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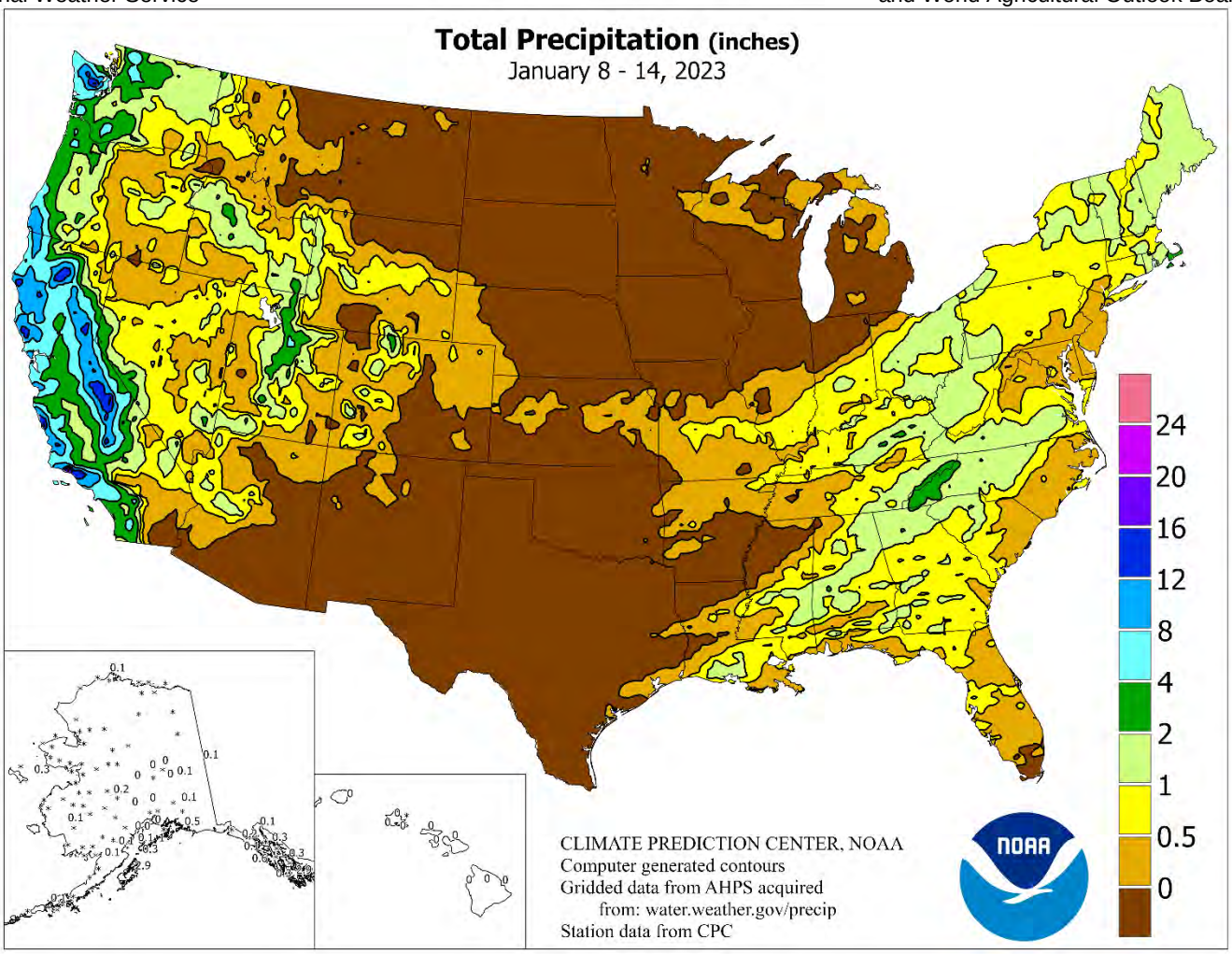
WEEKLY WEATHER AND CROP BULLETIN

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

January 8 – 14, 2022

Highlights provided by USDA/WAOB

For the third week in a row, seemingly incessant storminess in **California** caused debris flows and extensive flooding, but further padded high-elevation snowpack and boosted reservoir levels. At times, stormy weather extended into other areas, including the **Pacific Northwest**, **Great Basin**, and **Intermountain West**. By mid-January, the water equivalency of the **Sierra Nevada** snowpack topped 30 inches, slightly higher than the typical accumulation during an entire October-March season. However, record flooding was observed along

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Contents

Water Supply Forecast for the Western United States

Highlights

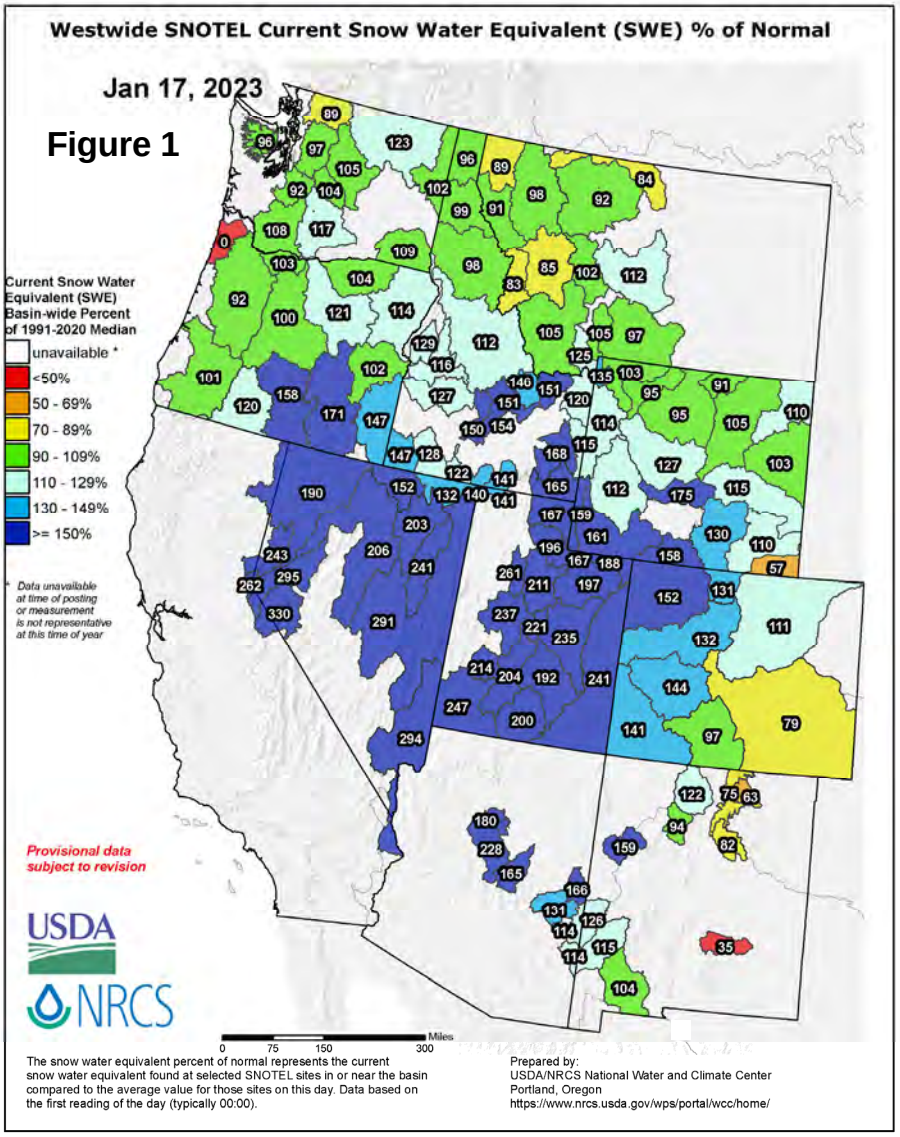
Uncharacteristically for a La Niña winter, periods of extraordinarily heavy precipitation spread inland across California, the Great Basin, and the Intermountain West. The most significant storminess occurred in early December and during a 3-week period starting December 26-27. The first round of wet weather bumped the average water equivalency of the Sierra Nevada snowpack from 3 to 11 inches, according to the California Department of Water Resources, while the longer stormy spell added more than 20 additional inches to the Sierra Nevada's snow-water content. As a result, the Sierra Nevada snowpack was roughly 250 percent of the mid-January average and about 125 percent of the normal for an entire October-March season. Similar snowpack surpluses were noted by mid-January as far east as the Wasatch Range.

Following as many as 3 consecutive years of Western drought, the early-to mid-winter storms resulted in substantial drought relief, according to the *U.S. Drought Monitor*. In fact, drought coverage in the 11-state Western region decreased from 74 to 61 percent between September 27, 2022, and January 10, 2023. Additionally, Western coverage of extreme to exceptional drought (D3 to D4) during the same period decreased from 19 to 9 percent.

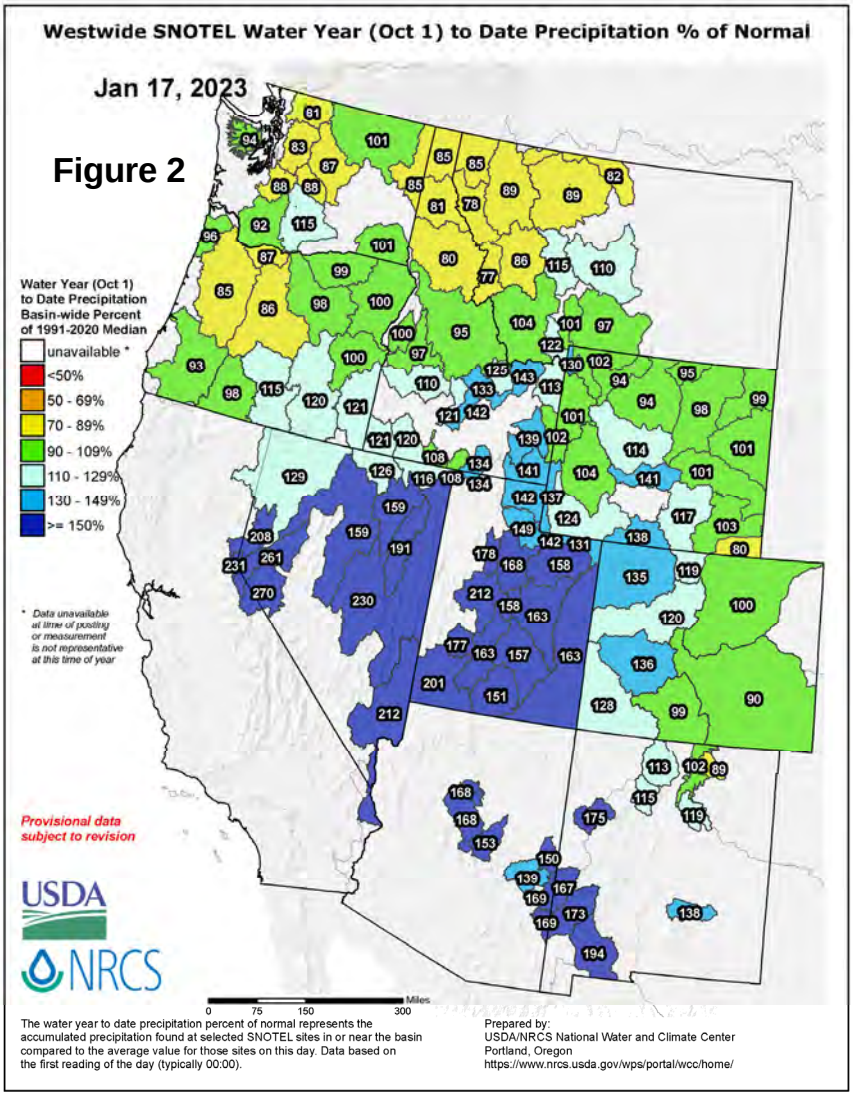
Snowpack (and spring and summer runoff prospects) were a little less optimistic in some areas, including the Pacific Northwest and the eastern slopes of the Rockies. Still, only a few basins reported significantly below-average snowpack and season-to-date precipitation. However, with many large Western reservoirs still reeling from long-term drought, statewide water storage was generally below average as 2023 began.

Snowpack and Precipitation

Intense storminess in early December and from late December to mid-January padded high-elevation snowpack, especially from the Sierra Nevada to the Wasatch Range. In those areas, snow-water equivalencies were at least 150 to 300 percent of the mid-January average, portending additional drought relief during the spring snow-melt season (figure 1). Favorably heavy snowpack also extended into parts of the Southwest, including much of Arizona and western New Mexico. However, mid-January snow-water equivalencies were less than 90 percent of average in scattered basins across the northern and southern Rockies, as well as the Pacific Northwest.



Season-to-date precipitation (October 1, 2022 – January 17, 2023) was significantly above normal from California to the western slopes of the central Rockies. In fact, precipitation during the first half of the Western winter wet season was more than 200 percent of normal in many basins from the Sierra Nevada to the Wasatch Range (figure 2). Another area, covering Arizona and western New Mexico, has received precipitation totaling 150 to 200 percent of normal since the beginning of the water year on October 1. Less significant precipitation has fallen in the Northwest and across the eastern slopes of the Rockies, although only a few basins—mainly from the Cascades to northwestern Montana—reported below-average totals, ranging from 70 to 90 percent of normal.

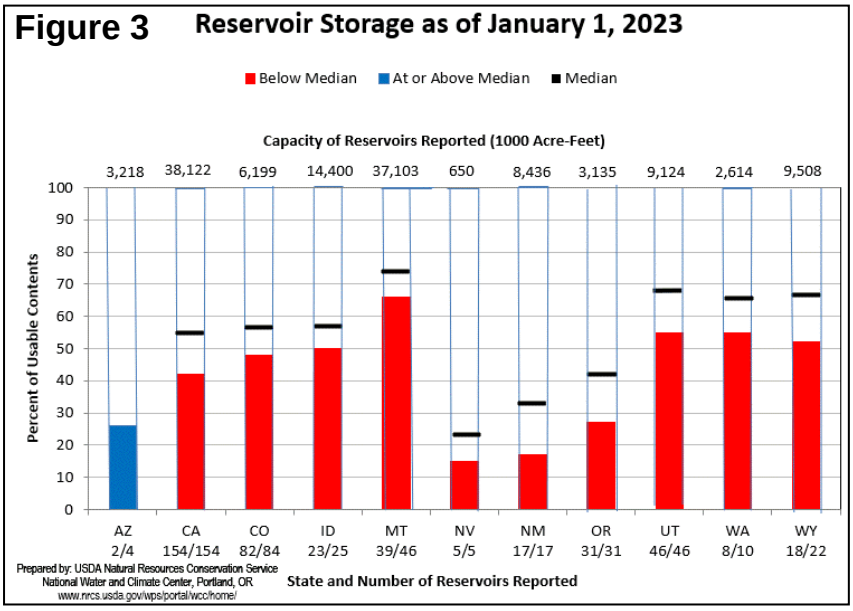


Spring and Summer Streamflow Forecasts

By January 1, 2023, projections for spring and summer streamflow were indicating the likelihood of mostly favorable to locally excessive runoff (150 to more than 300 percent of average) from the Sierra Nevada to the Wasatch Range. Most of the remainder of the western U.S. can expect near- or slightly above-average runoff. Exceptions—areas facing the possibility of below-average spring and summer streamflow—include the southern Rockies and parts of eastern Washington and northeastern Oregon.

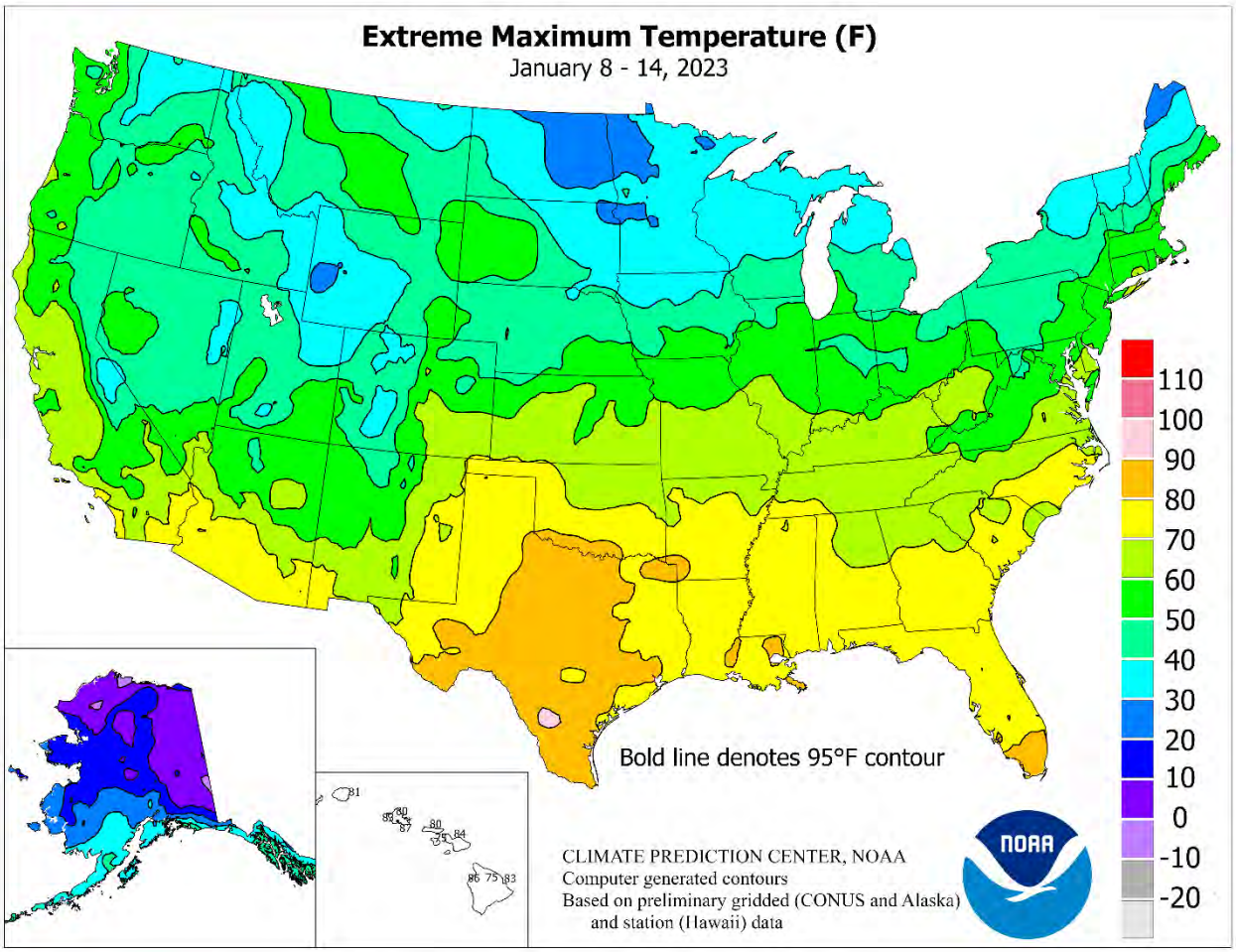
Reservoir Storage

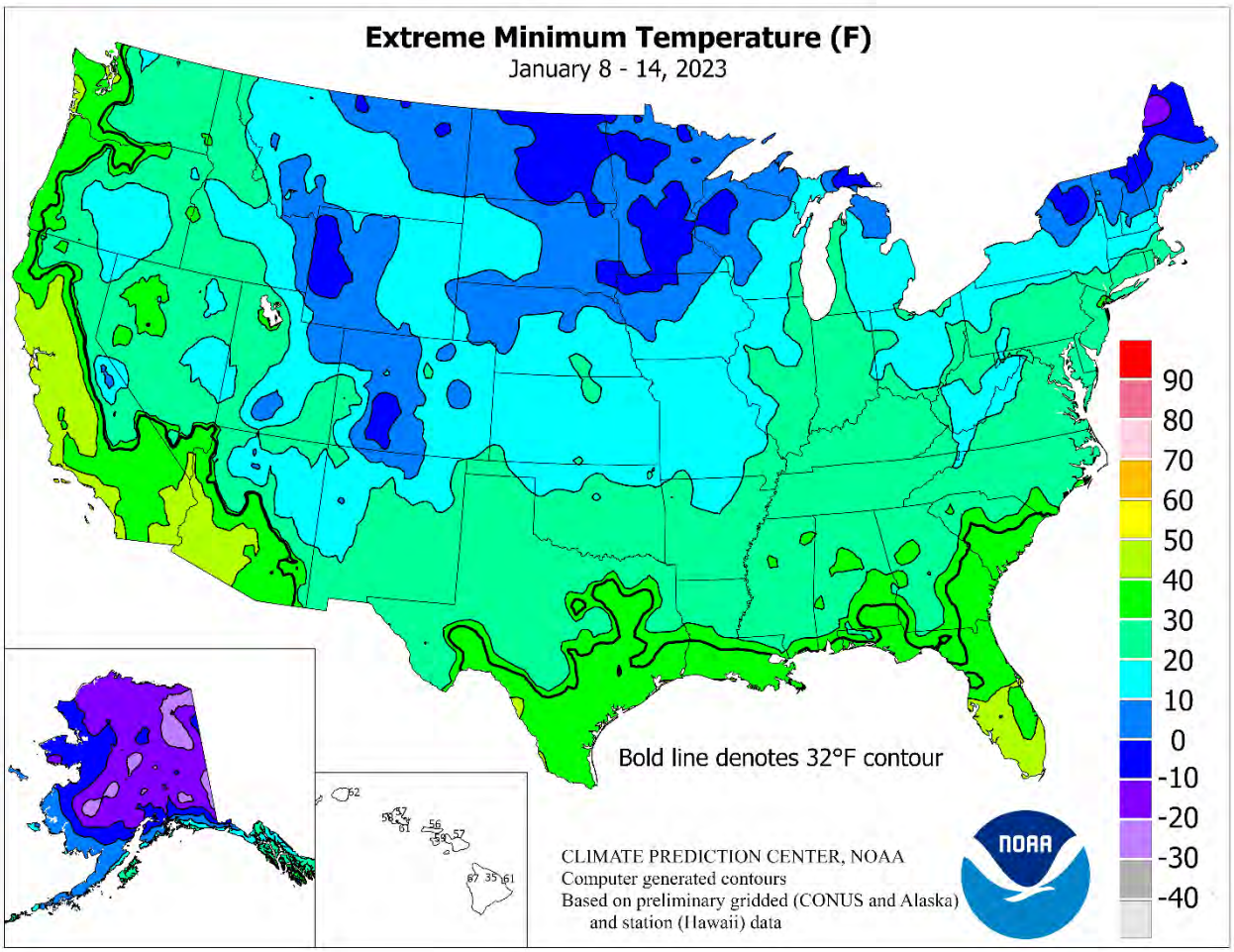
On January 1, 2023, statewide reservoir storage as a percent of average for the date continued to reflect long-term drought, despite stormy December weather. As 2023 began, California's 154 primary intrastate reservoirs held 16.0 million acre-feet of water, 76 percent of average for the date and 42 percent of capacity (figure 3).



For More Information

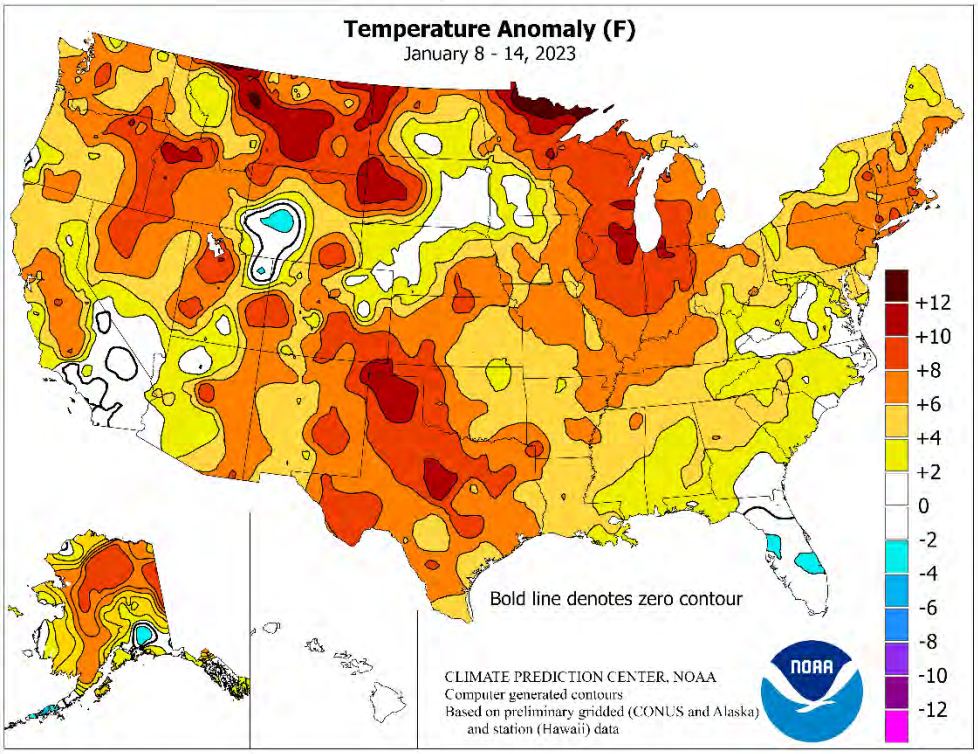
The National Water and Climate Center homepage provides the latest available snowpack and water supply information. Please visit: http://www.wcc.nrcs.usda.gov


Extreme Maximum Temperature (F)
January 8 - 14, 2023
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
Bold line denotes 95°F contour
CLIMATE PREDICTION CENTER, NOAA
Computer generated contours
Based on preliminary gridded (CONUS and Alaska)
and station (Hawaii) data
NOAA


Extreme Minimum Temperature (F)
January 8 - 14, 2023
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
Bold line denotes 32°F contour
CLIMATE PREDICTION CENTER, NOAA
Computer generated contours
Based on preliminary gridded (CONUS and Alaska)
and station (Hawaii) data
NOAA

(Continued from front cover)

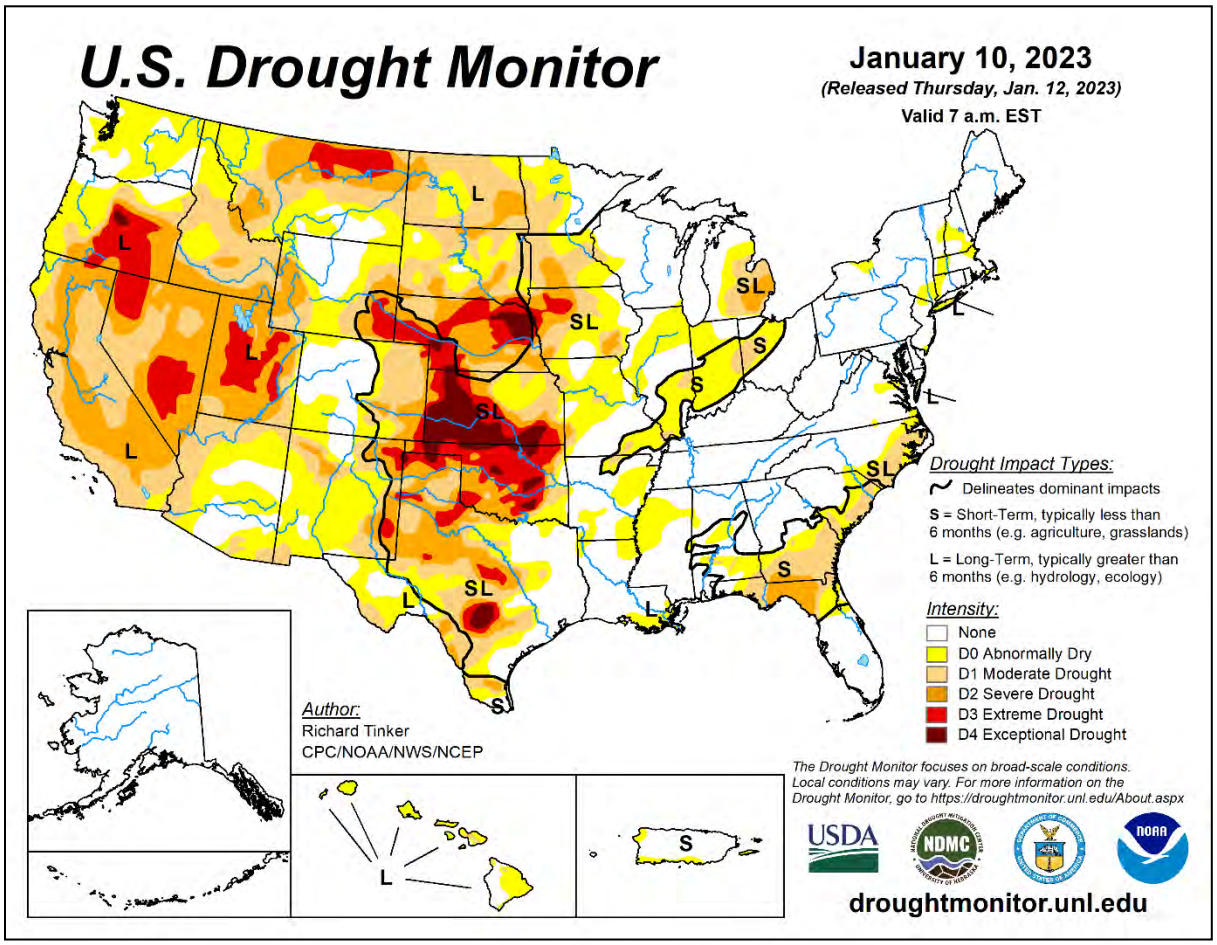
several **California** waterways, including portions of the **Salinas River**. In contrast, mild, dry weather dominated the **nation's mid-section**, including large sections of the **Plains** and **upper Midwest**. Although a substantial snow cover continued to insulate winter grains and cover crops across the **north-central U.S.**, other areas—including the **southern Plains** and **northern High Plains**—had full exposure to potential weather extremes. Meanwhile, precipitation across the **eastern one-third of the U.S.** included a mid-winter severe weather outbreak on January 12. According to preliminary reports, as many five dozen tornadoes struck a seven-state area of the **South** on January 12. A deadly EF3 tornado—with maximum winds estimated near 150 mph—carved a 77-mile path across **Alabama**, starting in **Autauga County**, where seven fatalities were reported. Elsewhere, near- or above-normal temperatures covered the entire country. Weekly temperatures averaged at least 10°F above normal in scattered locations across the **Midwest**, **upper Great Lakes region**, and **northern and southern Plains**.

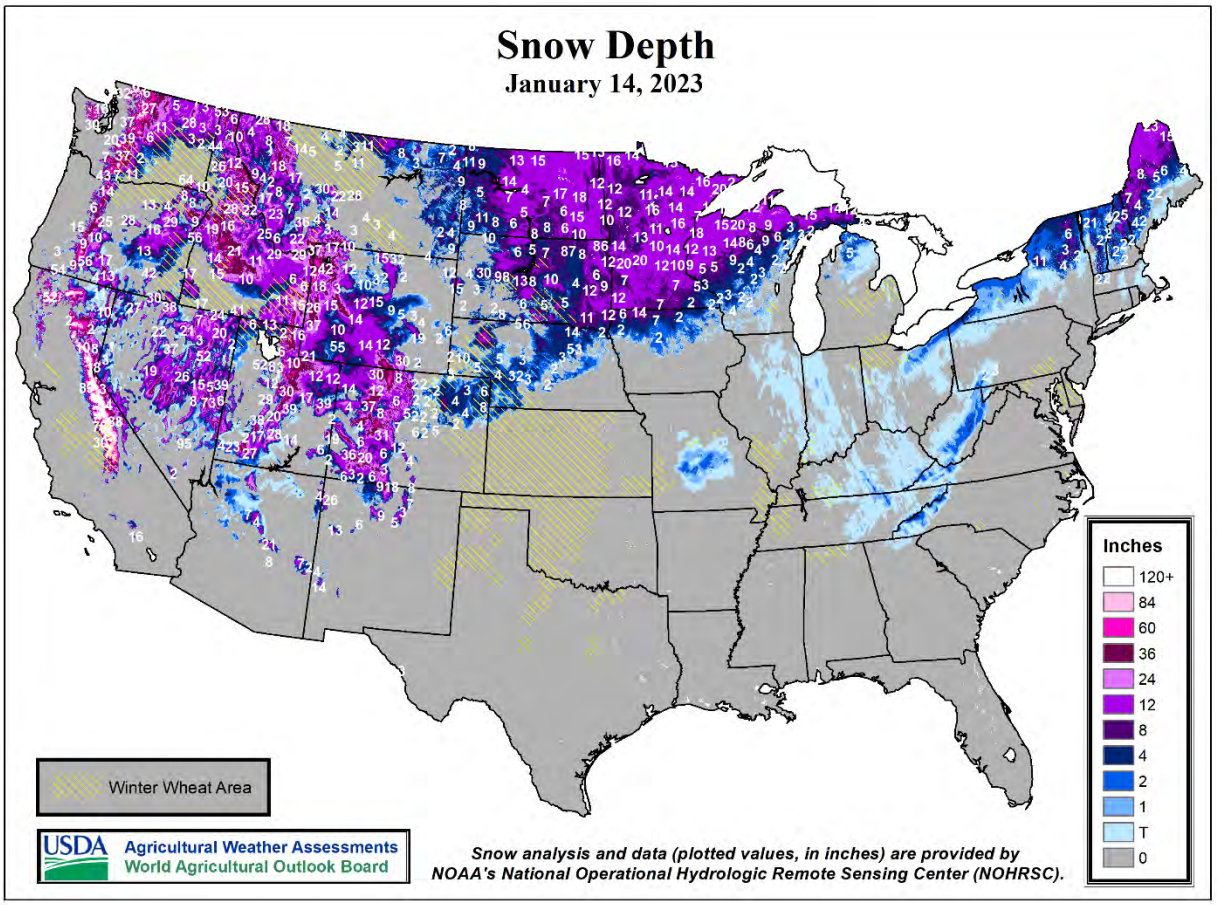


The week's most prominent warmth developed by January 10 across the **south-central U.S.** In **Texas**, for example, consecutive daily-record highs were set or tied on January 10-11 in locations such as **San Angelo** (84 and 83°F) and **Del Rio** (86 and 88°F). **San Angelo** last reported measurable precipitation on December 13. Elsewhere on the 10th, record-setting highs soared to 82°F in **Wichita Falls, TX**, and 80°F in **Lawton, OK**. The following day, as warmth shifted eastward, daily-record highs climbed to 82°F in **Texarkana, AR**; 81°F in **Lafayette, LA**; and 79°F in **McComb, MS**. With a high of 85°F on the 11th, **Dallas-Fort Worth, TX**, reported its warmest January day since 1969, when the temperature reached 88°F on January 8. Later, mild weather developed across the **Pacific Northwest**, where daily-record highs for January 12 rose to 66°F in **Medford, OR**, and 60°F in **Bellingham, WA**. The **Southwest** also experienced late-week warmth, with **Tucson, AZ**, notching a daily-record high of 80°F on January 13. At week's end, a brief surge of warmth across the **High Plains** led to record-setting highs for January 14 in **Pueblo, CO** (67°F), and **East Rapid City, SD** (62°F).

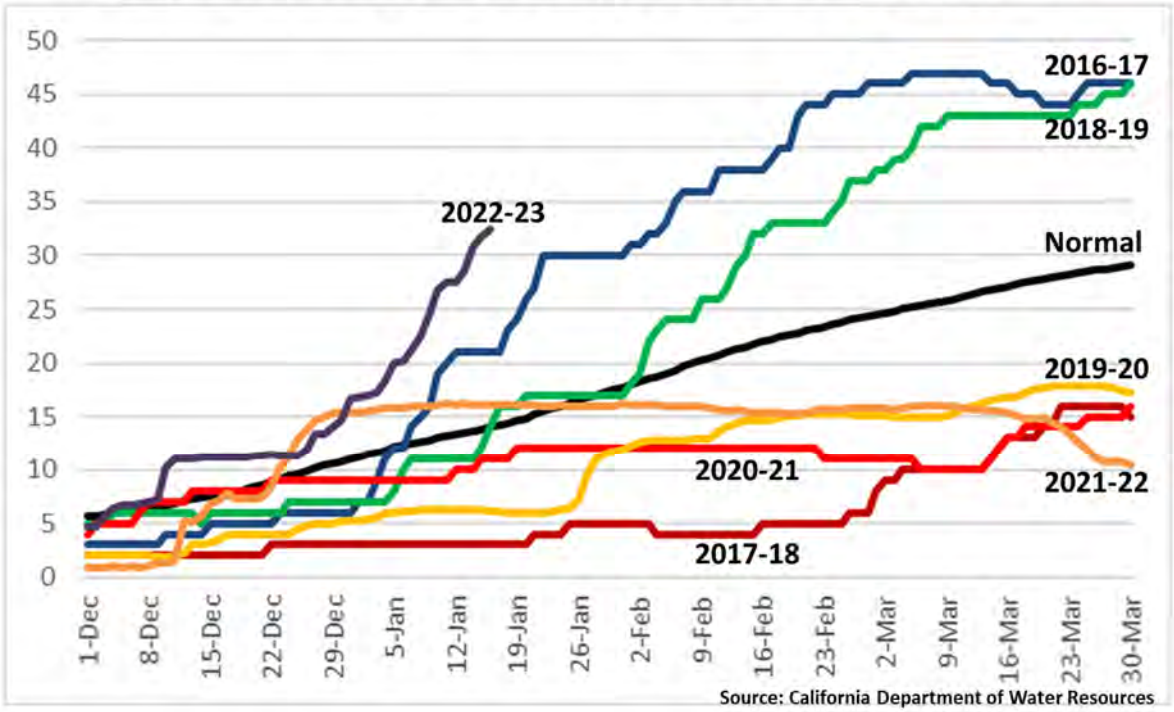
California's 3-week deluge culminated with record-setting rainfall. In a 72-hour period ending the evening of January 11, rainfall totals of 12 to 18 inches or more were reported in **southern California** locations such as **Ventura** (18.78 inches), **Nordhoff Ridge** (18.31 inches), **Matilija Dam** (17.17 inches), **San Marcos Pass** (17.17 inches), and **White Ledge Peak** (16.85 inches). **California's** calendar-day rainfall records for January 9 included 4.22 inches in **Santa Barbara**, 3.42 inches in **Santa Maria**, 3.02 inches in **Bishop**, 2.69 inches in **Sandberg**, and 2.16 inches in **Santa Rosa**. For **Santa Barbara**, it was the wettest January day on record, surpassing 4.16 inches on January 23, 2008. In **Bishop**, where the normal annual precipitation is 4.84 inches, it was the fifth-wettest day on record at any time of year. Along **California's Salinas River**, a northward-flowing waterway, a record crest (3.09 feet above flood stage) was reported on January 9 in **Paso Robles**. Farther downstream, the **Salinas River at Bradley, CA**, crested 5.88 feet above flood stage on January 10. It was the third-highest crest in **Bradley**, below the high-water marks of March 1995 and February 1969. Due to broken or compromised levees in the **Salinas Valley**, significant agricultural land remained under water after the crest passed. Meanwhile in **Merced, CA**, **Bear Creek** achieved a record crest on January 10, rising 3.18 feet above flood stage; the previous high-water mark had occurred on April 4, 2006. Finally, the **Carmel River at Robles del Rio, CA**, climbed 4.19 feet above flood stage on January 9, just 0.31 foot below the March 1995 high-water mark. At **Donner Pass, CA**, season-to-date snowfall at the **Central Sierra Snow Lab** climbed above 340 inches by mid-January, up from 56.5 inches at the end of November. Farther inland, **Alta, UT**, received 130.7 inches of snow in 19 days, from December 27 – January 14. Late in the week, precipitation overspread the **Pacific Northwest** before returning across **southern California**. Record-setting rainfall totals reached 2.59 inches (on January 12) in **Quillayute, WA**, and 2.69 inches (on January 13) in Cres**cent City, CA**. Meanwhile, heavy showers accompanied locally severe **Southern** thunderstorms, mainly on January 12-13. Daily-record wind gusts were clocked to 46 mph (on the 12th) in **Alma, GA**, and 47 mph (on the 13th) in **Jacksonville, FL**. Heavy precipitation fell in **northern New England** on January 13, when **Caribou, ME**, set daily records for precipitation (1.78 inches) and snowfall (10.5 inches). In **southern California**, record-breaking rainfall totals for January 14 included 1.82 inches in **downtown Los Angeles**, 1.72 inches in **Long Beach**, and 1.13 inches in **Paso Robles**.

Mild weather dominated **Alaska**, except for lingering cold conditions in the **Aleutians**. On January 11, **Cold Bay** posted a daily-record low of 6°F. In addition, **Cold Bay** recorded 4°F, not a record for the date, on January 12. Meanwhile, weekly temperatures averaged more than 10°F above normal in parts of **interior and northern Alaska**. In **Fairbanks**, an above-normal daily average temperature was noted on each of the first 14 days of January. Meanwhile, significant **Alaskan** precipitation was limited to a few spots, with **Kodiak** netting 2.29 inches on January 13-14. In **southeastern Alaska**, **Ketchikan** received precipitation totaling 2.98 inches from January 10-14. Farther south, unusually dry weather continued in **Hawaii**. Through January 14, month-to-date rainfall at the state's major airport observation sites ranged from 0.03 to 0.05 inch. On the **Big Island**, **Hilo's** 0.04-inch total was just 1 percent of normal.


U.S. Drought Monitor
January 10, 2023
(Released Thursday, Jan. 12, 2023)
Valid 7 a.m. EST
Drought Impact Types:
Delineates dominant impacts
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)
Intensity:
None
D0 Abnormally Dry
D1 Moderate Drought
D2 Severe Drought
D3 Extreme Drought
D4 Exceptional Drought
Author:
Richard Tinker
CPC/NOAA/NWS/NCEP
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx
droughtmonitor.unl.edu


Snow Depth
January 14, 2023
Inches
120+
84
60
36
24
12
8
4
2
1
T
0
Winter Wheat Area
USDA Agricultural Weather Assessments
World Agricultural Outlook Board
Snow analysis and data (plotted values, in inches) are provided by NOAA's National Operational Hydrologic Remote Sensing Center (NOHRSC).

Daily Sierra Nevada Snowpack (Inches) vs. Normal



California Reservoirs, Recharge and Withdrawal

Million Acre-Feet and Percent of Average

	Recharge		Withdrawal
2010-11	12.47 (138%)	**2011**	8.75 (97%)
2011-12	5.75 (64%)	**2012**	11.54 (128%)
2012-13	6.52 (72%)	**2013**	11.49 (147%)
2013-14	4.17 (46%)	**2014**	7.75 (86%)
2014-15	6.46 (71%)	**2015**	7.13 (79%)
2015-16	14.68 (162%)	**2016**	7.88 (87%)
2016-17	15.00 (166%)	**2017**	8.77 (97%)
2017-18	6.88 (76%)	**2018**	10.84 (120%)
2018-19	14.05 (155%)	**2019**	10.00 (111%)
2019-20	4.59 (51%)	**2020**	10.63 (118%)
2020-21	1.67 (19%)	**2021**	7.16 (79%)
2021-22	7.12 (79%)	**2022**	7.21 (80%)
Avg.	**9.04**	**Avg.**	**9.04**

Notes: Recharge and withdrawal values are based on end-of-month statistics, not daily readings. Data is updated through December 31, 2022.

National Weather Data for Selected Cities

Weather Data for the Week Ending January 14, 2023

Data Provided by Climate Prediction Center

STATES AND STATIONS		TEMPERATURE ˚F						PRECIPITATION							RELATIVE HUMIDITY PERCENT		NUMBER OF DAYS TEMP. ˚F		NUMBER OF DAYS PRECIP	
		AVERAGE MAXIMUM	AVERAGE MINIMUM	EXTREME HIGH	EXTREME LOW	AVERAGE	DEPARTURE FROM NORMAL	WEEKLY TOTAL, IN.	DEPARTURE FROM NORMAL	GREATEST IN 24-HOUR, IN.	TOTAL, IN., SINCE DEC 1	PCT. NORMAL SINCE DEC 1	TOTAL, IN., SINCE JAN 1	PCT. NORMAL SINCE JAN 1	AVERAGE MAXIMUM	AVERAGE MINIMUM	90 AND ABOVE	32 AND BELOW	.01 INCH OR MORE	.50 INCH OR MORE
AK	ANCHORAGE	25	15	30	-2	20	4	0.14	-0.02	0.09	4.18	280	0.28	83	94	72	0	7	3	0
	BARROW	-2	-10	1	-15	-6	0	0.12	0.08	0.07	0.74	249	0.12	166	81	71	0	7	4	0
	FAIRBANKS	6	-9	10	-16	-1	8	0.00	-0.15	0.00	1.20	140	0.03	11	83	71	0	7	0	0
	JUNEAU	33	25	42	20	29	1	0.30	-1.03	0.25	4.78	51	1.63	60	99	88	0	7	3	0
	KODIAK	38	32	41	29	35	4	2.88	0.93	1.18	10.46	81	4.20	105	98	84	0	5	6	2
	NOME	15	-1	20	-13	7	2	0.27	0.04	0.19	2.00	134	0.37	83	96	70	0	7	3	0
AL	BIRMINGHAM	58	38	67	31	48	3	1.18	0.06	0.60	7.54	106	3.29	146	89	51	0	2	2	2
	HUNTSVILLE	55	37	67	30	46	4	1.18	0.02	1.13	8.43	102	2.32	99	92	61	0	2	2	1
	MOBILE	67	44	76	30	55	5	0.09	-1.25	0.09	6.37	78	1.61	60	86	45	0	1	1	0
	MONTGOMERY	64	40	76	32	52	5	0.48	-0.53	0.39	5.59	79	2.03	98	88	51	0	1	2	0
AR	FORT SMITH	58	31	69	25	45	5	0.01	-0.66	0.01	4.30	88	0.38	27	91	46	0	5	1	0
	LITTLE ROCK	60	37	77	25	49	8	0.09	-0.73	0.09	8.21	119	2.05	115	84	47	0	2	1	0
AZ	FLAGSTAFF	45	20	53	13	33	2	0.18	-0.33	0.12	4.40	151	2.09	207	87	37	0	7	3	0
	PHOENIX	70	47	76	44	59	2	0.00	-0.21	0.00	2.54	220	0.54	128	67	23	0	0	0	0
	PRESCOTT	56	29	58	23	42	3	0.32	0.04	0.23	2.18	137	1.28	218	84	25	0	5	2	0
	TUCSON	74	44	80	37	59	6	0.00	-0.20	0.00	1.43	104	0.19	46	58	15	0	0	0	0
CA	BAKERSFIELD	64	51	70	44	57	8	1.09	0.81	0.80	3.00	180	1.39	246	83	43	0	0	4	1
	EUREKA	59	47	67	40	53	5	2.88	1.28	0.98	13.29	117	4.25	132	84	60	0	0	7	2
	FRESNO	60	50	64	46	55	7	2.56	2.03	1.52	8.17	288	3.66	350	96	58	0	0	5	2
	LOS ANGELES	63	52	71	47	57	-1	3.19	2.48	1.52	7.69	211	5.24	373	93	59	0	0	3	3
	REDDING	55	47	61	45	51	4	5.76	4.33	1.34	16.58	182	8.39	303	93	70	0	0	7	5
	SACRAMENTO	59	51	65	48	55	8	1.72	0.83	0.77	11.73	228	3.94	232	89	62	0	0	4	1
	SAN DIEGO	65	49	72	47	57	-1	0.84	0.37	0.64	4.04	153	2.49	258	89	46	0	0	2	1
	SAN FRANCISCO	62	53	68	52	58	7	4.60	3.65	1.50	16.93	283	7.34	399	89	61	0	0	6	5
	STOCKTON	59	50	65	47	55	7	2.37	1.72	1.04	12.22	336	3.70	301	91	65	0	0	6	2
CO	ALAMOSA	46	9	53	2	27	11	0.00	-0.07	0.00	0.28	56	0.26	180	87	28	0	7	0	0
	CO SPRINGS	56	27	67	20	42	10	0.00	-0.06	0.00	0.67	198	0.17	153	67	18	0	6	0	0
	DENVER INTL	47	24	59	16	36	4	0.07	-0.01	0.07	1.38	265	0.23	138	77	43	0	6	1	0
	GRAND JUNCTION	44	29	52	27	37	10	0.07	-0.07	0.06	1.52	173	0.27	95	93	50	0	6	2	0
	PUEBLO	60	19	67	12	40	8	0.00	-0.06	0.00	0.20	48	0.06	53	69	16	0	7	0	0
CT	BRIDGEPORT	44	31	55	27	38	6	0.63	-0.11	0.56	5.62	102	1.55	103	84	56	0	5	3	1
	HARTFORD	41	27	56	22	34	7	1.00	0.25	0.76	6.53	115	2.09	134	82	52	0	6	2	1
DC	WASHINGTON	49	34	56	30	42	4	0.42	-0.23	0.20	4.19	88	0.42	32	86	51	0	4	4	0
DE	WILMINGTON	48	33	59	27	40	7	0.13	-0.60	0.08	5.74	108	0.56	38	85	54	0	3	3	0
FL	DAYTONA BEACH	71	45	79	36	58	-1	0.36	-0.22	0.36	1.81	51	0.70	58	92	41	0	0	1	0
	JACKSONVILLE	69	40	79	32	55	1	0.28	-0.41	0.28	1.60	39	1.39	105	92	38	0	1	1	0
	KEY WEST	76	64	80	59	70	-1	0.08	-0.30	0.08	4.12	138	0.08	9	91	56	0	0	1	0
	MIAMI	78	58	82	48	68	-1	0.03	-0.33	0.03	1.75	54	0.03	4	86	42	0	0	1	0
	ORLANDO	73	47	79	40	60	0	0.77	0.23	0.77	1.80	50	0.87	81	92	39	0	0	1	1
	PENSACOLA	67	46	79	34	56	4	0.07	-1.06	0.07	6.39	83	0.93	40	87	48	0	0	1	0
	TALLAHASSEE	69	40	77	30	55	3	0.61	-0.35	0.61	2.96	48	0.91	47	92	43	0	1	1	1
	TAMPA	71	50	77	42	60	-1	0.45	-0.09	0.45	3.39	92	1.00	91	90	48	0	0	1	0
	WEST PALM BEACH	75	53	80	42	64	-2	0.01	-0.74	0.01	3.48	69	0.01	0	91	47	0	0	1	0
GA	ATHENS	60	37	70	29	48	5	0.69	-0.27	0.57	10.15	158	5.44	272	89	45	0	2	2	1
	ATLANTA	59	41	70	31	50	6	0.74	-0.28	0.60	6.70	100	3.30	158	86	51	0	1	2	1
	AUGUSTA	63	35	71	29	49	2	0.55	-0.30	0.51	5.79	102	2.05	116	94	39	0	3	2	1
	COLUMBUS	62	39	73	33	51	3	0.82	-0.11	0.71	5.51	81	3.95	200	90	51	0	0	2	1
	MACON	64	38	76	30	51	3	0.84	-0.08	0.82	6.15	94	4.16	214	91	45	0	2	2	1
	SAVANNAH	65	42	76	34	53	3	0.33	-0.35	0.28	2.48	54	0.76	55	86	35	0	0	2	0
HI	HILO	82	62	83	61	72	1	0.00	-1.58	0.00	7.52	48	0.04	1	81	49	0	0	0	0
	HONOLULU	81	64	87	61	73	-1	0.00	-0.45	0.00	2.28	72	0.05	5	90	53	0	0	0	0
	KAHULUI	82	61	84	57	71	-2	0.00	-0.53	0.00	3.84	98	0.04	3	85	51	0	0	0	0
	LIHUE	80	65	81	62	73	0	0.00	-0.63	0.00	4.88	81	0.04	2	84	57	0	0	0	0
IA	BURLINGTON	41	24	53	16	32	8	0.00	-0.33	0.00	1.64	64	0.83	124	92	63	0	7	0	0
	CEDAR RAPIDS	35	21	45	16	28	8	0.00	-0.21	0.00	0.62	30	0.31	69	95	73	0	7	0	0
	DES MOINES	39	20	52	13	29	7	0.00	-0.24	0.00	2.58	124	0.67	136	91	59	0	7	0	0
	DUBUQUE	35	22	47	18	29	10	0.00	-0.29	0.00	2.98	125	0.77	133	96	77	0	7	0	0
	SIOUX CITY	34	17	42	8	25	6	0.00	-0.16	0.00	2.03	154	0.37	111	93	74	0	7	0	0
	WATERLOO	35	21	42	19	28	9	0.00	-0.21	0.00	2.40	127	0.75	172	90	70	0	6	0	0
ID	BOISE	48	36	52	30	42	10	0.26	-0.07	0.09	2.22	100	0.38	56	81	52	0	2	4	0
	LEWISTON	47	36	53	32	42	6	0.31	0.06	0.15	1.49	91	0.31	61	87	66	0	2	4	0
	POCATELLO	41	26	45	19	33	8	0.26	0.00	0.10	2.13	129	0.54	105	88	65	0	7	4	0
IL	CHICAGO/O_HARE	42	30	57	24	36	11	0.02	-0.46	0.02	3.45	112	1.31	138	86	63	0	4	1	0
	MOLINE	42	25	55	17	34	10	0.01	-0.37	0.01	2.45	86	0.78	100	85	62	0	6	1	0
	PEORIA	42	28	53	21	35	9	0.03	-0.46	0.03	3.11	96	0.45	44	96	65	0	6	1	0
	ROCKFORD	38	25	50	19	32	10	0.01	-0.36	0.01	3.00	112	0.47	62	91	71	0	6	1	0
	SPRINGFIELD	44	28	60	22	36	8	0.15	-0.32	0.09	2.25	71	0.17	16	93	58	0	6	3	0
IN	EVANSVILLE	49	31	64	23	40	6	0.80	0.01	0.74	5.52	101	1.98	120	93	62	0	4	3	1
	FORT WAYNE	42	28	52	20	35	9	0.06	-0.56	0.04	2.63	70	0.44	35	89	63	0	6	2	0
	INDIANAPOLIS	43	31	52	23	37	9	0.89	0.13	0.85	4.34	96	1.75	112	89	63	0	4	3	1
	SOUTH BEND	42	30	54	25	36	12	0.04	-0.60	0.04	3.99	107	0.85	65	87	63	0	4	1	0
KS	CONCORDIA	49	27	61	22	38	9	0.00	-0.13	0.00	0.81	61	0.16	56	80	44	0	7	0	0
	DODGE CITY	58	25	65	19	41	9	0.01	-0.11	0.01	0.19	14	0.10	37	85	30	0	7	1	0
	GOODLAND	44	26	54	22	35	5	0.00	-0.06	0.00	0.00	0	0.00	0	95	75	0	4	0	0
	TOPEKA	48	22	58	18	35	6	0.13	-0.05	0.12	1.13	59	0.17	42	90	49	0	7	2	0

Based on 1991-2020 normals

***** Not Available**

Weather Data for the Week Ending January 14, 2023

STATES AND STATIONS		TEMPERATURE °F						PRECIPITATION							RELATIVE HUMIDITY PERCENT		NUMBER OF DAYS			
																	TEMP. °F		PRECIP	
		AVERAGE MAXIMUM	AVERAGE MINIMUM	EXTREME HIGH	EXTREME LOW	AVERAGE	DEPARTURE FROM NORMAL	WEEKLY TOTAL, IN.	DEPARTURE FROM NORMAL	GREATEST IN 24-HOUR, IN.	TOTAL, IN., SINCE DEC 1	PCT. NORMAL SINCE DEC 1	TOTAL, IN., SINCE JAN 1	PCT. NORMAL SINCE JAN 1	AVERAGE MAXIMUM	AVERAGE MINIMUM	90 AND ABOVE	32 AND BELOW	.01 INCH OR MORE	.50 INCH OR MORE
	WICHITA	53	25	62	19	39	6	0.03	-0.14	0.03	0.87	54	0.09	24	86	41	0	7	1	0
KY	LEXINGTON	49	33	62	22	41	7	0.62	-0.15	0.57	7.59	131	4.21	267	87	61	0	3	3	1
	LOUISVILLE	50	35	62	29	43	7	0.56	-0.24	0.51	6.44	111	3.19	195	87	59	0	1	3	1
	PADUCAH	53	32	69	25	42	6	0.47	-0.44	0.47	8.45	137	4.00	215	90	58	0	5	1	0
LA	BATON ROUGE	69	46	82	31	57	6	0.51	-1.00	0.50	8.76	106	1.50	51	91	50	0	1	2	1
	LAKE CHARLES	66	46	77	35	56	3	1.21	-0.26	1.21	10.47	140	1.24	43	96	54	0	0	1	1
	NEW ORLEANS	67	50	81	39	59	5	0.92	-0.34	0.92	9.48	129	1.46	57	91	52	0	0	1	1
	SHREVEPORT	67	41	81	30	54	7	0.00	-1.01	0.00	0.00	0	0.00	0	89	39	0	1	0	0
MA	BOSTON	44	29	58	23	36	6	0.68	-0.12	0.33	5.43	91	1.74	107	87	60	0	5	4	0
	WORCESTER	41	25	56	19	33	8	1.15	0.35	0.80	8.53	144	2.43	149	85	62	0	7	3	1
MD	BALTIMORE	49	32	56	25	40	6	0.22	-0.48	0.12	5.10	99	0.33	23	88	50	0	4	3	0
ME	CARIBOU	24	8	32	-6	16	4	2.03	1.35	1.72	7.27	145	2.76	199	87	66	0	7	4	1
	PORTLAND	38	22	50	14	30	6	1.94	1.14	1.09	6.77	110	2.82	172	86	57	0	6	3	2
MI	ALPENA	32	21	36	6	26	6	0.21	-0.22	0.17	2.35	86	0.90	104	94	71	0	7	2	0
	GRAND RAPIDS	38	27	47	18	33	8	0.00	-0.60	0.00	2.20	59	0.74	62	85	66	0	6	0	0
	HOUGHTON LAKE	32	22	36	9	27	7	0.10	-0.30	0.10	1.92	74	0.61	76	93	72	0	7	1	0
	LANSING	38	26	45	15	32	8	0.00	-0.50	0.00	1.55	53	0.56	55	83	61	0	6	0	0
	MUSKEGON	40	31	50	25	36	9	0.01	-0.56	0.01	1.79	50	0.61	53	80	63	0	4	1	0
	TRAVERSE CITY	35	29	40	23	32	8	0.04	-0.36	0.02	1.05	40	0.39	47	81	67	0	6	2	0
MN	DULUTH	26	16	31	5	21	10	0.06	-0.17	0.05	3.73	190	0.52	106	91	76	0	7	2	0
	INT_L FALLS	26	13	31	0	20	15	0.00	-0.20	0.00	0.30	21	0.00	0	91	76	0	7	0	0
	MINNEAPOLIS	29	14	34	0	21	5	0.07	-0.13	0.07	3.12	194	1.35	313	91	76	0	7	1	0
	ROCHESTER	28	15	35	3	22	7	0.00	-0.22	0.00	3.04	175	1.43	320	91	79	0	7	0	0
	ST. CLOUD	26	11	32	-6	19	7	0.04	-0.12	0.04	2.98	247	1.09	329	92	77	0	7	1	0
MO	COLUMBIA	48	28	60	19	38	7	0.21	-0.28	0.20	1.80	58	0.59	59	91	55	0	5	2	0
	KANSAS CITY	50	27	61	20	38	9	0.01	-0.23	0.01	2.27	108	1.09	211	80	45	0	6	1	0
	SAINT LOUIS	49	29	66	19	39	7	0.05	-0.55	0.05	2.96	78	1.01	79	85	52	0	5	1	0
	SPRINGFIELD	51	26	65	18	39	5	0.08	-0.52	0.08	3.85	99	1.63	127	92	51	0	6	1	0
MS	JACKSON	63	40	78	27	51	4	1.33	0.13	1.33	7.27	96	1.65	68	89	51	0	1	1	1
	MERIDIAN	63	38	77	30	50	3	1.11	-0.12	0.95	6.13	79	2.13	86	95	51	0	3	2	1
	TUPELO	60	38	74	31	49	6	0.16	-0.94	0.10	8.79	107	1.63	73	84	46	0	2	2	0
MT	BILLINGS	48	29	56	21	39	12	0.00	-0.13	0.00	0.61	73	0.00	0	70	36	0	5	0	0
	BUTTE	37	11	43	5	24	4	0.00	-0.10	0.00	0.55	80	0.06	31	92	57	0	7	0	0
	CUT BANK	45	24	55	12	34	13	0.00	-0.06	0.00	0.00	0	0.00	0	82	49	0	6	0	0
	GLASGOW	27	13	35	5	20	6	0.02	-0.09	0.02	0.90	142	0.02	8	88	77	0	7	1	0
	GREAT FALLS	47	29	54	19	38	13	0.01	-0.12	0.01	1.41	180	0.50	196	77	43	0	5	1	0
	HAVRE	28	8	42	-2	18	1	0.03	-0.07	0.03	1.50	242	0.03	14	91	75	0	7	1	0
	MISSOULA	33	21	37	11	27	3	0.19	-0.04	0.12	1.46	94	0.20	43	95	83	0	7	3	0
NC	ASHEVILLE	49	30	62	24	40	1	1.19	0.26	0.87	6.19	101	2.62	137	91	55	0	5	2	1
	CHARLOTTE	57	37	69	30	47	5	0.93	0.12	0.67	7.39	141	2.85	172	90	46	0	2	2	1
	GREENSBORO	51	33	62	26	42	3	1.42	0.63	0.97	6.06	127	2.31	146	88	52	0	4	3	1
	HATTERAS	59	40	68	35	50	2	0.51	-0.57	0.19	3.79	54	0.51	23	96	64	0	0	4	0
	RALEIGH	55	35	68	29	45	4	0.69	-0.11	0.43	4.87	97	1.23	76	89	47	0	4	4	0
	WILMINGTON	61	38	75	31	50	3	0.04	-0.78	0.04	2.36	44	0.20	11	89	45	0	1	1	0
ND	BISMARCK	24	4	33	-5	14	1	0.00	-0.11	0.00	2.09	247	0.00	0	90	72	0	7	0	0
	DICKINSON	33	16	40	9	25	8	0.00	-0.06	0.00	0.14	46	0.00	0	92	75	0	7	0	0
	FARGO	21	9	28	2	15	6	0.01	-0.17	0.01	1.98	156	0.01	3	96	84	0	7	1	0
	GRAND FORKS	19	5	24	-1	12	6	0.00	-0.13	0.00	1.32	144	0.01	4	90	79	0	7	0	0
	JAMESTOWN	22	3	28	-2	13	3	0.00	-0.08	0.00	0.43	84	0.00	0	90	76	0	7	0	0
NE	GRAND ISLAND	42	25	53	19	34	8	0.01	-0.11	0.01	0.93	83	0.49	185	87	61	0	7	1	0
	LINCOLN	44	21	56	14	32	7	0.00	-0.16	0.00	1.04	68	0.41	123	87	52	0	7	0	0
	NORFOLK	37	20	44	14	28	6	0.00	-0.13	0.00	1.31	117	0.64	231	88	67	0	7	0	0
	NORTH PLATTE	39	16	43	10	27	1	0.00	-0.09	0.00	2.08	330	0.74	417	92	65	0	7	0	0
	OMAHA	38	20	50	14	29	5	0.00	-0.16	0.00	1.58	101	0.55	158	90	64	0	7	0	0
	SCOTTSBLUFF	43	19	51	11	31	3	0.25	0.17	0.24	1.26	179	0.61	337	87	59	0	7	2	0
	VALENTINE	37	15	48	5	26	1	0.00	-0.07	0.00	4.22	744	2.00	900	91	68	0	7	0	0
NH	CONCORD	37	19	43	10	28	6	1.10	0.47	0.78	6.11	121	2.11	159	89	52	0	7	3	1
NJ	ATLANTIC_CITY	47	30	59	24	39	5	0.47	-0.30	0.42	6.25	103	0.74	47	92	57	0	4	3	0
	NEWARK	47	35	59	32	41	8	0.32	-0.48	0.23	5.61	97	1.13	69	76	51	0	1	3	0
NM	ALBUQUERQUE	53	28	58	24	40	4	0.00	-0.09	0.00	0.80	112	0.18	97	67	24	0	6	0	0
NV	ELY	38	23	40	15	30	4	0.34	0.17	0.26	2.48	247	0.98	292	92	64	0	7	2	0
	LAS VEGAS	57	42	61	38	50	1	0.22	0.09	0.14	0.56	76	0.48	178	77	40	0	0	2	0
	RENO	46	33	55	30	39	3	1.37	1.04	0.81	6.94	400	1.87	296	89	52	0	3	6	1
	WINNEMUCCA	46	34	49	31	40	8	0.36	0.13	0.17	3.06	254	0.65	141	85	57	0	1	4	0
NY	ALBANY	36	23	43	18	30	5	0.60	-0.01	0.33	5.07	112	1.31	105	87	60	0	7	2	0
	BINGHAMTON	35	24	44	16	29	7	0.75	0.14	0.41	5.35	123	1.61	129	91	72	0	7	2	0
	BUFFALO	34	26	45	19	30	5	0.69	-0.07	0.61	11.54	215	1.76	108	89	74	0	6	2	1
	ROCHESTER	35	25	45	18	30	4	0.77	0.19	0.62	16.30	421	2.03	170	91	72	0	6	2	1
	SYRACUSE	35	21	44	15	28	3	1.03	0.42	0.56	5.22	114	2.06	161	89	66	0	7	3	1
OH	AKRON-CANTON	40	28	50	21	34	6	1.02	0.34	0.95	4.39	102	2.52	180	87	66	0	5	4	1
	CINCINNATI	45	30	54	24	38	6	0.69	-0.08	0.67	4.61	86	1.96	123	92	61	0	5	2	1
	CLEVELAND	40	29	50	18	35	5	1.39	0.67	1.05	4.09	91	2.88	196	82	65	0	6	3	1
	COLUMBUS	42	27	53	18	34	5	0.78	0.07	0.73	4.07	88	2.07	140	93	67	0	6	2	1
	DAYTON	43	28	50	21	35	6	0.87	0.11	0.84	2.72	59	1.24	80	87	61	0	5	3	1
	MANSFIELD	38	26	49	13	32	5	1.20	0.44	1.16	3.83	83	2.49	161	91	73	0	7	2	1

Based on 1991-2020 normals ***** Not Available**

Weather Data for the Week Ending January 14, 2023

STATES AND STATIONS		TEMPERATURE °F						PRECIPITATION							RELATIVE HUMIDITY PERCENT		NUMBER OF DAYS TEMP. °F		NUMBER OF DAYS PRECIP	
		AVERAGE MAXIMUM	AVERAGE MINIMUM	EXTREME HIGH	EXTREME LOW	AVERAGE	DEPARTURE FROM NORMAL	WEEKLY TOTAL, IN.	DEPARTURE FROM NORMAL	GREATEST IN 24-HOUR, IN.	TOTAL, IN., SINCE DEC 1	PCT. NORMAL SINCE DEC 1	TOTAL, IN., SINCE JAN 1	PCT. NORMAL SINCE JAN 1	AVERAGE MAXIMUM	AVERAGE MINIMUM	90 AND ABOVE	32 AND BELOW	.01 INCH OR MORE	.50 INCH OR MORE
	TOLEDO	41	28	52	19	35	7	0.06	-0.51	0.03	0.97	26	0.07	6	87	62	0	6	3	0
	YOUNGSTOWN	38	26	46	19	32	5	1.18	0.46	1.13	4.15	89	2.58	173	91	71	0	6	3	1
OK	OKLAHOMA CITY	60	31	70	26	46	8	0.00	-0.27	0.00	2.09	88	0.08	13	82	33	0	6	0	0
	TULSA	57	26	69	20	42	4	0.00	-0.36	0.00	2.59	80	0.04	5	91	40	0	6	0	0
OR	ASTORIA	54	45	58	42	49	6	2.27	-0.18	0.61	15.06	96	3.52	70	93	69	0	0	6	3
	BURNS	39	24	44	12	31	5	0.99	0.67	0.30	3.53	163	1.15	182	90	69	0	5	6	0
	EUGENE	54	40	61	29	47	6	0.88	-0.56	0.31	6.88	67	1.87	64	97	66	0	1	7	0
	MEDFORD	57	40	66	33	48	9	0.44	-0.25	0.21	4.48	91	0.48	34	85	45	0	0	5	0
	PENDLETON	54	39	58	33	47	12	0.48	0.12	0.29	2.02	90	0.54	74	85	49	0	0	5	0
	PORTLAND	51	42	53	34	47	5	2.01	0.84	0.65	10.80	132	2.45	103	92	67	0	0	7	1
	SALEM	53	40	55	34	47	5	1.48	0.07	0.42	7.81	79	2.21	77	97	69	0	0	7	0
PA	ALLENTOWN	43	29	53	25	36	6	0.27	-0.47	0.16	5.75	107	1.41	95	83	57	0	6	2	0
	ERIE	38	27	48	15	32	4	1.33	0.53	1.11	4.03	68	2.98	176	91	67	0	6	3	1
	MIDDLETOWN	44	30	52	26	37	6	0.37	-0.31	0.15	5.39	113	1.04	77	86	60	0	5	3	0
	PHILADELPHIA	47	33	59	29	40	6	0.18	-0.53	0.10	5.31	98	0.50	34	87	54	0	4	3	0
	PITTSBURGH	40	27	51	23	34	5	0.79	0.09	0.74	3.37	79	1.71	123	89	63	0	6	3	1
	WILKES-BARRE	41	30	52	23	35	7	0.67	0.06	0.40	4.79	119	1.15	94	86	62	0	5	2	0
	WILLIAMSPORT	41	29	47	25	35	8	0.77	0.09	0.55	6.51	140	1.43	104	88	59	0	5	2	1
RI	PROVIDENCE	45	29	58	23	37	6	1.36	0.43	0.71	8.21	126	2.22	119	90	62	0	6	4	2
SC	CHARLESTON	65	42	75	37	54	4	0.32	-0.40	0.19	2.32	48	0.66	45	88	37	0	0	3	0
	COLUMBIA	62	38	72	32	50	5	0.39	-0.38	0.39	4.58	86	1.59	98	89	42	0	1	1	0
	FLORENCE	60	37	71	30	49	3	0.30	-0.37	0.27	3.76	76	1.06	74	88	45	0	1	2	0
	GREENVILLE	55	36	67	27	46	4	0.91	-0.03	0.63	8.97	137	4.53	232	88	48	0	2	2	1
SD	ABERDEEN	22	8	33	1	15	2	0.01	-0.12	0.01	1.45	161	0.01	4	98	81	0	7	1	0
	HURON	26	10	37	3	18	2	0.00	-0.13	0.00	1.89	201	0.15	54	94	78	0	7	0	0
	RAPID CITY	50	20	64	14	35	11	0.00	-0.07	0.00	0.84	168	0.15	105	90	44	0	7	0	0
	SIOUX FALLS	28	9	37	-5	19	1	0.00	-0.13	0.00	***	***	***	***	89	71	0	7	0	0
TN	BRISTOL	51	30	66	21	41	5	1.80	1.01	1.01	6.17	115	2.32	145	88	57	0	5	3	2
	CHATTANOOGA	55	37	65	29	46	4	0.95	-0.18	0.51	8.70	115	2.65	116	89	58	0	2	2	1
	KNOXVILLE	50	34	66	25	42	3	1.70	0.62	0.86	8.57	120	3.09	144	94	61	0	3	3	2
	MEMPHIS	57	38	71	28	48	6	0.31	-0.62	0.31	10.74	144	4.83	249	90	54	0	1	1	0
	NASHVILLE	55	36	69	28	45	6	0.18	-0.72	0.17	6.07	97	1.67	93	88	58	0	2	2	0
TX	ABILENE	71	41	84	29	56	10	0.00	-0.22	0.00	0.46	26	0.00	0	60	19	0	1	0	0
	AMARILLO	65	32	73	25	48	10	0.00	-0.14	0.00	0.15	15	0.00	0	66	16	0	3	0	0
	AUSTIN	72	46	84	34	59	8	0.00	-0.61	0.00	1.96	49	0.07	5	80	31	0	0	0	0
	BEAUMONT	70	49	79	36	59	6	1.16	-0.12	1.13	6.87	92	1.24	50	96	49	0	0	2	1
	BROWNSVILLE	77	54	83	39	65	3	0.00	-0.24	0.00	0.26	15	0.00	0	98	50	0	0	0	0
	CORPUS CHRISTI	75	48	86	36	62	4	0.04	-0.28	0.04	0.35	13	0.04	6	93	44	0	0	1	0
	DEL RIO	76	46	88	37	61	8	0.00	-0.13	0.00	0.02	2	0.02	7	64	21	0	0	0	0
	EL PASO	65	36	70	28	50	5	0.00	-0.08	0.00	0.40	49	0.08	42	57	19	0	2	0	0
	FORT WORTH	70	41	85	33	55	9	0.00	-0.57	0.00	2.37	58	0.00	0	71	26	0	0	0	0
	GALVESTON	69	56	75	47	62	6	1.20	0.20	1.20	4.43	71	1.26	64	88	58	0	0	1	1
	HOUSTON	70	49	80	34	59	6	0.21	-0.65	0.18	4.60	80	0.77	45	92	44	0	0	2	0
	LUBBOCK	67	32	77	23	50	9	0.00	-0.13	0.00	0.41	39	0.00	0	66	17	0	4	0	0
	MIDLAND	68	35	78	28	52	6	0.00	-0.13	0.00	0.08	9	0.00	0	65	19	0	2	0	0
	SAN ANGELO	72	36	84	26	54	7	0.00	-0.19	0.00	1.02	80	0.00	0	74	19	0	1	0	0
	SAN ANTONIO	71	45	79	32	58	6	0.00	-0.41	0.00	0.48	16	0.01	1	78	33	0	1	0	0
	VICTORIA	73	48	84	36	60	6	3.45	2.82	3.45	4.90	137	3.47	280	97	47	0	0	1	1
	WACO	70	35	83	24	52	5	0.00	-0.58	0.00	0.56	13	0.00	0	92	27	0	3	0	0
	WICHITA FALLS	69	33	82	24	51	9	0.00	-0.25	0.00	2.02	96	0.00	0	75	22	0	3	0	0
UT	SALT LAKE CITY	49	33	53	32	41	10	0.89	0.57	0.73	4.32	210	2.03	314	89	48	0	2	3	1
VA	LYNCHBURG	49	30	53	24	39	3	1.29	0.50	0.61	7.09	140	1.51	97	86	46	0	5	3	2
	NORFOLK	52	36	67	29	44	2	0.63	-0.12	0.32	3.52	73	0.68	45	96	60	0	3	4	0
	RICHMOND	51	31	65	26	41	3	1.25	0.52	0.82	5.96	119	1.47	100	88	51	0	5	3	1
	ROANOKE	47	31	52	24	39	1	1.19	0.48	0.71	5.15	115	1.22	87	80	48	0	4	3	1
	WASH/DULLES	47	29	53	23	38	4	0.38	-0.28	0.23	5.29	114	0.38	29	87	51	0	5	3	0
VT	BURLINGTON	32	19	37	11	26	4	0.85	0.36	0.50	4.52	128	1.95	191	89	65	0	7	4	0
WA	OLYMPIA	52	38	57	34	45	6	1.63	-0.17	0.43	10.16	88	2.54	70	100	77	0	0	7	0
	QUILLAYUTE	51	43	54	38	47	6	5.53	1.89	2.55	21.22	101	6.61	92	99	81	0	0	7	2
	SEATTLE-TACOMA	54	44	59	40	49	7	1.52	0.19	0.46	9.44	112	1.94	72	86	54	0	0	7	0
	SPOKANE	39	32	45	27	36	6	0.96	0.49	0.32	4.50	136	0.96	99	99	86	0	4	6	0
	YAKIMA	40	31	43	25	36	5	0.60	0.31	0.19	2.98	147	0.84	142	96	82	0	5	6	0
WI	EAU CLAIRE	30	17	34	-1	24	9	0.05	-0.18	0.05	1.69	92	0.68	142	91	75	0	7	1	0
	GREEN BAY	33	24	40	17	29	10	0.05	-0.27	0.04	2.06	85	0.38	57	90	75	0	7	2	0
	LA CROSSE	32	20	37	12	26	7	0.00	-0.28	0.00	3.14	153	1.12	200	91	73	0	7	0	0
	MADISON	35	24	46	19	30	10	0.01	-0.31	0.01	2.94	129	0.61	93	91	72	0	7	1	0
	MILWAUKEE	40	30	46	25	35	10	0.06	-0.37	0.02	2.72	100	0.45	54	81	63	0	4	4	0
WV	BECKLEY	42	27	56	19	34	2	0.56	-0.15	0.36	3.38	72	0.61	43	94	65	0	6	5	0
	CHARLESTON	47	28	68	19	37	2	1.28	0.54	0.69	2.91	57	1.73	118	97	60	0	6	4	1
	ELKINS	43	24	62	17	34	3	0.70	-0.07	0.30	4.02	79	0.88	58	89	64	0	6	6	0
	HUNTINGTON	46	29	62	22	37	3	1.13	0.43	0.82	3.10	62	1.46	104	89	59	0	6	3	1
WY	CASPER	35	25	39	19	30	5	0.72	0.61	0.55	1.95	232	1.20	527	83	64	0	7	3	1
	CHEYENNE	48	27	56	17	37	8	0.23	0.15	0.23	0.54	84	0.49	312	74	39	0	7	1	0
	LANDER	27	9	34	2	18	-3	0.55	0.44	0.53	3.17	373	1.85	822	93	72	0	7	2	1
	SHERIDAN	46	20	52	11	33	9	0.00	-0.13	0.00	1.02	130	0.00	0	82	43	0	7	0	0

Based on 1991-2020 normals ***** Not Available**

January 12 ENSO Diagnostic Discussion

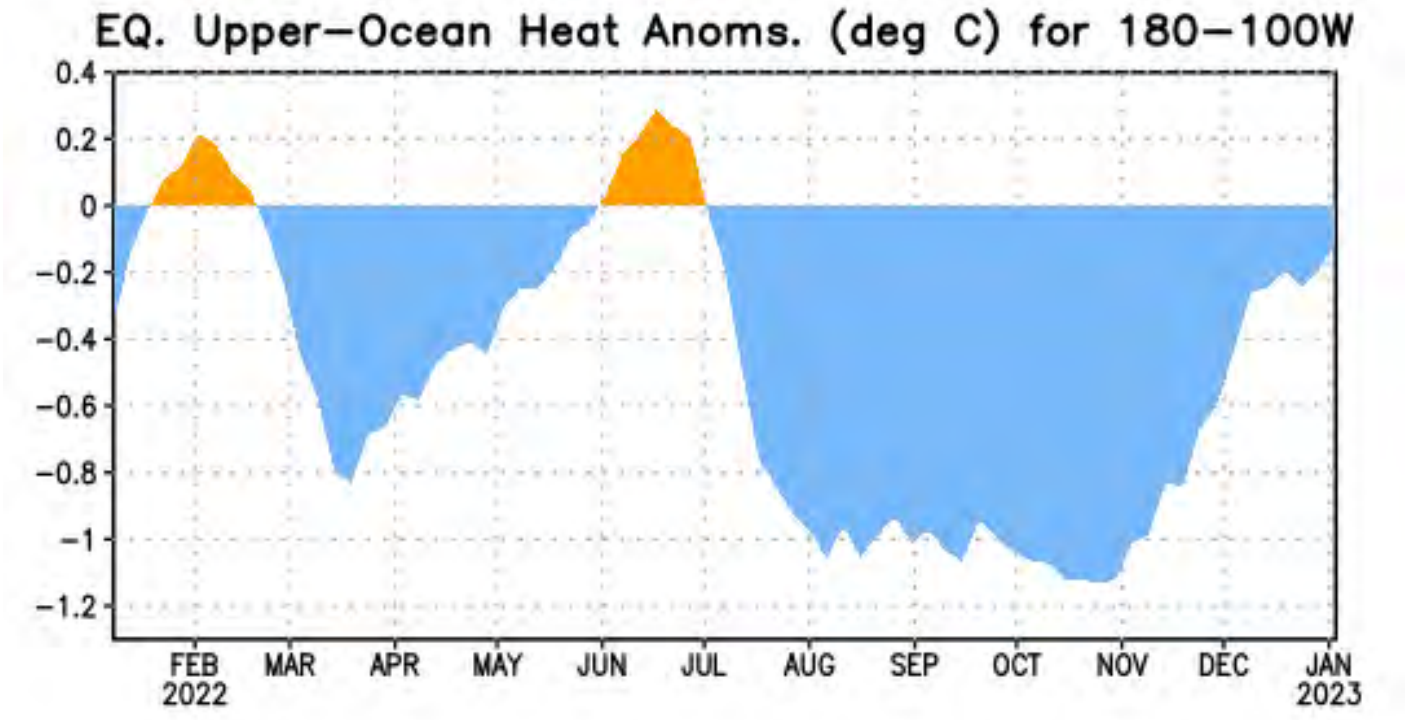


Figure 1: Area-averaged upper-ocean heat content anomaly (°C) in the equatorial Pacific (5°N-5°S, 180º-100ºW). The heat content anomaly is computed as the departure from the 1991-2020 base period pentad means.

ENSO Alert System Status: La Niña Advisory

Synopsis: A transition from La Niña to ENSO-neutral is anticipated during the February-April 2023 season. By Northern Hemisphere spring (March-May 2023), the chance for ENSO-neutral is 82%.

During December, below-average sea surface temperatures (SSTs) weakened over the equatorial Pacific Ocean. All of the latest weekly Niño index values were between -0.7ºC and -0.8ºC. The subsurface temperature anomalies also weakened substantially (Fig. 1), but below-average subsurface temperatures persisted near the surface and at depth in the eastern equatorial Pacific Ocean. However, the atmospheric circulation anomalies over the tropical Pacific Ocean did not notably weaken. Low-level easterly wind and upper-level westerly wind anomalies remained across most of the equatorial Pacific. Suppressed convection persisted over the western and central tropical Pacific, while enhanced convection was observed around Indonesia. Overall, the coupled ocean-atmosphere system continued to reflect La Niña.

The most recent IRI plume predicts that La Niña will transition to ENSO-neutral during the Northern Hemisphere winter 2022-23. Interestingly, the dynamical models indicate a faster transition (January-March) than the statistical models (February-April). At this time, the forecaster consensus favors the statistical models, with a transition to ENSO-neutral in the February-April 2023 season. The sustained atmospheric circulation anomalies and the weakening downwelling oceanic Kelvin wave do not support an imminent transition. However, lower accuracy during times of transition, and when predictions go through the spring, means that uncertainty remains high. In summary, a transition from La Niña to ENSO-neutral is anticipated during the February-April 2023 season. By Northern Hemisphere spring (March-May 2023), the chance for ENSO-neutral is 82%.

This discussion is a consolidated effort of the National Oceanic and Atmospheric Administration (NOAA), NOAA's National Weather Service, and their funded institutions. Oceanic and atmospheric conditions are updated weekly on the Climate Prediction Center website (El Niño/La Niña Current Conditions and Expert Discussions). Additional perspectives and analyses are also available in an ENSO blog. A probabilistic strength forecast is available here. The next ENSO Diagnostics Discussion is scheduled for **9 February 2023**. To receive an e-mail notification when the monthly ENSO Diagnostic Discussions are released, please send an e-mail message to: ncep.list.enso-update@noaa.gov.

International Weather and Crop Summary

January 8-14, 2023

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

HIGHLIGHTS

EUROPE: Very warm weather prevailed while rain expanded across much of the continent.

MIDDLE EAST: Dry weather over central Turkey contrasted with additional heavy rain and mountain snow in central and southern portions of the region.

NORTHWESTERN AFRICA: Very dry and warm weather exacerbated drought in the east and heightened drought concerns in the west.

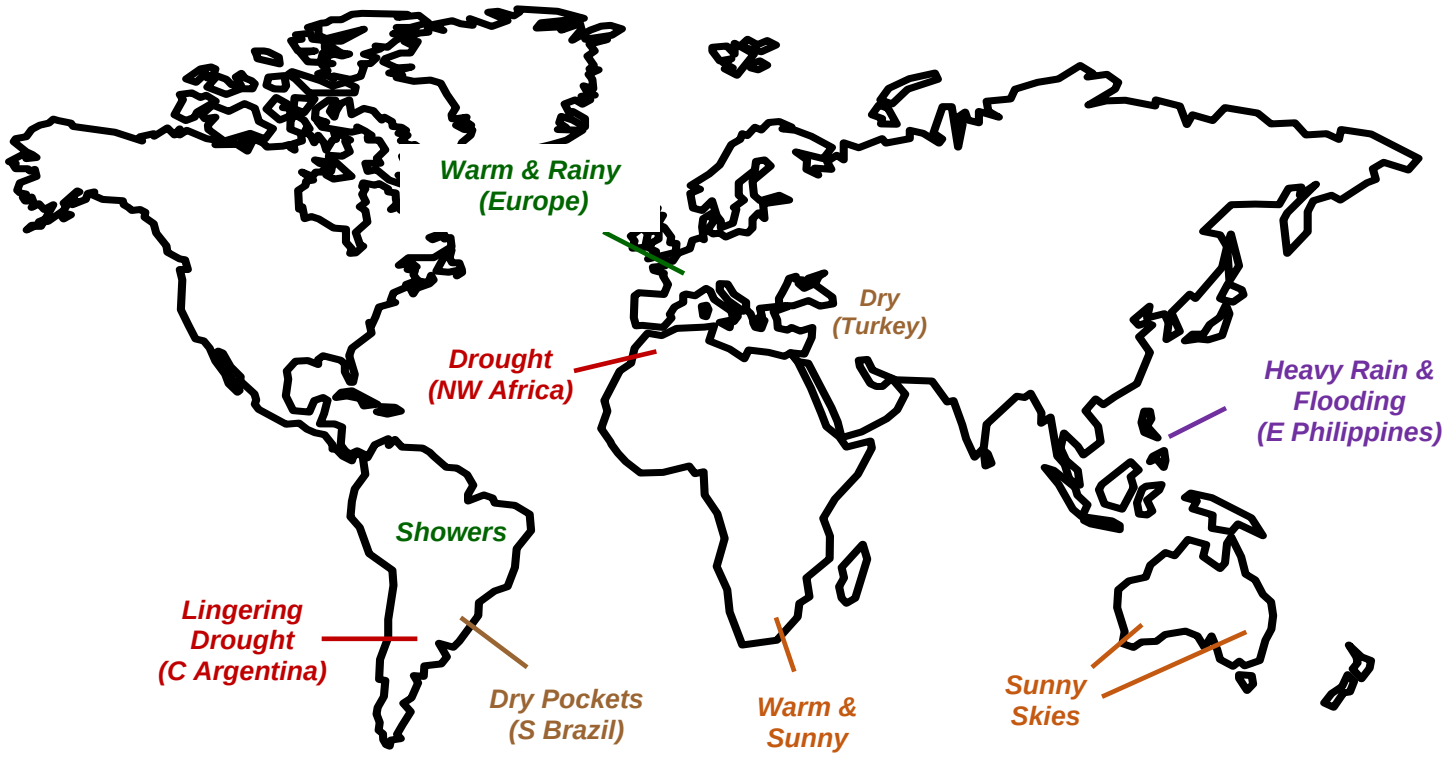
SOUTHEAST ASIA: Torrential downpours caused severe flooding in the eastern Philippines.

AUSTRALIA: Sunny skies favored final winter crop harvests and cotton and sorghum development.

SOUTH AFRICA: Warm, sunny weather benefited vegetative to reproductive corn.

ARGENTINA: Drought persisted in high-yielding farmlands of central Argentina.

BRAZIL: Widespread, locally heavy rainfall in soybean areas of central and northeastern Brazil contrasted with patchy dryness farther south.



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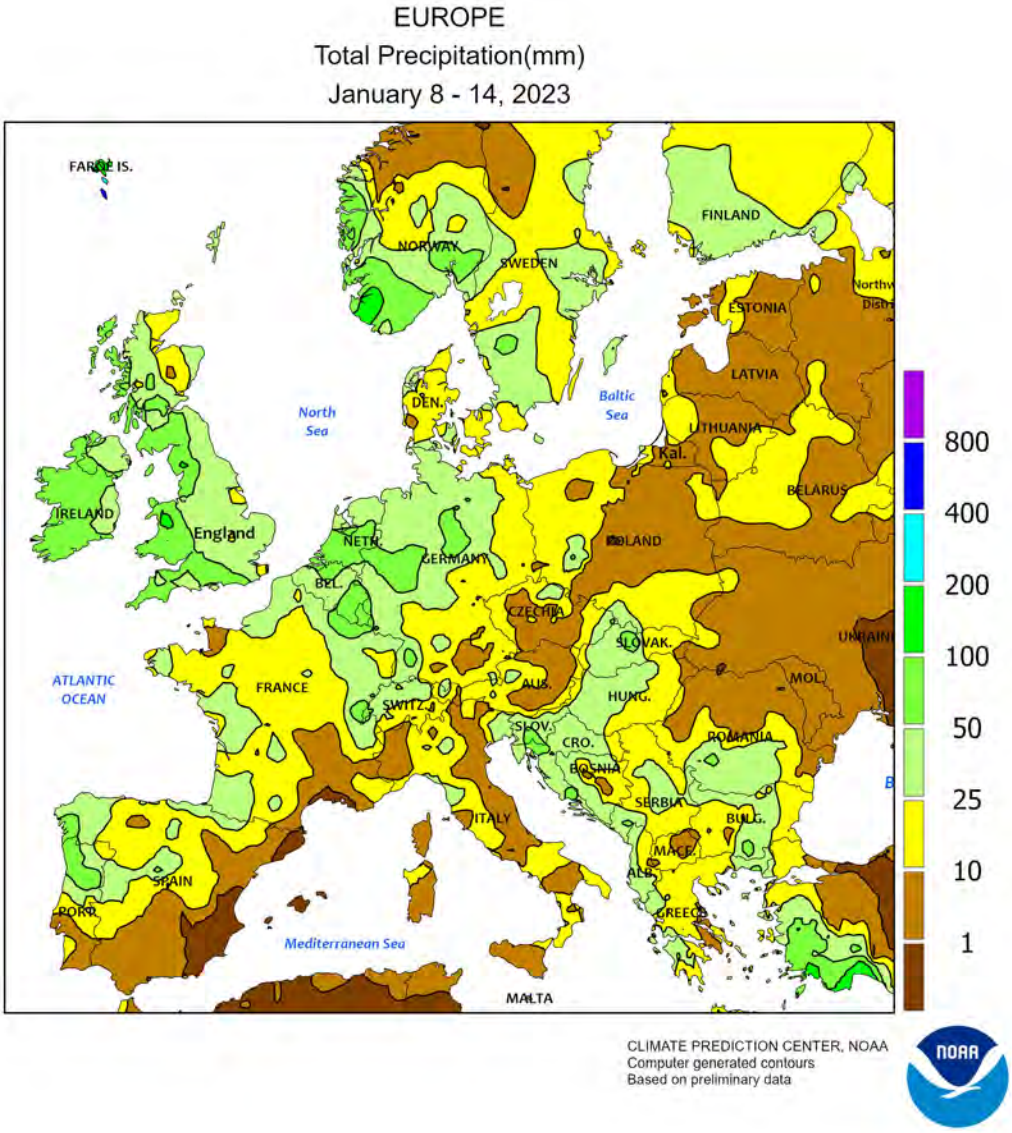

EUROPE

Unseasonable warmth prevailed as wet weather expanded across much of the continent. Temperatures for the week averaged 2 to 5°C above normal in Spain, France, and England and 5 to 8°C above normal from Germany eastward. The unseasonable warmth kept primary growing areas devoid of snow cover, reduced winter crop cold hardiness, and further lowered mountain snowpacks and resultant spring runoff prospects. Widespread moderate to heavy showers (10-100 1mm, locally more) accompanied the unseasonably warm conditions over much of Europe, easing or erasing short-term moisture deficits over France, Germany, and Poland while providing additional relief from lingering long-term drought in Portugal, Spain, and northern Italy. Soil moisture reserves were good to excellent across much of Europe at the end of the period, though some drier pockets lingered in northeastern portions of the continent.

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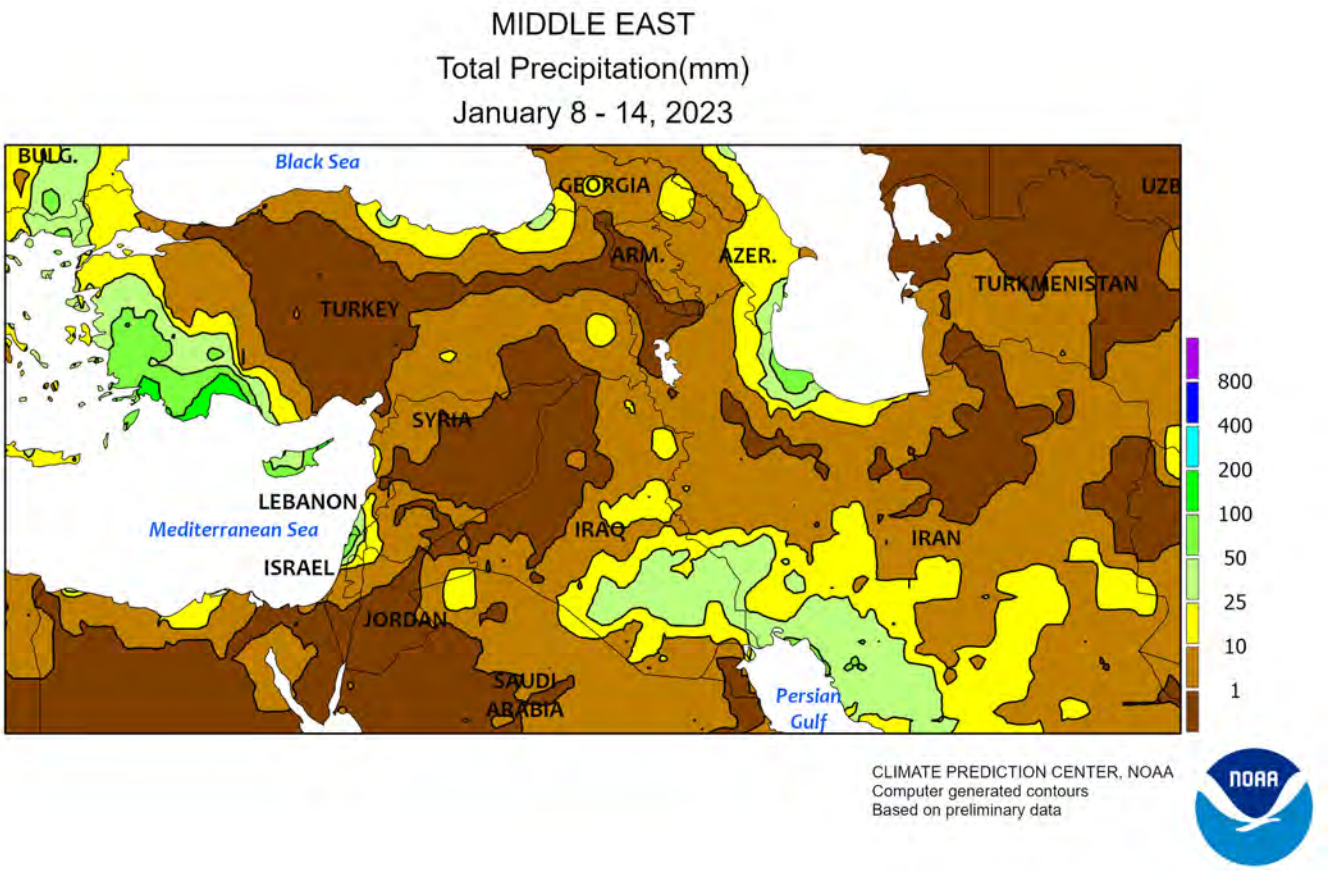

MIDDLE EAST

Increasingly dry weather over central Turkey raised drought concerns, while heavy rain and mountain snow fell in southwestern Turkey as well as southern portions of Iraq and Iran. After beneficial rain in Turkey during late November and early December, little to no rain or snow since has heightened drought concerns. In particular, season-to-date (since September 1) precipitation on the Anatolian Plateau slipped to 55 percent of normal, which put it as the 3rd driest of the past 30 years. Similarly, northeastern Iran (Khorasan) has trended dry over the past 30 days, though light showers (2-10 mm) provided some moisture during the past week. Winter-time drought generally has little to no impact on winter wheat and barley as long as timely rain returns in the spring. Meanwhile, a slow-moving storm system produced heavy to excessive rainfall (25-200 mm, locally more) across southwestern Turkey, causing localized flooding but generally falling outside primary winter crop areas. Moderate to heavy showers (10-90 mm) also continued along the southeastern Mediterranean Coast, favoring vegetative winter wheat and barley. Meanwhile, a separate slow-moving storm brought unusually heavy rain and mountain snow (10-50 mm liquid equivalent) to southern portions of Iraq and Iran, with somewhat lighter precipitation (2-20 mm) noted in northeastern Iraq and west-central Iran. The recent and ongoing wet weather pattern in central portions of the region has led to much-improved crop prospects at this early juncture over last year's severe drought.

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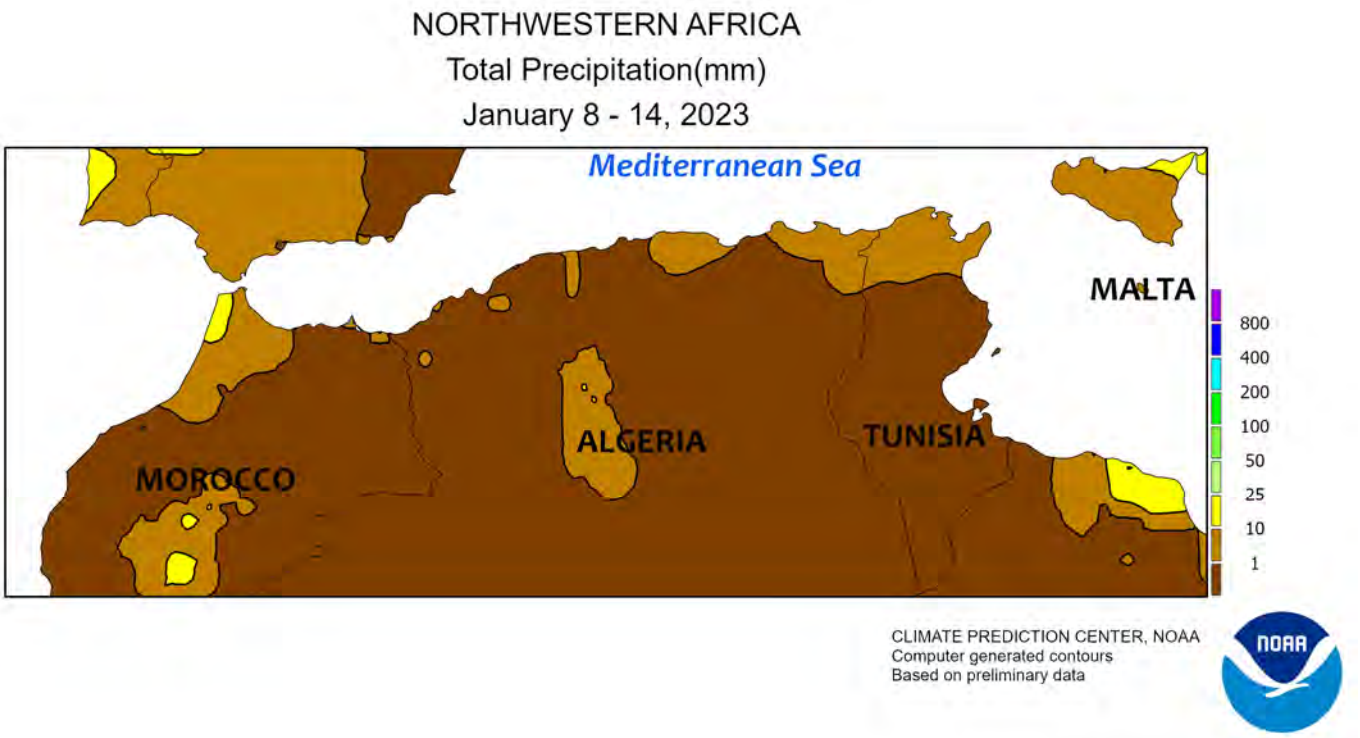

NORTHWESTERN AFRICA

Very dry and warm weather further exacerbated drought in the east and increased dryness concerns in the west. After much-needed rain eased record-setting autumn drought in Morocco during the first half of December, a fourth consecutive week with no rain and above-normal temperatures (2-4°C above normal) quickly ushered the country back into drought. However, it remained early in the growing campaign and wheat and barley remained largely vegetative. Farther east, drought intensified in Algeria and Tunisia under sunny skies and unseasonable warmth (up to 4°C above normal). Season-to-date rainfall (since September 1) was below normal across the entire region; most of Tunisia and Algeria were at or below 50 percent of normal, while Morocco's primary crop areas adjacent to the central Atlantic Coast slipped to 70 percent of normal even with the heavy early winter rains. Furthermore, the recent and ongoing protracted warmth has accelerated crop development, with winter grains developing two to four weeks ahead of normal.

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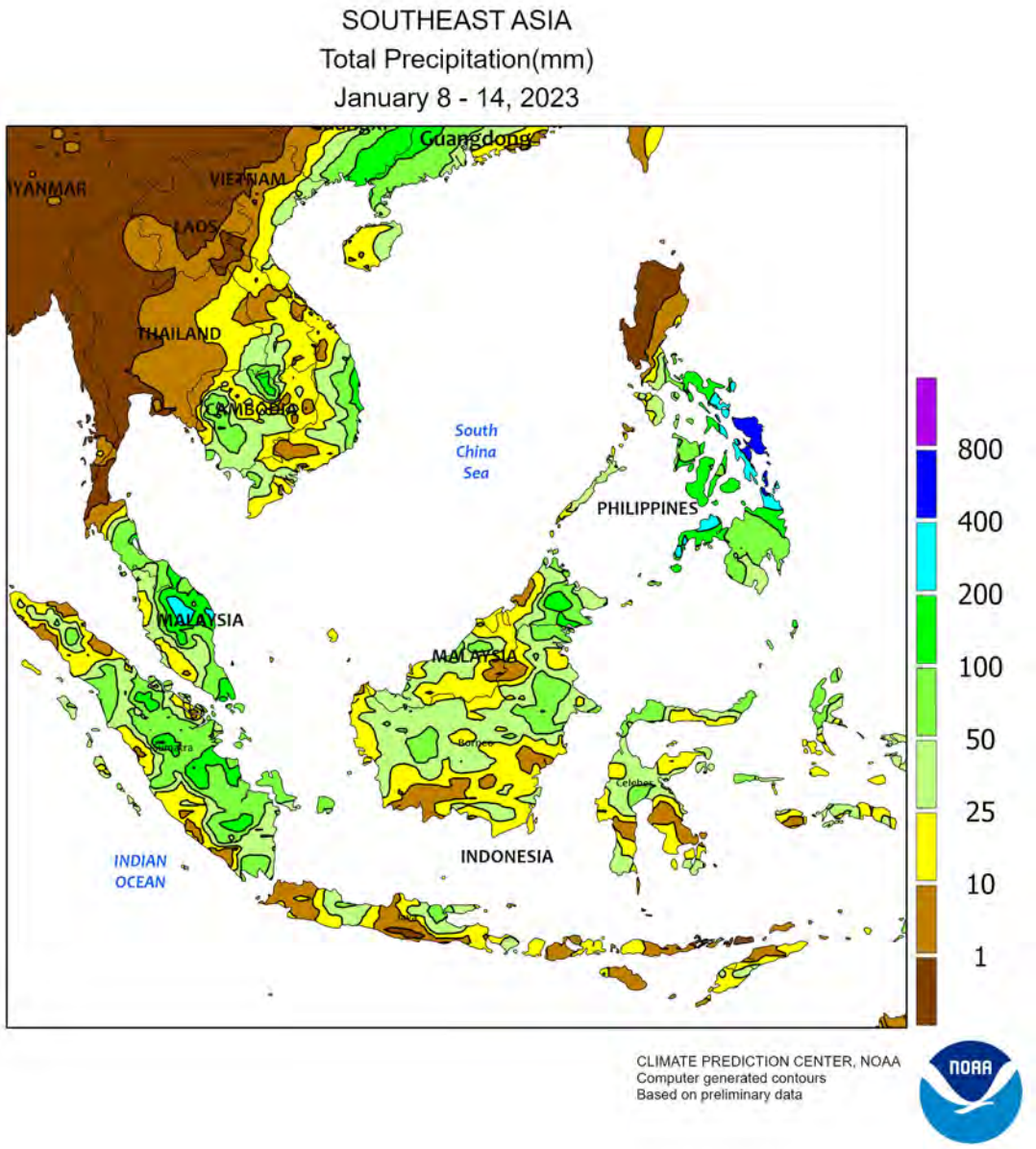

SOUTHEAST ASIA

The eastern Philippines was barraged by tropical downpours during the reporting period. The hardest hit areas in the Eastern Visayas averaged over 500 mm of rain (nearly four times the normal amount), with flooding into neighboring southern Luzon and northern Mindanao. While the flooding was reportedly severe, it occurred outside major rice producing areas. In the remainder of the region, showers were variable across Malaysia and Indonesia, as some locales recorded over 100 mm and others barely 25 mm. Long-term moisture conditions remained favorable to excessive, with lower yields a concern in the wettest reaches. Meanwhile, occasional showers (1-25 mm or more) in Indochina and eastern sections of Thailand bolstered irrigation supplies for dry-season rice.

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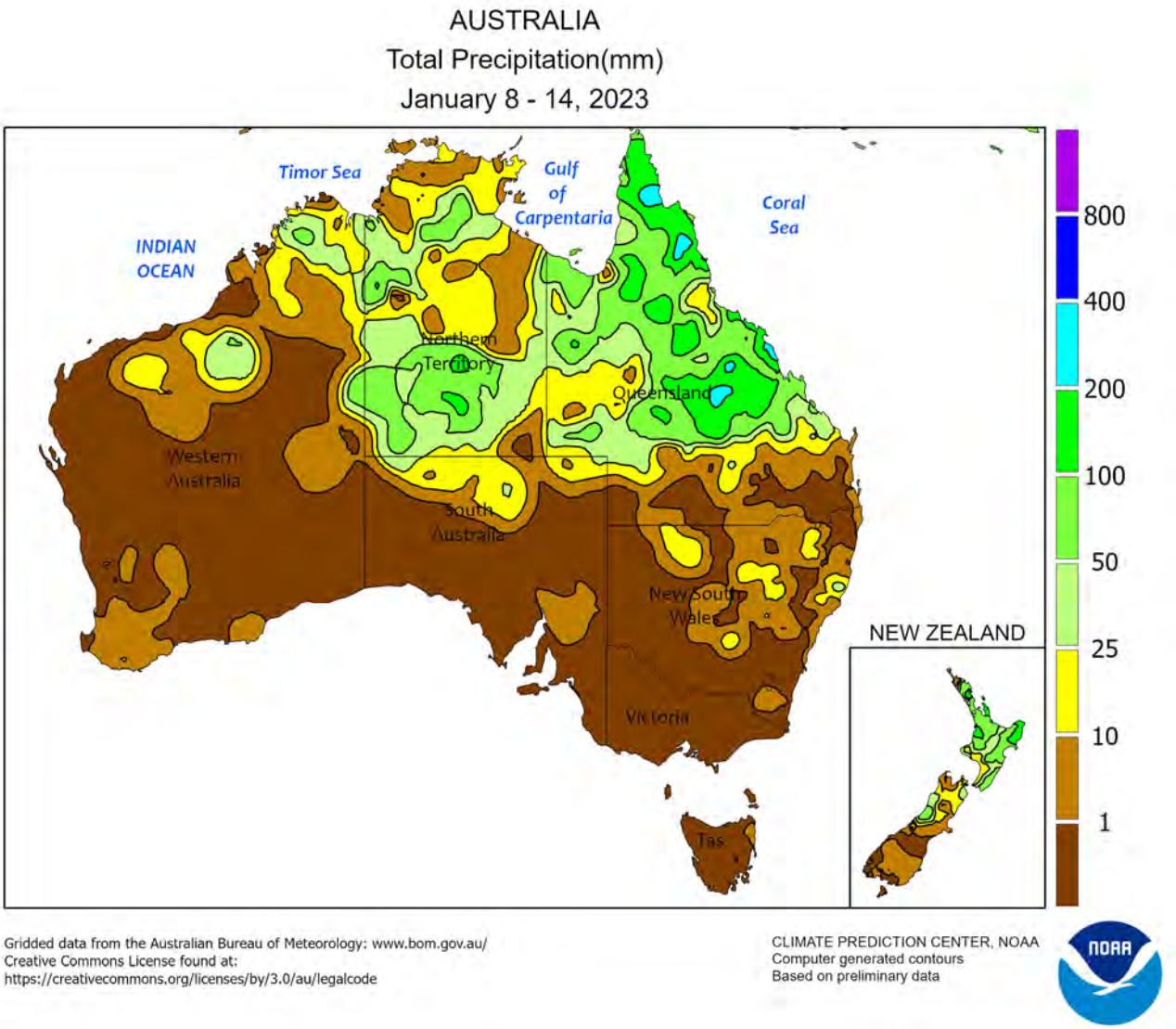

AUSTRALIA

In eastern Australia, widely scattered showers (5-25 mm) benefited local cotton and sorghum while otherwise dry weather favored late summer crop planting and final winter crop harvests. Soil moisture remained adequate for dryland crop development while nearly full reservoirs maintained good to excellent prospects for irrigated crops. Temperatures averaged near normal, with maximum temperatures in the middle to upper 30s (degrees C). Elsewhere in the wheat belt, hot, mostly dry weather in the south and west promoted rapid winter crop harvesting, which is reportedly nearing completion in most areas. Temperatures were generally seasonable in Western Australia with maximum temperatures in the middle to upper 30s. In South Australia and Victoria temperatures averaged 2 to 4°C above normal with maximum temperatures climbing into the lower 40s in some areas.

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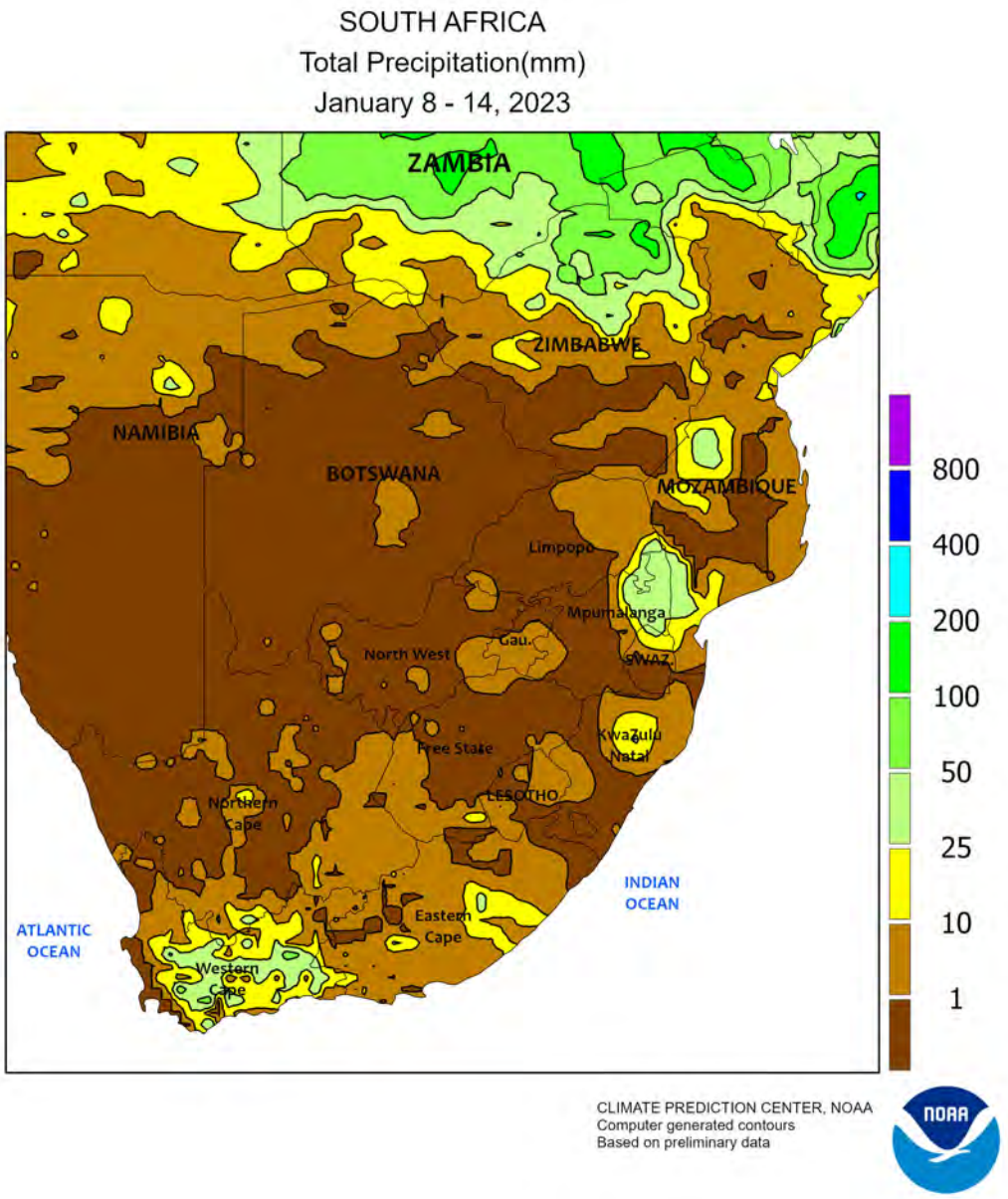

SOUTH AFRICA

Warm, generally sunny weather aided development of vegetative to reproductive summer crops, which have benefited from adequate to abundant levels of moisture for much of the season. Most major farming areas reported little to no rain, with few locations receiving more than 5 mm. Summer warmth accompanied the dryness, fostering rapid growth of crops growing with sufficient moisture. In the corn belt (North West and Free State eastward), highest daytime temperatures mostly ranged from the upper 20s to the lower 30s (degrees C), although temperatures reached 35°C or higher at the edges of the main commercial production areas. Similarly, hot weather (highs reaching 35-40°C) in the Cape Provinces spurred rapid growth of irrigated crops, including tree and vine crops in Western Cape and corn and cotton in the Orange River Valley.

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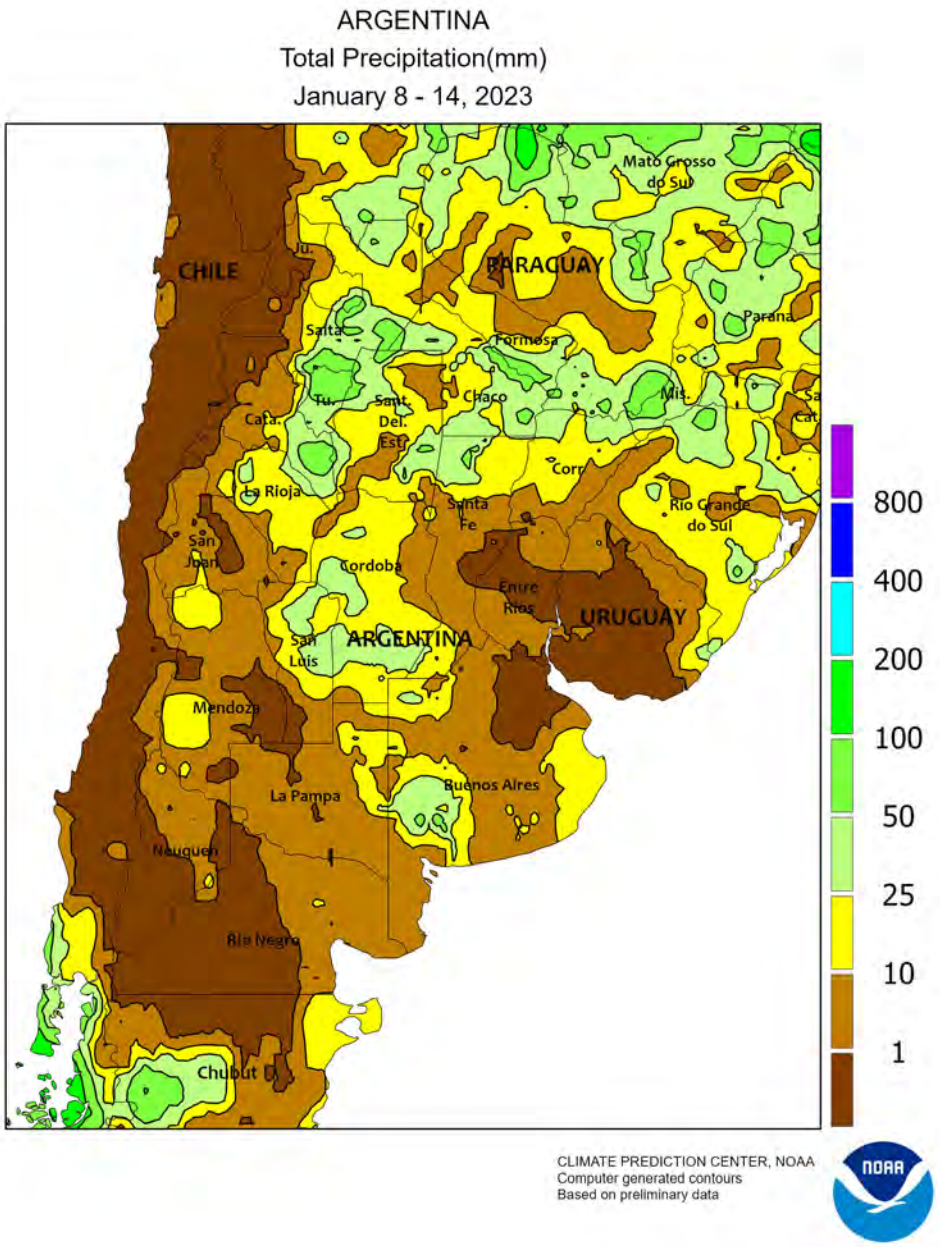

ARGENTINA

Warmer- and drier-than normal weather persisted in high-yielding farming areas of central Argentina, compounding stress on early-planted summer crops advancing through reproduction. Rainfall totaled less than 10 mm over a large area centered over the southern Paraná Valley (northern Buenos Aries and neighboring locations in Entre Rios and Santa Fe). Somewhat heavier rain fell to the west and south, though most locations reported less than 25 mm. Weekly temperatures averaged 1 to 2°C above normal, owing to an early-week spike in temperatures (highs reaching the upper 30s degrees C) before the onset of the rain. Heavier rain (10-50 mm, locally higher) overspread northern Argentina, bringing some relief from the early-week heat (highs in the lower 40s) and increasing moisture for germination of corn and other emerging summer crops. According to the government of Argentina, corn and soybeans were 88 and 93 percent planted, respectively, as of January 12, now similar to last year's pace for both crops. Meanwhile, cotton was 81 percent planted versus 99 percent last year.

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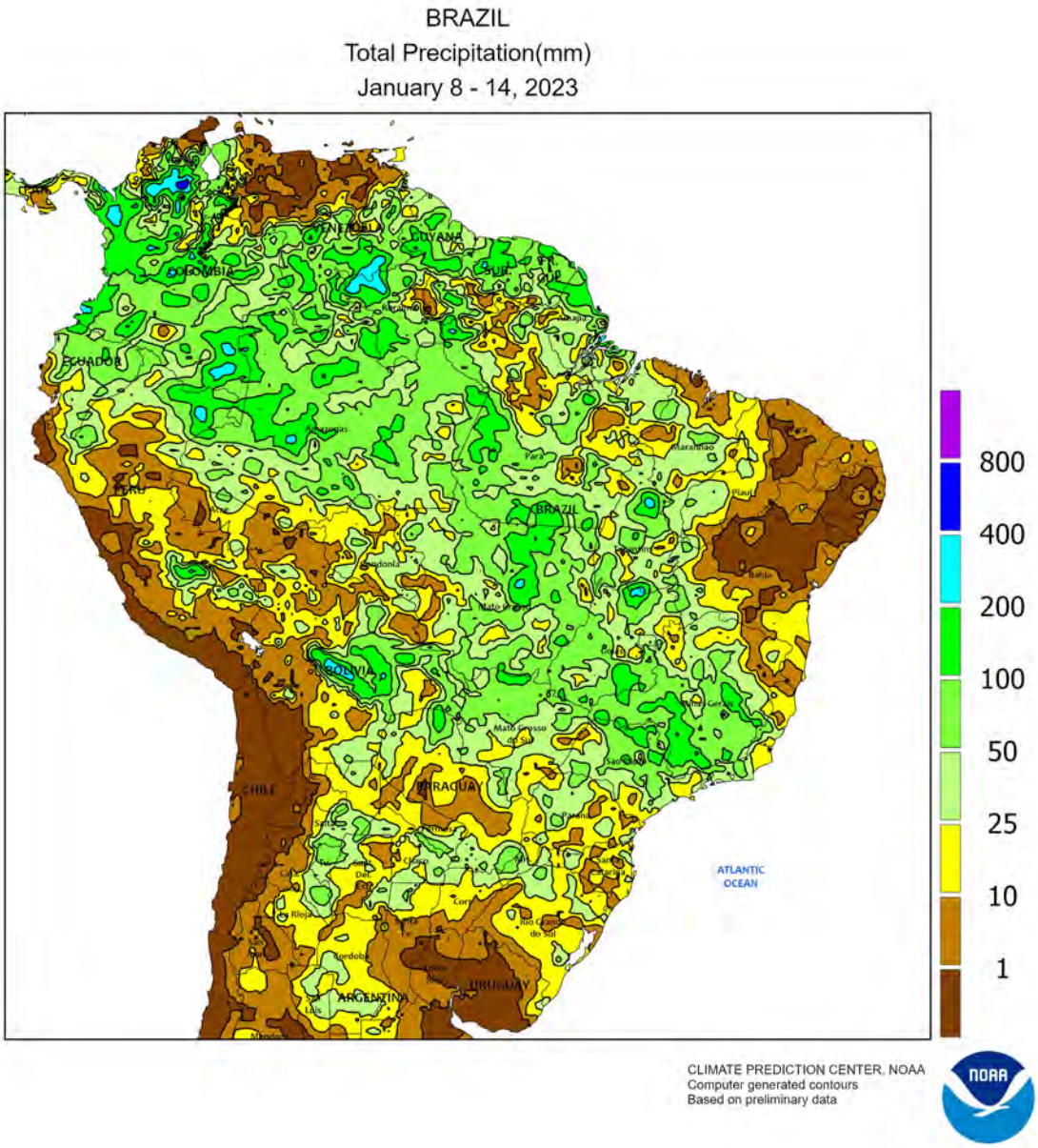

BRAZIL

Lingering pockets of dryness in southern production areas contrasted with widespread, heavier rainfall farther north. Amounts were highly variable albeit lighter than normal from southern sections of Mato Grosso do Sul and São Paulo through Rio Grande do Sul, though a few locations recorded more than 25 mm. Summer warmth (highest daytime temperatures reaching the lower and middle 30s degrees C) fostered rapid summer crop development while also maintaining high moisture losses through evaporation. According to the government of Rio Grande do Sul, corn was 93 percent planted as of January 12, with 79 percent of the sown crop having reached reproduction. In contrast, 96 percent of soybeans were planted but just 20 percent of that crop had reportedly flowered. In Paraná, at least 85 percent of both soybeans and first-crop corn had reached reproduction as of January 9, with some of the earliest-planted crops reaching maturation. Meanwhile, moderate to heavy showers (25-50 mm, locally exceeding 100 mm) maintained favorable prospects for soybeans and other summer crops from Mato Grosso eastward. Highest daytime temperatures ranging from the upper 20s to lower 30s promoted rapid crop growth, in the absence of stressful temperatures.

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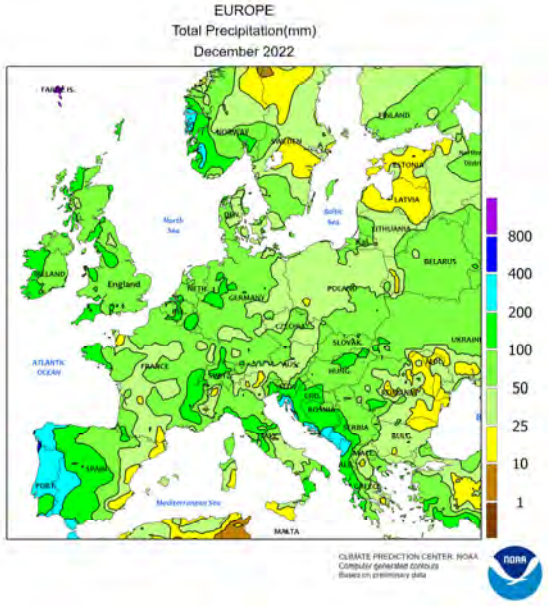
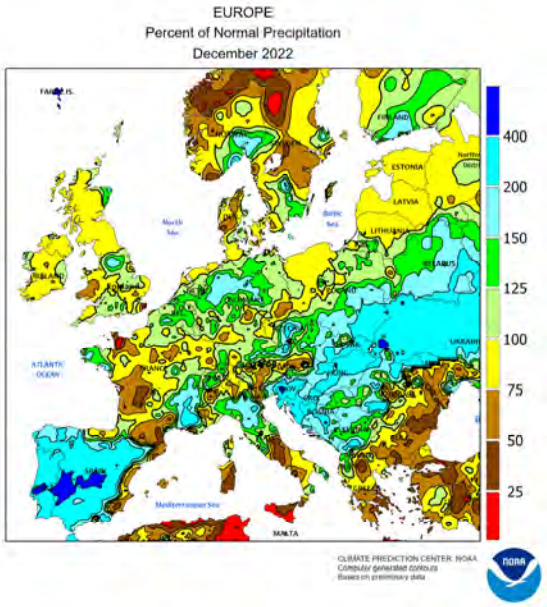
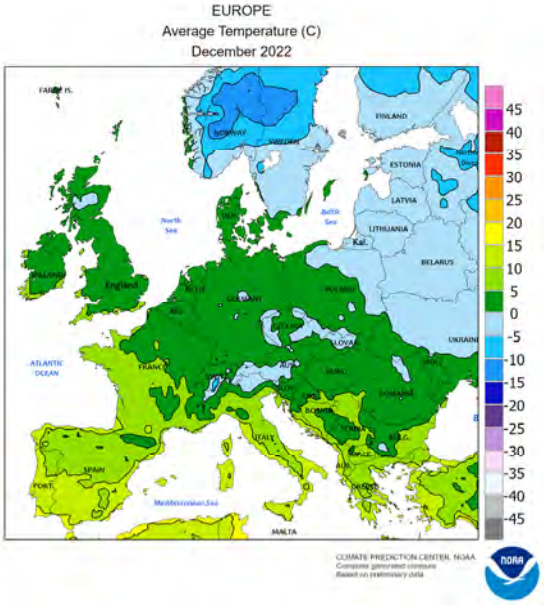
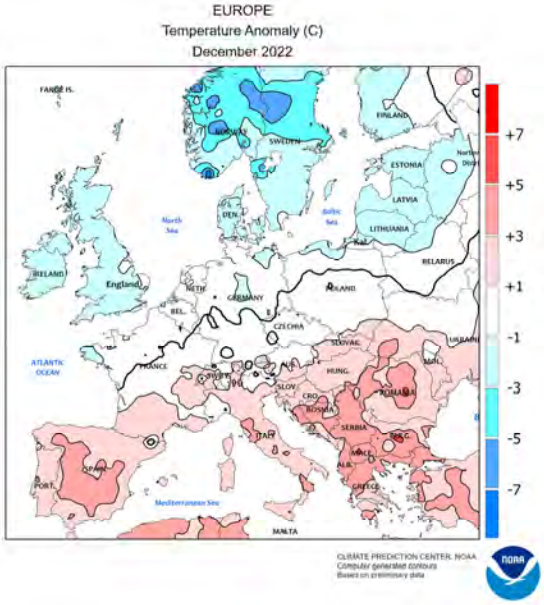
December International Temperature and Precipitation Maps









EUROPE

During December, conditions were overall favorable for dormant (central and north) to semi-dormant (south) winter crops. On the Iberian Peninsula, widespread heavy rain caused flooding but eased long-term drought. The rainfall — which totaled 50 to 250 mm over Spain's primary growing areas — was beneficial for semi-dormant winter grains and provided a much-needed boost to historically low reservoir levels for summer crop irrigation; however, reservoirs remained well below the long-term average at month's end due to the multi-year drought that has afflicted much of Spain and Portugal. Rain in northern Italy (50-140 mm) also eased long-term drought and improved moisture reserves for wheat and barley. Farther east, excessive downpours in the western Balkans (100-340 mm, locally more) caused flooding and damage to infrastructure, though rain amounts tapered off to below-normal levels in Greece and the lower Danube River Valley (less than 50 percent of normal). In contrast, rain totaled locally more than 200 percent of normal in the upper Danube River Valley, maintaining good moisture reserves for dormant winter grains and oilseeds. Meanwhile, variable but mostly beneficial precipitation (rain, ice, and snow) was observed over primary winter crop areas of central and northern Europe, though crops were dormant and deficits had no impact. Temperatures for the month averaged 2 to 5°C above normal over the southern third of Europe, near normal from northern France into Poland, and 2 to 6°C below normal over the continent's northern tier. However, record-setting warmth overspread much of Europe at the end of December.

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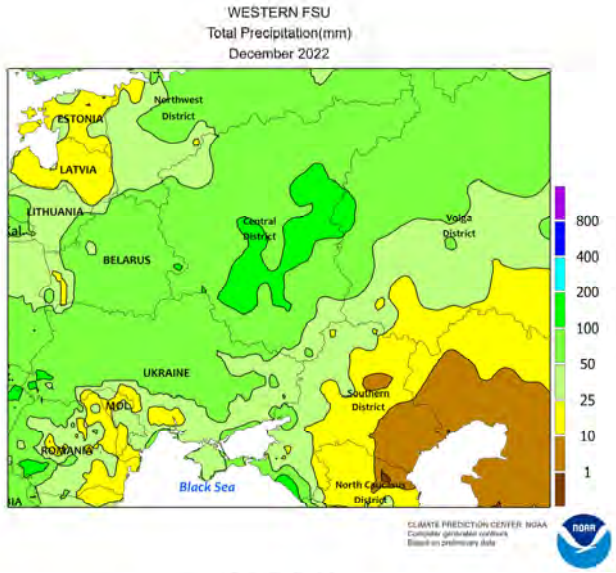

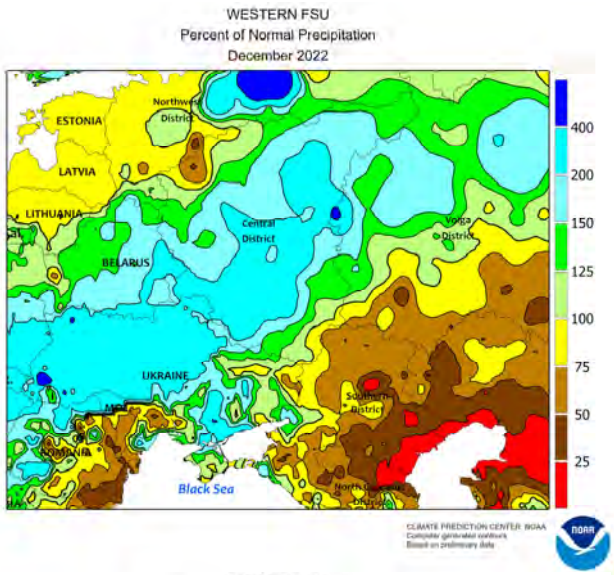

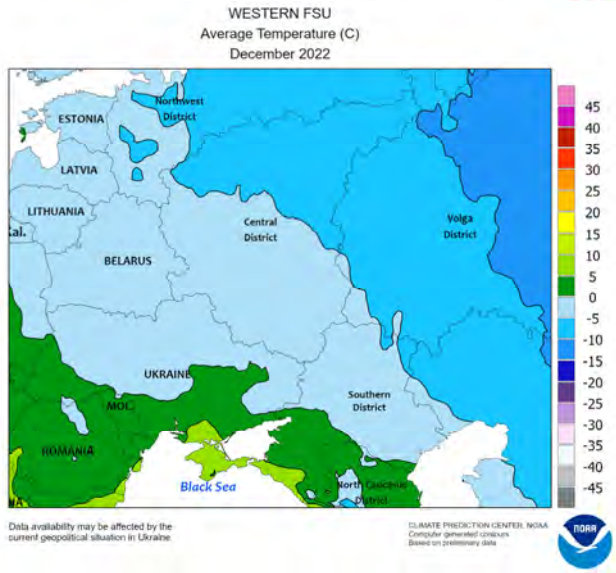

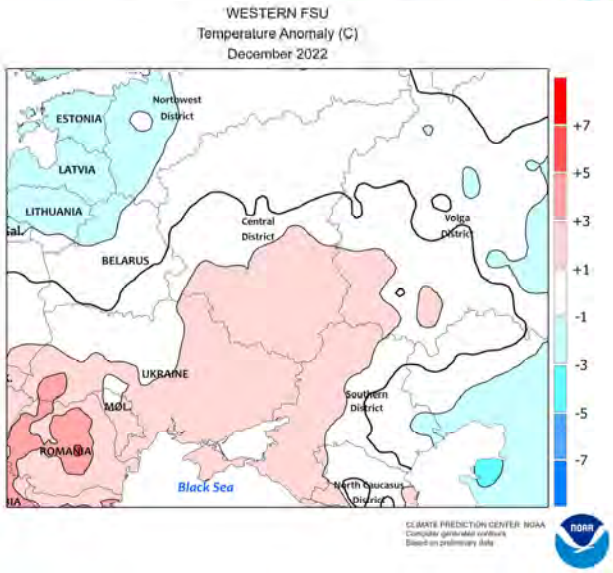

WESTERN FSU

Warm and wet weather continued over much of the region during December. Moderate to heavy rain and northern snow (50-125 mm liquid equivalent, or 100 to 310 percent of normal) fell from Belarus into western and northern Russia, further hindering the already delayed summer crop harvest but maintaining abundant moisture supplies for winter crop establishment. However, weather data from Ukraine remained unavailable; satellite-derived monthly precipitation estimates for December indicated above-normal rainfall over most of Ukraine. Drier weather was reported from central and eastern portions of the Southern District into the southern Volga District, though winter crops were dormant and the precipitation deficits had no agricultural impact. Temperatures during the month averaged 1 to 4°C above normal from Moldova and Belarus into western Russia, while colder-than-normal conditions (up to 4°C below normal) were observed in the far north.

The WWCB focuses entirely on weather and resultant crop conditions; conflict and unrest are beyond the scope of this publication.

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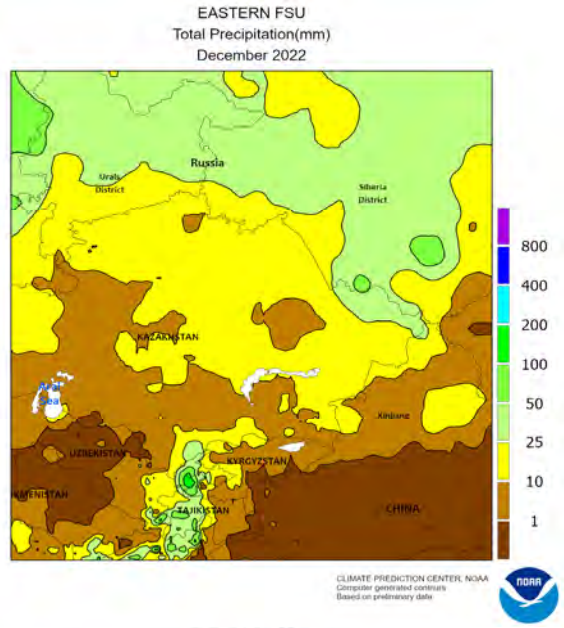

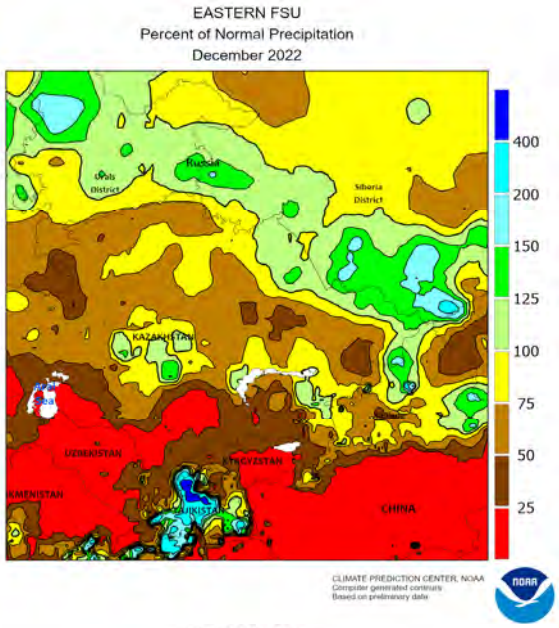

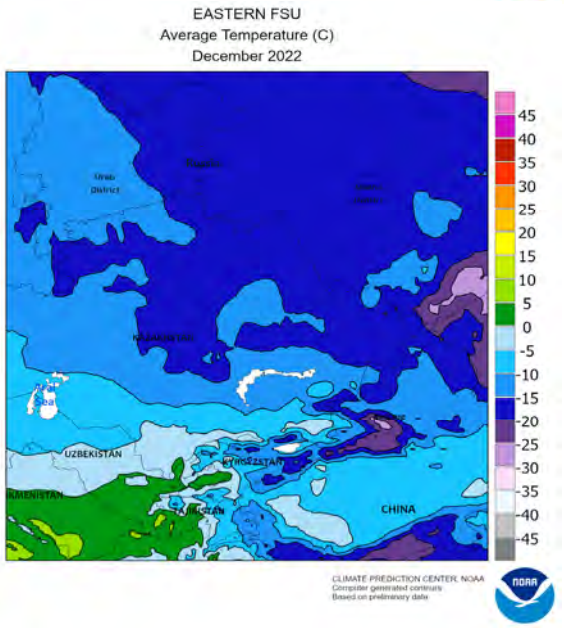

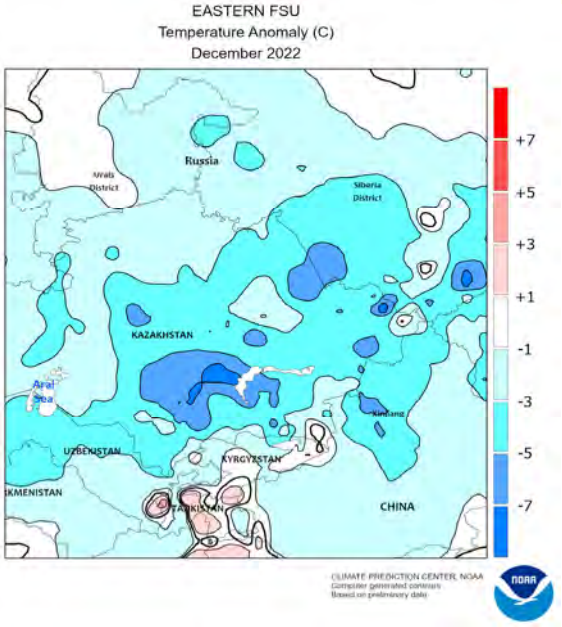

EASTERN FSU

Bitterly cold, snowy weather in the north juxtaposed with a dry albeit cold December in the south. Across northern Kazakhstan and central Russia, the seasonally cold, harsh conditions (-37 to -26°C) persisted, with the region encased in a deep snowpack. However, winter weather has no bearing on spring grain prospects. Across Uzbekistan, Turkmenistan, Tajikistan, and Kyrgyzstan, dry albeit cold weather returned, with monthly precipitation totaling less than 50 percent of normal over much of the region. However, the 2022-23 Water Year has gotten off to a very good start; as of January 7, season-to-date (since September 1) precipitation in the catchment basins of the Amu (south) and Syr (north) Darya Rivers — primary sources of summer crop irrigation — stood at 220 and 145 percent of normal, respectively. Historically, the Amu Darya's very wet start (150 mm, 80 mm surplus) remained the wettest of the past 30 years despite the dry December, while the Syr Darya's 175 mm was enough to rank as the 2nd wettest start to the water year of the past 30 years.

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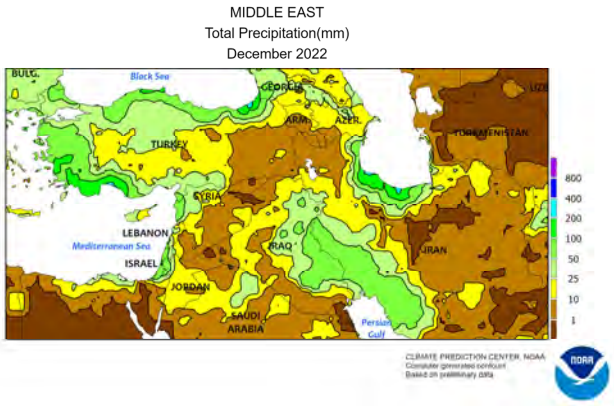
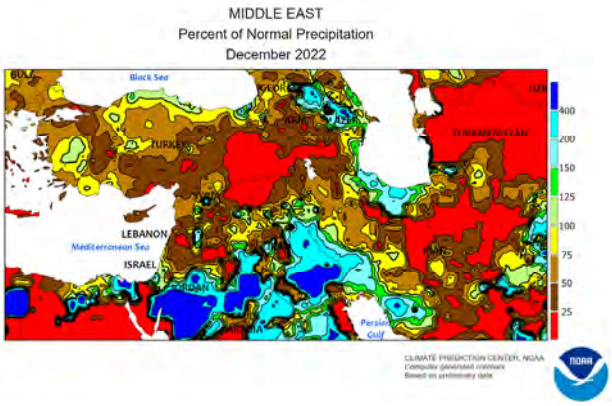
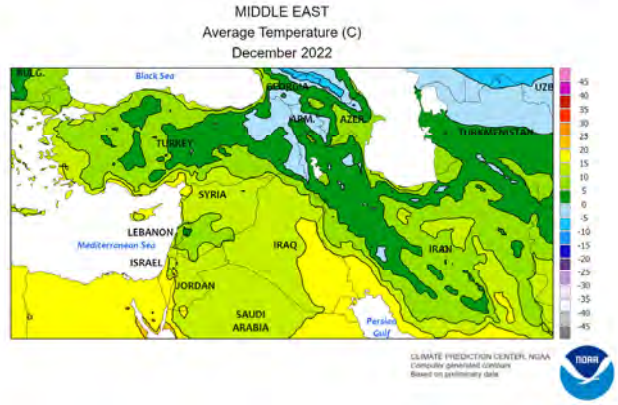
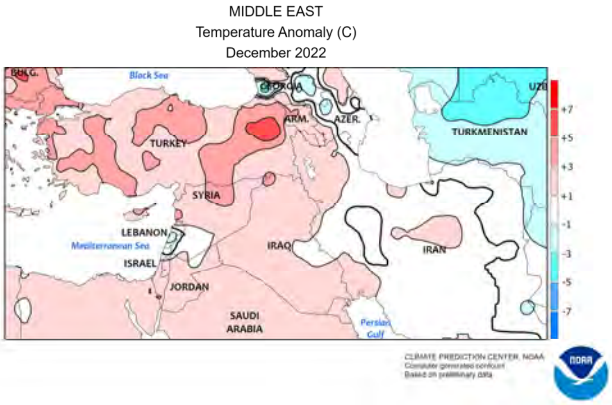


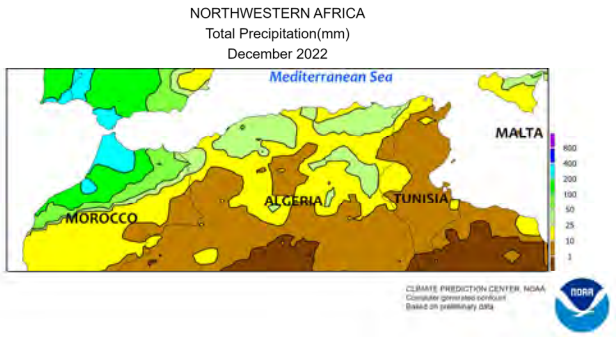


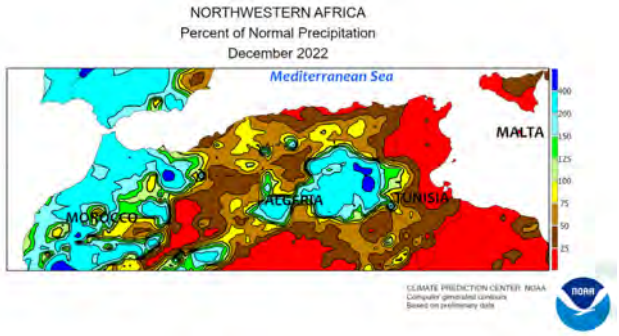


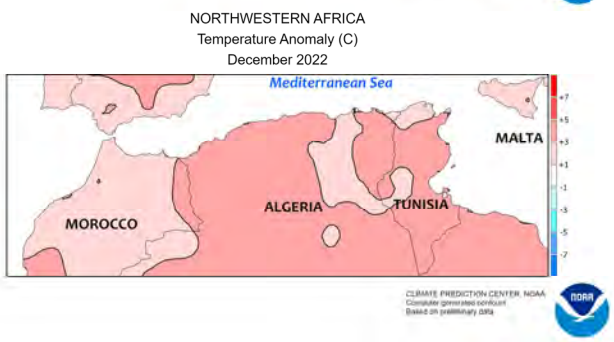


MIDDLE EAST

Widespread moderate to heavy rain prevailed in central portions of the region during December, while drier-than-normal conditions persisted in central Turkey and northeastern Iran. From western and southern Turkey and the eastern Mediterranean Coast into southwestern Iran, moderate to heavy rain and mountain snow (25-100 mm liquid equivalent, locally more) further boosted moisture supplies for semi-vegetative to vegetative winter grains. Additional rain was also noted in typically arid Saudi Arabia, with amounts topping 40 mm near the Iraqi border. Despite the wet weather over southern, western, and northern Turkey, the country's key winter crop area (the Anatolian Plateau) remained dry, with rainfall locally less than 25 percent of normal for the month. Northeastern Iran also remained dry, with central and southern portions of Khorasan receiving no rain whatsoever. Temperatures averaged 2 to 6°C above normal across the entire region, though winter crops in the climatologically colder northern growing areas finally went dormant by month's end while the warmth accelerated crop development farther south.







NORTHWESTERN AFRICA

During December, much-needed rain in the west contrasted with intensifying drought in the east. In Morocco, 25 to 100 mm of rainfall (locally more than 200 mm in the far north) eased the impacts of autumn's historic dryness and improved winter grain prospects, though the drought was far from eradicated. Conversely, conditions in central and eastern portions of northern Africa have rapidly deteriorated. Increasingly dry weather was noted from western Algeria (35-55 percent of normal) into Tunisia (5-15 percent of normal). Furthermore, temperatures averaged 2 to 5°C above normal in Algeria and Tunisia, with daytime highs in the middle and upper 20s (degrees C) exacerbating soil moisture losses for emerging to vegetative winter grains.

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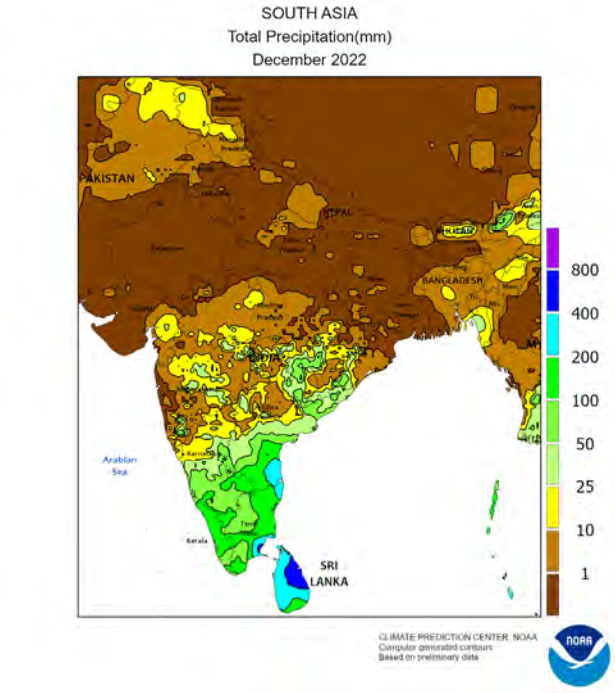

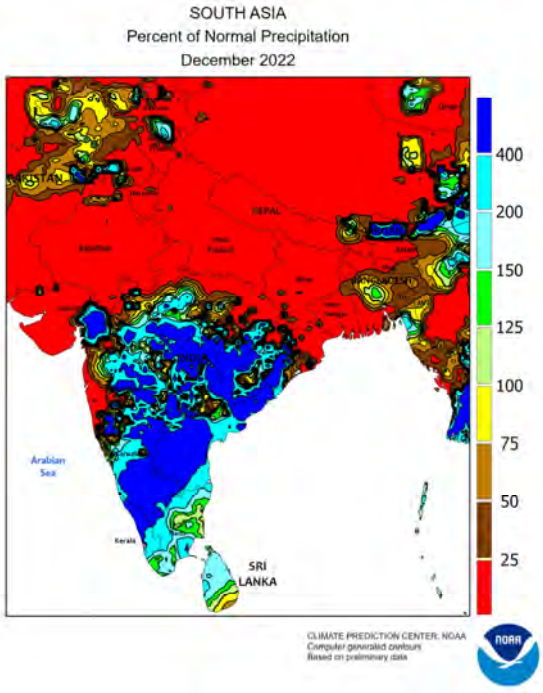

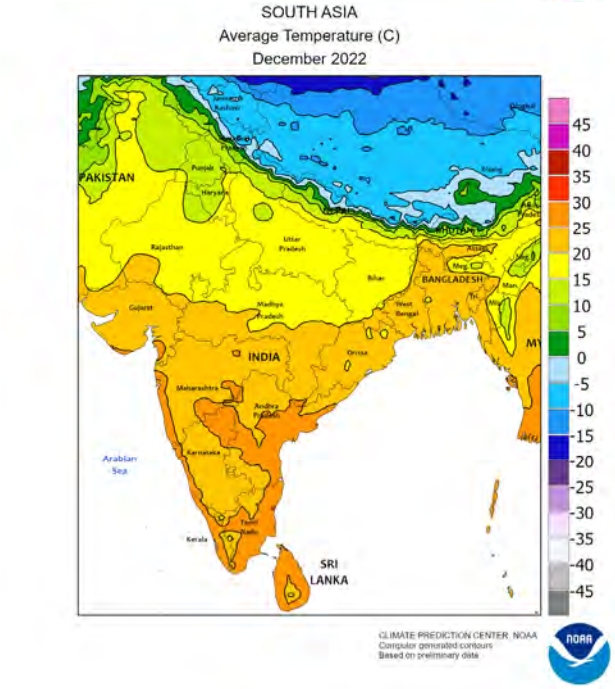

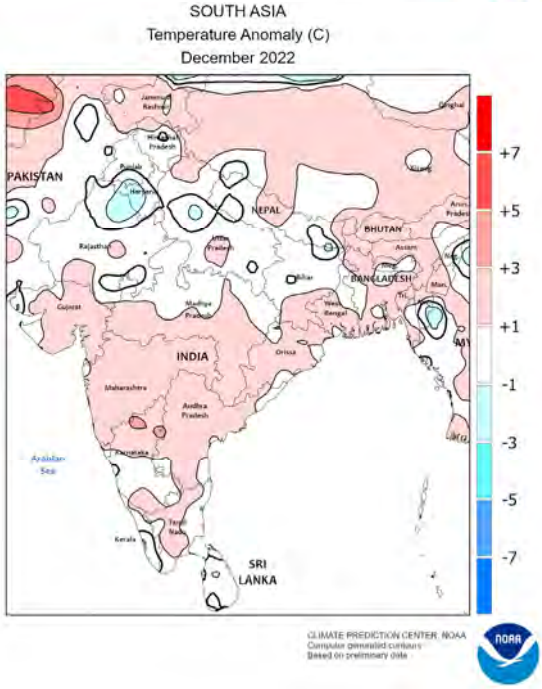

SOUTH ASIA

Seasonably dry weather across the northern half of the region in December supported wheat and rapeseed sowing in India and Pakistan as well as boro rice sowing in Bangladesh. Meanwhile, unseasonably wet weather prevailed in southern sections of the region. A barrage of tropical showers (including Severe Cyclonic Storm Mandous) produced a wide swath of over 50 mm and locally over 150 mm (100-400 percent of normal) in southern India and Sri Lanka. While the wet weather caused flooding in crop areas, seasonably drier conditions returned by month's end to ease the wetness.

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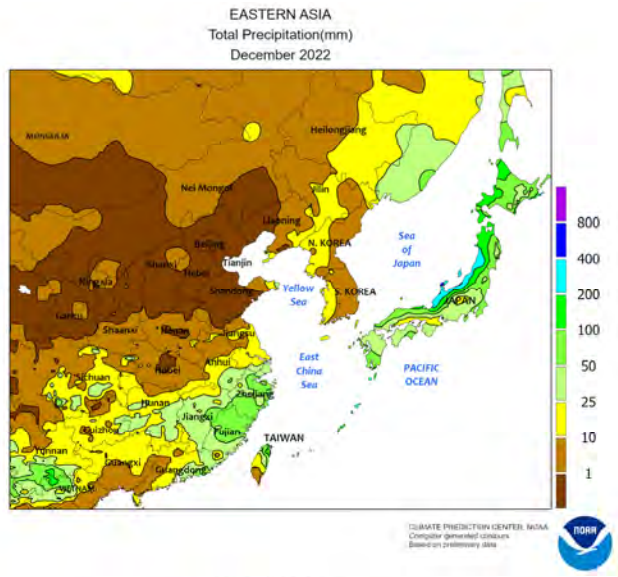

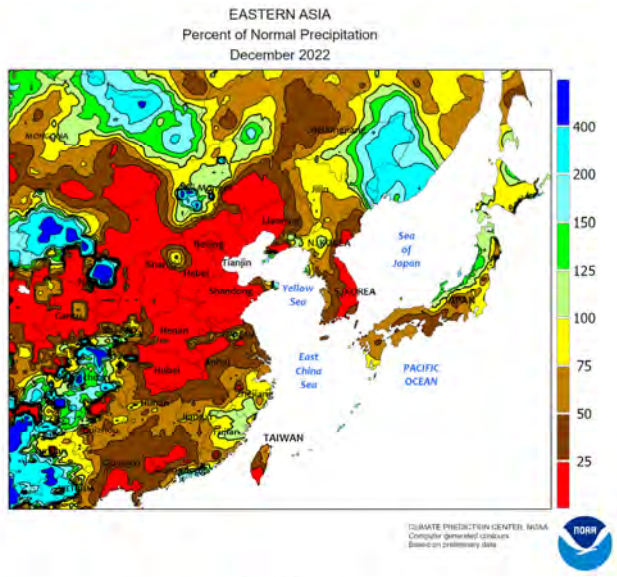

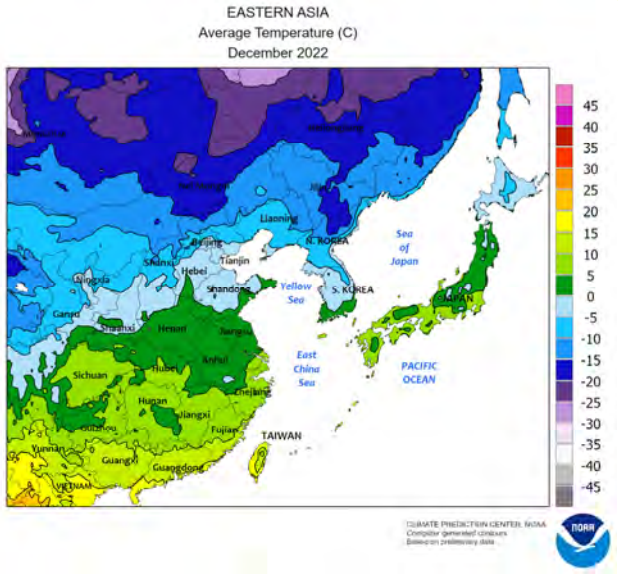

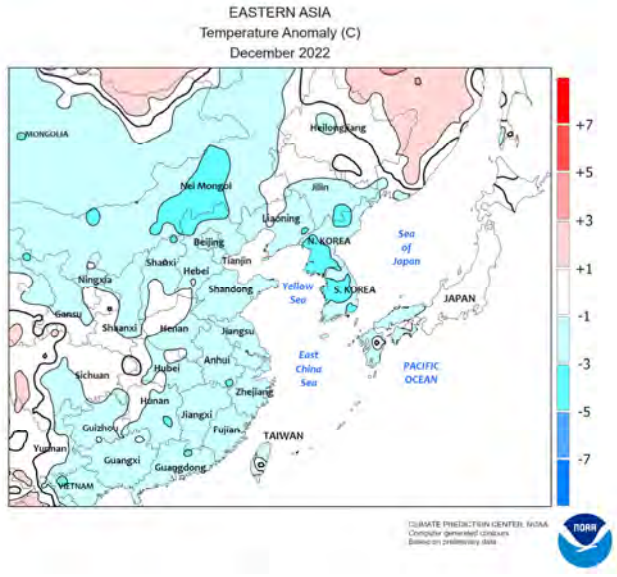

EASTERN ASIA

December showers were generally confined to the seasonably wetter southern sections of China. Rainfall was all but non-existent on the North China Plain, with amounts below 25 mm south of the Yangtze River and up to 100 mm in parts of the southeast. While rainfall was well below normal (less than 50 percent of normal) in all but some southeastern locales, colder-than-normal weather (1-3°C below average) had eased wheat and most rapeseed into dormancy, lowering moisture needs.

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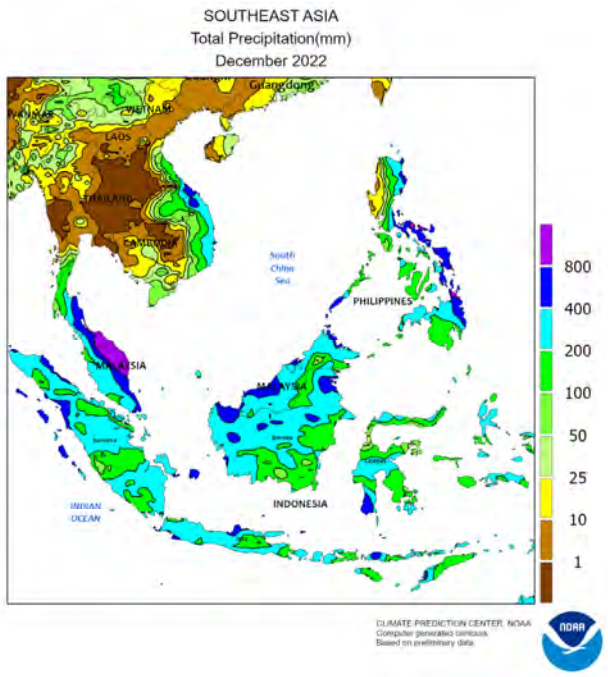
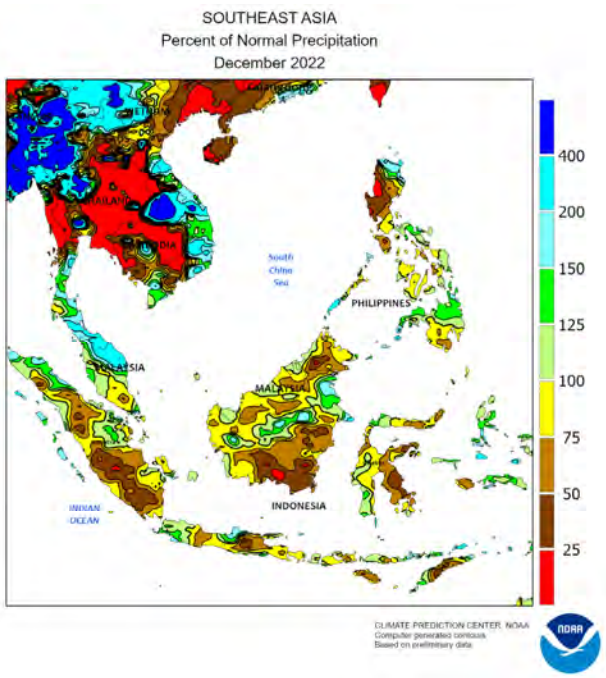
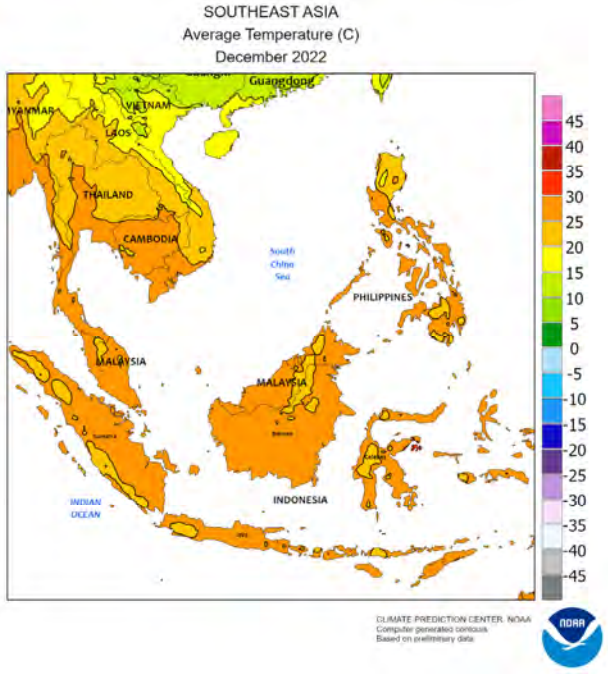
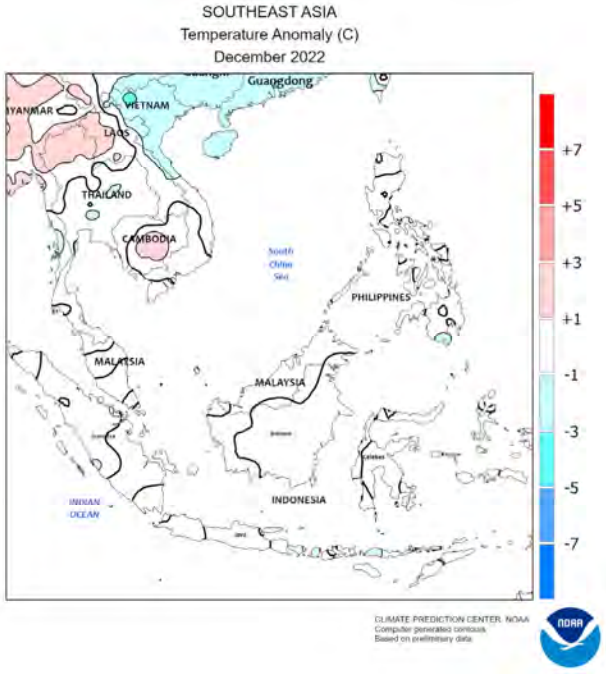


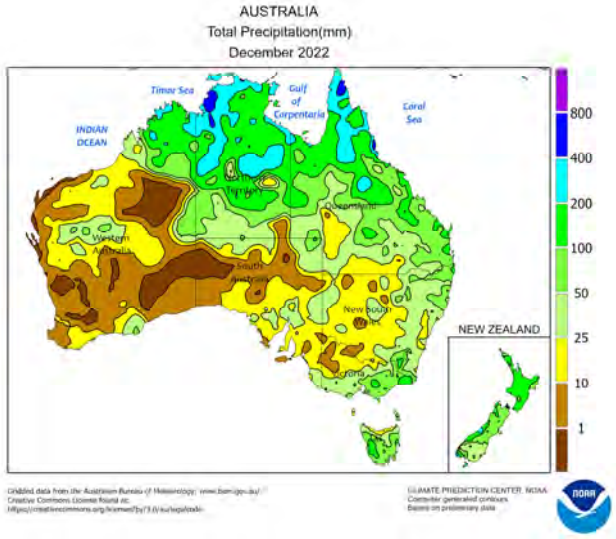


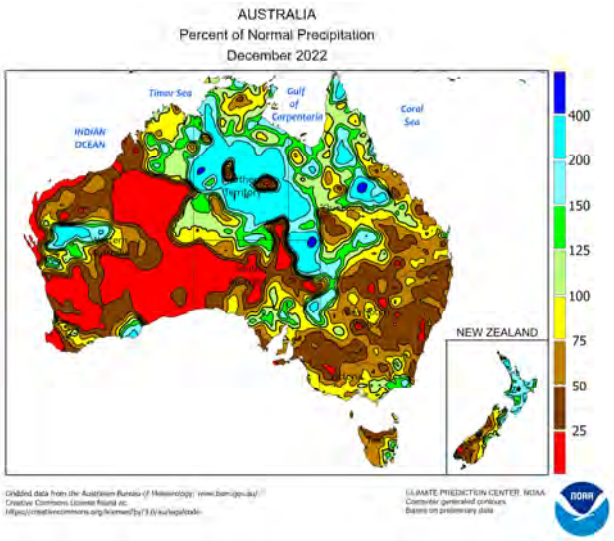


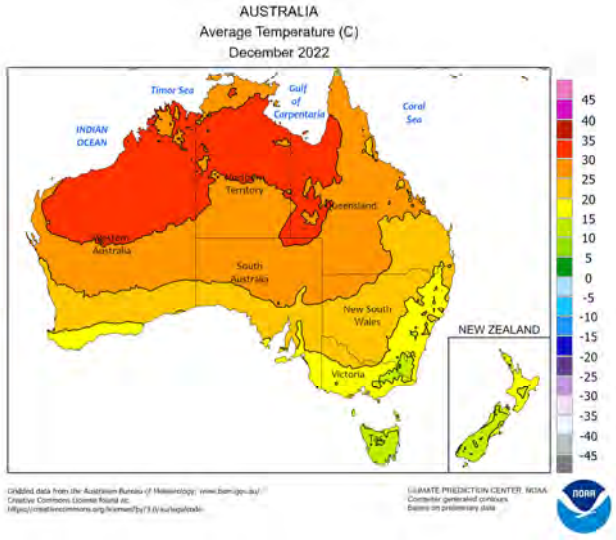


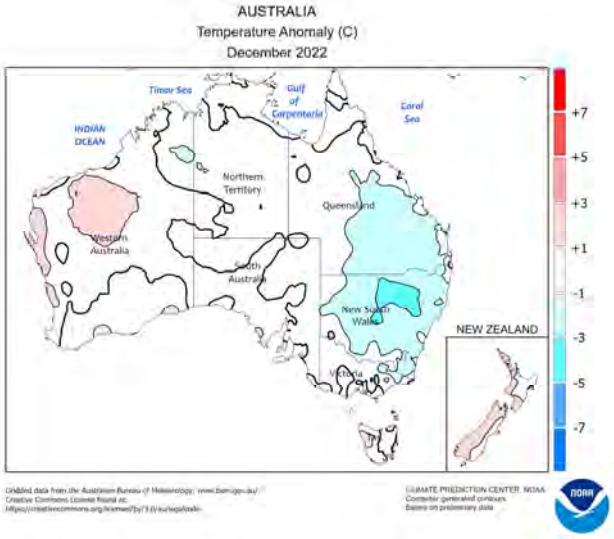
SOUTHEAST ASIA

Strong easterly winds and warmer-than-normal sea surface temperatures during December induced downpours across many windward areas of the region. The eastern Philippines averaged over 600 mm of rain (100-150 percent of normal), while central Vietnam recorded over 150 mm (125-200 percent of normal). The rainfall in the Philippines caused localized flooding but was generally favorable for rice and other seasonal crops. The wet weather in Vietnam generally occurred outside major agricultural areas. Elsewhere, intense showers during the first three weeks of the month in portions of Malaysia produced over 800 mm (over 200 percent of normal), causing delays in oil palm harvesting, with only pockets of seasonable showers (150-300 mm) in other sections of Malaysia and Indonesia.









AUSTRALIA

In the wake of a very wet winter crop growing season, drier-than-normal weather overspread much of the wheat belt during December. The relative dryness was very timely and welcome, aiding the drydown and harvesting of wheat, barley, canola, and other winter crops. Additionally, the drier weather helped stabilize crop conditions, reportedly resulting in better-than-expected crop quality in many areas that received excessive rainfall during the growing season. The abundant sunshine during December benefited summer crops as well, working in tandem with plentiful moisture supplies to spur cotton and sorghum development. Unseasonably cool weather kept the pace of summer crop growth somewhat slower than normal, however, with temperatures averaging 2 to 4°C below normal in eastern Australia.

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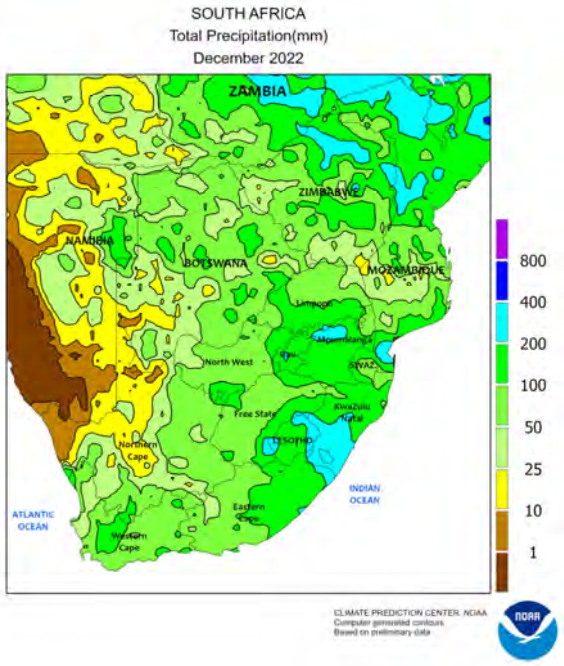

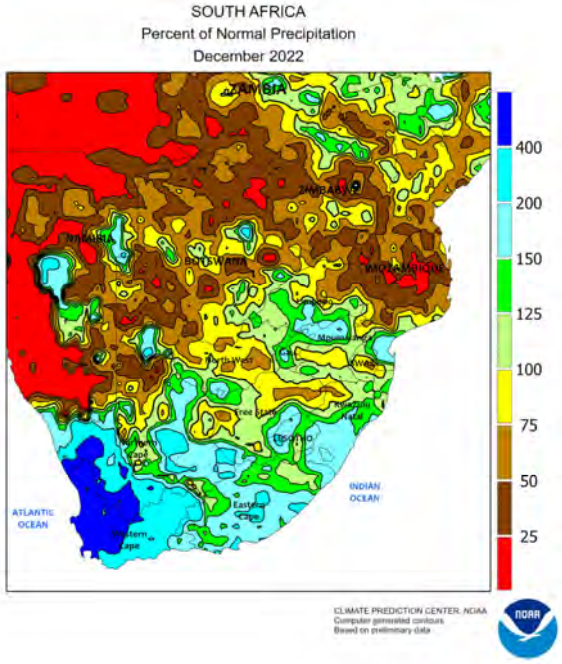

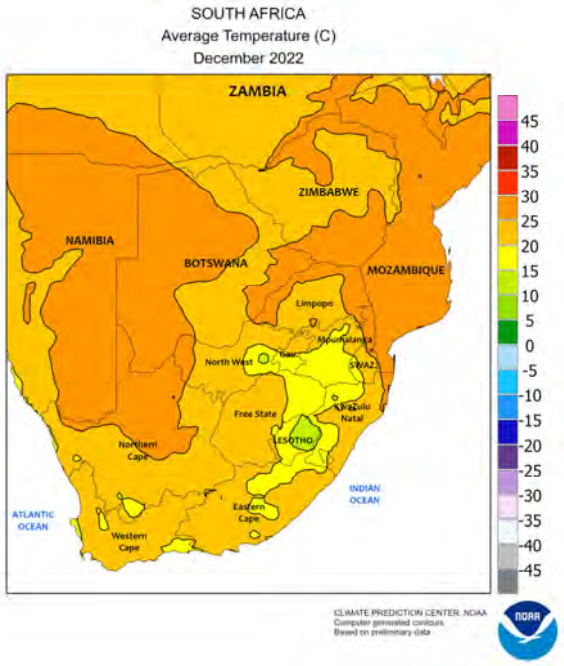

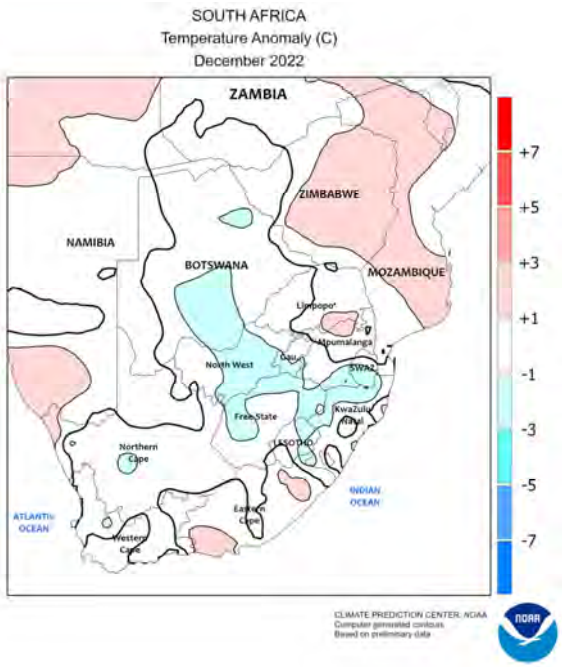

SOUTH AFRICA

In December, mild, showery weather maintained favorable prospects for corn and other rain-fed summer crops. Eastern farming areas – notably eastern sections of the corn belt (Mpumalanga and environs) and sugarcane areas in southern KwaZulu-Natal – recorded the heaviest rainfall, with accumulations locally exceeding 200 mm. Meanwhile, periods of dryness supported corn planting and other fieldwork in western sections of the corn belt (North West and Free State), where soil moisture was adequate for germination of traditionally later-planted crops. The general pattern of rainy weather also helped to replenish irrigation reserves, including in watersheds of the Orange River. A brief period of lighter albeit unseasonably heavy rainfall (greater than 50 mm) was untimely for tree and vine crops in Western Cape, but sunny, warm weather (highs reaching the upper 30s degrees C) improved conditions during the latter half of September. In general, December temperatures averaged near to slightly below normal, with daytime highs mostly in the upper 20s and lower 30s favoring development of emerging to vegetative corn in the main production areas.

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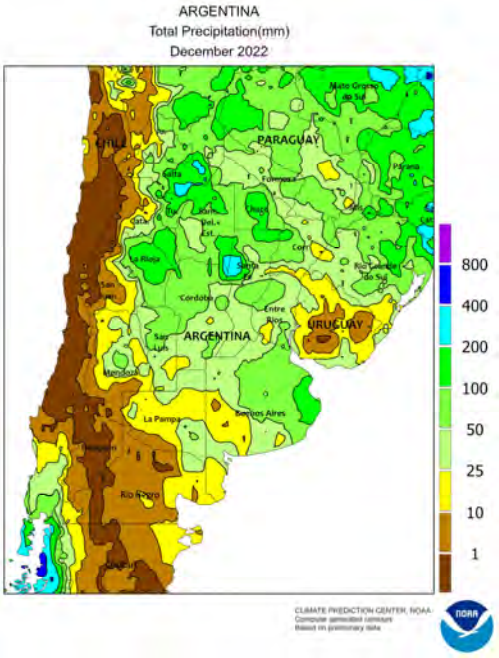

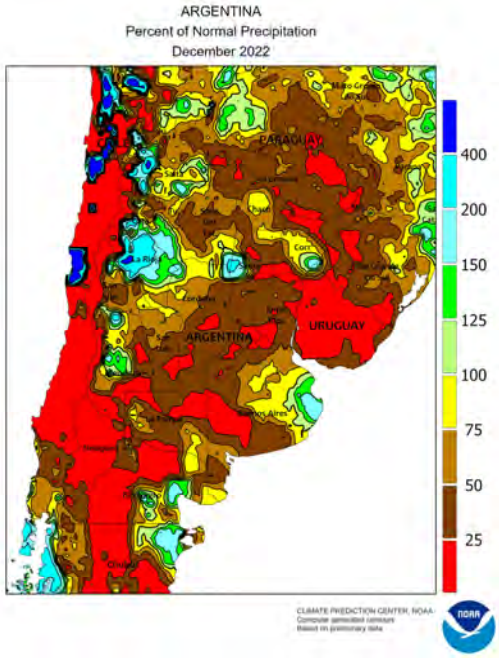

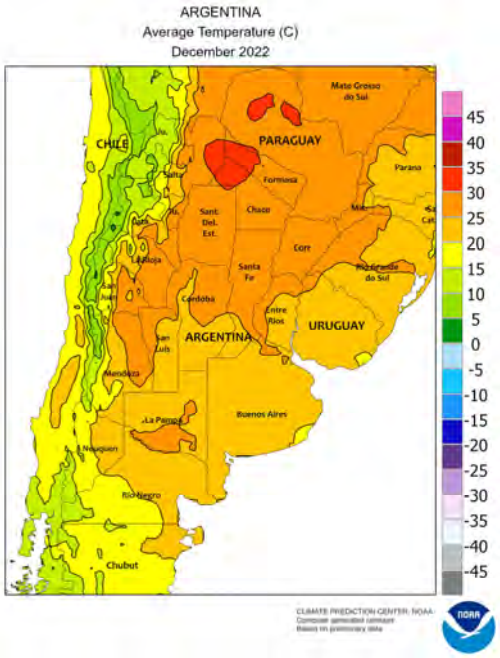

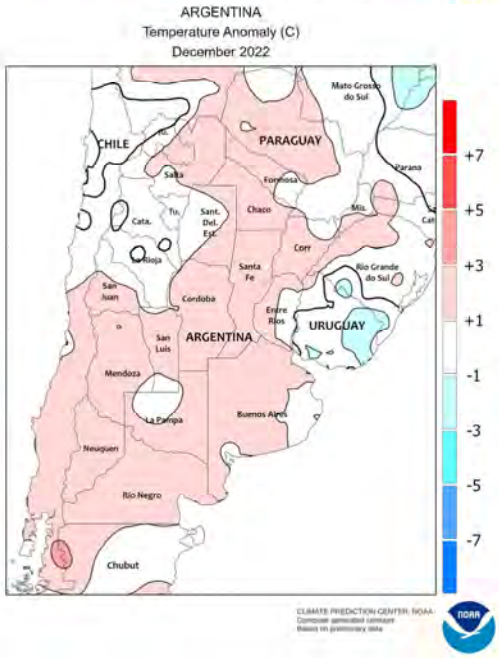

ARGENTINA

Throughout much of December, warmer- and drier-than-normal weather hastened maturation of winter grains, while also maintaining stress on early-sown summer crops. In high-yielding farming areas of central Argentina (southern Córdoba and La Pampa eastward), the combination of infrequent rainfall and numerous periods of stressful heat (daytime highs reaching the upper 30s and lower 40s degrees C) reduced yield prospects of corn and soybeans in or approaching reproductive stages of development. Conditions also led to drying of fields, sustaining delays in planting summer grains, oilseeds, and cotton in key central and northeastern production areas. Monthly average temperatures were 1 to 2°C above normal regionwide, with highest daytime temperatures (highs reaching the middle 40s) centered over the traditionally warmer northwest (northern Córdoba to eastern Salta and Formosa). The ongoing drought – linked to current La Niña conditions – has resulted in significant reductions in the yield potential in both winter and summer crops.

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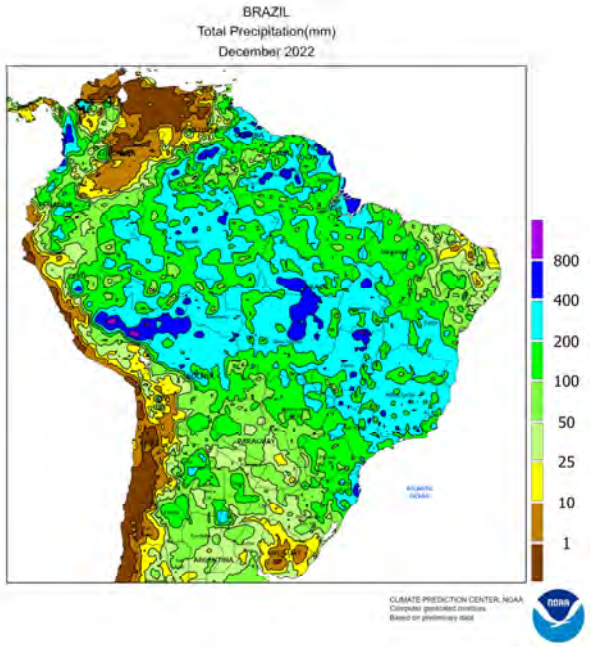

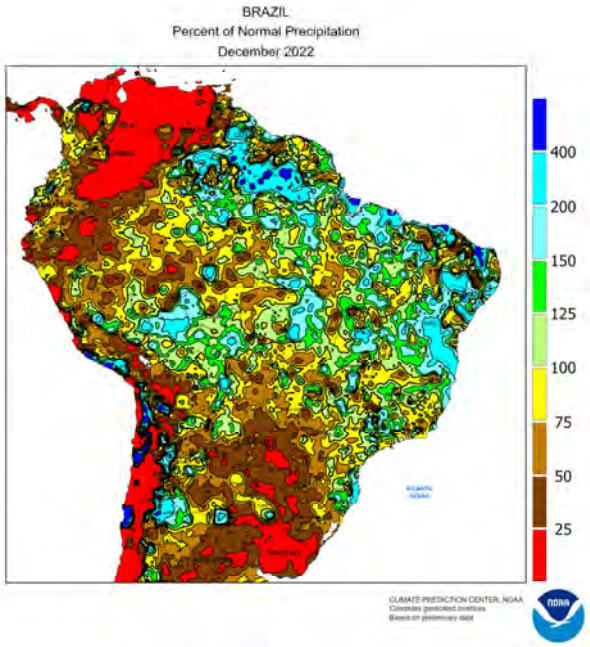

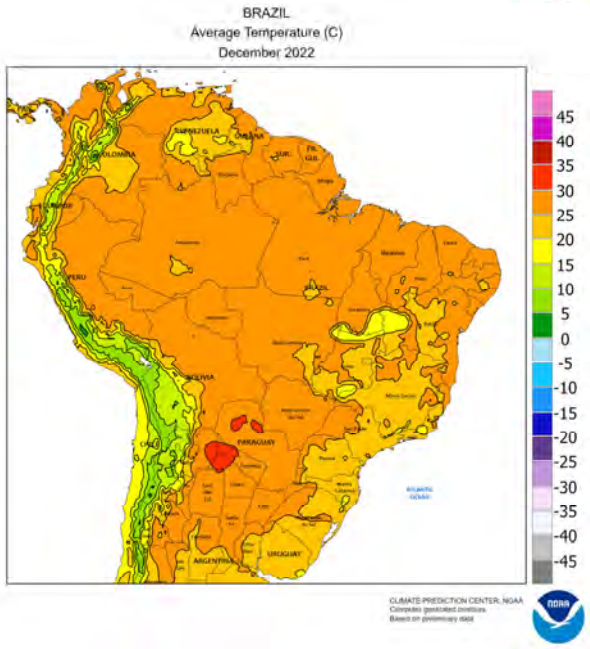

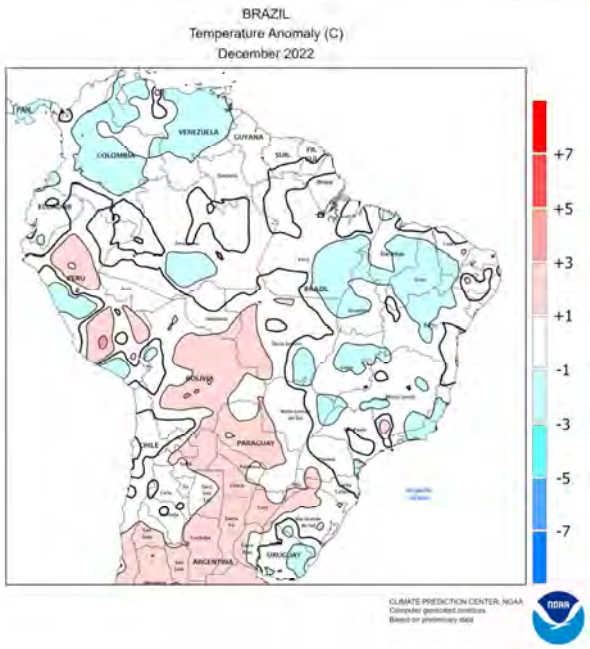

BRAZIL

In December, pockets of dryness in southern Brazil contrasted with abundant rainfall in key summer production areas farther north. Drier-than-normal conditions were prevalent in Rio Grande do Sul and to the north in western Paraná and eastern parts of Paraguay, where accumulations fell below 50 mm. Summer heat (daytime highs reaching above 35°C on several days) exacerbated the impacts of the dryness on corn and other early-planted crops in some of the drier locations; this was particularly true in Rio Grande do Sul, where corn was advancing through reproduction. In contrast, more than 200 mm fell locally from Mato Grosso eastward, reaching as far south as São Paulo, and fewer locations recorded temperatures reaching the middle and upper 30s (degrees C). As a result, summer crop prospects at the national level were overall favorable, despite reductions in yield potential in sections of the south.

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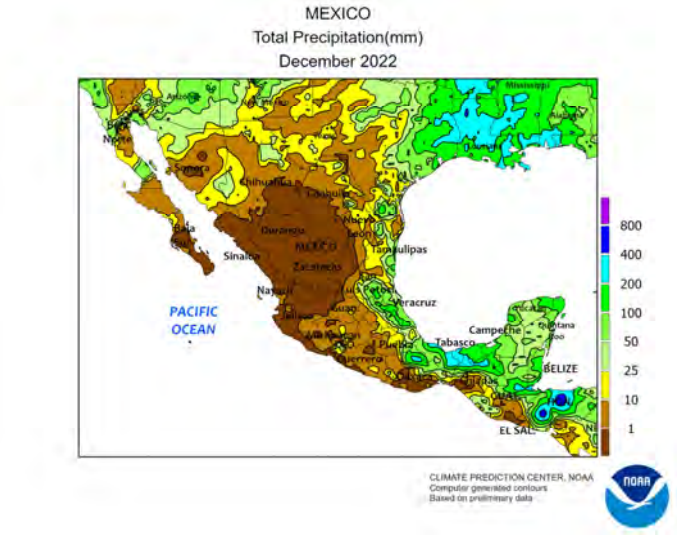

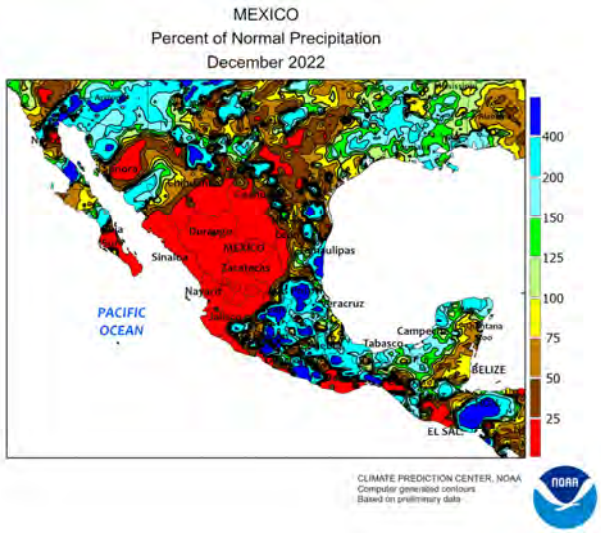

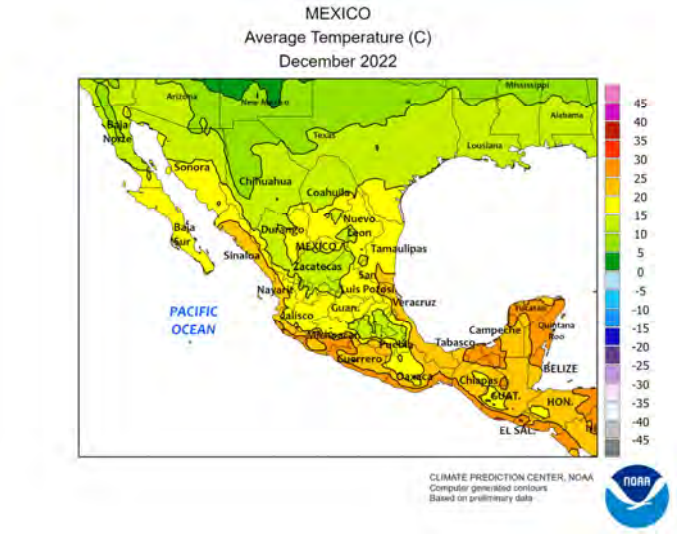

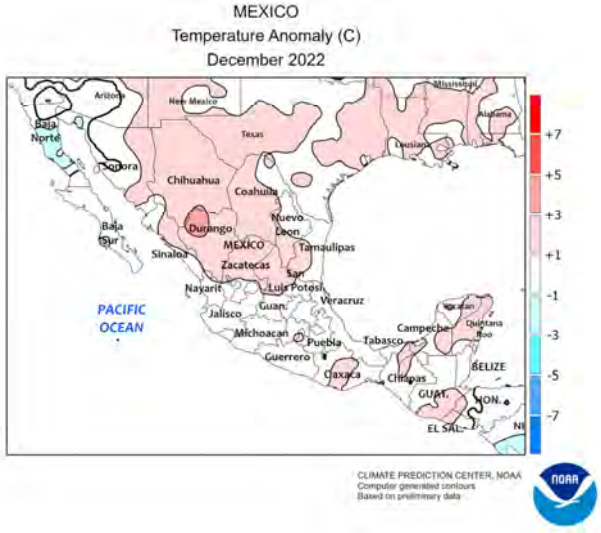

MEXICO

In December, showers provided additional moisture for winter-grown crops along the Gulf Coast and the far northwest, as seasonably drier conditions prevailed elsewhere. The heaviest rainfall (well over 200 mm) was concentrated over Tabasco and southeastern Veracruz, with spotty moderate to heavy showers (amounts totaling 50-100 mm) from Tamaulipas to Oaxaca, and in the Yucatan Peninsula. Meanwhile, lighter rain (locally greater than 25 mm) fell in the northwest – in and around Sonora – but mostly dry weather prevailed in other western watersheds. December average temperatures were near to above normal, although freezes were recorded across much of the north, aiding drydown of mature summer crops. Frost reached as far south as the southern plateau, where corn harvesting was underway. According to the government of Mexico, national reservoir levels were at 65 percent capacity as of December 31. In the northwest, reservoir capacity was at 39 percent in Sonora; 60 percent in Sinaloa; and 83 percent in Chihuahua.

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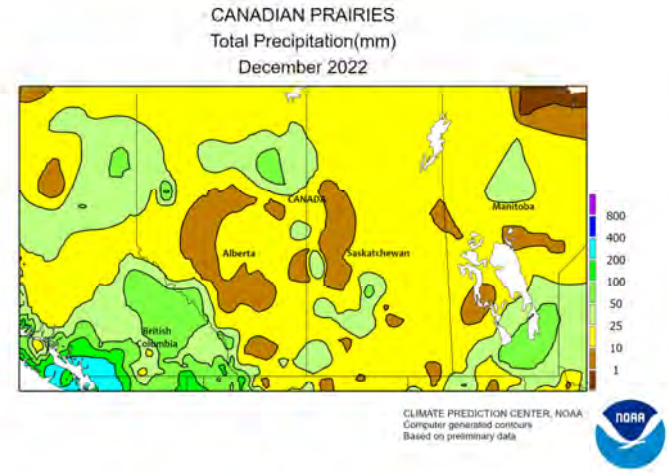
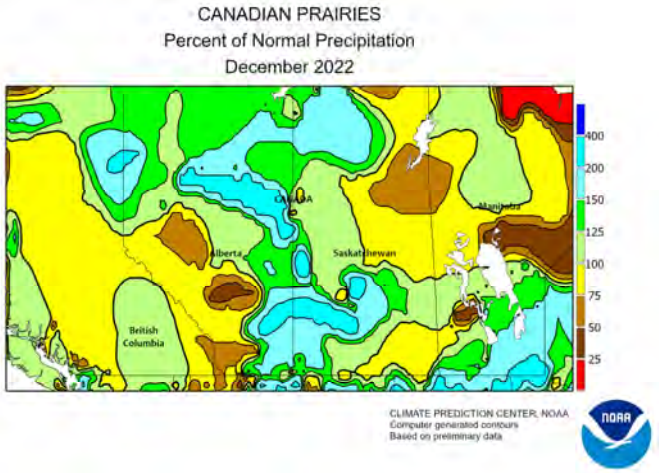
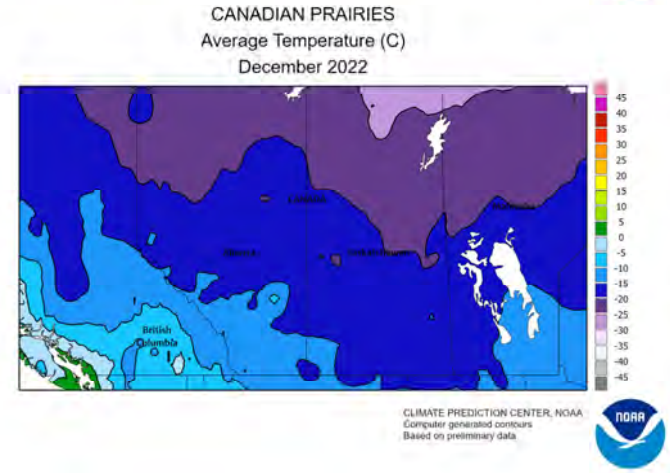
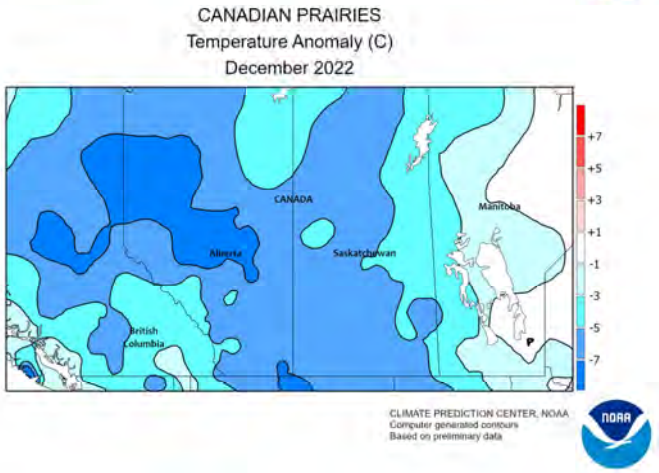




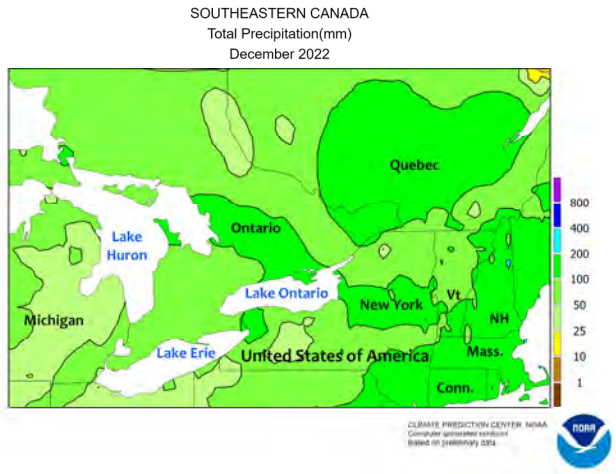


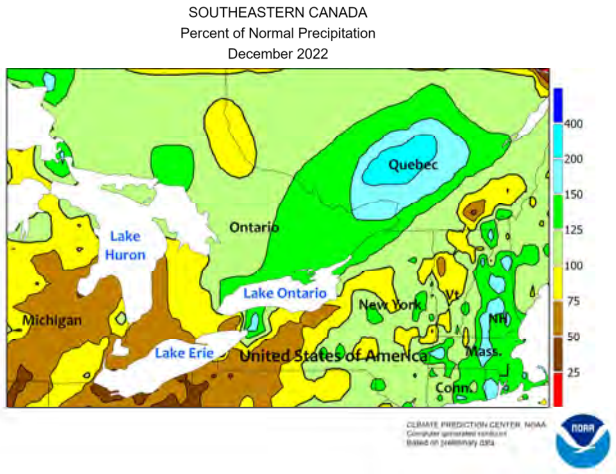


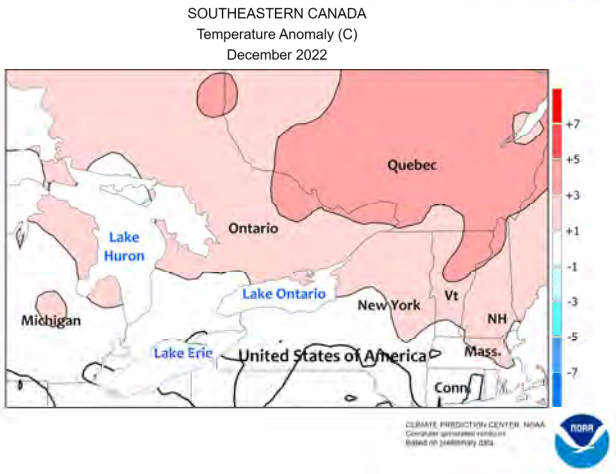
CANADIAN PRAIRIES

Colder-than-normal weather prevailed during much of December, including several outbreaks of bitter cold that potentially impacted overwintering crops and livestock. Monthly average temperatures ranged from 1 to 2°C below normal in Manitoba's Red River Valley to as much as 8°C below normal in Alberta's northern farming areas. All locations recorded temperatures of -30°C or lower on at least one occasion in December, with multiple outbreaks of cold that dropped temperatures below -20°C. Following a dry start to December, precipitation gradually increased, with most districts accumulating above-normal precipitation, mostly in the form of snow. At month's end, fields were void of snow in sections of southern Alberta and southwestern Saskatchewan. According to the Canadian Drought Monitor, Moderate to Severe Drought (D1 and D2) lingered over much of the Prairies, although few locations remained in the Extreme (D3) range.

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







SOUTHEASTERN CANADA

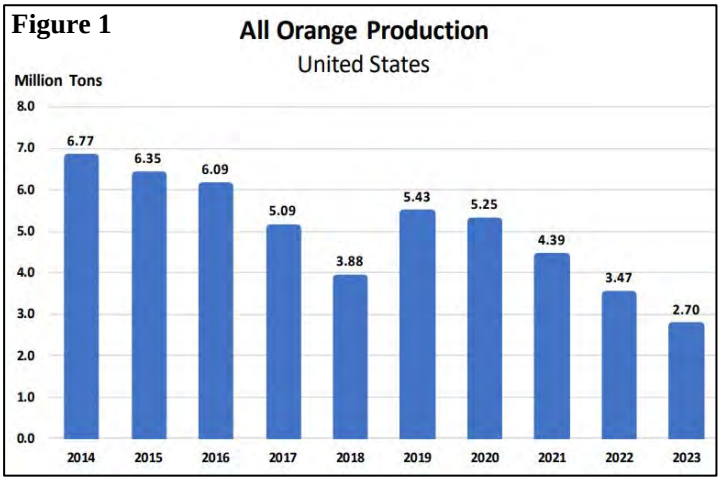
A generally mild December favored overwintering wheat and pastures. Monthly average temperatures ranged from 1 to 2°C above normal in Ontario's southwestern farming areas to 3°C or more above normal in southern Quebec. Additionally, nighttime lows generally stayed above the threshold for potential damage to dormant wheat (-17°C), and most locations in both Ontario and Quebec had some protective layer of snow cover on the coldest evenings. At month's end, a warming trend – which ushered rainfall into the region – helped to erode the layer of protective snow, resulting in much of Ontario lacking protection from a potential cold snap. According to the Canadian Drought Monitor, farming areas lying between Windsor and Toronto remained in Moderate to Extreme Drought (D1 to D3) despite recording near- to above-normal monthly precipitation.

U.S. Crop Production Highlights

The following information was released by USDA's Agricultural Statistics Board on January 12, 2023. Forecasts refer to January 1.

The **U.S all orange** forecast for the 2022-2023 season is 2.70 million tons (figure 1), down 5 percent from the previous forecast and down 22 percent from the 2021-2022 final utilization.

Figure 1



The Florida all orange forecast, at 18.0 million boxes (810,000 tons), is down 10 percent from the previous forecast and down 56 percent from last season's final utilization. In Florida, early, midseason, and Navel varieties are forecast at 7.00 million boxes (315,000 tons), unchanged from the previous forecast but down 62 percent from last season's final utilization. The Florida Valencia orange forecast, at 11.0 million boxes (495,000 tons), is down 15 percent from the previous forecast and down 52 percent from last season's final utilization.

The California all orange forecast is 46.1 million boxes (1.84 million tons), is down 2 percent from previous forecast but up 14 percent from last season's final utilization. The California Navel orange forecast is 38.0 million boxes (1.52 million tons), unchanged from the previous forecast but up 19 percent from last season's final utilization. The California Valencia orange forecast is 8.10 million boxes (324,000 tons), down 11 percent from the previous forecast and down 6 percent from last season's final utilization.

The Texas all orange forecast, at 1.15 million boxes (49,000 tons) unchanged from the previous forecast but up significantly from last season's final utilization.

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