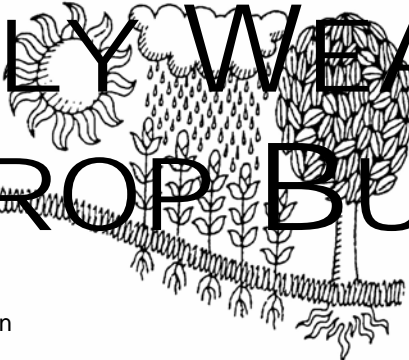
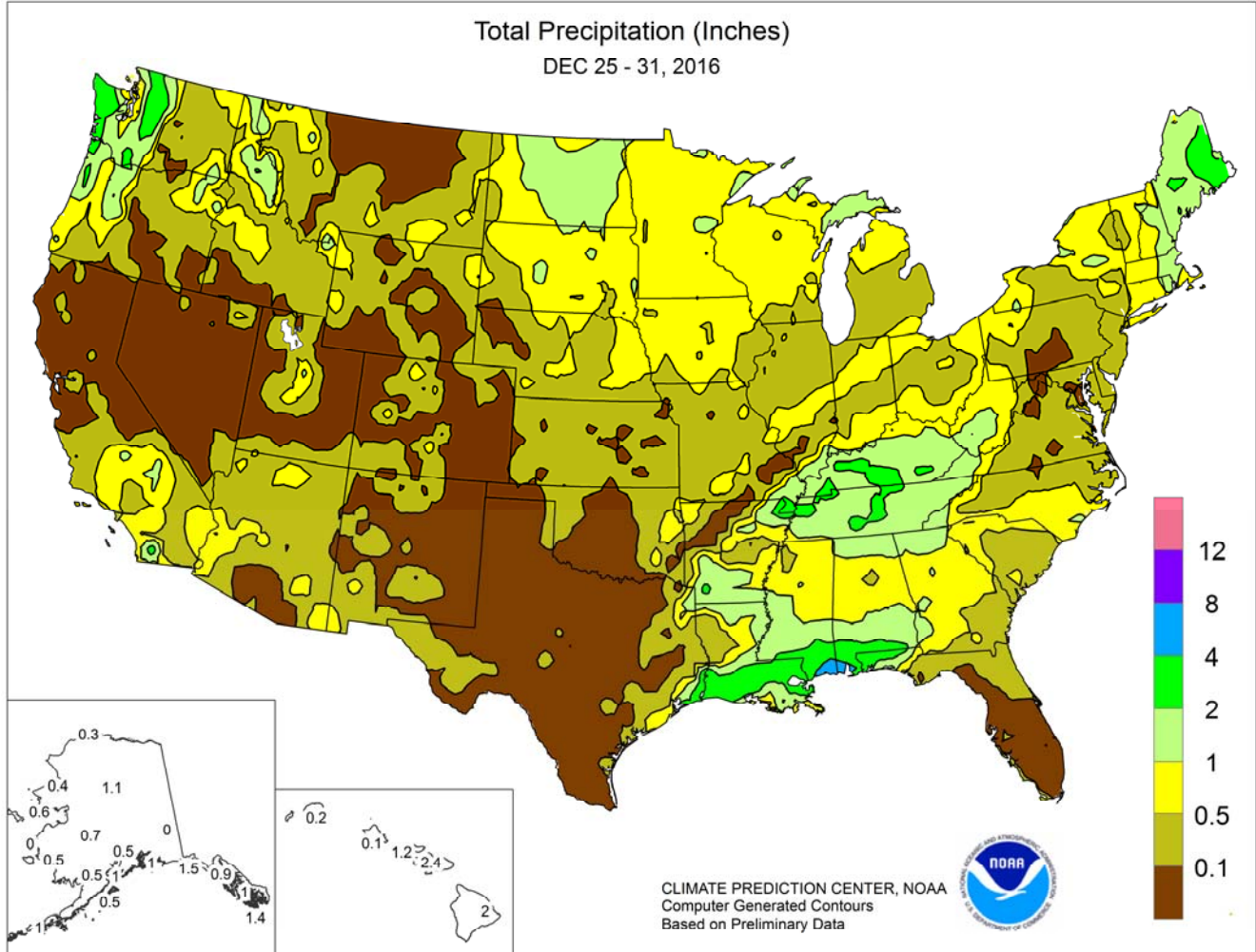


# WEEKLY WEATHER AND CROP BULLETIN



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 25 – 31, 2016

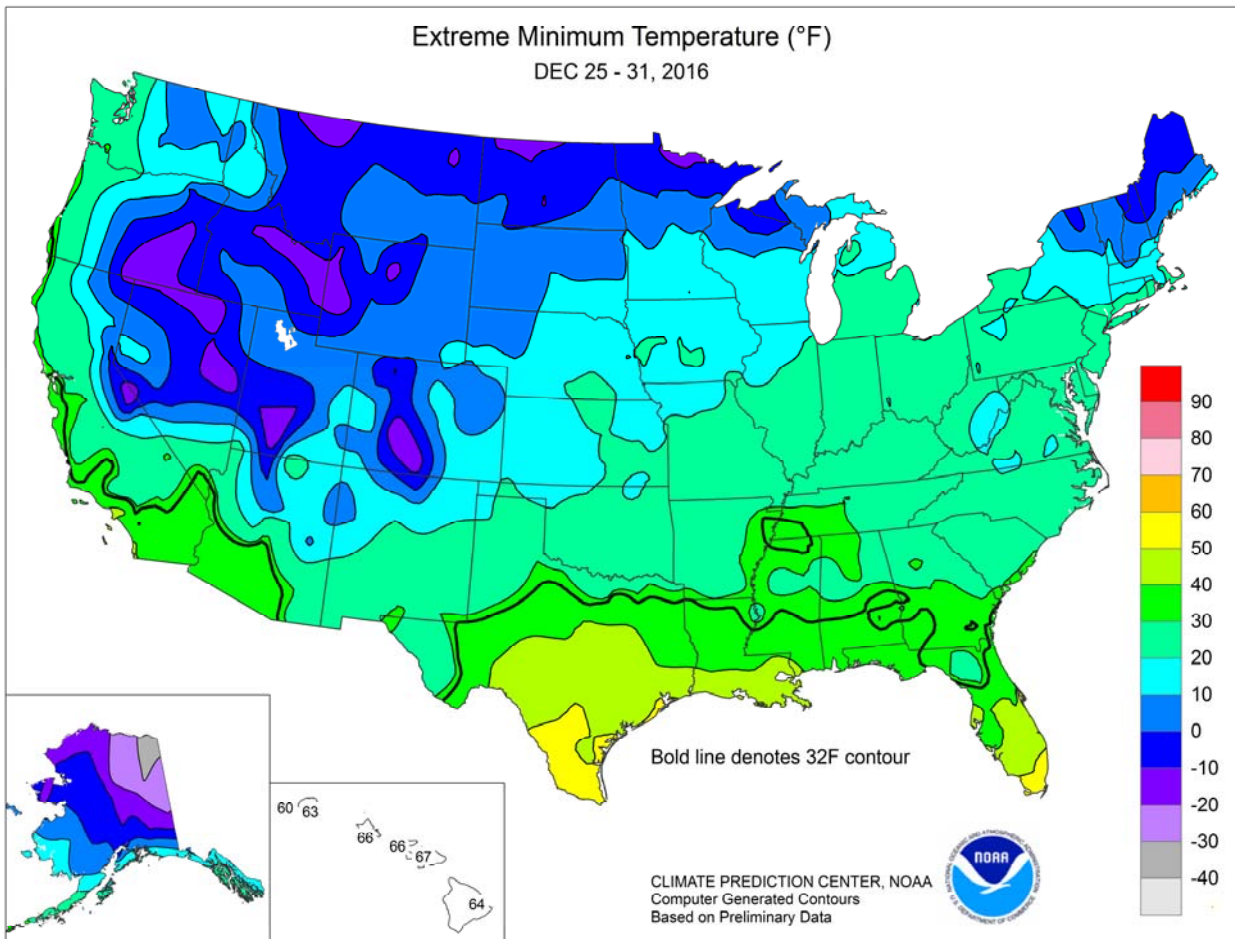
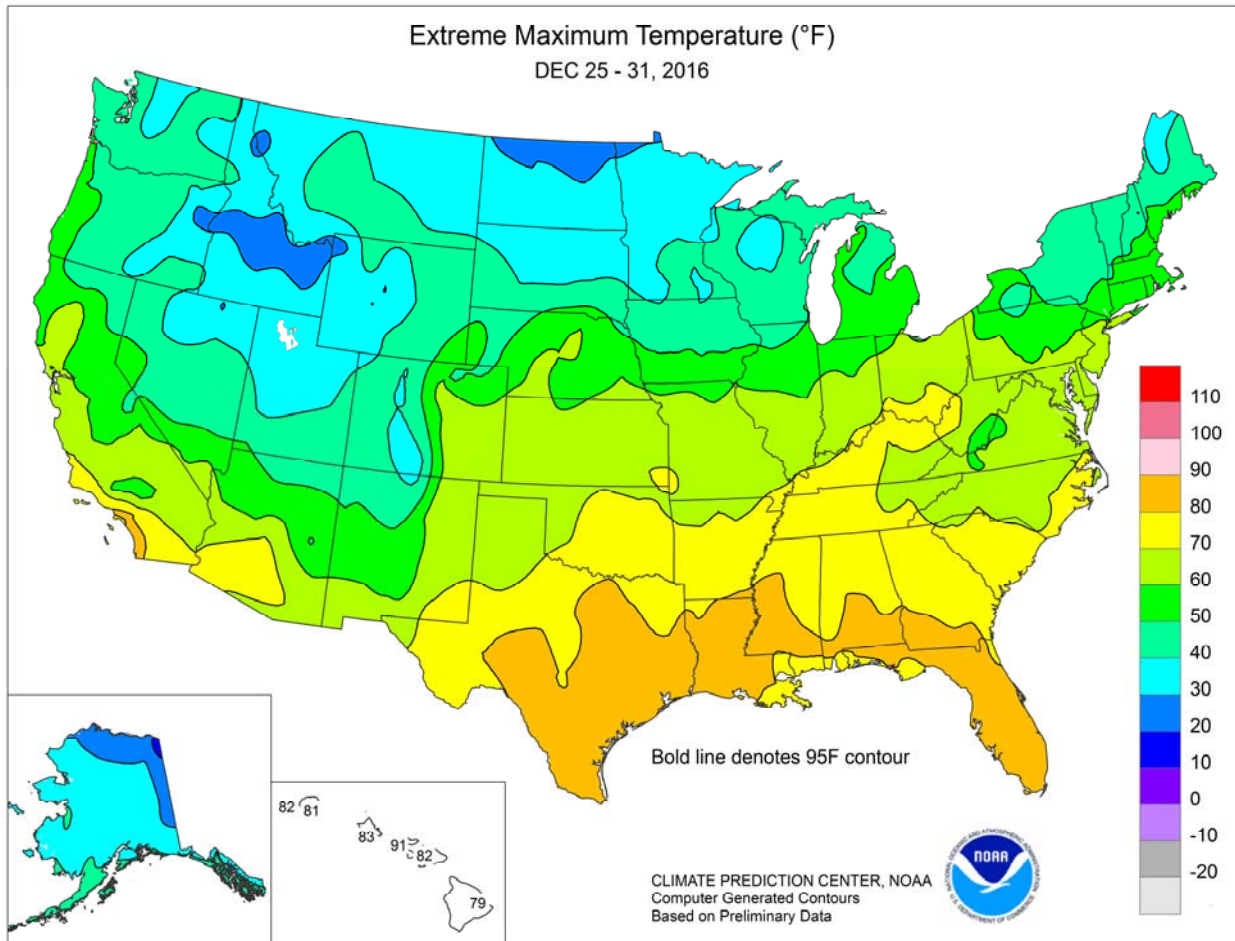
*Highlights provided by USDA/WAOB*

The week began with a blizzard in progress in the **Dakotas** and a wintry mix (rain, freezing rain, sleet, and snow) occurring in the **upper Midwest**. Later, on December 29-30, heavy, wet snow blanketed parts of **New England**. Farther south, periodic rain continued to provide **Southeastern** drought relief. During the last week of 2016, some of the heaviest rain (locally 2 to 4 inches or more) fell across the **central Gulf Coast region** and the **interior Southeast**. In contrast, persistent dryness across portions of the **southern Plains** led to worsening

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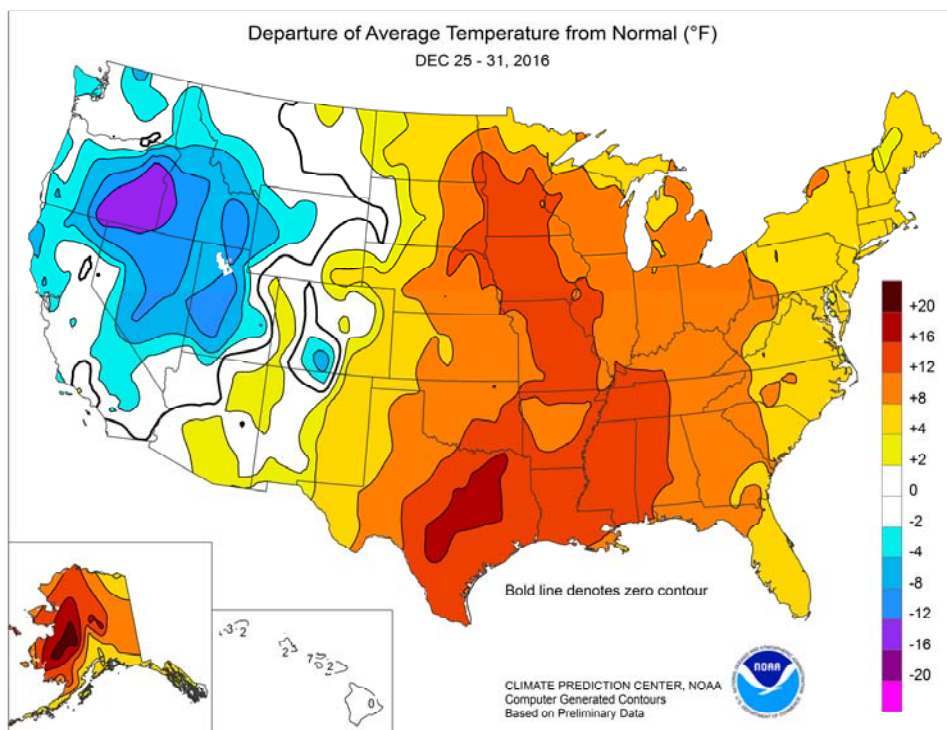


(Continued from front cover)

agricultural impacts, including low pond levels and poor rangeland, pasture and winter wheat conditions. Elsewhere, cool weather in the **West** was accompanied by several precipitation events. Cool, showery weather in the **Northwest** helped to boost high-elevation snowpack, while additional rain (and mountain snow) fell from **southern California into the Southwest**. Cold air trapped in the valleys of the **northern Intermountain West** held weekly temperatures as much as 10 to 15°F below normal, while readings averaged at least 10°F above normal from the **eastern Plains into the Mississippi Valley**.

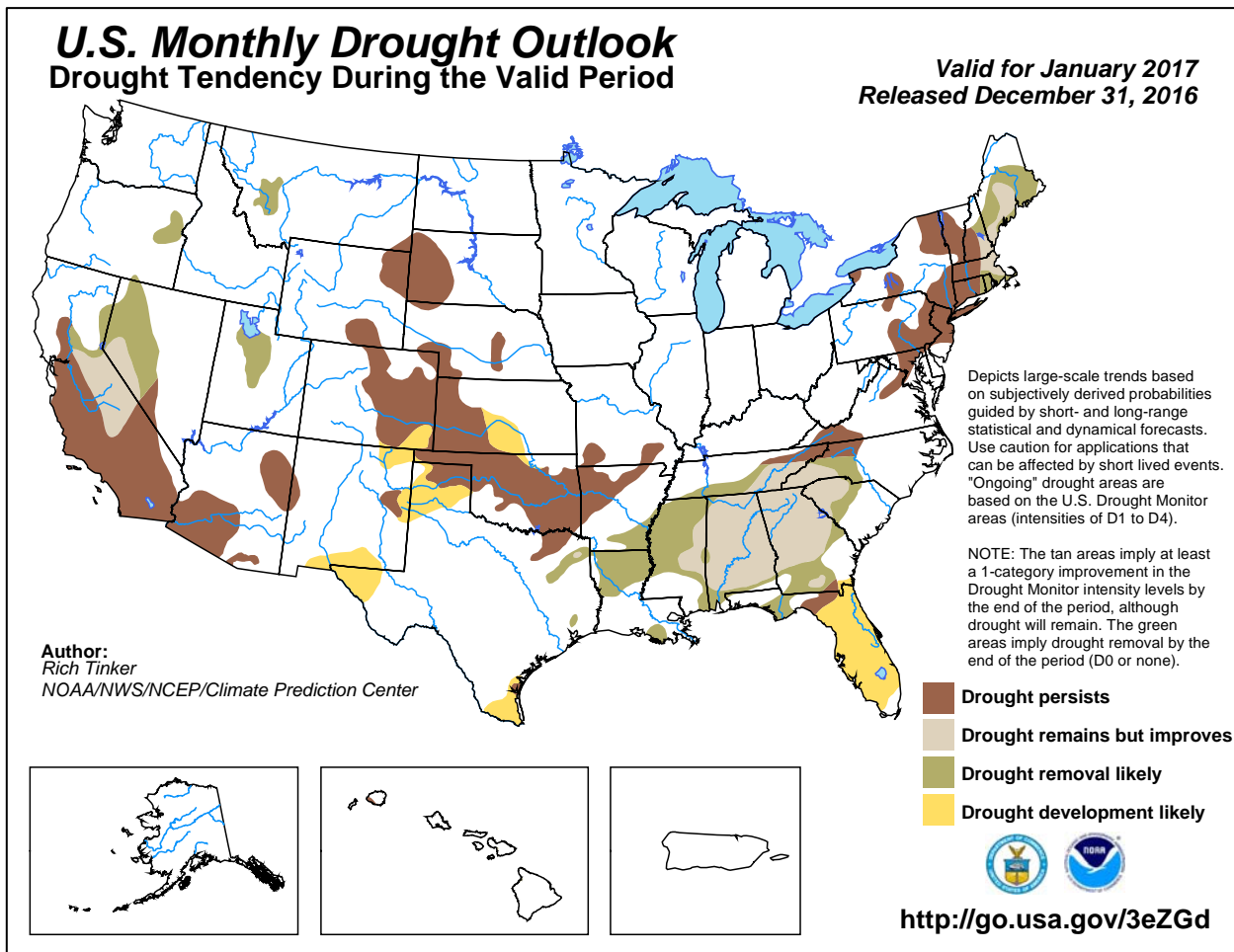
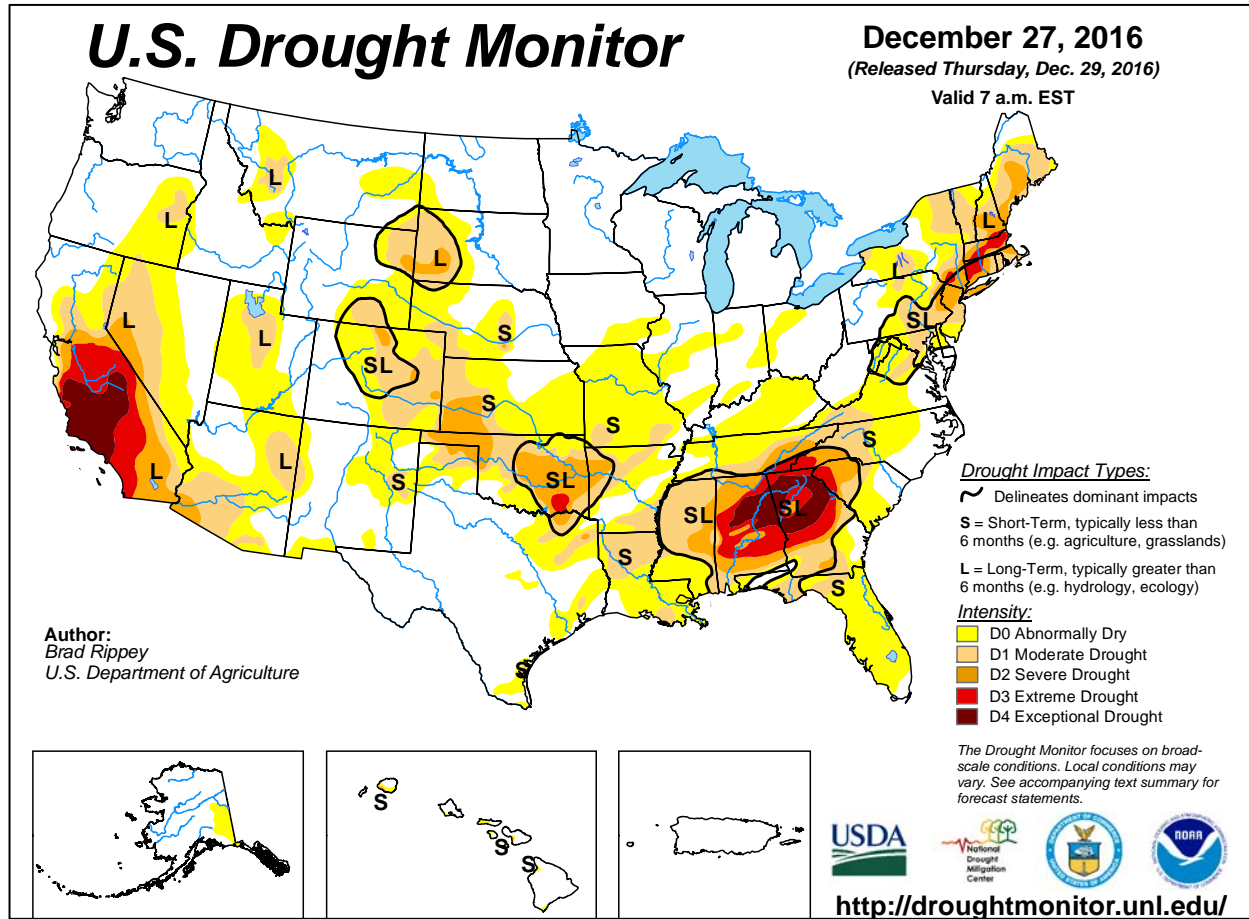
A blizzard unfolded on Christmas Day across the **north-central U.S.**, with **Bismarck, ND**, reporting 12.5 inches of snow on December 25-26, along with a peak wind gust to 49 mph. During the same 2-day period, **Rapid City, SD**, received only 5.0 inches of snow, but clocked a wind gust to 58 mph. Farther east, significant rain was reported across parts of the **upper Midwest**. For the first time on record, Christmas thunder was noted in **Sioux Falls, SD**, and **Sioux City, IA**. Both locations also collected daily-record precipitation totals—1.23 inches in **Sioux Falls** and 1.09 inches in **Sioux City**. With a boost from the holiday storm, annual precipitation records were broken in locations such as **Minneapolis-St. Paul, MN** (40.32 inches; previously, 40.15 inches in 1911); **Rhineland, WI** (42.96 inches; previously, 42.42 inches in 1911); and **La Crosse, WI** (44.76 inches; previously, 44.74 inches in 1881). Later, showers swept into the **East and South**, where **Paducah, KY**, tallied a daily-record rainfall (1.34 inches) for December 26. Toward week's end, unsettled weather returned to parts of the **West**. In **Bakersfield, CA**, rainfall totaled 0.91 inch on December 30-31. Farther east, heavy rain erupted on New Year's Eve along the **Gulf Coast**. Record-setting rainfall totals for December 31 included 3.50 inches in **Beaumont-Port Arthur, TX**; 3.20 inches in **Baton Rouge, LA**; and 2.30 inches in **Hattiesburg, MS**. With the year-end deluge, **Baton Rouge** clinched its wettest year on record, with 90.54 inches (previously, 88.32 inches in 1989).

Warmth in advance of a cold front resulted in dozens of daily-record highs across the **South and East** from December 25-27. It was the warmest Christmas Day on record in many locations, with highs peaking at 88°F in **Fort Myers, FL**; 82°F in **Montgomery, AL**; 80°F in **Dallas-Ft. Worth, TX**; 76°F in **Nashville, TN**; 72°F in **Joplin, MO**, and **Bowling Green, KY**; 67°F in **Wichita, KS**; and 64°F in **St. Louis, MO**. A few of the same places also attained daily records the following day, December 26; highs climbed to 88°F (again) in **Fort Myers**, and 75°F in **Bowling Green**. Other daily-record highs for the 26th



included 84°F in **Waco, TX**; 76°F in **Louisville, KY**; 74°F in **Huntington, WV**; and 69°F in **Columbus, OH**. Later, lingering warmth was relegated to the **Deep South**, where **Houston, TX**, achieved highs of 80°F or greater on 5 consecutive days from December 24-28. **Houston's** highest reading during the warm spell was a daily-record high of 84°F on December 26. Elsewhere in **Texas**, record-setting highs for December 28 included 89°F in **McAllen**; 85°F in **Austin**; 84°F in **San Angelo**; and 83°F in **Dallas-Ft. Worth**. In stark contrast, the first half of the week featured very cold weather across the **West**. In **Oregon**, **Burns** posted a daily-record low of -14°F on December 25. The following day in **California**, daily-record lows for the 26th were set in locations such as **Red Bluff** (26°F) and **Eureka** (29°F). Farther inland, **Tonopah, NV** (-2°F), also registered a daily-record low for December 26. And, **Greybull, WY**, began a long string of days with minimum temperatures of 0°F or below, starting on the 26th.

Temperatures further rose in **Alaska**, averaging more than 20°F above normal in some western locations. On December 31, daily-record highs were established in locations such as **King Salmon** (46°F) and **Kotzebue** (37°F). Despite the mild conditions, a significant snow storm engulfed much of the mainland. From December 27-30, snowfall totaled 16.0 inches in **Fairbanks** and 8.2 inches in **McGrath**. The bulk of the snow—10.4 inches in **Fairbanks** and 6.2 inches in **McGrath**—fell on December 29. In **western Alaska**, weekly snowfall reached 11.8 inches in **Kotzebue** and 7.6 inches in **Nome**. Farther south, showers intensified across **Hawaii's** western and central islands during the mid- to late-week period. **Kahului, Maui**, netted 2.57 inches of rain on December 30-31. Year-end showers became heavy in parts of windward **Maui**, with several locations reporting at least 4 inches in a 24-hour period on December 31 – January 1.



National Weather Data for Selected Cities

Weather Data for the Week Ending December 31, 2016

Data Provided by Climate Prediction Center

STATES AND STATIONS	TEMPERATURE °F						PRECIPITATION							RELATIVE HUMIDITY PERCENT		NUMBER OF DAYS			
	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	TEMP. °F		PRECIP	
																90 AND ABOVE	32 AND BELOW	.01 INCH OF MORE	.50 INCH OF MORE
AL BIRMINGHAM	66	46	78	34	56	12	0.51	-0.53	0.25	2.39	53	40.31	75	93	45	0	0	3	0
HUNTSVILLE	65	43	77	32	54	13	1.57	0.34	0.62	5.91	106	44.43	77	93	49	0	1	4	1
MOBILE	73	55	80	36	64	13	1.70	0.68	1.58	8.11	174	62.37	94	86	60	0	0	2	1
AK MONTGOMERY	71	48	82	32	60	13	0.61	-0.41	0.60	4.12	83	41.64	76	84	42	0	2	2	1
ANCHORAGE	27	15	32	5	21	4	0.51	0.31	0.40	1.49	142	16.45	102	86	80	0	7	3	0
BARROW	8	-6	26	-12	1	14	0.27	0.27	0.17	0.33	275	5.39	130	80	70	0	7	5	0
FAIRBANKS	14	-6	35	-13	4	12	1.55	1.39	0.59	1.88	254	15.96	155	89	81	0	7	4	2
JUNEAU	36	29	38	20	33	6	0.90	-0.32	0.38	6.78	125	63.97	110	92	83	0	4	6	0
KODIAK	39	26	43	20	33	3	0.50	-1.33	0.46	4.12	54	81.98	109	85	65	0	6	3	0
NOME	26	13	34	-13	19	12	0.64	0.45	0.41	1.09	108	16.06	97	88	80	0	7	5	0
AZ FLAGSTAFF	41	14	54	0	28	-1	8.18	7.77	7.85	11.98	655	33.35	146	96	55	0	7	3	1
PHOENIX	66	46	77	38	56	3	0.21	-0.01	0.19	0.96	104	6.20	75	78	54	0	0	3	0
PRESCOTT	48	25	60	14	37	1	0.48	0.20	0.39	2.67	209	17.51	91	96	53	0	6	3	0
TUCSON	65	44	71	33	54	3	0.36	0.11	0.28	1.12	109	11.92	98	81	55	0	0	2	0
AR FORT SMITH	63	38	73	24	51	12	0.02	-0.57	0.02	0.78	23	31.22	71	81	34	0	3	1	0
LITTLE ROCK	59	42	75	29	51	10	0.29	-0.59	0.13	4.40	93	56.13	110	94	51	0	1	4	0
CA BAKERSFIELD	56	38	66	34	47	1	0.86	0.67	0.44	2.36	311	7.08	109	85	69	0	0	2	0
FRESNO	53	34	60	30	44	0	0.09	-0.26	0.09	2.51	187	13.64	121	89	79	0	4	1	0
LOS ANGELES	68	50	80	45	59	2	0.28	-0.19	0.20	2.80	156	10.28	78	63	47	0	0	2	0
REDDING	57	29	65	23	43	-2	0.00	-1.18	0.00	6.04	129	49.37	147	91	64	0	6	0	0
SACRAMENTO	53	32	58	27	42	-3	0.01	-0.60	0.01	3.61	147	22.19	124	99	60	0	6	1	0
SAN DIEGO	67	50	83	46	58	1	1.10	0.74	0.67	4.22	322	10.24	95	73	49	0	0	2	1
SAN FRANCISCO	55	41	58	37	48	-1	0.00	-0.73	0.00	4.66	161	21.42	107	75	61	0	0	0	0
STOCKTON	55	31	59	28	43	-1	0.09	-0.35	0.09	2.12	116	18.30	132	97	88	0	5	1	0
CO ALAMOSA	26	-9	33	-18	9	-6	0.31	0.25	0.20	1.08	327	9.18	127	82	66	0	7	2	0
CO SPRINGS	48	20	63	15	34	6	0.26	0.17	0.26	0.69	164	15.57	90	75	17	0	7	1	0
DENVER INTL	50	19	65	13	34	6	0.00	-0.06	0.00	0.78	252	12.57	92	70	30	0	6	0	0
GRAND JUNCTION	39	21	44	18	30	4	0.01	-0.10	0.01	0.74	142	8.83	98	90	70	0	7	1	0
PUEBLO	54	21	68	13	37	8	0.45	0.37	0.45	0.76	195	11.90	96	71	27	0	7	1	0
CT BRIDGEPORT	48	31	61	27	40	8	0.68	-0.12	0.66	3.37	97	39.34	89	75	51	0	5	2	1
HARTFORD	44	25	56	18	35	7	0.49	-0.32	0.40	2.60	72	32.59	71	76	54	0	6	5	0
DC WASHINGTON	53	36	68	28	44	7	0.28	-0.42	0.28	2.70	89	31.80	81	84	50	0	2	1	0
DE WILMINGTON	50	30	65	27	40	7	0.32	-0.45	0.28	2.60	76	40.98	96	88	48	0	6	2	0
FL DAYTONA BEACH	76	54	82	37	65	6	0.06	-0.57	0.06	0.70	26	44.64	91	95	56	0	0	1	0
JACKSONVILLE	73	48	80	30	60	7	0.21	-0.43	0.15	2.29	87	38.52	74	97	54	0	2	2	0
KEY WEST	80	70	83	63	75	4	1.16	0.66	1.14	1.74	81	37.35	96	94	58	0	0	2	1
MIAMI	82	67	85	56	75	6	0.00	-0.43	0.00	2.33	107	65.94	113	77	51	0	0	0	0
ORLANDO	79	57	84	41	68	6	0.06	-0.44	0.04	2.53	110	54.30	112	86	51	0	0	2	0
PENSACOLA	70	59	76	43	64	11	0.03	-0.93	0.03	5.52	139	60.52	94	87	58	0	0	1	0
TALLAHASSEE	73	49	82	31	61	9	0.16	-0.87	0.15	4.26	104	59.87	95	96	59	0	2	2	0
TAMPA	79	60	86	43	70	8	0.02	-0.46	0.02	0.26	11	52.40	117	84	47	0	0	1	0
GA WEST PALM BEACH	79	63	81	49	71	4	0.04	-0.57	0.03	3.47	111	51.07	83	80	61	0	0	2	0
ATHENS	62	42	75	29	52	9	0.42	-0.47	0.19	2.52	68	36.97	77	88	51	0	2	3	0
ATLANTA	63	45	74	33	54	11	0.84	-0.03	0.64	3.06	80	38.75	77	81	55	0	0	3	1
AUGUSTA	66	43	79	27	55	10	0.06	-0.77	0.05	4.44	141	38.29	86	85	49	0	2	2	0
COLUMBUS	66	49	77	34	58	11	0.44	-0.54	0.21	4.44	101	36.22	75	92	48	0	0	4	0
MACON	66	45	78	30	56	10	0.44	-0.50	0.32	5.98	152	33.72	75	93	44	0	2	3	0
SAVANNAH	68	48	77	31	58	8	0.15	-0.60	0.15	4.23	151	55.38	112	89	57	0	1	1	0
HI HILO	77	65	79	64	71	-1	2.03	0.07	0.74	21.22	202	129.26	102	91	83	0	0	7	2
HONOLULU	81	71	83	66	76	2	0.07	-0.59	0.05	0.83	29	13.14	72	73	62	0	0	2	0
KAHULUI	79	70	82	67	74	1	2.45	1.67	1.49	6.50	211	18.78	100	82	73	0	0	3	2
LIHUE	79	69	81	63	74	2	0.21	-0.86	0.16	1.19	25	13.43	34	81	68	0	0	4	0
ID BOISE	25	8	34	2	17	-12	0.03	-0.25	0.03	2.03	147	8.72	71	86	75	0	7	1	0
LEWISTON	37	25	45	18	31	-2	0.27	0.05	0.26	1.59	151	15.07	118	80	68	0	7	2	0
POCATELLO	24	4	31	-5	14	-10	0.26	0.02	0.25	6.95	632	19.99	159	89	80	0	7	2	0
IL CHICAGO/O'HARE	40	25	54	19	32	8	0.32	-0.13	0.23	1.76	72	35.95	99	87	65	0	7	2	0
MOLINE	46	26	56	19	36	13	0.45	0.02	0.27	1.44	65	36.29	95	76	57	0	6	2	0
PEORIA	45	28	57	20	37	12	0.51	0.09	0.44	1.15	48	37.17	103	83	55	0	5	2	0
ROCKFORD	39	24	48	19	32	11	0.29	-0.08	0.16	1.88	91	35.66	97	85	66	0	7	2	0
SPRINGFIELD	49	30	62	23	39	12	0.26	-0.22	0.22	0.91	36	42.78	120	85	55	0	4	2	0
IN EVANSVILLE	52	36	68	26	44	11	1.06	0.39	0.98	3.93	111	49.59	112	80	59	0	3	3	1
FORT WAYNE	42	29	60	23	36	10	0.88	0.34	0.76	2.31	83	37.37	102	84	64	0	5	3	1
INDIANAPOLIS	47	31	66	24	39	11	0.11	-0.48	0.06	1.55	51	45.96	112	84	56	0	5	3	0
SOUTH BEND	39	27	53	21	33	7	0.46	-0.14	0.17	2.24	72	46.85	118	85	68	0	7	4	0
IA BURLINGTON	45	28	56	20	36	11	0.12	-0.25	0.12	0.78	37	32.39	85	87	57	0	5	1	0
CEDAR RAPIDS	40	23	47	14	32	12	0.05	-0.20	0.04	0.75	51	43.19	129	95	65	0	7	2	0
DES MOINES	46	27	53	21	37	15	0.53	0.29	0.53	1.43	108	34.55	100	75	55	0	6	1	1
DUBUQUE	34	22	41	14	28	9	0.27	-0.02	0.19	1.44	85	40.88	115	88	74	0	7	2	0
KS SIOUX CITY	42	24	49	18	33	14	1.09	0.98	1.09	1.48	224	32.24	124	78	54	0	6	1	1
WATERLOO	38	24	43	16	31	13	0.50	0.33	0.50	1.88	169	41.79	126	78	67	0	6	1	1
CONCORDIA	49	27	64	24	38	10	0.33	0.16	0.33	0.94	109	30.72	108	77	49	0	6	1	0
DODGE CITY	57	27	64	17	42	11	0.20	0.06	0.20	0.62	81	23.40	105	79	23	0	5	1	0
GOODLAND	50	18	67	11	34	6	0.36	0.28	0.36	0.60	150	17.38	88	79	49	0	7	1	0
TOPEKA	54	26	68	20	40	11	0.21	-0.04	0.21	1.09	77	43.27	121	80	43	0	6	1	0

Based on 1971-2000 normals

\*\*\* Not Available

Weather Data for the Week Ending December 31, 2016

STATES AND STATIONS	TEMPERATURE °F						PRECIPITATION								RELATIVE HUMIDITY PERCENT		NUMBER OF DAYS			
	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	TEMP. °F		PRECIP		
																90 AND ABOVE	32 AND BELOW	.01 INCH OR MORE	.50 INCH OR MORE	
WICHITA	55	28	67	19	42	11	0.13	-0.13	0.13	0.67	50	50.61	167	78	36	0	6	1	0	
KY JACKSON	54	36	70	28	45	10	1.52	0.65	0.63	6.17	144	52.91	107	91	49	0	4	6	2	
LEXINGTON	53	36	74	24	45	11	1.47	0.61	1.09	6.18	153	45.03	98	82	54	0	4	4	1	
LOUISVILLE	54	38	76	28	46	11	0.64	-0.12	0.48	5.31	144	43.56	98	77	44	0	2	3	0	
PADUCAH	56	37	71	26	47	13	1.63	0.81	1.34	6.01	137	53.49	109	84	45	0	3	4	1	
LA BATON ROUGE	72	57	82	40	65	14	3.28	2.07	3.20	9.81	187	89.71	142	95	52	0	0	4	1	
LAKE CHARLES	72	59	81	43	65	13	3.21	2.13	3.21	12.12	263	75.94	133	94	63	0	0	1	1	
NEW ORLEANS	73	60	80	49	66	13	2.50	1.44	2.48	7.79	154	70.65	110	92	70	0	0	3	1	
SHREVEPORT	71	53	83	34	62	15	0.24	-0.75	0.21	3.17	70	59.04	115	91	55	0	0	2	0	
ME CARIBOU	30	11	41	-2	20	7	1.92	1.20	0.72	4.24	133	44.00	118	85	64	0	7	6	2	
PORTLAND	40	20	53	12	30	6	2.13	1.20	1.70	5.24	124	42.04	92	88	49	0	7	5	1	
MD BALTIMORE	51	30	66	25	40	6	0.31	-0.46	0.29	2.74	82	40.49	97	86	55	0	6	2	0	
MA BOSTON	46	29	58	24	38	6	1.25	0.42	1.16	3.17	85	32.98	78	86	46	0	6	3	1	
WORCESTER	40	23	52	17	32	6	1.18	0.31	0.93	3.74	98	40.86	83	87	50	0	7	4	1	
MI ALPENA	35	25	49	20	30	9	0.69	0.29	0.35	1.98	108	29.88	105	87	65	0	7	5	0	
MI GRAND RAPIDS	38	28	53	24	33	8	0.38	-0.10	0.16	2.52	93	46.06	124	81	62	0	6	4	0	
MI HOUGHTON LAKE	33	23	47	19	28	7	0.40	0.04	0.19	2.11	121	33.62	118	84	72	0	7	5	0	
MI LANSING	39	29	55	26	34	10	0.23	-0.15	0.16	1.96	90	35.14	111	75	61	0	6	2	0	
MI MUSKOGON	39	29	52	22	34	8	0.33	-0.19	0.23	2.37	90	39.70	121	78	66	0	6	4	0	
MI TRAVERSE CITY	36	27	53	23	31	7	0.24	-0.37	0.10	1.24	47	30.08	90	83	59	0	7	4	0	
MN DULUTH	25	12	38	3	19	9	0.77	0.62	0.50	1.65	176	33.25	107	86	79	0	7	5	1	
MN INT'L FALLS	22	2	33	-18	12	8	1.13	1.00	0.51	2.19	313	29.33	123	87	75	0	7	6	1	
MN MINNEAPOLIS	34	21	43	17	27	12	0.97	0.78	0.97	2.18	218	40.35	137	77	67	0	7	1	1	
MN ROCHESTER	32	18	39	11	25	11	0.60	0.43	0.60	2.08	204	43.56	139	88	82	0	7	1	1	
MN ST. CLOUD	31	18	41	14	25	14	0.76	0.62	0.74	1.56	226	33.84	125	89	72	0	7	2	1	
MS JACKSON	71	50	81	33	61	15	1.20	0.00	0.81	5.74	107	63.38	113	88	51	0	0	2	1	
MS MERIDIAN	72	48	79	31	60	13	1.14	-0.06	0.74	3.89	73	45.72	78	94	61	0	1	2	1	
MS TUPELO	67	44	79	32	55	14	0.62	-0.71	0.32	3.69	60	45.04	81	73	56	0	1	3	0	
MO COLUMBIA	54	31	68	25	43	14	0.28	-0.13	0.17	1.02	41	40.07	99	75	40	0	5	2	0	
MO KANSAS CITY	53	28	65	20	40	11	0.29	0.00	0.29	1.19	73	48.66	128	71	37	0	6	1	0	
MO SAINT LOUIS	56	34	68	29	45	14	0.58	0.07	0.42	1.14	40	41.43	107	67	49	0	4	3	0	
MO SPRINGFIELD	57	32	65	20	45	12	0.25	-0.25	0.17	0.63	20	36.26	81	71	47	0	4	2	0	
MT BILLINGS	31	17	43	10	24	-1	0.34	0.18	0.25	1.69	252	14.91	101	74	52	0	7	3	0	
MT BUTTE	26	0	42	-9	13	-4	0.06	-0.05	0.06	0.45	85	10.61	83	83	53	0	7	1	0	
MT CUT BANK	28	11	37	-14	19	-1	0.00	-0.06	0.00	0.05	15	10.90	87	83	58	0	7	0	0	
MT GLASGOW	26	7	34	0	16	3	0.05	-0.03	0.05	0.40	108	20.97	187	81	68	0	7	1	0	
MT GREAT FALLS	32	13	43	-6	23	0	0.04	-0.13	0.04	0.90	134	14.46	97	73	47	0	7	1	0	
MT HAVRE	31	12	38	-4	21	4	0.00	-0.11	0.00	0.48	94	19.28	168	77	66	0	7	0	0	
MT MISSOULA	28	12	36	1	20	-2	0.06	-0.19	0.03	1.59	138	14.11	102	93	80	0	7	3	0	
NE GRAND ISLAND	47	23	53	20	35	12	0.44	0.33	0.44	0.80	121	24.21	94	83	49	0	7	1	0	
NE LINCOLN	47	24	60	18	35	11	0.92	0.78	0.92	1.59	185	29.87	105	80	48	0	6	1	1	
NE NORFOLK	43	21	52	16	32	11	0.59	0.50	0.59	0.83	128	31.41	118	74	47	0	7	1	1	
NE NORTH PLATTE	49	17	63	10	33	9	0.57	0.49	0.57	0.63	158	23.06	117	82	31	0	7	1	1	
NE OMAHA	46	25	54	20	36	13	0.77	0.63	0.77	1.42	154	34.59	114	71	46	0	6	1	1	
NE SCOTTSBLUFF	43	15	53	8	29	5	0.36	0.25	0.35	0.61	109	15.80	97	74	51	0	7	2	0	
NE VALENTINE	41	14	51	11	28	6	0.50	0.44	0.50	0.94	285	28.19	144	77	46	0	7	1	1	
NV ELY	36	-2	49	-18	17	-8	0.01	-0.12	0.01	1.06	212	11.23	113	82	70	0	7	1	0	
NV LAS VEGAS	53	36	61	32	45	-1	0.01	-0.07	0.01	0.83	208	4.77	106	64	45	0	2	1	0	
NV RENO	45	21	55	14	33	1	0.00	-0.19	0.00	1.22	139	9.05	121	80	64	0	7	0	0	
NV WINNEMUCCA	30	6	33	-4	18	-11	0.00	-0.17	0.00	2.27	280	9.43	113	93	79	0	7	0	0	
NH CONCORD	39	22	52	8	31	8	0.79	0.16	0.68	3.21	108	32.98	88	80	47	0	6	4	1	
NJ NEWARK	48	32	62	29	40	7	0.37	-0.43	0.36	2.82	79	39.12	85	71	51	0	6	2	0	
NM ALBUQUERQUE	47	27	50	22	37	2	0.03	-0.08	0.03	0.51	104	6.69	71	78	46	0	7	1	0	
NY ALBANY	39	24	48	14	32	7	0.23	-0.32	0.17	1.70	64	33.32	88	82	55	0	6	3	0	
NY BINGHAMTON	35	23	44	22	29	5	0.38	-0.21	0.18	3.53	117	36.44	94	89	66	0	7	6	0	
NY BUFFALO	40	27	58	25	34	7	0.65	-0.13	0.37	4.02	106	33.83	83	81	64	0	7	4	0	
NY ROCHESTER	41	27	52	23	34	7	0.22	-0.33	0.08	2.60	95	30.41	90	83	65	0	7	5	0	
NY SYRACUSE	39	24	50	15	32	7	0.31	-0.28	0.19	2.73	88	40.31	101	91	58	0	7	4	0	
NC ASHEVILLE	55	37	65	22	46	9	0.19	-0.57	0.18	2.32	68	33.41	71	81	46	0	2	2	0	
NC CHARLOTTE	60	40	69	24	50	8	1.08	0.31	1.08	2.90	91	33.55	77	79	41	0	2	1	1	
NC GREENSBORO	56	38	68	23	47	8	0.18	-0.52	0.18	1.70	56	39.64	92	88	47	0	2	1	0	
NC HATTERAS	***	***	***	***	***	***	***	***	***	***	***	71.93	125	***	***	0	0	0	0	
NC RALEIGH	58	39	68	23	49	8	0.40	-0.34	0.35	2.21	73	51.24	119	89	49	0	2	3	0	
NC WILMINGTON	63	40	72	26	52	5	0.83	-0.05	0.74	5.36	142	71.87	126	98	51	0	2	2	1	
ND BISMARCK	27	7	35	-11	17	5	1.35	1.27	0.52	6.18	1405	27.60	164	87	75	0	7	4	1	
ND DICKINSON	30	12	46	2	21	5	0.09	0.03	0.05	0.18	53	17.56	107	75	57	0	7	2	0	
ND FARGO	31	14	37	6	23	14	0.80	0.66	0.69	1.30	228	23.54	111	87	75	0	7	3	1	
ND GRAND FORKS	28	6	33	-2	17	9	0.58	0.47	0.30	1.37	249	26.99	138	86	69	0	7	3	0	
ND JAMESTOWN	29	11	32	-1	20	9	1.05	0.95	0.91	1.30	295	26.43	143	91	76	0	7	2	1	
ND WILLISTON	23	5	32	-9	14	4	0.55	0.44	0.41	0.98	172	17.57	124	83	75	0	7	3	0	
OH AKRON-CANTON	44	30	65	24	37	9	0.56	-0.04	0.47	2.99	100	38.64	100	78	63	0	5	5	0	
OH CINCINNATI	50	33	71	23	41	9	0.83	0.14	0.76	4.43	135	44.43	104	87	60	0	5	5	1	
OH CLEVELAND	46	32	68	27	39	11	0.69	0.10	0.33	2.63	84	36.43	94	78	56	0	4	3	0	
OH COLUMBUS	50	34	69	27	42	11	0.33	-0.25	0.31	3.12	106	38.80	101	75	56	0	3	3	0	
OH DAYTON	47	32	66	23	40	12	0.54	-0.09	0.47	2.99	97	36.78	93	86	59	0	5	2	0	
OH MANSFIELD	43	30	65	25	36	9	0.60	-0.04	0.52	2.91	89	34.99	81	92	63	0	6	4	1	

Based on 1971-2000 normals

Weather Data for the Week Ending December 31, 2016

STATES AND STATIONS	TEMPERATURE °F						PRECIPITATION							RELATIVE HUMIDITY PERCENT		NUMBER OF DAYS					
	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 01	PCT. NORMAL SINCE JAN 01	AVERAGE MAXIMUM	AVERAGE MINIMUM	90 AND ABOVE	32 AND BELOW	TEMP. °F		PRECIP	
																		01 INCH OR MORE	50 INCH OR MORE	01 INCH OR MORE	50 INCH OR MORE
OK TOLEDO	42	29	61	24	35	9	0.77	0.27	0.53	2.48	94	34.33	103	88	72	0	5	2	1		
OK YOUNGSTOWN	42	29	64	24	36	9	0.97	0.40	0.48	3.57	121	44.33	117	80	67	0	6	5	0		
OK OKLAHOMA CITY	61	35	73	23	48	11	0.08	-0.31	0.08	0.82	43	26.32	73	66	28	0	3	1	0		
OR TULSA	62	35	71	25	48	11	0.22	-0.21	0.22	0.45	19	28.19	66	71	38	0	3	1	0		
OR ASTORIA	49	35	52	29	42	0	1.59	-0.60	0.66	10.36	100	86.85	129	82	74	0	3	6	1		
OR BURNS	22	-5	38	-14	9	-15	0.09	-0.19	0.08	2.43	187	8.74	83	91	82	0	7	2	0		
OR EUGENE	45	30	53	23	37	-2	0.21	-1.49	0.08	5.11	62	41.33	81	91	87	0	5	4	0		
OR MEDFORD	40	30	42	22	35	-2	0.03	-0.54	0.02	4.57	158	21.71	118	98	82	0	4	2	0		
OR PENDLETON	42	26	50	20	34	1	0.19	-0.11	0.17	2.29	155	13.59	107	83	71	0	7	2	0		
OR PORTLAND	42	32	47	27	37	-2	0.40	-0.77	0.18	4.54	80	43.28	117	97	86	0	3	5	0		
OR SALEM	44	31	49	24	38	-1	0.61	-0.71	0.27	5.15	80	46.98	117	92	85	0	5	4	0		
PA ALLENTOWN	45	28	61	23	36	7	0.35	-0.39	0.33	2.44	72	37.73	84	76	49	0	6	3	0		
PA ERIE	44	30	63	25	37	7	0.60	-0.11	0.33	4.17	112	46.95	110	74	61	0	6	2	0		
PA MIDDLETOWN	47	29	59	25	38	7	0.24	-0.40	0.23	2.45	76	41.07	101	89	50	0	6	2	0		
PA PHILADELPHIA	49	33	64	30	41	7	0.22	-0.53	0.19	2.73	82	35.93	85	76	51	0	6	2	0		
PA PITTSBURGH	46	30	66	23	38	8	0.30	-0.28	0.09	3.22	113	34.81	92	91	57	0	5	5	0		
PA WILKES-BARRE	42	29	55	28	36	7	0.18	-0.32	0.17	2.09	82	31.44	84	86	53	0	6	2	0		
PA WILLIAMSPORT	44	29	54	26	37	9	0.26	-0.32	0.14	2.85	97	34.97	84	77	49	0	6	3	0		
RI PROVIDENCE	48	27	59	22	37	6	1.12	0.19	0.94	3.07	74	39.94	86	75	53	0	6	4	1		
SC BEAUFORT	66	46	77	30	56	7	0.39	-0.41	0.33	4.11	133	52.39	105	93	51	0	1	2	0		
SC CHARLESTON	67	46	77	30	56	7	0.37	-0.44	0.28	4.79	148	59.65	116	89	50	0	2	3	0		
SC COLUMBIA	64	42	75	28	53	8	0.24	-0.63	0.24	3.39	100	39.59	82	89	46	0	2	1	0		
SC GREENVILLE	60	40	69	26	50	9	1.19	0.28	1.16	2.70	70	34.42	69	86	42	0	2	2	1		
SD ABERDEEN	32	14	36	5	23	10	1.29	1.21	1.28	1.76	463	20.57	102	76	70	0	7	2	1		
SD HURON	35	17	38	8	26	10	0.63	0.55	0.63	1.41	362	20.94	100	88	69	0	7	1	1		
SD RAPID CITY	33	11	44	7	22	-1	0.28	0.20	0.26	0.66	165	13.15	79	75	55	0	7	2	0		
SD SIOUX FALLS	37	21	43	15	29	14	0.43	0.35	0.43	1.11	213	31.41	127	82	66	0	7	1	0		
TN BRISTOL	53	34	68	20	43	8	1.40	0.66	0.77	5.37	158	36.69	89	95	51	0	3	4	1		
TN CHATTANOOGA	59	40	74	28	49	9	0.94	-0.12	0.30	5.15	107	35.68	65	81	55	0	2	4	0		
TN KNOXVILLE	58	38	70	28	48	10	1.49	0.49	0.85	6.52	145	44.72	93	90	47	0	2	5	1		
TN MEMPHIS	62	44	77	33	53	12	0.84	-0.24	0.37	7.34	129	61.59	113	88	49	0	0	4	0		
TN NASHVILLE	62	42	76	31	52	14	1.31	0.37	0.83	6.94	153	42.71	89	81	39	0	2	4	1		
TX ABILENE	67	44	78	37	55	11	0.00	-0.28	0.00	1.19	94	36.81	155	70	41	0	0	0	0		
TX AMARILLO	60	28	80	21	44	8	0.08	-0.08	0.08	0.31	51	17.24	87	71	22	0	5	1	0		
TX AUSTIN	76	57	85	43	67	17	0.00	-0.53	0.00	3.12	128	53.87	160	77	54	0	0	0	0		
TX BEAUMONT	74	60	82	47	67	14	3.54	2.30	3.50	13.05	249	78.03	130	92	60	0	0	2	1		
TX BROWNSVILLE	81	66	84	55	74	14	0.14	-0.08	0.01	1.67	150	22.81	83	97	68	0	0	2	0		
TX CORPUS CHRISTI	76	63	83	51	70	13	0.11	-0.28	0.10	2.21	126	32.74	102	96	68	0	0	2	0		
TX DEL RIO	70	55	80	46	62	11	0.04	-0.07	0.03	2.62	349	32.60	179	90	65	0	0	2	0		
TX EL PASO	56	37	65	31	47	3	0.15	0.00	0.11	0.86	112	9.04	96	74	38	0	1	2	0		
TX FORT WORTH	72	53	83	39	62	17	0.00	-0.57	0.00	0.61	24	35.49	102	68	29	0	0	0	0		
TX GALVESTON	74	64	78	53	69	13	1.04	0.24	1.03	8.60	244	54.02	123	96	68	0	0	2	1		
TX HOUSTON	75	61	84	48	68	16	0.33	-0.47	0.30	3.39	92	60.79	127	89	61	0	0	3	0		
TX LUBBOCK	59	32	67	25	46	8	0.05	-0.07	0.05	0.49	73	13.46	72	67	24	0	4	1	0		
TX MIDLAND	65	40	78	34	53	10	0.06	-0.08	0.05	0.42	65	15.19	103	64	35	0	0	2	0		
TX SAN ANGELO	70	45	84	42	58	13	0.01	-0.18	0.01	0.76	81	35.74	171	74	43	0	0	1	0		
TX SAN ANTONIO	74	59	83	49	67	16	0.34	-0.07	0.32	6.24	318	43.94	133	85	50	0	0	2	0		
TX VICTORIA	74	60	84	48	67	13	0.17	-0.38	0.12	3.02	122	39.26	98	94	63	0	0	3	0		
TX WACO	72	53	84	43	62	15	0.00	-0.55	0.00	1.27	46	38.56	116	80	51	0	0	0	0		
TX WICHITA FALLS	***	***	***	***	***	***	***	***	***	***	***	37.18	129	***	***	***	***	***	***		
UT SALT LAKE CITY	28	12	33	4	20	-9	0.50	0.22	0.50	2.00	163	14.87	90	94	80	0	7	1	1		
VT BURLINGTON	38	20	47	13	29	8	0.45	0.01	0.22	2.41	109	27.79	77	80	54	0	6	5	0		
VA LYNCHBURG	51	33	65	20	42	6	0.23	-0.50	0.21	3.10	96	43.08	99	87	51	0	4	2	0		
VA NORFOLK	55	39	69	25	47	5	0.19	-0.56	0.19	2.55	84	68.87	151	82	54	0	1	1	0		
VA RICHMOND	54	35	68	23	44	6	0.22	-0.53	0.22	2.81	90	52.73	120	87	54	0	2	1	0		
VA ROANOKE	50	35	66	27	43	6	0.26	-0.36	0.25	2.80	98	46.82	110	84	59	0	3	2	0		
WA WASH/DULLES	51	32	67	24	42	9	0.20	-0.46	0.20	2.30	75	35.27	84	79	53	0	5	1	0		
WA OLYMPIA	42	30	46	24	36	-1	0.70	-0.95	0.22	6.35	80	57.42	113	100	95	0	4	5	0		
WA QUILLAYUTE	42	30	45	20	36	-4	3.59	0.51	1.62	13.06	90	122.22	120	99	90	0	5	6	3		
WA SEATTLE-TACOMA	44	35	48	29	39	-1	0.44	-0.72	0.25	3.87	69	45.17	122	92	80	0	1	5	0		
WA SPOKANE	31	17	36	10	24	-2	0.24	-0.20	0.22	1.48	66	18.29	110	93	77	0	7	2	0		
WA YAKIMA	39	15	50	10	27	-1	0.01	-0.29	0.01	0.87	63	9.98	121	85	74	0	7	1	0		
WV BECKLEY	47	32	59	21	39	7	1.18	0.49	0.46	4.67	151	49.59	119	83	60	0	4	5	0		
WV CHARLESTON	54	35	73	25	45	10	1.04	0.35	0.44	3.84	116	44.98	102	88	44	0	4	6	0		
WV ELKINS	50	29	64	13	40	10	1.17	0.43	0.61	4.94	144	46.10	100	88	49	0	4	5	1		
WV HUNTINGTON	53	37	74	28	45	11	0.29	-0.45	0.23	3.69	109	46.06	109	86	49	0	3	4	0		
WI EAU CLAIRE	31	19	41	14	25	11	0.55	0.36	0.53	1.40	136	40.54	126	91	67	0	7	2	1		
WI GREEN BAY	35	23	45	16	29	11	0.63	0.38	0.32	2.16	153	33.03	113	85	66	0	7	3	0		
WI LA CROSSE	36	23	44	16	29	11	0.67	0.47	0.61	1.86	151	46.55	144	84	61	0	6	2	1		
WI MADISON	35	21	44	13	28	8	0.39	0.10	0.28	2.04	123	50.01	152	84	66	0	7	2	0		
WI MILWAUKEE	41	25	54	17	33	10	0.30	-0.12	0.15	1.93	87	32.64	94	78	62	0	6	2	0		
WY CASPER	31	14	41	6	23	0	0.47	0.36	0.39	1.31	211	16.80	129	76	52	0	7	4	0		
WY CHEYENNE	41	21	55	17	31	5	0.04	-0.04	0.04	0.48	104	16.70	108	57	38	0	7	1	0		
WY LANDER	29	6	41	1	17	-3	0.33	0.22	0.33	0.90	148	23.30	174	83	51	0	7	1	0		
WY SHERIDAN	32	8	53	-2	20	-1	0.40	0.24	0.30	1.00	147	19.14	130	72	55	0	7	2	0		

Based on 1971-2000 normals

\*\*\* Not Available



## National Agricultural Summary

December 26, 2016 – January 1, 2017

Weekly National Agricultural Summary provided by USDA/NASS

### HIGHLIGHTS

**Most of the nation experienced above-average temperatures, with the southern Great Plains and lower Mississippi Valley recording temperatures more than 10°F above normal. In contrast, the Northwest had below-average temperatures, with temperatures dipping below**

**0°F in large sections of the Rocky Mountains and the Great Basin. Precipitation totaled less than 2 inches in most locations, with the most notable exception being the central Gulf Coast, where in some areas rainfall totaled more than 4.5 inches above normal weekly values.**

**Arizona:** Barley and Durum wheat planting was well underway by the end of the week. Barley planting was 25 percent complete, compared to 29 percent last year and 49 percent for the 5-year average. Durum wheat planting was estimated at 22 percent complete, 8 percentage points ahead of last year. Alfalfa conditions were rated mostly good to excellent, depending on location, with harvesting taking place on almost three-quarters of the state's alfalfa acreage. Central Arizona growers shipped anise, beets, broccoli, cabbage (green and red), carrots, cauliflower, cilantro, kale greens, green onions, parsley, and Swiss chard. In western Arizona, growers shipped anise, arugula, bok choy, broccoli, cabbage (green and red), cauliflower, celery, Chinese cabbage, cilantro, endive, escarole, frisee, kale greens, lettuce (Boston, green leaf, iceberg, red leaf, romaine and other), parsley, radicchio, and spinach. Beneficial rains continued last week in Coconino and Yavapai Counties, where soil moisture levels were reported as high and water tanks were nearly full or completely full. Wheat planting was delayed in Graham County according to respondents, due to cold and wet weather. For the second week in a row, every weather station reported some measurable precipitation. Douglas reported the least at 0.07 inch, while Payson reported the most at 1.71 inches. All but 12 of the 52 weather stations reported above-normal temperatures. The highest temperature was 78°F at Buckeye; the lowest was 0°F at Flagstaff.

**California:** Rainfall was limited to the far northwestern mountains on Monday, where over an inch of rain fell. Tuesday and Wednesday were fairly dry, but the Pineapple Express began on Thursday evening affecting areas from Salinas to Los Angeles with light rain. Friday and Saturday saw moderate to heavy rain across the southern one-third of the state, with the highest totals (over 2 inches) in and around Bakersfield. The deserts received around an inch of rain, while other locations in the southern valley saw up to an inch. Upslope showers also affected the central Sierras, where up to one-half of an inch of rain fell. On Sunday, the main rainfall area shifted to the northern half of the state, where most locations saw up to one-quarter inch of rain, but the northwestern mountains and windward slopes of the Sierras saw just over one-half inch. Temperatures at higher elevations in the central and southern Sierras were low enough to result in snow. Up to 10 inches of new snow fell at high elevations, particularly at Mt. Whitney. Up to 6 inches fell just south of Tahoe. However, mild weather resulted in a decrease of the mountain snowpack, as meltwater runoff increased. High temperatures were in the 30s to 50s in the mountains, 40s to 50s along the coast and in the valley, and 50s to 70s in the desert. Low temperatures were between the 0s and 30s in the mountains; 20s to 40s in the desert; and 30s to 40s in the coast and valley. On Monday and Tuesday temperatures fell into the 20s with widespread hard freezes across the agricultural areas of the valley, and subzero temperatures in the mountains. Field preparation for winter forage crops continued where the moisture

level of the ground allowed. Winter wheat continued to progress well due to adequate soil moisture. Post-harvest pruning and orchard removal continued in all deciduous tree fruit orchards and vineyards. Wet weather slowed citrus harvest. Navel and Mandarin oranges were harvested and exported. Melogold grapefruit, lemons, and limes were exported. New planting of citrus trees were covered for frost protection. Almonds, pistachios, shelled and in-shell walnuts, and shelled pecans continued to be packed and shipped. Nut orchards continued to be pruned, irrigated, and treated in preparation for their dormant season. Orchard replanting continued. In San Joaquin County, winter farmers' market vegetables were harvested. In Fresno County, winter vegetables were in good condition. Irrigation was not needed due to the rainy weather. With snow covering higher rangeland, more cattle were in valley pastures and most were being fed supplemental hay. Also in Fresno County, supplemental feeding of livestock continued as new germination of rangeland grasses improved from recent rains. Sheep were grazing on idle crop fields, dormant alfalfa, and stubble crop grounds.

**Florida:** There were 6.4 days suitable for fieldwork. Precipitation estimates ranged from no rain in several locations including Apopka (Orange County), Dade City (Pasco County), and Sebring (Highlands County) to 7.74 inches in DeFuniak Springs (Walton County). Average temperatures ranged from 60.6°F in Macclenny (Baker County) to 73.2°F in Ft. Lauderdale (Broward County). Although rain fell during the week across many parts of the state, most farms remain in drought or abnormally dry. In the citrus-growing region, temperatures were warmer than average for the first part of the week. Daily highs were in the mid to upper 80s on most afternoons. A front passing through the center of the state late Thursday lowered temperature about 20°F, but did not bring much rain. Canals and ditches remained at low levels due of the lack of widespread rain over the past couple of months. Growers were irrigating frequently to keep moisture in the ground and on the trees. Early tangerine harvest (Fallglo and Sunburst) was about over for the season. Early and mid-season oranges were still being harvested for the fresh market. Grapefruit harvest was in full swing, with internal quality holding well. All processing plants were open and accepting field-run fruit. Growers continued to spray in order to lower the psyllid population. Primarily, growers were performing general grove maintenance in well-kept groves. Strawberry harvesting activities were reported during the week in Hillsborough County. Greens, cabbage, and broccoli were being planted in Bradford County. Spring watermelons continued to be planted in several counties. Crops coming to market included avocado, beets, bitter melon, boniato, collards, eggplant, green beans, kale, malanga, pepper, squash, sweet corn, tomato, zucchini, and other tropical fruits. Cattle condition remained mostly fair to good despite persistently dry conditions and deteriorating pasture quality. Many cattle operators were using supplemental feeding.



## December State Agricultural Summaries

*These summaries, issued weekly through the summer growing season, provide brief descriptions of crop and weather conditions important on a national scale. More detailed data are available in Crop Progress and Condition Reports published each Monday by NASS State Statistical Offices in cooperation with the National Weather Service. The crop reports are available on the Internet through the NASS Home Page on the World Wide Web at <http://www.nass.usda.gov>.*

**ALABAMA:** The long lasting drought conditions of 2016 eased throughout the State in December. Much needed rainfall came, with some areas receiving significantly more than others. The heaviest rainfall was in the lower part of the State, with too much falling too fast, causing some flooding issues. It has been scattered elsewhere, with producers in those areas still needing more rain for emerging small grains and replenishing water supplies. Pasture conditions are improving in some areas, but for many, they have already gone dormant as the rain came too late. Cattle conditions are fair as they are continuing to be fed due to lack of grazing. Hay supplies are running low, critically low in some areas, with producers seeking more for the remainder of the winter. Small grains plantings were lower than usual, and stands have been vulnerable to either not having enough moisture or being washed out. Temperatures have fluctuated between below normal and above normal. Average mean temperatures for the month ranged from 44°F in Hamilton to 58°F in Mobile. Precipitation estimates for the month ranged from 3.28 inches in Gainesville to 16.29 inches in Mobile.

**ALASKA: DATA NOT AVAILABLE**

**ARIZONA:** Temperatures across the State were mostly above normal for the month of December with the only exception being the first week of the month where only 1 of the 52 weather stations was above normal. The temperature extremes for December were a high of 86°F in Sahuarita and a low of -5°F at the Grand Canyon. Thirteen of the 52 reporting stations finished the year with above normal precipitation. Nogales had the lowest percent of normal precipitation at 47 and Prescott finished the highest with 126% of normal precipitation. Cotton harvesting was virtually complete by the end of the month. Alfalfa harvesting had occurred on at least two-thirds of the planted acres. Barley planted was 25% complete and Durum wheat planted was 22% complete at the end of December. Vegetable and citrus harvesting activities continued throughout the month.

**ARKANSAS:** The month of December was fairly wet especially compared to November and October. The livestock conditions are good. Temperatures have been moderate in the last month with only a short period of extreme cold that may have stressed them some. Wheat crops are showing some signs of cold stress, but have adequate moisture. There was quite a bit of late planted (late November, early December) wheat.

**CALIFORNIA:** Temperature highs were in the 30s to 50s in the mountains, 40s to 50s along the coast and in the valley, and 50s to 70s in the desert. The temperature lows were between 0s and 30s in the mountains, 20s to 40s in the desert, 30s to 40s in the coast and valley. Rainfall was limited to the far northwestern mountains on Monday, where over an inch of rain fell. Tuesday and Wednesday were fairly dry, with the Pineapple Express beginning on Thursday evening affecting areas from Salinas to Los Angeles with light rain. Friday and Saturday saw moderate to heavy rain across the southern third of the State, with the heaviest rainfall totals over 2 inches in and around Bakersfield. The deserts received around an inch of rain, while other locations in the southern valley saw up to an inch. Upslope showers also affected the central Sierras, where up to half an inch of rain fell. On Sunday, the main rainfall areas

shifted to the northern half of the State, where most locations saw up to a quarter inch of rain, but the northwestern mountains and windward slopes of the Sierras saw just over half an inch. Field preparation for winter forage crops continued where the moisture level of the ground allowed. Winter wheat continued to progress well due to adequate moisture in the soil. Post-harvest pruning and orchard removal continued in all deciduous tree fruit orchards and vineyards. Wet weather slowed citrus harvest. Navel and Mandarin oranges were harvested and exported. Melogold grapefruit, lemons, and limes were exported. New planting of citrus trees were covered for frost protection. Almonds, pistachios, shelled and in-shell walnuts, and shelled pecans continued to be packed and shipped. Nut orchards continued to be pruned, irrigated, and treated in preparation for their dormant season. Orchard replanting continued. In San Joaquin County, winter Farmers' Market vegetables were harvested. In Fresno County, winter vegetables were in good condition. Irrigation was not needed due to the rainy weather. With snow covering at higher rangeland, more cattle were in valley pastures and most were being fed supplemental hay. In Fresno County, supplemental feeding of livestock continued as new germination of rangeland grasses improved from recent rains. Sheep were grazing on idle crop fields, dormant alfalfa, and stubble crop grounds.

**COLORADO:** Topsoil moisture 10% very short, 36% short, 52% adequate, 2% surplus. Subsoil moisture 10% very short, 34% short, 55% adequate, 1% surplus. Winter wheat condition 2% very poor, 23% poor, 35% fair, 38% good, 2% excellent. Livestock condition 1% very poor, 3% poor, 14% fair, 72% good, 10% excellent. Pasture and range condition 1% very poor, 26% poor, 43% fair, 27% good, 3% excellent. Seasonal snow and rainfall provided beneficial moisture within the western part of the State and along the Front Range, with eastern counties receiving sporadic moisture. Reporters in eastern districts noted lack of winter snow cover, coupled with cold and mostly dry conditions, is a concern for the health of winter wheat stands. Pasture condition remains a concern in areas that received little good moisture. Livestock are in good condition with sufficient feed supplies and availability of winter grazing. As of January 1, 2017, snowpack in the State was at 113% measured as percent of median snowfall.

**DELAWARE:** For the month of December maximum registered temperature was 64°F with minimum of 12°F. There were 10 instances of precipitation with near maximum of 0.77 inches of rain in a single day and total accumulation of 2-3 inches for the month. The weather conditions contributed to pasture and cover crop growth and soybean growers were able to complete the soybean harvest by beginning of December. Some dry field conditions allowed extended manure hauling. Minimal freezing temperature has had no mayor effects on freezing soil. No mayor health issues was reported with animal. Many producers were feeding hay even with the available forages. No freeze kill has occurred to the tillage radishes that were planted yet to date. December goes in the books as one of the warmest, foggy and cloudy December's on record. Other than farming activities for the month included taking soil samples, repairing and cleaning up equipment, purchasing supplies, tax planning, pricing inputs for 2017, and attending workshops as usual for the month.

**FLORIDA:** December started mostly warm and dry. The Panhandle and northern counties were under abnormally dry conditions, which spread throughout the month to include several counties in the middle of the State. Cotton, soybean, and peanut harvesting all wrapped up at the beginning of the month. Sugarcane harvest continued in Glades, Hendry, and Palm Beach Counties. Less winter cover crops and forages were able to be planted in the Panhandle and northern part of State due to the dry conditions. Flagler and Putnam Counties began harvesting cabbage and leafy greens. Farmers in southwest harvested green beans, beets, collards, cucumbers, eggplant, herbs, kale, peppers, squash, Swiss chard, tomatoes, watermelon. Palm Beach County farmers used ditches, canals, and other equipment to irrigate. Miami-Dade County harvested green beans, pole beans, tomatoes, peppers, eggplant, yellow squash, sweet potatoes, sweet corn, zucchini, boniato, bitter melon, malanga, and avocado. The dry conditions and warm temperatures had pasture quality and quantity declining steadily throughout the month. The cattle, however remained in mostly fair to good condition. Supplemental feeding was reported in several counties. Early orange harvest activities increased at the beginning of month. Grapefruit harvest was in full swing by the end of the month, with internal quality holding well. All processing plants were open and accepting field-run fruit by the end of the month. The navel oranges, white grapefruit, and red grapefruit harvest schedule was slightly ahead of last season. Grove work included irrigating, mowing, spraying, fertilizing. Caretakers were replacing unproductive trees and taking care of healthy older trees and resets with various types of fertilization programs. Old, non-productive groves were being pushed and cleared.

**GEORGIA:** According to the U.S Drought Monitor, more than 80% of the State remained in a moderate to severe drought throughout December with the most severe areas in the northern half of the State. Total precipitation for the month ranged from 1.8 inches of rain in Polk County to 13.5 inches in Dougherty County. December rains provided limited drought relief and allowed some producers to plant late-season winter forages and small grains, but many others were unsuccessful because dry weather persisted throughout the planting window. Forages and small grains began to emerge, but were expected to yield very little due to late planting. Some sightings of aphids were reported in the southern portion of the State. The fall drought not only limited traditional winter grazing, but also harmed permanent grazing. Many livestock producers were quickly depleting local hay supplies and paying a premium for forage from increased shipping distances. Fears of hay shortages continued. Cattle producers fed mixed rations to supplement lower quality hay. Emergency feed assistance was activated for several counties. Cattle, sheep, and goats were in good condition, despite the drought. Cooler temperatures helped fruit crops accumulate much needed chill hours. Camarosa strawberries were growing well. Vegetable growers began laying plastic for the upcoming season. Majority of onions were planted and doing well. Cotton harvest was nearly complete.

**HAWAII: DATA NOT AVAILABLE**

**IDAHO:** December brought lots of snow and freezing rain to the State. Areas from all over the State received up to 2 feet of snow during the month. Average daytime highs were in the 40s with many lows below zero. Average temperatures ranged from 10°F below normal to 2°F above normal. Due to the extended snow cover, deer, elk and wild turkeys entered domestic livestock areas of local farms in search of food, causing predation issues. Winter grazing was difficult due to the frequent precipitation. Most cattle were on full feed. Livestock owners in many areas were struggling to keep supplies of

unfrozen water and hay available. In a few areas of the south, there was some pneumonia reported in the livestock due to fluctuating weather conditions. There was also some newborn loss. However, many other reporters stated local livestock were in fair to excellent condition in spite of harsh conditions. Most cropland was covered in snow. South central regions reported good snow cover to protect the winter cereals. Good snowpack had farmers optimistic about the water outlook for the coming season. Accumulation of snow in the southwest was well above normal.

**ILLINOIS:** Topsoil moisture 5% short, 87% adequate, 8% surplus. Subsoil moisture 6% short, 88% adequate, 6% surplus. Winter wheat condition 2% very poor, 4% poor, 25% fair, 57% good, 12% excellent. Statewide, temperatures for the month of December averaged 28.6°F, 1.2°F below normal. Precipitation averaged 1.41 inches, 1.28 inches below normal. Normal winter conditions were reported throughout the State.

**INDIANA:** Topsoil moisture 1% very short, 6% short, 75% adequate, 18% surplus. Subsoil moisture 1% very short, 8% short, 82% adequate, 9% surplus. Winter wheat condition 1% very poor, 3% poor, 23% fair, 62% good, 11% excellent. The Statewide average temperature was 29.8°F, 1.3°F below normal. Statewide average precipitation 3.06 inches, 0.71 inches below normal. Temperatures dropped sharply during the middle of the month, mainly in northern Indiana. Snow cover protected wheat to some extent in that region. Temperatures rebounded during the last week of the month, melting snow and creating muddy conditions. Precipitation in the far southern portion of the State helped alleviate dry conditions that were prevalent beginning in the fall. Livestock were in good condition and pastures in the south remained green. Other activities included clearing fencerows, repairing and installing drainage tile, applying lime and hauling grain to market.

**IOWA:** Weather has been mostly mild so far this winter. Iowa experienced variable temperatures for the month of December, swinging from above to below normal and back again. Little snow cover remained in the State as the month came to a close; much of it melting off with warm conditions and rain. Moisture supplies are considered sufficient to start the next growing season. Fieldwork activities for the month of December included dry fertilizer, anhydrous, lime and manure applications. Some tiling and terracing also took place in the southern third of the State. Grain movement in December was mostly light to non-existent. There were scattered reports of corn moving to ethanol plants and feed mills. Some outside corn piles have already been removed, others are dwindling, and some remain intact. Adequate hay supplies for livestock at this time. Cattle still grazing on corn stalks in some areas. Temperature swings have been rough on cattle, creating some health problems.

**KANSAS:** Topsoil moisture 23% very short, 34% short, 42% adequate, and 1% surplus. Subsoil moisture 16% very short, 28% short, 55% adequate, and 1% surplus. Winter wheat condition 5% very poor, 14% poor, 37% fair, 42% good, 2% excellent. Cotton 92% harvested, 95% 2015. Stock water supplies 2% very short, 8% short, 89% adequate, and 1% surplus. Hay and roughage supplies 0% very short, 3% short, 83% adequate, 14% surplus. Cattle and calf condition, 1% very poor, 2% poor, 22% fair, 68% good, 7% excellent. Calving progress 7% complete. Cattle and calf death loss, 0% heavy, 55% average, 45% light. Sheep and lamb conditions, 0% very poor, 0% poor, 13% fair, 82% good, 5% excellent. Lambing progress 3% complete. Sheep and lamb death loss, 0% heavy, 55% average, 45% light. Near-normal temperatures were experienced in eastern Kansas, whereas the west experienced temperatures from 3 to 5°F below normal. Most the State

remained dry, prompting some concerns over the development of winter wheat.

**KENTUCKY:** The majority of counties were still in a Moderate or Severe Drought rating from the U S Drought Monitor through mid-December. As precipitation improved towards the end of the month, some counties still had an Abnormally Dry rating. Precipitation for the month totaled 5.54 inches, 1.12 inches above normal. Precipitation totals by climate division, West 5.29 inches, Central 6.06 inches, Bluegrass 5.26 inches and East 5.53 inches, which was 0.46, 1.26, 1.41 and 1.32 inches above normal respectively. Temperatures averaged 38°F for the month, near normal. High temperatures averaged from 45°F in the West to 47°F in the East. Low temperatures averaged from 30°F in the West to 31°F in the East. Milder temperatures and rainfall have resulted in muddy field conditions in some areas. Tobacco producers continued to strip their tobacco when conditions allowed. The amount of tobacco stripped was 81%, compared to 87% last year. Winter wheat was rated in mostly good condition, but there are spots in some fields where dry weather affected stands, and delayed and/or non-uniform emergence occurred. Winter wheat conditions were rated as 3% very poor, 8% poor, 33% fair, 45% good, and 11% excellent. Most producers feel hay supplies are adequate, however quality may be an issue due to dry conditions experienced in October and November. Hay and roughage supplies were reported as 4% very short, 14% short, 74% adequate, and 8% surplus. Livestock was rated in mostly good condition, although many producers started to supplement pastures with hay earlier this season. Additionally, some pastures are being reseeded in areas that were impacted by severe and extreme drought. Livestock conditions were rated as 1% very poor, 2% poor, 20% fair, 64% good, and 13% excellent.

**LOUISIANA:** Recent rainfall and mild temperatures have improved ryegrass pasture conditions for December. Mild winter conditions have helped keep cattle in descent body condition during the delayed transition from warm season to cool season forages. Cattle producers are beginning to graze ryegrass. Temperatures have been above normal for this time of year causing rapid growth of winter weeds. Commercial vegetable production is doing fine and plentiful. Sugarcane harvest is now complete. Majority of the beef cattle is doing well due to very mild winter. Some parts of the State received up to several inches of rain.

**MARYLAND:** For the month of December maximum registered temperature was 64°F with minimum of 12°F. There were 10 instances of precipitation with near maximum of 0.77 inch of rain in a single day and total accumulation of 2-3 inches for the month. The weather conditions contributed to pasture and cover crop growth and soybean growers were able to complete the soybean harvest by beginning of December. Some dry field conditions allowed extended manure hauling. Minimal freezing temperature has had no mayor effects on freezing soil. No mayor health issues was reported with animal. Many producers were feeding hay even with the available forages. No freeze kill has occurred to the tillage radishes that were planted yet to date. December goes in the books as one of the warmest, foggy and cloudy December's on record. Other than farming activities for the month included taking soil samples, repairing and cleaning up equipment, purchasing supplies, tax planning, pricing inputs for 2017, and attending workshops as usual for the month.

**MICHIGAN:** Topsoil moisture 61% adequate, 39% surplus. Subsoil moisture 2% short, 73% adequate, 25% surplus. Winter wheat condition, 3% very poor, 6% poor, 27% fair, 47% good, 17% excellent. Temperatures were generally above normal

early in the month, but fell well below normal during mid-December, then rose above normal at month's end. The variance in temperatures caused health issues for livestock in some areas. There was adequate precipitation during December, in the form of snow and rain, available to the Winter Wheat crop, although the lack of frost and snow cover at the end of the month was a concern. Some producers took advantage of the lack of snow to haul manure and prune orchards.

**MINNESOTA:** Temperatures for the month averaged 16.7°F, 0.4°F above average. Statewide average precipitation was 1.77 inches, 0.79 inch above normal. A blizzard on December 6-7 brought heavy snow and serious wind chills to northwestern Minnesota. There were reports of 6 to 13 inches of snow received, including some new daily record snowfalls. A slow-moving system moved across the State December 10-12, bringing significant snowfall. Some of the new daily snowfall records reported for December 11 include 7.0 inches of snow in Owatonna, 10.0 inches in Canby, and 8.2 inches in Duluth. A third winter storm passed through Minnesota on December 16-17. A powerful low pressure system on Christmas day brought snow to northwestern and northern Minnesota, while a combination of thunderstorms, sleet, freezing rain, and rain hit the rest of the State. The storm created ice covered feedlots in many areas, leaving producers concerned about foot and leg injuries associated with the icy conditions. There were also concerns about winterkill on alfalfa that iced over due to the freezing rains. Totals show a new annual precipitation record set for the Twin Cities, at 40.32 inches.

**MISSISSIPPI:** The fall planting season for forages started out very dry and unseasonably warm. The early warm weather helped winter grazing, but cool season grazing was behind due to drought in the fall. This caused producers to lose a few months of winter forage production and led many to feed hay starting in early fall. There's a growing concern of depleting reserves leading many producers to believe that there may not be enough hay to make through the winter. Late rains throughout the State helped improve water levels. Stock ponds began to fill back up, but still have a long way to go to be back to normal. Winter pastures have made some improvements but still not at the level under a normal year.

**MISSOURI:** Topsoil moisture 2% very short, 17% short, 72% adequate, 9% surplus. Subsoil moisture 3% very short, 20% short, 73% adequate, 4% surplus. Hay and roughage supplies 2% short, 82% adequate, 16% surplus. Stock water supplies 2% very short, 16% short, 81% adequate, 1% surplus. Winter Wheat condition 4% poor, 52% fair, 40% good, 4% excellent.

**MONTANA:** Topsoil moisture 2% very short, 4% last year; 10% short, 16% last year; 83% adequate, 76% last year; 5% surplus, 4% last year. Subsoil moisture 5% very short, 7% last year; 18% short, 26% last year; 73% adequate, 63% last year; 4% surplus, 4% last year. Winter wheat – wind damage 66% none, 91% last year; 28% light, 8% last year; 6% moderate, 1% last year; 0% heavy, 0% last year. Winter wheat – freeze and drought damage 78% none, 88% last year; 15% light, 10% last year; 7% moderate, 2% last year; 0% heavy, 0% last year. Winter wheat – protectiveness of snow cover 7% very poor, 6% last year; 5% poor, 13% last year; 29% fair, 28% last year; 40% good, 35% last year; 19% excellent, 18% last year. Livestock grazing accessibility – 23% open, 24% last year; 39% difficult, 38% last year; 38% closed, 38% last year. Livestock receiving supplemental feed – cattle and calves 97% fed, 97% last year. Livestock receiving supplemental feed – sheep and lambs 98% fed, 98% last year. The month of December was mostly very cold with periods of snow and high wind for the State of Montana, though there were brief periods of above average

temperatures between storm systems. High temperatures ranged from the lower 30s to the lower 50s and all reporting stations recorded subzero lows with the coldest reported in West Yellowstone and Wisdom at -43°F. Precipitation in the form of snowfall was present across the State but in variable amounts, with the highest recorded this month in West Yellowstone with 3.78 inches of moisture. Topsoil moisture conditions were 88% adequate to surplus which is above last year's 80%. Subsoil moisture conditions are 77% adequate to surplus which is well above last year's 67%. So far winter freeze and wind damage to winter wheat remains low but reporters note the extent of damage may be hard to gauge until the crop breaks dormancy in the spring, particularly in the central portion of the State. Snow coverage for the State is rated 59% good to excellent compared with 53% at this time last year. Winter wheat condition is rated 58% good to excellent, compared with 74% last year. Pasture and range conditions improved from the last report with 45% rated good to excellent, which is a great improvement over last year's 16%. Livestock producers are providing supplemental feed at same rate as the previous year at this time with 97% of cattle and 98% of sheep being fed.

**NEBRASKA:** Topsoil moisture 12% very short, 22% short, 64% adequate, and 2% surplus. Subsoil moisture 11% very short, 26% short, 62% adequate, and 1% surplus. Winter wheat condition 2% very poor, 8% poor, 44% fair, 41% good, 5% excellent. Stock water supplies 0% very short, 8% short, 91% adequate, and 1% surplus. Hay and roughage supplies 0% very short, 3% short, 91% adequate, 6% surplus. Cattle and calf condition, 0% very poor, 1% poor, 17% fair, 71% good, 11% excellent. Cattle and calf death loss, 0% heavy, 54% average, 46% light. Sheep and lamb conditions, 0% very poor, 1% poor, 20% fair, 72% good, 7% excellent. Sheep and lamb death loss, 0% heavy, 75% average, 25% light. Temperatures averaged 2 to 6°F below normal. Precipitation in the form of snow and rain was recorded during the month. High winds on Christmas day caused damage to numerous pivots in south central counties. At the end of the month, snow cover was limited to northern Panhandle counties. This allowed good use of stalk fields for winter grazing in other areas.

**NEVADA:** Humboldt County reported snow. The ground remains frozen, and has likely halted ground work until early to mid-March. Most livestock were fed hay and will continue until March or April. Lincoln County reported rain, bringing overall soil moisture levels up for December. The south east of the State saw some moisture but no snowfall. Cold temperatures have maintained in Mineral County, with little rain but no snow. Cattle in Mineral County were out on range land. Douglas County saw some snow and moisture, leading to an optimistic water situation for the coming spring and good current soil moisture. Continuous grazing continued in Douglas County, particularly for cows about to calve.

**NEW ENGLAND:** Although some rain and snowfall improved water level conditions in many areas over the prior month, many areas of New England were subject to D0 Abnormally Dry to D3 Extreme Drought conditions with only the northernmost part of Maine having no drought. Massachusetts and western parts of Connecticut had the most extreme conditions. As such, soils remain dry in most parts of the region. Feed and hay was short in the region and purchased from other areas. Cover crops were reported as looking good. Most producers spent time doing general farm maintenance as well as administrative activities such as income tax planning. Cranberry bogs still lacked the necessary water for winter flooding. Orchardists prepared for pruning apple trees and Christmas tree growers finished up

their season. Fresh greens were sold at winter farmers markets. Maple producers were getting ready for the 2017 season.

**NEW JERSEY:** The State average temperature in December was 36.5°F, with a low temperature of 14°F and a high temperature of 62°F. Total precipitation in New Jersey for the month of December was 2.65 inches. Field activities included hauling manure and preparing seeds for the spring. Cover crops including rye, wheat, and barley have been planted. Producers moved and marketed Christmas trees and poinsettias.

**NEW MEXICO:** Topsoil moisture 14% very short, 49% short, 34% adequate, 3% surplus. Subsoil moisture 13% very short, 40% short, 47% adequate. Red chile harvested 99%, 87% November 27. Corn harvested for grain 100%, 65% November 27, 100% last year. Cotton harvested 92%, 87% November 27, 100% last year. Pecans harvested 52%, 30% November 27, 100% last year. Pecan condition 3% fair, 82% good, 15% excellent. Sorghum harvested 100%, 54% November 27. Winter wheat condition 8% very poor, 38% poor, 46% fair, 5% good, 3% excellent. Cattle receiving supplemental feed 81%, 53% November 27, 86% last year. Cattle condition 2% very poor, 4% poor, 34% fair, 55% good, 5% excellent. Sheep receiving supplemental feed 71%, 65% November 27, 78% last year. Sheep and lamb condition 11% very poor, 17% poor, 16% fair, 56% good. Hay and roughage supplies 4% very short, 12% short, 71% adequate, 13% surplus. Stock water supplies 8% very short, 28% short, 63% adequate, 1% surplus. December was an unusually warm month for much of New Mexico, with above average temperatures dominating all areas except a few locations in the northeast. Specifically, average temperatures varied from -3°F to 7°F above normal. Daytime highs ranged from 45°F at Eagle Nest to 77°F at Antelope Wells and Carlsbad. Overnight lows varied from -19°F at Eagle Nest to 25°F at NMSU. Monthly moisture totals varied drastically depending on location, with the southwest accumulating above average precipitation to help replenish depleted soil moisture levels that were affected by an extremely dry 2016. The largest precipitation total was reported at Gila Hot Spring, where 2.99 inches of moisture fell during December. Additionally, Animas, Chama, Cloudcroft, and Redrock also recorded over 2 inches of precipitation during the month. Conversely, much of the northeast was extremely dry when compared with normal. Comments from Union County indicated that strong winds coupled with dry weather led to dusty conditions in many wheat pastures resulting in sick calves. In Curry County, reports suggested that wheat condition had declined rapidly in late-December, forcing many producers that were grazing wheat fields to reduce their stocking rates, find additional pastures, sell their cattle, or move them to feed yards. Producers in Dona Ana County were able to harvest 100% of the cabbage crop during the month, while excessive rainfall was slowing the pecan harvest.

**NEW YORK:** Winter is underway in New York. Much of the Empire State received ample snow throughout the month of December 2016, replenishing water reserves that were used up throughout 2016's drought. Many fields are covered in ice or snow, but are melting as the weather fluctuates. Harvesting of late crops was finally completed. Year-over-year "YOY" corn grain yields are reported as being down 20-40%, but of exceptional quality. YOY soybean yields are reported as being down 15-30%, but of exceptional quality as well. Field activities for the month include late harvesting, tending livestock, trees, and vines, fixing and maintaining machinery and structures, and manure and fertilizer application.

**NORTH CAROLINA:** Days suitable for field work 4.6. Topsoil moisture 0% very short, 7% short, 74% adequate and 19%



surplus. Subsoil moisture 1% very short, 8% short, 79% adequate and 12% surplus. Barley condition 1% very poor, 15% poor, 58% fair, 25% good and 1% excellent. Oats condition 0% very poor, 1% poor, 39% fair, 59% good and 1% excellent. Winter wheat condition 0% very poor, 5% poor, 25% fair, 51% good and 19% excellent. Pasture and range condition 4% very poor, 42% poor, 32% fair, 21% good and 1% excellent. Hay and roughage supplies 6% very short, 21% short, 72% adequate and 1% surplus. Rain has limited field activity. December has been a mild month with warmer than normal temperatures and less than normal precipitation. Most of the counties received between 3.5-4.0 inches of rain during the month. Rains over the past few days have replenished water supplies. Temperatures are normal for time of year.

**NORTH DAKOTA:** Topsoil moisture 2% very short, 6% short, 70% adequate, 22% surplus. Subsoil moisture 2% very short, 6% short, 80% adequate, 12% surplus. Winter wheat condition, 2% very poor, 2% poor, 13% fair, 77% good, 6% excellent. Cattle and calves condition, 1% very poor, 3% poor, 23% fair, 66% good, 7% excellent. Cattle and calves death loss, 4% heavy, 51% average, 45% light. Sheep and lambs condition, 1% very poor, 6% poor, 26% fair, 61% good, 6% excellent. Sheep and lambs death loss, 4% heavy, 45% average, 51% light. Hay and roughage supplies, 1% very short, 12% short, 84% adequate, 5% surplus. Stock water supplies, 1% very short, 10% short, 84% adequate, 5% surplus. Heavy snow across much of the State caused hardship for livestock producers. Multiple winter storms made access to feed and facilities difficult. Temperatures averaged from 2°F above normal to 6°F below normal across the State.

**OHIO:** Topsoil moisture 1% very short, 11% short, 68% adequate, and 20% surplus. Subsoil moisture 1% very short, 21% short, 65% adequate, 13% surplus. Winter wheat condition rated 1% poor, 15% fair, 67% good, and 17% excellent. The December 2016 Statewide average temperature was 31.0°F, 0.7°F below normal. Precipitation averaged 3.38 inches Statewide, which was 0.46 inches above normal for the month of December. Most of the State saw decent snow cover on fall planted crops through most of December. Warmer temperatures and rain melted much of the snow at the end of the month. There have not been any hard freezes without adequate snow cover, but more snow will be needed to shield the crop from further cold weather. Wheat appears to be doing well with slightly above average precipitation. Fields are too soggy at the moment for field work.

**OKLAHOMA:** The State experienced cold and dry weather for the month of December. On December 16, a front brought the coldest weather since February 2011, dropping temperatures 60°F in a 24 hour period. According to the OCS Mesonet, the Statewide average temperature was 38.4°F, 0.5 of a point below normal and the 50th coolest December since records began in 1895. Precipitation ranged from 1.48 inches in the Southeast district to 0.46 of an inch in the North Central district. Statewide temperatures averaged in the high 30's, with the lowest recording of -18°F at Beaver on Sunday, December 18th and the highest recording of 62°F at Broken Bow on Monday, December 26th. Topsoil and subsoil moisture conditions were rated mostly adequate to short.

**OREGON:** The Statewide temperature differential for the month of December ranged from 0°F to 11°F below normal. A low temperature was reported at -20°F Fahrenheit in the northeast region. A high temperature was reported at 60°F Fahrenheit in the northern coastal region. The heavy rains of fall subsided a bit in December as most regions reported average to below average cumulative precipitation. The exceptions were some of the southern regions where better

than average snowfall was reported. December was still wet in the northern coastal region. Grass cover crops had mixed survival. Goose damage was apparent in some fields with newer plantings. In the north central region, winter wheat was in the three leaf to 3 tiller stage under a 3 to 7 inch layer of snow. In the northeast region, the colder than normal temperatures arrived as calving season was about to begin. While snow cover on fall-planted winter wheat eased winter kill concerns, extra precautions were taken to protect newborn calves. In the southwest region, the cold weather kept most orchard, vineyard, and berry crops in deep dormancy. The cold weather was good for knocking down pest populations, especially the spotted wing drosophila. Most growers waited for drier ground and the colder weather to pass before resuming additional pruning operations. The southeast region experienced higher than average snowpack. Total snowpack in the Owyhee Basin was reported at 144% of normal. Portions of Lake County reported significant snow accumulation at higher elevations. Although still early, the 2017 irrigation conditions in the southeast region were off to a promising start compared to the past several years.

**PENNSYLVANIA:** December weather in Pennsylvania was a bit undecided, ranging from cold and snowy (or sunny) to warm and rainy (or clear). Warmer temperatures crept up towards the month's end greeting the New Year with some brisk but otherwise pleasant weather. Overall, temperatures ranged from a high of 59°F to a low of 14°F with a resulting December average temperature of 39°F. The current lack of snow cover has some concerned about cover crop exposure to a potential freeze while others hope that this will allow rain to permeate and recharge the dry soil. Minimal field activity is expected this time of year but some took advantage of the warmer days to get in field work such as manure hauling.

**SOUTH CAROLINA:** December brought much needed rain to the State and helped bring the annual precipitation significantly closer to the State's yearly average. Temperatures have been warm for December but there were also a few frosts during the month. In the western part of the State, small grain crops were planted and are benefitting from the rain. The summer drought left many producers having to completely re-seed their pasture and purchase additional hay. In central and eastern South Carolina, many producers focused on clearing debris from fields impacted by Hurricane Matthew with some limited small grains being planted. Pastures and livestock are in good condition with hay readily available. Winter vegetables had an excellent harvest. Average maximum temperatures ranged from the mid-60s in eastern South Carolina to the mid-50s in the west. Average minimum temperatures ranged from the mid-40s in the east to low 30s in west. Precipitation estimates for the month range from 6.10 inches in Bamberg to 2.0 inches in Anderson.

**SOUTH DAKOTA:** Topsoil moisture 3% very short, 16% short, 79% adequate, 2% surplus. Subsoil moisture 4% very short, 22% short, 72% adequate, 2% surplus. Winter wheat condition 1% very poor, 5% poor, 38% fair, 53% good, and 3% excellent. Stock water supplies 5% very short, 18% short, 74% adequate, 3% surplus. Hay and roughage supplies 1% very poor, 12% poor, 83% adequate, and 4% excellent. Cattle and calf conditions 0% very poor, 2% poor, 15% fair, 79% good, and 4% excellent. Cattle and calf death loss 0% heavy, 69% average, 31% light. Sheep and lamb condition 0% very poor, 4% poor, 18% fair, 75% good, and 3% excellent. Sheep and lamb death loss 0% heavy, 74% average, 26% light. Snow, wind, and ice impacted much of the State, according to the USDA's National Agricultural Statistics Service. A Christmas day blizzard left thousands without power across northeast, north central and western South Dakota. Southeast South Dakota received mostly rain as temperatures remained well above freezing.

**TENNESSEE:** Days suitable 1.8. Topsoil moisture 1% very short, 8% short, 56% adequate, 35% surplus. Subsoil moisture 3% very short, 16% short, 63% adequate, 18% surplus. Winter wheat condition 1% very poor, 7% poor, 34% fair, 52% good, 6% excellent. Pasture and Range condition 24% very poor, 41% poor, 24% fair, 10% good, 1% excellent. Cattle condition 1% very poor, 7% poor, 41% fair, 44% good, 7% excellent. Hay and roughage supplies 17% very short, 22% short, 58% adequate, 3% surplus. Tennessee experienced above normal temperatures and much needed rainfall in December which has helped improve livestock conditions and pasture conditions to some extent. However, pastures are being depleted quickly due the slow growth in the fall. Most operations in the State have begun feeding hay. Hay and roughage supplies are mostly adequate to fair, down significantly from last year at this time. Primary activities for the month include equipment maintenance, soil sampling, and purchasing seed and fertilizer.

**TEXAS:** Precipitation throughout December was above normal across the State. Some areas of the Upper Coast, the Coastal Bend, and the Lower Valley received precipitation slightly above historic averages, however areas of Northeast Texas, the Blacklands, and the Cross Timbers recorded amounts well below normal. Parts of the Upper Coast and South East Texas observed up to 15 inches of rainfall, while the rest of the State received between .5 and 6 inches of precipitation. Some winter wheat suffered in dry areas of the State, while rainfall aided the growth of cool-season grasses in other areas. Across the State, producers continued to prepare cropland for spring planting.

**UTAH:** Topsoil moisture 0% very short, 2% last year; 6% short, 8% last year; 84% adequate, 85% last year; 10% surplus, 5% last year. Subsoil moisture 3% very short, 9% last year; 14% short, 33% last year; 78% adequate, 58% last year; 5% surplus, 0% last year. Pasture and range condition 5% very poor, 2% last year; 10% poor, 11% last year; 40% fair, 34% last year; 43% good, 52% last year; 2% excellent, 1% last year. Winter wheat condition 0% very poor, 0% last year; 0% poor, 2% last year; 38% fair, 29% last year; 60% good, 55% last year; 2% excellent, 14% last year. Hay and roughage supplies 0% very short, 0% last year; 1% short, 0% last year; 66% adequate, 63% last year; 33% surplus year, 37% last year. Stock water supplies 0% very short, 8% last year; 10% short, 15% last year; 85% adequate, 77% last year; 5% surplus, 0% last year. Cattle and calves condition 0% very poor, 0% last year; 0% poor, 0% last year; 11% fair, 18% last year; 85% good, 71% last year; 4% excellent, 11% last year. Sheep and lambs condition 0% very poor, 0% last year; 1% poor, 0% last year; 22% fair, 20% last year; 75% good, 66% last year; 2% excellent, 14% last year. Livestock receiving supplemental feed for cattle 63%, and livestock receiving supplemental feed for sheep 58%. Cows calved at 1% complete. The northern and southwestern parts of the State saw the most precipitation over the last month, while the central southeastern region had very little.

**VIRGINIA:** Barley conditions were 9% poor, 26% fair, 61% good, and 4% excellent. Oats conditions were 11% poor, 51% fair, and 38% good. Winter wheat conditions were 1% very poor, 7% poor, 30% fair, 55% good, and 7% excellent. Livestock conditions were 1% very poor, 7% poor, 32% fair, 54% good, and 6% excellent. Pasture and range conditions were 9% very poor, 33% poor, 25% fair, 28% good, and 5% excellent. Percent of feed obtained from pastures 25%. December was a relatively mild and warm for this time of year. Rains were welcomed and improved conditions on most farms. Still many farmers began feeding hay already as the rain was too late to improve the grazing conditions. Farm activities this

month included conducting farm maintenance, soil sampling, and purchasing seeds and fertilizers.

**WASHINGTON:** The winter started out both cold and wet, with snow in the mix. Temperatures dropped to as low as -14°F Fahrenheit in the northeast region, while the highest temperature was reported at 55°F Fahrenheit in the central region. Average temperatures were all below freezing, except in the west, for most of December. The highest reported precipitation was in the western region at 9.42 inches while the lowest reported precipitation was in the east central region at 0.18 inch. In the west, cold temperatures were met with some precipitation. The cold weather hindered Christmas tree farms earlier in the month, with lowland fields filled with standing water. The cold and wet weather slowed field work to a halt, impacting cranberry field progress and leaving late pumpkins to rot. Other farmers were concerned that the cold weather would damage the raspberries and blueberries. In the central and eastern regions, the winter weather change was well received with increased moisture and the cold coverage provided by the snow for the winter wheat. While the snow provided coverage, it was considered minimal. Two cold snaps were reported, but the snow provided some protection. Prior to the cold snaps, workers were able to make good progress pruning and training fruits, grapes, and hops. As a result, the preparations prevented or limited crop damage. With increased wind levels paired with the cold weather, work halted until conditions improved. Lastly, most livestock were placed on full feed due to winter conditions.

**WEST VIRGINIA:** Topsoil moisture was 1% very short, 8% short, 73% adequate, and 18% surplus. Subsoil moisture was 1% very short, 15% short, 73% adequate, and 11% surplus. Hay and roughage supplies were 1% very short, 4% short, 94% adequate, and 1% surplus. Feed grain supplies were 1% short, 98% adequate, and 1% surplus. Winter wheat conditions were 14% poor, 48% fair, 30% good, and 8% excellent. Cattle and calves were 1% poor, 11% fair, 85% good, and 3% excellent. Sheep and lambs were 1% poor, 15% fair, 82% good, and 2% excellent. Weather this month has been a mix of fluctuating temperatures and precipitation forms including rain, snow and sleet. Farming activities for the month included preparing for winter weather and pruning deciduous tree fruits, except for peaches.

**WISCONSIN:** December temperatures at the five major weather stations ranged from 0.7°F below normal to 2.9°F above normal. Average highs ranged from 25.2°F in Eau Claire to 31.5°F in Milwaukee, while average lows ranged from 13.2 to 20.1°F in those same cities. Precipitation ranged from 1.93 inches in Milwaukee to 2.25 inches in Green Bay. Green Bay received the most snowfall out of the major cities with 23.1 inches. Milwaukee received the least, with 18.8 inches of snow for the month. All five locations reported above average snowfall for December, but warm and rainy weather late in the month resulted in below average snow cover at all locations. Reporters expressed some concern about winter damage to winter wheat and alfalfa. By the end of the month almost all corn was harvested, though Northern and Central Wisconsin reported some still standing. Some producers were having issues finding storage for their crop.

**WYOMING:** Topsoil moisture 11% very short, 42% short, 44% adequate, 3% surplus. Subsoil moisture 10% very short, 38% short, 52% adequate. Winter wheat condition 18% very poor, 22% poor, 40% fair, 16% good, 4% excellent. Hay and roughage supplies 1% very short, 16% short, 76% adequate, 7% surplus. Livestock condition 1% very poor, 3% poor, 17% fair, 77% good, 2% excellent. Stock water supplies 14% very short, 14% short, 71% adequate, 1% surplus. Pasture and range condition 4% very poor, 18% poor, 34% fair, 44% good.

**International Weather and Crop Summary**

**December 25-31, 2016**

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

**EUROPE:** Mostly dry, mild weather maintained favorable conditions for dormant winter crops across central and northern Europe.

**FSU-WESTERN:** Dormant winter wheat remained sufficiently insulated by widespread snow cover.

**MIDDLE EAST:** Widespread rain and snow boosted moisture supplies for dormant (north) to vegetative (south) winter grains.

**NORTHWEST AFRICA:** Sunny skies promoted winter grain development following recent rain in Morocco, Algeria, and Tunisia.

**SOUTHEAST ASIA:** Typhoon Nock-Ten brought drenching rainfall to the northern Philippines but did little damage to rice and corn.

**AUSTRALIA:** Widespread showers in the southeast stalled winter grain harvesting.

**SOUTH AFRICA:** Showers provided timely moisture for summer crop germination in western sections of the corn belt.

**ARGENTINA:** Locally heavy showers improved topsoil moisture in most corn, soybean, and cotton areas.

**BRAZIL:** Rain benefited southern corn and soybeans but warmth and dryness dominated soybean and cotton areas farther north.

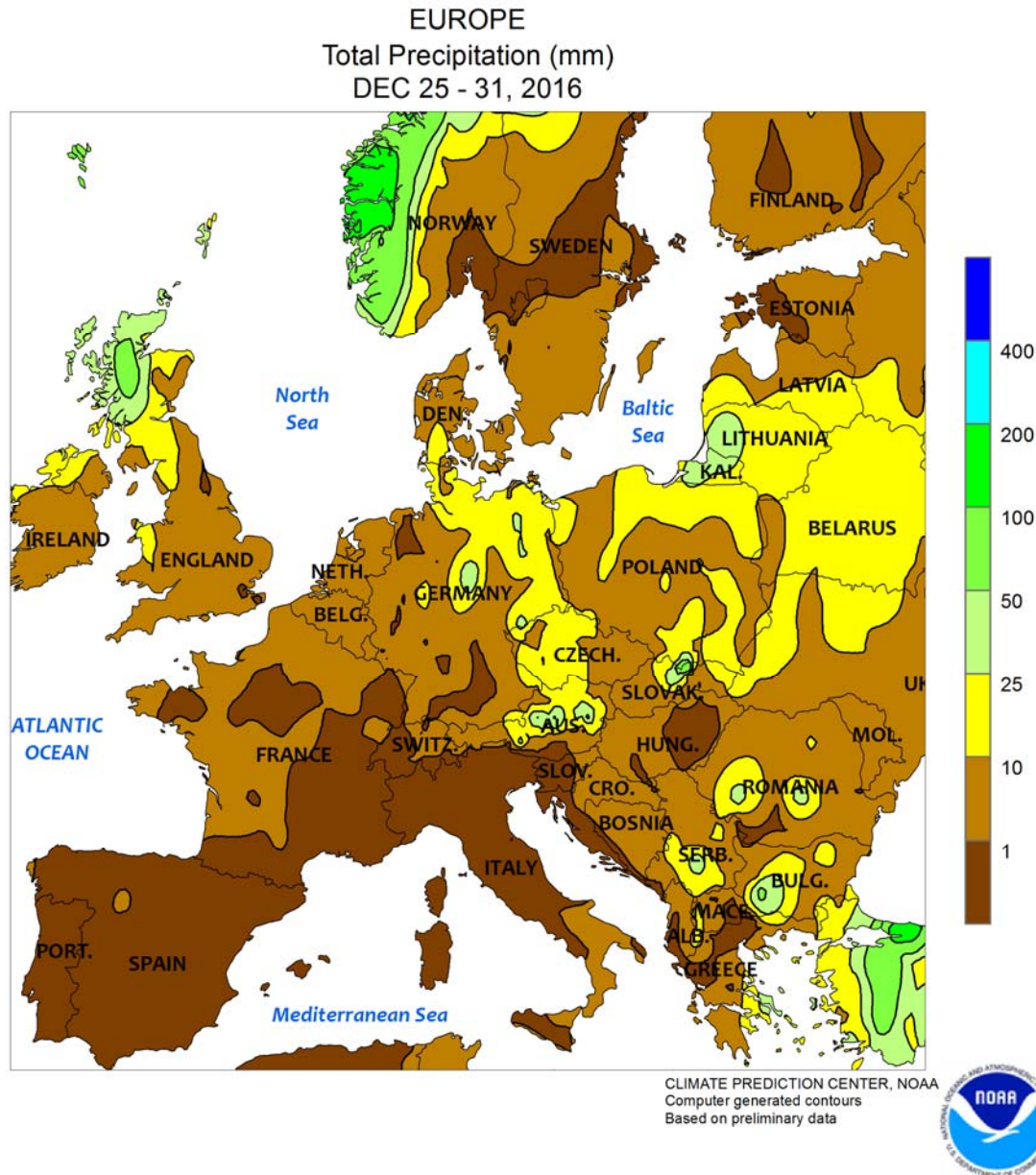
**December 2016**

COUNTRY	CITY	TEMPERATURE (C)					PRECIP. (MM)		
		AVG MAX	AVG MIN	HI MAX	LO MIN	DEP AVG	DEP NRM	TOT	DEP NRM
ALGERI	ALGER	19	9	21	4	14	1.9	194	104
	BATNA	14	3	17	-5	9	2	9	-22
ARGENT	IGUAZU	30	20	34	13	25	-0.5	152	-33
	FORMOSA	31	22	37	15	27	0	268	111
	CERES	31	19	40	14	25	0.7	111	-39
	CORDOBA	30	16	37	8	23	-0.1	152	-11
	RIO CUARTO	30	17	38	10	23	1.1	66	-90
	ROSARIO	31	18	38	11	24	1.2	138	30
	BUENOS AIRES	30	17	36	8	24	1.8	92	6
	SANTA ROSA	33	15	38	6	24	1.5	14	-88
	TRES ARROYOS	31	15	37	7	23	3	34	-58
AUSTRA	DARWIN	32	26	35	24	29	0	197	-79
	BRISBANE	27	22	29	19	24	0.3	121	4
	PERTH	29	15	43	9	22	-0.1	7	0
	CEDUNA	28	16	42	5	22	1.1	0	-18
	ADELAIDE	26	15	39	9	21	0.3	4	-20
	MELBOURNE	26	13	39	6	19	1.6	38	-8
	WAGGA	31	16	38	7	24	2	57	7
	CANBERRA	29	14	34	7	21	2.4	65	18
AUSTRI	VIENNA	3	-2	14	-9	1	-0.1	41	1
	INNSBRUCK	6	-5	11	-9	0	0.5	5	-50
BAHAMA	NASSAU	28	22	30	17	25	2.6	21	-36
BARBAD	BRIDGETOWN	29	25	31	22	27	1	134	30
BELARU	MINSK	0	-3	6	-11	-1	2.1	46	-5
BERMUD	ST GEORGES	22	18	25	14	20	0.2	94	-15
BOLIVI	LA PAZ	17	4	21	1	10	1	83	-67
BRAZIL	FORTALEZA	31	26	32	24	28	-0.1	36	1
	RECIFE	30	26	32	24	28	-0.7	26	-15
	CAMPO GRANDE	29	21	32	16	25	-0.7	157	-53
	FRANCA	29	19	31	15	24	1.5	156	-89
	RIO DE JANEIRO	31	23	38	19	27	0.9	73	-64
	LONDRINA	31	20	35	15	26	2.2	172	-74
	SANTA MARIA	31	20	37	12	25	1	132	15
	TORRES	27	20	35	13	24	-1.1	223	131
BULGAR	SOFIA	4	-4	13	-11	0	-0.9	5	-36
BURKIN	OUAGADOUGOU	35	19	40	16	27	1.9	0	-1
CANADA	TORONTO	1	-5	10	-14	-2	1.1	77	17
	MONTREAL	-1	-8	9	-24	-5	1.7	105	27
	WINNIPEG	-10	-17	1	-31	-13	1.2	0	-17
	REGINA	-9	-17	1	-32	-13	-0.2	0	-16
	SASKATOON	-9	-18	1	-31	-14	0.6	0	-16
	LETHBRIDGE	***	***	***	***	***	*****	*****	*****
	CALGARY	-6	-15	7	-27	-11	-3.4	23	11
	VANCOUVER	4	-2	9	-9	1	-2.7	158	-16
CANARY	LAS PALMAS	22	17	28	15	20	1	17	-12
CHILE	SANTIAGO	29	13	37	10	21	1.2	15	13
CHINA	HARBIN	-9	-18	5	-26	-13	1	1	-5
	HAMI	2	-10	8	-17	-4	3.4	5	3
	BEIJING	5	-4	11	-8	1	1.7	0	-3
	TIENTSIN	5	-3	11	-8	1	1.4	5	0
	LHASA	12	-5	19	-8	4	4.4	0	*****
	KUNMING	16	6	20	2	11	2.3	9	-6
	CHENGCHOW	10	2	21	-4	6	3.9	25	15
	YEHCHANG	12	5	23	0	9	1	30	12
	HANKOW	12	3	20	-3	8	0.9	61	36
	CHUNGKING	13	10	18	7	12	2.1	14	-9
	CHIHKIANG	13	5	22	0	9	1.3	77	48
	WU HU	12	4	20	-2	8	2.4	67	32
	SHANGHAI	13	6	20	-2	10	1.7	49	11
	NANCHANG	14	7	20	2	11	2.6	32	-9
	TAIPEI	23	19	30	13	21	2.6	16	-55
	CANTON	22	13	27	5	17	1.8	3	-28
	NANNING	22	12	27	5	17	1.6	5	-20
COLOMB	BOGOTA	20	8	22	2	14	0.9	112	66
COTE D	ABIDJAN	32	26	32	23	29	1.3	85	10
CUBA	HAVANA	29	19	32	13	24	1.7	0	-51
CYPRUS	LARNACA	17	8	22	2	12	-1	109	37
CZECHR	PRAGUE	3	-1	11	-7	1	0.7	32	6
DENMAR	COPENHAGEN	7	3	12	-5	5	2.7	41	-5
EGYPT	CAIRO	19	12	23	9	16	0.1	6	1

Based on Preliminary Reports





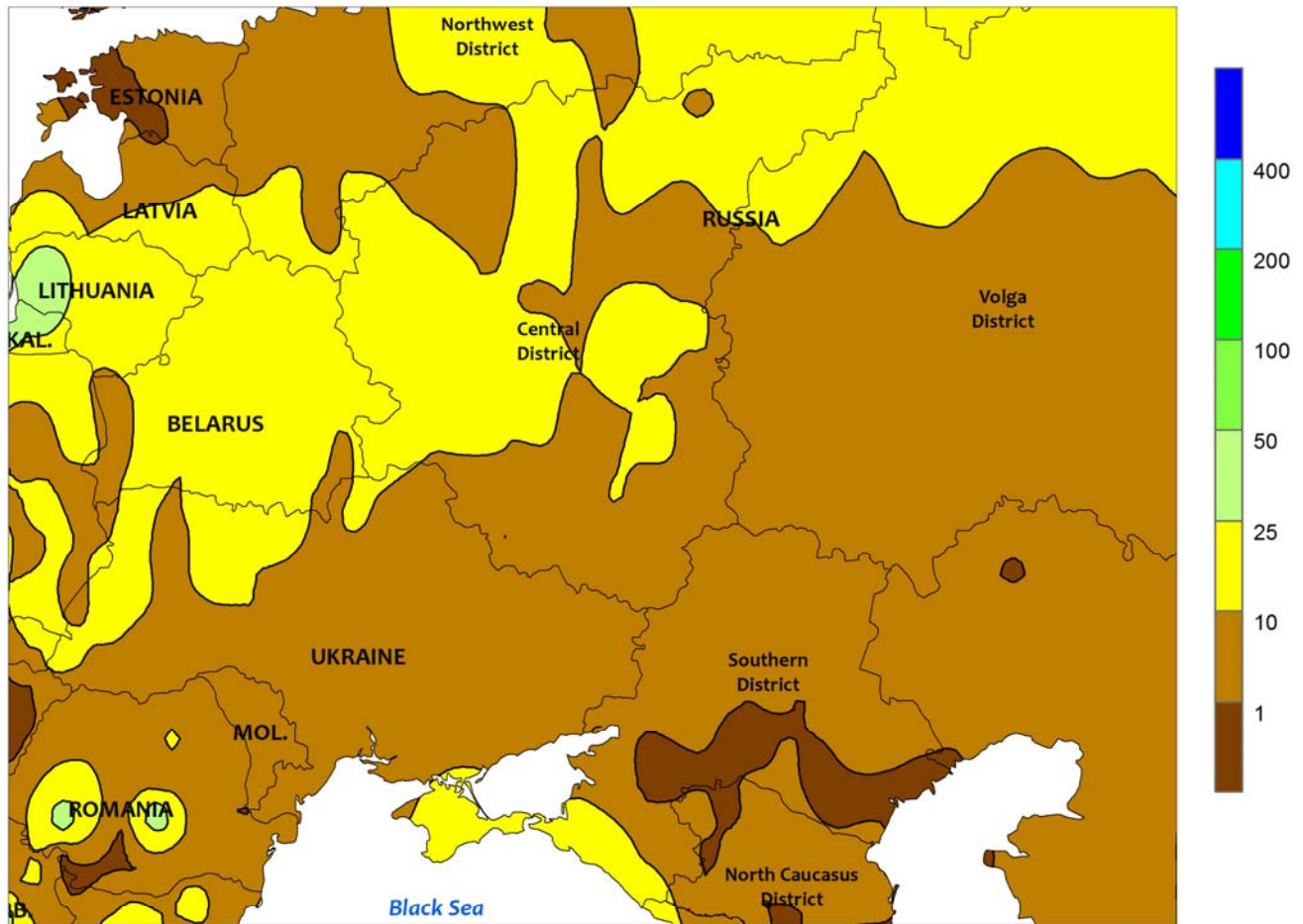


**EUROPE**

A stationary area of high pressure maintained dry, mild weather across central and western portions of the continent. Sunny skies and near- to above-normal temperatures were favorable for dormant winter wheat and rapeseed from France and southeastern England into southern Germany and the northern Balkans. Dry weather also prevailed across the Mediterranean region, promoting seasonal fieldwork and winter grain development. However, moisture remained

limited for vegetative wheat and barley in northern Spain, with localized but pronounced short-term drought adversely impacting crop development in Castilla y León. Farther east, light rain and wet snow (3-30 mm, locally more) maintained favorable moisture reserves for dormant winter crops from eastern Germany into the Baltic States, though these typically colder crop areas remained devoid of a protective snow cover at week's end.

WESTERN FSU  
Total Precipitation (mm)  
DEC 25 - 31, 2016



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

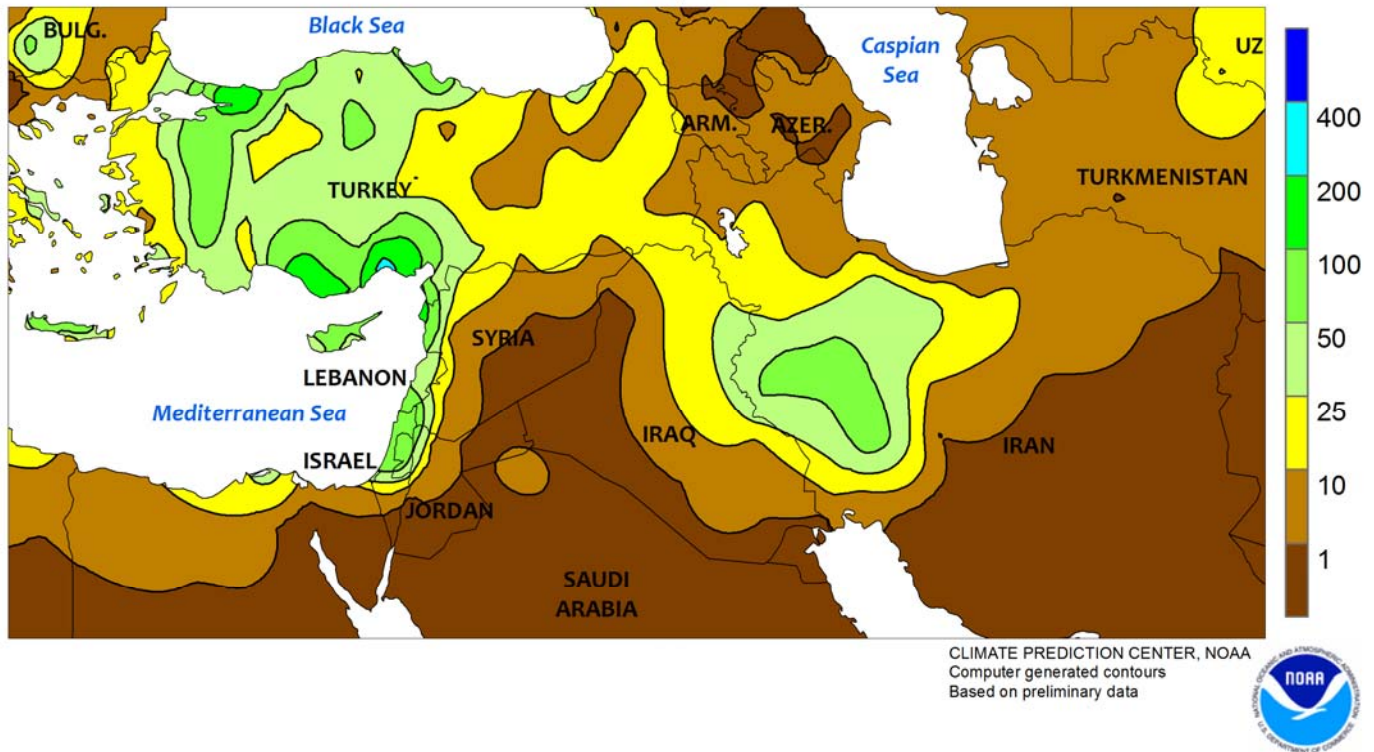


**WESTERN FSU**

Dormant winter wheat remained insulated from potential bitter cold by snow cover. Primary winter crop areas from central Ukraine into southern and central Russia remained

covered by 5 to 20 cm of snow, while northern crop areas (Russia's Central and Volga Districts) were under 10 to 25 cm of snow at week's end.

MIDDLE EAST  
 Total Precipitation (mm)  
 DEC 25 - 31, 2016



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

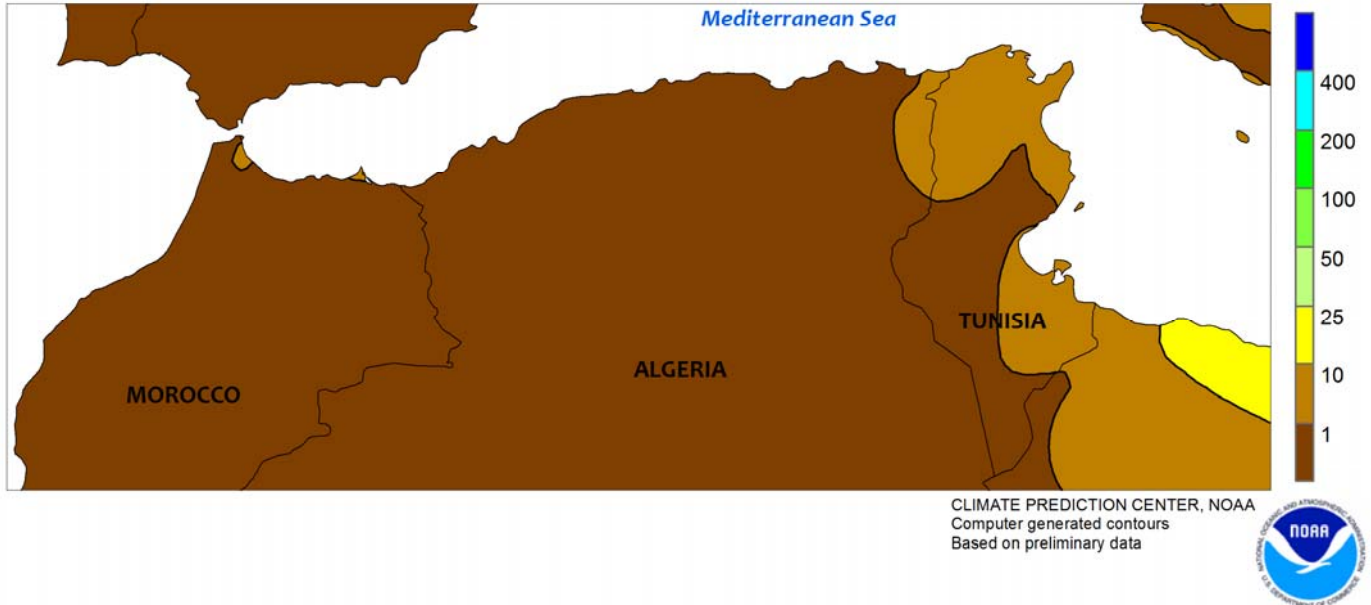


MIDDLE EAST

Unsettled weather prevailed, though temperatures moderated across much of the region. A stationary storm system continued to produce moderate to heavy rain (10-100 mm, locally more) over the eastern Mediterranean Coast and environs, further increasing soil moisture for vegetative winter grains. However, the rain likely caused flooding, particularly in typically-arid areas of northeastern Africa. In Turkey, moderate to heavy rain and snow (10-100 mm liquid equivalent, locally more along the south coast) boosted moisture reserves, especially on the previously-dry Anatolian Plateau (a key wheat and barley region). Snow covered much

of Turkey by week's end, though amounts were highly variable, ranging from 5 to more than 50 cm. In Iraq and western Iran, another round of beneficial rain and mountain snow (10-60 mm liquid equivalent, locally more) improved soil moisture for winter grain development following a dry autumn. However, precipitation amounts in northeastern Iran were much less (4-10 mm), leaving this part of the country still in need of moisture for crop development. Temperatures averaged 3 to 7°C above normal from eastern Turkey into Iran, while chilly conditions (up to 4°C below normal) lingered in western Turkey.

NORTHWESTERN AFRICA  
Total Precipitation (mm)  
DEC 25 - 31, 2016



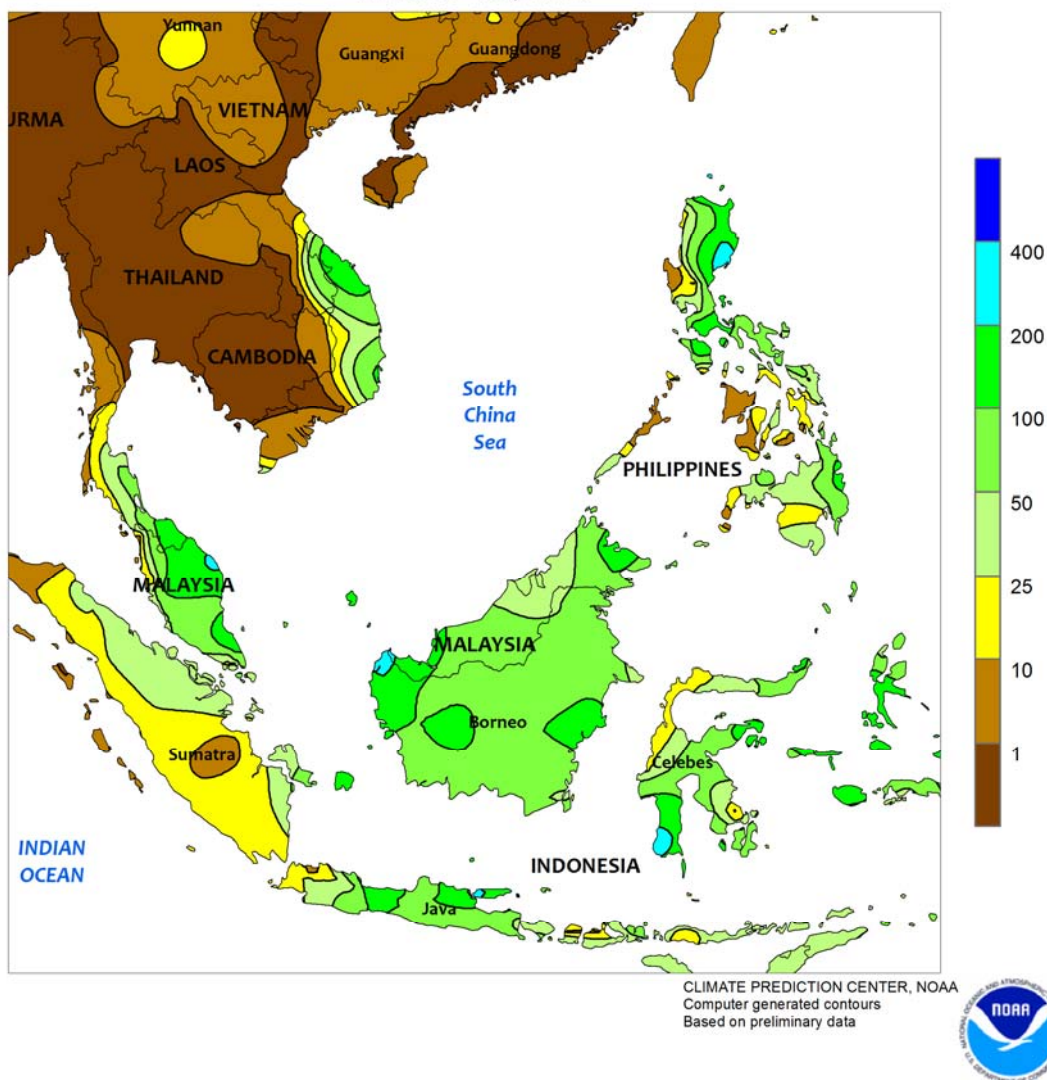
**NORTHWESTERN AFRICA**

Sunny skies and near-normal temperatures promoted winter grain development following recent protracted rainfall in most major production areas. The wet weather, which began in mid-November, alleviated autumn dryness and drought which had settled over Morocco and Algeria, though northeastern portions of Algeria are still wrestling with lingering

precipitation deficits. Crop conditions in Morocco and western Algeria are vastly improved over last year, and current winter grain yield prospects are in line to show a substantial improvement year to year. In Tunisia, dryness has not been an issue; consequently, winter wheat and barley prospects remained good to excellent.



SOUTHEAST ASIA  
Total Precipitation (mm)  
DEC 25 - 31, 2016

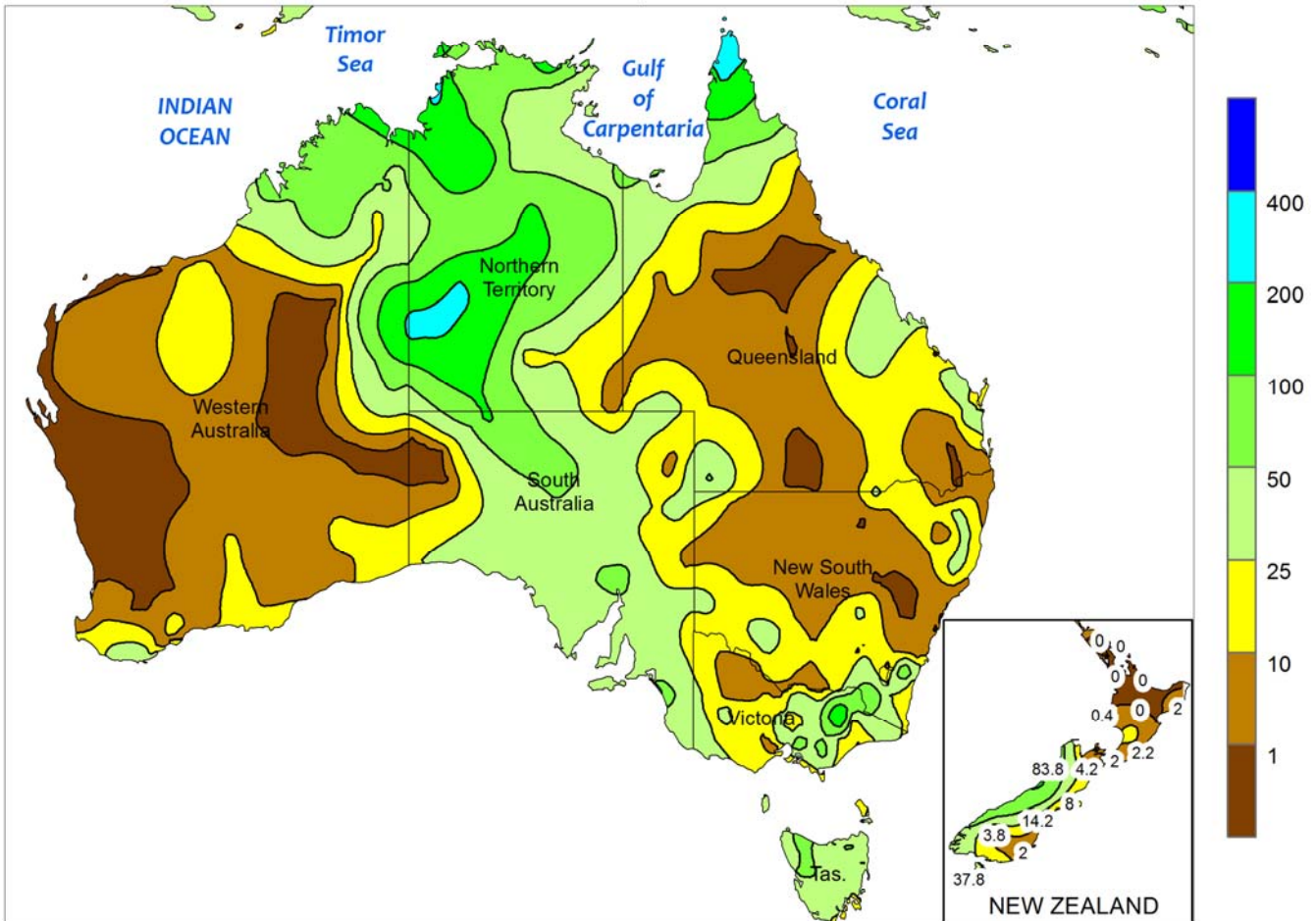


### SOUTHEAST ASIA

Typhoon Nock-Ten crossed the Philippines early in the period, producing rainfall amounts between 100 to 200 mm (locally over 300 mm) across eastern Luzon. The rainfall caused localized flooding but was generally beneficial for winter rice and corn grown in the interior. Rainfall amounts were lower (less than 100 mm) in central (Visayas) and southern (Mindanao) sections of the country where less rice and corn are grown this time of year. Meanwhile, unseasonably heavy showers (50-150 mm) continued in central Vietnam, maintaining excessively wet conditions in relatively minor

crop areas. Farther south, seasonably heavy showers (25-100 mm, locally more) in Malaysia and eastern Indonesia maintained favorable moisture conditions for oil palm; parts of western Malaysia continued to experience moisture deficits, though. In addition, heavy showers (50-100 mm, locally over 200 mm) in much of Java, Indonesia, kept rice well watered. Portions of western Java have experienced below-normal rainfall for much of December, but despite the recent dryness, seasonal (since August 1) rainfall was 50 percent above the long-term average.

AUSTRALIA  
Total Precipitation (mm)  
DEC 25 - 31, 2016



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

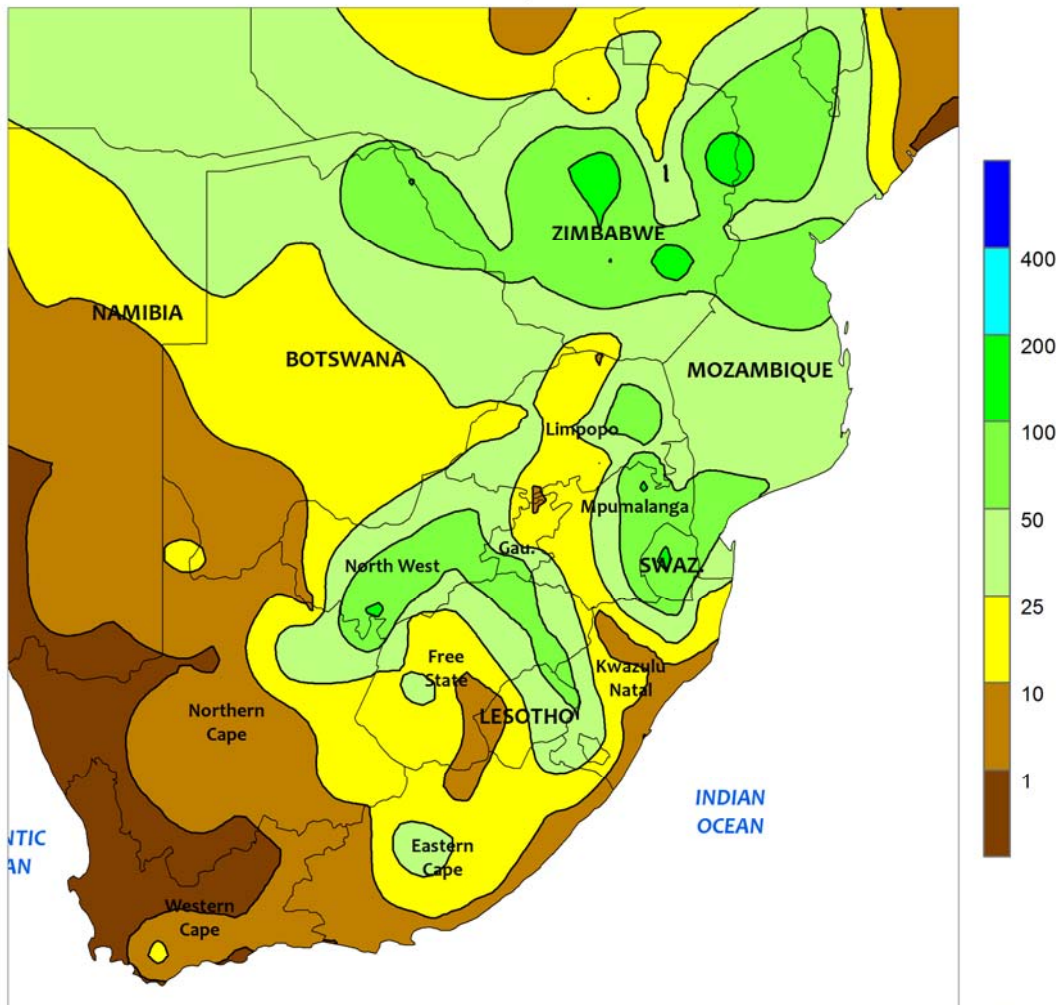


**AUSTRALIA**

In the wake of last week’s beneficial rainfall, isolated showers (locally around 5 mm) provided little additional moisture for summer crops in southern Queensland and northern New South Wales. Farther south, widespread showers (10-50 mm or more) overspread much of southeastern Australia, stalling winter grain harvesting and likely raising some concerns about local crop quality. Although the rain was unwelcome for harvesting, the wet weather was unlikely to have a significant impact on final crop yields. In Western Australia, showers (5-20 mm) were confined primarily to southern coastal areas, potentially

slowing local fieldwork. Most of the wheat belt remained dry, however, allowing winter crop harvesting to proceed with little delay. Temperatures in Western Australia averaged about 2 to 3°C below normal. In contrast, temperatures in southern and eastern Australia averaged about 2 to 6°C above normal. Temperatures rose throughout the week in northern New South Wales and southern Queensland, with maximum temperatures ranging from the middle 30s to lower 40s degrees C by week’s end. The gradual increase in heat accelerated summer crop development and slowly increased crop water requirements.

SOUTH AFRICA  
Total Precipitation (mm)  
DEC 25 - 31, 2016



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



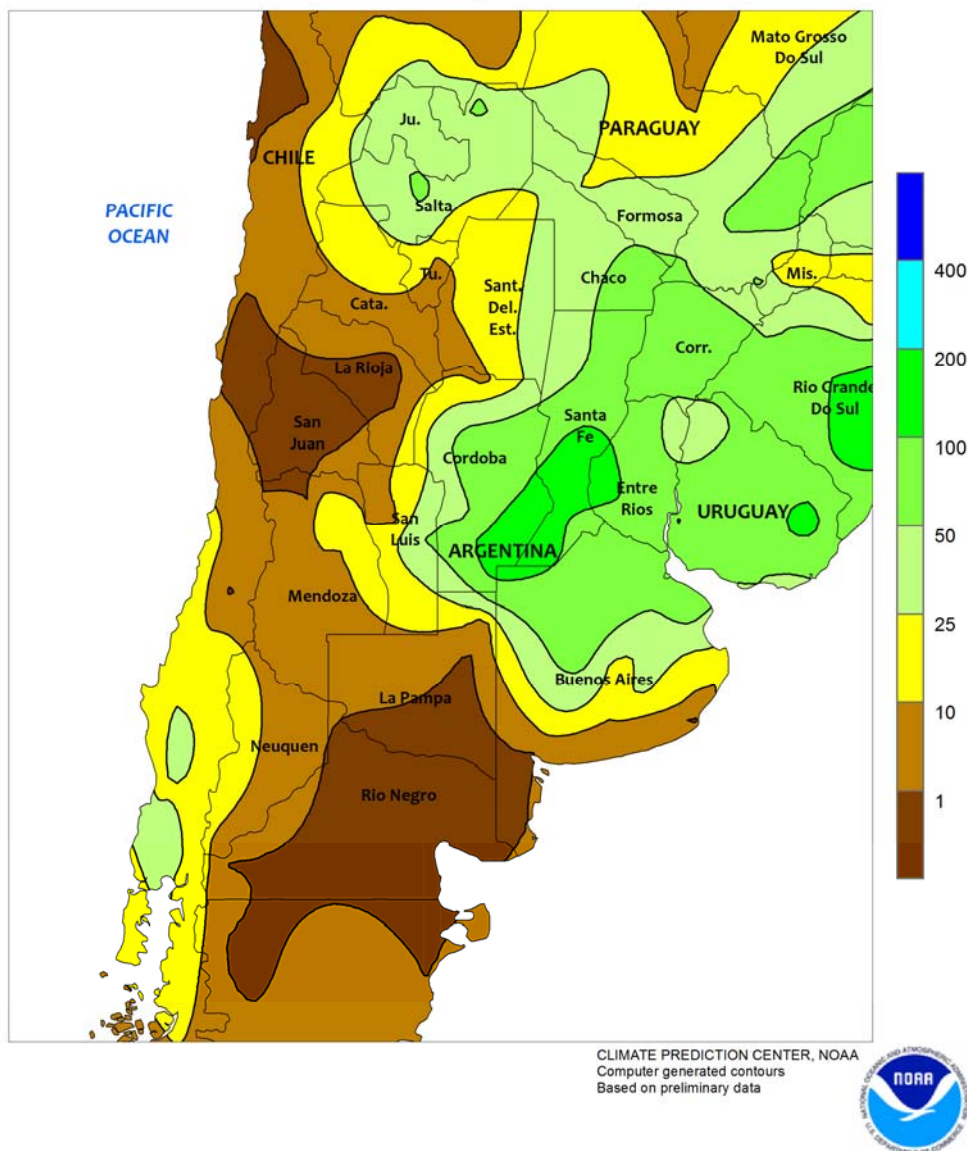
**SOUTH AFRICA**

Showers overspread the corn belt, maintaining generally favorable prospects for emerging to vegetative summer crops. Most areas recorded rainfall totaling 10 to 50 mm, with higher amounts in North West and portions of Free State. The rain in North West and neighboring locations in Gauteng and Free State was particularly timely for newly-sown crops and reduced the likelihood of late plantings. Weekly temperatures averaging near to slightly below normal accompanied the moisture, with daytime highs generally capped in the lower

30s (degrees C). The wet, relatively cool weather extended eastward into irrigated sugarcane areas of eastern Mpumalanga and northern KwaZulu-Natal but unseasonable dryness continued in rain-fed sugarcane areas of southern KwaZulu-Natal. Meanwhile, scattered showers (5-25 mm, locally higher) increased irrigation reserves for corn and cotton in the Orange River Valley. Dry, warmer-than-normal weather (daytime highs approaching 40°C in spots) spurred rapid development of tree and vine crops in Western Cape.



ARGENTINA  
Total Precipitation (mm)  
DEC 25 - 31, 2016



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



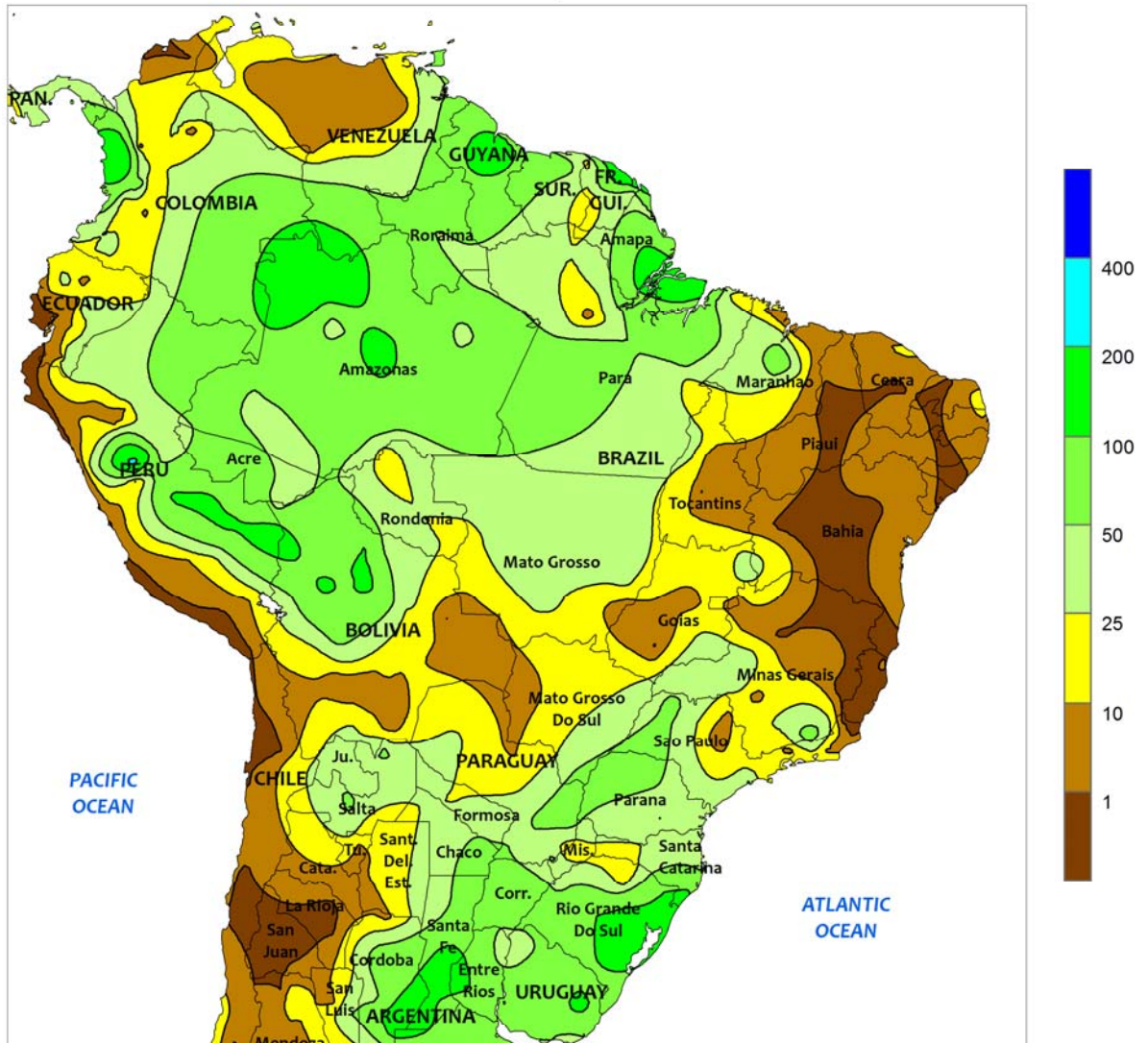
**ARGENTINA**

Beneficial rain continued across much of Argentina, further increasing moisture for summer crops in key production areas. Most areas recorded rainfall totaling 10 to 50 mm, with higher amounts (50 to 140 mm) concentrated over central and northeastern farming areas (northern Buenos Aires and Cordoba to Corrientes). In contrast, drier conditions persisted in southern farming areas of La Pampa and Buenos Aires, favoring rapid winter grain harvesting but limiting moisture for germination of second-crop soybeans. Weekly temperatures averaged 3 to 5°C above normal (daytime highs reaching the upper 30s degrees C on

several days) in the drier southern locations, exacerbating the impact of the dryness on emerged corn and first-crop soybeans. Weekly average temperatures were 1 to 2°C above normal in most other agricultural areas, with daytime highs exceeding 40°C in Santiago del Estero and northern Cordoba both before and after the rain. According to the government of Argentina, corn and soybeans were 73 and 83 percent planted, respectively, as of December 29, slightly lagging last year's pace. Meanwhile, wheat was 84 percent harvested (versus 75 percent last year), an increase of 9 points from the previous week.



BRAZIL  
Total Precipitation (mm)  
DEC 25 - 31, 2016



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



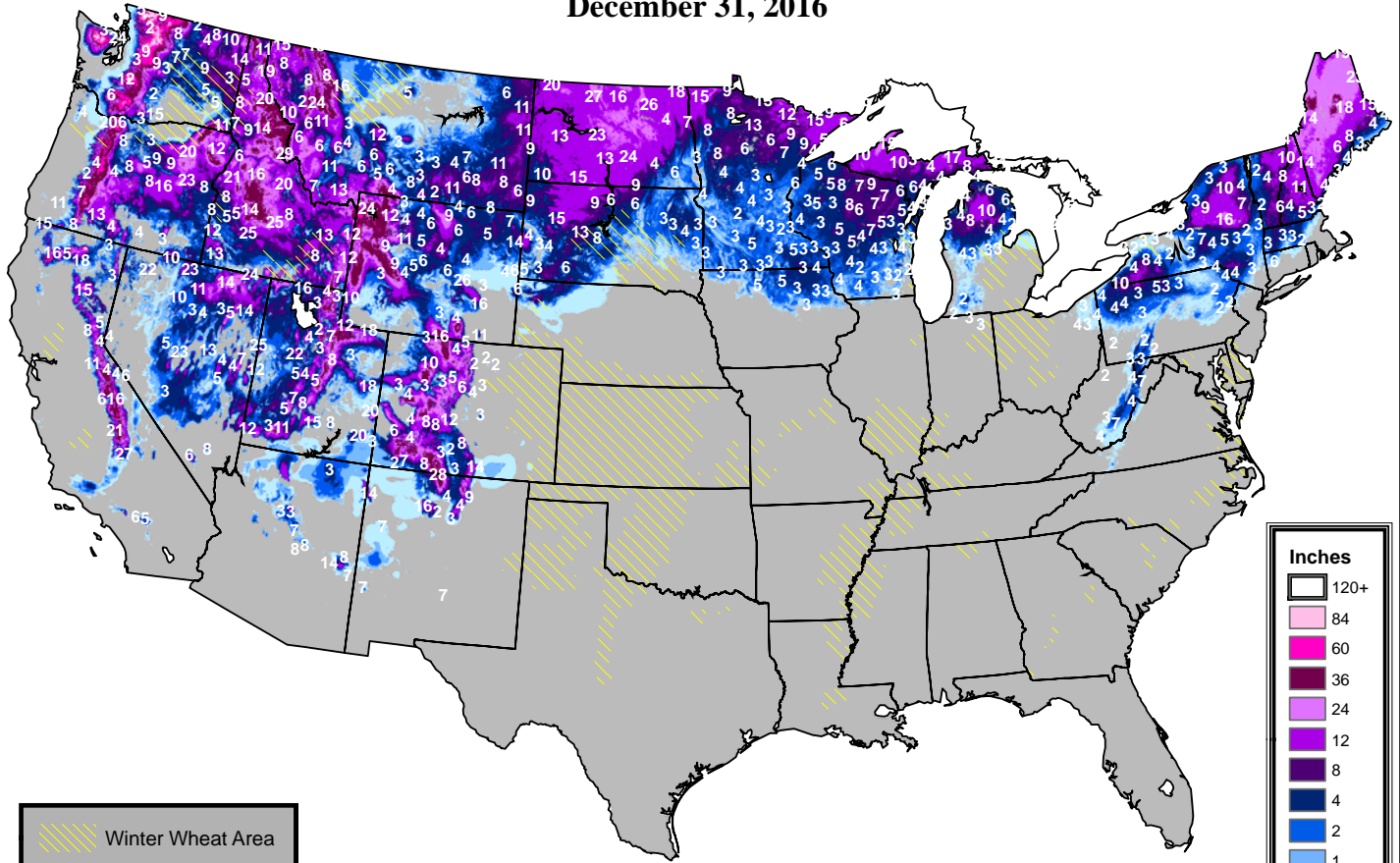
**BRAZIL**

Beneficial rain maintained generally favorable conditions for corn and soybeans in the main production areas of southern Brazil. Aside from a pocket of dryness centered over western Santa Catarina, rainfall totaled 25 to 50 mm — locally higher — from Rio Grande do Sul northward through western Sao Paulo. According to reports emanating from Rio Grande do Sul, a portion of the soybeans and corn in that state had reached reproduction as of December 29, making the continuation of rainfall timely. The moisture was also favorable for sugarcane, coffee, and citrus in Sao Paulo and Minas Gerais. However, above-normal temperatures (daytime highs reaching the middle 30s

degrees C) in the aforementioned areas maintained high crop moisture demands. Farther north, light to moderate rain (15-50 mm) fell in Mato Grosso but a generally drier pattern dominated the remainder of the Center-West (notably northern Mato Grosso do Sul and Goias), as well as northeastern Brazil, reducing moisture for soybeans and cotton. Unseasonable warmth accompanied the dryness, with daytime highs reaching the upper 30s in spots. It was the second week of general warmth and dryness in the northeastern interior (western Bahia, Tocantins, and southern farming areas of Piaui and Maranhao), raising concern for potential stress to vulnerable crops.

# Snow Depth

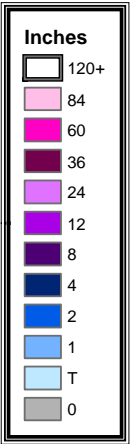
December 31, 2016



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).



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