

WEEKLY WEATHER AND CROP BULLETIN

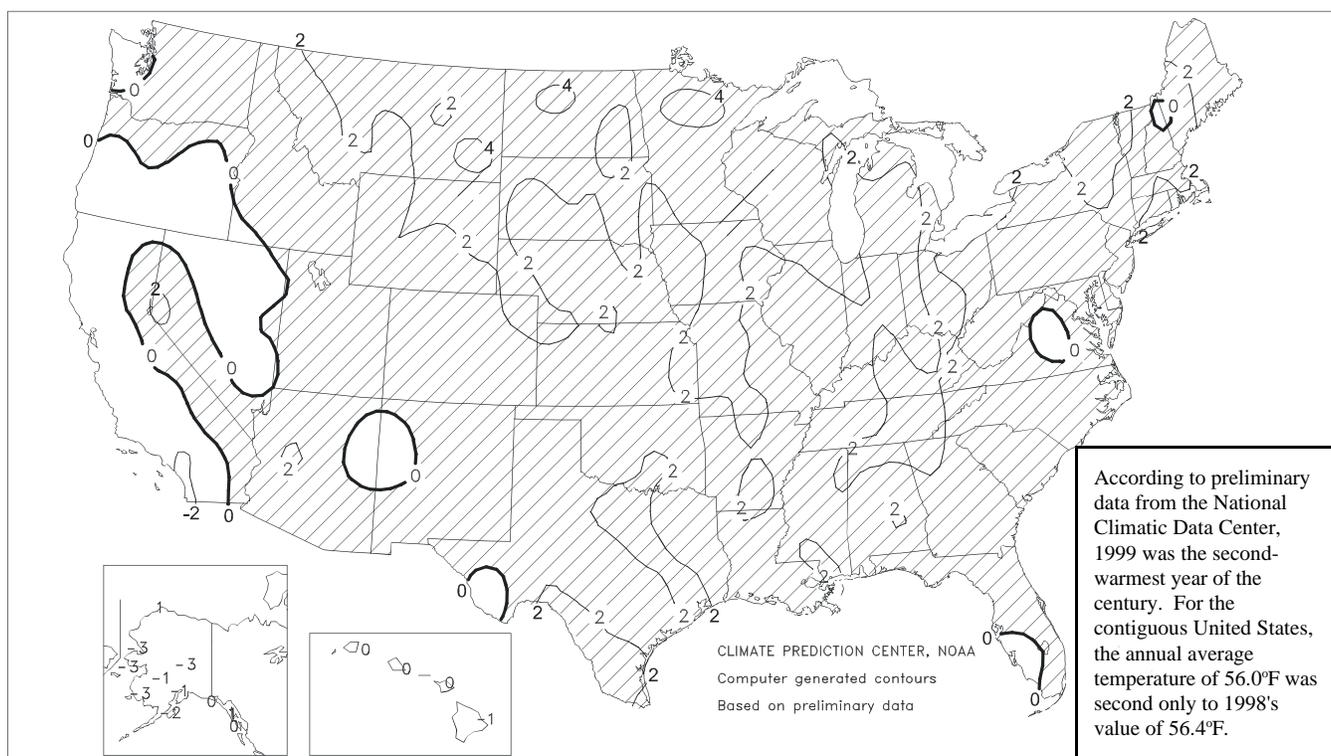
U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Weather Service

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



Departure of Average Temperature from Normal (°F)

JAN 1 - DEC 31 1999



According to preliminary data from the National Climatic Data Center, 1999 was the second-warmest year of the century. For the contiguous United States, the annual average temperature of 56.0°F was second only to 1998's value of 56.4°F.

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

HIGHLIGHTS

January 9 - 15, 2000

Much-needed precipitation overspread northern **California**, improving the region's water-supply prospects. According to the State's Department of Water Resources, the water equivalent of the **Sierra Nevada** snow pack stood at only 3 inches, or 20 percent of normal, as the week began. Meanwhile, beneficial rain continued early in the week in much of the **Southeast**, further boosting topsoil moisture and easing long-term drought. Dry weather prevailed in **Florida**, however, increasing vegetable and citrus irrigation requirements. Dry, mild weather in the **Plains** and **western Corn Belt** favored overwintering wheat but raised additional concerns about

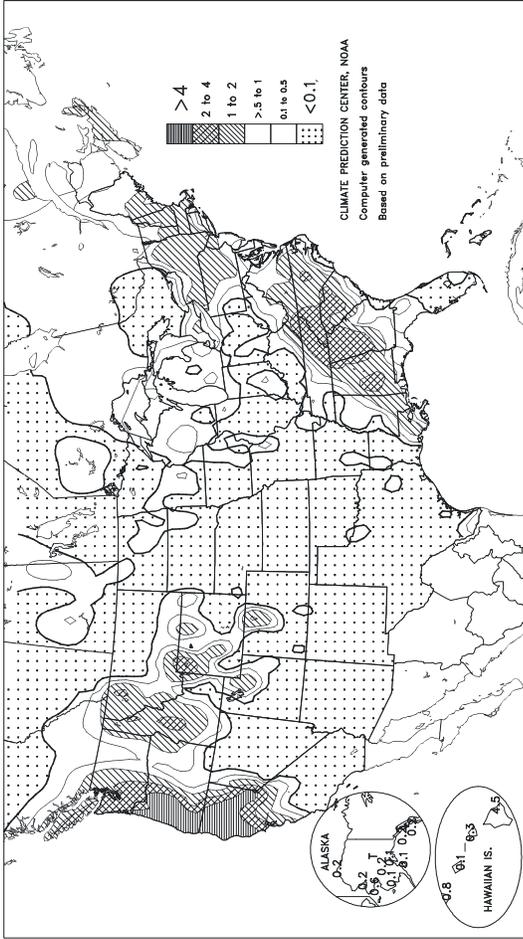
(Continued on page 3)

Contents

Total Precipitation, Temperature Departure, & Extreme Maximum and Minimum Temperature Maps	2
Weather Data for the Delta	3
La Niña Update	4
National Weather Data for Selected Cities	5
Water Supply Forecast for the Western U.S.	8
National Agricultural Summary & Snow Cover Map	10
1999 Weather Review	11
1999 Weather: The Year in Graphs	14
1999 Weather Data for Selected Cities	16
1999 Crop Production Highlights	17
International Weather and Crop Summary & December Temperature/Precipitation Maps	19
Subscription Information	32

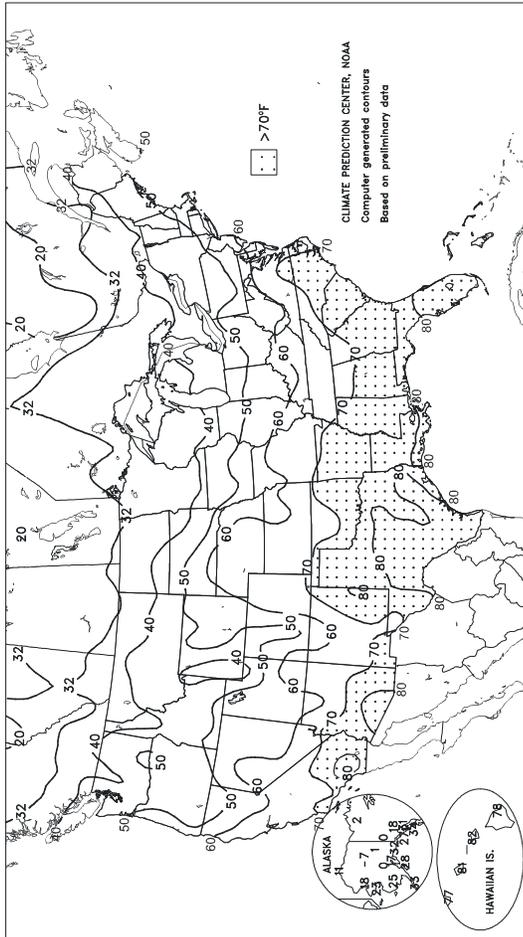
Total Precipitation (Inches)

JAN 9 - 15, 2000



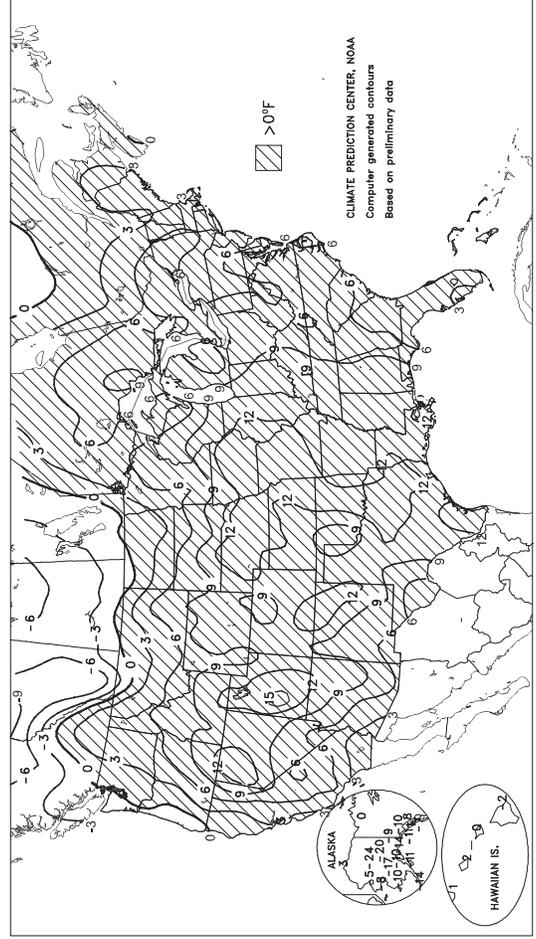
Extreme Maximum Temperature (°F)

JAN 9 - 15, 2000



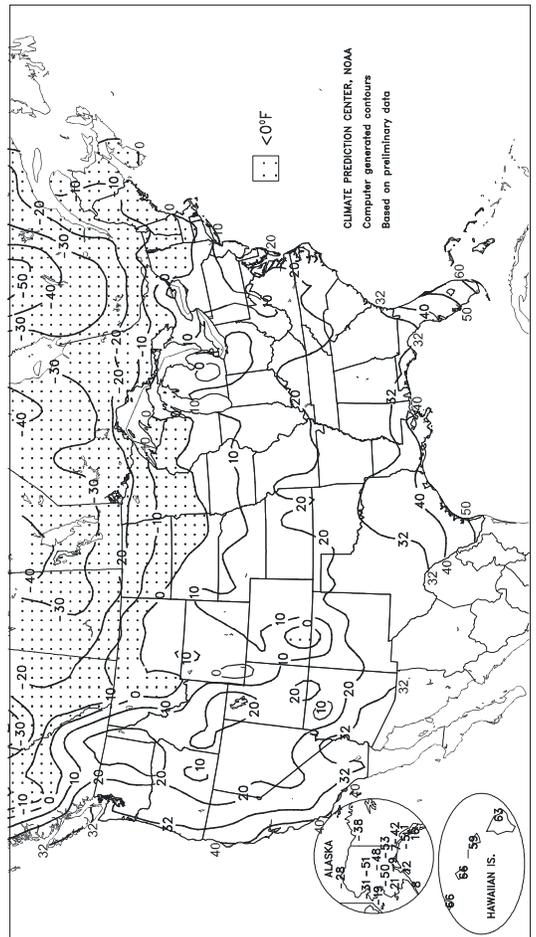
Departure of Average Temperature from Normal (°F)

JAN 9 - 15, 2000



Extreme Minimum Temperature (°F)

JAN 9 - 15, 2000



Weather Data for Selected Locations in the Delta

Weather Data for the Week Ending January 15, 2000

Data provided by the Mississippi State Delta Research and Extension Center (DREC) and the Southern Regional Climate Center (SRCC).

STATES AND STATIONS	TEMPERATURE °F						PRECIPITATION								4-INCH SOIL TEMP. °F		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	90 AND ABOVE	32 AND BELOW	TEMP. °F		PRECIP.	
																		OF 100	OF 100	1/4 INCH OR MORE	1/2 INCH OR MORE
MS BATESVILLE ^x	60	37	70	27	49	11	0.00	-1.04	0.00	--	--	0.44	19	--	--	0	2	0	0		
BELZONI ^x	66	40	73	29	53	11	0.12	-1.21	0.12	--	--	0.77	27	--	--	0	1	1	0		
CLARKSDALE ^x	61	39	71	29	50	12	0.29	-0.76	0.29	--	--	0.86	38	--	--	0	2	1	0		
CLEVELAND ^x	59	39	72	30	49	6	0.10	-0.95	0.10	--	--	1.02	50	--	--	0	2	1	0		
GREENVILLE ^x	60	44	74	32	52	10	0.00	-1.12	0.00	--	--	2.03	85	--	--	0	1	0	0		
GREENWOOD ^x	64	40	72	27	52	10	0.09	-1.06	0.08	--	--	1.44	61	--	--	0	1	2	0		
INDIANOLA 1S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
INVERNESS 5E	64	41	72	33	53	--	0.04	--	0.04	3.65	--	0.93	--	56	49	0	0	1	0		
LYON	61	36	71	28	49	--	0.06	--	0.04	4.19	--	0.91	--	--	--	0	3	2	0		
MOORHEAD ^x	64	42	73	34	53	11	0.00	-1.12	0.00	--	--	0.95	39	--	--	0	0	0	0		
ONWARD	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
ROLLING FORK ^x	63	40	73	31	52	10	0.12	-1.11	0.12	--	--	0.83	32	--	--	0	1	1	0		
SIDON	67	43	77	33	55	--	0.04	--	0.03	3.61	--	1.26	--	56	50	0	0	2	0		
TUNICA ^x	60	37	70	27	49	11	0.09	-0.93	0.09	--	--	0.12	5	--	--	0	2	1	0		
VICKSBURG ^x	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
YAZOO CITY ^x	65	45	74	39	55	11	0.12	-1.17	0.08	--	--	0.93	33	--	--	0	0	2	0		
STONEVILLE [*]	60	43	72	32	52	12	0.85	-0.29	0.85	4.73	57	1.29	49	56	47	0	2	1	1		

Compiled by USDA/OCE/WAOB's Stoneville Field Office.

* Based on 1964-93 normals.

x Based on 1961-90 normals.

Delta Weather and Crop Summary: Much-above-normal temperatures continued across the Mississippi Delta. Most of the area remained in need of precipitation. Some researchers and farmers are concerned that soils will not be adequately moist for the upcoming planting season.

(Continued from front cover)

a lack of moisture for winter grains and the availability of moisture when spring planting begins. In the **Southwest**, warm, unfavorably dry weather continued to adversely affect ranges, pastures, and dryland crops. Despite cold intrusions that briefly dropped temperatures from 0 to -25°F across the **North** (from **northern Montana** to **New England**), weekly temperatures averaged above normal nationwide. Warmer-than-normal weather prevailed for a 12th consecutive week on the **northern Plains**, while readings averaged 7 to 15°F above normal from the **central and southern Plains** to the **Midwest**. Temperatures occasionally exceeded 70°F across the **southern one-third of the Nation**, and reached the 85°F as far north as **central Texas**.

Early-week rainfall topped 2 inches in many locations from **Alabama** to **eastern Tennessee** and the **western Carolinas**. During the first half of January, precipitation reached 3.86 inches in **Knoxville, TN**, 3.16 inches in **Birmingham, AL**, and 3.13 inches in **Columbia, SC**. Meanwhile, heavy precipitation pelted **western Oregon** and **northern California**. Weekly totals topped 4 inches throughout the region, and exceeded 10 inches in a few orographically favored locations. The water equivalent of the **Sierra Nevada** snow pack doubled during the week, to 6 inches (about 40 percent of normal).

Although dry weather persisted on the **Plains**, a storm system blanketed the **northern Corn Belt** with beneficial snow. On January 12, **Minneapolis, MN** noted a daily-record snowfall (8.7 inches). Heavy snow, accompanied by sharply colder weather, also spread into the **Northeast**. In **Boston, MA**, 5.6 inches fell on January 13, ending their 303-day (March 16 - January 12) period without measurable snow. **Boston's** previous latest first

accumulation occurred on January 6, 1892, and their previous longest snow-free period was 274 days, set in 1998. **Albany, NY** received 10.1 inches, lifting their season-to-date total to 11.6 inches. Farther west, the storm system produced heavy precipitation earlier in the week across the **northern Rockies**, where 24-hour snowfall rates reached 23.4 inches in **Clearwater County, ID**, at **Elk Butte**.

High winds periodically swept across much of the Nation during the week. On Monday, **Redding, CA** clocked a peak wind gust to 56 mph. Meanwhile in **coastal Maine**, gusts reached 83 mph at **Mount Desert Rock** and 78 mph on **Matinicus Island**. Three days later, winds in the **Mid-Atlantic region** reached 78 mph in **Blacksburg, VA** and 55 mph in **Washington, DC**. Meanwhile, more than 100 daily-record highs were set or tied during the week, many of which occurred across the **Southwestern and South-Central States**. On Wednesday, highs soared to 85°F as far north as **San Angelo, TX**, while **McAlester, OK** recorded 77°F. On January 13-14, **El Cajon, CA** logged consecutive daily-record highs (87 and 86°F). On Saturday, record warmth spread onto the **Plains**, where **Hill City, KS** measured 70°F. In the **Black Hills, Rapid City, SD** (63°F) also posted a record high. In contrast, frigid air reached the **Northeast**, where lows on January 15 fell to -21°F in **East Albany, VT** and -15°F in **Tupper Lake, NY**.

Bitterly cold weather (weekly temperatures from 5 to 25°F below normal) persisted across **interior and western Alaska**, continuing a trend that developed in late October 1999. On January 11, **St. Paul Island** notched a low of -8°F, their sixth daily-record low in 9 days. Two days later, lows plummeted to -56°F in **Ft. Yukon** and -59°F in **Tanacross**. In contrast to previous weeks, however, cold, dry air also overspread **southeastern Alaska**.

La Niña Update: January 11, 2000

The following is derived from the ENSO Advisory 2000/1 issued by the Climate Prediction Center/National Centers for Environmental Prediction (NCEP) on January 11, 2000.

Cold episode conditions (La Niña) continued to strengthen in the tropical Pacific during December, as equatorial sea surface temperature indices dropped to values comparable to those observed in December 1998. Equatorial sea surface temperatures during December 1999 were more than 1°C below normal everywhere between 180°W and 90°W (Fig. 1). With the redevelopment of strong negative SST anomalies in recent months, the 1998-1999 period has become the longest period of sustained cold episode conditions since the mid-1980s. The SST indices indicate that the 1998-2000 cold episode is comparable in intensity to the cold episodes of 1970-71 and 1973-76, is stronger than the cold episode in the mid-1980s, and is weaker than the cold episode of 1988-89.

A feature of the current cold episode, that has been noted in previous advisories, is the lack of evolution of the subsurface thermal structure towards a pre-warm episode state. Instead, the subsurface temperature structure has maintained a pattern that is typical of the mature phase of cold episodes, with positive subsurface temperature anomalies in the

western equatorial Pacific and negative subsurface temperature anomalies in the eastern equatorial Pacific.

The patterns of anomalous convection and low-level winds during the last year have also been highly persistent over the central and western equatorial Pacific. Weaker-than-normal convection and stronger-than-normal easterlies have dominated the equatorial region in the vicinity of the date line, while stronger-than-normal convection has prevailed over Indonesia and Malaysia.

The most recent NCEP coupled model forecasts and other available coupled model and statistical predictions indicate that cold episode conditions will persist at least through the first half of 2000.

Weekly updates for SST, 850-hPa wind, and OLR are available on the Climate Prediction Center homepage at:

<http://www.cpc.ncep.noaa.gov>

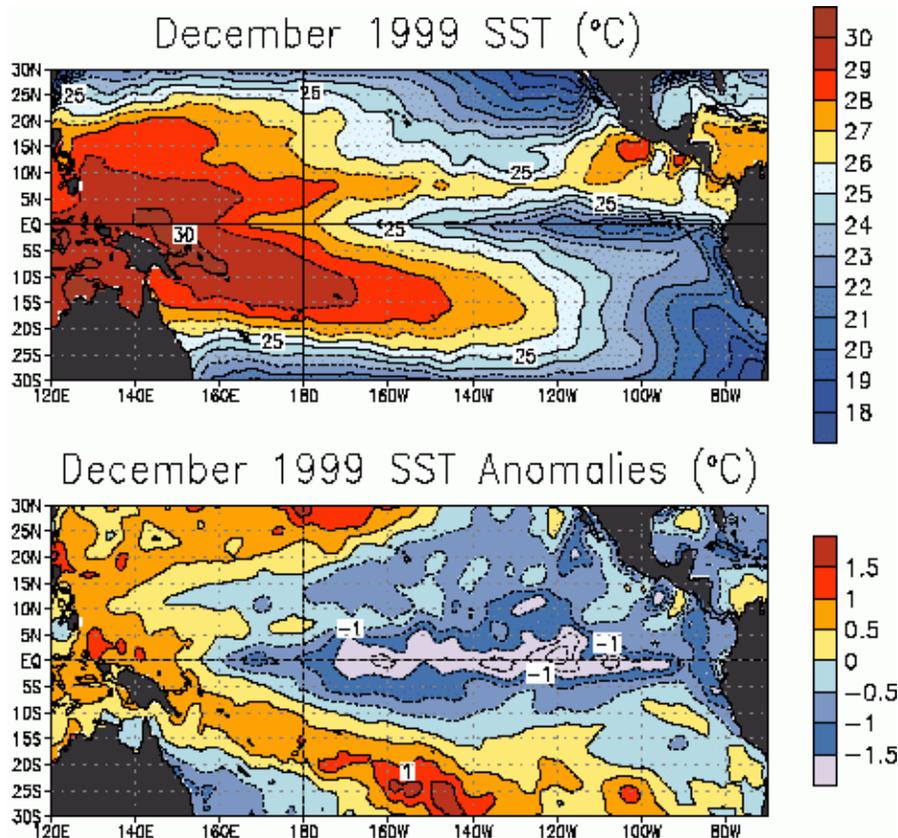


Figure 1. Sea surface temperature (top) and departures from average (bottom) for December 1999. Departures from average are computed based on the 1950-1979 adjusted OI climatology (Reynolds and Smith 1995). *Climate*, 8, 1571-1583). Contour interval is 1°C, with intermediate contours shown for +/-0.5°C.

National Weather Data for Selected Cities

Weather Data for the Week Ending January 15, 2000

Data Provided by Climate Prediction Center (301-763-8000, Ext. 7503)

STATES AND STATIONS	TEMPERATURE EF						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. EF		PRECIP	
																90 AND ABOVE	32 AND BELOW	0.1 INCH OR MORE	5.0 INCH OR MORE
AL	BIRMINGHAM	61	40	72	28	51	9	1.03	-0.16	0.90	3.96	61	1.03	76	44	0	3	2	1
	HUNTSVILLE	57	38	71	26	48	9	1.11	-0.13	1.07	4.51	62	1.11	78	57	0	3	2	1
	MOBILE	68	43	77	31	56	6	0.37	-0.72	0.37	3.80	58	0.37	30	95	48	0	2	1
	MONTGOMERY	65	41	76	28	53	7	0.64	-0.43	0.64	4.02	63	0.64	52	94	63	0	3	1
AK	ANCHORAGE	18	8	27	-6	13	-2	0.08	-0.11	0.08	1.63	122	0.08	36	87	70	0	7	1
	BARROW	-4	-17	2	-26	-10	2	0.03	0.00	0.01	0.16	84	0.03	100	87	70	0	7	3
	FAIRBANKS	-22	-37	5	-49	-30	-20	0.05	-0.08	0.05	0.40	40	0.05	33	-99	-99	0	7	1
	JUNEAU	32	26	40	15	29	5	0.72	-0.33	0.24	11.02	195	0.72	60	92	72	0	5	4
	KODIAK	29	15	36	7	22	-8	0.71	-1.01	0.36	7.72	88	0.71	36	84	54	0	7	4
	NOME	-7	-19	8	-28	-13	-21	0.00	-0.19	0.00	0.21	20	0.00	0	80	65	0	7	0
AZ	FLAGSTAFF	37	7	45	0	22	-6	0.01	-0.47	0.01	0.13	4	0.13	23	83	33	0	7	1
	PHOENIX	62	39	65	36	51	-2	0.01	-0.16	0.01	0.01	1	0.01	5	59	19	0	0	1
	TUCSON	59	30	65	28	45	-6	0.10	-0.12	0.10	0.10	8	0.10	40	59	18	0	6	1
	YUMA	65	47	68	41	56	0	0.00	-0.07	0.00	0.00	0	0.00	0	34	15	0	0	0
AR	FORT SMITH	55	34	68	23	44	7	1.36	0.90	0.83	6.37	178	1.36	252	91	41	0	4	3
	LITTLE ROCK	58	40	75	24	49	10	0.19	-0.66	0.17	5.43	93	0.19	19	89	48	0	2	2
CA	BAKERSFIELD	54	31	57	26	43	-4	0.00	-0.17	0.00	0.13	16	0.00	0	83	44	0	5	0
	EUREKA	47	42	52	34	44	-4	0.75	-0.66	0.39	3.97	52	0.95	59	95	87	0	0	3
	FRESNO	53	31	56	29	42	-2	0.00	-0.42	0.00	0.03	2	0.00	0	99	56	0	6	0
	LOS ANGELES	64	45	70	41	55	-2	0.00	-0.49	0.00	0.40	18	0.00	0	62	23	0	0	0
	REDDING	54	31	63	28	42	-2	0.05	-1.36	0.04	0.72	10	0.09	6	93	49	0	4	2
	SACRAMENTO	54	34	61	28	44	0	0.01	-0.80	0.01	0.04	1	0.01	1	94	44	0	2	1
	SAN DIEGO	64	46	68	43	55	-2	0.04	-0.37	0.04	0.48	24	0.16	34	77	33	0	0	1
	SAN FRANCISCO	57	43	65	38	50	2	0.01	-0.95	0.01	0.49	12	0.01	1	91	55	0	0	1
CO	ALAMOSA	32	-2	37	-9	15	1	0.00	-0.07	0.00	0.03	6	0.00	0	78	24	0	7	0
	CO SPRINGS	38	17	49	9	28	0	0.05	-0.03	0.00	0.26	47	0.06	67	77	31	0	7	1
	DENVER	41	20	48	14	30	1	0.07	-0.04	0.06	0.36	47	0.07	54	67	27	0	7	1
	GRAND JUNCTION	30	10	36	5	20	-4	0.10	-0.04	0.10	0.40	52	0.14	88	88	58	0	7	1
	PUEBLO	47	15	56	0	31	2	0.01	-0.07	0.01	0.14	27	0.09	100	82	23	0	7	1
CT	BRIDGEPORT	48	32	56	23	40	10	0.87	0.11	0.83	3.25	74	0.87	100	89	59	0	5	2
	HARTFORD	48	28	62	15	38	13	0.34	-0.47	0.30	2.61	54	0.34	37	90	53	0	5	3
DC	WASHINGTON	57	38	71	30	48	13	1.22	0.58	1.22	3.71	96	1.22	167	83	46	0	3	1
DE	WILMINGTON	54	34	68	25	44	13	0.78	0.06	0.78	2.63	61	0.78	94	91	48	0	4	1
FL	DAYTONA BEACH	75	55	82	51	65	7	0.18	-0.41	0.17	1.74	53	0.18	26	96	61	0	0	2
	JACKSONVILLE	72	47	82	40	59	7	0.48	-0.21	0.30	1.37	39	0.48	61	99	62	0	0	2
	KEY WEST	78	70	81	65	74	4	0.56	0.10	0.37	1.21	47	0.56	106	96	73	0	0	2
	MIAMI	80	68	81	64	74	7	0.24	-0.20	0.24	2.92	125	0.24	48	91	64	0	0	1
	ORLANDO	77	58	82	54	67	7	0.01	-0.47	0.01	2.66	99	0.01	2	98	48	0	0	1
	PENSACOLA	66	46	74	33	56	5	0.04	-0.98	0.02	3.97	73	0.06	5	90	46	0	0	3
	TALLAHASSEE	68	42	77	32	55	4	0.02	-1.05	0.01	2.62	42	0.07	6	93	51	0	1	2
	TAMPA	76	60	80	53	68	8	0.06	-0.35	0.02	1.08	41	0.06	13	96	60	0	0	2
	WEST PALM	79	66	79	59	72	7	0.00	-0.61	0.00	1.45	46	0.00	0	91	63	0	0	0
GA	ATHENS	58	40	66	30	49	7	0.24	-0.79	0.24	2.49	47	0.25	21	86	50	0	2	1
	ATLANTA	59	40	70	30	50	9	0.48	-0.58	0.47	2.69	49	0.48	40	89	48	0	1	2
	AUGUSTA	66	38	77	25	52	8	0.12	-0.76	0.11	1.09	25	0.12	12	90	43	0	4	2
	COLUMBUS	63	42	71	34	53	7	0.11	-0.95	0.11	1.83	30	0.11	9	84	40	0	0	1
	MACON	65	39	76	26	52	6	0.23	-0.79	0.21	2.03	37	0.23	20	91	42	0	3	3
	SAVANNAH	68	44	79	36	56	7	0.15	-0.65	0.11	2.10	54	0.16	18	95	53	0	0	2
HI	HILO	76	63	79	62	70	-2	1.93	-0.40	0.73	16.34	111	1.93	72	98	77	0	0	6
	HONOLULU	81	69	82	64	75	2	0.01	-0.87	0.01	2.66	55	0.01	1	86	60	0	0	1
	KAHULUI	81	64	84	58	73	1	0.01	-0.93	0.01	2.56	59	0.01	1	89	56	0	0	1
	LIHUE	77	68	79	62	73	1	0.27	-1.13	0.18	4.19	62	0.28	18	92	66	0	0	4
ID	BOISE	36	25	40	20	30	2	0.30	-0.03	0.24	1.25	72	0.35	92	96	69	0	7	2
	LEWISTON	44	32	50	26	38	5	0.10	-0.20	0.09	1.24	80	0.10	29	86	58	0	4	2
	POCATELLO	30	18	35	6	24	1	0.12	-0.13	0.08	0.47	34	0.20	71	90	71	0	7	3
IL	CHICAGO/O'HARE	39	26	60	13	32	10	0.28	-0.13	0.25	3.05	104	0.28	60	91	63	0	6	2
	MOLINE	39	21	61	4	30	10	0.13	-0.28	0.11	2.40	89	0.13	28	91	67	0	6	2
	PEORIA	40	24	64	10	32	10	0.11	-0.29	0.10	2.66	92	0.11	24	91	61	0	6	2
	ROCKFORD	36	20	59	5	28	9	0.14	-0.20	0.08	2.09	86	0.15	38	95	72	0	6	3
	SPRINGFIELD	43	27	64	13	35	10	0.25	-0.16	0.24	2.45	77	0.25	53	87	61	0	5	2
IN	EVANSVILLE	49	32	69	24	41	10	2.29	1.64	2.09	7.42	168	2.29	309	90	61	0	5	2
	FORT WAYNE	43	27	58	20	35	11	0.01	-0.47	0.01	1.96	57	0.01	2	93	67	0	5	1
	INDIANAPOLIS	47	29	61	22	38	12	0.77	0.19	0.63	3.38	84	0.77	115	93	64	0	5	2
	SOUTH BEND	40	28	61	18	34	10	0.15	-0.43	0.08	2.81	71	0.15	22	89	68	0	5	4
IA	BURLINGTON	39	22	60	6	31	9	0.00	-0.33	0.00	2.52	107	0.00	0	90	65	0	5	0
	CEDAR RAPIDS	35	17	52	0	26	8	0.01	-0.25	0.00	0.76	40	0.01	3	93	70	0	6	1
	DES MOINES	39	21	50	9	30	10	0.11	-0.13	0.00	0.46	29	0.11	41	87	59	0	7	1
	DUBUQUE	34	16	52	1	25	9	0.04	-0.28	0.04	0.90	39	0.04	11	94	72	0	7	1
	SIOUX CITY	35	13	48	3	24	6	0.09	-0.05	0.09	0.44	47	0.09	56	96	67	0	7	1
	WATERLOO	34	16	44	4	25	10	0.04	-0.16	0.03	0.62	41	0.04	17	90	69	0	7	2
KS	CONCORDIA	41	19	52	8	30	4	0.00	-0.14	0.00	0.43	43	0.00	0	89	47	0	7	0
	DODGE CITY	44	19	51	9	32	3	0.12	0.01	0.12	0.43	55	0.12	92	86	42	0	7	1
	GOODLAND	40	15	48	9	28	0	0.02	-0.07	0.02	0.41	79	0.10	91	81	45	0	7	1
	TOPEKA	45	22	57	13	33	6	0.03	-0.21	0.03	1.79	105	0.03	11	90	47	0	7	1

Weather Data for the Week Ending January 15, 2000

STATES AND STATIONS	TEMPERATURE EF						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. EF		PRECIP		
																90 AND ABOVE	32 AND BELOW	.01 INCH OR MORE	.50 INCH OR MORE	
KY	WICHITA	43	24	54	13	34	5	0.39	0.19	0.39	4.45	311	0.39	170	90	54	0	7	1	0
	JACKSON	52	34	70	22	43	10	0.70	-0.19	0.62	3.32	61	0.76	75	87	50	0	4	2	1
	LEXINGTON	51	32	66	21	41	10	1.39	0.68	1.06	4.09	85	1.39	172	88	50	0	5	4	1
	LOUISVILLE	52	35	70	24	43	11	3.93	3.25	2.28	9.57	217	3.93	504	85	52	0	5	2	2
LA	PADUCAH	53	34	70	22	44	11	2.75	1.95	1.99	6.79	121	2.75	299	92	57	0	5	3	2
	BATON ROUGE	68	45	81	27	56	6	0.17	-0.95	0.02	5.44	80	0.17	13	93	43	0	2	2	0
	LAKE CHARLES	66	46	78	29	56	5	0.09	-1.00	0.08	4.57	73	0.09	7	95	54	0	1	2	0
	NEW ORLEANS	68	48	78	33	58	6	0.08	-1.06	0.08	3.94	56	0.08	6	91	50	0	0	1	0
	SHREVEPORT	60	43	77	23	51	6	1.25	0.37	1.14	5.07	99	1.25	124	85	41	0	2	3	1
ME	CARIBOU	32	10	41	-5	21	11	0.58	-0.03	0.28	3.36	86	0.58	83	98	63	0	7	5	0
	PORTLAND	41	23	59	11	32	10	0.59	-0.27	0.48	2.59	47	0.59	60	94	53	0	6	4	0
MD	BALTIMORE	56	33	70	22	45	13	1.22	0.51	1.22	4.18	99	1.22	151	93	48	0	4	1	1
MA	BOSTON	50	31	64	18	41	12	1.05	0.22	0.87	2.57	52	1.05	111	85	48	0	4	4	1
	WORCESTER	45	29	58	14	37	14	0.96	0.10	0.92	3.51	70	0.96	98	95	61	0	4	3	1
MI	ALPENA	34	19	45	14	27	8	0.49	0.08	0.37	2.05	82	0.49	104	91	69	0	7	2	0
	GRAND RAPIDS	38	24	57	16	31	8	0.08	-0.41	0.04	2.39	70	0.08	14	93	71	0	6	3	0
	HOUGHTON LAKE	33	19	46	15	27	9	0.51	0.13	0.24	2.14	90	0.51	116	94	75	0	7	3	0
	LANSING	39	25	56	17	32	10	0.22	-0.17	0.11	2.06	74	0.22	49	96	74	0	6	4	0
	MUSKEGON	38	26	53	19	32	8	0.48	-0.13	0.33	2.84	76	0.48	69	91	72	0	6	4	0
	TRAVERSE CITY	33	21	46	6	27	6	0.42	-0.08	0.28	2.26	83	0.42	74	88	62	0	7	2	0
MN	DULUTH	23	2	35	-10	12	5	0.07	-0.23	0.01	0.30	19	0.07	20	94	67	0	7	2	0
	INT'L FALLS	20	-4	32	-19	8	7	0.05	-0.17	0.02	0.23	21	0.05	21	88	70	0	7	4	0
	MINNEAPOLIS	30	13	38	0	22	10	0.25	0.03	0.17	0.58	44	0.25	100	91	64	0	6	4	0
	ROCHESTER	29	11	35	0	20	8	0.00	-0.19	0.00	0.52	42	0.03	14	94	75	0	7	0	0
	ST. CLOUD	29	10	42	-4	19	11	0.00	-0.17	0.00	0.22	21	0.00	0	90	60	0	7	0	0
MS	JACKSON	63	38	76	24	51	7	0.54	-0.72	0.47	3.30	45	0.54	38	95	44	0	4	4	0
	MERIDIAN	63	37	73	23	50	5	0.65	-0.57	0.63	4.23	57	0.65	46	95	44	0	4	2	1
	TUPELO	58	36	72	22	47	7	0.66	-0.54	0.37	3.70	49	0.67	49	92	51	0	4	2	0
MO	COLUMBIA	45	25	63	13	35	7	0.37	0.00	0.19	3.74	129	0.37	86	90	53	0	7	2	0
	KANSAS CITY	44	23	58	12	34	8	0.16	-0.12	0.16	2.34	123	0.16	50	90	49	0	7	1	0
	SAINT LOUIS	47	29	68	15	38	8	0.67	0.20	0.51	2.51	70	0.67	124	89	56	0	4	2	1
	SPRINGFIELD	48	26	63	17	37	6	0.86	0.39	0.63	7.85	212	0.86	159	93	45	0	4	3	1
MT	BILLINGS	38	21	47	8	29	7	0.05	-0.17	0.01	0.25	24	0.05	20	66	37	0	7	2	0
	BUTTE	32	16	38	5	24	8	0.04	-0.10	0.03	0.58	97	0.04	25	81	51	0	7	2	0
	GLASGOW	27	7	38	-13	17	7	0.12	0.04	0.12	0.33	70	0.13	144	88	63	0	7	1	0
	GREAT FALLS	40	25	47	4	33	12	0.00	-0.19	0.00	0.03	3	0.00	0	66	39	0	4	0	0
	KALISPELL	36	26	40	19	31	11	0.16	-0.22	0.11	1.50	69	0.41	93	89	67	0	6	3	0
	MILES CITY	35	15	48	-3	25	10	0.00	-0.14	0.00	0.26	33	0.02	13	87	50	0	7	0	0
	MISSOULA	34	23	39	20	28	6	0.02	-0.28	0.01	0.50	33	0.02	6	94	60	0	7	2	0
NE	GRAND ISLAND	41	15	52	1	28	6	0.01	-0.10	0.01	0.28	33	0.01	8	89	49	0	7	1	0
	LINCOLN	39	18	53	7	29	8	0.01	-0.13	0.01	0.58	56	0.01	6	94	53	0	7	1	0
	NORFOLK	38	15	53	3	26	7	0.00	-0.13	0.00	0.20	22	0.00	0	90	54	0	7	0	0
	NORTH PLATTE	43	7	51	-4	25	4	0.02	-0.06	0.02	0.07	13	0.02	22	92	38	0	7	1	0
	OMAHA	38	19	52	6	29	8	0.01	-0.18	0.01	0.58	47	0.01	5	92	52	0	7	1	0
	SCOTTSBLUFF	42	12	48	-1	27	3	0.08	-0.03	0.07	0.21	30	0.08	62	86	44	0	7	2	0
	VALENTINE	40	6	51	-15	23	4	0.05	-0.01	0.04	0.16	36	0.05	71	93	42	0	7	2	0
NV	ELY	38	8	46	-1	23	-1	0.00	-0.17	0.00	0.05	6	0.00	0	84	34	0	7	0	0
	LAS VEGAS	54	35	59	29	44	0	0.00	-0.11	0.00	0.00	0	0.00	0	43	23	0	2	0	0
	RENO	47	21	60	12	34	2	0.00	-0.25	0.00	0.07	6	0.00	0	80	31	0	7	0	0
	WINNEMUCCA	42	13	51	-2	27	-1	0.08	-0.11	0.04	0.16	15	0.08	38	86	40	0	7	2	0
NH	CONCORD	43	23	58	8	33	14	0.59	-0.01	0.46	1.94	50	0.59	86	85	48	0	6	3	0
NJ	NEWARK	53	36	68	25	44	13	0.71	-0.07	0.71	3.66	84	0.71	79	88	55	0	3	1	1
NM	ALBUQUERQUE	42	21	48	15	31	-2	0.00	-0.11	0.00	0.19	30	0.16	123	69	29	0	7	0	0
NY	ALBANY	45	26	60	15	36	15	0.75	0.18	0.65	2.17	61	0.75	115	85	49	0	5	3	1
	BINGHAMTON	43	25	58	13	34	12	0.45	-0.13	0.33	2.10	57	0.45	67	91	63	0	5	5	0
	BUFFALO	46	27	59	21	36	11	0.92	0.24	0.39	3.12	70	0.92	118	88	58	0	5	5	0
	ROCHESTER	47	26	61	19	36	11	0.79	0.29	0.59	2.85	86	0.79	136	90	58	0	6	5	1
	SYRACUSE	48	26	64	18	37	14	0.61	0.03	0.39	1.96	51	0.61	91	87	51	0	6	3	0
NC	ASHEVILLE	54	33	67	19	44	8	0.29	-0.43	0.20	2.27	52	0.29	35	94	47	0	4	2	0
	CHARLOTTE	59	38	70	26	48	8	0.42	-0.41	0.39	2.16	49	0.42	45	87	46	0	3	2	0
	GREENSBORO	57	36	70	23	47	10	0.53	-0.19	0.53	2.58	62	0.53	64	86	49	0	4	1	1
	HATTERAS	62	51	71	44	57	12	0.17	-1.03	0.08	4.74	80	0.17	12	98	69	0	0	3	0
	RALEIGH	61	36	73	25	49	10	0.50	-0.27	0.34	2.82	68	0.50	57	95	44	0	4	4	0
	WILMINGTON	66	41	76	34	54	9	0.34	-0.54	0.22	1.75	38	0.34	34	93	53	0	0	3	0
ND	BISMARCK	28	2	44	-15	15	6	0.20	0.09	0.08	0.45	70	0.22	169	88	68	0	7	3	0
	DICKINSON	30	9	42	-13	20	7	0.02	-0.06	0.00	0.24	50	0.03	33	88	66	0	7	1	0
	FARGO	23	3	39	-7	13	7	0.00	-0.17	0.00	0.45	54	0.00	0	88	69	0	7	0	0
	GRAND FORKS	21	-1	36	-15	10	5	0.00	-0.14	0.00	0.35	43	0.00	0	89	70	0	6	0	0
	JAMESTOWN	24	2	40	-11	13	5	0.06	-0.08	0.03	0.12	19	0.07	44	90	70	0	7	1	0
	WILLISTON	26	0	37	-23	13	4	0.08	-0.06	0.08	0.43	58	0.13	81	89	69	0	7	1	0
OH	AKRON-CANTON	45	30	63	20	38	12	1.00	0.46	0.65	2.87	81	1.00	164	91	66	0	5	5	1
	CINCINNATI	47	30	62	18	39	10	2.16	1.54	1.57	5.76	149	2.16	304	93	65	0	5	2	2
	CLEVELAND	47	31	62	23	39	13	0.73	0.21	0.43	3.43	93	0.73	124	89	62	0	5	4	0
	COLUMBUS	47	32	64	21	40	13	1.78	1.25	1.38	4.46	129	1.78	292	91	63	0	5	5	1
	DAYTON	46	31	60	21	38	11	1.16	0.63	0.76	3.72	105	1.16	190	90	62	0	5	4	1
	MANSFIELD	45	29	60	19	37	12	0.27	-0.24	0.15										

Weather Data for the Week Ending January 15, 2000

STATES AND STATIONS	TEMPERATURE EF						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. EF		PRECIP	
																90 AND ABOVE	32 AND BELOW	.01 INCH OR MORE	.50 INCH OR MORE
OK TOLEDO	44	27	58	17	36	13	0.19	-0.28	0.18	2.01	58	0.19	35	92	60	0	5	2	0
OK YOUNGSTOWN	45	31	61	22	38	13	1.48	0.94	1.02	3.85	109	1.48	243	92	60	0	5	5	1
OK OKLAHOMA CITY	53	31	63	22	42	6	0.28	0.03	0.16	3.99	236	0.28	97	86	41	0	5	2	0
OK TULSA	52	30	66	22	41	6	0.32	-0.05	0.24	5.43	210	0.32	76	87	41	0	4	3	0
OR ASTORIA	50	39	54	32	45	3	2.85	0.46	0.89	16.15	122	3.29	121	98	75	0	1	7	2
OR BURNS	36	13	41	-2	25	2	0.13	-0.12	0.09	0.70	49	0.13	46	95	64	0	7	5	0
OR EUGENE	48	37	53	29	43	3	0.97	-0.95	0.37	4.99	46	1.34	61	96	77	0	2	6	0
OR MEDFORD	45	33	50	24	39	2	0.18	-0.49	0.06	1.28	31	0.39	51	99	70	0	3	5	0
OR PENDLETON	46	33	51	28	39	6	0.56	0.20	0.43	1.58	77	0.57	139	85	60	0	4	4	0
OR PORTLAND	47	38	51	30	43	4	1.17	-0.14	0.43	5.18	68	1.56	103	98	77	0	1	7	0
OR SALEM	48	37	52	29	43	4	1.29	-0.15	0.71	7.01	83	1.63	98	99	75	0	2	6	1
PA ALLENTOWN	50	28	65	17	39	12	0.28	-0.46	0.26	2.73	63	0.28	33	91	56	0	5	2	0
PA ERIE	47	31	61	22	39	12	0.55	-0.02	0.43	4.39	103	0.55	83	88	59	0	5	4	0
PA MIDDLETOWN	52	31	68	22	41	12	0.13	-0.53	0.11	2.70	68	0.13	17	86	50	0	5	2	0
PA PHILADELPHIA	54	35	67	26	45	14	0.79	0.04	0.79	3.78	89	0.79	92	87	51	0	4	1	1
PA PITTSBURGH	48	31	66	20	40	13	1.06	0.45	0.62	3.31	91	1.07	153	92	48	0	5	4	1
PA WILKES-BARRE	48	29	62	17	38	13	0.39	-0.11	0.37	1.63	53	0.39	68	89	43	0	5	2	0
PA WILLIAMSPORT	48	28	61	20	38	12	0.48	-0.11	0.30	2.84	77	0.48	72	86	54	0	5	3	0
RI PROVIDENCE	51	30	62	19	41	12	1.46	0.54	1.32	3.85	71	1.46	139	88	52	0	5	3	1
SC BEAUFORT	66	44	76	37	55	6	0.51	-0.33	0.46	2.98	72	0.51	53	95	59	0	0	2	0
SC CHARLESTON	68	43	76	37	56	8	0.37	-0.40	0.20	2.91	72	0.37	42	96	55	0	0	2	0
SC COLUMBIA	63	37	75	25	51	7	0.30	-0.68	0.30	1.72	37	0.30	27	92	47	0	3	1	0
SD GREENVILLE	57	39	66	29	48	8	0.34	-0.60	0.33	2.96	57	0.34	32	87	49	0	2	2	0
SD ABERDEEN	31	4	48	-10	18	8	0.02	-0.06	0.02	0.17	34	0.02	22	87	59	0	7	1	0
SD HURON	35	8	50	-5	22	9	0.02	-0.06	0.02	0.12	21	0.02	22	92	56	0	7	1	0
SD RAPID CITY	41	13	52	2	27	5	0.01	-0.07	0.01	0.18	32	0.01	11	79	36	0	7	1	0
SD SIOUX FALLS	33	9	48	-2	21	7	0.02	-0.11	0.01	0.19	22	0.02	13	91	61	0	7	2	0
TN BRISTOL	55	27	70	17	41	7	0.13	-0.61	0.13	1.58	37	0.13	15	90	42	0	4	1	0
TN CHATTANOOGA	59	37	73	25	48	10	0.97	-0.16	0.68	2.81	43	0.98	75	92	47	0	4	3	1
TN KNOXVILLE	56	32	73	22	44	8	0.84	-0.14	0.75	2.54	45	0.84	75	97	52	0	4	2	1
TN MEMPHIS	58	38	75	24	48	8	0.14	-0.80	0.09	4.87	71	0.14	13	84	44	0	4	2	0
TN NASHVILLE	56	36	71	24	46	10	1.69	0.82	1.69	4.19	75	1.69	169	98	63	0	5	1	1
TX ABILENE	58	35	71	23	47	4	0.07	-0.15	0.07	0.42	33	0.07	28	70	22	0	3	1	0
TX AMARILLO	51	20	59	10	36	1	0.03	-0.08	0.00	0.96	171	0.03	23	78	24	0	7	1	0
TX AUSTIN	64	38	76	14	51	2	1.90	1.54	1.34	2.59	113	1.90	452	89	41	0	3	3	1
TX BEAUMONT	65	50	78	32	58	7	0.40	-0.73	0.39	4.43	73	0.40	31	86	51	0	1	2	0
TX BROWNSVILLE	74	55	82	40	65	6	0.09	-0.26	0.01	0.41	25	0.09	23	88	50	0	0	2	0
TX CORPUS CHRISTI	73	50	87	30	62	7	0.15	-0.19	0.05	0.40	24	0.15	38	86	47	0	1	1	0
TX DEL RIO	64	39	76	30	52	2	0.01	-0.10	0.01	0.02	3	0.01	8	75	24	0	2	1	0
TX EL PASO	52	29	59	22	40	-2	0.00	-0.11	0.00	0.63	91	0.00	0	64	26	0	4	0	0
TX FORT WORTH	61	42	73	28	51	8	0.81	0.41	0.66	3.36	146	0.81	176	82	39	0	1	3	1
TX GALVESTON	66	56	72	40	61	8	0.99	0.20	0.98	6.81	154	1.00	110	89	67	0	0	2	1
TX HOUSTON	66	48	81	24	57	7	0.40	-0.37	0.39	2.60	60	0.40	45	84	39	0	2	2	0
TX LUBBOCK	54	24	64	14	39	1	0.00	-0.08	0.00	1.05	169	0.00	0	70	23	0	7	0	0
TX MIDLAND	54	28	70	19	41	-1	0.61	0.53	0.61	0.61	94	0.61	678	61	21	0	6	1	1
TX SAN ANGELO	60	37	73	26	48	5	0.01	-0.16	0.01	0.10	10	0.01	5	65	21	0	3	1	0
TX SAN ANTONIO	65	43	74	23	54	5	0.38	0.02	0.28	0.90	47	0.38	93	87	37	0	2	2	0
TX VICTORIA	69	49	81	26	59	6	1.75	1.27	1.08	2.77	107	1.75	318	86	46	0	1	2	2
TX WACO	60	41	73	24	51	6	1.38	1.02	1.32	4.19	185	1.38	337	87	43	0	2	2	1
TX WICHITA FALLS	56	33	69	24	45	5	0.46	0.23	0.20	1.18	76	0.46	170	84	35	0	4	4	0
UT SALT LAKE CITY	32	21	36	13	27	0	0.62	0.35	0.31	2.48	145	0.64	206	90	61	0	7	5	0
VT BURLINGTON	42	22	55	12	32	14	0.46	0.01	0.25	1.58	54	0.46	88	84	48	0	7	2	0
VA LYNCHBURG	55	32	67	18	44	9	0.45	-0.21	0.45	2.81	70	0.45	59	93	53	0	4	1	0
VA NORFOLK	60	42	76	30	51	11	0.77	-0.07	0.68	2.48	59	0.77	80	96	49	0	1	3	1
VA RICHMOND	60	36	73	25	48	12	0.75	0.01	0.75	2.47	60	0.75	88	90	44	0	4	1	1
VA ROANOKE	56	32	69	21	44	9	0.11	-0.48	0.11	2.57	70	0.11	16	87	47	0	4	1	0
VA WASH/DULLES	55	32	69	20	44	13	0.30	-0.33	0.30	2.97	75	0.30	41	89	48	0	4	1	0
WA OLYMPIA	45	36	49	27	40	3	1.80	-0.10	0.63	12.11	118	2.16	100	97	75	0	1	6	1
WA QUILLAYUTE	45	36	48	32	41	1	3.02	-0.35	1.13	25.11	130	3.48	90	10	79	0	2	7	2
WA SEATTLE-TACOMA	46	37	50	33	42	3	1.32	0.02	0.40	6.66	90	1.60	107	95	73	0	0	5	0
WA SPOKANE	35	26	38	23	31	5	0.85	0.36	0.37	3.12	105	0.86	154	96	80	0	7	4	0
WA YAKIMA	44	23	53	17	33	5	0.14	-0.16	0.08	0.41	23	0.14	40	93	50	0	7	2	0
WV BECKLEY	50	30	67	18	40	10	0.47	-0.22	0.44	2.29	57	0.48	62	85	45	0	5	3	0
WV CHARLESTON	55	31	73	20	43	10	0.56	-0.12	0.43	3.11	75	0.56	72	96	42	0	5	3	0
WV ELKINS	50	24	68	13	37	9	0.38	-0.35	0.37	3.66	85	0.38	46	93	44	0	6	2	0
WV HUNTINGTON	53	31	72	19	42	9	1.32	0.65	0.88	4.05	98	1.32	171	90	46	0	5	3	1
WI EAU CLAIRE	29	10	38	-5	20	9	0.70	0.45	0.37	1.11	80	0.74	264	91	65	0	7	4	0
WI GREEN BAY	29	14	37	-6	22	7	0.16	-0.13	0.09	0.99	53	0.16	48	91	67	0	7	3	0
WI LA CROSSE	33	16	46	5	25	10	0.00	-0.23	0.00	0.65	42	0.00	0	86	61	0	6	0	0
WI MADISON	34	20	52	5	27	11	0.11	-0.18	0.04	0.98	45	0.12	36	88	62	0	7	3	0
WI MILWAUKEE	36	22	56	7	29	10	0.29	-0.12	0.20	1.55	55	0.29	60	93	65	0	6	3	0
WI CASPER	34	16	40	10	25	3	0.03	-0.11	0.02	0.13	16	0.03	19	76	38	0	7	2	0
WI CHEYENNE	36	17	44	8	26	0	0.03	-0.05	0.03	0.22	42	0.03	30	67	34	0	7	1	0
WI LANDER	35	13	41	8	24	5	0.00	-0.11	0.00	0.15	21	0.00	0	69	25	0	7	0	0
WI SHERIDAN	36	15	46	8	26	6	0.01	-0.16	0.00	0.64	72	0.01	5	84	48	0	7	1	0

Based on 1961-90 normals

*** Not Available

NOTE: These data are preliminary and subject to change. In the past, precipitation totals from a number of stations have been incomplete.

Water Supply Forecast for the Western United States

Snowpack and Precipitation

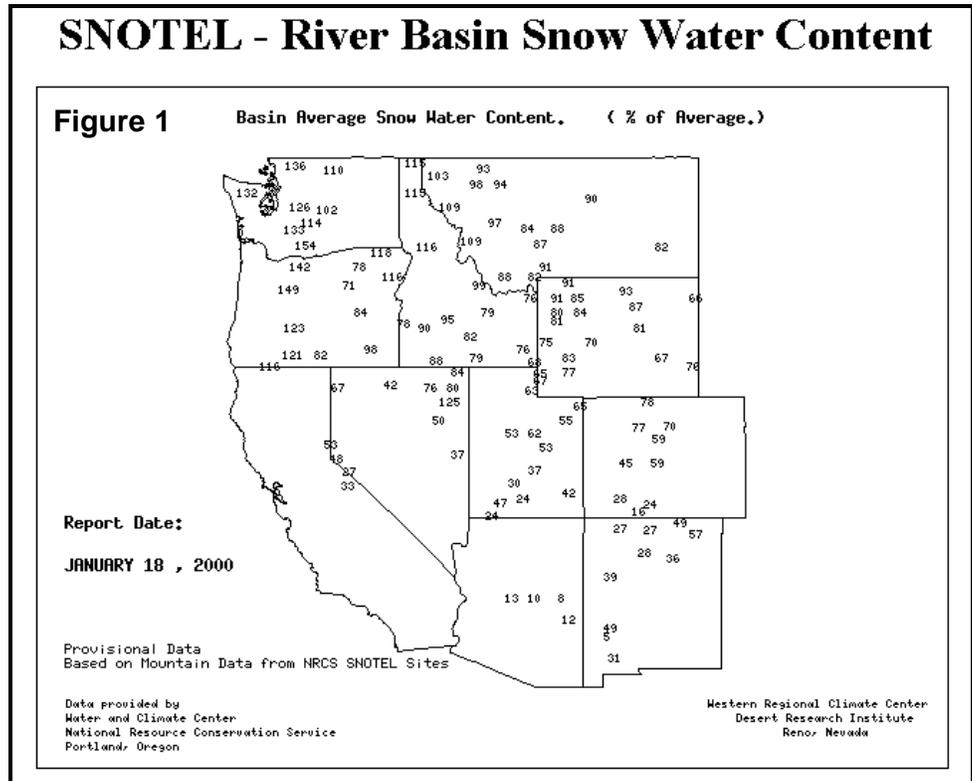
As of January 18, 2000, western snowpack conditions continue show the effects of the ongoing La Niña weather pattern (fig. 1). Most Western States are reporting snowpacks less than 70% of average on a line starting from the Oregon-California border east to the Utah-Wyoming border. Nearly all of New Mexico, Arizona, southern Colorado, southern Utah, and central and southern California are reporting snowpacks less than 50% of average. The northern basin snowpacks are nearer to average, with some northern Cascade basins and northern Rockies reporting slightly above average snowpacks.

Western precipitation conditions mirror snowpack in most areas (fig. 2). The La Niña conditions have created warm, dry conditions in the southern portion of the West. Sporadic precipitation has not alleviated concerns of continuing deficits for dryland farmers in these areas.

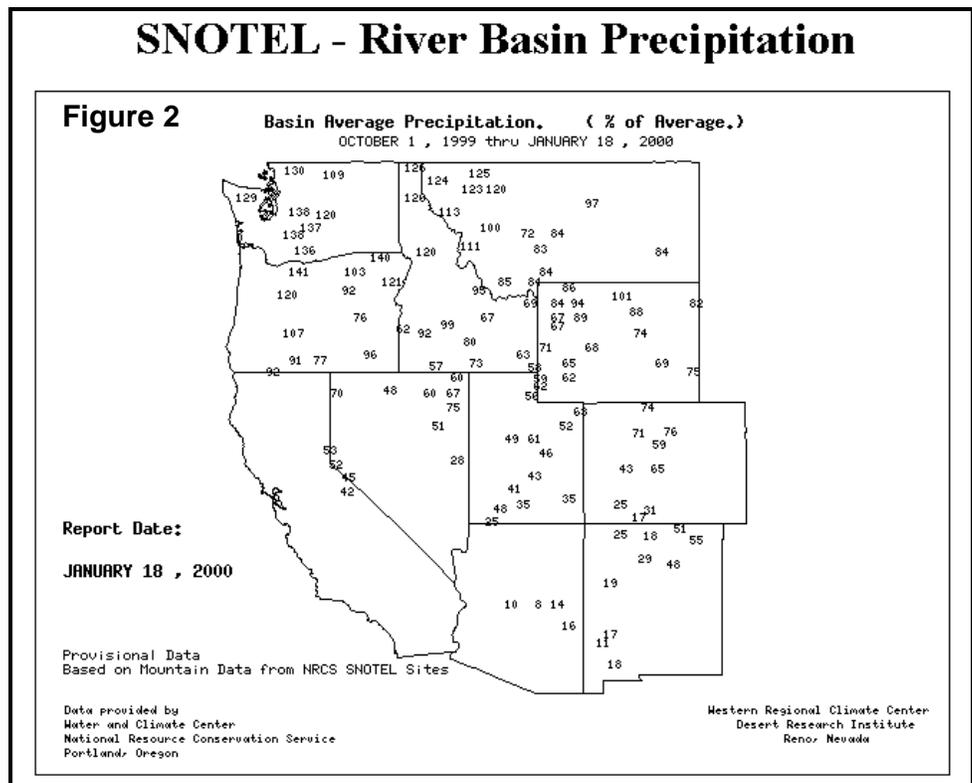
Spring and Summer Streamflow Forecasts

As of January 1, 2000, conditions continue to look favorable for supplying average spring and summer runoff in Washington, northern Idaho, northern and southwestern Oregon (including the Willamette Basin), and northwestern Montana (fig. 3). Below- average spring and summer streamflows are forecast for parts of southern Oregon, southeastern Idaho, parts of southwestern Montana. Well-below-average spring and

SNOTEL - River Basin Snow Water Content



SNOTEL - River Basin Precipitation



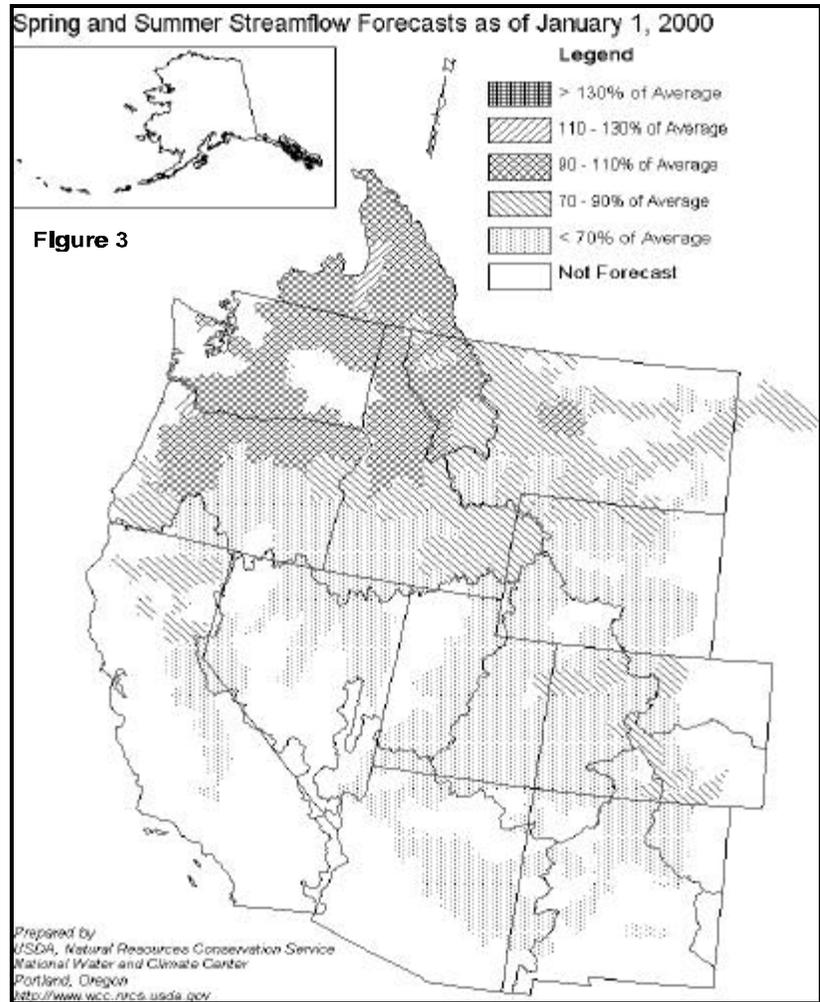
summer streamflows are forecast for most of Wyoming, southwestern Colorado, Utah, Nevada, Arizona, and New Mexico, along with central and southern California.

Reservoir Storage

As of January 1, 2000, major Western storage reservoirs are generally near or above average for this time of year (fig. 4). Only Arizona and Montana were reporting slightly below average storage levels. Reservoirs in southern Colorado, New Mexico and Arizona benefited from a wet spring and summer during 1999.

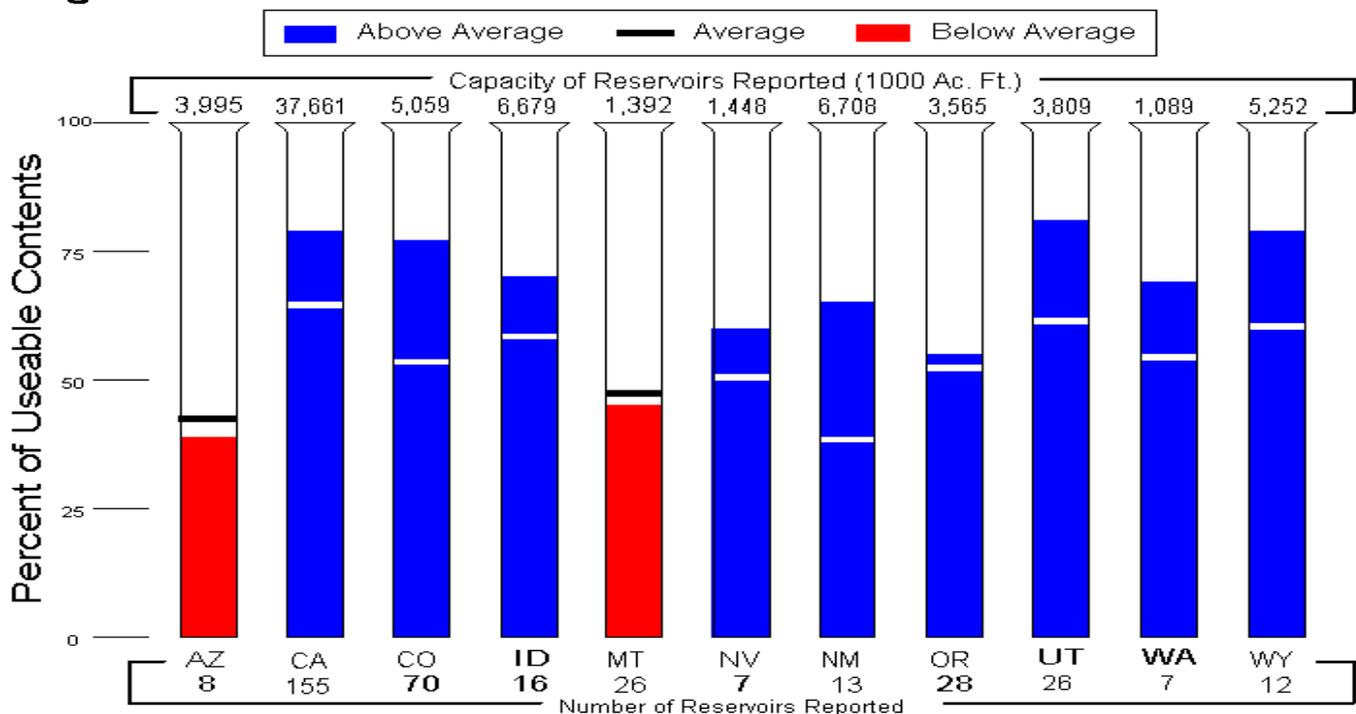
For More Information

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



Reservoir Storage as of January 1, 2000

Figure 4



National Agricultural Summary

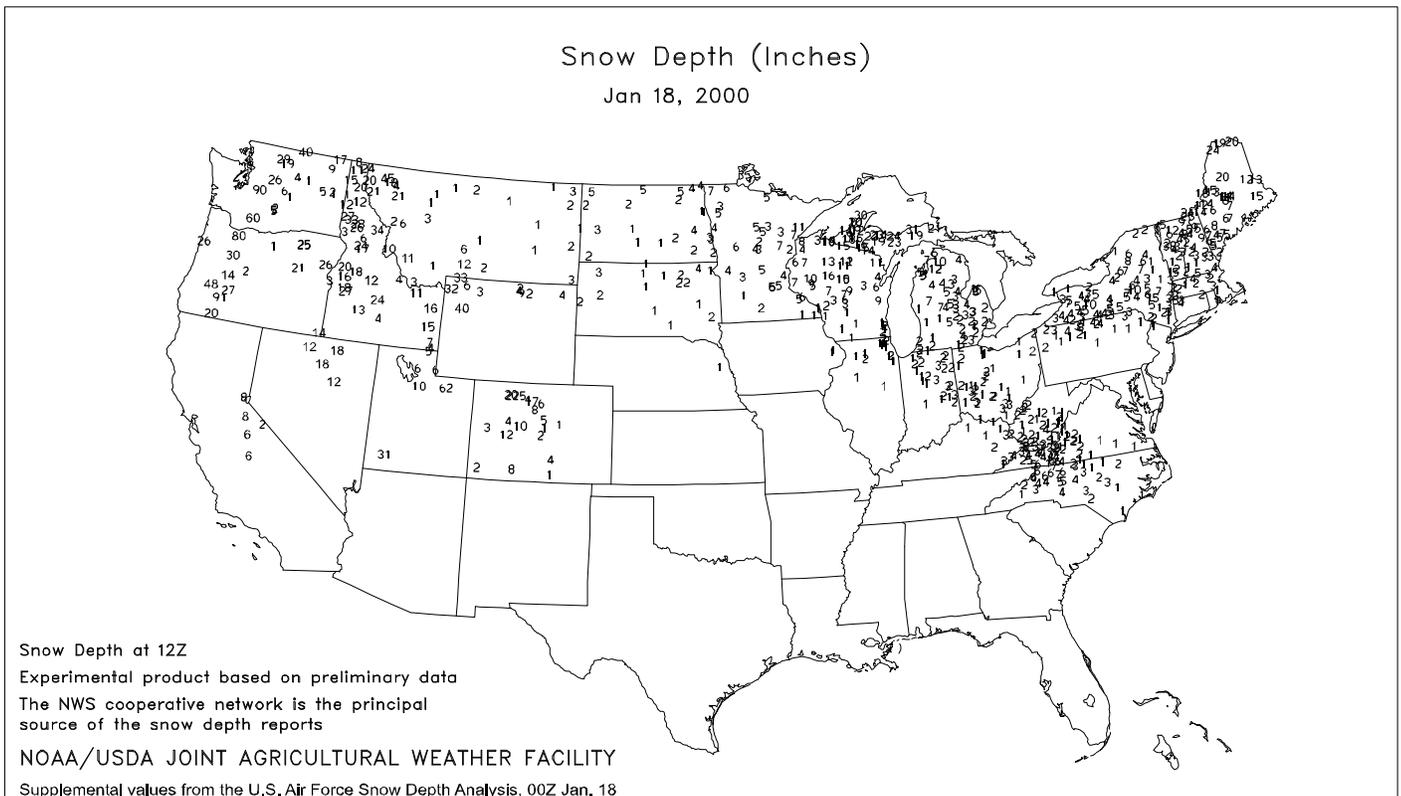
January 10 - 16, 2000

HIGHLIGHTS

Record warmth stimulated winter wheat growth where moisture was available in the southern Great Plains, lower Mississippi Valley, and Southeast. In Texas, germination and emergence of wheat and oats was also boosted by recent precipitation in the east, but seedling death continued in western areas due to dry soils. Aphid and green bug populations continued to expand in some areas as the unseasonably mild weather persisted. The southern Appalachians and adjacent areas of the Piedmont received beneficial rain, but soil moisture shortages remained in the upper Mississippi Valley, Southwest, and most of the Great Plains. Frequent storms lashed the Pacific Northwest, dumping excessive rains along the coast, and heavy snows on the Cascades and northern Rocky Mountain ranges. Heavy precipitation finally extended southward into northern California, stimulating forage growth.

In central and southern parts of the State, growers irrigated vineyards and orchards due to moisture shortages. Dry weather aided picking of grapefruit and lemon crops, which was active in southern California. The San Joaquin Valley navel orange harvest gained momentum. In Florida, topsoil moisture generally remained short throughout the State. Citrus growers irrigated on a daily basis to maintain good tree and fruit condition. New growth and bloom buds were forming on young, well-cared-for trees in the southern part of the State. Early and mid-season fruit had good color, and Valencias were beginning to color in some of the early-bloom groves. Harvest of oranges for processing was very active, with nearly ideal weather. Sugarcane grinding and planting was active, but dry conditions increased irrigation requirements in vegetable-producing areas.

(Commodity-specific information will resume during the first week of April 2000.)

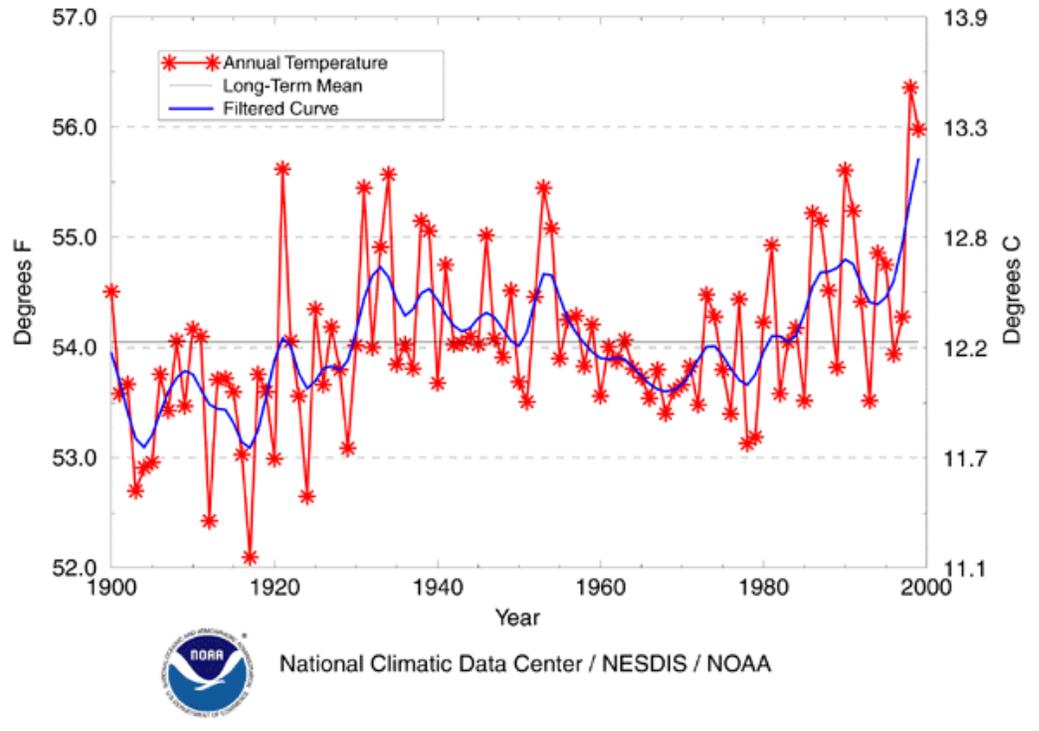


1999 U.S. Weather Review

Highlights

The weather highlights of the year included the extensive summer drought that covered much of the eastern half of the country and the flooding from Hurricane Floyd in September that ended the drought in the East. The growing season in the Corn Belt was characterized by dryness in the east and wetness in the west, with a bias toward widespread wetness in the spring and dryness in the autumn. The year as a whole tended to be warm (fig. 1), with above-normal precipitation in the Plains and both coasts, and below-normal precipitation in the interior West, central and southern Texas, and the Ohio, Tennessee, and lower Mississippi Valleys (figs. 2 and 3).

Figure 1 U.S. National Temperature
Annual, 1900-1999



Winter (December 1998 - February 1999)

Nationwide, winter 1998-99 was tied as the second mildest on record, with temperatures averaging above normal in every State but California. Mean temperatures ranged from 4 to 6°F above normal from the Rockies to the East Coast. Wet and stormy conditions prevailed from the lower Mississippi to the Tennessee Valley and across the Pacific Northwest. La Niña-related dryness covered the southwestern corner of the country, where precipitation was under 50 percent (%) of normal. Dry weather also prevailed in Georgia and Florida, as well as along the Gulf Coast. Precipitation totaled under 75% of normal from Louisiana eastward into the western parts of Florida's peninsula.

Despite the abnormal warmth, winter highlights included the severe California cold wave of December 21-25 and January's severe Midwestern blizzard and cold wave. The early January snowstorm gave Chicago its greatest storm snowfall (21.6 inches) since 1967.

Later in January, rain, and melting snow contributed to flooding in Ohio, Indiana, and Kentucky. Indianapolis, Indiana recorded 6.35 inches of precipitation in January, its wettest January since 1950. Youngstown, Ohio's monthly snowfall of 36.4 inches set an all-time record for any month. Severe flooding occurred in northern Indiana's Wabash River basin.

Alaska endured extreme cold from late January into the first half of February, highlighted by Chandalar Lake's all-time record low of -74°F on January 29. On February 5, an all-time

record low of -54°F was set at Denali National Park while the University of Alaska at Fairbanks set a February record with -53°F.

As is typical for a La Niña, which persisted throughout the year, numerous ocean storms dumped heavy rain and snow on the Pacific Northwest this winter. Quillayute, Washington, established a February rainfall record with 26.20 inches, or 208% of normal.

Spring (March-May)

Storms battered the Northwest through March, resulting in the greatest seasonal snowfall ever recorded in the United States when the weather station at Mt. Baker, Washington, measured 1,140 inches of snow for the 1998-99 snowfall season.

Winter dryness in the Southeast continued into April. Rainfall from January 24 through April 21 totaled under 25% of normal across southern Georgia and over the western portion of the Florida peninsula. Rainfall deficits reached 12 inches in parts of Georgia. The dryness contributed to wildfires in Florida, though burned acreage was much lower than during 1998's drought. Seasonal showers in June eliminated most of the drought in Florida as well as Georgia, though the relief in Georgia was temporary.

April rain and snow also eased drought fears in the Southwest following an unusually arid winter season. April storms brought monthly totals 200 to 400% of normal and temperatures 2 to 6°F below normal.

The April-June period was wet and stormy across the country's mid-section, with numerous severe weather outbreaks. Spring precipitation exceeded the norm by 50% or more across most of the Great Plains and the central Rockies. In contrast, precipitation was under 75% of normal over much of the eastern third of the country. Rainfall less than 50% of normal caused drought to intensify in Georgia and extreme northern Florida. The stormy Plains weather pattern included numerous severe weather occurrences, including the historic tornado outbreak in Oklahoma and Kansas on May 3-4.

Spring saw the end of the string of Pacific storms in the Northwest, but dryness developed east of the Cascades in Washington and Oregon and persisted through the summer. March-May precipitation totaled as little as 50% of normal in both States.

Summer (June-August)

While wet and stormy weather prevailed during spring and much of the summer in the Central States, precipitation across the eastern one-third of the country was deficient starting in late April. June-August rainfall totals exceeded 150% of normal in parts of the western Corn Belt, including northeast Iowa and eastern Nebraska, but barely reached 75% of normal in the eastern Corn Belt (eastern Indiana and much of Ohio and Kentucky). Amounts totaled only around 75% of normal over the northeastern quadrant of the country but exceeded 200% of normal in parts of the northern Plains. Summer temperatures averaged 2 to 4°F above normal near and east of the Mississippi River.

By August, drought extended from New England to Texas, including the Ohio and Tennessee Valleys and much of the South, causing considerable losses for agriculture. The Mid-Atlantic region experienced its worst drought since the mid-1960s and a number of States instituted water restrictions. Rhode Island and Connecticut endured their driest summer (June-August) ever, while New York and West Virginia recorded their second-driest summer. Ohio and Virginia measured their third-lowest summer rainfall totals. Precipitation deficits from July 1, 1998, through August 19, 1999, near the drought's peak, ranged from 14 to 20 inches in the Baltimore-Washington D.C. region.

Heat waves during the summer worsened the drought. Notable periods of heat included July 3-6 in southern New England and the Mid-Atlantic States and July 19-31 across a wide expanse from New York to Georgia and Minnesota to Kansas. Near the heat wave's peak, on July 29, triple-digit temperatures extended across the entire Great Plains from Canada to Mexico.

Percent Of Normal Precipitation

JAN 1 - DEC 31 1999

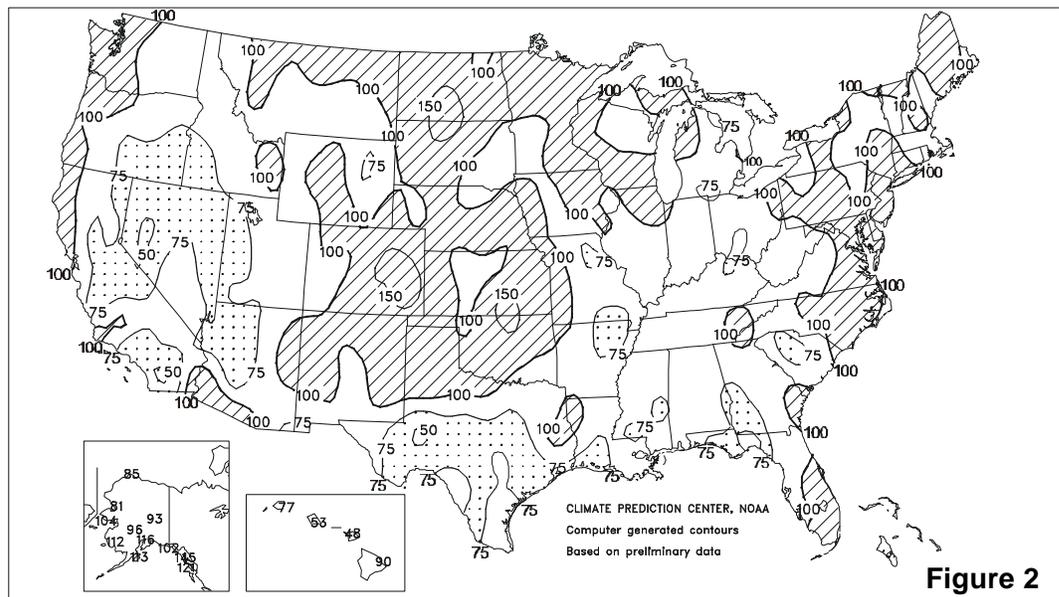


Figure 2

Long-term drought continued on some of the Hawaiian islands, where water supplies became a concern. Heavier rains in late autumn eased dryness, but more rain was needed to eliminate the large deficits, which had been building since 1997. Annual rainfall in Honolulu was just slightly more than one-half of normal in 1999.

Though Hurricane Bret brought up to 8 inches of rain to eastern and southern Texas in late August, much of Texas endured severe drought during the latter half of the year, as the State recorded its sixth-driest August-October in 105 years. Northeast Texas measured less than 50% of its normal summer rainfall, with August rainfall only a trace in Dallas-Fort Worth and Waco. Dallas-Fort Worth recorded a 56-day rainless streak from July 11 to September 4, its third longest dry spell of the century. High temperatures aggravated the dryness, as Dallas-Fort Worth registered a 24-day spell of triple-digit heat from July 28 to August 20.

Hurricane Dennis brushed the coastal Carolinas during the last days of August, returning as a tropical storm in early September. Dennis' heavy rains eased drought in the Carolinas and Virginia.

An active summer monsoon season prevailed across the Southwestern States. June-September rainfall totaled over 200% of normal in the Four Corners area as well as southern Arizona.

Farther north, summer was quite dry. Summer rainfall totaled under 50% of normal in eastern Oregon and adjacent Idaho. Boise, Idaho, recorded no measurable rain from June 16 through August 10, a dry period lasting 56 days. Dry conditions in northern Nevada and eastern parts of Oregon and Washington persisted into fall. Wildfires burned more than 1 million acres during the first half of August alone in the Great Basin.

Autumn (September- November)

Despite the heavy rains and flooding during September along the East Coast, the nation recorded its seventh driest and fifth warmest autumn. Rainfall totaled under one-half normal across much of the country's interior, and temperatures averaged above normal nearly everywhere. The dry weather promoted Midwestern corn and soybean harvesting, but stressed developing winter wheat in the Plains, Ohio Valley, and South.

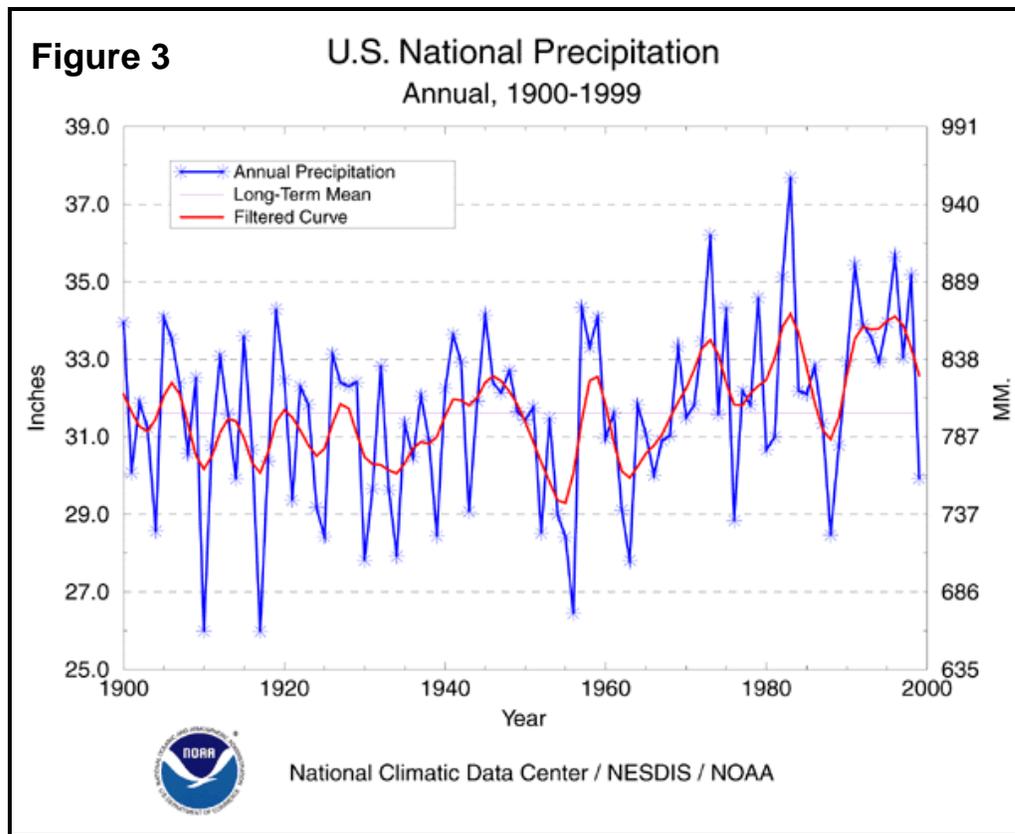
Several wet frontal passages and heavy rains from Hurricanes Dennis and Floyd ended the drought along the Eastern Seaboard in September, but Floyd's 15 to 20 inches of rain caused extensive flooding in eastern North Carolina and portions of other States along the East Coast. September rainfall amounts generally exceeded 1 foot from northeastern North Carolina to New England. Besides North Carolina, the States most affected by flooding were Connecticut, Delaware, Florida, Maryland, New Jersey, New York, Pennsylvania, South Carolina, and Virginia. In contrast, drought continued from the Ohio Valley southward to Georgia, as the tropical rains missed this region.

Several other tropical systems affected the country in autumn. Hurricane Irene tracked across southern Florida on October 15-16, dumping around 1 foot of rain before bringing another 4 to 6 inches to eastern North Carolina on October 17-18. Later in October, Hurricane Jose tracked northwestward near the Virgin Islands and passed within 50 miles of Puerto Rico on the 21st. In November, Hurricane Lenny brought heavy rains and high winds to Puerto Rico and the Virgin Islands on the 17th-18th.

All told, there were 12 named tropical cyclones during the 1999 season--four tropical storms and eight hurricanes. This compares to the long-term averages of 10 named storms and six hurricanes. Three storms made landfall at hurricane strength and two made landfall at tropical storm strength. For the first time on record, there were five Category 4 hurricanes (winds at least 131 mph) this season.

Frontal systems delivered some drought relief to the interior Appalachian States and the Ohio, Tennessee, and lower Mississippi Valleys during November but a water emergency continued for all or part of 53 counties in Kentucky as of early December. The drought expanded westward during September and October into the central and northern Plains, with drought reaching severe status in eastern Nebraska and western Iowa by mid-November. Autumn precipitation totaled as little as 25% of normal in Nebraska.

In the Southwest, conditions reverted to abnormal dryness following the end of the summer rainy season. From October



to early December, cumulative precipitation totaled under 50% of normal over the southwestern quarter of the country, and less than 25% of normal across Arizona, New Mexico, and southern California.

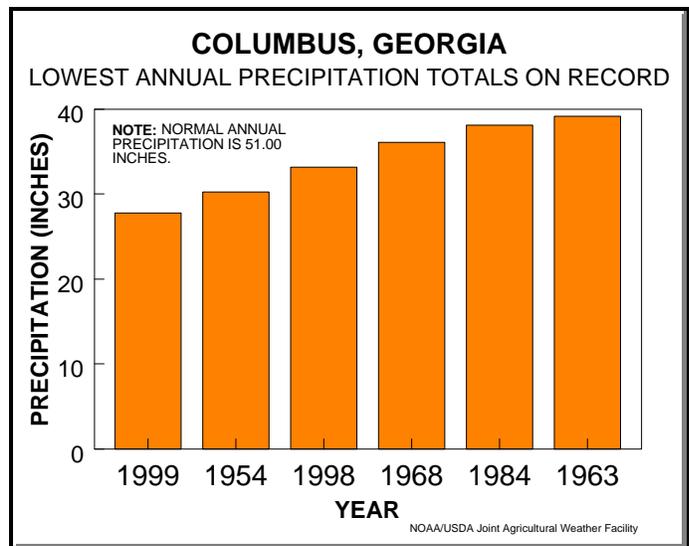
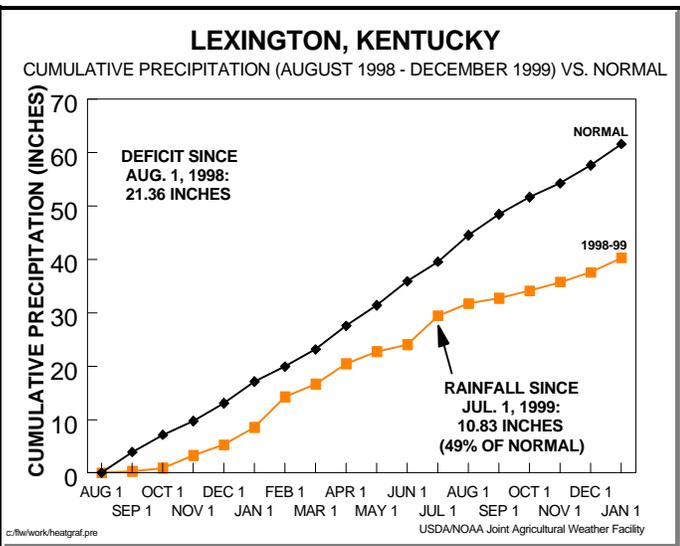
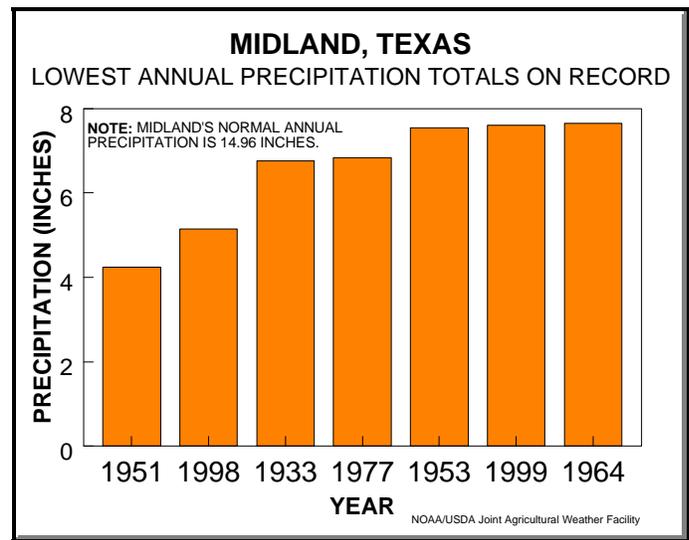
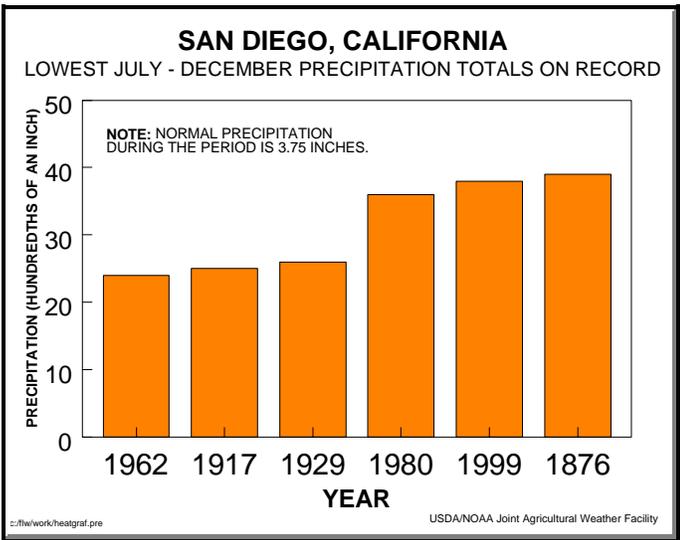
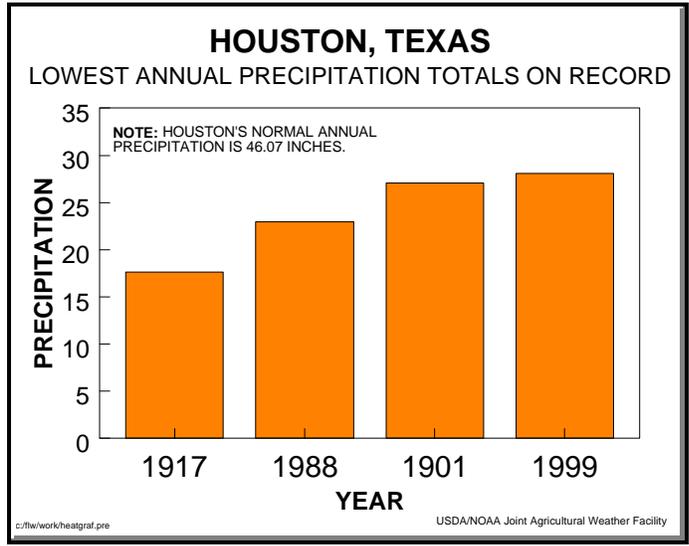
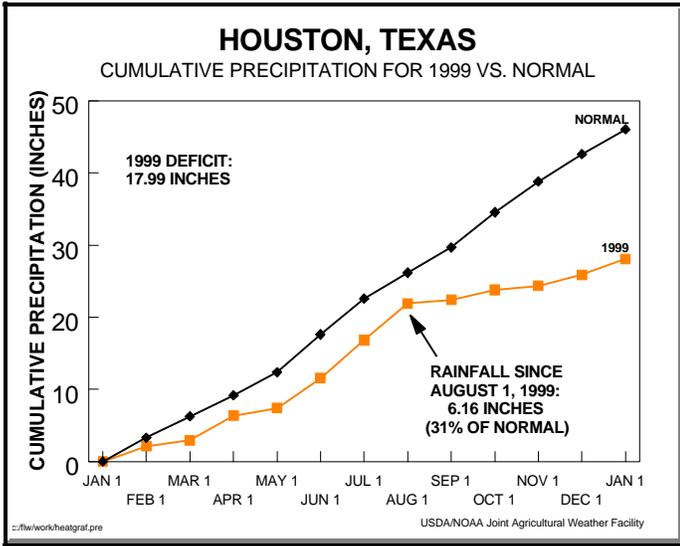
Unusual November heat covered much of the country during the month, with the abnormal heat setting or tying more than 60 monthly records and hundreds of daily records. Nationally, this was the warmest November in 105 years of record-keeping, with eight States--mainly in the Plains--reporting record monthly warmth.

Numerous Pacific storms pelted the southern coast of Alaska during October, November, and December, and the Pacific Northwest coast in November and early December.

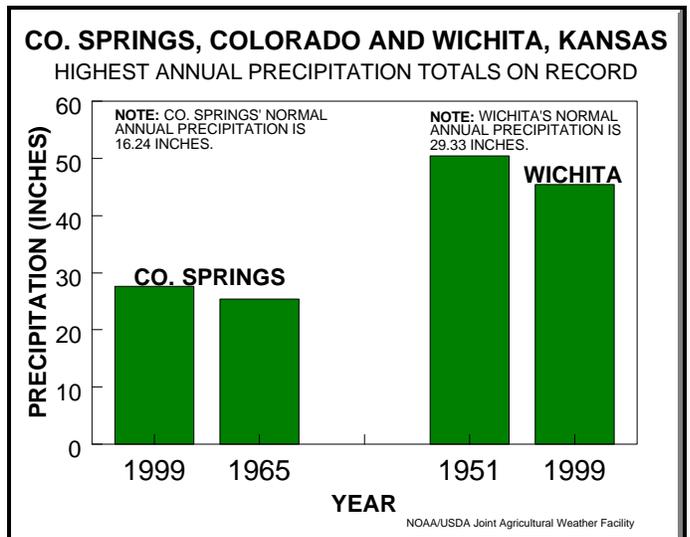
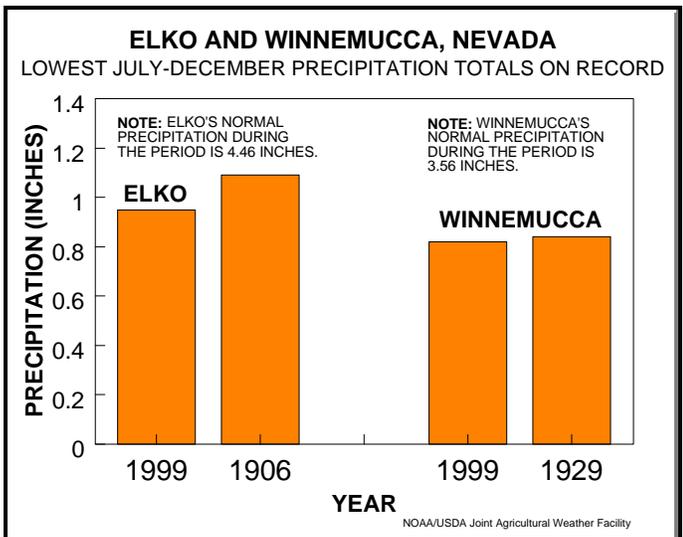
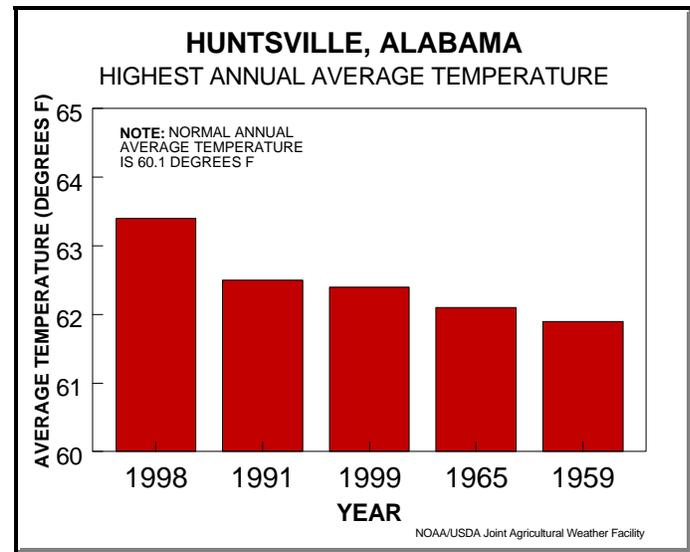
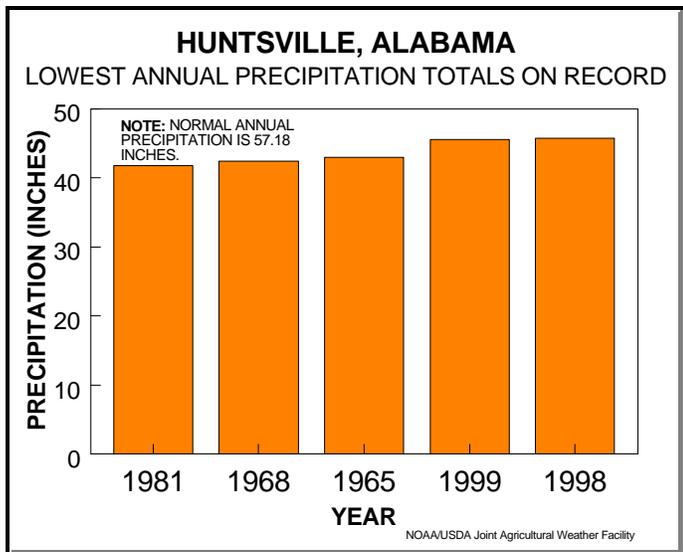
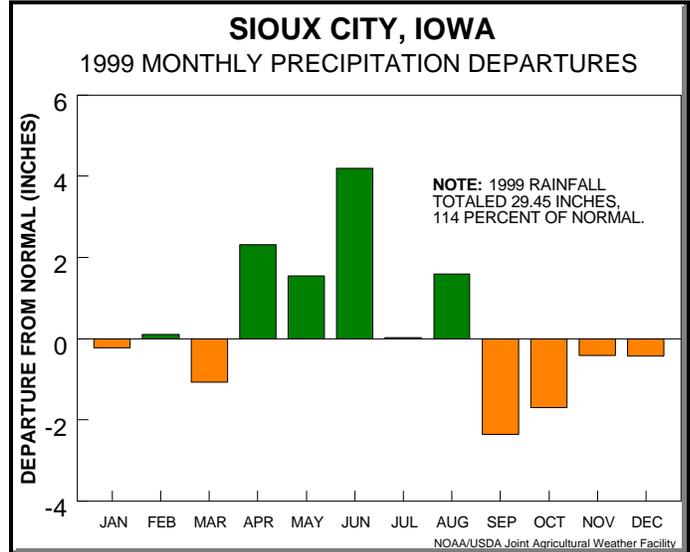
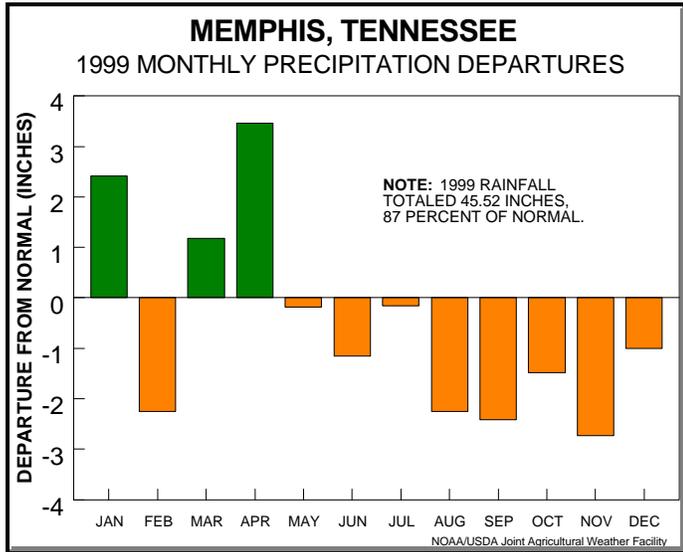
December

December continued November's mild pattern, though with interruptions from several short-lived outbreaks of cold weather. Temperatures were especially mild in the Plains States, with readings averaging more than 6°F above normal from Nebraska northward. In contrast, winter held most of Alaska in its frigid grip as readings plunged to near -60°F in the interior toward the end of the month, and December temperatures averaged between 5°F and 20°F below normal, especially in western sections. Precipitation was below normal over large parts of the country, especially over the Southwest, including California. Storms drove monthly precipitation amounts above 200% of normal from northern Texas and Oklahoma northeastward into Missouri and eastern Kansas, providing some relief from dryness. Rain and snow also eased long-term drought in the Ohio Valley, but precipitation deficits worsened in Georgia and southern Texas. Snowfall and snow cover were below normal for much of the nation as the new year began.

1999 Weather: The Year in Graphs



1999 Weather: The Year in Graphs (Continued)



PRECIPITATION SUMMARY Annual 1999

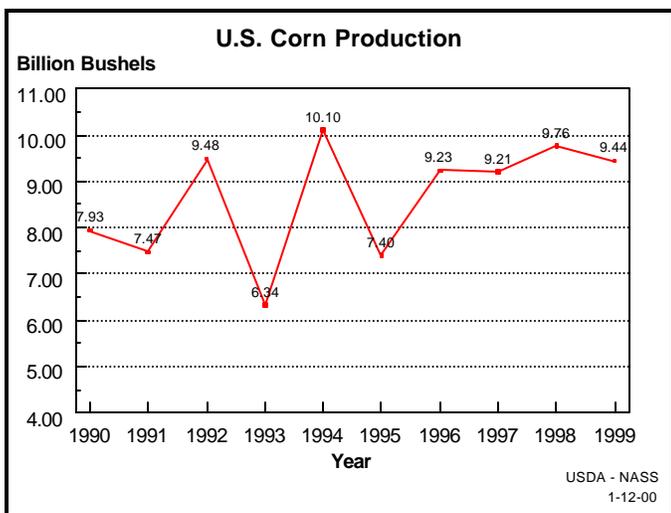
STATES AND STATIONS	TEMP., EF		PRECIP., IN.		STATES AND STATIONS	TEMP., EF		PRECIP., IN.		STATES AND STATIONS	TEMP., EF		PRECIP., IN.	
	AVERAGE	DEPARTURE	TOTAL	DEPARTURE		AVERAGE	DEPARTURE	TOTAL	DEPARTURE		AVERAGE	DEPARTURE	TOTAL	DEPARTURE
AL BIRMINGHAM	63	1	48.41	-6.16	LEXINGTON	56	1	31.73	-12.28	COLUMBUS	55	4	27.57	-10.52
HUNTSVILLE	62	2	45.58	-11.59	LONDON-CORBIN	57	2	36.47	-9.18	DAYTON	53	1	29.86	-6.78
MOBILE	68	0	50.91	-13.05	LOUISVILLE	59	3	41.24	-3.15	MANSFIELD	50	0	34.06	-5.50
AK MONTGOMERY	66	1	41.98	-11.45	PADUCAH	59	2	41.09	-8.22	TOLEDO	51	2	28.99	-3.97
ANCHORAGE	34	-2	18.41	2.50	LA BATON ROUGE	68	0	49.06	-12.01	YOUNGSTOWN	50	2	41.96	4.64
BARROW	11	1	3.83	-0.66	LAKE CHARLES	69	1	37.36	-17.48	OK OKLAHOMA CITY	62	2	39.25	5.89
COLD BAY	36	-2	40.35	4.35	NEW ORLEANS	70	2	46.32	-15.56	TULSA	62	2	48.47	7.88
FAIRBANKS	24	-3	10.18	-0.69	SHREVEPORT	67	2	55.02	8.91	OR ASTORIA	52	1	87.83	21.43
JUNEAU	42	1	79.03	24.72	ME BANGOR	46	2	41.61	0.39	BURNS	44	0	7.30	-2.66
KING SALMON	30	-4	18.19	-1.63	CARIBOU	42	3	38.54	1.94	EUGENE	52	-1	42.48	-6.89
KODIAK	38	-3	76.02	8.44	PORTLAND	48	2	40.66	3.68	MEDFORD	55	1	16.50	-2.35
NOME	23	-3	15.40	0.53	MD BALTIMORE	56	1	43.93	3.06	PENDLETON	53	1	9.35	-2.67
AZ FLAGSTAFF	46	0	15.79	-7.01	MA BOSTON	53	2	37.90	-3.60	PORTLAND	54	0	38.92	2.62
PHOENIX	74	1	6.61	-1.05	WORCESTER	50	3	41.35	-6.40	SALEM	53	1	46.78	7.62
TUCSON	69	1	9.68	-2.32	MI ALPENA	45	2	20.52	-8.31	PA ALLENTOWN	52	1	41.72	-1.80
AR FORT SMITH	63	2	40.65	-0.25	DETROIT	51	2	32.22	-0.40	ERIE	51	2	40.56	-0.97
LITTLE ROCK	63	1	37.43	-13.43	FLINT	48	1	28.97	-1.31	MIDDLETOWN	55	2	38.32	-1.68
CA BAKERSFIELD	63	-2	5.99	0.27	GRAND RAPIDS	49	2	32.53	-3.51	PHILADELPHIA	57	3	48.49	7.08
EUREKA	52	-1	39.54	2.01	HOUGHTON LAKE	45	2	27.66	-0.59	PITTSBURGH	52	2	36.21	-0.63
FRESNO	63	0	6.45	-4.15	LANSING	48	1	28.40	-2.21	WILKES-BARRE	50	1	35.27	-1.01
LOS ANGELES	62	-1	7.54	-4.48	MUSKEGON	49	2	29.95	-2.61	WILLIAMSPORT	51	1	45.24	4.53
REDDING	62	0	24.34	-8.96	TRAVERSE CITY	47	2	30.64	0.88	PR SAN JUAN	80	0	60.86	-8.78
SACRAMENTO	60	-1	11.85	-5.67	MN DULUTH	41	2	38.40	8.41	RI PROVIDENCE	53	2	42.43	-2.94
SAN DIEGO	62	-2	5.49	-4.41	INT'L FALLS	40	3	29.13	4.78	SC CHARLESTON	66	0	46.41	-5.12
SAN FRANCISCO	56	-1	15.69	-4.01	MINNEAPOLIS	48	3	30.55	2.23	COLUMBIA	64	1	29.97	-19.94
STOCKTON	60	-2	10.09	-3.85	ROCHESTER	46	2	37.51	7.85	FLORENCE	64	1	39.43	-4.41
CO ALAMOSA	43	2	7.58	0.01	ST. CLOUD	45	3	26.08	-1.35	GREENVILLE	62	2	35.93	-15.34
CO SPRINGS	50	1	27.58	11.34	MS JACKSON	66	2	43.24	-12.14	MYRTLE BEACH	64	***	63.75	*****
DENVER	51	1	20.95	5.54	MERIDIAN	65	1	37.38	-19.32	SD ABERDEEN	44	0	22.12	3.58
GRAND JUNCTION	53	0	8.09	-0.55	TUPELO	64	2	49.28	-6.59	HURON	48	3	16.80	-3.28
PUEBLO	54	1	13.85	2.66	MO COLUMBIA	56	2	29.78	-9.27	RAPID CITY	49	2	18.77	2.14
CT BRIDGEPORT	53	1	40.93	-0.73	JOPLIN	59	2	53.44	10.21	SIoux FALLS	47	1	21.91	-1.95
HARTFORD	52	2	43.82	-0.31	KANSAS CITY	56	2	40.09	2.47	TN BRISTOL	56	0	34.89	-5.83
DC WASHINGTON	59	1	40.23	1.60	SPRINGFIELD	58	2	41.54	-1.50	CHATTANOOGA	62	3	47.42	-6.04
DE WILMINGTON	55	1	46.68	5.84	ST JOSEPH	55	2	32.20	-3.49	JACKSON	61	1	41.88	-11.00
FL DAYTONA BEACH	71	1	46.37	-1.52	ST LOUIS	58	2	34.06	-3.45	KNOXVILLE	59	1	50.14	3.00
FT LAUDERDALE	76	0	75.22	14.58	MT BILLINGS	50	3	11.67	-3.41	MEMPHIS	64	2	45.52	-6.58
FT MYERS	74	0	46.78	-6.59	BUTTE	42	3	11.25	-0.85	NASHVILLE	61	2	41.79	-5.51
JACKSONVILLE	68	0	42.36	-8.96	GLASGOW	45	2	14.28	3.32	TX ABILENE	66	1	16.77	-7.63
KEY WEST	78	0	47.87	8.28	GREAT FALLS	47	2	12.38	-2.71	AMARILLO	58	1	26.99	7.43
MELBOURNE	73	1	61.51	16.02	HELENA	46	2	9.37	-2.22	AUSTIN	70	1	25.59	-7.81
MIAMI	76	0	63.91	8.00	KALISPELL	45	3	14.15	-2.35	BEAUMONT	70	2	36.63	-20.56
ORLANDO	73	1	54.80	6.69	MILES CITY	49	3	11.29	-2.78	BROWNSVILLE	75	1	23.04	-3.57
PENSACOLA	69	1	47.13	-15.10	MISSOULA	46	2	11.99	-1.47	COLLEGE STATION	70	2	24.62	-14.46
ST PETERSBURG	73	0	42.69	-5.93	NE GRAND ISLAND	52	2	25.73	0.83	CORPUS CHRISTI	73	1	29.28	-0.85
TALLAHASSEE	68	1	50.06	-15.65	HASTINGS	53	3	27.97	0.17	DALLAS/FT WORTH	69	4	23.59	-10.11
TAMPA	73	1	34.33	-9.63	LINCOLN	51	0	27.25	-1.01	DEL RIO	72	3	15.32	-2.92
GA WEST PALM BEACH	75	0	63.05	2.30	MCCOOK	53	2	20.59	-0.12	EL PASO	65	2	8.15	-0.66
ATHENS	63	1	41.10	-8.64	NORFOLK	51	2	23.86	-1.22	GALVESTON	72	2	33.59	-8.69
ATLANTA	63	2	38.89	-11.88	NORTH PLATTE	50	2	19.34	0.04	HOUSTON	71	3	28.08	-17.99
AUGUSTA	64	1	36.73	-7.94	OMAHA/EPPLEY	51	0	38.72	8.86	LUBBOCK	61	1	20.20	1.55
COLUMBUS	66	1	27.80	-23.20	SCOTTSBLUFF	51	3	16.86	1.59	MIDLAND	65	2	7.60	-7.35
MACON	65	1	36.30	-8.33	VALENTINE	49	2	19.33	1.10	SAN ANGELO	67	2	13.52	-6.93
SAVANNAH	66	0	49.17	-0.06	NV ELKO	46	-1	7.29	-2.84	SAN ANTONIO	70	1	16.63	-14.35
HI HILO	72	-2	117.56	-11.63	ELY	46	1	6.57	-3.56	VICTORIA	71	1	27.01	-10.40
HONOLULU	77	0	12.01	-10.01	LAS VEGAS	69	2	3.73	-0.40	WACO	69	2	20.48	-11.47
KAHULUI	75	-1	9.98	-10.95	RENO	53	2	4.42	-3.11	UT WICHITA FALLS	65	2	29.46	0.56
LIHUE	75	-1	33.39	-9.61	WINNEMUCCA	49	0	5.38	-2.85	VT SALT LAKE CITY	53	1	13.66	-2.52
ID BOISE	53	2	8.59	-3.52	NH CONCORD	47	2	40.31	3.94	VA BURLINGTON	48	3	32.57	-1.89
LEWISTON	53	0	11.62	-0.81	NJ ATLANTIC CITY	55	2	41.33	1.01	VA LYNCHBURG	56	0	39.73	-1.15
POCATELLO	47	1	10.26	-1.88	NEWARK	56	1	44.50	0.53	NORFOLK	61	2	55.27	10.85
IL CHICAGO/O'HARE	51	2	38.34	2.52	NM ALBUQUERQUE	57	1	8.29	-0.59	RICHMOND	58	0	48.20	5.04
MOLINE	52	2	33.96	-5.12	NY ALBANY	49	1	38.62	2.46	ROANOKE	58	2	36.17	-4.95
PEORIA	53	2	30.28	-5.97	BINGHAMTON	47	1	32.57	-4.41	WASH/DULLES	55	1	43.61	3.37
ROCKFORD	49	1	37.80	1.52	BUFFALO	49	1	34.08	-4.50	WA OLYMPIA	50	0	67.71	17.02
SPRINGFIELD	54	1	28.90	-6.35	ROCHESTER	49	1	33.15	1.19	QUILLAYAUTE	48	-1	133.31	28.12
IN EVANSVILLE	57	1	39.36	-3.77	SYRACUSE	49	2	30.94	-8.00	SEATTLE-TACOMA	51	-1	42.01	4.82
FORT WAYNE	51	1	28.33	-6.42	NC ASHEVILLE	56	1	39.85	-7.73	SPOKANE	48	1	14.76	-1.72
INDIANAPOLIS	54	2	32.37	-7.46	CHARLOTTE	60	0	34.91	-8.17	YAKIMA	50	0	6.01	-1.96
SOUTH BEND	51	1	30.66	-8.47	GREENSBORO	59	1	41.89	-0.73	WV BECKLEY	52	1	34.59	-6.44
BURLINGTON	55	4	36.15	0.06	HATTERAS	63	1	53.76	-2.33	CHARLESTON	56	1	37.24	-5.29
CEDAR RAPIDS	49	1	32.44	-1.28	RALEIGH	60	1	50.66	9.23	ELKINS	49	0	37.65	-7.19
DES MOINES	52	2	30.82	-2.30	WILMINGTON	65	2	72.06	17.79	WI HUNTINGTON	56	1	33.73	-7.76
DUBUQUE	49	2	35.06	-3.29	ND BISMARCK	45	3	26.45	10.98	EAU CLAIRE	47	3	29.50	-2.11
SIoux CITY	50	1	29.43	3.57	DICKINSON	46	3	18.10	1.99	GREEN BAY	46	2	24.76	-4.07
WATERLOO	49	2	43.98	10.28	FARGO	44	3	25.33	5.89	LA CROSSE	50	4	33.58	3.02
KS CONCORDIA	55	2	25.39	-3.39	GRAND FORKS	41	1	21.74	3.40	MADISON	48	3	31.93	1.05
DODGE CITY	56	1	21.13	-0.36	JAMESTOWN	43	2	22.30	5.41	MILWAUKEE	49	3	37.87	4.94
GOODLAND	52	1	20.33	2.13	MINOT	45	4	19.18	0.61	WAUSAU	46	3	27.76	-5.06
HILL CITY	54	1	19.87	-3.02	OH WILLISTON	43	1	15.19	1.52	CASPER	47	2	8.91	-3.61
TOPEKA	56	2	34.72	-0.50	OH AKRON-CANTON	51	1	35.84	-0.98	CHEYENNE	47	1	16.11	1.70
WICHITA	58	2	45.46	16.13	CINCINNATI	55	2	32.47	-8.86	LANDER	47	2	13.47	0.46
KY JACKSON	58	2	40.11	-9.56	CLEVELAND	51	1	31.97	-4.66	SHERIDAN	47	2	13.09	-1.39

Based on 1961-90 normals.

U.S. Crop Production Highlights 1999

Corn for grain production was estimated at 9.44 billion bushels, down 3 percent (%) from the 1998 crop and down 1% from the November 1 forecast. The 1999 production ranks as the fourth highest production on record behind the 1994, 1998, and 1992 crop years. The yield of 133.8 bushels per acre was down 0.6 bushel from last year.

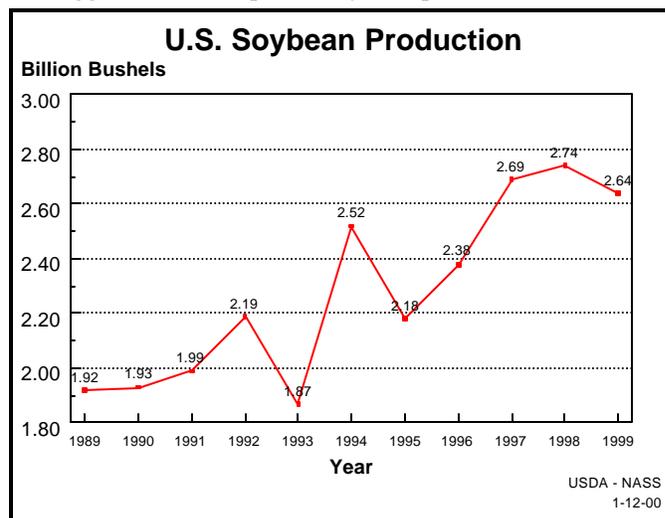
Corn planting proceeded rapidly and was 96% complete by May 29, 1999, ahead of the average of 90%. Favorable conditions prevailed over most of the Corn Belt through the summer months. Some areas of the corn belt were subjected to heat stress for a short time during late July. By the beginning of August, 91% of the corn acreage was silking in the 17 major corn-producing States, compared with the average of 78%. At that time, the percent of corn rated good to excellent totaled 63%, below the 68% in 1998. Corn quickly ripened in September and October and harvest proceeded well ahead of normal due to dry weather. As of November 14, harvest was 96% complete, compared with 93% last year, and the 5-year average of 80%.



Soybean production in 1999 totaled 2.64 billion bushels, the third-highest production on record, but 4% below 1998. The average yield per acre in 1999 is estimated at 36.5 bushels, 2.4 bushels below the 1998 yield. Planted area for the U.S., at 73.8 million acres, was up 2% from 1998, and is the largest planted acreage on record. Harvested area totaled 72.5 million acres, also a record and 3% above 1998. Yields as a whole were lower in 1999 as a result of moisture shortages during critical pod development and filling stages in many areas of the Corn Belt, Mid-Atlantic, and Southern growing regions.

Planting of the 1999 soybean crop was delayed by heavy and persistent storms during much of May in the western Corn Belt and Great Plains, but by the end of June was ahead of normal and 1998. The eastern Corn Belt States completed planting with the fewest weather disruptions. States in the Mid-Atlantic and eastern Corn Belt experienced very dry or drought conditions for much of July. Extremely high temperatures during the last 2 weeks of July stressed most of the soybean growing areas, especially localities that were experiencing moisture shortages. By the end of August, crop conditions had deteriorated in much of the Delta region, Southeast, and Mid-Atlantic region as soil moisture levels remained depleted and high temperatures persisted. Conditions in the western Corn Belt States and Northern Tier States were more favorable during August as milder temperatures and occasional rains eased the stress caused by the heat wave that hit in late July. In the drier eastern

Corn Belt and Mid-Atlantic, crop conditions improved when much-needed precipitation was received by the second week of August and continued through the end of the month. Much of the Delta and Southern growing regions continued to show very poor conditions through September, as soil moisture problems persisted. Very wet conditions persisted in the Atlantic Coastal Plains during September, due to hurricanes and tropical storms. Overall, crop maturity progressed at an accelerated pace. Freezing temperatures halted crop development and assisted in drying the crop in areas of northern Corn Belt and Great Plains during the last 2 weeks of September. Harvest progress rapidly advanced during October, as nearly ideal conditions prevailed in most areas of the Corn Belt, Great Plains and Delta. Harvest in Mid-Atlantic and Southeastern States was not as advanced and lagged behind the previous year's pace.



All Wheat production for 1999 is estimated at 2.30 billion bushels, down 1% from the level published in the *Small Grains 1999 Summary*, and 10% below the 1998 level. Most of the production decline from the last estimate is in Durum wheat primarily due to a reduction in both grain area and yield in North Dakota. Durum wheat is down 10% from the last estimate, other spring wheat is down 1%, and all winter wheat is up fractionally.

Winter wheat developed ahead of the normal in the spring, with more than one-fourth of the crop headed by the end of April. Harvesting began in southern Texas and fields rapidly matured in central and eastern Texas. Seasonable temperatures aided wheat development in the eastern Corn Belt and central and southern Great Plains during May. Planting and emergence of spring wheat lagged behind the 5-year average, with 85% planted and 65% emerged by the end of May. The winter wheat harvest fell behind the 5-year average in early June and continued to lag through the end of the month, mostly due to slow progress in Oklahoma and Kansas. Cool weather hindered spring wheat development in the northern Great Plains and Pacific Northwest until mid-July, when record setting, triple-digit temperatures accelerated growth. Growers began combining spring wheat in late July. Winter wheat harvesting was nearly complete in early August, while spring wheat harvesting gained momentum. Dry weather aided harvest efforts in the northern Great Plains and Pacific Northwest, but late-ripening fields limited the harvest pace for most of the month. Rain temporarily delayed the spring wheat harvest in Minnesota and North Dakota in early September, but farther west, in the High Plains and Pacific Northwest, dry weather aided harvest progress.

Cotton: Upland cotton acreage is estimated at 14.6 million acres, up 2% from the August estimate, and up 11% from last year. Harvested acreage at 13.1 million acres, is 25% above last year. The increases in planted acreage are attributable to the favorableness of cotton as an alternative crop during times of low prices. Harvested acreage increased due to more traditional abandonment levels than in 1998, when high abandonment occurred due to extremely dry conditions. Producers planted 290,000 acres of American-Pima cotton in 1999, down 12% from last year. Harvested acreage is estimated at 288,000 acres, an increase of 23% from 1998.

In Texas, crop development began slowly, but was on pace with average by the August 1. Heavy rains during early September raised some concerns about regrowth. Harvest progressed normally during the season as conditions were generally dry, although some farmers sprayed defoliant to aid harvest rather than waiting for the first hard freeze, which did not occur until late November.

The Delta States (Arkansas, Louisiana, Mississippi, Missouri, and Tennessee) planted 3.74 million acres. This is 16% more than in 1998. Harvested area totaled 3.69 million acres. Warm, dry weather accelerated development of this year's crop, but resulted in deterioration of the condition and quality of the cotton. The dry weather also allowed harvesting to progress well ahead of average.

Arizona increased the acreage that was planted to Upland cotton in 1999, while California's acreage decreased. Arizona planted 265,000 acres, a 6% increase from last year, while California planted 610,000 acres, 6% less than in 1998. Unseasonably cool weather hampered planting activities, resulting in a late-developing crop. Despite the slow development, condition ratings remained high throughout the season. Warm, dry weather allowed rapid harvest progress during October and November, with California being virtually complete by the end of November.

In the Southeastern States (Alabama, Georgia, North Carolina, and South Carolina), plantings were delayed, except in Alabama and North Carolina due to extremely dry conditions. Alabama and North Carolina were able to progress at a normal pace during the planting season, but required some replanting due dry conditions. The extremely dry conditions persisted for Georgia and Alabama during August and September, leading to deterioration of the cotton crop. North Carolina and South Carolina were dry during most of August. Tropical Storm Dennis improved soil moisture in some areas during early September, but some fields were too mature to benefit. During September, the Carolinas were adversely affected by torrential rainfall from Hurricane Floyd. North Carolina abandoned 80,000 acres during 1999, mostly the result of wind and rain damage from the hurricane. The excessively wet, muddy fields also delayed harvest in North Carolina. Harvest activities progressed ahead of average in Alabama and remained on pace for both Georgia and South Carolina.

American-Pima production is forecast at 695,500 bales, up 57% from 1998's output, and up 16,500 bales from the December forecast. This is the largest crop on record. The U.S. yield is forecast at 1,159 pounds per harvested acre, 103 pounds above the previous record high yield set in 1997. California producers increased planted acres 20% from 1998, to 240,000 acres. Arizona and Texas decreased acres planted to Pima from last year, while New Mexico increased their acreage. Planting in the San Joaquin Valley began in late March, but made very little progress until mid-April. The delay in progress was due to the persistently cool, damp weather, which kept soil temperatures below the optimum level for planting. Cool temperatures during

August resulted in the crop developing slowly. However, weather conditions were ideal for virtually the entire harvest season. The harvest was nearly complete by mid-December and some growers picked a third time in order to get the last few late-opening bolls.

Sorghum for grain production in 1999 was estimated at 595 million bushels, essentially unchanged from the November forecast and up 14% from 1998. Area harvested for grain was estimated at 8.5 million acres, up 11% from 1998. Average grain yield, at 69.7 bushels per acre, was 2.4 bushels above the 1998 average yield. Kansas continued to lead the Nation in sorghum planted and harvested acres and production for both grain and silage. Texas sorghum acres decreased from last year, mainly due to an increase in cotton planted acreage.

Barley production for 1999 is estimated at 282 million bushels, down 20% from the previous crop year. Average yield per acre, at 59.2 was down 0.9 bushels from 1998. The area harvested for grain was estimated at 4.76 million acres, 19% less than 1998.

In North Dakota, the crop was planted later than normal due to excessive moisture in the spring. Crop development remained behind the 5-year average during most of the growing season and harvest progressed behind normal. Condition of the crop declined throughout the month of August.

Oat production for the 1999 crop year is estimated at 146.2 million bushels, 12% smaller than the 1998 production. This is the lowest production since records were first kept in 1866. The estimated yield, at 59.6 bushels per acre, is below last year's 60.2-bushel yield. Area harvested and to be harvested for grain in 1999 is 2.45 million acres, 11% below 1998. This is the smallest acreage harvested for grain on record.

Planting and crop development proceeded ahead of normal in most of the Corn Belt States, especially east of the Mississippi River. In the northern Great Plains, planting was frequently delayed by wet weather and development remained behind normal for most of the summer. Early-season development was aided by adequate moisture supplies and warm weather, but a mid-season drought reduced yields in the mid-Atlantic and Northeast. Some fields were cut to supplement forage supplies in Pennsylvania and New York. In the Corn Belt, the hot, dry weather in July accelerated development and limited the crop's potential in some areas, but did not seriously affect yields. The oat harvest proceeded ahead of normal in the Corn Belt, where dry conditions prevailed during most of the harvest season. Wet weather periodically delayed harvest progress in the upper Mississippi Valley and parts of the central and northern Great Plains.

Rice production of rice in 1999 totaled 210 million cwt., up 12% from 1998. The 1999 production is the highest on record. The previous record production was set in 1994 at 198 million cwt. Area for harvest, at 3.56 million acres, was up 7% from 1998. The 1999 harvested acres is second highest behind the 1981 record of 3.79 million acres. The average yield for all U.S. rice is estimated at 5,908 pounds per acre, 21 pounds below the November 1 forecast. This is the third-highest yield on record behind the 1994 yield of 5,964 pounds per acre.

All States, except California, experienced good growing conditions this year. Cool weather during pollination and throughout the growing season reduced expected yields to near last year's El Niño-affected crop in California. At the U.S. level, long and medium grain rice yields in 1999 were 199 pounds higher than 1998. Short grain rice yielded 1,779 pounds higher than last year.

International Weather and Crop Summary

January 9 - 15, 2000

HIGHLIGHTS

FSU-WESTERN: The sixth consecutive week of unseasonably mild weather provided favorable overwintering conditions for dormant winter grains.

EUROPE: Scattered showers helped winter grain development in southern Spain and Portugal.

NORTHWESTERN AFRICA: Much-needed rain fell over Moroccan winter grains, while showers were mainly light and scattered throughout Algeria and Tunisia.

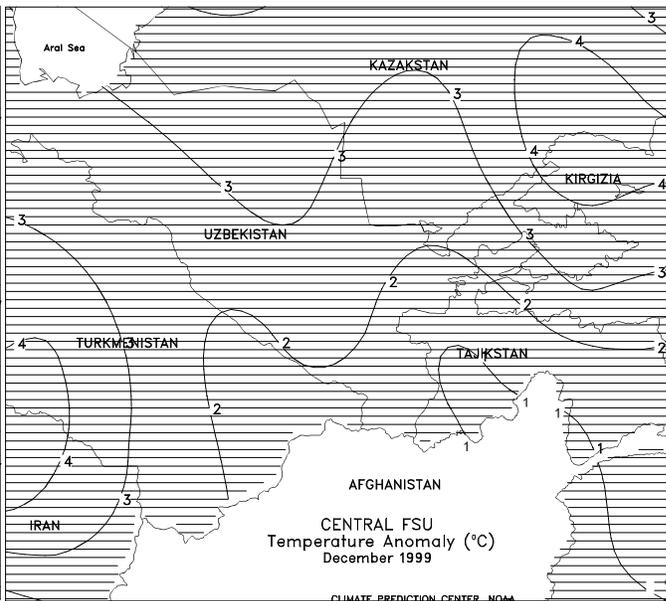
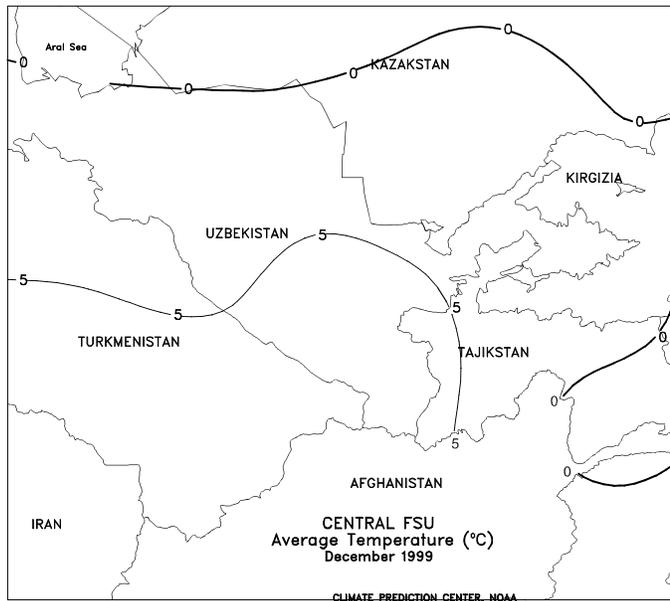
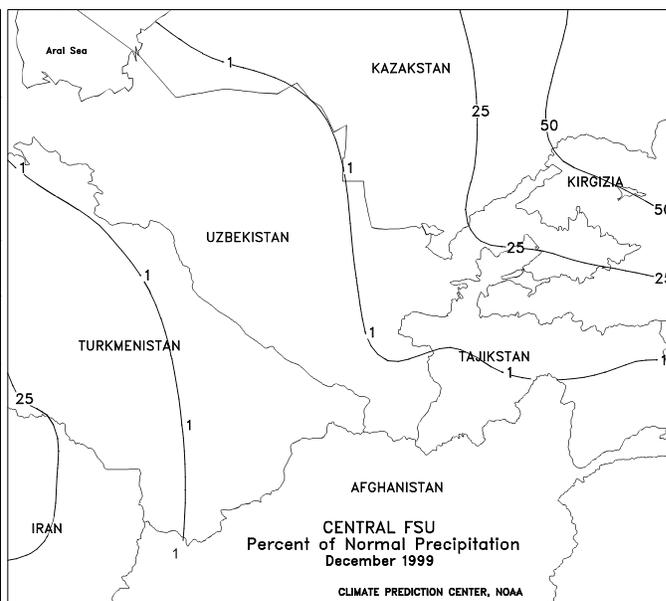
AUSTRALIA: Unseasonably cool weather continued in the main eastern summer crop areas, slowing growth of cotton and sorghum.

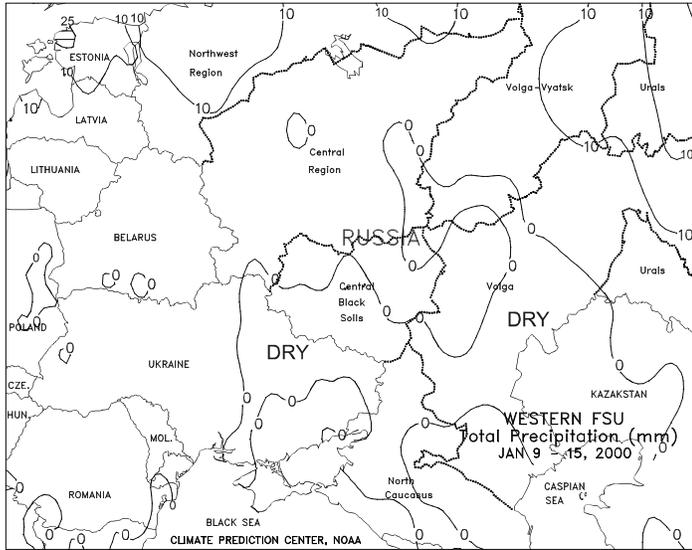
SOUTH AFRICA: Locally heavy rain soaked vegetative to reproductive corn and other summer crops.

SOUTHEAST ASIA: Despite drier weather, moisture supplies remained adequate for main-season rice in Java, Indonesia and second-season crops in the eastern Philippines.

EASTERN ASIA: Widespread precipitation continued to increase moisture supplies for winter wheat across portions of the North China Plain and winter rapeseed in the Yangtze Valley.

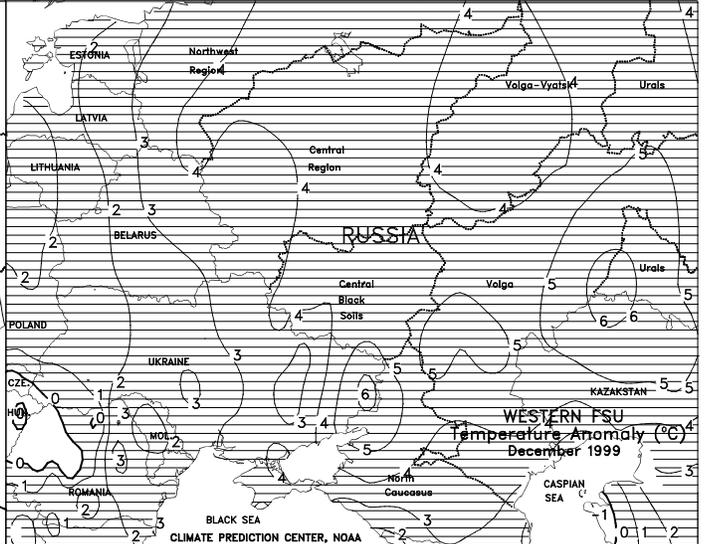
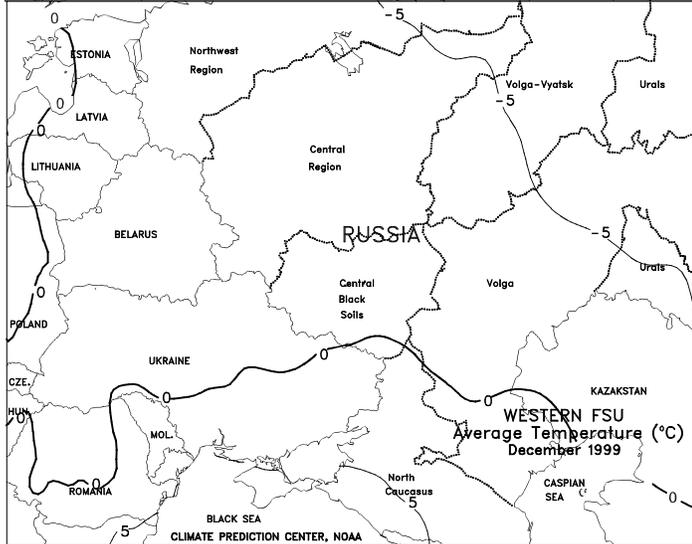
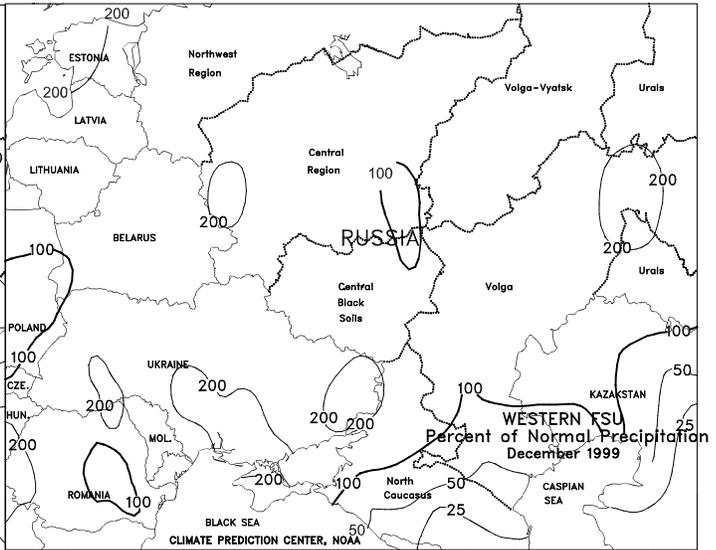
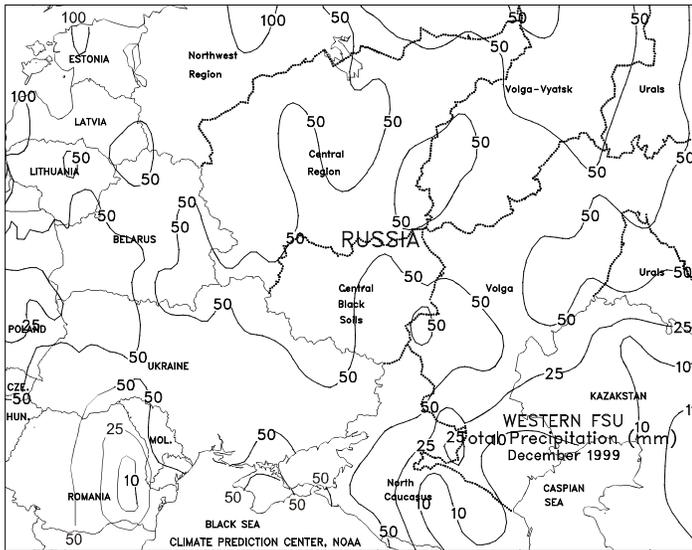
SOUTH AMERICA: In extreme southern Brazil, central Argentina, and southern Paraguay, showers brought relief to stressed corn, soybeans, and cotton.

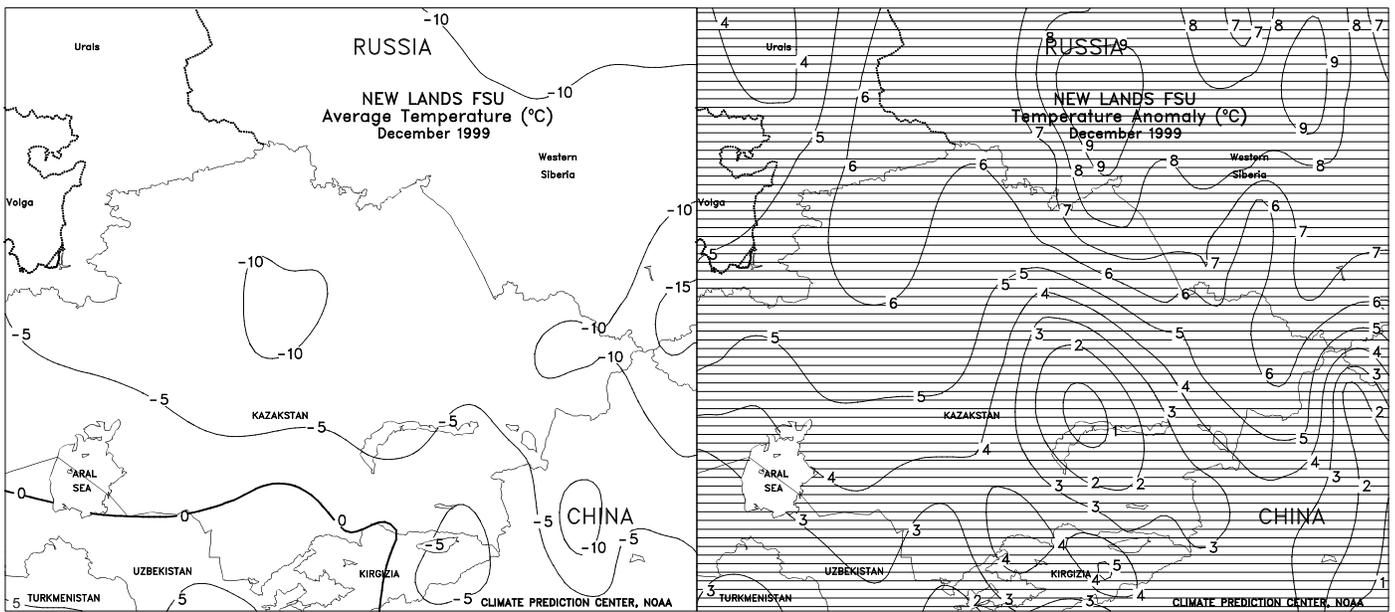
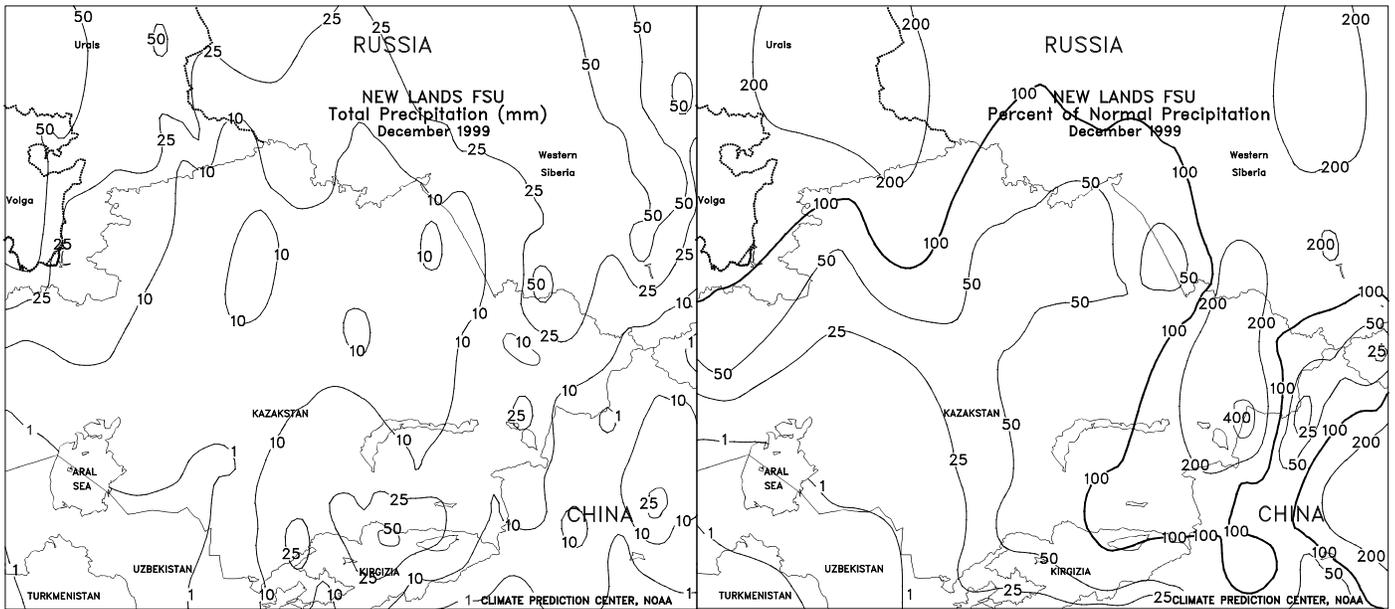


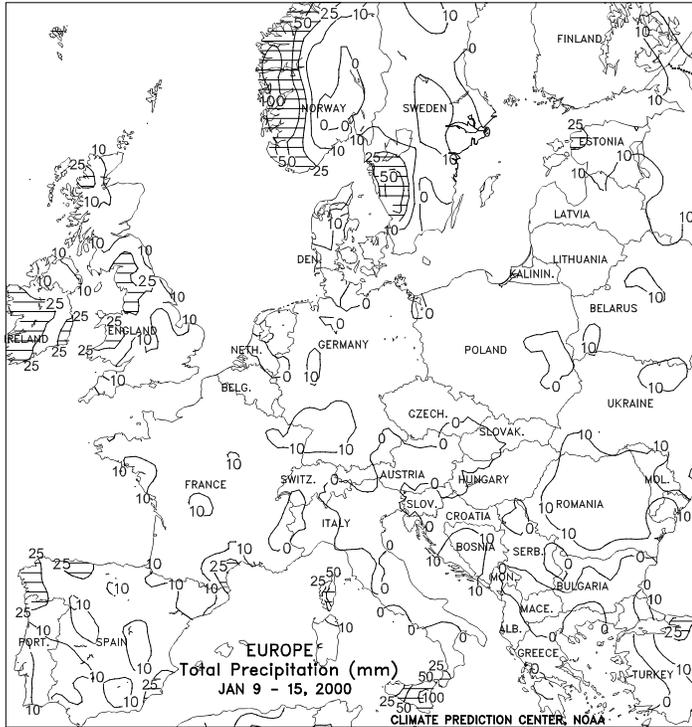


WESTERN FSU

Mostly dry weather prevailed over the region, as a ridge of high pressure dominated the weather. The sixth consecutive week of unusually mild weather maintained favorable overwintering conditions for winter grains. Weekly temperatures averaged 1 to 5 degrees C above normal in Ukraine and southern Russia, 4 to 7 degrees C above normal in Belarus and the Baltics, and 6 to 12 degrees C above normal in northern Russia. A protective snow cover remained over the western two-thirds of Ukraine, Belarus, and northern Russia. However, snow cover in eastern Ukraine and the North Caucasus region in Russia remained thin or patchy, leaving winter grains vulnerable to potentially cold weather. In December, the combination of unseasonably mild weather and above-normal precipitation provided favorable overwintering conditions for winter grains in Ukraine, Russia, Belarus, and the Baltics. Snow cover increased in western and northern Ukraine and northern Russia (Central Region, Volga Vyatsk, upper Volga Valley, and the Central Black Soils Region) during the month. The snow cover in these areas protected winter grains from a period of bitterly cold weather (minimum temperatures ranging from -14 to -20 degrees C) that was observed from December 23-25, 1999. Farther south, a combination of rain and snow fell over key winter wheat producing areas of eastern Ukraine and southern Russia (North Caucasus and lower Volga Valley), improving moisture conditions for dormant crops.

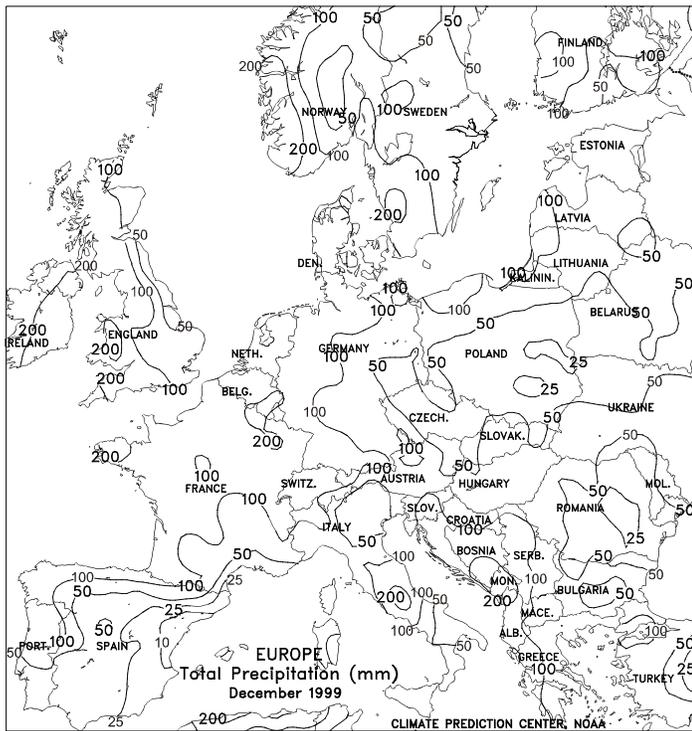


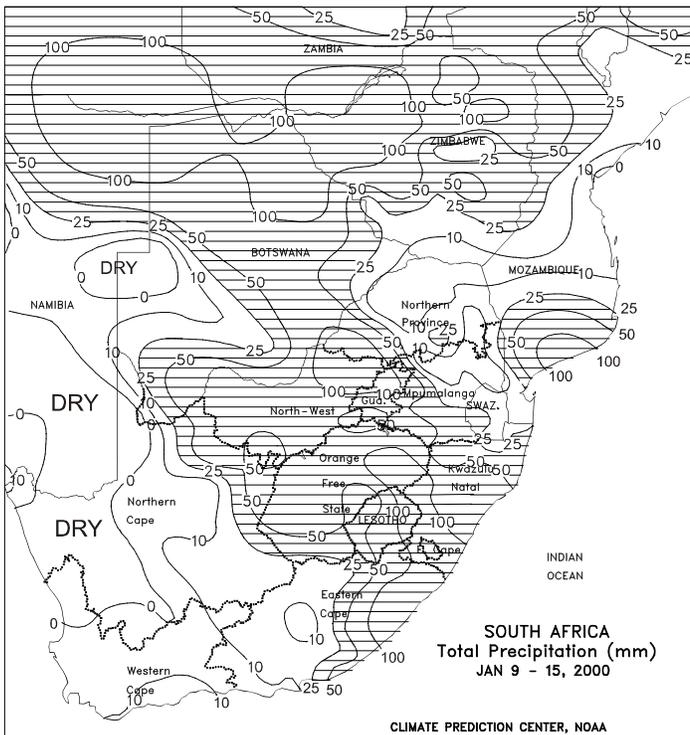
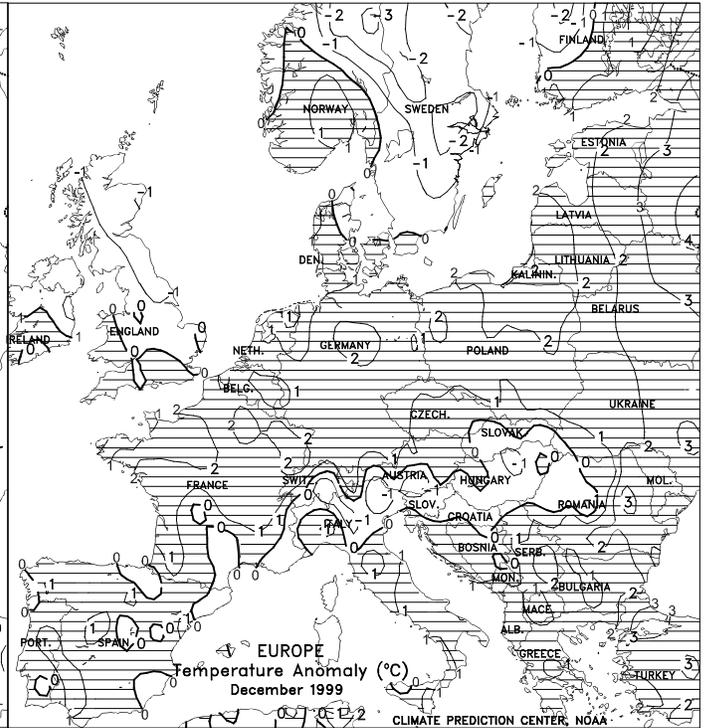




EUROPE

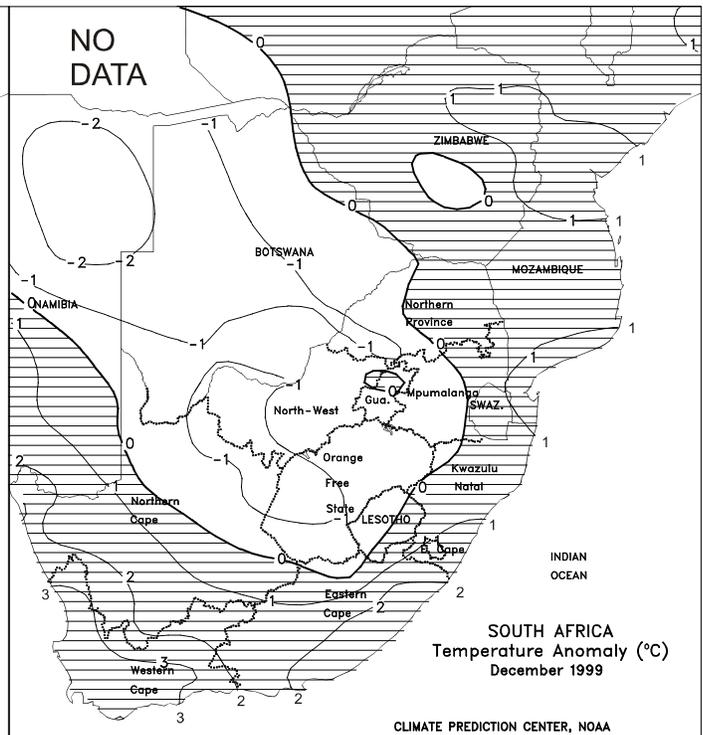
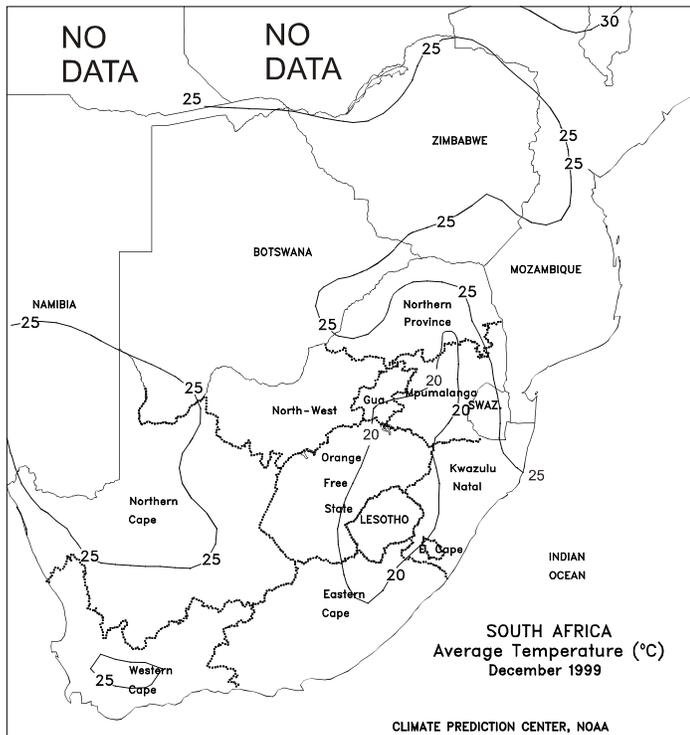
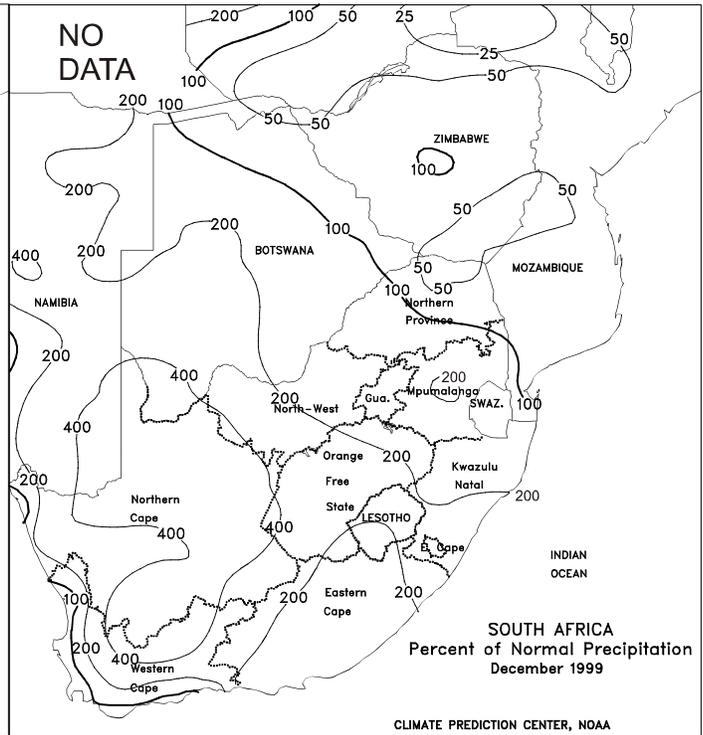
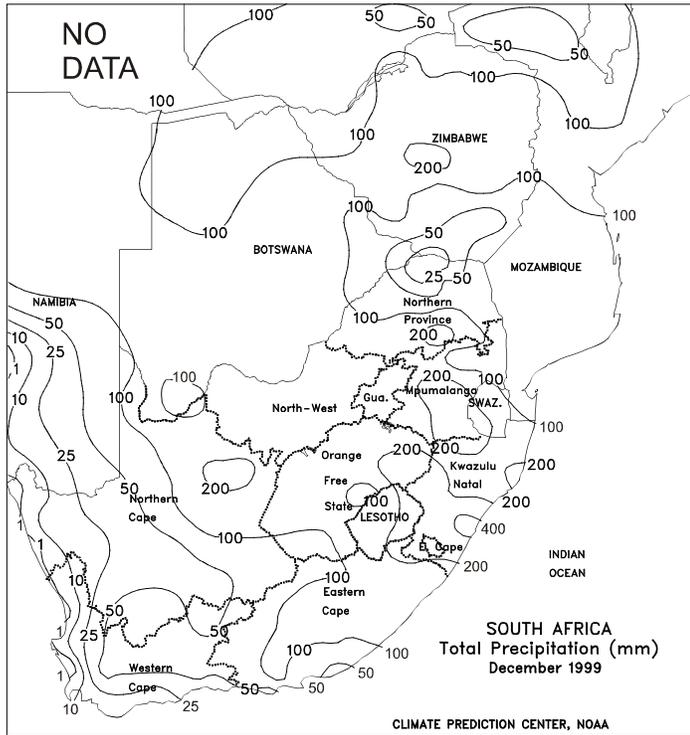
Scattered showers (5-35 mm) improved soil moisture in Spain and Portugal, helping winter grain establishment in southern areas. Farther north, very light precipitation (less than 10 mm) fell across major winter grain producing areas in southern and eastern England and northern France, maintaining soil moisture for dormant winter grains. Elsewhere across the continent, major crop producing areas remained dry. Temperatures across northern Europe averaged slightly above normal (0 to 2 degrees C above normal), favoring dormant winter grains. In contrast, unseasonably cold weather (temperatures 1 to 4 degrees C below normal) prevailed in France, the Iberian peninsula, and southeastern Europe. In December, below-normal precipitation in Spain and southern Portugal slowed winter grain germination and emergence. In contrast, frequent storms brought above-normal precipitation to England, France, the Benelux countries, and western Germany, maintaining adequate to excessive soil moisture supplies. Above-normal temperatures across much of Europe maintained favorable overwintering conditions for dormant and semi-dormant winter grains. Winter grains eased into dormancy across England and eastern France during the latter half of the month, while winter grains remained dormant across central and eastern Europe.

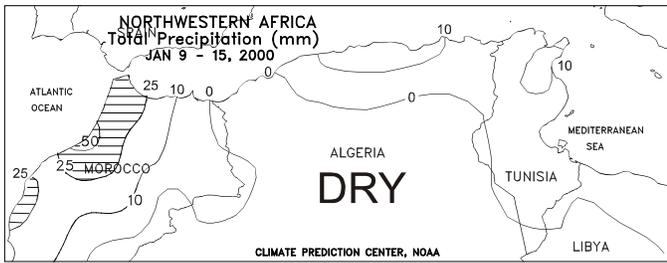




SOUTH AFRICA

Widespread, locally heavy rain (25-50 mm, locally exceeding 100 mm) swept across the corn belt late in the week, providing abundant moisture to vegetative to reproductive summer crops. Although average temperatures were 2 to 4 degrees C below normal, warm weather (highs generally ranging in the lower 30's degrees C) prior to the rainfall aided crop development. The ample moisture pushed southeastward to the coast of Eastern Cape and KwaZulu-Natal, increasing irrigation levels for sugarcane and other crops but likely causing localized flooding. Dry, albeit cooler weather (temperatures averaging 1-3 degrees C below normal with highs in the lower 30's degrees C) dominated Western Cape. In December, a more normal weather pattern gradually developed over southern Africa. As a result, conditions improved for corn and other summer crops by month's end, and some late planting may have occurred. In fact, monthly rainfall was near to above normal in all major agricultural areas, including the primary orchard and vineyard regions of Western Cape. December temperatures averaged near to below normal in the corn belt but above normal in the coastal provinces, increasing crop moisture demands and the need to irrigate.

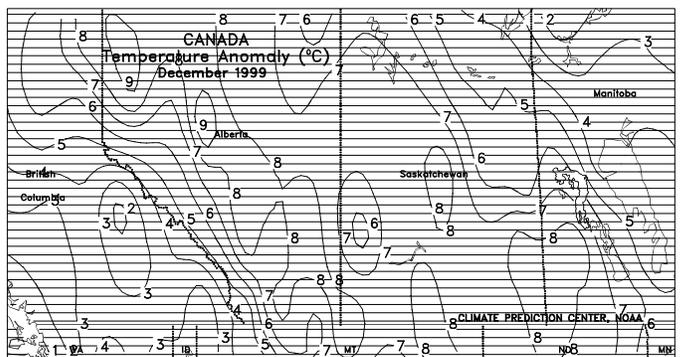
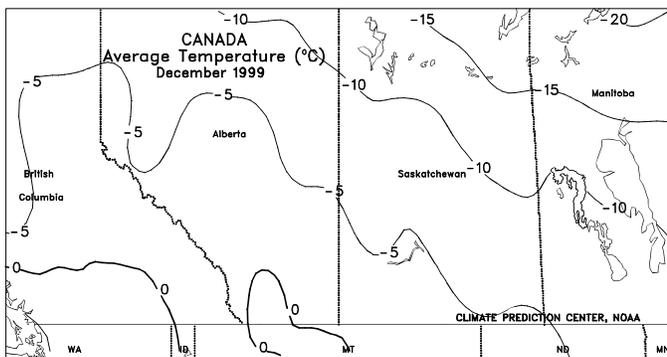
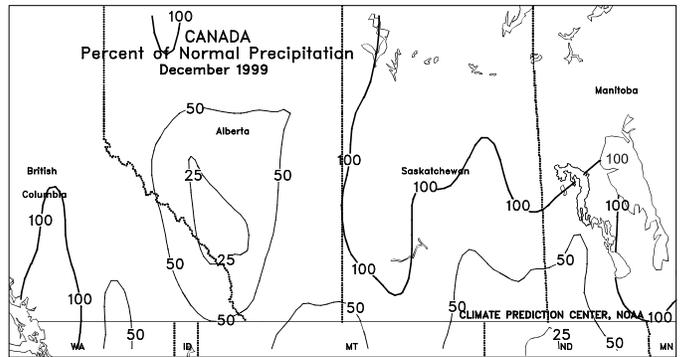
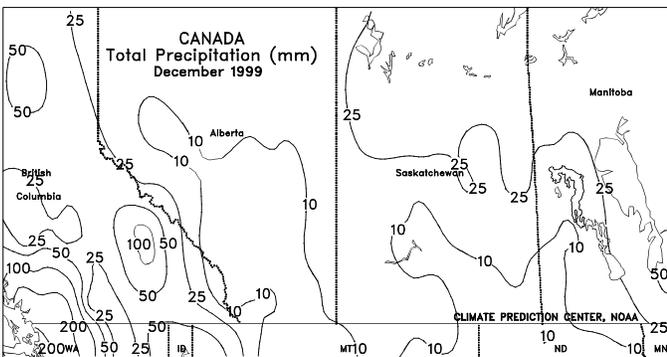
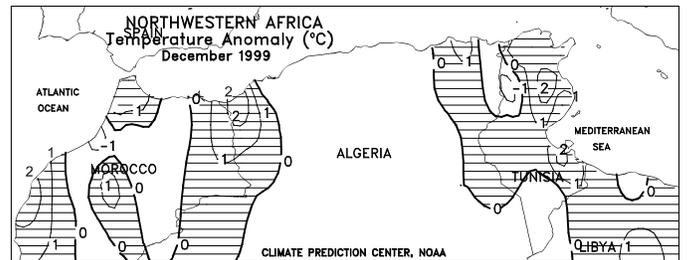
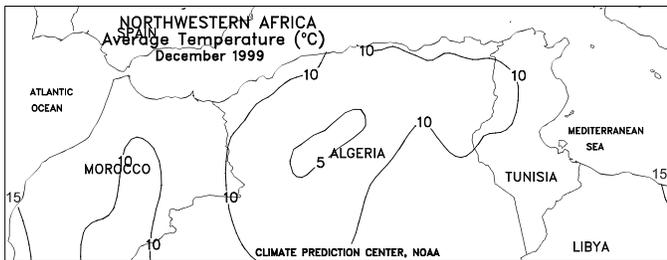
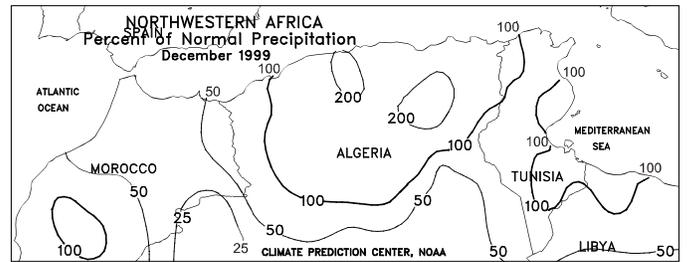
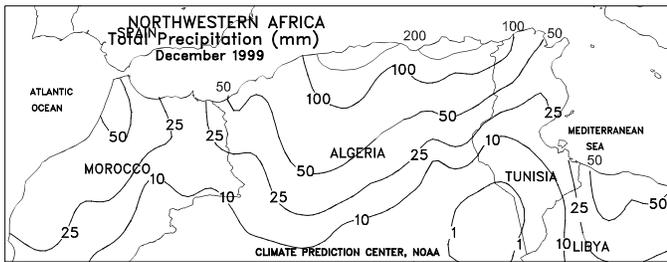




NORTHWESTERN AFRICA

Rainfall increased in Moroccan winter grain areas at week's end, improving moisture conditions for crop development. Most winter grain areas received anywhere from 10 to 54 mm of precipitation. The rain was highly beneficial, bringing some relief to crops that were stressed by prolonged dryness since mid-November. However, despite this past week's rain in Morocco, soil moisture reserves remain limited, necessitating timely rains in upcoming week's to prevent serious declines in crop prospects. In Algeria and Tunisia, the second

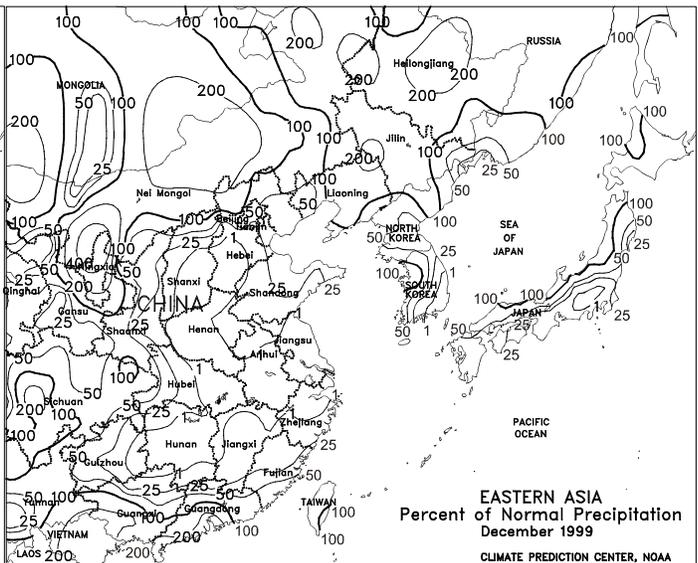
consecutive week of insufficient precipitation (less than 5 mm) prevailed over winter grain areas, but soil moisture was adequate to sustain normal crop development. In December, winter grain areas in Morocco received less than half their normal rainfall, while crop areas in Algeria and Tunisia received near- to well-above-normal precipitation. Overall, moisture conditions so far this growing season have favored winter grain emergence and establishment in Algeria and Tunisia.

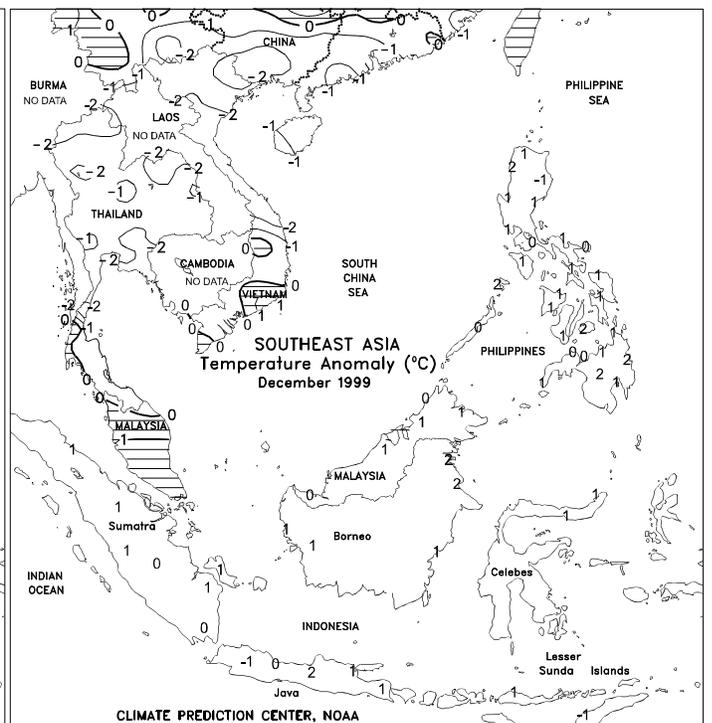
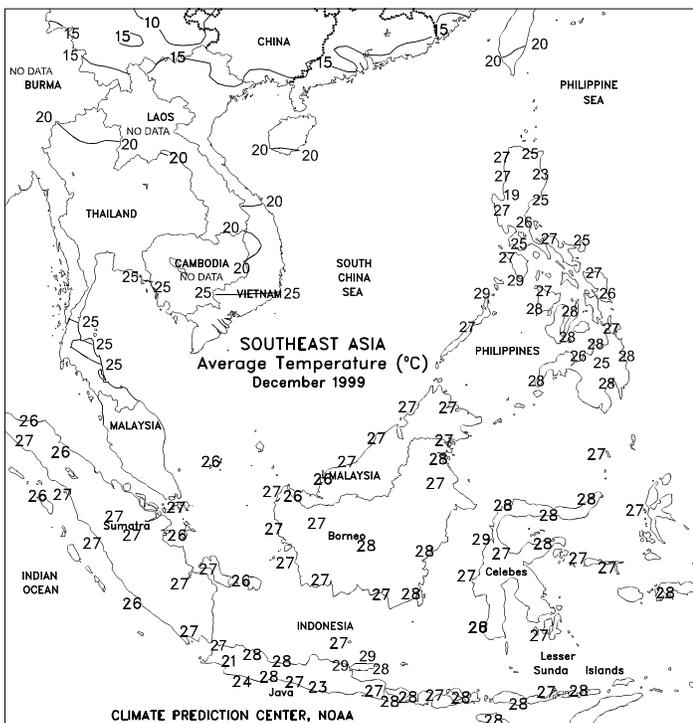
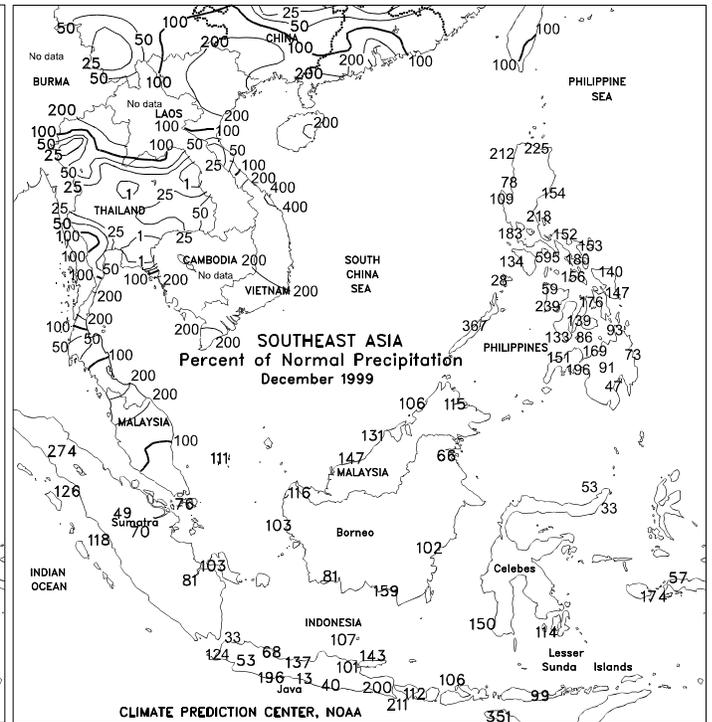
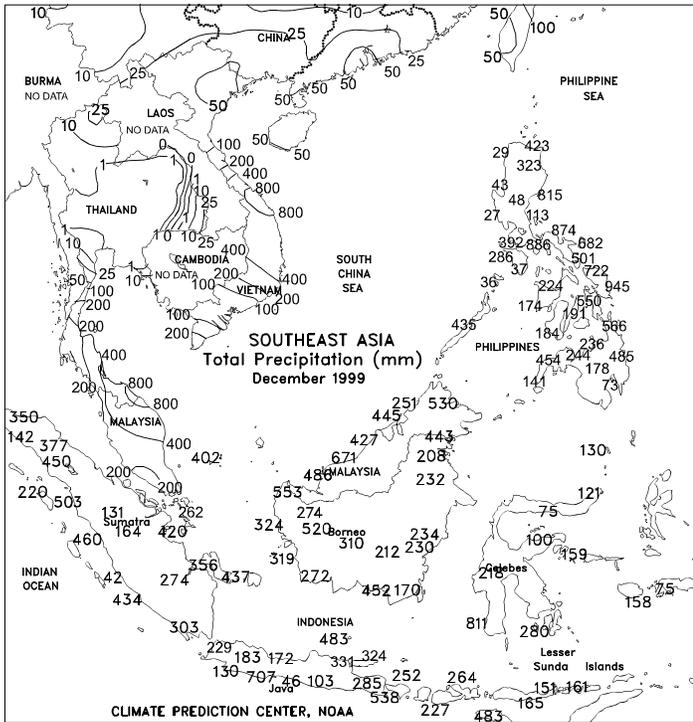




EASTERN ASIA

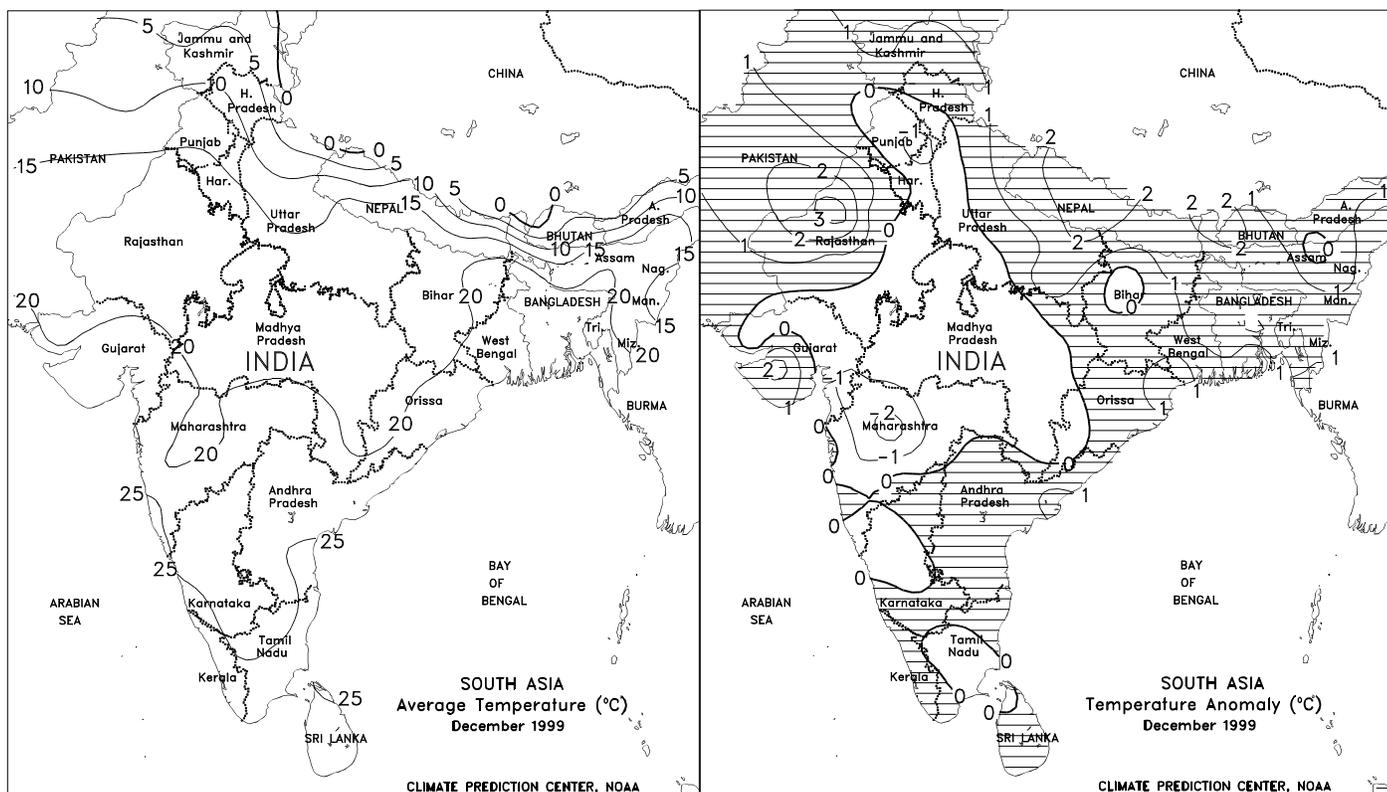
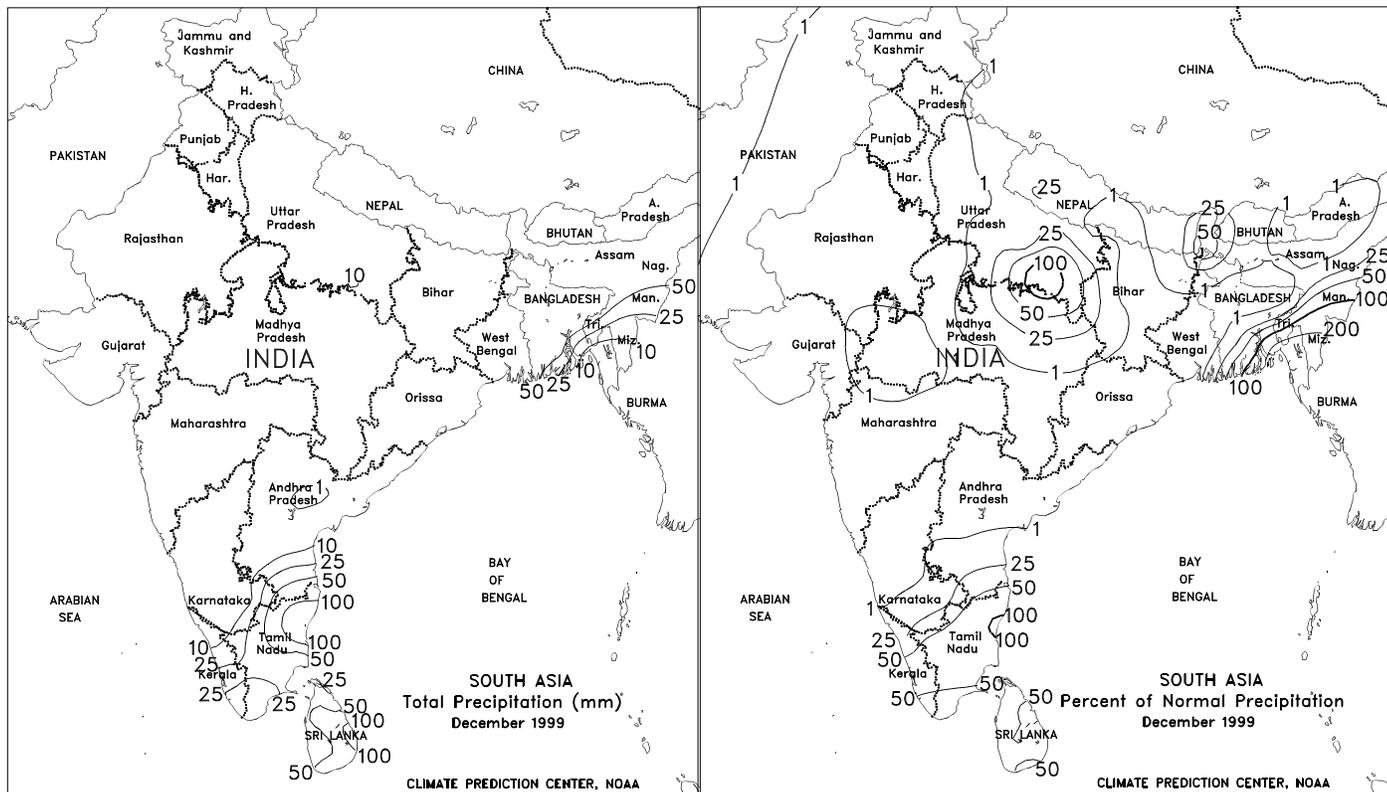
Widespread precipitation (5-25 mm of liquid equivalent) fell across the North China Plain, increasing moisture supplies for dormant winter wheat. This precipitation fell as light snow across most of Shandong and northern Henan. Heavier rain (25-70 mm) was reported across the lower Yangtze Valley, boosting irrigation supplies and favoring winter rapeseed. Temperatures averaged near normal across most of north-central China and 2 to 4 degrees C above normal across the southern coastal provinces. In early December, winter wheat entered dormancy across the North China Plain. A cold airmass moved south and settled in the North China Plain during December 17 to 21, with low temperatures ranging from -10 to -15. The dormant wheat withstood the cold weather with little or no winterkill damage. Cold weather also extended to the southern coastal provinces, with freezing temperatures reported during December 23 to 26. The cold weather burned back winter crops and possibly damaged sugarcane. Below-normal December rainfall reduced moisture supplies for winter rapeseed across the Yangtze Valley.

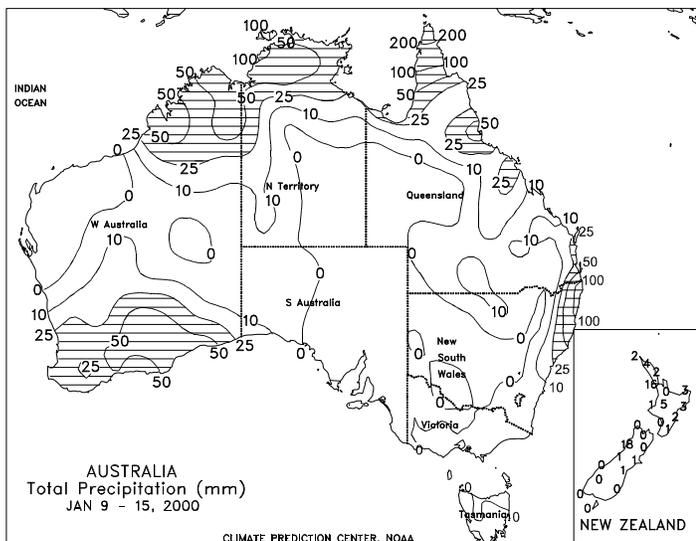




SOUTH ASIA

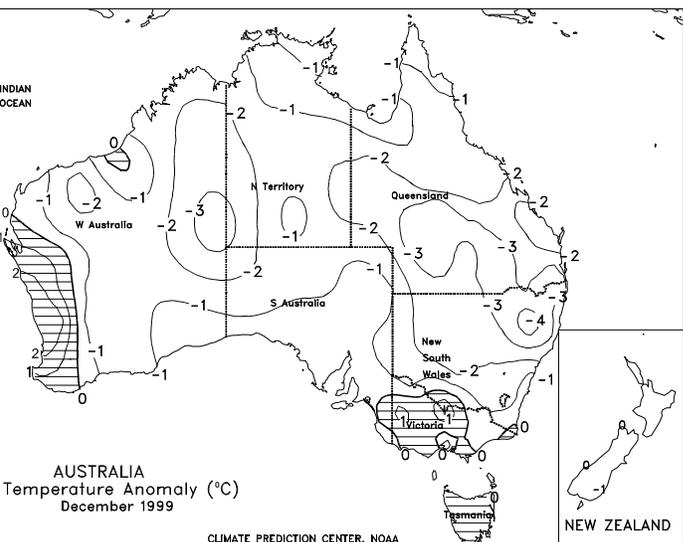
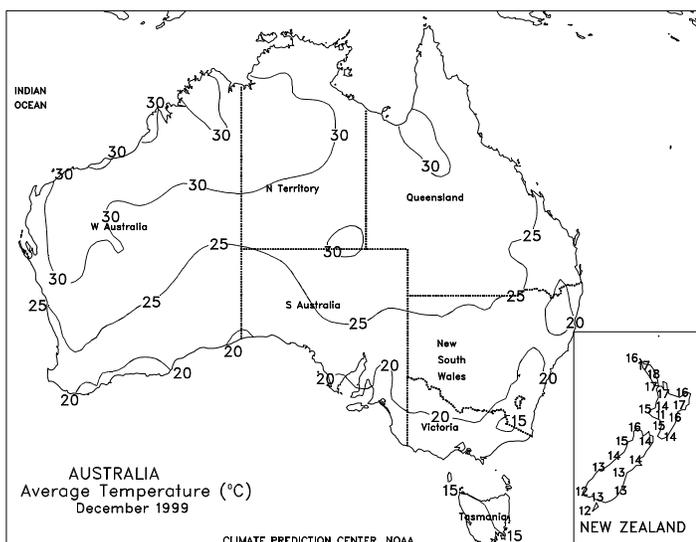
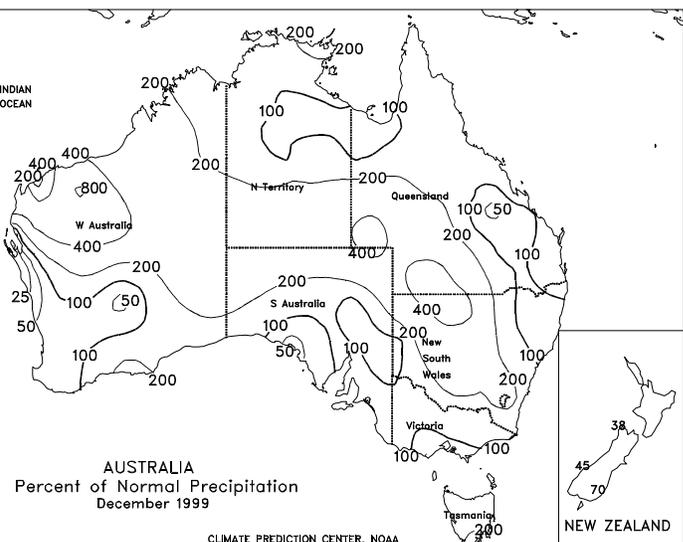
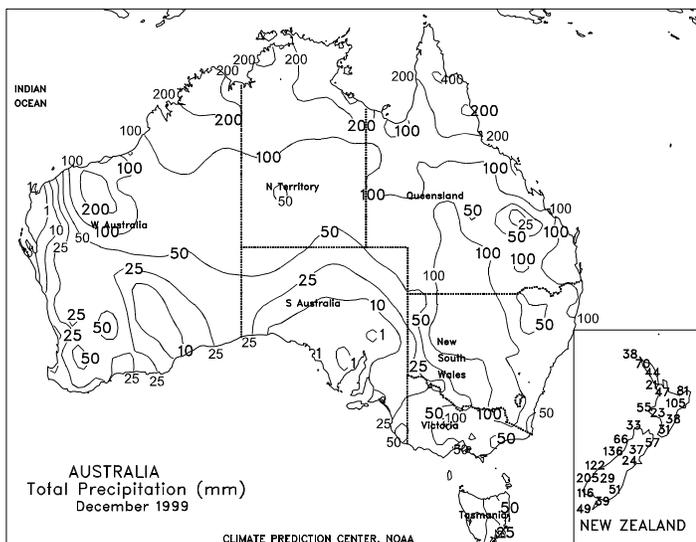
In December, warm, dry weather favored harvesting of summer-grown grains, oilseeds, and cotton throughout the region. Lingering showers (25-100 mm or more) improved moisture levels over India's southern tip but elsewhere, rice and other winter-grown crops, including wheat and rapeseed in northern growing areas, relied on irrigation reserves.

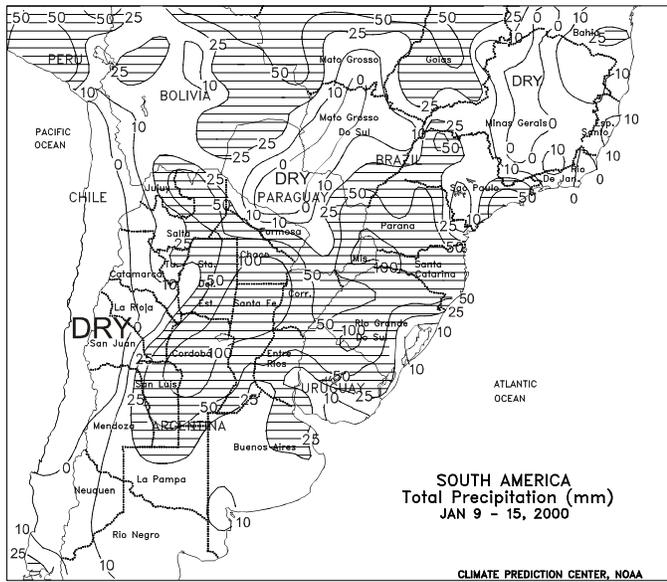




AUSTRALIA

Cooler-than-normal weather continued to dominate the primary summer crop areas of northern New South Wales and southern Queensland. Temperatures averaged 1 to 3 degrees C below normal, despite highs that were generally in the lower 30's degrees C. Scattered, mostly light showers (2-25 mm) fell over interior crop areas of Queensland and northeastern New South Wales. Heavy rain (100 mm or greater) continued over the coastal sugarcane areas of New South Wales but lighter rain (25 mm or less, most areas) covered the Queensland sugarcane areas. Warmer weather is needed in the east to help advance summer crop development. Elsewhere, warm, dry weather covered the southeast (South Australia to southern New South Wales), reducing moisture levels for pastures and grazing. In Western Australia, widespread, locally heavy rain (10-50 mm or more) swept through the winter grain belt, but most crops should have been harvested. Dry weather covered New Zealand. During December, near- to above-normal rainfall and below-normal temperatures sustained generally unfavorable harvest conditions in the winter grain belts of Queensland and New South Wales. Although the moisture was overall beneficial for summer crops, the cool weather slowed development of sorghum and cotton. Conditions were generally more favorable in Western Australia and the southeast (South Australia and Victoria) for winter crop harvesting, although mid-month showers in the west briefly raised some quality concerns.

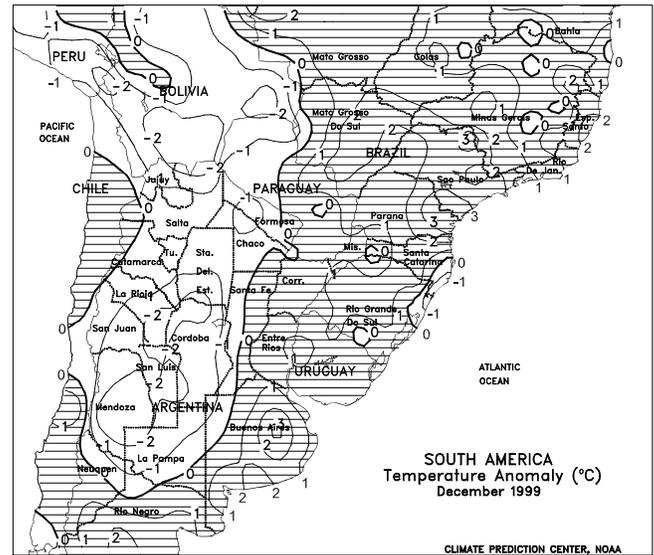
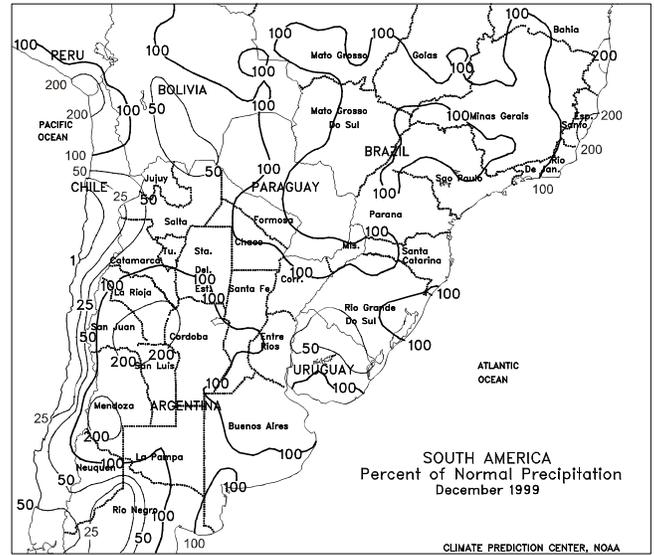
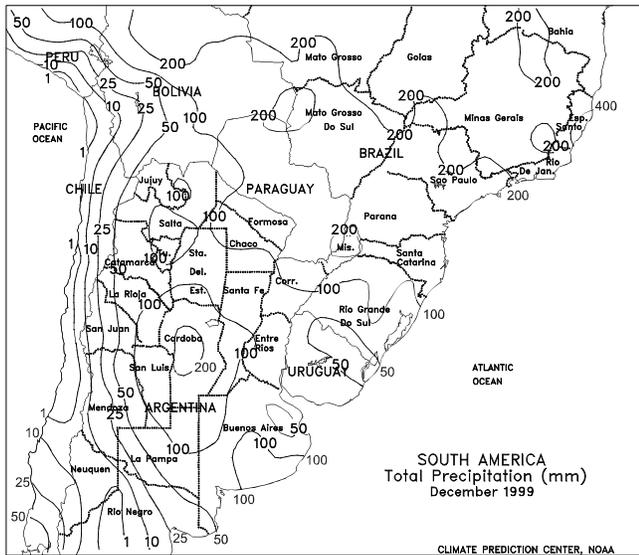




SOUTH AMERICA

In southern Brazil, widespread showers (20-75 mm or more) covered the primary corn and soybean areas of Rio Grande do Sul and western Paraná. In southern Mato Grosso do Sul, lighter showers (10-35 mm) brought some relief, but more rain is still needed to maintain yield potentials for summer crops. Variable showers (10-60 mm) prevailed elsewhere in southern Brazil, maintaining adequate soil moisture. Beneficial showers (40-100 mm) also fell across southern Paraguay, aiding cotton and soybeans. Temperatures averaged 2 to 4 degrees C above normal across southern Brazil. In central Argentina, showers (20-65 mm) boosted soil moisture for vegetative summer crops. The moisture helped offset hot weather (high temperatures ranging from 35-37 degrees C) in southern Santa Fe and northeastern Buenos Aires. Lighter rain (10-25 mm) fell across southern Buenos Aires, aiding summer crops and causing only minor delays to late winter wheat harvesting. According to reports as of January 7, Argentine soybeans were 94 percent planted, compared with 97 percent last year, and corn was 92 percent planted, compared with 95 percent last year. Cotton planting was 89 percent complete. Wheat harvesting was 96 percent done nationwide, compared with 97 percent last year. Despite beneficial early December rainfall, periodic hot, dry weather from mid-December into

early January stressed corn and soybeans across extreme southwestern Brazil, southern Paraguay, and east-central Argentina. Below normal rainfall in northern Buenos Aires favored winter wheat maturation and harvesting. Near- to above-normal rainfall in the remainder of southern Brazil and western Argentina boosted soil moisture for summer crops and Brazilian coffee.



The *Weekly Weather and Crop Bulletin* (ISSN 0043-1974) is published weekly and jointly prepared by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) and the U.S. Department of Agriculture (USDA). Publication began in 1872 as the *Weekly Weather Chronicle*. It is issued under general authority of the Act of January 12, 1895 (44-USC 213), 53rd Congress, 3rd Session. NOAA is responsible for managing, printing, and distributing the bulletin. The contents may be reprinted freely, with proper credit.

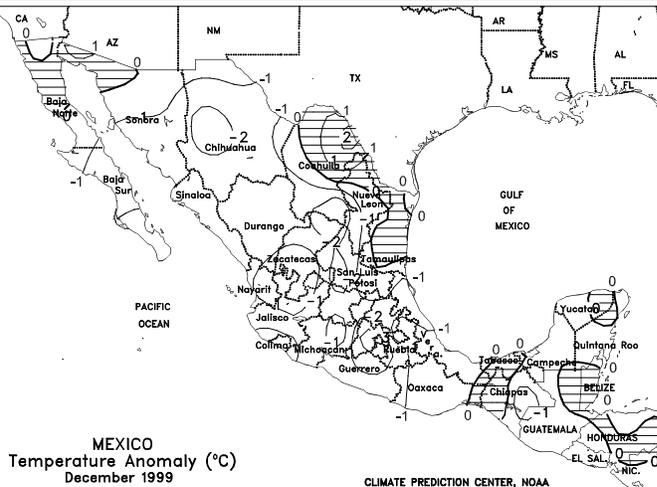
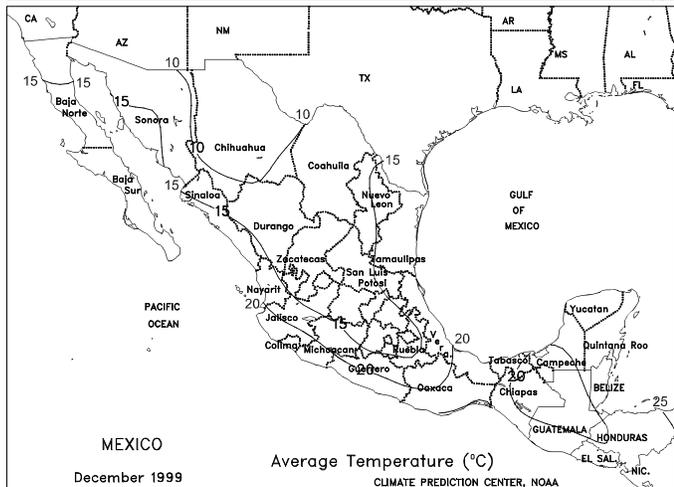
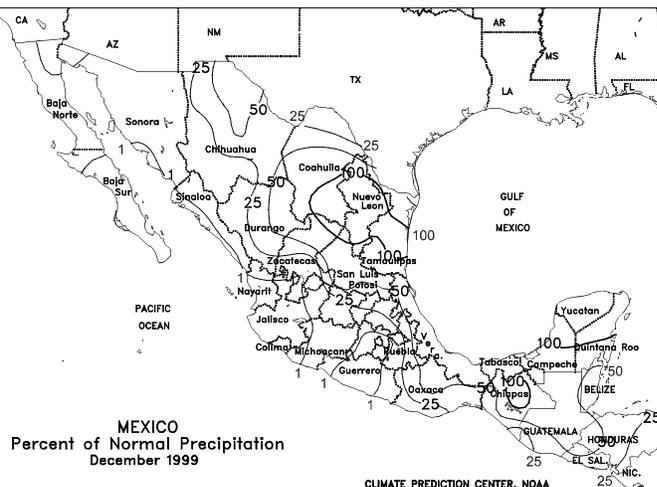
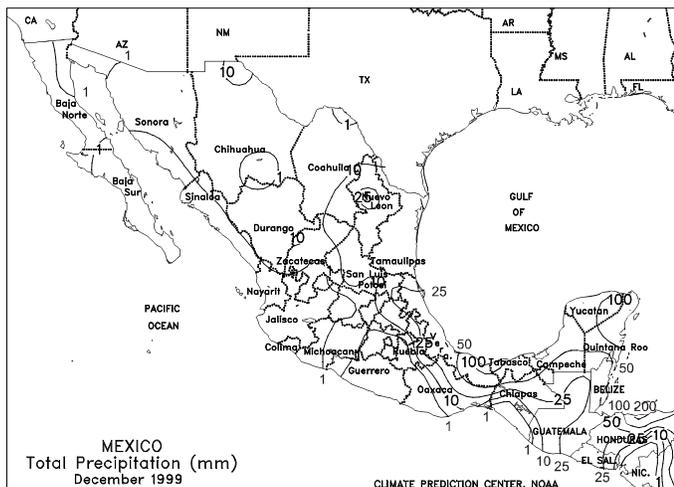
Annual subscriptions: domestic first class \$45, foreign \$55 (in U.S. funds by international money order or check drawn on U.S. bank) payable to **U.S. Department of Commerce, NOAA**. POSTMASTER: Send address changes to: **Climate Prediction Center, W/NP52, Attn: Weekly Weather and Crop Bulletin, Room 605, WWBG, 5200 Auth Road, Camp Springs, MD 20746-4304**. Order subscriptions from the office and address listed above. First-class postage paid at Washington, DC, and other mailing offices. Correspondence to the meteorologists should be directed to: **Weekly Weather and Crop Bulletin, NOAA/USDA, Joint Agricultural Weather Facility, USDA South Building, Room 5844, Washington, DC 20250**. Internet URL: <http://www.usda.gov/oce/waob/jawf>; E-mail address: wwcb@jawsrv.wwb.noaa.gov

U.S. DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration
 National Weather Service/Climate Prediction Center
 Managing Editor **David Miskus** (202) 720-7919
 Meteorologists **Eric Luebehusen, Brad Pugh,**
 **and Chester Schmitt**
 Subscriptions **John Kopman** (301) 763-8000 ext 7534
 **fax: (301) 763-8125**

U.S. DEPARTMENT OF AGRICULTURE

Economic Research Service
 E.R.S. Editor **Sharon Lee**
 National Agricultural Statistics Service
 Agricultural Statistician **Mark Miller** (202) 720-7621
 State Summaries Editor . **Delores Thomas** (202) 720-8033
 World Agricultural Outlook Board
 International Editor **Tom Puterbaugh**
 U.S. Editor **Brad Rippey** (202) 720-2397
 Agricultural Weather Analysts **Mark Brusberg**
 **Bob Stefanski, Brian Morris, and Harlan Shannon**
 Stoneville **Michael Toth and Elizabeth Lord**



Climate Prediction Center, W/NP52
 Attn: *Weekly Weather & Crop Bulletin*
 NOAA/NWS/NCEP/CPC
 5200 Auth Road
 WWB, Room 605
 Camp Springs, MD 20746-4304

**WEEKLY NEWS BULLETIN
 FIRST CLASS**

FIRST CLASS MAIL
 POSTAGE & FEES PAID
 NOAA
 PERMIT NO. G-19

OFFICIAL BUSINESS
 PENALTY FOR PRIVATE USE, \$300