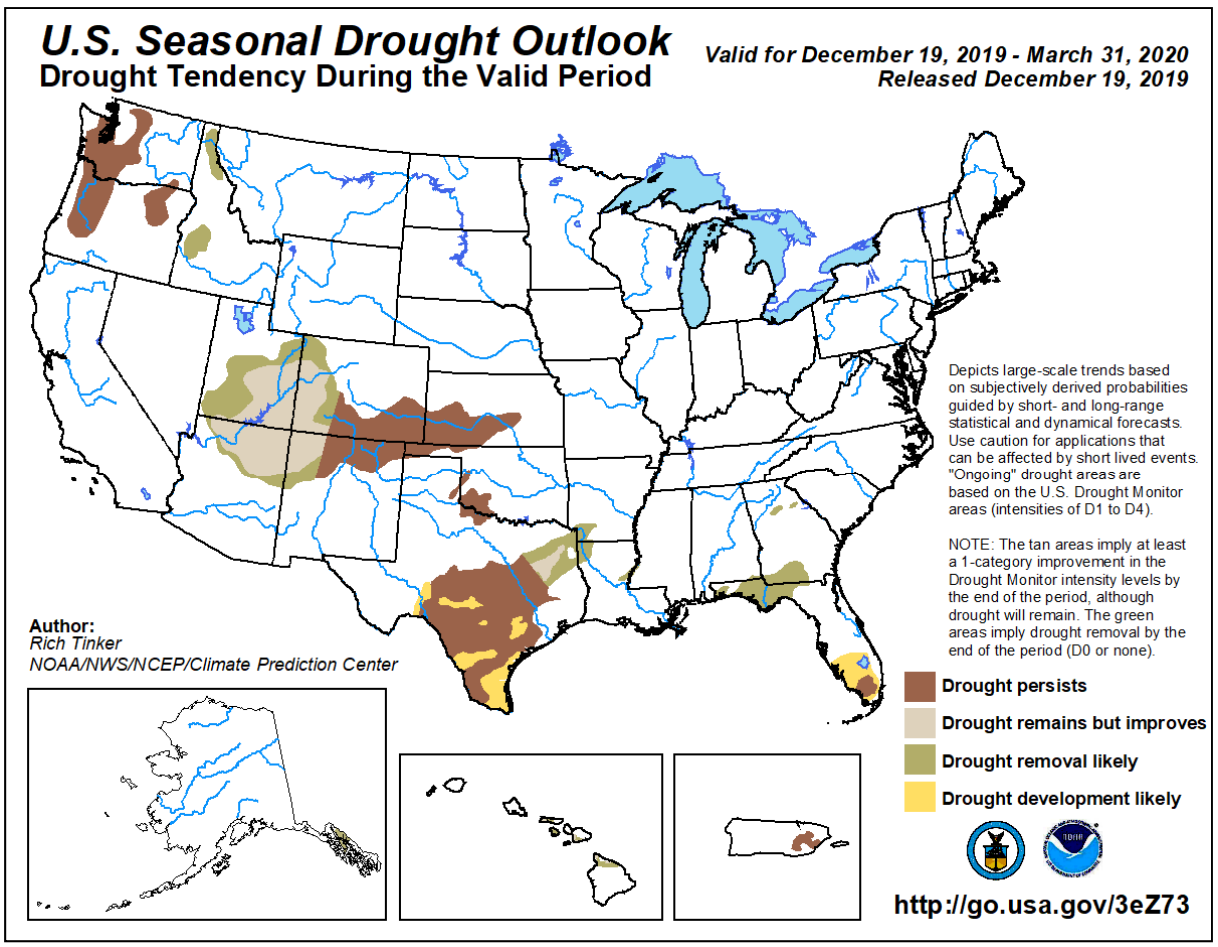
thunderstorms. Meanwhile, heavy precipitation also developed in the **Pacific Northwest**, sparking generally minor flooding west of the **Washington Cascades**. The **Northwestern** storminess provided a slight boost to high-elevation snowpack, but season-to-date accumulations remained well below normal in many river basins. In contrast, generally dry weather prevailed from **southern California to the southern Plains**, and from the **northern Plains into the upper Midwest**. Elsewhere, a late-week storm delivered the early stages of another round of **Southern** rainfall. Cold conditions dominated the much of the country, with weekly temperatures averaging at least 5 to 10°F below normal in the **central Rockies** and environs, as well as the **upper Great Lakes region** and an area stretching from the **Ohio Valley into the Northeast**. However, mild weather prevailed in much of the **Southeast** and stretched from the **Pacific Northwest to the northern High Plains**. Temperatures averaged more than 10°F above normal in parts of **Montana**.

Early-week warmth dominated the **South**. December 14-16 featured a trio of daily-record highs (93, 91, and 89°F) in **McAllen, TX**. On the 15th, record-setting highs in **Texas** soared to 90°F in **Laredo** and 89°F in **San Angelo**. Farther east, daily-record high for December 16 included 87°F in **Fort Myers, FL**, and 81°F in **Lake Charles, LA**. **Fort Myers** posted another daily record on December 17, with a high of 86°F. By December 18, however, lows plunged to daily-record levels in **Texas** locations such as **Del Rio** (24°F) and **Corpus Christi** (29°F). **Del Rio** had recorded a monthly record high of 91°F just 4 days earlier, on December 14. **Corpus Christi** had experienced consecutive daily-record highs (89 and 86°F, respectively) on December 14-15. Farther north, frigid weather led to daily-record lows in **Hibbing, MN** (-26°F on December 15); **Big Piney, WY** (-15°F on December 16); and **Crested Butte, CO** (-28°F on December 17). Late in the week, warm air returned across the **northern High Plains** and the **Northwest**. On December 20-21, the week ended with consecutive daily-record highs in **Montana** locations such as **Missoula** (54 and 58°F) and **Kalispell** (51 and 54°F). In **Oregon**, record-setting highs for December 20 rose to 66°F in **Hermiston** and 63°F in **Medford**. Elsewhere in the **West**, daily-record highs for December 21 included 63°F in **Reno, NV**, and **Walla Walla, WA**.

As the week began, snow quickly spread from the **central Rockies into the lower Midwest**. Record-setting snowfall totals for December 15 included 4.3 inches in **Indianapolis, IN**; 3.8 inches in **Alamosa, CO**; and 3.3 inches in **Kansas City, MO**. From December 15-17, storm-total snowfall in **Indianapolis** reached 7.6 inches. On December 16, several dozen tornadoes struck **Louisiana**, **Mississippi**, and **Alabama**, based on preliminary reports. In **Louisiana**, the nation's first deadly tornado since May 27 carved a 62-mile path, up to 400 yards wide, across **Beauregard**, **Vernon** (one fatality), and **Rapides Parishes** from roughly **DeRidder to Pineville**, including the **Alexandria** area. On the 16th, **Alexandria** reported 1.91 inches of rain and a peak wind gust to 50 mph. Later in the day, a tornado cut across nearly 19 miles of **Limestone and Lawrence Counties** in **northern Alabama**, resulting in two fatalities in the latter county. Meanwhile in **West Virginia**, record-setting rainfall totals for December 16 included 1.61 inches in **Charleston** and 1.51 inches in **Parkersburg**. On December 17, a few more tornadoes were spotted across **southeastern Alabama** and **southern Georgia**. In the **Atlantic Coast States**, daily-record rainfall amounts for the 17th reached 1.08 inches in **Augusta, GA**, and 1.03 inches in **Newark, NJ**. As **Northeastern** rain made a transition to snow showers, **Newark** netted a daily-record snowfall (1.0 inch) for December 18. Farther west, December 19-21 rainfall topped the 5-inch mark in **western Washington** locations such as **Olympia** (5.53 inches) and **Seattle** (5.40 inches). December 20 was particularly wet, with 2.87 inches in **Olympia** and 3.25 inches in **Seattle**. Other daily-record amounts for the 20th were 3.42 inches in **Astoria, OR**, and 2.35 inches in **Hoquiam, WA**. At week's end, precipitation began to shift southward along the **Pacific Coast**, while a new storm system developed across the **Deep South**. Record-setting rainfall amounts for December 21 included 2.49 inches in **Crescent City, CA**, and 0.35 inch in **Harlingen, TX**.

The coldest air of the season invaded **interior Alaska**, but mild weather lingered around the edges of the state. **Nome** notched a daily-record high of 36°F on December 15, followed by sub-zero readings on December 18 and 19. From December 20-22, **Fairbanks** reported its first three days of the season with temperatures below -30°F, including a low of -35°F on the 21st. Elsewhere on December 21, **Fort Yukon** registered a low of -50°F. Mostly dry weather accompanied the colder regime, although heavy precipitation fell in parts of **southeastern Alaska**. For example, weekly precipitation in **Ketchikan** totaled 5.16 inches. Farther south, very warm weather accompanied scattered **Hawaiian** showers, mainly in windward locations. On the **Big Island**, **Hilo's** weekly rainfall totaled 3.58 inches. With unusual warmth dominating the **Hawaiian Islands**, several daily-record highs were set or tied. On December 15, daily records were tied in **Kahului, Maui** (86°F), and **Lihue, Kauai** (84°F).


U.S. Drought Monitor
December 17, 2019
(Released Thursday, Dec. 19, 2019)
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 Miskus
NOAA/NWS/NCEP/CPC
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
USDA
NDMC
droughtmonitor.unl.edu


U.S. Seasonal Drought Outlook
Drought Tendency During the Valid Period
Valid for December 19, 2019 - March 31, 2020
Released December 19, 2019
Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).
NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).
Drought persists
Drought remains but improves
Drought removal likely
Drought development likely
Author:
Rich Tinker
NOAA/NWS/NCEP/Climate Prediction Center
http://go.usa.gov/3eZ73

National Weather Data for Selected Cities

Weather Data for the Week Ending December 21, 2019

Data Provided by Climate Prediction Center

STATES AND STATIONS		TEMPERATURE ˚F						PRECIPITATION							RELATIVE HUMIDITY PERCENT		NUMBER OF DAYS			
																	TEMP. ˚F		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
AL	BIRMINGHAM	60	38	73	26	49	4	0.79	-0.15	0.36	2.56	87	50.02	95	87	46	0	3	3	0
	HUNTSVILLE	57	36	70	25	46	3	1.47	0.24	1.29	2.41	63	58.45	105	81	60	0	4	3	1
	MOBILE	63	4	76	-79	34	-18	2.22	1.25	1.48	4.26	132	63.10	97	91	64	0	5	3	2
	MONTGOMERY	62	39	75	26	50	1	1.80	0.71	1.51	3.25	93	45.01	84	86	46	0	3	2	1
AK	ANCHORAGE	26	18	34	6	22	4	0.00	-0.24	0.00	0.48	69	14.08	90	73	64	0	7	0	0
	BARROW	5	-6	18	-18	-1	10	0.00	0.00	0.00	0.07	700	11.57	287	87	76	0	7	0	0
	FAIRBANKS	-7	-19	4	-35	-13	-7	0.00	-0.17	0.00	0.01	2	14.26	142	74	71	0	7	0	0
	JUNEAU	37	33	41	29	35	6	0.62	-0.61	0.19	2.55	71	55.39	98	94	89	0	4	6	0
	KODIAK	41	34	45	27	37	6	2.26	0.55	1.14	9.48	193	72.47	100	80	72	0	2	5	2
	NOME	18	5	36	-7	11	3	0.12	-0.10	0.09	0.37	54	26.68	164	80	70	0	7	2	0
AZ	FLAGSTAFF	40	15	56	8	27	-3	0.00	-0.39	0.00	1.32	112	25.31	114	74	27	0	7	0	0
	PHOENIX	66	43	73	38	55	1	0.00	-0.19	0.00	0.12	22	5.36	68	48	27	0	0	0	0
	PRESCOTT	50	21	60	14	35	-2	0.00	-0.28	0.00	0.45	54	15.28	82	72	18	0	7	0	0
	TUCSON	64	37	73	30	50	-2	0.00	-0.23	0.00	0.53	88	13.05	111	59	33	0	2	0	0
AR	FORT SMITH	49	30	58	23	40	-1	0.16	-0.57	0.16	0.17	7	66.33	154	95	68	0	4	1	0
	LITTLE ROCK	49	31	55	25	40	-3	0.63	-0.41	0.56	0.77	22	60.61	122	93	54	0	4	2	1
CA	BAKERSFIELD	62	41	72	37	51	4	0.00	-0.15	0.00	0.53	123	8.12	132	60	47	0	0	0	0
	FRESNO	60	40	63	37	50	5	0.00	-0.28	0.00	1.95	253	12.02	113	72	58	0	0	0	0
	LOS ANGELES	70	50	78	45	60	3	0.00	-0.38	0.00	1.08	104	15.37	124	35	23	0	0	0	0
	REDDING	52	37	59	31	44	-1	0.70	-0.30	0.51	6.90	239	41.36	130	91	86	0	4	3	1
	SACRAMENTO	57	39	60	34	48	3	0.20	-0.31	0.15	3.55	234	23.56	139	95	56	0	0	2	0
	SAN DIEGO	69	45	75	41	57	0	0.00	-0.26	0.00	1.40	194	12.67	124	65	34	0	0	0	0
	SAN FRANCISCO	58	46	62	41	52	3	0.36	-0.25	0.35	2.58	146	22.35	118	85	73	0	0	2	0
	STOCKTON	59	41	62	36	50	5	0.06	-0.31	0.06	3.25	288	16.82	128	86	80	0	0	1	0
CO	ALAMOSA	25	-10	32	-20	7	-10	0.18	0.12	0.17	0.20	105	7.68	108	81	63	0	7	2	0
	CO SPRINGS	42	16	57	5	29	0	0.31	0.23	0.18	0.31	148	12.12	71	68	31	0	7	2	0
	DENVER INTL	46	20	65	15	33	4	0.00	-0.06	0.00	0.12	67	15.32	114	63	22	0	7	0	0
	GRAND JUNCTION	37	16	44	9	26	-2	0.00	-0.10	0.00	0.25	86	8.27	95	68	47	0	7	0	0
	PUEBLO	44	13	60	0	28	-2	0.26	0.18	0.19	0.26	118	13.15	108	86	57	0	7	2	0
CT	BRIDGEPORT	35	24	48	16	29	-6	0.58	-0.17	0.57	5.91	260	49.68	116	66	57	0	6	2	1
	HARTFORD	33	19	48	10	26	-5	0.43	-0.34	0.41	5.25	219	49.75	111	73	59	0	7	2	0
DC	WASHINGTON	43	30	57	22	36	-3	0.54	-0.12	0.45	2.42	122	41.52	108	77	49	0	4	2	0
DE	WILMINGTON	40	26	52	17	33	-3	1.08	0.34	0.69	3.77	167	47.83	115	80	43	0	4	2	1
FL	DAYTONA BEACH	74	53	84	43	64	3	0.72	0.14	0.62	0.97	55	56.61	117	97	60	0	0	3	1
	JACKSONVILLE	69	45	82	33	57	2	0.17	-0.39	0.17	1.70	102	43.18	84	90	56	0	0	1	0
	KEY WEST	79	71	83	64	75	3	1.44	0.97	0.95	2.15	158	29.83	78	90	74	0	0	4	1
	MIAMI	80	68	84	61	74	4	0.77	0.29	0.42	1.85	119	62.57	108	82	63	0	0	5	0
	ORLANDO	77	57	85	48	67	4	1.03	0.53	0.99	2.63	169	45.73	96	89	56	0	0	2	1
	PENSACOLA	66	45	75	34	55	1	3.46	2.63	2.71	5.94	231	51.34	82	90	61	0	0	3	2
	TALLAHASSEE	66	40	77	28	53	0	1.15	0.28	1.07	1.81	71	37.40	61	81	56	0	2	2	1
	TAMPA	76	56	81	44	66	3	0.86	0.34	0.68	1.18	76	57.44	131	85	52	0	0	2	1
	WEST PALM BEACH	80	67	85	57	74	6	1.01	0.39	0.75	3.74	159	57.72	95	80	63	0	0	5	1
GA	ATHENS	59	35	74	25	47	3	0.63	-0.17	0.63	3.68	154	44.85	96	78	48	0	3	1	1
	ATLANTA	57	39	70	29	48	3	0.33	-0.47	0.33	2.96	116	42.55	87	76	52	0	2	1	0
	AUGUSTA	62	33	77	25	48	1	1.08	0.40	1.08	4.90	265	49.66	115	87	45	0	3	1	1
	COLUMBUS	62	39	74	29	50	1	1.36	0.40	1.29	4.88	165	45.79	97	84	42	0	3	2	1
	MACON	62	34	77	25	48	0	1.25	0.40	1.22	5.37	214	41.20	95	87	43	0	3	2	1
	SAVANNAH	65	39	78	31	52	1	0.54	-0.07	0.54	1.77	108	47.31	98	86	50	0	1	1	1
HI	HILO	82	68	84	66	75	3	3.60	1.38	1.21	7.11	89	96.31	78	87	78	0	0	6	2
	HONOLULU	84	73	85	69	78	3	0.03	-0.62	0.03	1.18	64	16.15	94	74	67	0	0	1	0
	KAHULUI	84	71	86	63	78	5	0.50	-0.17	0.24	0.89	48	11.27	64	79	69	0	0	3	0
	LIHUE	82	75	84	72	78	5	0.65	-0.41	0.26	2.98	94	34.33	90	84	75	0	0	6	0
ID	BOISE	41	28	50	19	35	5	0.01	-0.28	0.01	0.96	103	14.31	122	70	61	0	5	1	0
	LEWISTON	45	33	60	25	39	5	0.17	-0.05	0.17	0.74	107	12.76	103	69	58	0	4	1	0
	POCATELLO	31	11	41	3	21	-4	0.00	-0.22	0.00	0.85	123	12.41	102	85	73	0	7	0	0
IL	CHICAGO/O'HARE	34	20	47	10	27	0	0.01	-0.53	0.01	0.17	10	48.20	135	83	60	0	7	1	0
	MOLINE	35	17	50	11	26	0	0.09	-0.39	0.09	0.24	15	47.72	128	84	64	0	7	1	0
	PEORIA	33	19	46	13	26	-2	0.24	-0.29	0.24	0.37	21	50.37	142	85	64	0	7	1	0
	ROCKFORD	34	18	48	9	26	2	0.06	-0.39	0.04	0.26	17	49.81	138	84	69	0	7	2	0
	SPRINGFIELD	34	18	47	7	26	-4	0.25	-0.32	0.23	0.34	19	46.36	133	88	65	0	7	2	0
IN	EVANSVILLE	40	25	53	20	33	-2	0.64	-0.14	0.48	1.10	42	59.41	137	87	67	0	6	3	0
	FORT WAYNE	33	18	44	8	26	-3	0.18	-0.44	0.07	1.20	61	38.11	107	87	63	0	7	3	0
	INDIANAPOLIS	34	20	44	9	27	-4	0.76	0.10	0.38	1.68	77	47.37	118	87	64	0	7	3	0
	SOUTH BEND	36	22	48	13	29	0	0.06	-0.63	0.04	0.62	28	44.53	115	79	61	0	7	2	0
IA	BURLINGTON	33	19	49	10	26	-2	0.11	-0.35	0.11	0.13	8	43.73	117	86	63	0	7	1	0
	CEDAR RAPIDS	34	15	49	5	25	2	0.00	-0.31	0.00	0.05	5	40.96	124	94	58	0	7	0	0
	DES MOINES	37	18	52	8	28	3	0.04	-0.24	0.04	0.22	23	48.17	140	86	63	0	7	1	0
	DUBUQUE	33	16	47	5	24	2	0.00	-0.36	0.00	0.03	2	53.31	152	82	66	0	7	0	0
	SIOUX CITY	33	9	50	1	21	-1	0.07	-0.05	0.07	0.08	18	32.86	127	92	80	0	7	1	0
	WATERLOO	36	13	51	3	25	4	0.00	-0.23	0.00	0.13	15	40.95	125	81	63	0	7	0	0
KS	CONCORDIA	40	22	53	18	31	1	0.19	0.02	0.19	0.19	32	34.21	121	71	56	0	7	1	0
	DODGE CITY	49	20	59	18	35	2	0.03	-0.14	0.02	0.03	6	21.59	98	72	32	0	7	2	0
	GOODLAND	49	20	63	11	35	5	0.00	-0.06	0.00	0.00	0	23.01	118	67	45	0	7	0	0
	TOPEKA	38	21	48	10	29	-2	0.35	0.05	0.34	0.39	37	47.00	133	81	65	0	7	2	0

Based on 1971-2000 normals

***** Not Available**

Weather Data for the Week Ending December 21, 2019

STATES AND STATIONS		TEMPERATURE ˚F						PRECIPITATION							RELATIVE HUMIDITY PERCENT		NUMBER OF DAYS			
																	TEMP. ˚F		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 JAN01	PCT. NORMAL SINCE JAN01	AVERAGE MAXIMUM	AVERAGE MINIMUM	90 AND ABOVE	32 AND BELOW	.01 INCH OR MORE	.50 INCH OR MORE
	WICHITA	42	21	55	10	32	-1	0.22	-0.07	0.13	0.22	24	40.66	136	85	69	0	7	2	0
KY	JACKSON	45	28	57	18	37	-1	2.03	1.07	1.82	4.08	136	55.39	115	91	64	0	4	3	1
	LEXINGTON	43	28	55	17	35	-1	2.89	1.98	2.44	4.09	150	54.20	122	79	63	0	4	3	1
	LOUISVILLE	42	29	55	21	36	-1	1.28	0.47	1.03	2.05	80	53.14	122	81	54	0	4	3	1
	PADUCAH	42	25	53	19	34	-3	0.65	-0.33	0.55	0.75	23	68.93	143	87	64	0	6	3	1
LA	BATON ROUGE	65	41	82	29	53	1	0.78	-0.38	0.67	2.37	68	64.45	105	91	49	0	3	2	1
	LAKE CHARLES	63	42	81	32	53	0	0.33	-0.65	0.33	0.68	23	65.75	118	84	52	0	1	1	0
	NEW ORLEANS	66	46	80	36	56	1	1.83	0.73	0.92	2.68	75	62.42	100	82	64	0	0	2	2
	SHREVEPORT	61	34	80	26	47	-1	0.48	-0.53	0.47	1.33	43	42.36	85	88	52	0	3	2	0
ME	CARIBOU	25	11	48	5	18	2	0.14	-0.57	0.13	2.19	104	41.13	113	79	60	0	7	2	0
	PORTLAND	34	17	54	5	26	-2	0.20	-0.74	0.19	5.78	200	49.72	112	66	47	0	7	2	0
MD	BALTIMORE	41	27	54	19	34	-2	0.45	-0.29	0.36	2.74	125	38.11	93	79	53	0	4	2	0
MA	BOSTON	37	24	55	15	31	-4	0.65	-0.18	0.65	4.18	167	48.81	118	59	37	0	6	1	1
	WORCESTER	29	16	45	6	22	-7	0.43	-0.40	0.41	5.26	209	52.97	111	83	56	0	7	2	0
MI	ALPENA	30	15	44	5	22	-2	0.02	-0.37	0.02	1.47	123	37.36	135	82	56	0	7	1	0
	GRAND RAPIDS	34	20	46	7	27	-1	0.11	-0.48	0.08	1.48	74	50.13	138	80	59	0	7	3	0
	HOUGHTON LAKE	29	15	42	10	22	-2	0.02	-0.35	0.02	1.25	105	37.86	136	80	67	0	7	1	0
	LANSING	33	18	47	7	26	-1	0.08	-0.39	0.04	1.41	88	40.46	131	79	58	0	7	3	0
	MUSKEGON	34	21	44	14	28	-1	0.06	-0.51	0.02	1.09	58	48.68	152	76	63	0	7	3	0
	TRAVERSE CITY	31	19	44	12	25	-1	0.00	-0.58	0.00	1.50	86	41.59	128	80	59	0	7	0	0
MN	DULUTH	19	0	32	-16	10	-4	0.01	-0.16	0.01	2.46	342	36.87	120	82	71	0	7	1	0
	INT'L FALLS	19	-7	37	-27	6	-2	0.02	-0.11	0.01	0.34	68	33.70	142	86	61	0	7	2	0
	MINNEAPOLIS	28	10	44	-2	19	0	0.00	-0.19	0.00	0.39	56	45.70	157	83	65	0	7	0	0
	ROCHESTER	25	6	37	-8	16	-1	0.00	-0.20	0.00	0.34	44	56.61	182	84	73	0	7	0	0
	ST. CLOUD	22	2	34	-16	12	-2	0.00	-0.14	0.00	0.40	85	42.95	160	89	63	0	7	0	0
MS	JACKSON	58	35	75	25	46	-1	1.57	0.39	0.96	3.25	91	62.18	115	89	54	0	4	3	2
	MERIDIAN	62	40	80	27	51	2	1.66	0.50	1.23	2.89	81	62.00	109	88	57	0	3	2	1
	TUPELO	55	34	72	25	44	1	1.79	0.41	1.38	3.18	76	74.16	138	86	62	0	4	2	1
MO	COLUMBIA	37	22	53	14	30	-2	0.31	-0.23	0.24	0.66	35	49.14	124	88	67	0	7	2	0
	KANSAS CITY	39	23	53	15	31	0	0.23	-0.12	0.23	0.23	19	52.55	140	87	62	0	7	1	0
	SAINT LOUIS	38	23	52	18	31	-3	0.53	-0.08	0.30	0.68	32	53.86	142	86	69	0	7	2	0
	SPRINGFIELD	41	26	55	19	34	-2	0.22	-0.47	0.13	0.22	9	53.33	120	90	75	0	7	2	0
MT	BILLINGS	45	30	54	20	38	12	0.00	-0.14	0.00	0.14	37	22.20	153	50	31	0	4	0	0
	BUTTE	34	11	45	2	23	6	0.00	-0.11	0.00	0.00	0	12.56	100	77	47	0	7	0	0
	CUT BANK	39	26	52	10	33	12	0.00	-0.06	0.00	0.04	24	12.72	103	67	42	0	6	0	0
	GLASGOW	32	14	47	6	23	7	0.01	-0.06	0.01	0.34	179	19.77	179	76	67	0	7	1	0
	GREAT FALLS	46	30	59	18	38	14	0.00	-0.14	0.00	0.16	43	18.63	128	52	30	0	5	0	0
	HAVRE	40	19	59	8	30	11	0.00	-0.11	0.00	0.33	114	13.91	124	71	59	0	6	0	0
	MISSOULA	37	19	58	5	28	5	0.09	-0.16	0.08	0.49	67	15.09	113	86	77	0	6	2	0
NE	GRAND ISLAND	42	18	57	8	30	5	0.06	-0.06	0.06	0.08	16	42.51	165	77	63	0	7	1	0
	LINCOLN	40	15	55	9	27	1	0.11	-0.06	0.11	0.12	19	34.14	121	85	64	0	7	1	0
	NORFOLK	36	9	52	-2	23	-1	0.13	0.01	0.13	0.13	27	32.00	121	87	68	0	7	1	0
	NORTH PLATTE	40	11	53	2	25	-1	0.03	-0.05	0.03	0.30	115	31.05	159	90	58	0	7	1	0
	OMAHA	38	19	49	14	28	3	0.09	-0.09	0.09	0.13	19	39.76	133	88	69	0	7	1	0
	SCOTTSBLUFF	43	14	57	4	29	3	0.02	-0.09	0.02	0.14	38	30.91	192	82	60	0	7	1	0
	VALENTINE	41	12	52	2	27	4	0.21	0.15	0.21	0.31	141	35.96	185	77	57	0	7	1	0
NV	ELY	40	11	50	0	25	-1	0.00	-0.09	0.00	0.39	150	14.22	146	76	53	0	7	0	0
	LAS VEGAS	54	37	58	32	46	-1	0.07	-0.01	0.07	0.41	195	6.35	148	48	34	0	1	1	0
	RENO	48	25	63	20	37	4	0.06	-0.13	0.06	1.63	281	11.09	155	71	53	0	7	1	0
	WINNEMUCCA	45	22	57	12	34	5	0.04	-0.13	0.04	1.18	236	10.12	126	68	56	0	6	1	0
NH	CONCORD	30	14	49	0	22	-4	0.41	-0.22	0.36	3.82	189	42.64	116	76	47	0	7	2	0
NJ	NEWARK	36	25	49	16	31	-5	1.20	0.44	0.94	5.46	228	58.53	130	69	53	0	4	3	1
NM	ALBUQUERQUE	45	23	59	18	34	-2	0.00	-0.09	0.00	0.10	38	9.03	98	61	27	0	6	0	0
NY	ALBANY	30	16	44	6	23	-5	0.28	-0.30	0.28	3.13	169	45.52	122	69	50	0	7	1	0
	BINGHAMTON	25	13	33	6	19	-8	0.55	-0.12	0.46	3.09	143	44.67	118	85	70	0	7	5	0
	BUFFALO	32	18	39	10	25	-5	0.12	-0.72	0.09	3.82	144	46.10	117	77	59	0	7	3	0
	ROCHESTER	30	16	36	6	23	-6	0.20	-0.40	0.14	2.41	127	33.26	100	80	63	0	7	3	0
	SYRACUSE	29	14	38	5	22	-6	0.36	-0.31	0.28	2.94	129	46.50	119	82	64	0	7	4	0
NC	ASHEVILLE	55	29	65	23	42	3	0.63	-0.09	0.58	2.83	125	55.80	122	82	47	0	6	2	1
	CHARLOTTE	57	33	69	23	45	1	0.66	-0.02	0.66	3.71	184	52.42	124	78	43	0	3	1	1
	GREENSBORO	54	31	66	24	42	1	0.56	-0.10	0.56	3.38	169	51.42	122	79	40	0	5	1	1
	HATTERAS	56	43	70	36	50	0	0.04	-0.93	0.04	5.91	219	61.67	110	85	56	0	0	1	0
	RALEIGH	56	34	70	25	45	2	0.41	-0.24	0.41	2.97	154	43.11	103	77	47	0	3	1	0
	WILMINGTON	61	37	75	25	49	0	0.00	-0.81	0.00	2.09	85	44.76	80	89	42	0	2	0	0
ND	BISMARCK	28	9	41	6	19	4	0.01	-0.07	0.01	0.37	142	30.57	183	88	78	0	7	1	0
	DICKINSON	34	16	43	9	25	7	0.00	-0.06	0.00	0.00	0	25.37	156	83	62	0	6	0	0
	FARGO	21	-2	32	-15	10	-2	0.00	-0.11	0.00	0.42	127	33.42	160	88	72	0	7	0	0
	GRAND FORKS	20	-9	26	-27	6	-5	0.00	-0.11	0.00	0.21	62	31.24	161	87	70	0	7	0	0
	JAMESTOWN	26	6	40	0	16	2	0.00	-0.08	0.00	0.10	40	30.16	165	93	74	0	7	0	0
	WILLISTON	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	0	0	0	0
OH	AKRON-CANTON	35	21	47	9	28	-3	0.23	-0.43	0.15	2.43	116	46.24	123	84	67	0	7	4	0
	CINCINNATI	39	25	53	14	32	-2	1.33	0.61	0.87	2.50	112	54.14	130	86	62	0	6	3	1
	CLEVELAND	36	22	49	13	29	-2	0.20	-0.49	0.13	2.18	96	41.32	109	79	56	0	7	3	0
	COLUMBUS	37	22	48	13	30	-3	0.27	-0.37	0.12	1.42	68	43.67	116	85	60	0	7	3	0
	DAYTON	36	22	46	8	29	-2	0.43	-0.25	0.22	1.98	92	42.84	111	83	61	0	7	3	0
	MANSFIELD	35	19	48	5	27	-3	0.23	-0.49	0.16	2.18	93	49.03	116	89	57	0	7	3	0

Based on 1971-2000 normals

***** Not Available**

Weather Data for the Week Ending December 21, 2019

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 JAN01	PCT. NORMAL SINCE JAN01	AVERAGE MAXIMUM	AVERAGE MINIMUM	90 AND ABOVE	32 AND BELOW	.01 INCH OR MORE	.50 INCH OR MORE
	TOLEDO	36	20	49	9	28	-1	0.05	-0.54	0.02	0.93	49	43.51	134	76	53	0	7	3	0
	YOUNGSTOWN	34	20	47	12	27	-3	0.26	-0.39	0.14	3.01	141	54.77	147	78	63	0	7	4	0
OK	OKLAHOMA CITY	46	28	56	19	37	-2	0.00	-0.41	0.00	0.00	0	44.70	127	85	56	0	5	0	0
	TULSA	48	31	59	24	39	0	0.06	-0.46	0.03	0.06	3	58.77	141	79	61	0	4	2	0
OR	ASTORIA	51	40	55	30	46	3	5.74	3.43	3.58	8.96	123	49.97	78	95	86	0	1	5	3
	BURNS	34	14	50	-2	24	-1	0.19	-0.09	0.10	1.27	153	14.64	145	82	72	0	7	2	0
	EUGENE	51	38	61	27	45	6	2.15	0.31	1.12	4.14	70	35.12	72	93	83	0	3	3	2
	MEDFORD	52	37	63	28	44	6	0.10	-0.54	0.10	2.08	101	19.56	112	89	63	0	2	1	0
	PENDLETON	47	32	64	20	39	5	0.20	-0.11	0.20	0.62	62	12.20	99	77	68	0	5	1	0
	PORTLAND	49	39	59	32	44	4	2.10	0.83	1.01	3.73	93	26.03	74	89	77	0	1	4	2
	SALEM	50	37	59	25	43	3	1.83	0.39	1.20	4.10	90	30.04	79	93	86	0	2	4	2
PA	ALLENTOWN	36	24	48	16	30	-2	0.52	-0.21	0.30	2.65	115	60.06	136	72	54	0	4	3	0
	ERIE	35	25	45	17	30	-2	0.36	-0.48	0.27	3.92	146	43.71	105	69	57	0	7	2	0
	MIDDLETOWN	37	26	47	18	31	-2	0.78	0.07	0.59	2.97	129	47.78	121	78	48	0	4	2	1
	PHILADELPHIA	38	27	50	19	33	-4	1.20	0.48	0.61	4.22	193	49.30	120	69	51	0	4	2	2
	PITTSBURGH	35	20	47	9	27	-5	0.38	-0.24	0.30	2.52	127	53.37	144	86	61	0	7	2	0
	WILKES-BARRE	32	20	40	11	26	-5	0.35	-0.20	0.23	1.97	108	49.55	135	76	57	0	7	3	0
	WILLIAMSPORT	34	23	41	15	28	-3	0.35	-0.28	0.24	2.27	107	49.04	120	78	58	0	6	3	0
RI	PROVIDENCE	35	22	50	12	28	-5	0.69	-0.22	0.66	6.43	230	50.30	112	75	61	0	7	2	1
SC	CHARLESTON	62	38	76	30	50	0	0.20	-0.50	0.20	2.05	103	42.72	85	84	44	0	3	1	0
	COLUMBIA	59	33	74	23	46	-1	0.97	0.24	0.97	6.34	312	39.53	84	84	48	0	3	1	1
	FLORENCE	60	36	75	26	48	1	0.79	0.03	0.79	3.34	161	42.05	97	85	39	0	3	1	1
	GREENVILLE	56	33	67	25	45	2	0.51	-0.33	0.51	3.17	127	48.07	98	82	40	0	3	1	1
SD	ABERDEEN	25	8	33	2	17	1	0.00	-0.07	0.00	0.09	50	31.28	156	83	76	0	7	0	0
	HURON	30	11	38	6	20	1	0.00	-0.06	0.00	0.07	32	40.59	196	89	71	0	7	0	0
	RAPID CITY	43	17	52	8	30	5	0.00	-0.08	0.00	0.06	30	36.18	220	72	44	0	7	0	0
	SIOUX FALLS	31	11	45	7	21	3	0.04	-0.05	0.04	0.10	27	37.47	153	83	67	0	7	1	0
TN	BRISTOL	53	27	68	19	40	3	0.59	-0.15	0.33	2.63	114	56.03	139	87	41	0	5	2	0
	CHATTANOOGA	56	36	68	27	46	4	1.01	-0.02	0.81	2.52	77	60.79	115	90	58	0	3	2	1
	KNOXVILLE	55	32	73	24	44	3	0.65	-0.34	0.51	3.19	106	62.63	134	85	47	0	5	2	1
	MEMPHIS	50	33	62	26	42	-1	1.42	0.14	1.42	2.02	49	71.65	135	88	59	0	4	1	1
	NASHVILLE	52	33	64	23	42	2	1.43	0.43	1.41	2.33	73	62.15	133	82	56	0	4	2	1
TX	ABILENE	56	30	68	24	43	-2	0.00	-0.29	0.00	0.67	85	22.85	98	68	47	0	5	0	0
	AMARILLO	48	21	61	13	35	-2	0.00	-0.13	0.00	0.00	0	24.89	128	69	34	0	7	0	0
	AUSTIN	63	33	82	20	48	-4	0.40	-0.15	0.40	0.77	48	29.20	89	81	54	0	3	1	0
	BEAUMONT	63	43	80	31	53	-1	0.69	-0.46	0.69	1.04	30	86.45	149	87	56	0	2	1	1
	BROWNSVILLE	71	56	90	43	64	3	0.72	0.50	0.52	0.74	97	22.45	83	74	58	1	0	2	1
	CORPUS CHRISTI	68	46	86	29	57	-1	3.86	3.47	2.57	4.02	359	26.90	85	83	61	0	2	2	2
	DEL RIO	68	36	89	24	52	0	0.00	-0.17	0.00	0.05	10	15.07	84	62	35	0	3	0	0
	EL PASO	55	33	72	24	44	-1	0.00	-0.17	0.00	0.58	121	7.88	86	52	25	0	5	0	0
	FORT WORTH	55	35	72	27	45	-2	0.00	-0.59	0.00	0.55	33	33.90	100	85	47	0	3	0	0
	GALVESTON	63	51	77	43	57	-1	0.37	-0.37	0.36	0.72	31	59.97	141	82	55	0	0	2	0
	HOUSTON	64	43	84	31	53	0	0.08	-0.72	0.06	0.31	12	51.41	110	80	52	0	2	2	0
	LUBBOCK	55	23	68	18	39	0	0.00	-0.14	0.00	0.00	0	23.76	129	67	33	0	7	0	0
	MIDLAND	59	28	82	23	44	-1	0.00	-0.14	0.00	0.50	125	14.30	98	70	34	0	6	0	0
	SAN ANGELO	63	29	89	20	46	0	0.00	-0.22	0.00	0.99	162	17.45	85	71	33	0	5	0	0
	SAN ANTONIO	63	38	80	27	50	-2	0.34	-0.10	0.34	0.52	39	22.05	68	81	39	0	2	1	0
	VICTORIA	67	41	82	25	54	-1	0.50	-0.05	0.49	0.68	41	25.39	65	84	54	0	3	2	0
	WACO	58	33	77	21	45	-3	0.02	-0.61	0.02	0.47	25	32.78	101	87	56	0	3	1	0
	WICHITA FALLS	53	30	60	22	41	-2	0.01	-0.38	0.01	0.01	1	27.19	96	86	61	0	4	1	0
UT	SALT LAKE CITY	37	23	44	20	30	0	0.03	-0.22	0.03	1.17	150	19.65	122	87	57	0	7	1	0
VT	BURLINGTON	26	9	43	-1	18	-7	0.25	-0.21	0.18	0.84	54	42.54	120	78	55	0	7	3	0
VA	LYNCHBURG	49	28	57	16	39	1	0.05	-0.65	0.05	2.20	104	39.46	94	70	42	0	4	1	0
	NORFOLK	54	36	70	26	45	1	0.15	-0.50	0.15	2.00	106	46.26	104	76	48	0	2	1	0
	RICHMOND	48	31	57	22	39	-1	0.35	-0.32	0.35	3.00	152	43.94	103	81	47	0	4	1	0
	ROANOKE	49	30	54	22	40	1	0.04	-0.57	0.04	2.67	138	43.10	104	71	54	0	4	1	0
	WASH/DULLES	40	26	53	18	33	-3	0.53	-0.14	0.52	2.34	113	40.19	98	81	55	0	5	2	1
WA	OLYMPIA	48	37	53	28	42	4	5.86	4.12	3.31	7.53	136	35.18	73	96	89	0	2	6	3
	QUILLAYUTE	49	39	53	31	44	4	4.26	1.02	1.31	9.15	90	75.40	77	95	92	0	1	6	4
	SEATTLE-TACOMA	49	41	54	37	45	5	5.82	4.58	3.37	7.16	180	33.10	93	89	79	0	0	5	3
	SPOKANE	39	29	54	24	34	7	0.64	0.15	0.51	1.66	105	14.98	94	86	68	0	5	4	1
	YAKIMA	38	27	58	21	32	3	0.19	-0.11	0.19	0.63	70	8.50	109	90	85	0	6	1	0
WV	BECKLEY	45	26	56	15	35	0	0.57	-0.10	0.46	2.96	144	47.82	118	77	58	0	5	2	0
	CHARLESTON	43	26	56	17	35	-2	1.94	1.22	1.61	4.55	195	48.00	111	89	55	0	5	3	1
	ELKINS	43	23	58	11	33	0	2.05	1.30	1.63	4.92	209	51.75	115	83	71	0	6	4	1
	HUNTINGTON	40	26	54	16	33	-4	2.50	1.76	1.95	4.36	191	50.15	122	90	60	0	5	3	1
WI	EAU CLAIRE	25	5	39	-13	15	-2	0.00	-0.20	0.00	0.40	53	44.10	139	86	56	0	7	0	0
	GREEN BAY	26	12	38	-1	19	-2	0.00	-0.29	0.00	0.57	55	47.46	165	76	62	0	7	0	0
	LA CROSSE	30	11	43	-2	20	-2	0.00	-0.24	0.00	0.26	28	44.41	139	80	55	0	7	0	0
	MADISON	32	15	47	1	24	1	0.01	-0.34	0.01	0.09	7	47.28	145	81	60	0	7	1	0
	MILWAUKEE	35	20	50	7	27	1	0.00	-0.48	0.00	0.24	15	44.80	131	72	55	0	7	0	0
WY	CASPER	31	17	44	4	24	0	0.00	-0.12	0.00	0.37	95	20.18	158	64	55	0	7	0	0
	CHEYENNE	39	18	54	6	29	2	0.00	-0.08	0.00	0.20	67	28.57	187	50	34	0	6	0	0
	LANDER	24	4	35	-3	14	-7	0.00	-0.11	0.00	0.06	15	20.62	156	86	56	0	7	0	0
	SHERIDAN	45	18	61	13	32	10	0.00	-0.14	0.00	0.11	27	21.13	146	71	57	0	7	0	0

Based on 1971-2000 normals

***** Not Available**

December 12 ENSO Diagnostic Discussion

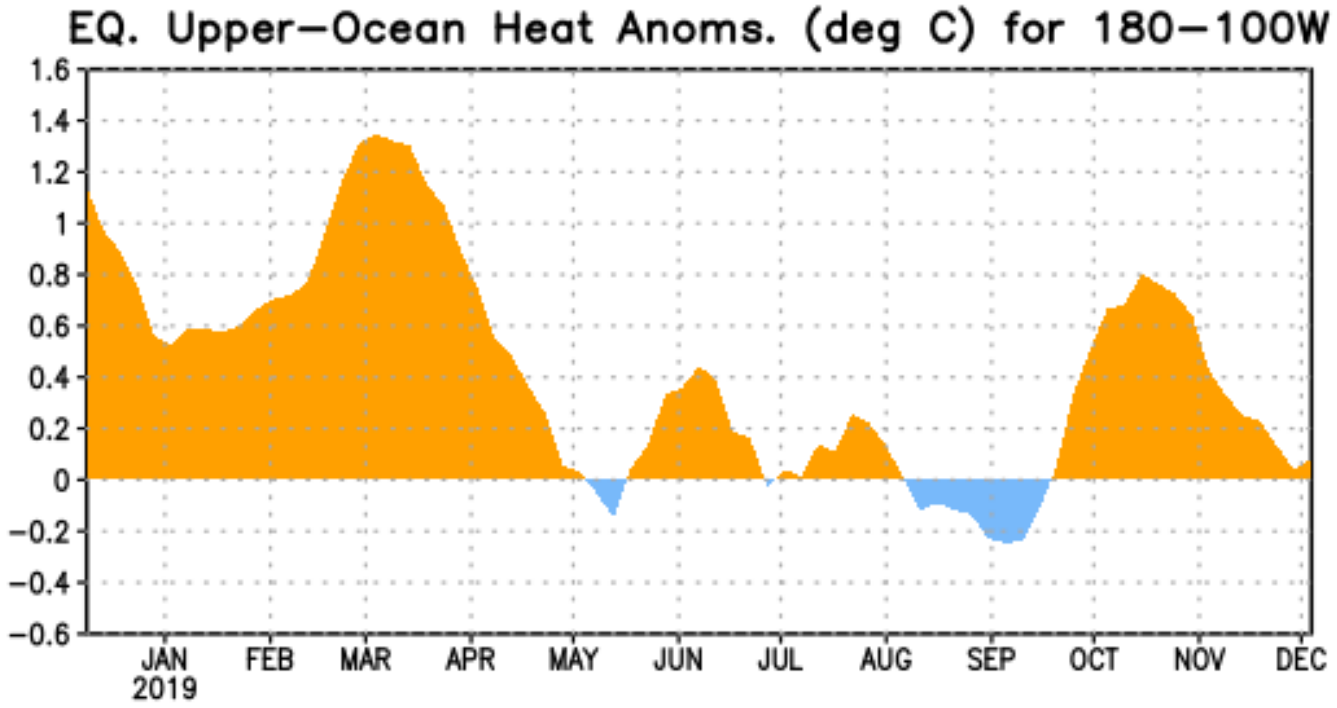


Figure 1: Area-averaged upper-ocean heat content anomaly (°C) in the equatorial Pacific (5°N-5°S, 180º-100ºW). The heat content anomaly is computed as the departure from the 1981-2010 base period pentad means.

ENSO Alert System Status: Not Active

Synopsis: ENSO-neutral is favored during the Northern Hemisphere winter 2019-20 (70% chance), continuing through spring 2020 (~65% chance).

Above-average sea surface temperatures (SSTs) were observed in the central tropical Pacific Ocean during November, with regions of above and below average SSTs observed farther east. In the most recent week, the SST indices were near average in the east-central and eastern Niño regions (+0.1°C to +0.3°C) and were above average in the westernmost Niño-4 region (+0.9°C). The equatorial subsurface temperature anomalies (averaged across 180°-100°W) returned to near zero during the month (Fig. 1), reflecting the progression of Kelvin waves to the east. The low-level winds were near average during November, while easterly upper-level wind anomalies were observed over the western Pacific. Finally, tropical convection was suppressed near and east of the Date Line and also over Indonesia, and somewhat enhanced over the western Pacific northeast of Papua New Guinea. The overall oceanic and atmospheric system was consistent with ENSO-neutral.

The majority of models in the IRI/CPC plume continue to favor ENSO-neutral (Niño-3.4 index between -0.5°C and +0.5°C) through the Northern Hemisphere summer. Many dynamical model forecasts suggest Niño-3.4 SST index values may remain near +0.5°C into December before decreasing toward zero. Forecasters agree with this consensus and believe the chances for El Niño to be 25-30% during the winter and spring. In summary, ENSO-neutral is favored during the Northern Hemisphere winter 2019-20 (70% chance), continuing through spring 2020 (~65% chance; click CPC/IRI consensus forecast for the chance of each outcome for each 3-month period).

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). Forecasts are also updated monthly in the Forecast Forum of CPC's Climate Diagnostics Bulletin. Additional perspectives and analysis are also available in an ENSO blog. The next ENSO Diagnostics Discussion is scheduled for **9 January 2020**. 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 15-21, 2019

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

HIGHLIGHTS

EUROPE: Heavy rain in western Europe contrasted with dry, very warm weather in eastern portions of the continent.

MIDDLE EAST: Dry weather renewed drought concerns in Turkey, while heavy rain boosted moisture reserves for winter grains in central and southern Iran.

NORTHWESTERN AFRICA: Widespread showers eased lingering drought in southwestern Morocco and maintained adequate to abundant moisture supplies for emerging to vegetative winter grains elsewhere.

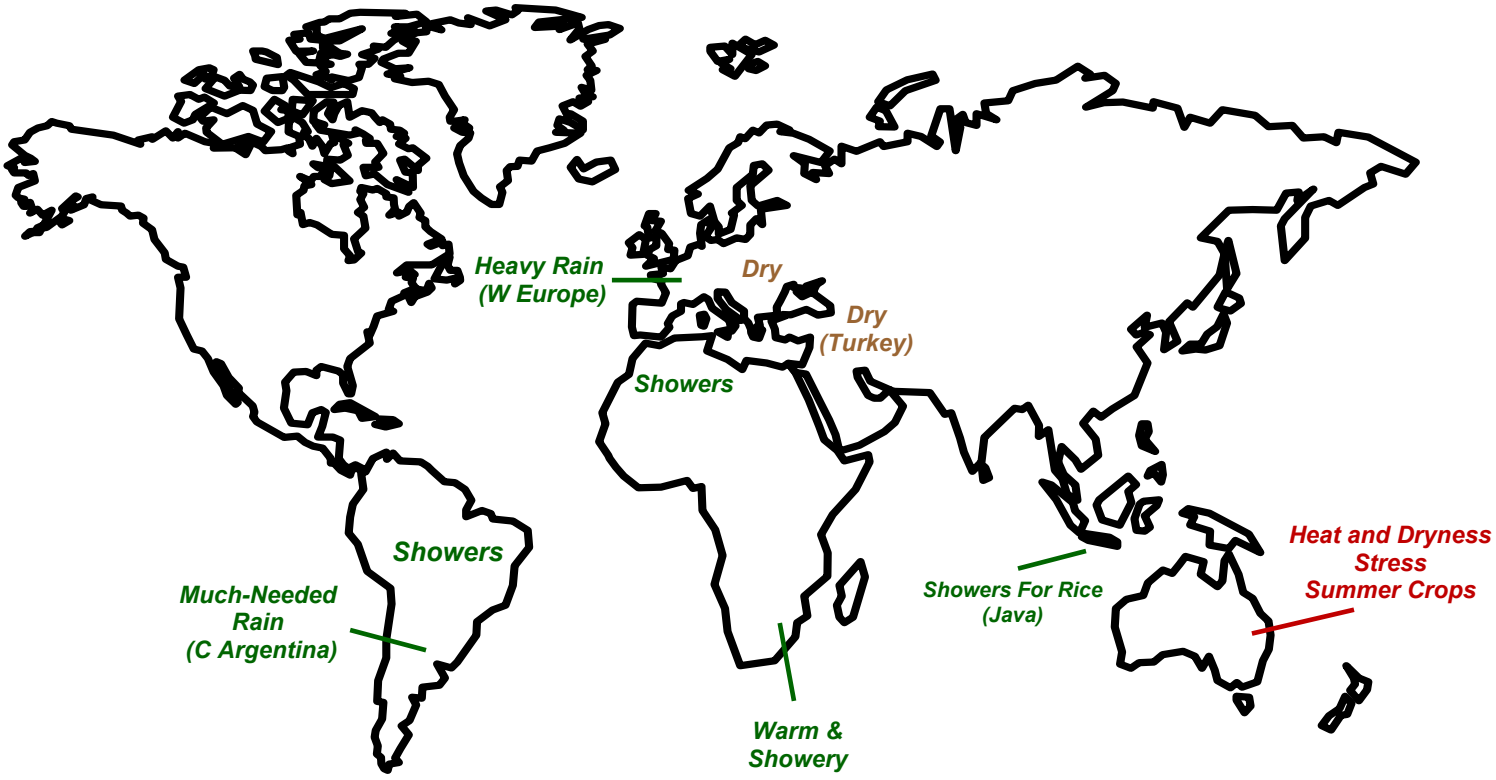
SOUTHEAST ASIA: Seasonal rainfall continued to improve short-term moisture conditions for rice in Java, Indonesia.

AUSTRALIA: Unfavorably hot, dry weather continued to stress summer crops.

SOUTH AFRICA: Warm, showery weather fostered rapid development of corn and other summer crops.

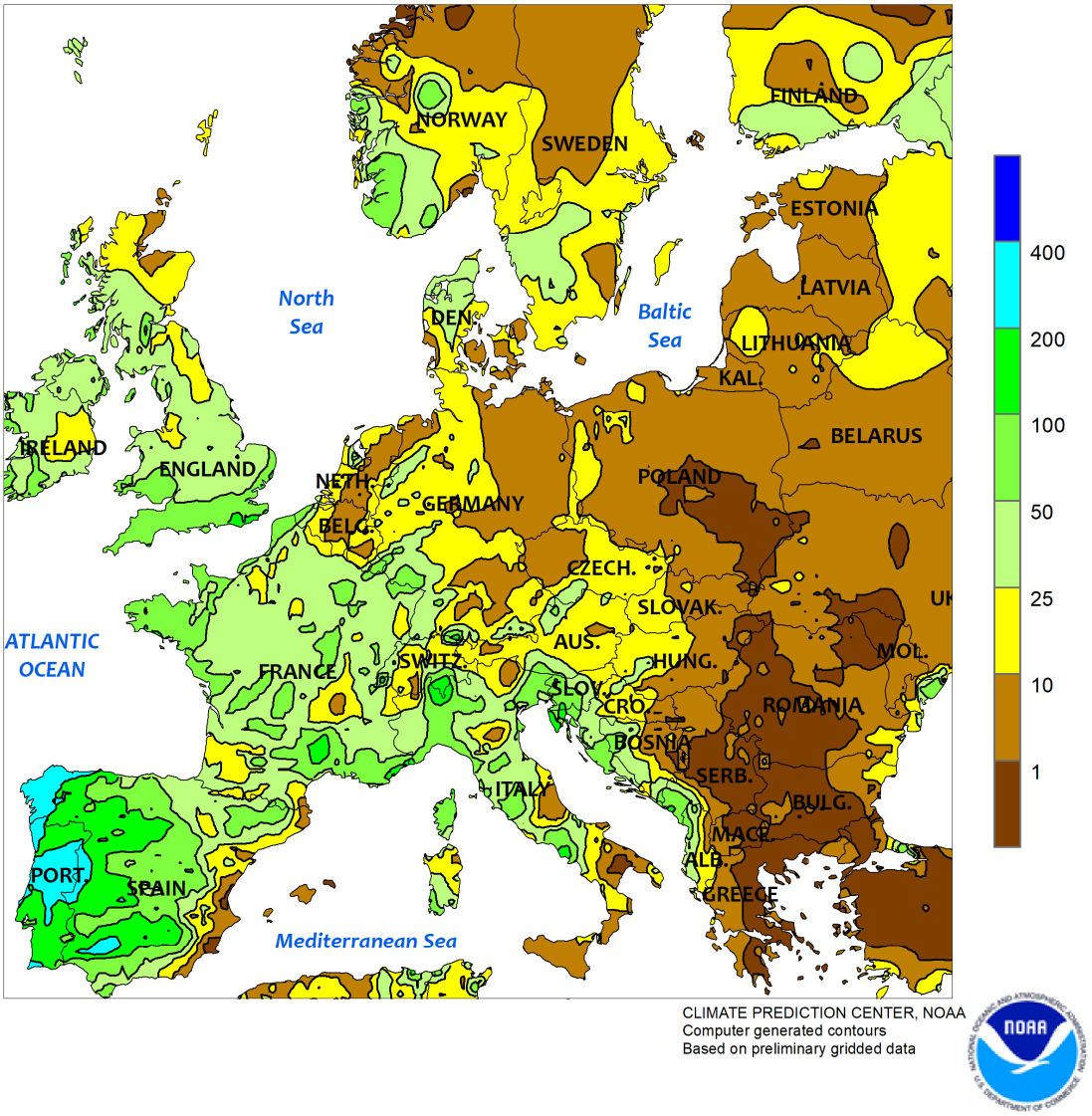
ARGENTINA: Much-needed rain brought relief from last week's heat and dryness to central Argentina.

BRAZIL: Widespread, locally heavy showers maintained overall favorable conditions for soybeans and other summer crops.



For additional information contact: mbrusberg@oce.usda.gov

EUROPE
Total Precipitation (mm)
December 15 - 21, 2019

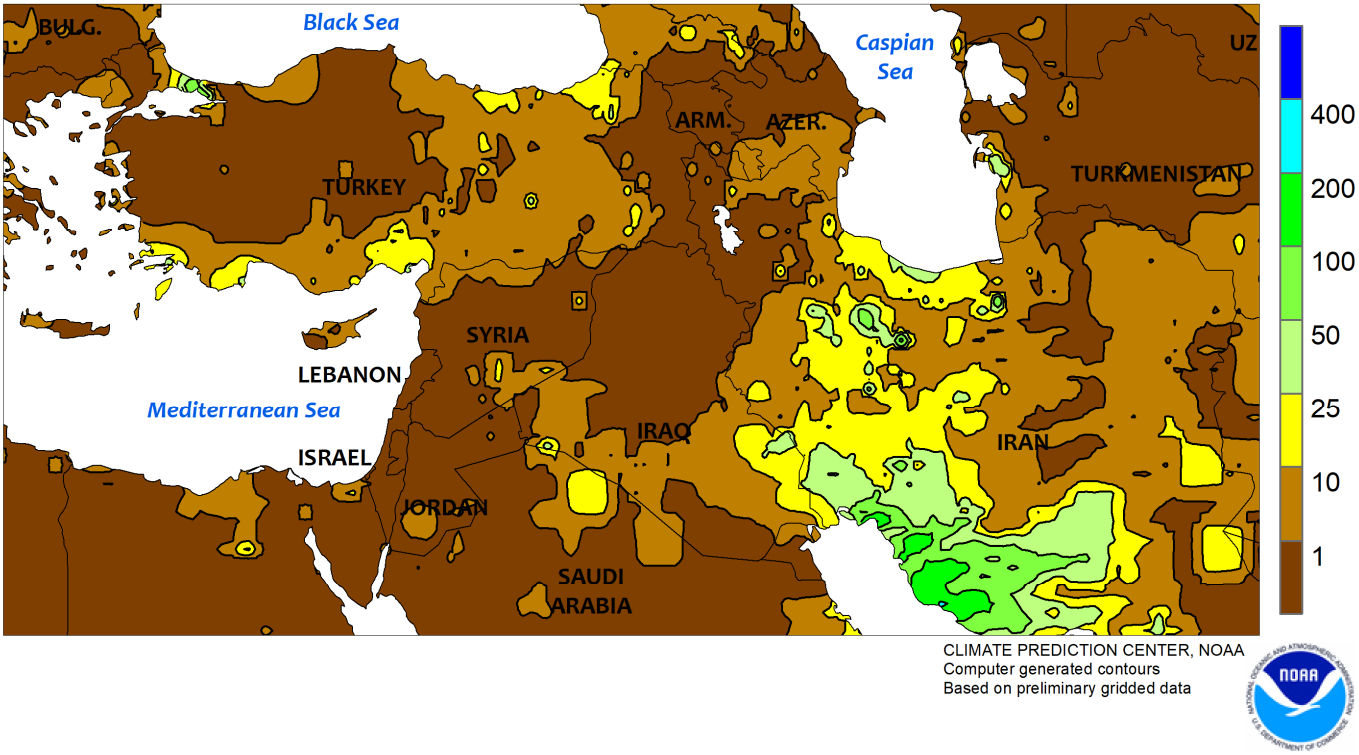


EUROPE

Heavy rain in western Europe contrasted with generally dry, very warm conditions in eastern portions of the continent. A strong southward-displaced jet stream supplied an atmospheric river of moisture to western Europe; rainfall totaled 10 to 70 mm in England and France, with 35 to 200 mm reported on the Iberian Peninsula. Rain amounts tapered off to the east, with 3 to 20 mm observed in Germany (heaviest in the west) and amounts generally 5 mm or less in Poland and the Danube River Valley. Similarly, heavy rain in western and northern Italy (25-100 mm) gave way to dry conditions (5 mm or less) in southern and eastern Italy. As a result, moisture supplies over the western half of the continent remained adequate to abundant (locally excessive) for dormant (north) to vegetative (south) winter crops. Conversely, short-term drought intensified in parts of eastern Europe, most notably across southern and central Poland (60-day rainfall less than 50 percent of normal). The influx of mild, maritime air from the Atlantic Ocean resulted in temperatures up to 10°C above normal, particularly from southern Poland into the Balkans. The anomalous warmth reduced winter crop cold hardiness and kept most growing areas devoid of a protective snow cover.

For additional information contact: mbrusberg@oce.usda.gov

MIDDLE EAST
Total Precipitation (mm)
December 15 - 21, 2019



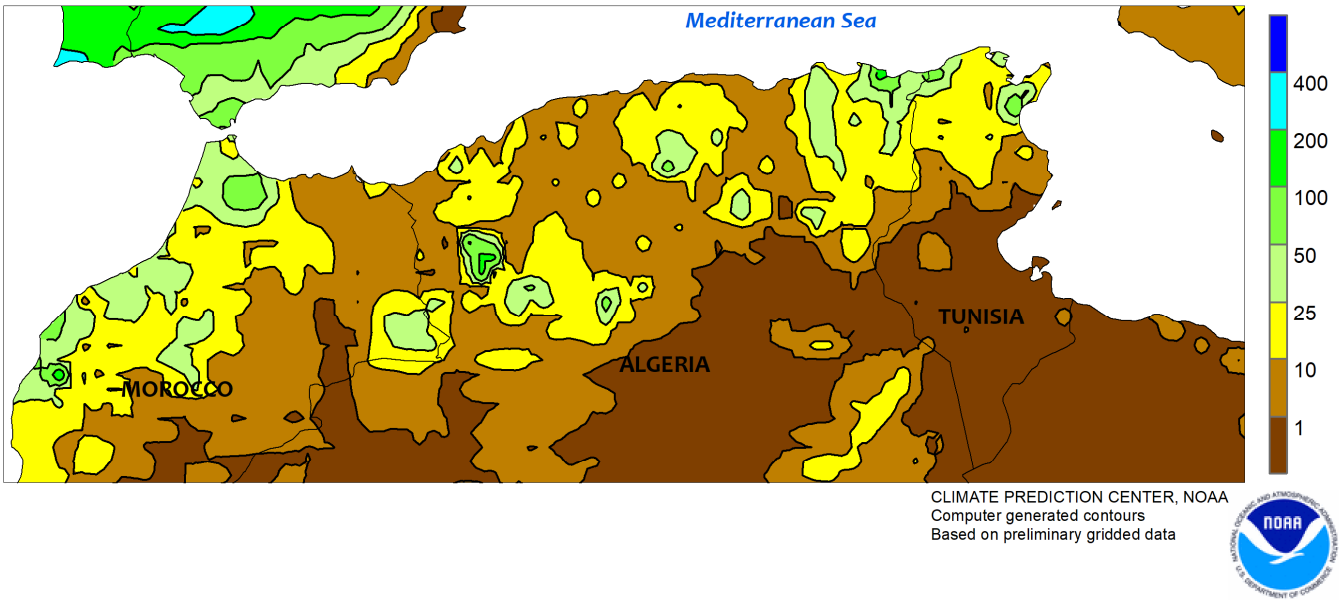
CLIMATE PREDICTION CENTER, NOAA
Computer generated contours
Based on preliminary gridded data

MIDDLE EAST

Dry weather across northern and central crop areas contrasted with moderate to heavy rain in the south. Strengthening high pressure across the Black and Caspian Seas brought mostly dry weather to crop areas from Turkey into northern Iraq and northwestern Iran, although light to moderate showers (1-10 mm) were reported in some coastal locales. Moisture supplies on central Turkey's Anatolian Plateau are highly variable, ranging from the recent beneficial rainfall in the west to lingering drought (90-day precipitation less than 50 percent of normal) in eastern and northern portions of the region. Meanwhile, a slow-moving storm system produced moderate to heavy rain (10-75 mm) in central and southern Iran, boosting moisture reserves for vegetative winter grains but likely causing localized flooding and fieldwork delays. Temperatures averaged 2 to 5°C above normal, though clouds and rain kept temperatures near to below normal in southern Iran. Despite the warmth, winter grains are now dormant from central Turkey into much of western Iran.

For additional information contact: mbrusberg@oce.usda.gov

NORTHWESTERN AFRICA
Total Precipitation (mm)
December 15 - 21, 2019

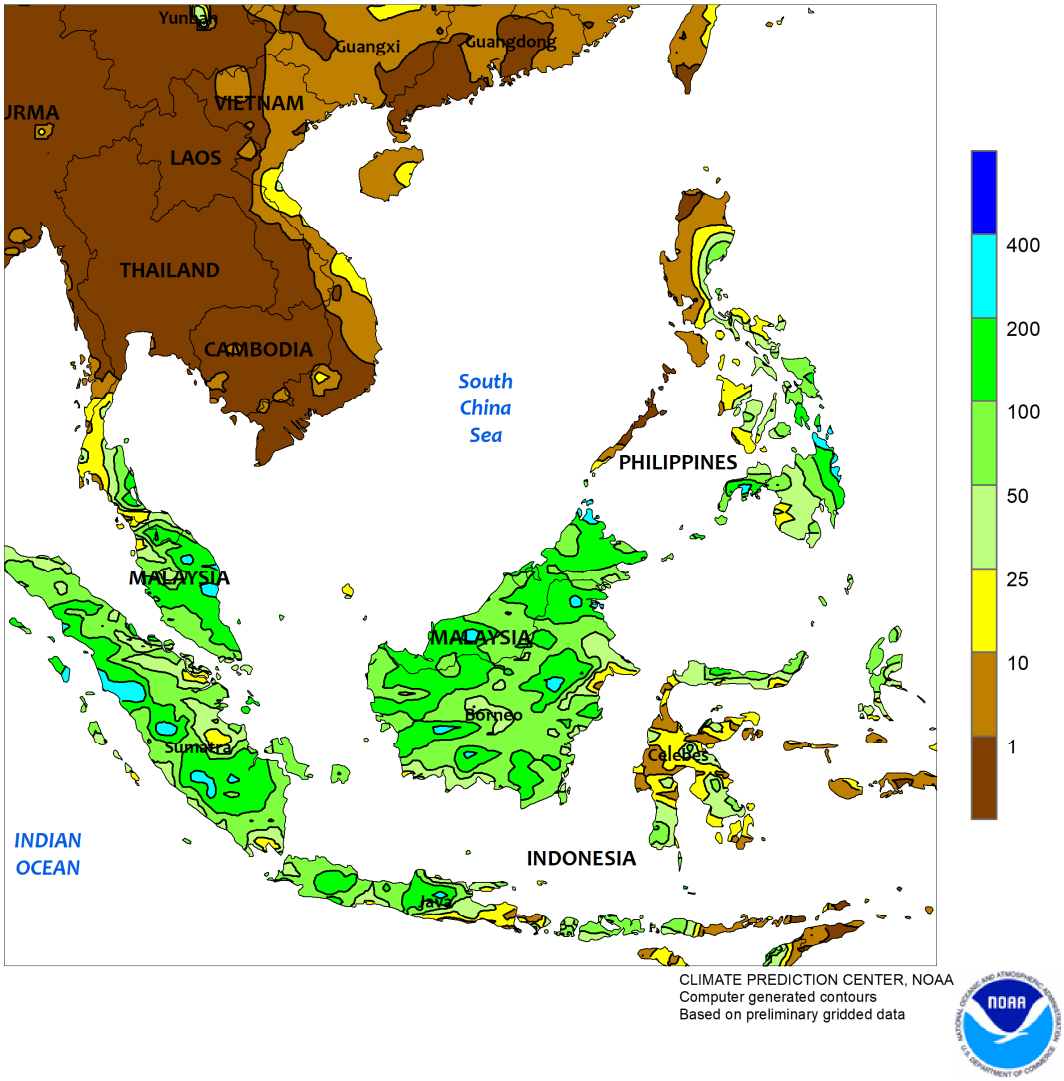


NORTHWESTERN AFRICA

The favorable start to the region's cool, wet season continued. Showers were reported across most primary wheat and barley areas, with amounts totaling 5 to 50 mm (locally more in Morocco). The rain maintained good to excellent moisture supplies for emerging to vegetative winter grains across Algeria and Tunisia while further improving soil moisture in Morocco. The recent wet weather in Morocco has alleviated concerns from early season drought, though southwestern-most portions of the country need more rain. Overall, conditions were good to excellent for winter grains from northern Morocco into Tunisia.

For additional information contact: mbrusberg@oce.usda.gov

SOUTHEAST ASIA
Total Precipitation (mm)
December 15 - 21, 2019

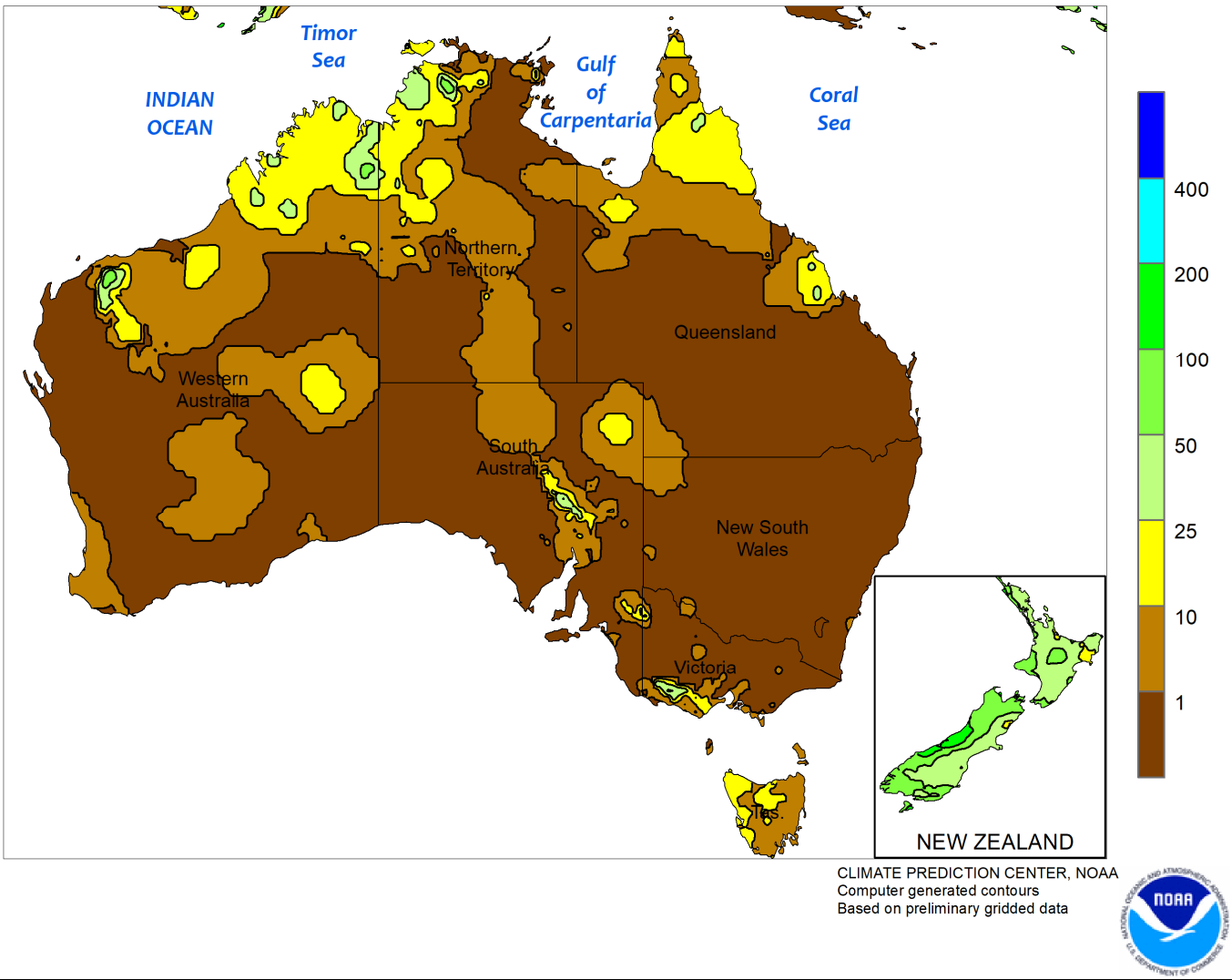


CLIMATE PREDICTION CENTER, NOAA
Computer generated contours
Based on preliminary gridded data

SOUTHEAST ASIA

Showers (25-100 mm) continued to improve short-term moisture supplies for rice in Java, Indonesia, though seasonal rainfall remained slow to develop in eastern growing regions. Due to the delayed onset of seasonal rain across Java, all areas are experiencing various levels of deficit moisture. In contrast, the remainder of Indonesia and Malaysia reported widespread showers (25-100 mm or more), maintaining adequate soil moisture for oil palm over the last 90 days. Meanwhile, waves of tropical showers in the southeastern Philippines produced locally over 200 mm. The rainfall significantly cut the large seasonal moisture deficit experienced by corn and rice, with more seasonable rainfall amounts (25-100 mm) in the remainder of the Philippines.

For additional information contact: mbrusberg@oce.usda.gov

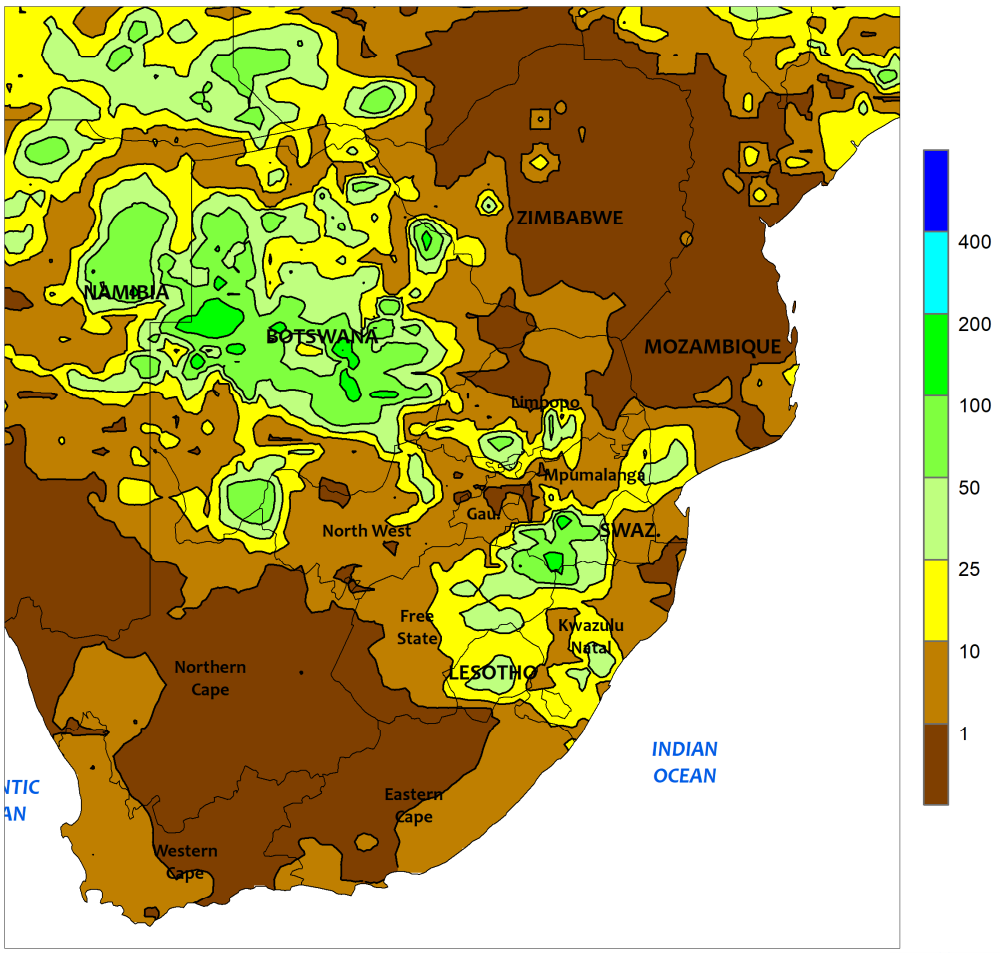


AUSTRALIA

Unfavorably hot, dry weather continued to stress dryland summer crops in southern Queensland and northern New South Wales, maintaining generally poor crop conditions throughout the region. Temperatures averaged 2 to 5°C above normal, with maximum temperatures generally in the upper 30s degrees C. Although it is still early in the summer crop growing season, soaking rain is urgently needed to help encourage normal crop development and to end the severe, long-term drought that grips much of eastern Australia. Elsewhere in the wheat belt, dry weather in southern and western Australia favored uninterrupted winter crop harvesting, which is rapidly nearing completion.

For additional information contact: mbrusberg@oce.usda.gov

SOUTH AFRICA
Total Precipitation (mm)
December 15 - 21, 2019



SOUTH AFRICA

Rainfall tapered off from the previous week throughout the main eastern commercial production areas, though summer warmth sustained high evaporative losses in outlying northern and western production areas. Most locations across the corn belt recorded less than 25 mm, with complete dryness in some northern and western farming areas (notably northern Limpopo and parts of North West). Weekly temperatures averaged 1 to 3°C above normal, with daytime highs ranging from the lower 30s (degrees C) in eastern farming areas to the upper 30s in the drier northern and western locations. Additional rain would be welcome in western farming areas — including commercial white corn areas of North West and Free State — to complete planting within the acceptable window (ending late December and early January). Elsewhere, warmer, drier conditions also prevailed along the Indian coast, reducing moisture available for rain-fed sugarcane in KwaZulu-Natal. Dryness returned to the Orange River Valley as well, spurring growth of irrigated corn and cotton. Meanwhile, warm (highs in the lower and middle 30s), generally sunny weather spurred growth of tree and vine crops in Western Cape.

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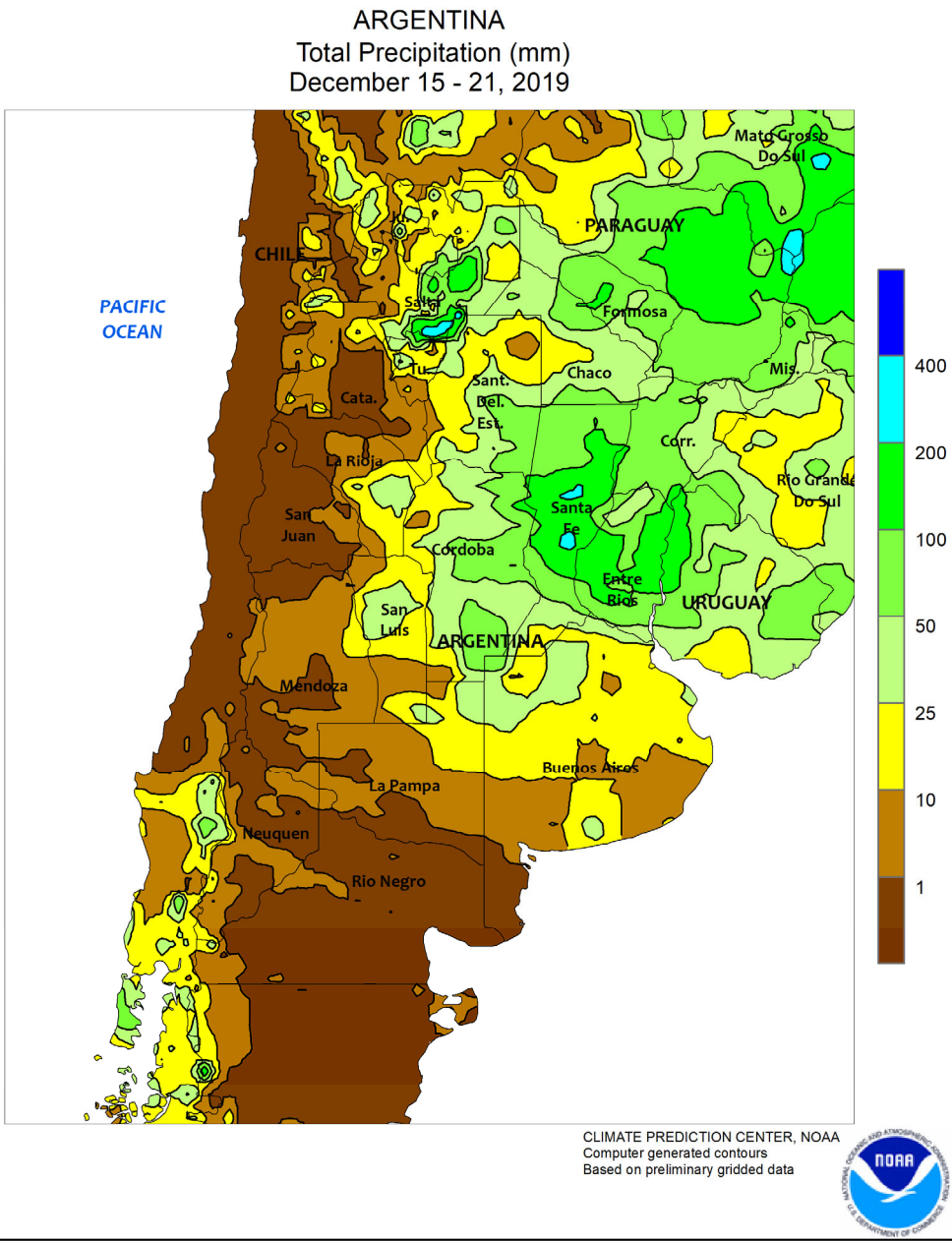
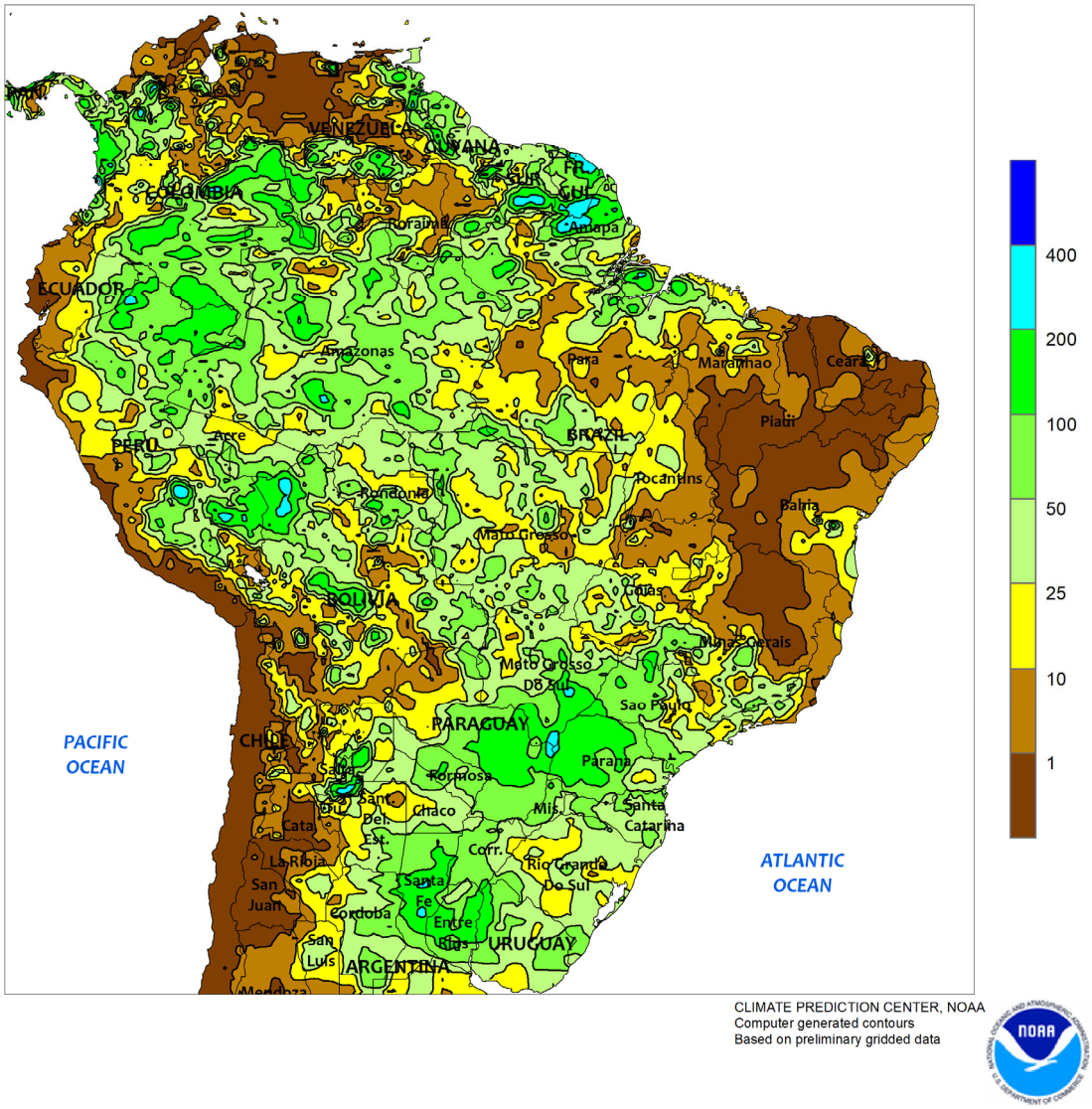


ARGENTINA

Locally heavy showers brought much-needed relief from heat and dryness. While nearly all major farming areas recorded at least 10 mm, the heaviest rainfall (25 to 50 mm or more, exceeding 100 mm locally) spanned a large area stretching from northern La Pampa and Buenos Aires north and eastward, crossing the borders into Uruguay and Paraguay. The moisture was especially timely in high-yielding corn and soybean areas of central Argentina, where dryness had been delaying the latter stages of planting and the hot weather was stressing earlier planted crops nearing reproduction. One exception to the beneficial rain was in southwestern agricultural districts (southern La Pampa and southwestern Buenos Aires), where dry weather persisted. Weekly average temperatures were generally within 1°C of normal throughout the region, although daytime highs again reached the upper 30s and lower 40s (degrees C) in northern and western agricultural areas, including La Pampa and Cordoba, where temperatures briefly reached the upper 30s before the onset of heavier showers during the latter part of the week. According to the government of Argentina, sunflowers were 99 percent planted as of December 19 versus 100 percent last year; in addition, corn and soybeans were 70 and 73 percent planted, respectively, and cotton was 87 percent planted. Meanwhile, wheat was 73 percent harvested, slightly ahead of last year's pace (70 percent).

For additional information contact: mbrusberg@oce.usda.gov

BRAZIL
Total Precipitation (mm)
December 15 - 21, 2019



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

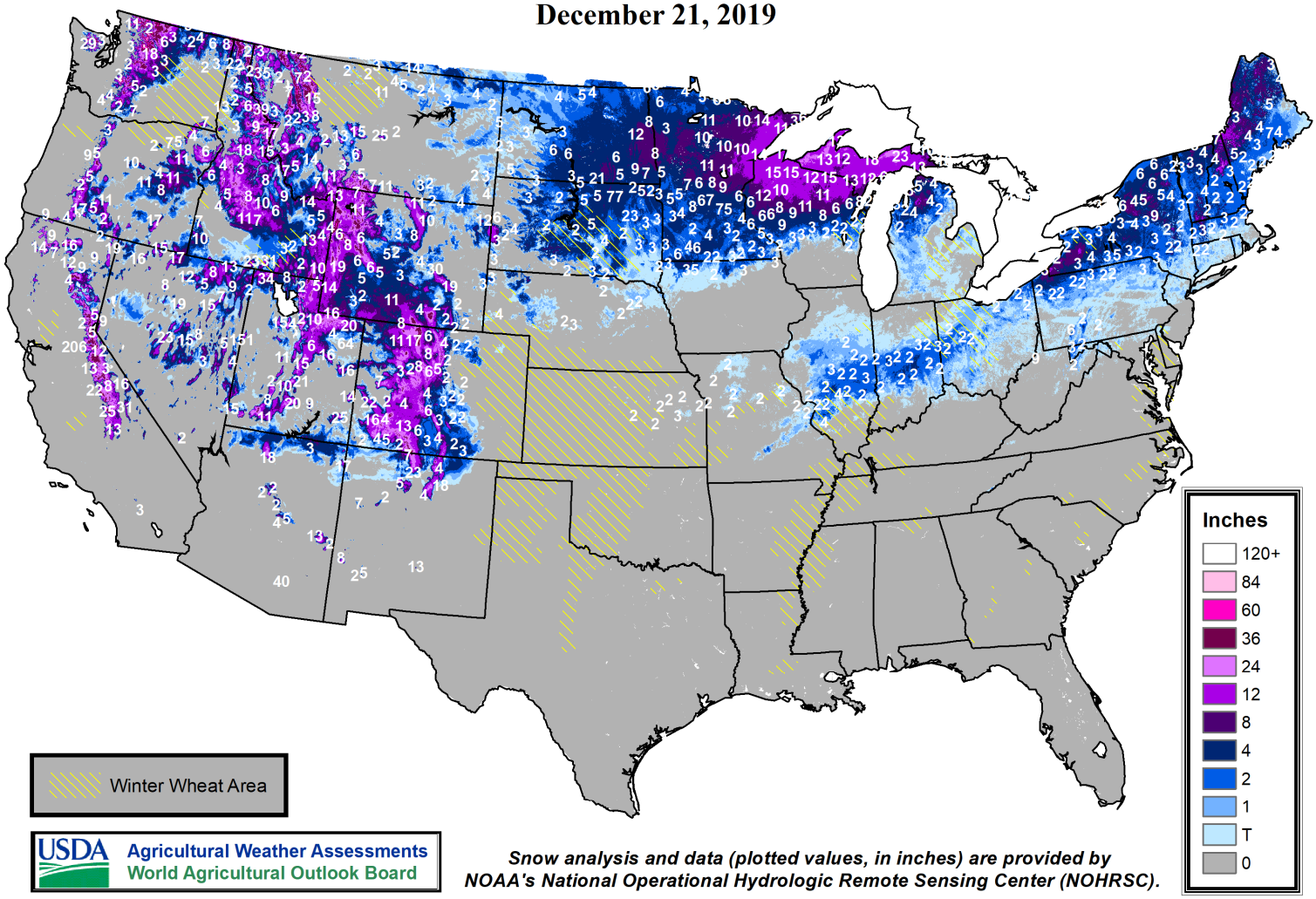
BRAZIL

Widespread, moderate to heavy showers maintained overall favorable conditions for soybeans and other main-season summer crops in key production areas of central and southern Brazil. Rainfall totaled 25 to 50 mm — locally in excess of 100 mm — from Mato Grosso and Tocantins southward through Rio Grande do Sul, reaching eastward into western and southern sections of Minas Gerais and Rio de Janeiro. Drier conditions (amounts below 25 mm and as little as 5 mm in spots) returned, however, to the northeastern interior (notably western Bahia and southern farming areas in Maranhao and Piaui), reflecting this season's trend of erratic rainfall in northeastern farming areas. Daytime highs reaching the lower 40s (degrees C) exacerbated the impacts of the dryness in the northeast on soybeans and other mostly vegetative summer crops. Earlier-planted summer crops in Mato Grosso were likely in vegetative to filling stages of development and advancing rapidly in locations where temperatures also locally reached 40°C. Farther south, rain returned to Rio Grande do Sul following several weeks of dryness; according to government reports, corn and soybeans were 92 and 94 percent planted, respectively, as of December 19, with 64 percent of corn having reached the reproductive to filling stages of development and soybeans 3 percent flowering. In Parana, where rainfall had been more consistently closer to normal prior to this week's heavy rain, first-crop corn and soybeans were reportedly 68 and 54 percent reproductive to filling, respectively, as of December 16.

For additional information contact: mbrusberg@oce.usda.gov

Snow Depth

December 21, 2019



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