

# 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

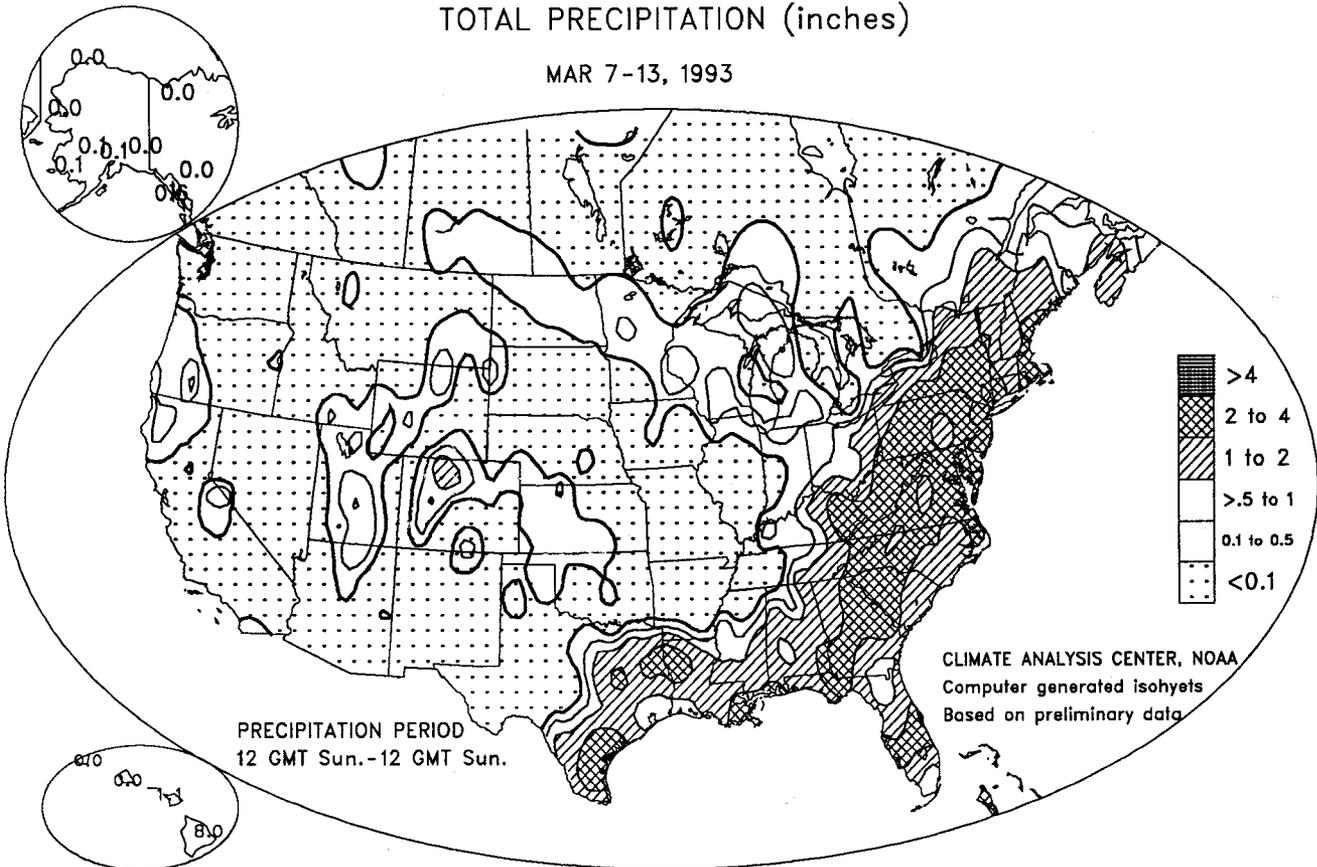
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Washington, D.C.

March 16, 1993

## TOTAL PRECIPITATION (inches)

MAR 7-13, 1993



## HIGHLIGHTS

March 7 - 13, 1993

A storm of unbelievable magnitude and strength thrashed the East with high winds and unprecedented late-season bitter cold and snowfall. In contrast, warm weather caused rapid snowmelt and subsequent flooding in the western two-thirds of the Nation. Early in the week, a series of cold fronts dug southeastward through the Great Lakes and Eastern States. As cold air overran sun-warmed ground, snow squalls and thundershowers resulted. Small hail was reported in several locations, including Charleston, WV, and Huntsville, AL. Farther west, warm weather set daily temperature records and caused rapid snow and ice melt. On Sunday, Bakersfield, CA, warmed to 83°F and Billings, MT, reached 65°F. Flooding continued on Arizona's Gila River, and major river flooding developed in east-central Nebraska, especially at the confluence of the Loup and Platte Rivers near Columbus,

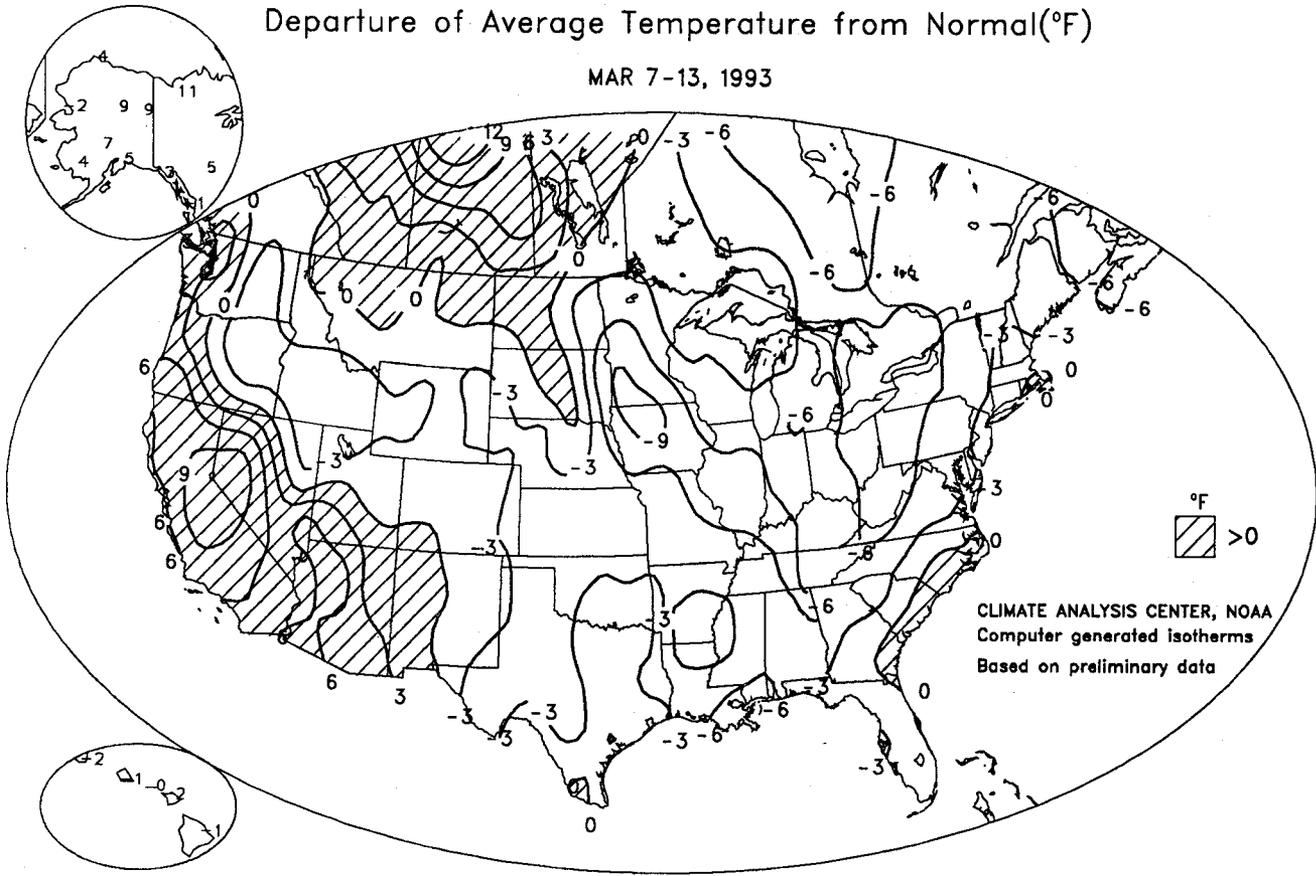
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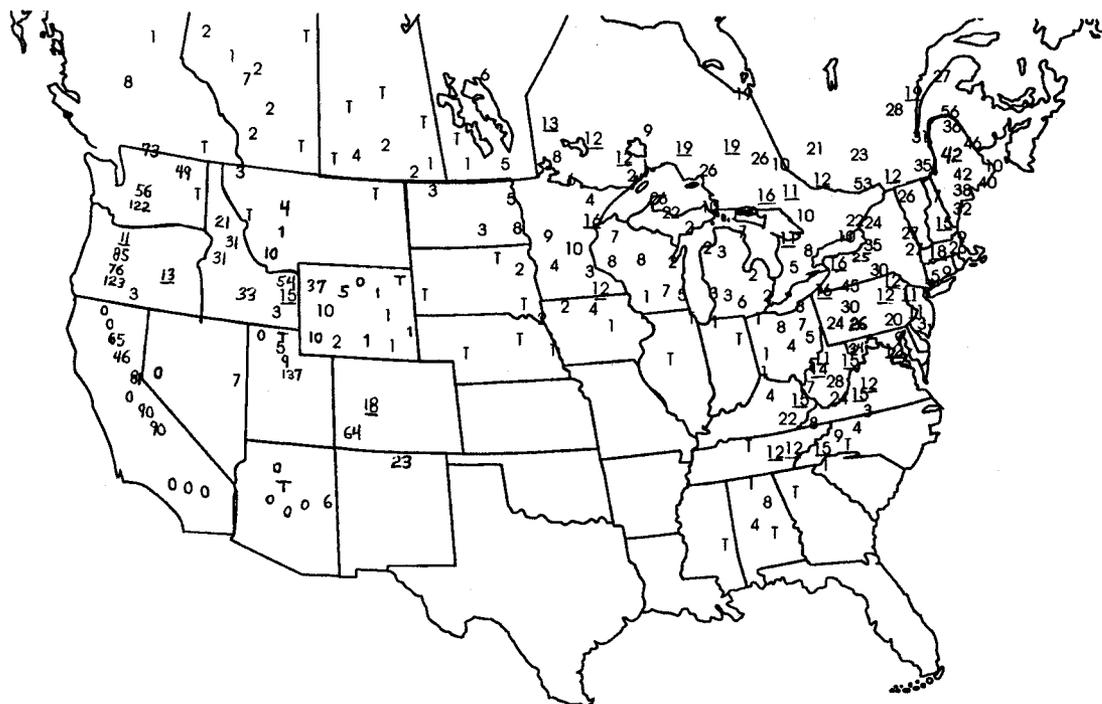
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Departure of Average Temperature from Normal(°F)

MAR 7-13, 1993



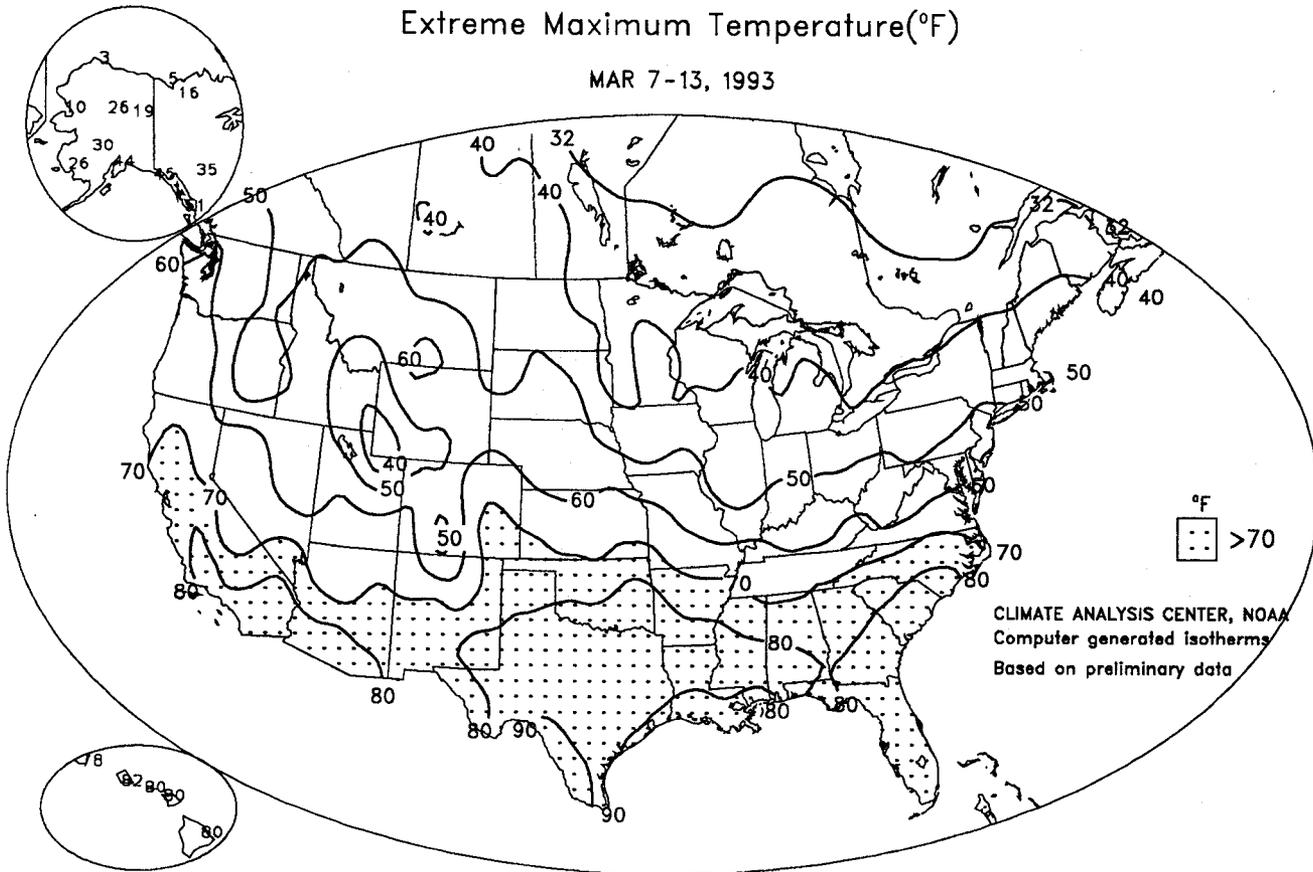
Total Snow Cover (Inches)  
March 15, 1993



NOAA/USDA JOINT AGRICULTURAL WEATHER FACILITY  
Based on preliminary reports

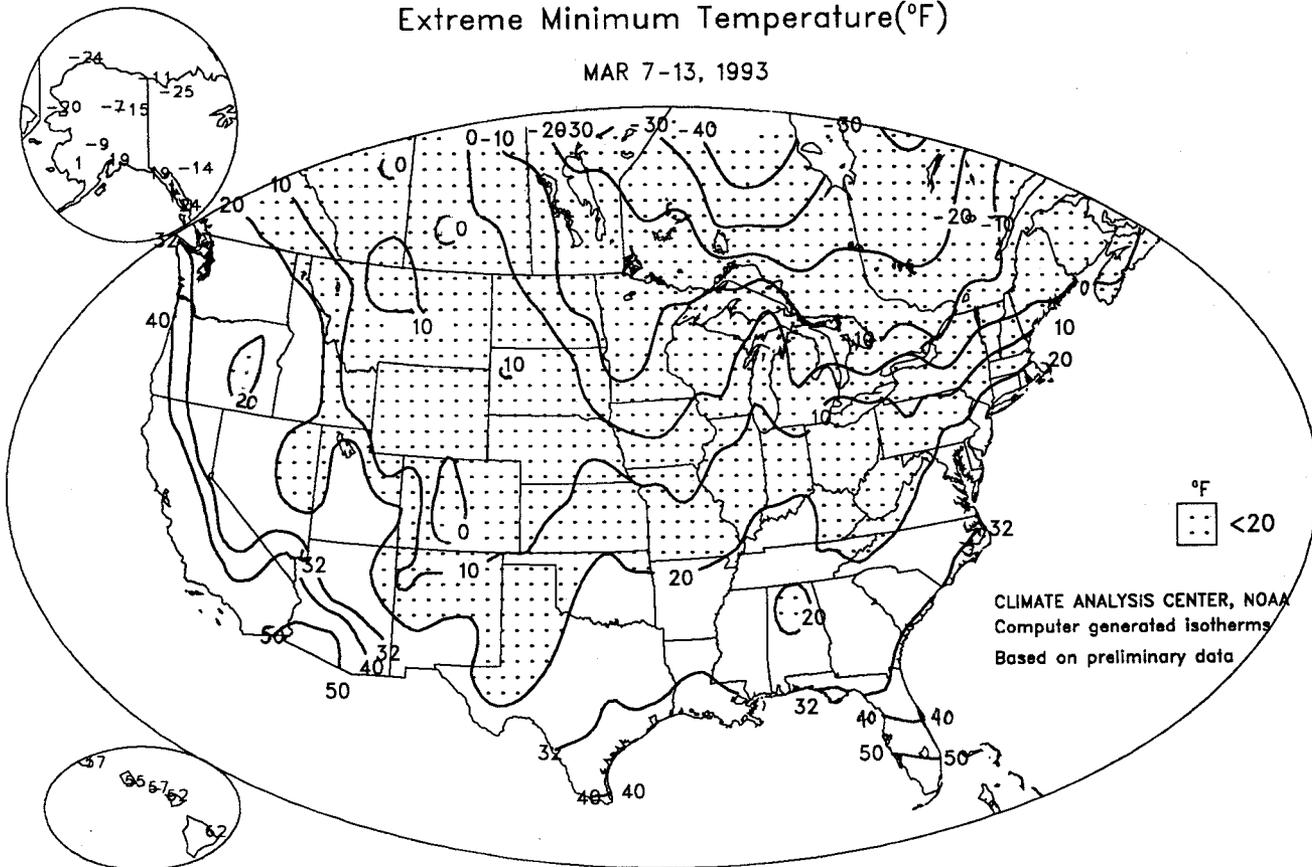
### Extreme Maximum Temperature(°F)

MAR 7-13, 1993



### Extreme Minimum Temperature(°F)

MAR 7-13, 1993



## Massive Storm Thrashes the East

The storm that roared up the East Coast on Saturday, March 13 (fig. 1) was notable for both its magnitude and its power. Its winds and heavy precipitation affected an enormous area stretching from Cuba to Canada. Heavy snow extended from Alabama and Georgia northward all the way to Quebec. In its wake, cold air set at least 140 temperature records in the Central and Eastern States.

While the extent of the snow attests to the magnitude of the storm, the high winds and extreme low pressures attest to the power and intensity of the storm. All-time record low pressures were measured at numerous locations up and down the eastern seaboard, including Washington, DC, Richmond, VA, Columbia, SC, Tallahassee, FL, Philadelphia, PA, and Concord, NH. The steep pressure gradient around the storm caused powerful winds across the entire affected area, with inland locations commonly reporting 35 to 50 mph gusts. More exposed locations on higher elevations or on the coast had 50 to 70 mph gusts. Boston, MA, reported a wind gust Saturday night of 81 mph and Fire Island, NY, reported 89 mph gusts Saturday afternoon. Flattop Mountain, east of Asheville, NC, reported a gust to 101 mph on Saturday evening.

The winds whipped the snow into tall drifts and reduced visibility to near zero in many locations, causing blizzard conditions. Unlike the storm of December 10-12, 1992, this storm drew in enough cold air to bring significant snow totals to the major east coast urban areas, with Boston, New York, Philadelphia, Baltimore, and Washington all reporting 7 to 12 inches (table 1). Interior areas measured higher totals, with 1 to 2 feet common over New England, Mid-Atlantic, and Appalachian areas. Totals of 2 to 3 feet were not unusual over mountainous areas and locations affected by lake effects. There were isolated reports of still higher totals. In Syracuse, NY, the final snowflakes on Monday morning brought the city's total to 43 inches, making the "Blizzard of '93" the all-time greatest snowstorm in Syracuse since records began in 1902. Albany's total of 27 inches was especially notable, since lake and mountain effects are not a factor in New York's capital city. This was Albany's greatest snowfall this century. Not since the great blizzard of 1888 has this city seen more snow (48 inches). The mountainous areas of Maryland, West Virginia, Virginia, and North Carolina reported 40 inches and more from this storm. Thanks to leftover snow from earlier storms, depths often exceeded 50 inches. In Birmingham, AL, their 13-inch total snowfall not only set a new 24-hour record for any month, but also set a record for maximum snow depth, maximum snow from a single storm, and maximum snow in a single month.

Figure 1

### TRACK OF MARCH 12 - 14, 1993 STORM

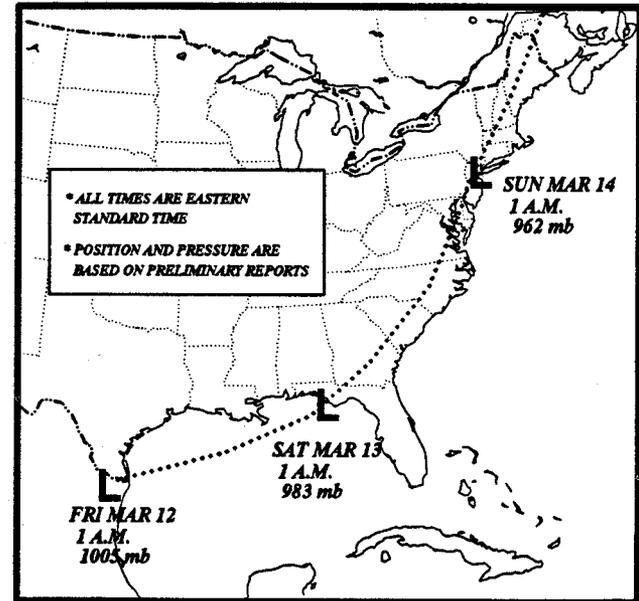


Table 1 Selected Storm Snowfall Totals (in.)

Caribou, ME	16	Princeton, NJ	12
Portland, ME	35	Washington Nat. AP	7
Concord, NH	17	Washington Dulles AP	13
Portsmouth, NH	20	Richmond, VA	3
Burlington, VT	18	Roanoke, VA	16
Montpelier, VT	23	Charleston, WV	17
Boston, MA	9	Beckley, WV	30
Worcester, MA	20	Canaan Valley, WV	41
New Bedford, MA	1	Baltimore, MD	10
Pittsfield, MA	23	Greensboro, NC	6
LaGuardia AP, NY	11	Asheville, NC	19
Poughkeepsie, NY	19	Mount Mitchell, NC	48
Albany, NY	27	Chattanooga, TN	20
Syracuse, NY	42	Nashville, TN	3
Hartford, CT	15	Lexington, KY	7
Philadelphia, PA	12	Atlanta, GA	4
Pittsburgh, PA	25	Birmingham, AL	13
Atlantic City, NJ	2	Pensacola, FL	TRC

The frigid air streaming in behind the storm also helped to rewrite the record books for the Central and Eastern States. On Sunday morning, March 14, at least 68 low temperature records were set or tied (fig. 2). On the following morning, with readings ranging from -20 and below in northern parts of New York and Vermont to freezing in Florida, at least 72 records were set or tied (fig. 3). The Sunday low of 21 F at Mobil, AL, not only broke the daily record by 8 degrees but also set a new all-time low for the month of March.

While cold and wind damaged crops in the South, snow and blowing snow stopped air and ground transportation, stranding thousands of travelers. The heavy snow and wind toppled trees and power lines, leaving many without electricity. High winds were especially damaging in Florida, with more than 1.2 million customers without electricity after the storm on Saturday, according to media reports. In addition, numerous tornadoes caused structural damage and led to fatalities. Media reports tallied well over 100 deaths from the storm throughout the Eastern United States.

The impacts on agriculture are still being assessed. In Georgia, the freezing temperatures and strong winds killed or damaged young tender plants and fruit buds. The extent of damage to the peach crop was still to be determined. The winds damaged onions and blew plastic covers off tobacco beds, exposing plants to the cold. In Florida, the cold damaged new leaves and growth on the citrus crop but there was minimum fruit loss. The freeze did, however, kill tobacco in fields and damaged some plant beds. In Texas, wind and rain damaged some early-planted fields of sorghum and may have damaged vegetables. There was also potential damage to peaches (see the State summaries for more information).

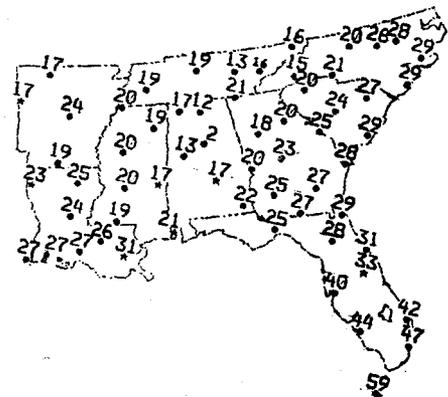
Looking at the overall size and fury of the storm and the impacts across the Eastern United States, this will certainly go down in the history books as a candidate for the worst winter storm of the century. Some locations have had more wind or more snow with other storms, but considering the size of the area affected by extreme weather, few storms can compare.

Douglas Le Comte

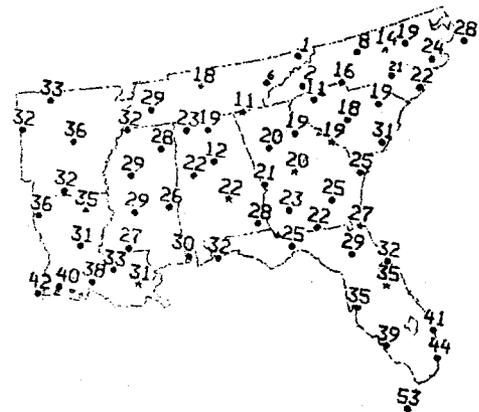
Figure 2

NOTE: In some cases, actual minimum temperatures may have been slightly lower due to additional cooling after 7 a.m. EST.

Minimum Temperatures (°F) through 7 a.m. EST Sunday, March 14, 1993



Minimum Temperatures (°F) through 7 a.m. EST Monday, March 15, 1993



# National Weather Data for Selected Cities

## Weather Data for the Week Ending March 13, 1993

STATES AND STATIONS	TEMPERATURE °F						PRECIPITATION						RELATIVE HUMIDITY, PERCENT		NUMBER OF DAYS						
	AVERAGE MAXIMUM	AVERAGE MINIMUM	EXTREME HIGH	EXTREME LOW	AVERAGE	DEPARTURE FROM NORMAL	WEEKLY TOTAL, IN.	DEPARTURE FROM NORMAL	GREATEST IN 24-HOUR, IN.	TOTAL, IN., SINCE Mar 1	PCT. NORMAL SINCE Mar 1	TOTAL, IN., SINCE Jan 1	PCT. NORMAL SINCE Jan 1	AVERAGE MAXIMUM	AVERAGE MINIMUM	90 AND ABOVE	32 AND BELOW	.01 INCH OR MORE		.50 INCH OR MORE	
																		OR MORE	OR MORE	OR MORE	OR MORE
AL BIRMINGHAM	59	34	75	13	47	-6	1.3	-1	1.0	2.3	90	10.6	86	81	35	0	3	2	1	1	
MOBILE	65	41	81	28	53	-6	2.2	.8	2.0	3.6	130	16.1	124	98	39	0	0	2	1	1	
MONTGOMERY	64	38	80	25	51	-4	2.2	.7	1.2	4.6	171	14.2	110	83	35	0	2	2	2	2	
AK ANCHORAGE	36	22	44	19	29	5	.1	-1	.0	.2	52	2.3	122	91	61	0	7	2	0	0	
BARROW	-4	-19	3	-24	-12	5	.1	.0	.0	.1	80	.7	232	80	74	0	7	0	0	0	
FAIRBANKS	26	2	35	-8	14	7	.1	.0	.1	.1	53	2.8	261	84	60	0	7	1	0	0	
JUNEAU	41	30	43	24	36	4	.1	-1	.1	1.4	97	19.6	201	100	76	0	4	1	0	0	
KODIAK	40	30	46	18	35	3	3.3	2.2	1.6	4.3	216	14.6	100	88	69	0	4	5	3	3	
NOME	23	5	28	-11	14	6	.0	-1	.0	.1	35	2.4	148	81	66	0	7	1	0	0	
AZ PHOENIX	81	54	83	52	67	5	.0	-2	.0	.0	0	7.0	396	60	21	0	0	0	0	0	
PRESCOTT	65	33	69	26	49	7	.0	-4	.0	.1	1	8.4	218	71	20	0	3	0	0	0	
TUCSON	79	46	83	43	63	5	.0	-2	.0	.1	3	6.3	342	67	17	0	0	0	0	0	
YUMA	86	59	89	57	72	8	.0	-1	.0	.0	0	2.9	434	40	16	0	0	0	0	0	
AR FORT SMITH	61	37	83	24	49	-1	.0	-9	.2	13	7.4	121	77	27	0	2	1	0	0	0	
LITTLE ROCK	59	40	76	25	50	-2	.1	-1	.1	.8	38	7.8	90	53	26	0	1	0	0	0	
CA BAKERSFIELD	79	50	84	48	64	8	.0	-3	.0	.0	0	4.4	183	62	39	0	0	0	0	0	
EUREKA	57	50	59	47	53	4	.3	-1	.2	.7	30	13.8	106	94	84	0	0	5	0	0	
FRESNO	77	50	83	47	64	10	.0	-4	.1	.1	1	7.7	167	86	37	0	0	1	0	0	
LOS ANGELES	72	54	83	51	63	5	.0	-5	.0	.0	0	15.9	271	88	55	0	0	0	0	0	
REDDING	72	49	75	42	60	9	.1	-1	.1	.1	5	18.0	144	88	40	0	0	1	0	0	
SACRAMENTO	73	50	75	46	62	9	.0	-6	.1	.1	9	13.8	177	98	53	0	0	0	0	0	
SAN DIEGO	73	53	80	49	63	4	.0	-4	.0	.1	1	13.8	335	80	49	0	0	0	0	0	
SAN FRANCISCO	67	52	71	50	59	6	.0	-7	.1	.1	5	16.0	180	91	71	0	0	1	0	0	
CO DENVER	51	25	69	10	38	0	.3	.0	.2	.3	54	1.6	103	72	31	0	5	5	0	0	
GRAND JUNCTION	56	30	63	22	43	0	.1	-1	.1	.1	28	2.6	171	68	25	0	5	5	0	0	
FURBLO	52	24	74	6	38	-2	.1	-1	.1	.9	317	1.5	167	73	33	0	1	1	0	0	
CT BRIDGEPORT	43	30	52	26	37	0	2.8	2.0	2.7	4.1	268	9.3	120	83	46	0	6	6	1	1	
HARTFORD	40	25	49	20	33	-3	2.4	1.6	2.1	3.5	239	9.1	112	83	40	0	7	4	1	1	
DC WASHINGTON	48	31	60	25	40	-5	2.5	1.8	2.2	4.0	298	9.1	135	83	47	0	5	4	1	1	
FL APALACHICOLA	71	49	78	35	60	1	1.3	.3	1.2	3.7	202	14.1	148	**	**	0	0	2	1	1	
DAYTONA BEACH	77	48	81	35	62	-1	1.4	.7	1.3	2.5	191	9.8	137	97	42	0	0	0	0	0	
JACKSONVILLE	76	47	82	34	62	0	1.3	.4	1.0	2.3	141	9.0	104	88	39	0	0	2	1	1	
KEY WEST	77	64	81	61	71	-2	.9	.5	.9	1.0	142	9.3	204	84	59	0	0	0	1	1	
MIAMI	80	61	82	53	70	-1	1.2	.6	1.2	1.3	133	8.5	167	82	47	0	0	1	1	1	
ORLANDO	78	51	83	39	65	-1	1.6	.8	1.5	2.3	158	8.7	128	90	43	0	0	2	2	2	
TALLAHASSEE	75	41	83	32	58	-1	1.9	.5	1.8	4.7	172	18.9	144	90	32	0	1	2	1	1	
TAMPA	74	50	82	43	62	-3	1.9	1.2	1.4	3.2	221	9.1	140	94	49	0	0	0	0	0	
WEST PALM BEACH	78	57	82	50	68	-3	.8	.1	.6	.8	62	10.8	163	89	45	0	0	2	2	2	
GA ATLANTA	60	40	75	22	50	-2	1.7	.3	1.0	3.0	122	11.4	95	75	42	0	1	2	2	2	
AUGUSTA	66	37	82	30	52	-2	1.9	.8	1.5	3.2	158	12.4	120	78	30	0	2	2	2	2	
MACON	65	40	79	27	52	-3	2.5	1.4	1.6	5.1	244	14.8	130	78	35	0	2	2	2	2	
SAVANNAH	72	48	82	32	60	2	1.1	.2	1.1	2.2	138	11.1	131	77	29	0	1	1	1	1	
HI HILO	78	64	80	62	71	-1	8.0	5.0	3.1	10.5	194	15.3	60	91	62	0	0	5	4	0	0
HONOLULU	80	64	83	56	72	-2	.0	.5	.0	.1	0	1.1	16	74	45	0	0	0	0	0	0
KAHULUI	78	63	80	52	71	-2	1.1	.5	.5	1.1	93	3.5	43	85	57	0	0	3	1	0	0
LIHUE	76	64	78	58	70	-3	.1	-9	.1	.2	12	1.4	13	75	50	0	0	0	0	0	0
ID BOISE	45	31	50	27	38	-3	.1	-2	.1	.2	29	2.8	91	87	56	0	5	1	0	0	0
LEWISTON	55	34	59	27	45	2	.0	-3	.0	.1	18	1.5	59	72	36	0	3	0	0	0	0
POCATELLO	40	21	45	7	30	-5	.1	-2	.1	.1	18	1.5	59	72	36	0	3	0	0	0	0
IL CHICAGO	35	23	44	11	29	-6	.1	-2	.1	.1	22	4.4	180	89	52	0	7	1	0	0	0
MOLINE	36	23	49	10	30	-6	.1	-1	.2	.9	92	5.5	144	88	52	0	7	5	0	0	0
PEORIA	37	24	44	12	30	-6	.1	-5	.0	1.4	129	6.6	122	87	52	0	6	3	0	0	0
QUINCY	39	23	50	10	31	-7	.1	-6	.1	.5	43	3.8	96	88	54	0	7	4	0	0	0
ROCKFORD	34	22	43	5	28	-4	.2	-3	.2	.4	44	3.7	112	86	55	0	6	1	0	0	0
SPRINGFIELD	38	27	45	15	32	-6	.1	-6	.1	1.3	109	6.8	150	85	54	0	7	2	0	0	0
IN EVANSVILLE	46	29	59	21	38	-8	.2	-9	.1	1.0	51	7.2	85	80	43	0	5	3	0	0	0
FORT WAYNE	37	24	46	11	31	-5	.4	-3	.2	.9	85	8.0	163	91	60	0	6	6	0	0	0
INDIANAPOLIS	41	27	52	16	34	-5	.3	-6	.1	1.8	117	7.4	118	89	51	0	5	4	0	0	0
SOUTH BEND	35	24	40	11	30	-5	.3	-3	.1	.6	52	6.1	116	88	52	0	6	6	0	0	0
IA DES MOINES	35	19	49	2	27	-8	.1	-3	.1	1.0	138	4.1	153	86	50	0	7	2	0	0	0
SIOUX CITY	34	16	45	2	25	-8	.1	-4	.1	1.1	10	2.9	146	89	51	0	7	1	0	0	0
WATERLOO	31	18	42	0	24	-7	.1	-4	.1	1.1	134	3.0	111	89	67	0	5	3	0	0	0
KS CONCORDIA	44	26	60	14	35	-4	.1	-5	.1	.6	72	3.2	147	87	44	0	6	0	0	0	0
DODGE CITY	47	27	66	13	37	-5	.1	-2	.1	.9	155	4.7	281	89	51	0	4	2	0	0	0
GOODLAND	46	21	63	3	33	-4	.2	-1	.2	.4	91	1.8	147	89	50	0	6	1	0	0	0
TOPEKA	48	26	63	14	37	-4	.1	-5	.1	.6	61	4.1	140	83	39	0	5	0	0	0	0
WICHITA	50	30	65	18	40	-4	.1	-5	.1	.7	67	3.5	119	82	40	0	4	1	0	0	0
KY BOWLING GREEN	49	30	59	20	39	-6	.2	-9	.1	1.3	59	7.1	70	85	46	0	5	3	0	0	0
LEXINGTON	44	29	54	19	37	-7	.7	-3	.3	1.8	100	8.4	106	88	50	0	5	4	0	0	0
LOUISVILLE	47	30	55	21	38	-7	.7	-4	.3	2.4	129	10.1	126	89	50	0	5	4	0	0	0
LA BATON ROUGE	67	44	81	34	56	-4	1.2	.2	1.2	2.9	142	19.1	153	87	39	0	0	1	1	1	1
LAKE CHARLES	66	45	77	34	56	-4	.5	-3	.5	2.1	150	13.2	139	91	46	0	0	1	0	0	0
NEW ORLEANS	66	42	78	34	54	-6	1.2	.0	1.2	2.8	126	11.3	85	93	45	0	0	1	1	1	1
SHREVEPORT	65	42	84	29	53	-2	2.1	1.1	1.2	3.3	192	12.8	126	75	31	0	1	3	2	2	2

Based on 1961-90 normals.

Weather Data for the Week Ending March 13, 1993

STATES AND STATIONS	TEMPERATURE °F						PRECIPITATION						RELATIVE HUMIDITY PERCENT		NUMBER OF DAYS						
	AVERAGE MAXIMUM	AVERAGE MINIMUM	EXTREME HIGH	EXTREME LOW	AVERAGE	DEPARTURE FROM NORMAL	WEEKLY TOTAL, IN.	DEPARTURE FROM NORMAL	GREATEST IN 24-HOUR, IN.	TOTAL, IN., SINCE Mar 1	PCT. NORMAL SINCE Mar 1	TOTAL, IN., SINCE Jan 1	PCT. NORMAL SINCE Jan 1	AVERAGE	MAXIMUM	AVERAGE MINIMUM	TEMP. °F		PRECIP.		
																	90 AND ABOVE	32 AND BELOW	.01 INCH OR MORE	.50 INCH OR MORE	
ME CARIBOU	28	9	38	-6	18	-4	.8	.3	.7	1.1	112	5.3	100	87	52	0	7	2	1		
PORTLAND	34	20	42	10	27	-4	3.0	2.2	1.4	3.5	236	10.1	121	92	57	0	7	5	3		
MD BALTIMORE	46	28	57	23	37	-5	2.6	1.8	2.5	4.7	330	10.3	134	88	45	0	6	3	1		
SALISBURY	51	27	61	20	39	-5	3.1	2.1	3.0	5.6	318	12.1	136	95	47	0	6	2	1		
MA BOSTON	42	30	49	24	36	-1	2.3	1.5	1.8	3.2	209	10.3	118	79	44	0	5	4	1		
CHATHAM	42	30	50	25	36	1	2.1	1.2	1.7	3.1	193	9.2	99	90	57	0	5	4	1		
MI ALPENA	29	11	38	-7	20	-6	.2	.3	.1	.2	30	2.4	64	93	55	0	7	4	4		
DETROIT	35	22	44	12	29	-5	.5	.0	.5	1.2	120	6.4	143	85	51	0	6	3	0		
FLINT	33	20	45	9	26	-6	.4	.1	.1	.5	64	4.5	130	88	55	0	6	6	0		
GRAND RAPIDS	33	20	39	2	26	-6	.4	.1	.3	.5	48	5.8	138	89	53	0	6	3	0		
HOUGHTON LAKE	31	15	42	-7	23	-3	.2	.2	.1	.2	27	2.8	82	91	54	0	7	2	0		
LANSING	34	19	45	0	27	-4	.4	.0	.4	.6	78	5.0	144	93	59	0	7	4	0		
MARQUETTE	27	8	39	-10	18	-3	.6	.0	.2	.6	59	3.7	74	89	57	0	7	6	0		
MUSKEGON	33	20	40	4	27	-5	.4	.1	.3	.4	46	3.9	81	89	52	0	6	4	0		
SAULT ST. MARIE	29	9	42	-6	19	-2	.1	.1	.1	.1	13	2.6	50	96	44	0	7	2	0		
MN ALEXANDRIA	23	5	38	-16	14	-9	.4	.1	.3	.4	88	1.4	70	90	67	0	7	3	0		
DULUTH	29	13	38	-9	21	-1	.2	.2	.1	.2	26	2.4	88	83	44	0	7	4	0		
INT'L FALLS	26	7	38	-17	16	-3	.1	.1	.1	.1	29	.9	47	87	46	0	7	2	0		
MINNEAPOLIS	30	15	46	-3	23	-5	.4	.0	.3	.4	61	2.1	82	91	51	0	7	2	0		
ROCHESTER	27	12	38	-8	20	-7	.3	.1	.2	.3	48	2.3	107	93	57	0	7	3	0		
MS GREENWOOD	61	41	79	28	51	-3	.1	-1.2	.1	.5	22	6.2	53	86	32	0	1	2	0		
JACKSON	64	39	83	25	52	-2	.8	.5	.8	1.6	65	9.7	76	85	30	0	2	1	1		
MERIDIAN	64	38	83	24	51	-4	.7	.9	.7	2.1	74	16.6	124	84	30	0	2	3	1		
MO CAPE GIRARDEAU	50	32	62	18	41	-4	T	-1.1	T	1.0	49	9.7	117	85	40	0	4	0	0		
COLUMBIA	44	25	57	10	35	-5	T	-1.7	T	.8	64	5.1	115	85	41	0	5	1	0		
KANSAS CITY	45	24	61	10	35	-6	T	-1.5	T	.5	52	3.7	119	84	39	0	6	0	0		
SAINT LOUIS	43	29	53	15	36	-7	T	-1.7	T	.0	86	7.5	141	74	43	0	4	2	0		
SPRINGFIELD	50	28	65	14	39	-4	T	-1.8	T	.3	22	5.8	114	75	35	0	4	1	0		
MT BILLINGS	47	24	65	13	35	2	T	-2	T	.7	.8	41	70	31	0	6	1	0			
GLASGOW	36	22	46	12	29	2	T	-1	T	T	13	.6	72	90	53	0	7	1	0		
GREAT FALLS	43	23	60	13	33	1	T	-2	T	2	1.9	.9	81	39	0	6	1	0			
HAVRE	38	22	49	15	30	1	T	-1	T	T	0	.6	57	88	48	0	7	0	0		
HELENA	41	23	49	11	32	0	T	-2	T	T	0	1.8	138	83	45	0	7	0	0		
KALISPELL	42	21	50	12	32	0	T	-2	T	.1	17	2.4	77	86	38	0	7	0	0		
MILES CITY	41	22	52	13	32	1	T	.3	T	.4	175	1.3	107	93	53	0	7	2	0		
MISSOULA	45	22	53	18	33	-1	T	-2	T	T	2	1.5	63	85	42	0	7	0	0		
NE GRAND ISLAND	42	23	53	9	33	-3	T	-4	T	.5	74	3.1	167	89	47	0	7	0	0		
LINCOLN	42	22	56	10	32	-4	T	-4	T	.8	114	2.1	104	92	48	0	7	0	0		
NORFOLK	39	21	50	6	30	-3	T	-4	T	T	4	3.0	154	83	51	0	7	1	0		
NORTH PLATTE	43	21	56	5	32	-3	T	-1	T	.1	29	2.3	185	88	42	0	7	1	0		
OMAHA	37	20	51	3	29	-6	T	-1	T	.5	69	2.4	108	81	49	0	7	2	0		
SCOTTSBLUFF	42	21	60	7	31	-3	T	-1	T	.1	28	2.2	164	89	45	0	7	1	0		
VALENTINE	40	19	53	3	30	-4	T	-3	T	.3	52	1.4	95	87	44	0	7	0	0		
NV ELY	43	17	51	6	30	-3	T	-2	T	.0	37	3.7	206	80	38	0	7	2	0		
LAS VEGAS	73	47	77	43	60	5	T	-1	T	.0	0	4.1	365	65	22	0	0	0	0		
RENO	65	37	70	29	51	9	T	-2	T	T	0	3.7	152	73	23	0	1	0	0		
WINNEMUCCA	59	35	65	32	47	8	T	-1	T	.2	77	2.8	165	80	36	0	2	1	0		
NH CONCORD	37	20	46	9	29	-1	T	.9	T	.3	.7	1.1	95	4.2	68	92	45	0	6	5	1
NJ ATLANTIC CITY	48	28	62	19	38	-2	2.4	1.6	2.4	5.3	357	10.3	129	88	45	0	6	1	1		
NM ALBUQUERQUE	61	30	73	16	46	0	T	-1	T	T	10	2.8	243	68	21	0	4	0	0		
CLOVIS	60	29	77	11	44	-2	T	-1	T	.1	19	.9	82	77	27	0	4	0	0		
ROSWELL	66	34	83	23	50	0	T	-1	T	T	20	1.0	100	60	19	0	3	1	0		
NY ALBANY	36	24	45	10	30	-2	1.9	1.2	1.6	1.9	164	7.0	119	87	47	0	7	3	1		
BINGHAMTON	31	17	42	4	24	-6	1.4	.8	.9	1.8	159	6.6	113	93	49	0	7	5	1		
BUFFALO	32	17	42	-1	24	-7	1.1	.6	.7	1.7	160	8.0	131	89	49	0	7	6	1		
NEW YORK	43	33	51	28	38	-2	2.6	1.8	2.4	3.7	258	10.0	137	82	46	0	3	2	1		
ROCHESTER	32	18	45	9	25	-7	1.2	.7	.9	1.6	173	5.5	107	93	51	0	6	4	1		
SYRACUSE	33	19	44	0	26	-6	1.9	1.3	1.4	1.9	180	7.4	134	89	51	0	6	5	1		
NC ASHEVILLE	52	28	73	18	40	-6	1.8	.5	1.4	2.7	111	8.6	79	85	39	0	5	2	1		
CHARLOTTE	59	37	76	24	48	-1	2.1	1.1	1.6	3.8	198	12.7	134	62	33	0	1	2	2		
GREENSBORO	55	32	74	23	43	-4	2.1	1.3	1.8	4.5	286	11.6	143	69	38	0	3	2	1		
HATTERAS	61	41	69	35	51	1	3.0	2.0	2.5	4.1	223	15.1	134	85	51	0	0	2	1		
NEW BERN	66	37	79	31	51	0	1.4	.5	1.1	2.7	159	11.7	114	87	33	0	2	2	1		
RALEIGH	60	34	79	27	47	-2	1.5	.6	1.1	4.3	256	11.0	124	74	30	0	3	2	1		
WILMINGTON	67	39	81	31	53	2	1.8	.8	1.7	3.2	162	11.9	108	85	33	0	1	2	1		
ND BISMARK	35	19	50	5	27	2	.2	.0	.1	.2	71	.8	70	86	52	0	6	3	0		
FARGO	26	9	42	-10	18	-5	.4	.2	.4	.4	114	1.4	93	87	60	0	7	2	0		
GRAND FORKS	26	9	40	-9	17	-4	.3	.1	.3	.3	76	.6	41	91	66	0	7	1	0		
WILLISTON	35	21	47	8	28	2	.1	.0	.1	.1	61	.6	50	87	49	0	6	3	0		
OH AKRON-CANTON	33	23	47	15	28	-7	.9	.2	.4	2.2	165	8.1	142	95	65	0	6	6	0		
CINCINNATI	41	30	51	19	36	-5	.4	-.5	.1	1.7	99	8.9	128	86	51	0	4	6	0		
CLEVELAND	34	24	46	15	29	-6	.5	-.2	.2	1.7	147	8.7	162	90	61	0	6	7	0		
COLUMBUS	39	27	51	14	33	-3	.8	.1	.3	1.7	139	7.7	141	88	55	0	6	5	0		
DAYTON	39	27	50	16	33	-5	.5	-.2	.2	2.0	149	8.7	154	89	53	0	6	5	0		

Based on 1961-90 normals.

Weather Data for the Week Ending March 13, 1993

STATES AND STATIONS	TEMPERATURE °F						PRECIPITATION								RELATIVE HUMIDITY, PERCENT		NUMBER OF DAYS				
	AVERAGE MAXIMUM	AVERAGE MINIMUM	EXTREME HIGH	EXTREME LOW	AVERAGE	DEPARTURE FROM NORMAL	WEEKLY TOTAL, IN.	DEPARTURE FROM NORMAL	GREATEST IN 24-HOUR, IN.	TOTAL, IN., SINCE Mar 1	PCT. NORMAL SINCE Mar 1	TOTAL, IN., SINCE Jan 1	PCT. NORMAL SINCE Jan 1	AVERAGE	MINIMUM	90 AND ABOVE	32 AND BELOW	.01 INCH OR MORE		.50 INCH OR MORE	
																		TEMP. °F	PRECIP.		
TOLEDO	35	23	46	12	29	-5								94	59	0	6	5	0	0	
YOUNGSTOWN	33	22	46	14	27	-7	1.3	.1	.4	1.6	159	6.5	144	92	57	0	7	5	1	1	
OK OKLAHOMA CITY	57	34	77	22	46	-3								235	8.6	158	92	57	0	0	
TULSA	56	33	80	20	45	-4								27	4.8	128	78	33	3	0	
OR ASTORIA	57	42	62	39	50									13	5.1	106	82	34	0	0	
BURNS	35	24	39	17	30									70	2.7	123	95	72	7	1	
MEDFORD	67	43	74	36	55									25	4.2	78	91	54	0	0	
FENDLETON	45	31	49	27	38									78	3.0	95	92	55	0	0	
PORTLAND	58	38	62	31	48									64	4.8	45	78	48	0	0	
SALEM	59	40	64	34	49									51	7.3	60	83	46	0	0	
PA ALLENTOWN	42	26	50	18	34									255	8.2	110	85	52	0	0	
ERIE	33	20	47	13	27									150	7.2	126	94	60	0	0	
HARRISBURG	42	29	50	23	36									234	7.1	99	85	49	0	0	
PHILADELPHIA	45	30	57	25	38									255	8.6	108	82	45	0	0	
PITTSBURGH	38	25	50	16	31									126	7.7	121	94	61	0	0	
SCRANTON	38	24	46	14	31									210	5.2	98	94	51	0	0	
RI PROVIDENCE	43	29	49	23	36									224	11.2	123	84	44	0	0	
SC CHARLESTON	69	46	81	32	57									124	14.3	167	85	35	0	0	
COLUMBIA	64	35	80	28	50									144	13.8	129	83	35	0	0	
FLORENCE	69	40	83	30	54									100	10.8	127	81	30	0	0	
GREENVILLE	57	32	73	25	45									205	15.4	143	79	33	0	0	
SD ABERDEEN	34	19	46	3	26									18	1.2	73	87	55	0	0	
HURON	37	16	50	-1	27									11	.9	56	90	51	0	0	
RAPID CITY	38	22	50	9	30									14	1.4	110	85	44	0	0	
SIOUX FALLS	32	14	41	-5	23									4	1.5	90	91	51	0	0	
TN CHATTANOOGA	57	34	75	24	45									115	11.8	96	86	37	0	0	
KNOXVILLE	54	33	71	21	43									135	9.2	89	85	43	0	0	
MEMPHIS	58	40	75	26	49									35	6.8	66	60	31	0	0	
NASHVILLE	51	33	65	23	42									82	7.5	80	72	37	0	0	
TX ABILENE	64	38	88	21	51									87	2.6	96	71	26	0	0	
AMARILLO	56	25	77	9	41									92	1.5	99	76	30	0	0	
AUSTIN	68	45	84	32	56									70	7.1	152	76	35	0	0	
BEAUMONT	69	45	80	34	57									136	15.9	167	95	42	0	0	
BROWNSVILLE	77	53	83	39	65									471	5.7	200	90	50	0	0	
CORPUS CHRISTI	76	48	86	36	62									582	4.7	114	93	43	0	0	
DEL RIO	75	46	92	31	61									5	1.4	47	57	30	1	0	
EL PASO	71	38	79	26	54									0	0	173	49	17	0	0	
FORT WORTH	66	43	88	30	55									94	8.6	159	72	27	0	0	
GALVESTON	68	53	75	38	60									157	14.5	224	82	52	0	0	
HOUSTON	69	46	82	30	58									295	12.5	142	83	42	0	0	
LUBBOCK	63	30	83	13	46									42	1.6	111	63	19	0	0	
MIDLAND	65	34	84	14	50									110	2.3	188	57	20	0	0	
SAN ANGELO	66	39	88	21	52									25	1.9	83	66	24	0	0	
SAN ANTONIO	70	41	86	28	56									157	6.0	145	78	32	0	0	
VICTORIA	73	49	84	34	61									206	8.8	124	90	44	0	0	
WACO	66	43	88	30	54									222	8.4	180	81	33	0	0	
WICHITA FALLS	64	36	85	24	50									137	5.9	138	76	29	0	0	
UT CEDAR CITY	59	28	65	24	43									24	4.5	210	83	28	0	0	
SALT LAKE CITY	46	34	48	28	40									25	4.8	154	86	57	0	0	
VT BURLINGTON	34	16	46	-1	25									77	4.7	109	87	51	0	0	
VA NORFOLK	58	35	67	29	47									257	11.3	129	78	38	0	0	
RICHMOND	55	30	62	24	43									292	11.8	149	83	46	0	0	
ROANOKE	49	29	60	20	39									327	12.0	169	74	42	0	0	
WA QUILLAYUTE	57	37	60	31	47									81	12.9	40	85	51	0	0	
SEATTLE-TACOMA	58	40	62	34	49									71	5.6	51	68	42	0	0	
SPOKANE	43	25	46	20	34									14	2.4	58	84	41	0	0	
YAKIMA	49	30	53	23	40									97	1.9	84	87	40	0	0	
WV BECKLEY	43	25	53	13	34									280	8.3	115	89	54	0	0	
CHARLESTON	46	28	60	18	37									189	7.7	104	87	47	0	0	
HUNTINGTON	46	29	58	19	38									214	9.0	120	93	48	0	0	
PARKERSBURG	43	27	53	18	35									265	8.6	113	93	57	0	0	
WI GREEN BAY	32	19	41	5	26									37	2.0	69	86	51	0	0	
LACROSSE	31	19	42	0	25									25	2.6	101	87	56	0	0	
MADISON	33	19	42	-3	26									53	3.2	108	86	50	0	0	
MILWAUKEE	34	23	42	10	29									55	4.2	103	82	50	0	0	
WAUSAU	30	16	38	-4	23									49	2.2	86	95	60	0	0	
WY CASPER	40	23	52	7	32									45	1.9	126	77	40	0	0	
CHEYENNE	42	21	58	4	31									65	1.4	123	73	36	0	0	
LANDER	38	18	56	5	28									87	1.7	116	83	48	0	0	
SHERIDAN	42	19	61	2	31									112	1.2	72	84	44	0	0	

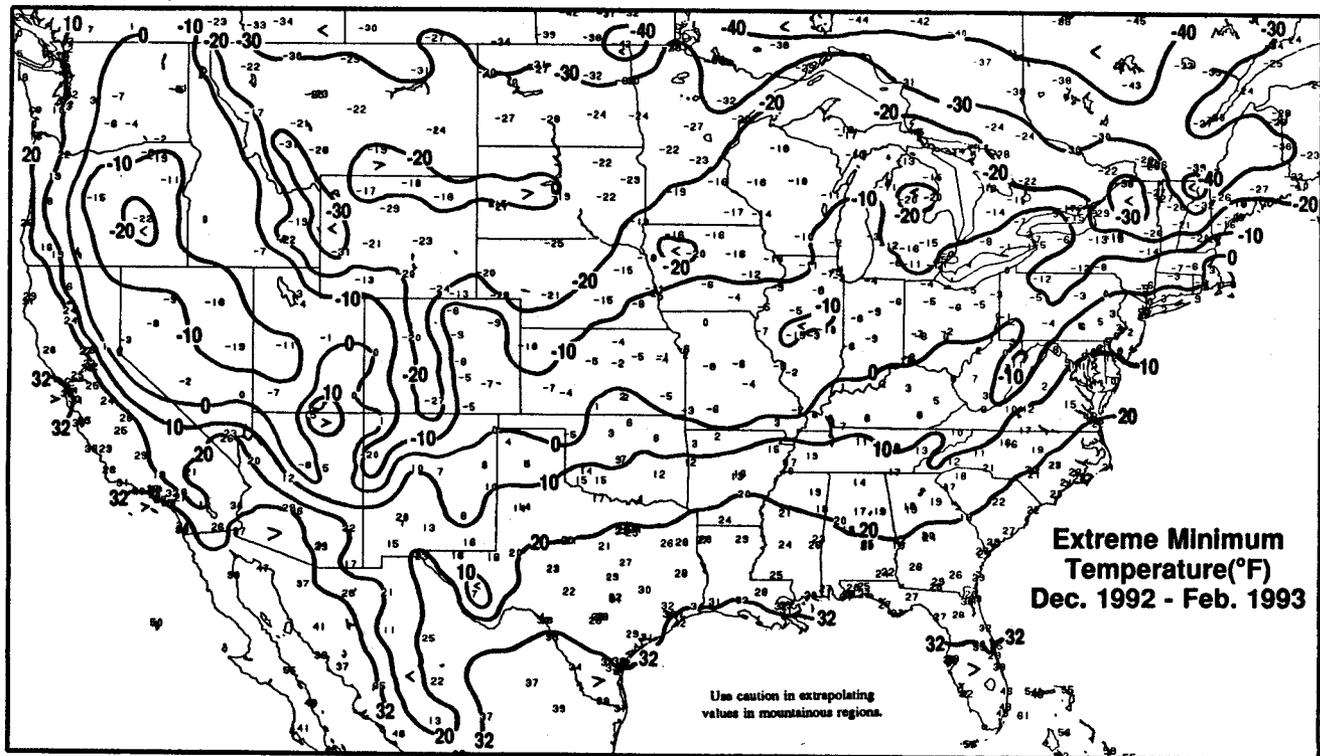
Based on 1961-90 normals.

## HEATING DEGREE DAYS (Base 65° F) March 7 - 13, 1993

(Cumulative totals and departures from normal are for the period July 1, 1992 - March 13, 1993)

STATES AND STATIONS	WEEKLY		CUMULATIVE		STATES AND STATIONS	WEEKLY		CUMULATIVE		STATES AND STATIONS	WEEKLY		CUMULATIVE				
	TOTAL	DEPARTURE	TOTAL	DEPARTURE		TOTAL	DEPARTURE	TOTAL	DEPARTURE		TOTAL	DEPARTURE	TOTAL	DEPARTURE			
AL BIRMINGHAM	129	36	2437	-94	227	SHREVEPORT	84	10	2067	9	297	DAYTON	221	25	4674	-13	470
MOBILE	84	32	1385	-180	-107	ME CARIBOU	326	23	7699	205	280	TOLEDO	249	25	5014	-277	373
MONTGOMERY	96	21	1915	-146	33	PORTLAND	261	16	5881	82	464	YOUNGSTOWN	262	37	5115	-114	477
AK ANCHORAGE	249	-55	8071	-250	240	MD BALTIMORE	195	28	3840	-68	181	OK OKLAHOMA CITY	133	7	3332	83	669
BARROW	532	-48	14124	-440	-647	MA BOSTON	181	22	3596	-38	301	TULSA	140	14	3461	193	913
FAIRBANKS	357	-65	11107	-453	-85	CHATHAM	201	0	4590	169	369	OR ASTORIA	105	-42	3825	114	536
JUNEAU	204	-41	6379	-413	557	MI ALPENA	201	-6	4420	-11	284	BURNS	247	42	6726	1438	1719
KODIAK	209	-25	6379	47	260	FLINT	315	30	6497	24	496	MEDFORD	68	-72	3286	-402	304
NOME	357	-63	10735	297	763	DETROIT	252	26	5072	-197	371	PENOLETON	189	35	4879	714	1159
AZ FLAGSTAFF	165	-57	5084	-277	187	GRAND RAPIDS	271	23	5530	-70	379	PORTLAND	117	-23	3515	-25	716
PHOENIX	0	-45	878	-416	114	HOUGHTON LAKE	269	28	5531	12	446	SALEM	110	-37	3559	-111	589
PRESCOTT	110	-53	3445	-341	38	LANSING	293	11	6360	-125	455	PA ALLENTOWN	215	13	4667	-66	503
TUCSON	16	-47	1348	-164	55	MARQUETTE	267	25	5663	89	436	ERIE	266	30	4790	-447	328
WINSLOW	130	-21	4037	35	-132	SAULT ST MARIE	328	18	7421	84	315	HARRISBURG	203	16	4358	-38	446
YUMA	0	-28	685	-215	210	MN ALEXANDRIA	267	25	5421	-15	449	PHILADELPHIA	186	9	3762	-318	254
AR FORT SMITH	110	-6	3022	-41	488	DULUTH	319	12	7204	86	438	PITTSBURGH	234	32	4592	-249	358
LITTLE ROCK	107	2	2828	29	470	INT'L FALLS	353	45	7413	-10	744	SCRANTON	238	19	4913	-195	261
CA BAKERSFIELD	8	-54	1684	-130	-117	MINNEAPOLIS	307	-8	7555	-205	265	RI PROVIDENCE	204	-4	4632	-36	485
EUREKA	81	-38	2820	-428	152	ROCHESTER	340	6	8289	-177	546	SC CHARLESTON	52	-23	1622	-313	126
FRESNO	10	-72	1894	-327	-30	SAINTE CLOUD	296	23	6546	-23	435	COLUMBIA	105	17	2343	-5	313
LOS ANGELES	23	-33	882	-247	182	JACKSON	316	35	6951	231	653	FLORENCE	74	-15	2045	-238	172
REDDING	31	-56	2182	-9	209	MUSKOGON	319	21	7243	-28	570	GREENVILLE	142	29	2973	152	530
SACRAMENTO	25	-63	2087	-149	105	HURON	96	4	2214	-224	158	SD ABERDEEN	269	-14	7209	218	1222
SAN DIEGO	15	-31	787	-153	186	MERIDIAN	91	11	1933	-226	68	HURON	267	-4	6787	163	1171
SAN FRANCISCO	37	-48	1766	-509	25	MO CAPE GIRARDEAU	95	12	1935	-293	48	RAPID CITY	245	4	6462	716	1630
STOCKTON	16	-68	2008	-211	11	COLUMBIA	168	19	3772	-30	612	ST LOUIS	293	30	6687	226	1026
CO DENVER	189	-11	5073	375	610	KANSAS CITY	212	31	4521	138	742	TN CHATTANOOGA	136	15	2842	-265	187
GRAND JCT.	153	-21	4488	-244	-254	SAINT LOUIS	211	29	4697	231	813	KNOXVILLE	150	27	3184	14	310
FUEBLO	188	4	5065	617	717	SPRINGFIELD	202	32	4075	-116	712	MEMPHIS	111	2	2695	-143	334
CT BRIDGEPORT	195	-6	4335	12	337	MT BILLINGS	181	22	3937	11	611	NASHVILLE	160	30	3126	-130	322
HARTFORD	226	12	5109	101	526	GLASGOW	206	-24	5998	359	1434	TX ABILENE	103	19	2345	-4	19
DE WILMINGTON	192	15	3915	-180	329	GREAT FALLS	253	-40	7478	299	1727	AMARILLO	167	24	3993	430	577
DC WASHINGTON	175	26	3551	58	460	HAYVE	222	-25	6570	558	1693	AUSTIN	62	7	1458	-168	127
FL APALACHICOLA	47	1	932	-372	-219	HELENA	244	-30	7350	441	1806	BEAUMONT	57	13	1189	-188	-14
DAYTONA BEACH	19	-14	579	-257	-84	KALISPELL	230	-16	6960	619	1332	BROWNSVILLE	23	5	421	-171	-143
FORT MYERS	1	-13	122	-308	-74	MILES CITY	233	-10	6861	376	1245	CORPUS CHRISTI	36	9	744	-179	-30
JACKSONVILLE	24	-20	1066	-242	-71	MISSOULA	232	-21	6765	394	1778	DEL RIO	41	2	1211	-219	-17
KEY WEST	0	-3	8	-108	-6	NE GRAND ISLAND	219	-9	6661	561	1344	EL PASO	72	-9	2171	-241	-96
MIAMI	0	-4	25	-169	-30	LINCOLN	224	2	5927	549	1443	FORT NORTH	77	2	2077	-10	208
ORLANDO	15	-6	390	-243	-66	NORFOLK	232	13	5676	341	1300	GALVESTON	39	-4	876	-286	-89
TALLAHASSEE	46	-4	1172	-343	-231	NORTH PLATTE	243	3	6025	217	1184	HOUSTON	59	13	1226	-211	-48
TAMPA	21	-5	391	-313	-105	OMAHA	232	4	6112	524	1438	LUBBOCK	128	11	3021	-40	148
W. PALM BEACH	1	-5	80	-181	-56	SCOTTSDUFF	251	38	5597	389	1002	MIDLAND-ODESSA	106	21	2429	42	-79
GA ATLANTA	105	5	2465	-180	364	VALENTINE	233	14	6183	859	1456	SAN ANGELO	94	21	2096	-10	17
AUGUSTA	91	6	2139	-155	122	NV ELY	247	-3	6394	479	1249	SAN ANTONIO	65	17	1346	-150	65
MACON	86	10	2058	-13	218	LAS VEGAS	244	14	6227	457	945	VICTORIA	41	3	1012	-182	22
SAVANNAH	39	-25	1501	-263	89	RENO	35	-43	2113	-103	187	WACO	77	9	1906	-29	245
ID BOISE	187	14	5161	590	1021	WINNEMUCA	95	-80	4412	-182	673	WICHITA FALLS	103	1	2666	-19	324
LEWISTON	140	-22	4550	243	809	NH CONCORD	125	-64	5239	340	904	UT BLANDING	142	-51	4481	-367	209
POCATELLO	242	25	6239	708	1159	NY ATLANTIC CITY	254	8	6111	185	621	CEDAR CITY	150	-40	4685	22	270
IL CHICAGO	249	29	5276	45	465	NM ALBUQUERQUE	186	4	4074	-7	272	SALT LAKE CITY	175	-5	5012	366	621
MOLINE	246	21	5384	-2	662	ALBUQUERQUE	133	-10	3528	-195	-28	VT BURLINGTON	277	8	6276	-26	251
PEORIA	240	27	5014	-155	501	LOUIS	145	7	3476	41	65	VA LYNCHBURG	165	15	3495	-154	335
QUINCY	238	36	4982	141	758	ROSWELL	102	0	2790	6	-155	NORFOLK	127	-2	2757	-156	254
ROCKFORD	256	18	5659	-26	597	NY ALBANY	245	7	5603	34	429	RICHMOND	154	14	3244	-145	387
SPRINGFIELD	227	31	4563	-167	454	BINGHAMTON	285	33	5990	219	803	ROANOKE	178	31	3638	4	521
IN EVANSVILLE	190	28	3821	-208	337	BUFFALO	284	43	5337	-3	390	WA COLVILLE	217	12	6076	455	1157
FORT WAYNE	240	23	5043	-100	485	NEW YORK	189	7	3936	-43	476	QUILLAYUTE	126	-35	4159	-73	575
INDIANAPOLIS	215	23	4570	-120	592	ROCHESTER	280	41	5597	288	518	SEATTLE-TACOMA	112	-36	3552	-231	540
SOUTH BEND	246	26	5084	-62	452	SYRACUSE	272	33	5580	201	480	SPOKANE	214	13	5831	474	1216
IA DES MOINES	264	34	5589	129	828	NC ASHEVILLE	171	28	3480	-93	390	YAKIMA	176	5	5323	516	1199
DUBUQUE	265	13	6123	96	660	CAPE HATTERAS	97	-11	1903	-328	156	WV BECKLEY	217	35	---	---	---
SIoux CITY	278	39	6101	308	1067	CHARLOTTE	117	-1	2696	-211	457	CHARLESTON	193	37	3746	-191	378
WATERLOO	282	26	6093	-110	612	GREENSBORO	151	16	3339	24	570	HUNTINGTON	191	37	3766	-159	360
KS CONCORDIA	207	14	5225	538	1335	NEW BERN	94	-7	2219	-274	197	PARKERSBURG	211	43	4110	-12	296
DODGE CITY	195	19	5036	821	1320	RALEIGH-DURHAM	124	-3	2919	-127	397	WI GREEN BAY	274	-1	6278	-209	406
GOODLAND	219	11	5662	779	1342	WILMINGTON	80	-9	2046	-144	158	LA CROSSE	278	18	6191	-8	474
TOPEKA	194	14	4609	106	912	ND BISMARCK	265	-30	7494	167	1293	MADISON	271	15	5925	-256	434
WICHITA	170	6	4293	215	919	FARGO	330	20	7676	89	974	MILWAUKEE	254	7	5406	-348	434
KY BOWLING GREEN	178	30	3588	-101	391	GRAND FORKS	332	8	7880	-85	849	WAUSAU	289	1	6809	-65	349
LEXINGTON	197	30	3888	-148	400	WILLISTON	257	-42	7759	320	1558	WY CASPER	231	-12	5995	126	805
LOUISVILLE	185	28	3611	-228	463	OH AKRON-CANTON	253	38	4995	-19	445	CHEYENNE	234	-6	5736	227	700
LA BATON ROUGE	68	18	1319	-236	-1	CLEVELAND	251	36	4798	-141	414	LANDER	260	18	6986	835	1171
LAKE CHARLES	68	18	1291	-175	29	COLUMBUS	225	33	4451	-225	411	SHERIDAN	238	-5	6655	575	1527
NEW ORLEANS	76	28	1111	-277	-164	CINCINNATI	204	25	4331	-39	559						

Based on 1961-90 normals.



Much of the Nation, except the Southwest, experienced its coldest weather of the winter during February. In Alaska, the coldest airmass since February 1989 settled in during late January and early February before nosing toward the contiguous States. By February 7, readings of  $-14^{\circ}\text{F}$  in Albany, NY, and  $-16^{\circ}\text{F}$  in Portland, ME, were the lowest in 6 and 9 years, respectively. Ten days later, temperatures dropped to  $-16^{\circ}\text{F}$  in Goodland, KS, and to  $-21^{\circ}\text{F}$  in North Platte, NE. Daytona Beach, FL ( $32^{\circ}\text{F}$ ), had its first freeze of the winter on February 18. Even by the end of the meteorological winter, cold air refused to ease its grip, as Burns, OR, noted  $-22^{\circ}\text{F}$  on February 28.

## Winter Weather Review

**HIGHLIGHTS:** Heavy precipitation ended the 6-year drought in California, but caused considerable flooding in the Southwest. Excessive wetness also plagued the central Plains. Long-term drought was whittled down to encompass only the Northwest. The northwestern quarter of the Nation was also host to the coldest air during the winter of 1992-93, with temperatures averaging more than  $5^{\circ}\text{F}$  below normal. In contrast, most of the eastern and southern tier States noted near-to above-normal temperatures.

**DECEMBER:** After an extremely dry November, California welcomed 6 days of heavy rain and snow beginning on December 6. One of California's disturbances traveled eastward and linked with polar jet stream energy to form a massive storm along the Middle Atlantic coast by December 11. Snowfall was measured in feet in the central and northern Appalachians, and winds gusted up to 90 mph along the New Jersey coastline.

The polar jet stream also transported unusually cold air out of Alaska and into the Western States, especially after December 20. Temperatures fell into the 20's as far south as southern California's desert areas. Meanwhile, an impressive band of sub-tropical moisture crossed Hawaii and aimed toward the west coast. Lihue, HI, was inundated by 15 inches of rain after December 20. Heavy precipitation returned to California late in the month. As the moisture spread eastward across the cold air, a wintry mess of precipitation plagued the Nation's mid-section.

**JANUARY:** Storms during the first 3 weeks of the month guaranteed California above-normal snowpack, but flooding and mudslides affected southern California and Arizona. A combination of rain, ice, and snow hampered outdoor activities in the central and southern Plains and the Midwest. Rain plagued the Southeast. Dry, cold weather persisted in the Northwest.

Temperatures averaged more than  $10^{\circ}\text{F}$  below in the Northwest's interior valleys, with extreme cold noted during the first half of the month. After January 20, the Nation welcomed a quieter weather pattern, allowing the Northwest to warm slightly, and permitting the Southwest to temporarily recuperate from flooding.

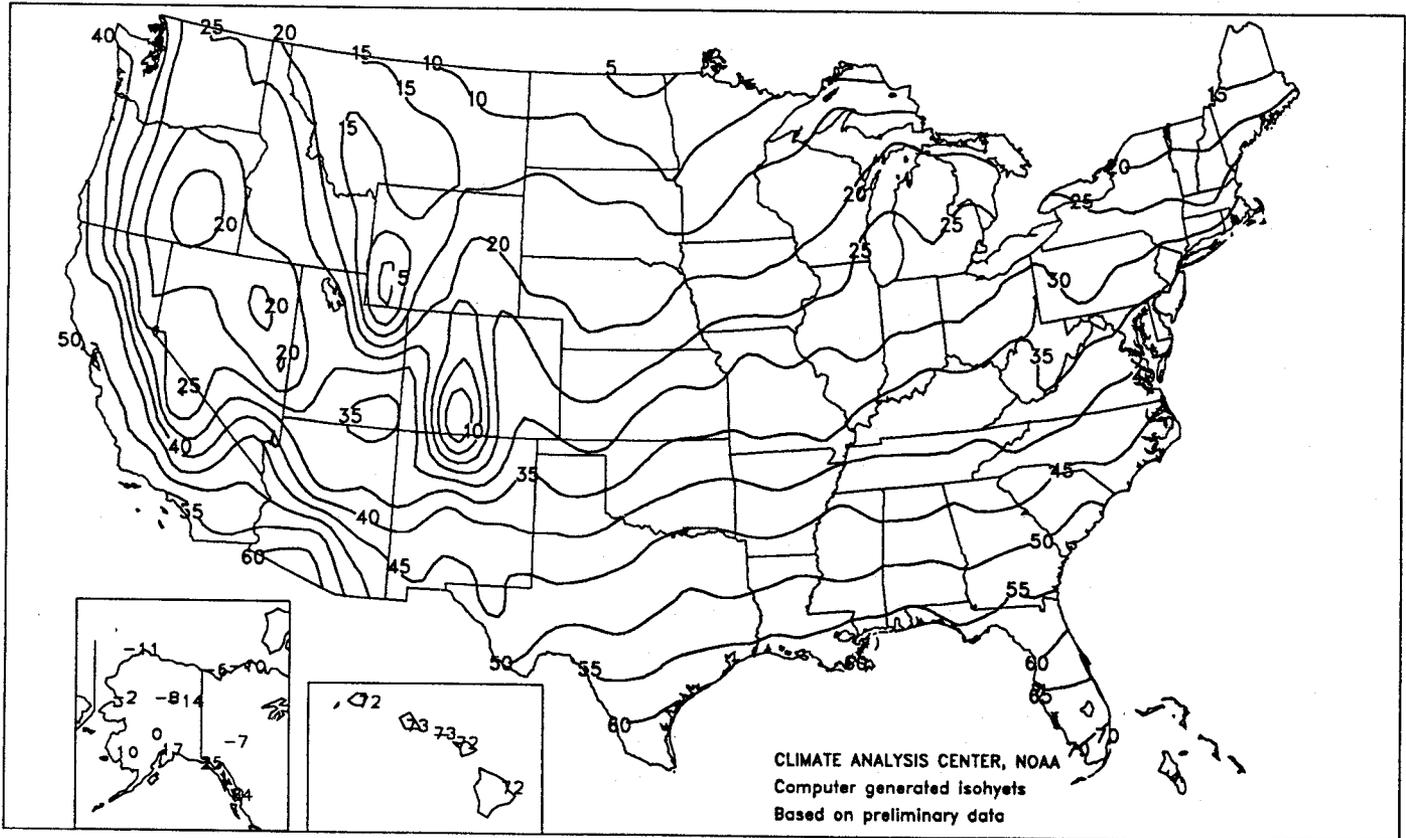
**FEBRUARY:** Bitterly cold air gathered strength over Alaska late in January, and was unleashed toward the contiguous States in early February. As a result, a large part of the Nation (except the Southwest) experienced its coldest air of the winter, and in some cases the coldest in several years, during the month. General weather patterns from the previous winter months persisted through February, including cold air in the Northwest, and wet weather in the Southwest and the central Plains.

A progression of storms returned to the Southwest early in the month. Farther east, considerable snow blanketed the central Plains and Midwest, protecting winter grains from low temperatures. In California, February precipitation accumulated at a rate of nearly twice the normal, leaving the moisture content of the Sierra Nevada snowpack at 180 percent of normal by March 1.



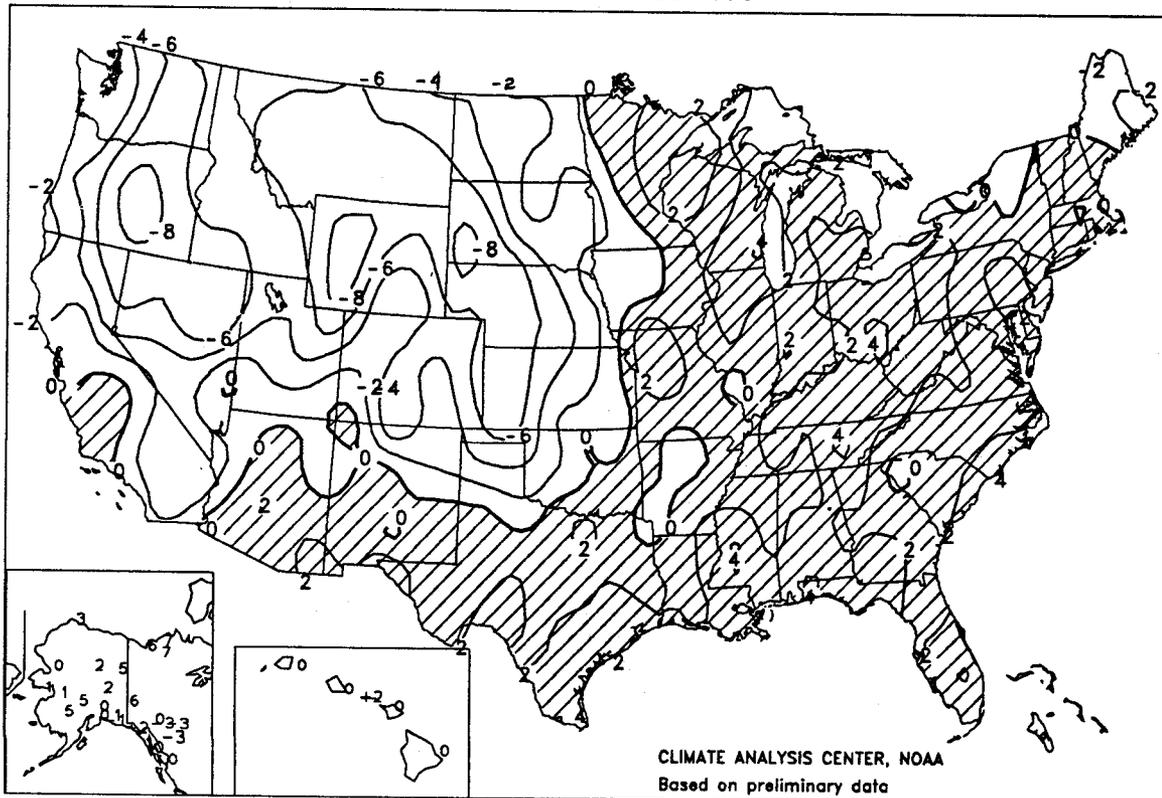
WINTER Average Temperature(°F)

DEC 1992 - FEB 1993



WINTER Departure from Normal Average Temperature(°F)

DEC 1992 - FEB 1993



# Winter Weather in Historical Perspective

Preliminary data for the continental United States indicate that the winter of 1992-93 was unusually wet and cold. The national normalized precipitation index (fig. 1) showed that the United States experienced its sixth wettest winter on record, and its wettest since 1978-79. The winter wetness parade was led by the Southwest, which had its wettest winter during the 98-year period of record (table 1). Similar conditions prevailed in the West region, which registered its fourth wettest winter.

The Nation's average temperature of 31.3°F was nearly 1.5°F below normal (fig. 2), making the winter of 1992-93 the coldest since 1984-85 and the 23rd coldest on record (table 1). In addition, the winter of 1992-93 ended a recent string of mild winters which included last year's record-warm winter.

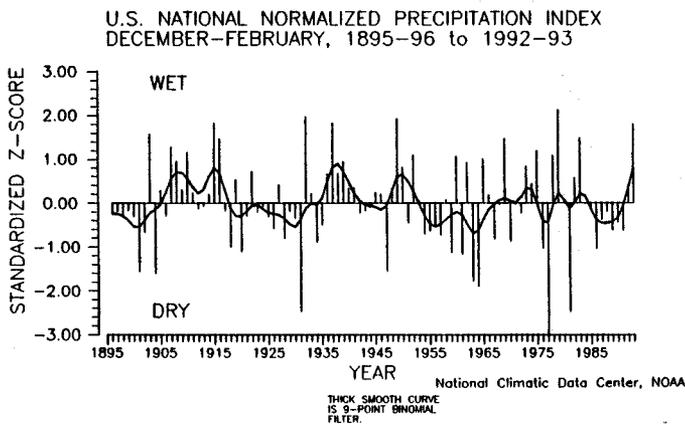
In contrast to the record, or near-record, wetness in the Southwest (fig. 3) and West regions, the Northwest region suffered through a seventh consecutive winter of sub-normal

precipitation (fig. 4). The same polar jet stream that blocked storms from reaching the Northwest also provided a chill, as the region endured its fourth coldest winter (fig. 5). Therefore, the precipitation that fell was often in the form of snow. As a result, winter wheat protection and spring snowmelt prospects are better than last year. Spokane, WA, retained snow cover for a record 113 days, from November 22, 1992, to March 14, 1993.

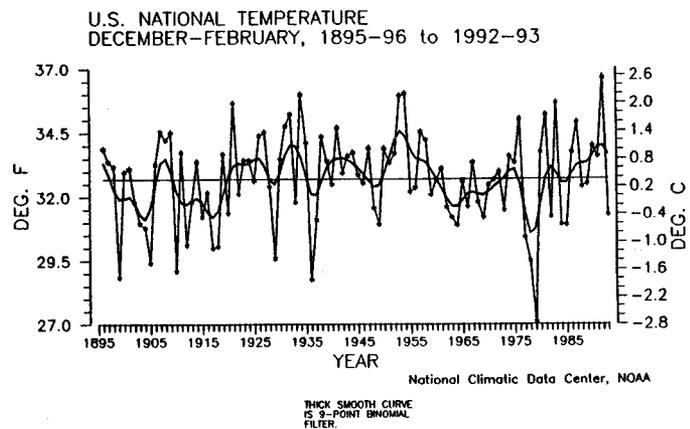
Seven States (ID, MT, NE, NV, OR, WA, and WY) experienced a tenth coldest, or colder, winter (table 2). Oregon had its second coldest winter on record as temperatures averaged up to 10°F below normal in eastern parts of the State.

Eight States notched a tenth wettest, or wetter winter (AZ, CA, IA, KS, NV, NM, OK, and UT). Arizona, which continues to reel from extensive river flooding, had its wettest winter (table 3). California's drought-ending winter precipitation exceeded 20 inches, which was more than twice the normal (fig. 6).

**Figure 1**



**Figure 2**



**TABLE 1. TEMPERATURE AND PRECIPITATION RANKINGS FOR DEC 1992-FEB 1993, BASED ON THE PERIOD 1895-96 TO 1992-93. 1 = DRIEST/COLDEST, 98 = WETTEST/HOTTEST.**

REGION	PRECIPITATION	TEMPERATURE
NATIONAL	93	23
NORTHEAST	48	50
EAST NORTH CENTRAL	72	57
CENTRAL	51	51
SOUTHEAST	66	61
WEST NORTH CENTRAL	47	9
SOUTH	70	40
SOUTHWEST	98	36
NORTHWEST	17	4
WEST	95	10

**Figure 3**

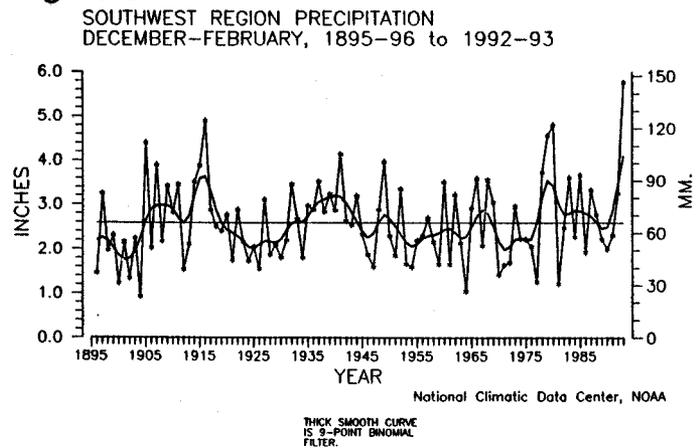


Figure 4

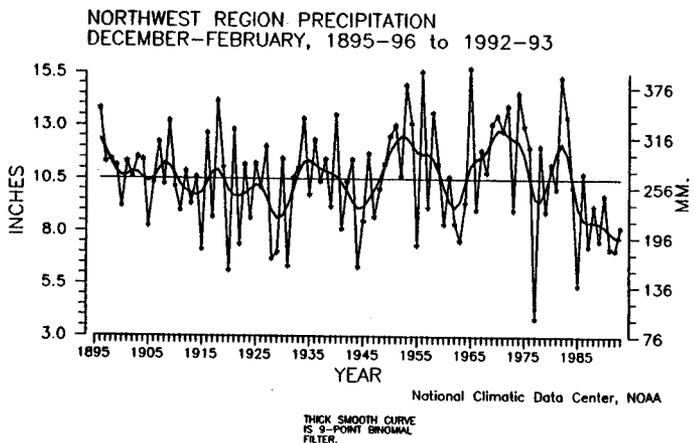


Figure 5

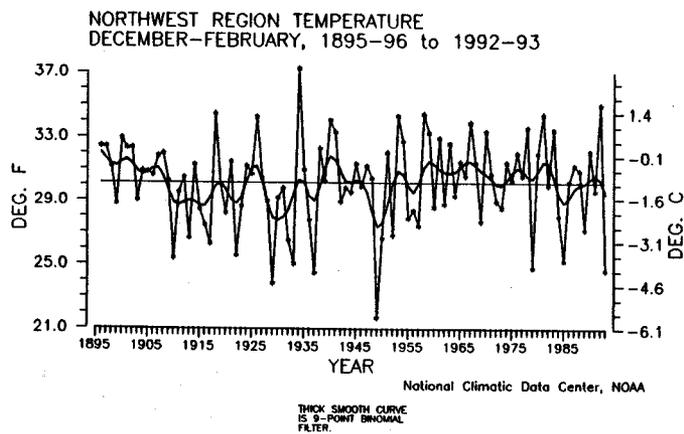


Figure 6

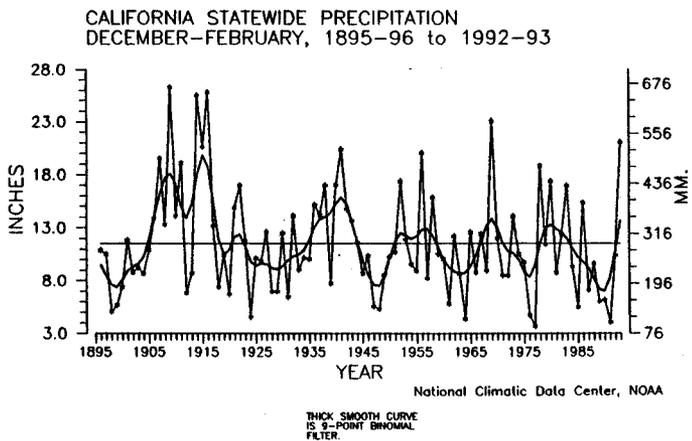
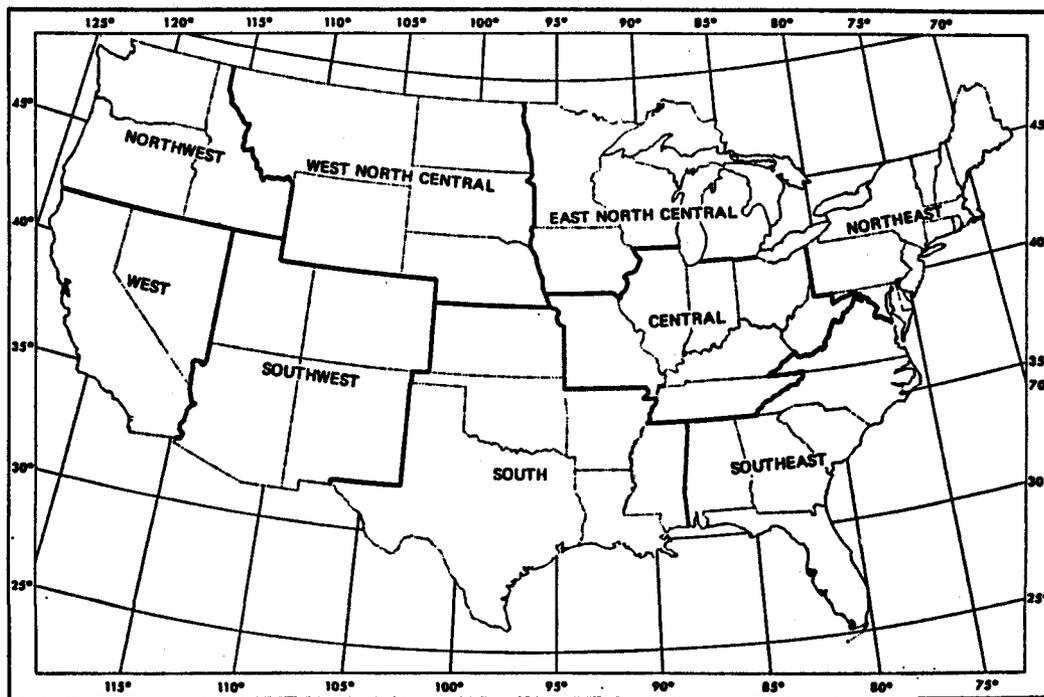


TABLE 2. TEMPERATURE RANKINGS FOR DEC 1992-FEB 1993, BASED ON THE PERIOD 1895-96 TO 1992-93. 1 = COLDEST, 98 = WARMEST.

STATE	RANK	STATE	RANK	STATE	RANK	STATE	RANK
AL	63	IA	37	NE	10	RI	59
AZ	59	KS	11	NV	6	SC	51
AR	35	KY	66	NH	64	SD	14
CA	23	LA	63	NJ	67	TN	57
CO	21	ME	20	NM	57	TX	66
CT	51	MD	65	NY	45	UT	17
DE	54	MA	38	NC	59	VT	64
FL	77	MI	66	ND	38	VA	67
GA	59	MN	56	OH	69	WA	8
ID	7	MS	72	OK	33	WV	64
IL	48	MO	35	OR	2	WI	71
IN	53	MT	7	PA	70	WY	4

TABLE 3. PRECIPITATION RANKINGS FOR DEC 1992-FEB 1993, BASED ON THE PERIOD 1895-96 TO 1992-93. 1 = DRIEST, 98 = WETTEST.

STATE	RANK	STATE	RANK	STATE	RANK	STATE	RANK
AL	66	IA	89	NE	77	RI	86
AZ	98	KS	89	NV	97	SC	86
AR	29	KY	25	NH	11	SD	62
CA	94	LA	71	NJ	73	TN	19
CO	71	ME	18	NM	96	TX	74
CT	49	MD	64	NY	62	UT	97
DE	38	MA	64	NC	63	VT	26
FL	68	MI	56	ND	63	VA	67
GA	41	MN	68	OH	56	WA	7
ID	54	MS	50	OK	95	WV	35
IL	86	MO	81	OR	24	WI	70
IN	57	MT	18	PA	56	WY	60



## National Agricultural Summary

March 8 - 14, 1993

**HIGHLIGHTS:** One of the largest winter storms on record battered the southern and eastern parts of the Nation the last part of the week. Snow and high winds damaged crops, stressed livestock, and brought a halt to many outside farming activities from Alabama to Maine. Heavy rains from Texas to Florida delayed field activities. Below-normal temperatures followed the storm. The cold weather caused further damage to fruit and vegetable crops in the Southeast.

**SMALL GRAINS:** Snow cover for the winter wheat crop remained adequate across the upper Midwest and northern Plains. Wheat condition in the Southeast and Northwest remained mostly fair to good. In Kansas, 95 percent (%) of the crop rated good to excellent. The Oklahoma crop rated mostly fair. The Texas wheat condition rated 74% of normal, compared with 86% last year. Warmer weather and sunny skies allowed small grains to grow rapidly in California and Texas. However, freezing temperatures at the end of the week retarded crop progress in Texas. Russian wheat aphids caused problems in the Texas High Plains. Central Texas' small grain fields had some problems with rust and powdery mildew. Wheat, in southern Kansas and western Oregon, started to green. Oats, barley, and rye remained in fair to good condition in the Southeast.

**COTTON:** Cotton field preparations advanced in Arizona, California, and Oklahoma. Cotton planting continued in southwestern Arizona and started in the California desert. Rain at the end of the week delayed completion of planting in the Rio Grande Valley of Texas. Rain also delayed planting in other areas of Texas. Some flooded fields in the Coastal Bend of Texas may need replanting.

**OTHER FIELD CROPS:** Alfalfa harvest activities gained momentum in Arizona and increased in southern California. Onion transplanting neared completion in New Mexico. The onion crop condition in Georgia and New Mexico rated fair to good. Georgia onions suffered wind and freeze damage from the weekend storm. Heavy rains delayed the onion harvest in the Rio Grande Valley of Texas. Onion planting in other areas of Texas continued as conditions allowed. Chile planting began in New Mexico. Freezing temperatures killed tobacco plants in Florida. Cold weather and wind damaged plant beds in Georgia and Florida, and possibly damaged plant beds in South Carolina. Freezing temperatures hit the Louisiana sugarcane crop, but damage is not known. Corn and sorghum planting neared completion in southern Texas. Corn planting was active and sorghum planting began in central Texas. Early-planted sorghum fields in the Coastal Bend of Texas suffered damage from high winds and heavy rains. Maple syrup tapping began in Wisconsin.

**FRUIT AND NUTS:** The winter storm and freeze caused possible peach damage in South Carolina. In Georgia, where half the crop was in bloom, damage from the freeze is not determined yet. In Texas, where the peaches were in full bloom, producers expressed concern over the damage caused by sub-freezing temperatures. Peaches are past full bloom in California. In Florida, the cold temperatures damaged new leaves and growth on the citrus crop. The central area suffered some bloom lost. The cold weather and high winds caused minimum fruit loss in Florida, with mostly grapefruit lost. In Virginia, the cold weather raised fruit prospects. Orange harvest advanced in Arizona, California, and Florida. Puff and rind defects concerned navel orange producers in California. Orchards in Oregon, California, and Washington had insecticides applied. Apple and prune trees showed green tips in California. Fruit tree buds swelled in Oregon. Pecan harvest remained active in Arizona. The California almond crop was past full bloom.

**VEGETABLES:** High winds, rain, and near- or below-freezing temperatures hit major Florida vegetable-growing areas over the weekend. Wind and frost hurt vegetables in northern and central Florida. Damage from wind burn and scarring occurred on crops in central and southern Florida. Low temperatures hurt newly planted vegetables in Texas. In California, planting preparations continued, although wet fields caused delays in some areas. Rains hampered carrot and cabbage harvests in the Rio Grande Valley of Texas. In Arizona, the vegetable harvest continued in western and central areas. Major crops harvested included broccoli, cauliflower, and lettuce. In Florida, tomatoes, cabbage, peppers, and celery harvests advanced. Broccoli, lettuce, and cauliflower harvests continued in California. The asparagus harvest remained active in the westside area of California. Peas, spinach, and lettuce plantings began in Washington. Vegetable plantings neared completion in southern Florida. Vegetable plantings continued in Texas and North Carolina where conditions allowed.

**PASTURES AND LIVESTOCK:** The high winds and cold weather added to livestock stress in the East and South. The cold weather has caused higher-than-normal calving losses in Wyoming, Oregon, Kansas, and Idaho. Hay supplies are tight in Texas and Oregon. Range grazing began in Washington. In several areas of Texas, cattle moved from small grain to native pastures. Nationally, livestock are in fair to good condition.

## State Summaries of Weather and Agriculture

These summaries provide brief descriptions of crop and weather conditions important on a national scale. More detailed data are available in Weather and Crop Bulletins published each Monday by NASS State Statistical Offices in cooperation with the National Weather Service.

**ALABAMA:** Rainfall 0.14 to 2.46 in. north; none to 3.20 in. central; 1.08 to 2.24 in. south. Temperatures 7 to 12° below normal north; 7 to 11° below normal central; 6 to 11° below normal south. Lows 2 to 17° north; 2 to 20° central; 15 to 27° south. Highs 68 to 78° north; 74 to 82° central; 78 to 82° south.

Primary activities: Soil testing; purchasing supplies; harvesting timber; land preparation for spring planting; planting corn, spring vegetables; applying fertilizer; marketing cattle; maintaining farm records, land-use planning, management, repairing machinery, fences; general care of livestock, poultry, catfish.

**ARIZONA:** Sunny, warm throughout the period. Light scattered showers, thunderstorms 11th; central, eastern mountains. Temperatures 2 to 8° above normal. Extremes 17°; 80° higher elevations, 34°; 88° deserts.

Cotton field preparations continued; planting continued southwest 1%, 1% 1992, 1% avg. Alfalfa good. Harvest activities moderate to heavy, all areas except southeastern areas where activities were light. Weed infestations moderate to heavy; insects, disease light. Small grains jointing 60%, 57% 1992, 74% avg. Heading 6%, 8% 1992, 12% avg. Fields in good condition. Vegetable harvest active. Broccoli, broccoflower, cauliflower, lettuce, cilantro, kale, parsley, spinach, available western, central areas. Also available west: Anise, artichokes, asparagus, bok choy, celery, escarole, endive. Leeks, beets, cabbage, kohlrabi, rapini, mixed greens, green onions, turnips available, central. Citrus harvest continued central, western areas. Sweet orange harvest winding down; valencia orange harvest continued. Lemons, grapefruit, tangerines, tangelos available both areas. Pecans harvested eastern areas.

**ARKANSAS:** Cold, dry week, temperatures below normal. Record lows over the weekend. Extremes 8°; 84°. Rainfall none to 0.11 in.

Soil moisture supplies adequate to surplus. Wheat fair to good, making normal progress. Signs of rust emerged in some wheat fields in the Delta. Field activities remained halted. Fuel needed to heat poultry houses remained at normal levels. Producers feeding hay supplies, increased slightly. Livestock good. Pastures good.

**CALIFORNIA:** Warm, dry over most of the State. A few areas in the northwest reported some precipitation near the end of the week, with amounts generally less than one-tenth of an inch.

Good progress field activities, open weather most areas. Small grains, seedling alfalfa growing rapidly; sunshine, warmer temperatures. Few fields barley, oats, new alfalfa seeded. Small grains received herbicide applications, broadleaf weeds. Sugarbeets sprayed aphids, established alfalfa treated weevils. Corn, cotton, safflower, sugarbeets prepared planting, sprayed herbicides. Cotton planting underway, desert areas. Alfalfa hay, sudan grass forage harvests increasing, southern counties. Stone fruits, nuts full bloom. Peaches, almonds past full bloom. Growers applied fungicides. Cutworm, mealybug treatment active grape vineyards. Grape vines began leafing out. Apples, prunes showed green tip. Navel orange picking active. Puff, rind defects concern growers. Valencia orange harvest active desert area. Lemon picking active south coast. Vegetable field preparations active. Some still too wet. Broccoli harvest central coast moderate to heavy. Additional supplies westside, desert regions. Westside lettuce thinned sprayed. Harvest of head lettuce Huron district begin late March. Head, leaf lettuce harvest continued Palo Verde, Coachella valleys. Asparagus harvest active westside, good quality. Cauliflower harvest light, moderately active Santa Maria Salinas-Watsonville. Tomatoes planted under hot caps some San Joaquin Valley areas. Onions, garlic, early planted tomatoes making good progress. Dry, warm weather benefited ranges, pasture. Conditions varied, good to

excellent. Feed growth rapid. Supplemental feeding tapered off. Water supplies plentiful. Livestock excellent. Stockers demand good. Few sheep grazing alfalfa fields, rangeland southern areas.

**COLORADO:** Sunny skies, above normal temperatures on the 8th. Temperatures as much as 20° above normal in the east with readings 60s to the mid 70s. West had readings in the 50s to 60s. A cold front swept through the east accompanied by rain, light snow. Snow spread across the mountains on the 9th, 10th, continued through the 11th. Front dropped temperatures to as much as 20° below normal in the east on the 11th, 12th with readings in the 20s to mid 30s in the mountains, east. The west cooled to the 40s to lower 50s. Temperatures rebounded during the weekend, resulted in normal or above normal temperatures on the 14th with readings in the 50s to lower 60s in the lower elevations with 20s to lower 40s in the mountains.

Days suitable for fieldwork 0.7. Soil moisture 7% short, 65% adequate, 28% surplus. Snowcover, wet fields, cold weather has prevented farmers from getting started with fieldwork. Spring barley 0% seeded, 12% 1992, 10% avg. Oats 0% seeded, 6% 1992, 3% avg. Dry onions 0% planted, 8% 1992, 6% avg. Winter wheat 2% poor, 8% fair, 72% good, 18% excellent. Pasture, range feed good. Livestock good. Calving 47% complete, 44% 1992, 33% avg. Lambing 44% complete, 49% 1992, 35% avg.

**FLORIDA:** Major late winter storm arrived late 12th. Storm brought severe thunderstorms, numerous tornadoes, high winds to Peninsula. Rain 1.00 in. to locally 3.00 in. reported across State. Windy, record breaking cold prevailed behind storm system. Freezing temperatures common north, colder central locations 13th, 14th nights. Scattered frost occurred colder southern locations 14th night, 15th morning. Lows; low to mid 20s Panhandle, mid to upper 20s Big Bend, northeast, upper 20s to mid 30s central, mid to upper 30s interior south, mid 40s near lower southeast coast. Highs; mostly low to mid 80s, first half of week. Temperatures 8° below normal Panhandle, 4 to 8° below normal elsewhere.

Freezing temperatures killed tobacco in fields. Some plant beds damaged by wind, freezing temperatures. Minor damage other field crops. Citrus tree damage limited to new leaves, new growth. Minimum fruit loss, mostly grapefruit. Some bloom lost, peak two weeks away in center of State. Orange harvest 60% complete, grapefruit 55% complete. High winds, 1.00 to 2.00 in. rain, near or below freezing temperatures hit major State vegetable growing areas over weekend. Vine, leafy, newly planted crops most threatened. Damage from wind burn and scarring, central, southern areas. Wind, frost hurt crops central, northern areas. Planting about complete southern areas except for squash, beans. Planting continues central, northern areas. Volume leaders: Tomatoes, cabbage, peppers, potatoes, celery. Also available: Snap beans, carrots, chinese cabbage, sweet corn, cucumbers, eggplant, escarole, romaine, specialty lettuces, radishes, squash, strawberries, cherry tomatoes. State's pasture ratings, 40% fair, 55% good, 5% excellent. Moisture levels adequate to surplus. State's cattle herds mostly good condition.

**GEORGIA:** Late winter storm, freezing temperatures entire State, foot or more snow north, 2 to 4 in. central. Temperatures 7 to 10° below normal north, 1 to 3° below extreme southeast, 6 to 9° below normal elsewhere. Warmest highs beginning of week 70° northeast mountains to low to middle 80s south. Lows end of week middle to upper teens northern half, around 20° central, low 20s south, middle to upper 20s along the coast. Rain or snow 1 to 2 days. Water equivalent of snow 1.00 to 2.00 in.; southeast amounts under 1.00 in.

Days suitable for fieldwork 4.2. Soil moisture 65% adequate, 35% surplus. Corn 8% planted, 9% 1992, NA avg. Tobacco 33% poor, 42% fair, 25% good; 1% transplanted, 1% 1992, NA avg.; wind, cold

damage tobacco beds much of southern areas. Extent of damage under assessment. Wheat 4% poor, 51% fair, 45% good; 28% jointing, 59% 1992, NA avg.; 2% boot, 3% 1992, NA avg.; wet weather causing leaching problems many fields. Other small grains 4% poor, 61% fair, 35% good. Onions 50% fair, 50% good; storm, cold 13th, 14th caused wind, freeze damage, extent of damage unknown. Spraying active to control disease on damaged leaves. Watermelons 4% planted, 4% 1992, NA avg. Apples 100% good; 0% blooming, 3% 1992, NA avg.; concern for early varieties due 13th, 14th extreme cold north. Peaches 4% fair, 81% good, 15% excellent; 54% blooming, 69% 1992, NA avg.; hard freeze 13th and 14th over State, extent of damage still to be determined. Pasture fair to good. Livestock good. Land preparation active drier areas south, southeast. Limited field work north. Applying fertilizer to wheat, some pastures as conditions allow. Wet lots causing dairy-men problems. After 13th, 14th storm farmers digging out, emergency care of livestock, poultry, making repairs to farm buildings.

**HAWAII:** A low pressure system brought strong winds, chilly weather to island chain during week. Some wind-related damage reported residential, farming areas from fast moving system that moved through State on 14th causing high wind warnings on all islands. Temperatures fell to record lows after midweek. Some rainfall windward coasts, mountain slopes. Temperatures low 50s to mid 80s. Rainfall none to 9.00 in.

Brisk, cool weather slowed crop maturity. Growers in exposed areas reported minor damage to crops. Most field operations normal except for spraying activities hindered by gusty winds. Recent showers beneficial to most plantings, dry areas still required irrigation for normal development. Banana, papaya production at normal levels. Watermelon planting underway on Molokai.

**IDAHO:** Temperatures 8° below normal to 1° above normal. Scattered precipitation was reported southwest, south central, southeast. Soil moisture adequate across most of the State. Activities: Planning spring field activities, applying graphite to some winter wheat fields, repairing farm machinery. Hay, roughage supplies short to adequate. Livestock activities: Calving, lambing still in progress. Livestock fair to good. Some counties report high calf death losses due to weather, scours.

**ILLINOIS:** Seasonable temperatures early in the week plunged to record lows late in the week. Temperatures 8 to 10° below normal. Highs low 30s; mid 40s. Lows upper teens to mid 20s. Extremes single digits to teens. Precipitation little to none in southern, central sections, 0.20 in. north.

General farm activities: Tending to livestock, general maintenance of equipment, ordering supplies.

**INDIANA:** Temperatures 9 to 13° below normal. Highs low to mid 30s in the north to the mid 30s to low 40s in the south. Lows from mid teens to low 20s north to the 20s south. Precipitation, liquid equivalent, averaged 0.30 in. or less across much of the State.

Wet, muddy conditions prevailed over much of the State during the majority of the week. Manure hauling continues when, where frozen ground will support machinery. Spring tillage, planting implements are being prepared for the start of planting season. No major problems in livestock. Hay supplies are adequate. Wheat crop remains fair to good, even after the wet, cold weather.

**IOWA:** Temperatures 7 to 11° below normal. Extremes -11° Mason City 14th; 48° Lamoni 8th. Precipitation, mainly snow, trace southwest to 0.31 in. northeast. Average 0.06 in. (normal 0.39 in.).

Grain movement to market is slow. Reports indicate much of the stored corn is still carrying a high level of moisture. Supply of hay, roughage for livestock feed is mostly adequate. Livestock mostly good. However, the weather is hard on newborn calves, their mothers as well as young pigs farrowed in unheated buildings.

**KANSAS:** Temperatures normal to 3° above normal. Light precipitation received west, central; little or no precipitation in east.

One-half day suitable for fieldwork fields still muddy. For State, topsoil moisture 31% adequate, 69% surplus. Subsurface moisture 51% adequate, 49% surplus. Soil moisture adequate or surplus all districts. Wheat good shape. Condition 95% good to excellent, 4% fair, 1% poor. Wheat beginning to green up southern districts. Planting of oats, spring barley delayed by wet field conditions. Stockmen busy fighting mud to tend livestock. Livestock stress, sickness high because of adverse weather. Weather stress causing abnormally high calving losses, reduced rates of gain.

**KENTUCKY:** Unusually cold weather. Precipitation heavy east one third, light west, central. High temperatures mid 40s, 10° below normal. Lows around 30°, 5° below normal. Heavy snow fell over east one-third. Water equivalent of snow 1.00 to 2.00 in., 1.00 in. above the mean. Elsewhere, precipitation 0.25 in., 0.75 in. below normal.

Cold, wet weather stressed livestock, limited field activity. Bitter cold temperatures, high winds at weekend kept livestock producers busy providing feed, water. Soil moisture adequate to mostly surplus. Burley markets closing. Tobacco growers preparing plant beds, UK specialists predict 40% of plants will be produced in float systems. Heavy snow eastern one third of State halted all activities.

**LOUISIANA:** Temperatures 2.3 to 5.0° below normal. Extremes 28°; 84°. Rainfall 0.72 in. southwest to 2.04 in. west central.

Days suitable for fieldwork 4.3. Soil moisture 52% adequate, 48% surplus. Corn 19% planted, 12% 1992, 11% avg.; 1% emerged, 4% 1992, 2% avg. Planting progressed early in the week amid warm temperatures. Rice 0% planted, 4% 1992, 3% avg.; 0% emerged, 1% 1992, 1% avg. Water leveling of rice fields continued. Wheat 13% poor, 50% fair, 37% good; 1% headed, 2% 1992, 3% avg. Wheat remained mostly fair to poor. Spring plowing 23% plowed, 18% 1992, 16% avg. Spring plowing progressed early in the week. Sugarcane 56% fair, 34% good 10% excellent. Off-barring, herbicide applications continued. Livestock 4% poor, 41% fair, 52% good, 3% excellent. Marketing of calves active. Pastures 1% very poor, 22% poor, 15% fair, 62% good. Final top dressing of pastures continued. Vegetables 20% poor, 50% fair, 30% good. Damage to crops from freezing temperatures over the weekend had not been fully assessed.

**MARYLAND & DELAWARE:** **MARYLAND:** Precipitation 0.30 in. Temperature 39.0°, normal 42.2°. Extremes 2°; 61°.

Hay supplies adequate. Cutting firewood, feeding hay and caring for livestock. Small grains good. Tax preparation. Making plans for spring planting. Tobacco growers anticipating opening of market.

**DELAWARE:** Precipitation 0.31 in. Temperature 39.7°, normal 42.7°. Extremes 23°; 64°.

Hay supplies adequate. Pastures, livestock in mostly excellent. Small grains good. Tax preparation. Making plans for spring planting.

**MICHIGAN:** Extremes -10°; 42°. Precipitation none to 0.44 in. across the State.

Corn harvested was approximately at 95%. Most livestock good. Feed supplies remained adequate to short. Activities: Caring for livestock, hauling manure, marketing crops, preparing tax returns.

**MINNESOTA:** Temperatures 6 to 12° below normal for the State. Extremes -24°; 48°. Precipitation 0.01 to 0.15 in. above normal for the southeast, west central, east central, 0.01 to 0.23 in. below normal elsewhere. Snowfall 1 to 5 in. Snow depth at weekend 2 to 10 in.

A return to winter conditions this week with subzero temperatures, snow. Calving has started with most areas reporting livestock in good condition. Considerable amounts of corn still standing in many areas of the State. Quality hay is in short supply. Alfalfa had good snowcover this winter, should come through in good shape.

**MISSISSIPPI:** Temperatures 50°, 3.3° below normal. Extremes 22°; 83°. Northern third of the State received almost no precipitation, the rest of the State received slightly below normal rainfall. State avg.; 0.52 in., 0.87 below normal. Soil temperatures 52°.

Days suitable for fieldwork 3.9, 3.0 1992, 2.0 avg. Soil moisture 72% adequate, 23% surplus, 5% excessive. Corn 5% planted, 10%

1992, 7% avg. Watermelons 2% planted, 2% 1992, 6% avg. Wheat 25% jointing, 34% 1992, 40% avg.; 20% poor, 70% fair, 10% good. Hay supply 96% adequate, 4% surplus. Feed grain 10% short, 86% adequate 4% surplus. Livestock 4% poor, 45% fair, 50% good, 1% excellent. Pasture 88% or normal. Activities: Land preparation.

**MISSOURI:** Temperatures around 5° below normal, coldest 13th, 14th. Virtually no precipitation.

Cold, dry weather alleviated mud problems in farm yards, most work was limited to livestock chores, preparation for spring.

**MONTANA:** Temperatures near to above normal; southwest slightly below normal. Precipitation was none to light with south central receiving up to 0.40 in.; other areas up to 0.10 in.

Winter wheat 1% poor, 29% fair, 63% good, 7% excellent. Winter wheat still 93% dormant, 7% greening. Grazing was 46% open, 41% difficult, 13% closed. More than 93% of livestock receiving supplemental feed. Calving 39% complete, lambing 31% complete.

**NEBRASKA:** Temperatures 3 to 10° below normal. Extremes -4°, 61°. Precipitation less than 0.10 in. Snowcover mostly diminished in east except in sheltered, shady areas. Flooding in these areas has caused considerable damage to roadways, bridges adjacent to rivers, streams. Snowcover still remains in southwestern, western areas.

**NEVADA:** High pressure early in week brought clear skies, warmest temperatures of year with exception of northeast. Weak low pressure spread clouds over State the 8th, 9th. This resulted in a slight decrease in maximum temperatures in west, south, north; east saw maximums raise a bit. Precipitation confined to northern half of State, generally light in west. Temperatures much above normal all areas except northeast division. Extremes -3°, 78°.

Pastures, should benefit from winter moisture. Calving nearing completion, lambing continues. Fieldwork in progress central, southern areas. Main farm/ranch activities: Cleaning irrigation ditches, preparing for spring planting, care, feeding of livestock.

**NEW ENGLAND:** Precipitation 0.32 to 3.10 in. north; 1.40 to 2.86 in. south. Temperatures mid teens to high 20s north; mid 20s to mid 30s south. Maximum temperatures high 30s to low 50s. Minimum temperatures minus 16 to 10° north; 3 to 23° south.

Activities: tending livestock, moving crops from storage.

**NEW JERSEY:** Temperatures much above normal. Extremes 2°, 62°. Rainfall 2.26 in. north, 1.90 in. central; 2.53 in. south. Heaviest 24 hour total 3.09 in. on 13th, 14th. Estimated soil moisture, in percent field capacity, averaged 100% north, 100% central, 99% south. Four inch soil temperatures averaged 34 north, 37 central, 39 south. Heaviest 24 hour snowfall 20 in. on 13th, 14th. Depth of snow on ground 15th ranged from trace amounts along the coast to 20 in. in the north.

Farmers caring for livestock; repairing equipment; preparing for spring planting, plowing snow.

**NEW MEXICO:** Temperatures below normal over the east, near normal elsewhere. Extremes 3° north; 86° south. Precipitation was light with most locations receiving only a trace for the week.

Days suitable for fieldwork 6.3. Soil moisture 37% short, 57% adequate, 6% surplus. Alfalfa 5% poor, 50% fair, 45% good. Irrigated wheat 31% fair, 69% good. Dryland wheat 8% very poor, 27% poor, 40% fair, 25% good with most needing moisture. Chile planting active. Onion transplanting declining with condition fair to good. Lettuce poor to good. Cattle, sheep fair to excellent. Range, pasture 83% of normal.

**NEW YORK:** Blizzard of 1993 highlighted weather. Temperatures much colder than normal, 4 to 8° below average. Extremes -16°; 51°. Small snowfall at midweek dropped 2 to 6 in. That was dwarfed by the weekend blizzard. Snowfall by morning of 12th was 2 to 3 ft. More fell as day progressed. Precipitation for week averaged 1.50 to 2.50 in. of liquid.

Major activities: Caring for livestock, preparing for maple syrup season, machinery maintenance, cutting firewood, snow plowing. Extreme cold, heavy snow made outside activities very difficult. Snow removal, clearing was primary activity over weekend.

**NORTH CAROLINA:** Temperatures 6° below normal to 2° above normal. Largest negative departures occurred in west. Precipitation 5.14 in. at Mast to 0.04 in. at Grayson High.

Days suitable for fieldwork 3.5. Soil moisture 85% adequate, 15% surplus. Crop condition: Pasture 18% poor, 43% fair, 39% good. Winter wheat 5% poor, 36% fair, 59% good. Oats 25% fair, 75% good. Barley 29% fair, 71% good. Rye 5% poor, 27% fair, 68% good. Hay, roughage supplies 4% very short, 15% short, 77% adequate, 4% surplus. Irish potatoes planted 34%, 53% 1992, 40% avg. Cabbage transplanted 35%, 63% 1992, 38% avg. Feed grain supplies 12% short, 88% adequate. Major activities: Topdressing small grains, tobacco plant bed maintenance, preparing land for planting. Other activities: Planting potatoes, cabbage, broccoli; applying herbicide/fertilizer to fruit crops; tending livestock; equipment repair; general farm maintenance.

**NORTH DAKOTA:** Temperatures 5° below normal in the east, central to 2° above normal northwest. Lowest temperature -20° north central; highest precipitation 0.39 in. north central.

Snowcover was sufficient to protect winter wheat, rye, alfalfa. Livestock good, calving was well underway with few problems reported. Supplemental feed supplies were adequate. Grain marketing was normal. Farmers were busy cleaning seed, planning for planting.

**OHIO:** Cloudy, damp weather. Intense storm which moved up the east coast on 13th brought snow, wind, cold. Clear skies, snowcover intensified the cold air, produced many record low temperatures 15th morning; thermometers bottomed out in the single digits. Week averaged colder than normal by 7 to 15°. Highs in the low 30s to low 40s were about 10 to 15° below normal. Lows in the upper teens to middle 20s were about 6 to 10° colder than normal. Canfield recorded the coldest temperature of -6° 15th morning. Precipitation (water equivalent) was 0.20 to 0.60 in. Youngstown reported just over an inch. Snowfall up to 22 in.

Snowcover is adequate to insulate winter wheat. Cold temperatures, high winds have contributed to stress in livestock. Farmers are feeding more hay than usual for this time of year.

**OKLAHOMA:** Temperatures 3° below normal Panhandle to 1° above normal southwest. Precipitation none northeast, central, southwest, south central to 0.32 in. Panhandle.

Days suitable for fieldwork 3.5. Topsoil 39% adequate, 61% surplus. Subsoil 100% adequate. Wheat 1% poor, 67% fair, 32% good; 6% jointing, 45% 1992, 10% avg. Oats 8% jointing, 20% 1992, 7% avg. Barley 3% jointing, 23% 1992, 9% avg. Corn 13% seedbed prepared, 60% 1992, 47% avg.; 3% planted, 0% 1992, 2% avg. Sorghum 4% seedbed prepared, 0% 1992, 17% avg. Soybeans 1% seedbed prepared, 33% 1992, 14% avg. Peanuts 23% seedbed prepared, 17% 1992, 14% avg. Cotton 27% seedbed prepared, 12% 1992, 25% avg. Pastures 90% of normal. Livestock 62% fair, 38% good. Prices for feeder steers steady to \$1.00 per cwt. lower. Feeder heifers were steady. Marketings were average.

**OREGON:** Temperatures warmed to well above normal in western and south central areas. Most locations east of the Cascades continued below normal primarily due to snow-covered ground. Warmer temperatures in south central areas promoted significant snow melt at Lakewiew with snow depth falling from 20 in. on 7th to 3 in. 13th afternoon. Light amounts of precipitation during the week.

Soil moisture mostly adequate statewide. Snow packs normal to above normal. Winter wheat, pastures showing growth western areas. Warming trend in eastern areas, the snow is melting, fieldwork is still delayed. Fruit, nut orchard activities continue with delayed dormant sprays going on, fruit tree buds swelling in western areas. Nurseries busy digging, bailing trees, shrubs for retail sale. Livestock good. Lambing, calving continues, with some calving problems reported in

eastern areas caused by the cold winter. Hay supply short due to heavy snow, eastern areas.

**PENNSYLVANIA:** Below normal temperatures above normal precipitation. Snowfall 1 to 3 feet. High winds, major drifting. Dairy barns inaccessible to trucks some milk has been dumped. Several reports of building damage due to snow weight. Some greenhouse crops lost, livestock killed due to collapsed buildings. Temperature 31°, 1° below normal. Extremes 0°; 31°. Precipitation 1.58 in., 0.83 in. above normal.

Activities: Shoveling snow, caring for livestock.

**PUERTO RICO:** Island rainfall of 0.24 in. was 0.33 in. below normal. Highest rainfall was 2.66 in. at Dos Bocas. Highest 24 hour total 1.94 in. Dos Bocas on 11th. Island temperatures 74 to 76° on the coasts, 68 to 72° interior with mean station temperature 61.6° at Pico Del Este to 79.9° at Roosevelt Roads. Extremes 51°; 91°.

**SOUTH CAROLINA:** Temperatures across the State 1 to 3° above normal. Average precipitation 1.50 in.

Farm activities: Land preparation for corn, other crops continued; possible small grain, tobacco bed, peach damage from storm; pastures average; livestock fair to good.

**SOUTH DAKOTA:** Most of the State had mild, dry weather. Temperatures up to 13° above normal in the northwest. A few places in south were slightly below normal as lingering snowcover helped keep temperatures down. Extremes -8°; 57°. No measurable precipitation fell in the east; light amounts were reported in the west. Warmer weather melted much of the snow with 3 to 7 in. of old snow remaining in the far east; spotty snowcover in the west.

Activities included: Monitoring calving, lambing, livestock care.

**TENNESSEE:** First part of the week had spring-like weather with highs climbing into the 70s. A cold front pushed through the State on the 11th with numerous scattered thunderstorms in the east. Temperatures much below normal were observed towards the end of the week as temperatures failed to climb above freezing on the 13th. For the week, temperatures averaged generally between 5 to 10° below normal. Near blizzard conditions on the 12th, 13th resulted in between 15 to 20 in. of snow in east. Melted precipitation 1.00 to 2.00 in. east to only trace amounts in the west.

Very little activity took place during the week as many fields were too wet in the beginning of the week, snowfall prevented the remainder of the week from being suitable for fieldwork.

**TEXAS:** Dry with above normal temperatures first part week, then powerful, late winter storm triggered thunderstorms mainly eastern two-thirds State. Arctic blast followed; resulting freezing temperatures into South Texas, along Upper Coast. Temperatures single digits Panhandle, mid, upper 30s Lower Rio Grande Valley. Precipitation reported all areas, Trans Pecos, however, amounts below normal western areas State, Upper Coast. Despite cold weekend readings, temperatures averaged above normal, except Southern High Plains, Lower Valley, due warm weather earlier on.

**Crops:** Corn planting near completion South Texas, Rio Grande Valley. Central Texas, planting full swing. Blacklands, East Texas, planting early fields underway, delayed later on by wet conditions. Sorghum planting also nearing completion Rio Grande Valley, getting underway Blacklands, Central Texas. Some early planted fields Coastal Bend suffered damage from high winds, heavy rains, may need replanting. Cotton planting almost complete Rio Grande Valley, delayed late week by rain. Planting other areas State also delayed by wet conditions, cooler temperatures. Some fields Coastal Bend may need replanting. Small grains grew rapidly most areas with early warmer temperatures, sunshine, however, freezing temperatures may have been set back most areas. Russian wheat aphid infestations problem High Plains, rust, powdery mildew plagued some oat, wheat fields Central, South Texas. Several wheat fields Blacklands top dressed with fertilizer. Wheat condition 74% normal, 86% 1992.

**Commercial Vegetables:** Rio Grande Valley, cabbage, onion, carrot harvests delayed by heavy rains. Citrus harvest continued. High Plains, land preparation activities continued, some onions, potatoes planted. East Texas, onion, potato, cabbage planting continued. Freezing temperatures may damage vegetables already planted. Watermelon planting continued. Trans-Pecos, onions, potatoes planted, land preparation activities other vegetable planting continued. Peaches full bloom across most State beginning week. Producers previously worried about lack chill hours, now worried about extent damage from sub-freezing temperatures.

**Range and Livestock:** Supplemental feeding had tapered off areas, increased again with rain, snow, freezing temperatures. Hay supplies extremely short most places. Winter pastures improved warmer temperatures, probably suffered set back from latest cold spell. Grazing conditions improved, several areas cattle moved off small grain pastures, onto native pastures. Lice infestations problem several places, cold wet conditions source stress livestock. Shearing Angora goats continued Hill Country. Overall livestock remained fair, good.

**UTAH:** Temperature maximums 1° above normal, minimums 2° above normal. Precipitation moderate to light in north central region to light elsewhere, except Uinta Basin division where none fell.

Activities were machinery repair, calving, lambing, preparing for spring planting. Some fieldwork underway in the southern areas.

**VIRGINIA:** Temperatures normal the beginning of the week before ending below normal by weekend. Precipitation was above normal with most areas receiving 2.00 in. Snow fell over the State; 1.5 in. at Norfolk to nearly 24.0 in. west.

Days suitable for fieldwork 1.9. Topsoil 3% short, 44% adequate, 53% surplus. Pasture 4% very poor, 15% poor, 64% fair, 15% good, 2% excellent. Wheat 9% poor, 58% fair, 33% good. Barley 14% poor, 48% fair, 38% good. Alfalfa 8% very poor, 2% poor, 83% fair, 7% good. Peach 9% poor, 46% fair, 45% good. Tobacco planted 24% poor, 43% fair, 32% good, 1% excellent. Tobacco plantbeds 67% seeded. Potatoes 30% planted. Calving, lambing, seeding tobacco plantbeds, topdressing small grains, fertilizing, liming land, repairing machinery. Fruit prospects good with cold weather holding buds. Maple syrup production in Highland County continued.

**WASHINGTON:** Temperatures 7° above normal to 3° above normal west; 7° above normal to 2° below normal east. Precipitation none to 0.05 in. west; none to 0.01 in. east.

Days suitable for fieldwork 5.9. Soil moisture 27% short, 73% adequate. Hay, other roughage 10% very short, 27% short, 53% adequate, 10% surplus. Range, pasture 26% very poor, 44% poor, 21% fair, 9% good. Winter wheat dryland 50% fair, 50% good; irrigated 10% fair, 90% good. Barley dryland 60% fair, 40% good; irrigated 5% fair, 95% good. Early indications of spring evident as extremely dry weather pattern persists. Field preparations advanced west, began in a few early, warmer locations east. Peas, spinach, lettuce being planted west. Dormant insecticide applications, tree planting underway in Yakima area fruit districts. Calving/lambing continued, 50% complete some areas. Pasture, range grazing began; fair, poor quality hay commanding premium prices as stocks dwindle.

**WEST VIRGINIA:** Temperature 32°. Extremes 2°; 61°. Precipitation 2.10 in. Snowfall of 1 to 3 feet was common.

Hay feed supplies adequate. Other feed supplies adequate. Cattle good. Sheep good. Wheat condition good. Farm activities: General maintenance, feeding livestock, calving, lambing, bookkeeping.

**WISCONSIN:** Temperature 21°. Extremes -25°; 47°. Snowy conditions, near normal temperatures from the 8th through early on the 11th. Bulk of snow, which added up to 3 to 7 in., fell between the afternoon of the 9th to morning of the 10th. Light snow lingered into the 11th across the south. From the 12th through the 14th, there were scattered snow showers, flurries over the northwest half of the State.

Some maple syrup tapping early in the week. Some manure hauling during the week, a lot of snow plowing. Getting ready for spring.

(Continued to back cover)

### International Weather and Crop Summary HIGHLIGHTS

March 7 - 13, 1993

**FSU-WESTERN:** Unusually cold, dry weather covered dormant winter grains.

**EUROPE:** Rain eased Spanish drought.

**SOUTH ASIA:** Dry weather prevailed over most crop areas in India.

**EASTERN ASIA:** Winter wheat continued greening across the North China Plain. Favorable moisture exists for rice transplanting in southern China.

**SOUTHEAST ASIA:** Beneficial showers covered Thailand and Malaysia.

**AUSTRALIA:** Dryness continued across eastern summer crops areas, aiding early harvesting.

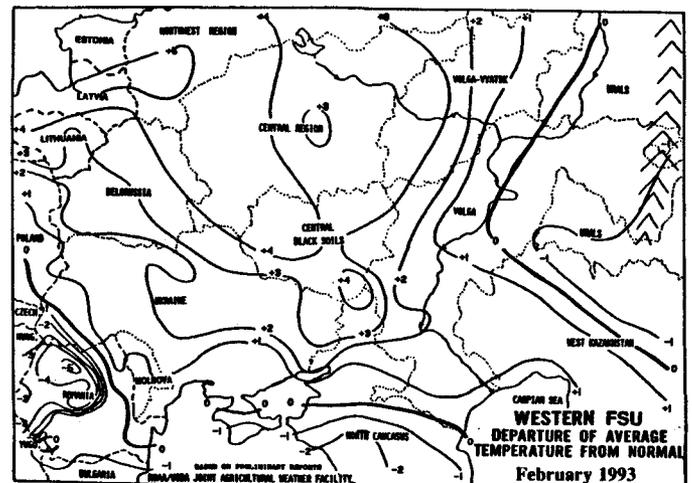
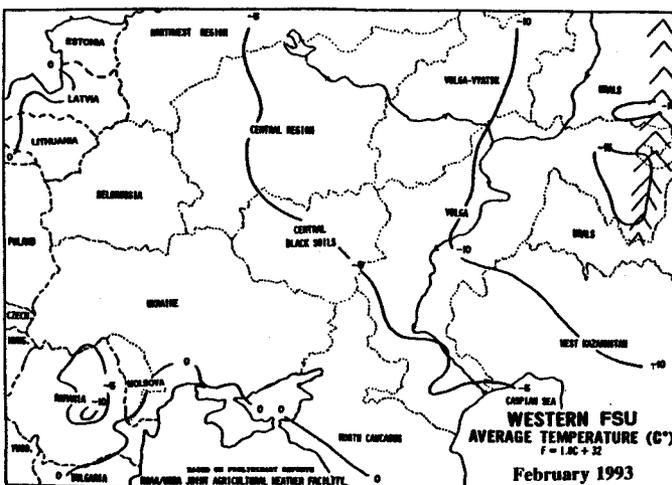
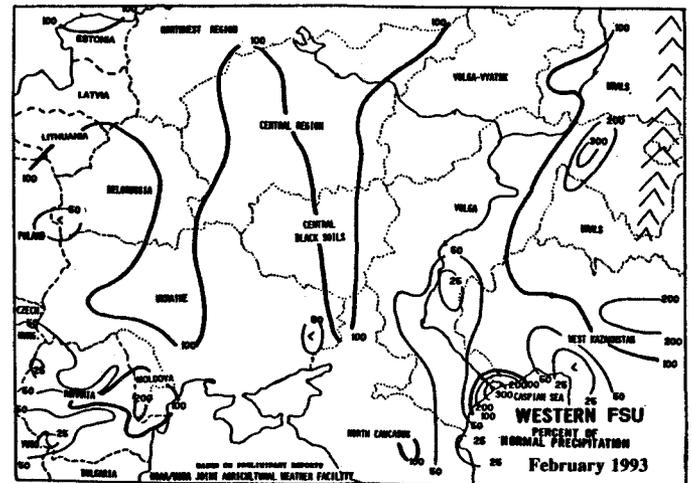
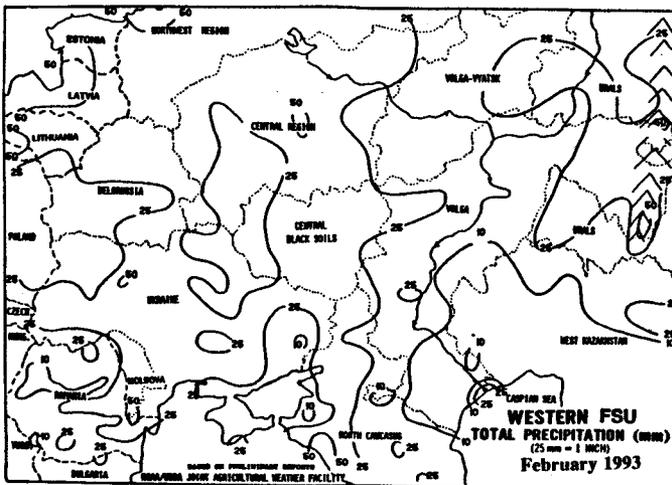
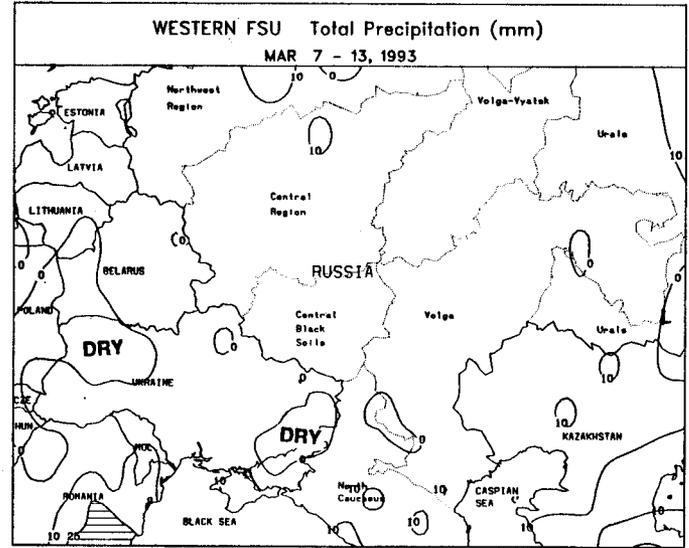
**SOUTH AMERICA:** Scattered showers aided double-crop soybeans in Argentina. Wet weather caused flooding and possible soybean disease problems across southern Brazil.

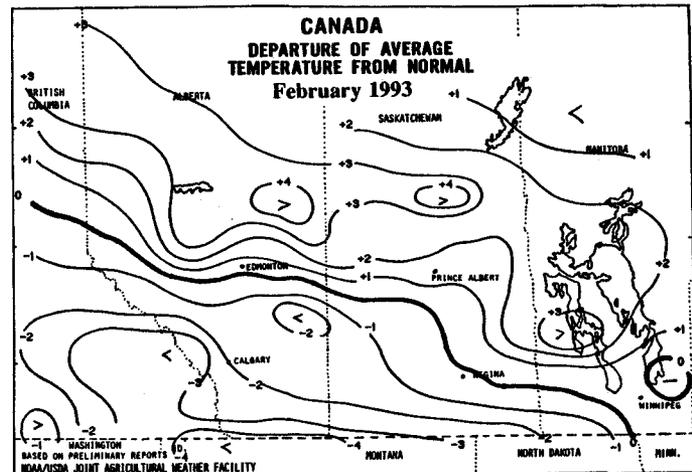
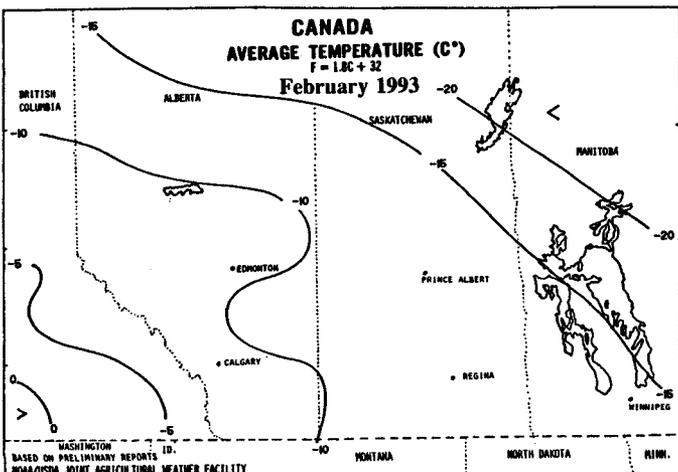
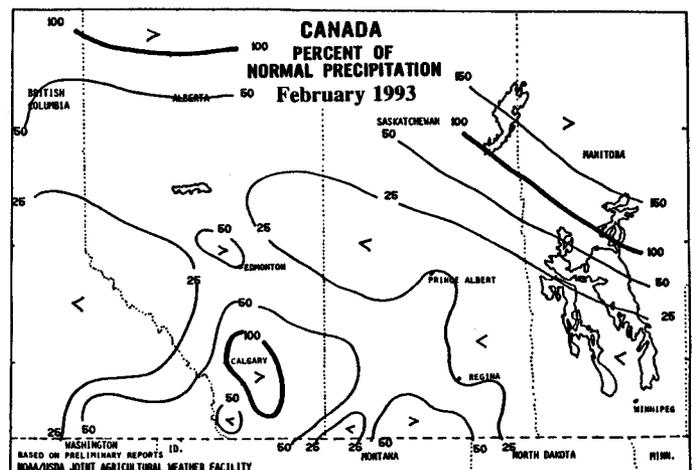
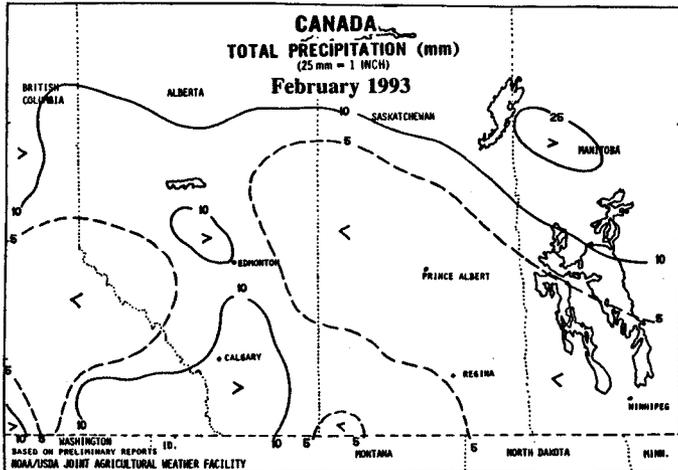
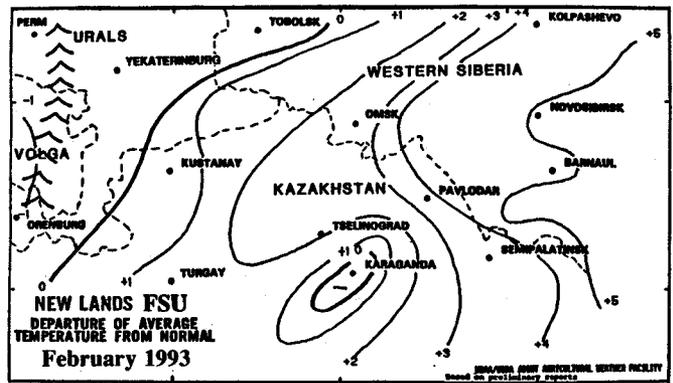
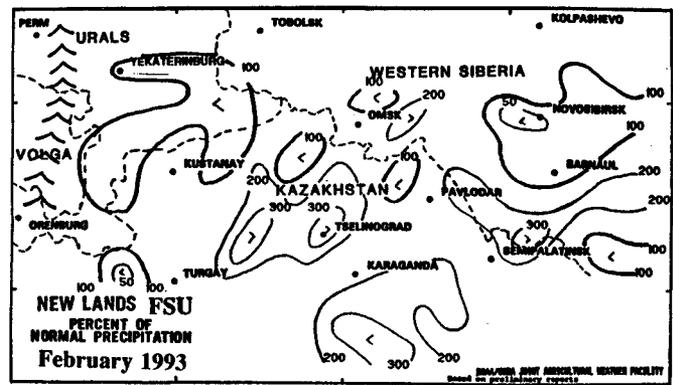
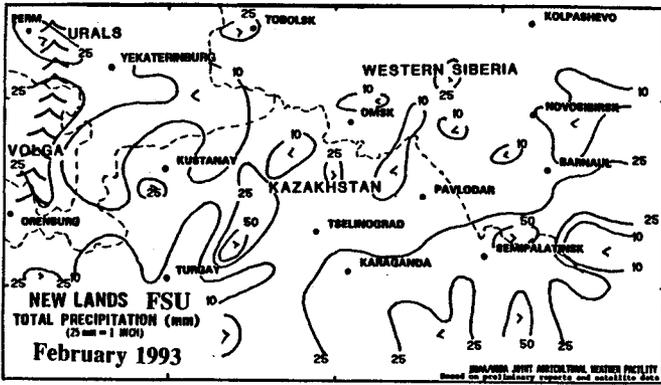
**NORTHWESTERN AFRICA:** Light showers dampened winter grains in Morocco, western and eastern Algeria, and Tunisia.

**SOUTH AFRICA:** Light rain favored filling corn across the central corn belt.

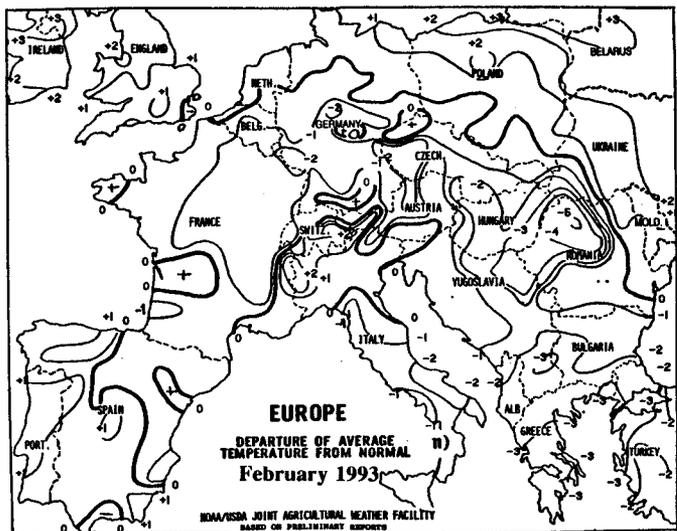
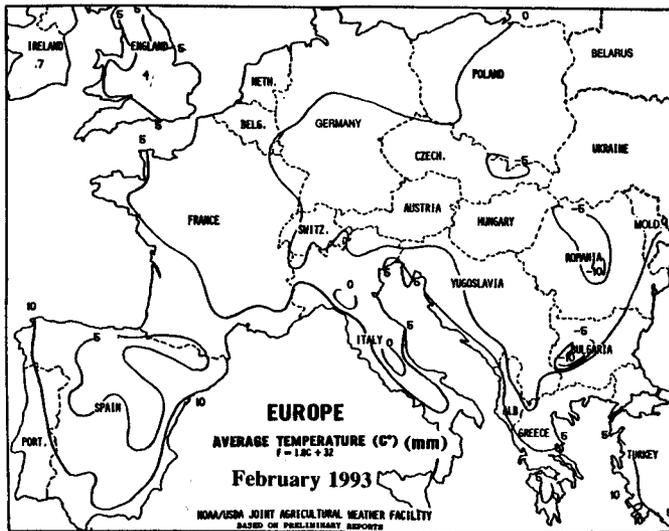
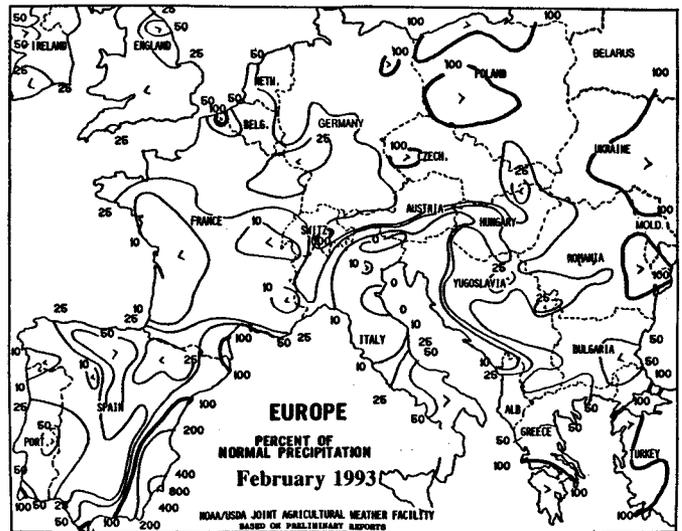
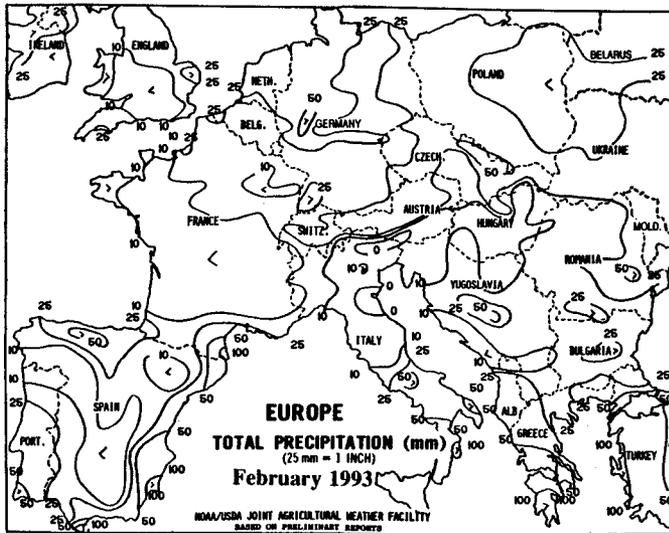
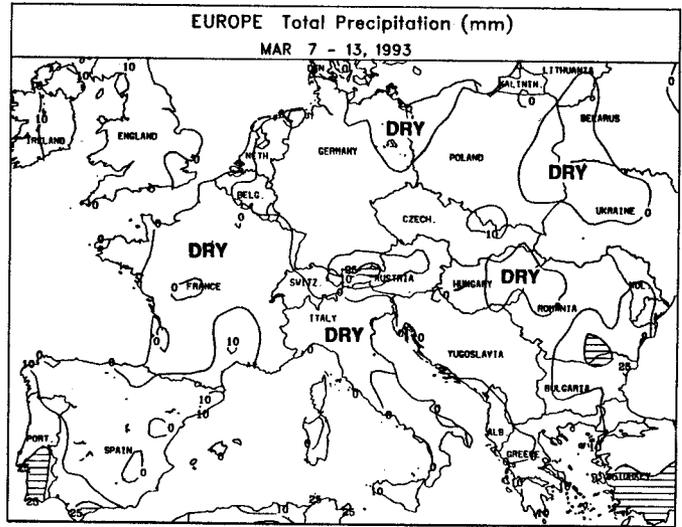


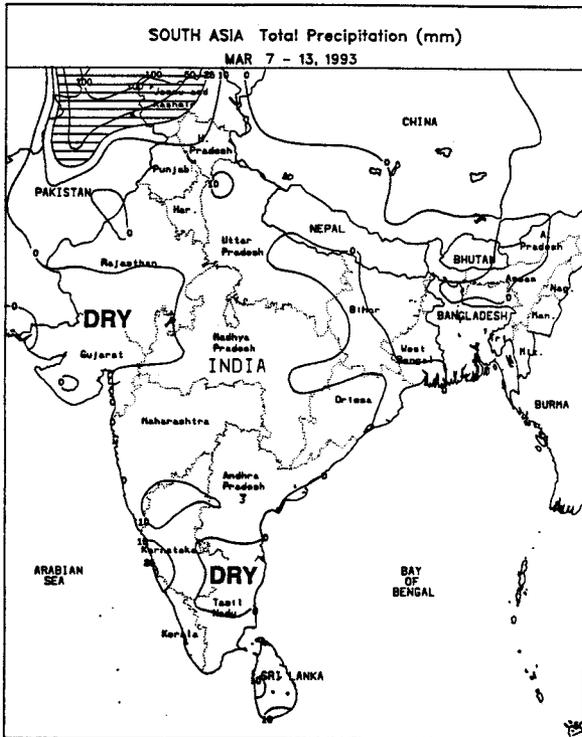
**FSU-WESTERN:** Unseasonably cold, dry weather covered most winter grain areas. Average temperatures ranged from -3 to -5 degrees Celsius (C) over western areas and -6 to -10 degrees C in the east. Protective snow cover existed as far south as central Ukraine and northern North Caucasus. Snow cover was patchy or absent over southern Ukraine and Krasnodar Oblast, North Caucasus. Snow cover usually begins to retreat northward during March through the Baltic States, Belarus, Black Soils Region, Volga Valley, and North Caucasus. In February, overwintering conditions for winter grains continued favorable in most areas. While temperatures for the month averaged 2-5 degrees C above normal, a brief episode of bitter cold from February 14-17 covered the eastern portion of Central Region, Volga Vyatsk Region, Volga Valley, Black Soils Region, the eastern Ukraine, and northern tip of North Caucasus. Minimum temperatures in these areas ranged from -15 to -26 degrees C, exceeding the threshold for potential winterkill. Although an adequate snow cover protected crops in most areas, snow cover was limited in lower Volga and northern North Caucasus, leaving winter grains vulnerable to potential freeze damage. Precipitation in February was mostly below normal, except for the Baltic States, Northwest Region, eastern Belarus, southern Moldova, and central Ukraine, where precipitation was above normal. The moisture that covered central Ukraine fell in late February, and was the first significant precipitation since the beginning of the 1993 winter season.



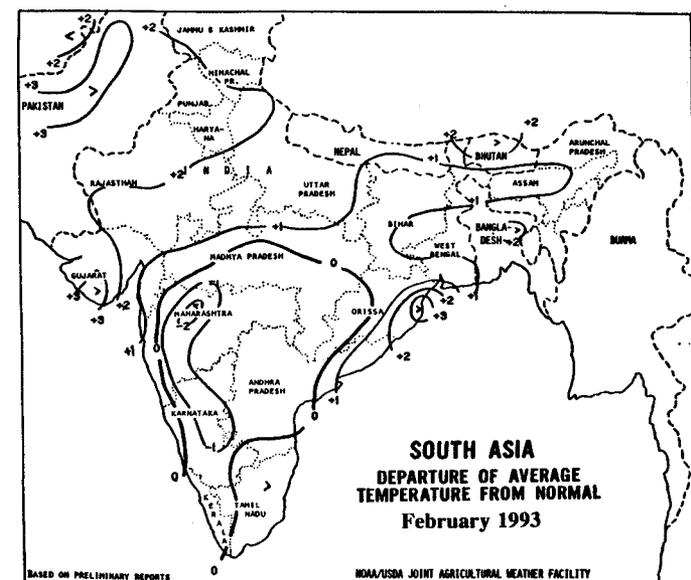
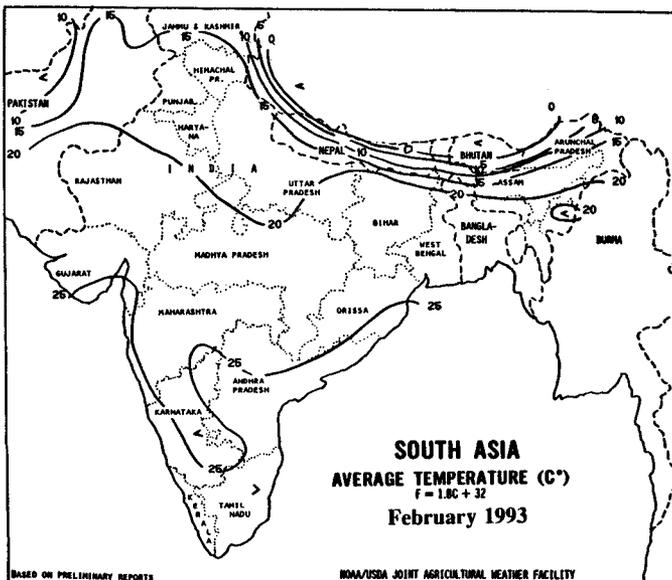
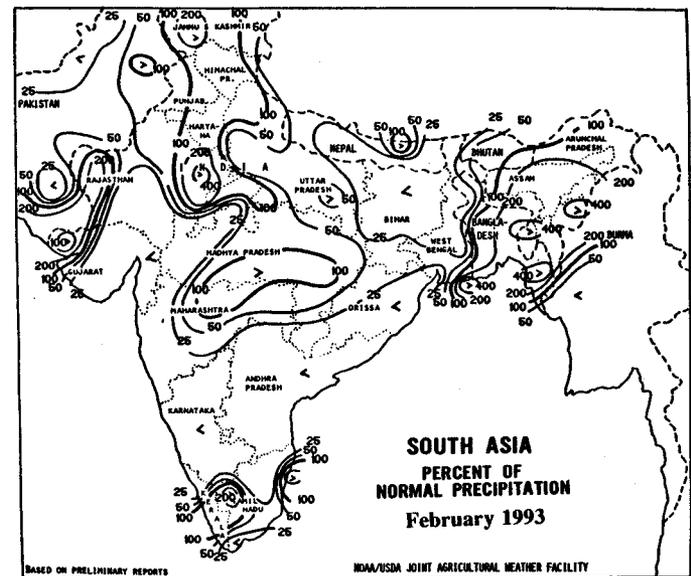
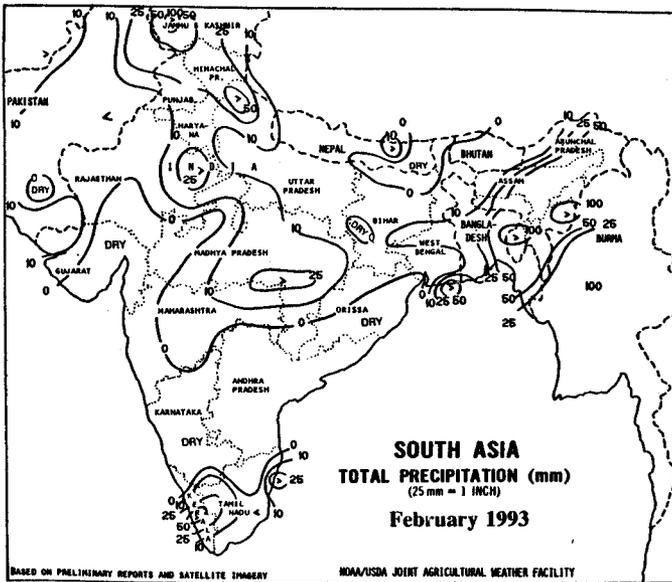


**EUROPE:** Light, scattered precipitation and seasonal temperatures prevailed over most of Europe. Beneficial showers (10-25 mm) fell over extreme western Spain and Portugal, and over southeastern Romania and Bulgaria. Unseasonably cold weather, with temperatures averaging 2-4 degrees C below normal, was confined to southeastern Europe. Slightly warmer-than-normal weather nudged winter crops toward early spring growth in the west. February's rainfall pattern reflected the continuing drought over the Iberian peninsula and showed well-below-normal precipitation in France, England, and Italy. Above-average monthly rainfall was restricted mostly to western Poland. Moisture supplies are adequate for winter grains across the north. However, topsoil moisture is marginally adequate in Italy's Po Valley, but the moisture shortage is acute in the Iberian Peninsula.

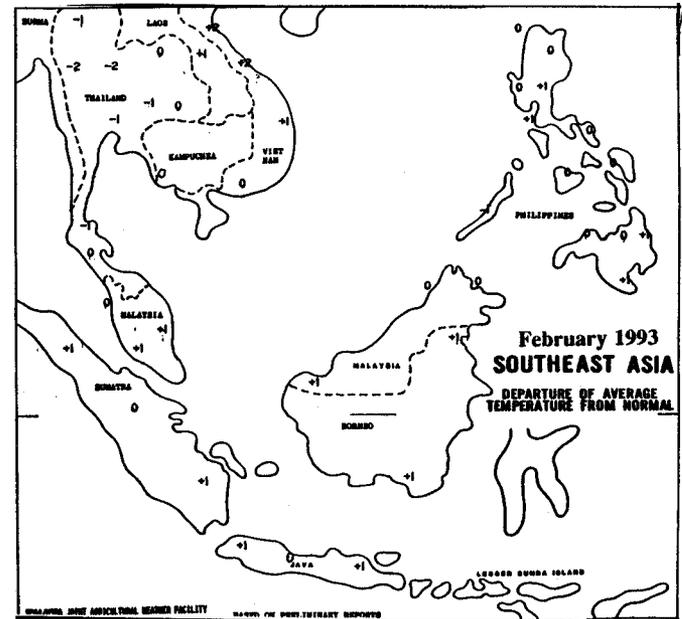
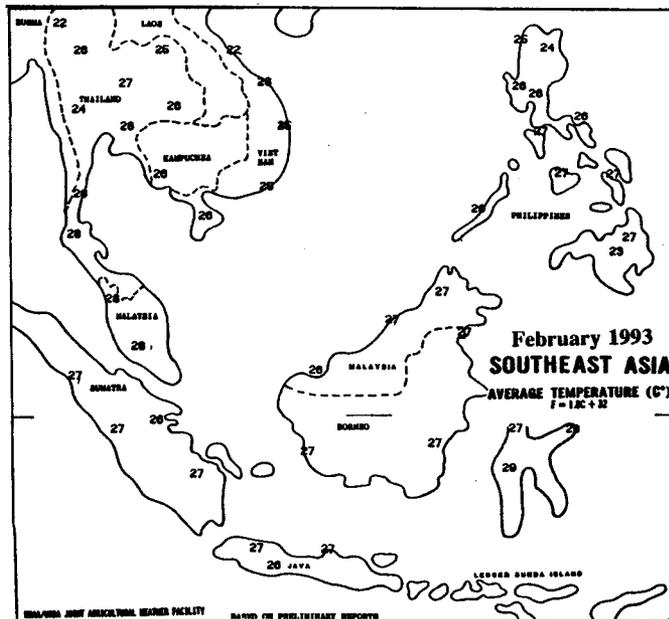
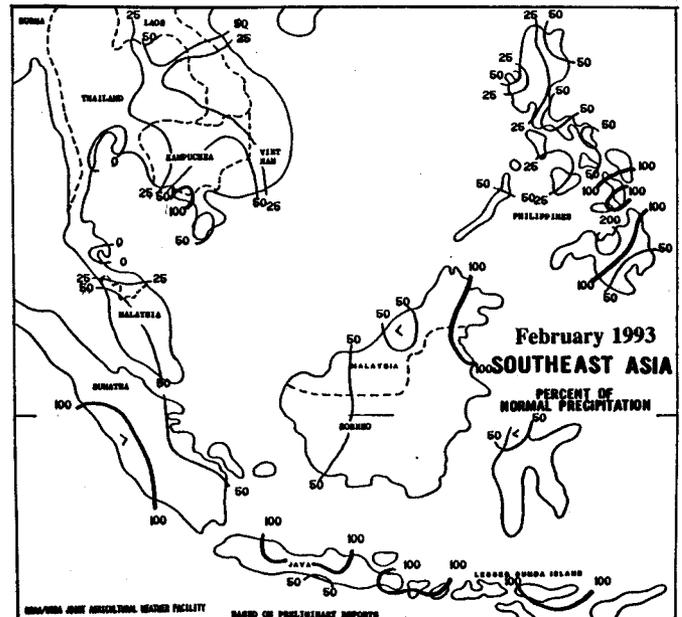
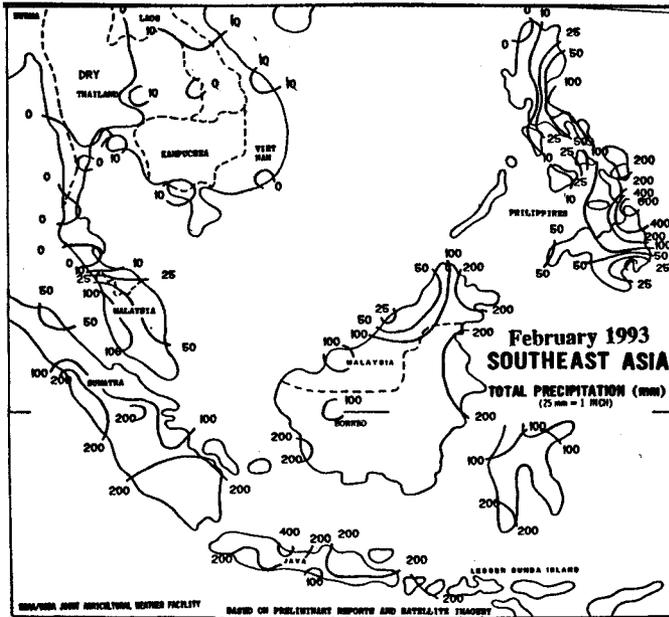
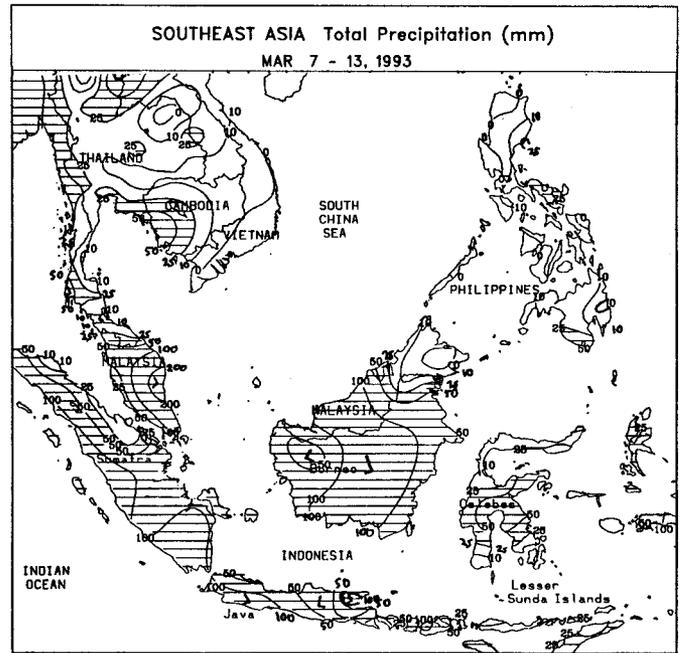


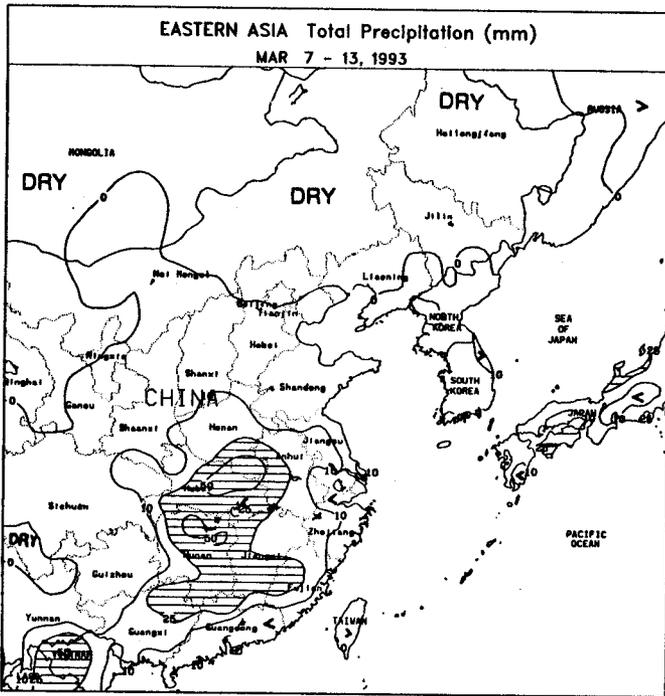


**SOUTH ASIA:** Winter grain harvesting was underway in central India, while crops across the north were in the filling stage. Little, if any, precipitation covered wheat areas in India, helping early winter grain harvest activities. Moderate to heavy rain (25-50 mm, with local amounts in excess of 100 mm) fell over northern Pakistan, Jamu, and Kashmir, boosting irrigation levels for planting, especially in cotton regions where fieldwork will be in full swing in April. Dry weather covered heading rice in Orissa, West Bengal, and Andhra Pradesh, necessitating irrigation to sustain normal development. In February, dryness accompanied unusually hot weather early in the month over India, increasing stress on winter grains and rice in or nearing reproduction. However, on February 25-28, light to moderate showers swept across winter grain and oilseed areas of central and northern India, alleviating stressful conditions.

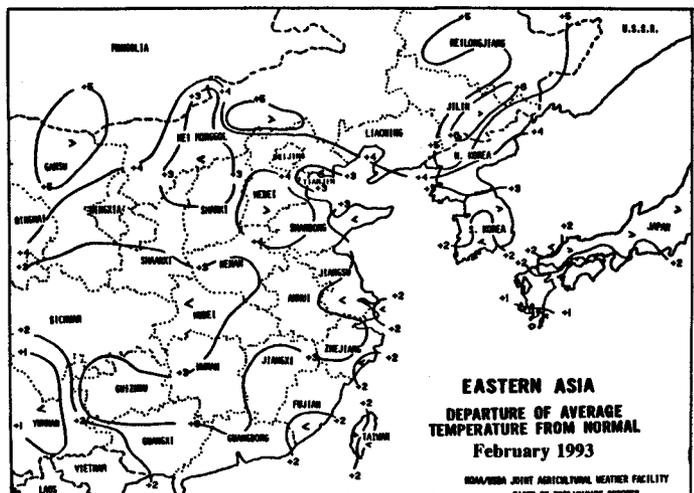
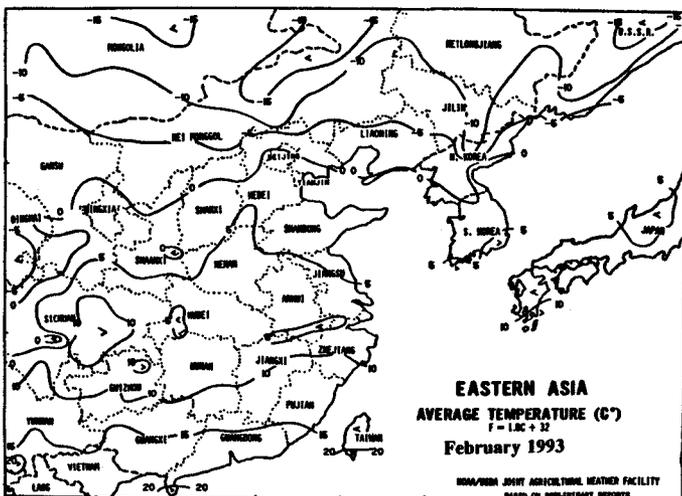
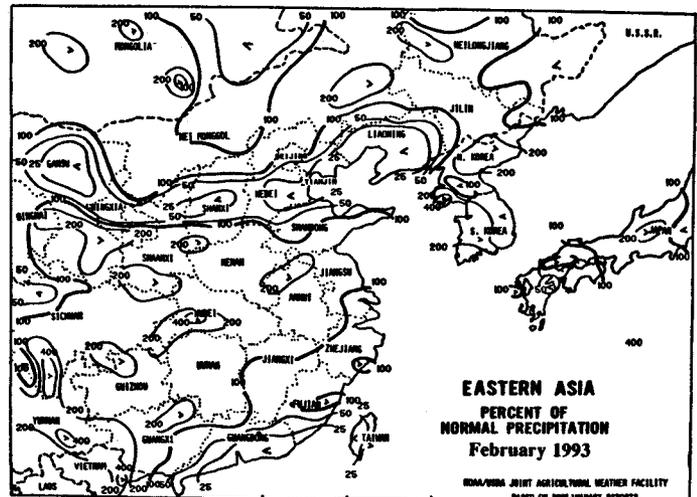
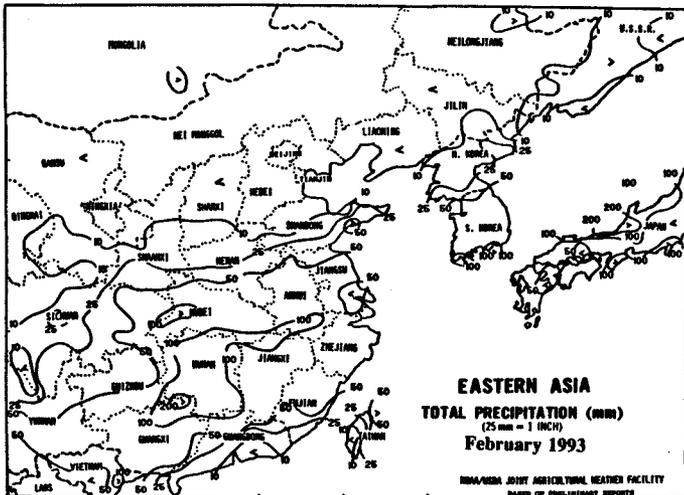


**SOUTHEAST ASIA:** Moderate to heavy rain (43-100 mm, with local amounts in excess of 200 mm) covered Malaysia and most of Indonesia, reversing February's below-normal precipitation pattern. Dry weather returned to the Philippines, limiting moisture for secondary grain growth. Further north, rainfall increased over Thailand, with light to moderate showers (2-48 mm) dotting the region. In February, below-normal precipitation covered most of Southeast Asia, with mostly dry weather prevailing over Thailand and parts of Malaysia.

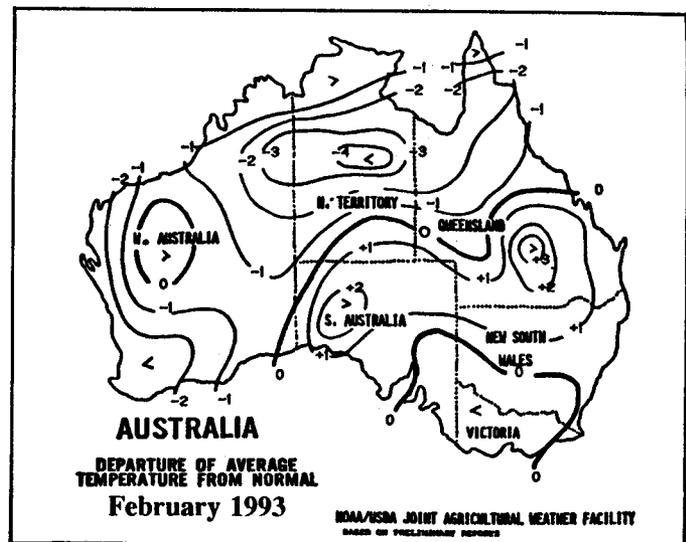
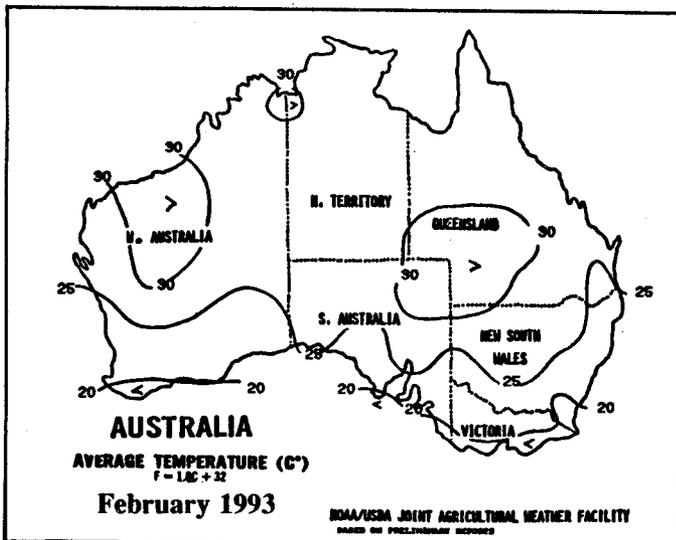
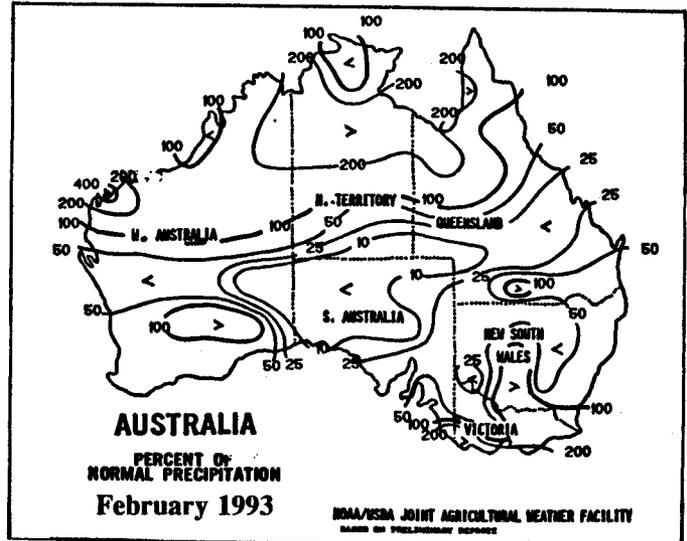
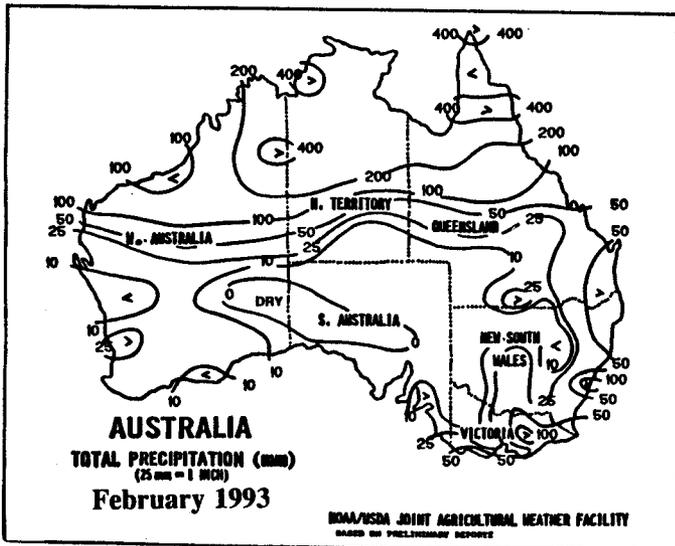
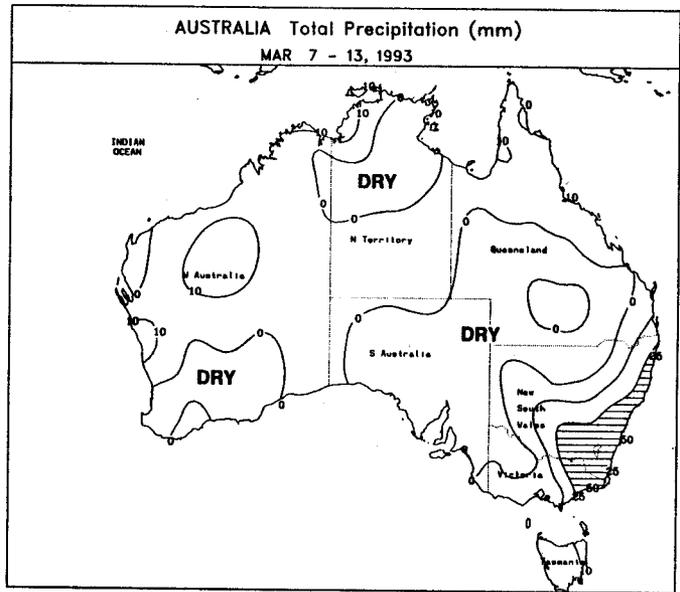


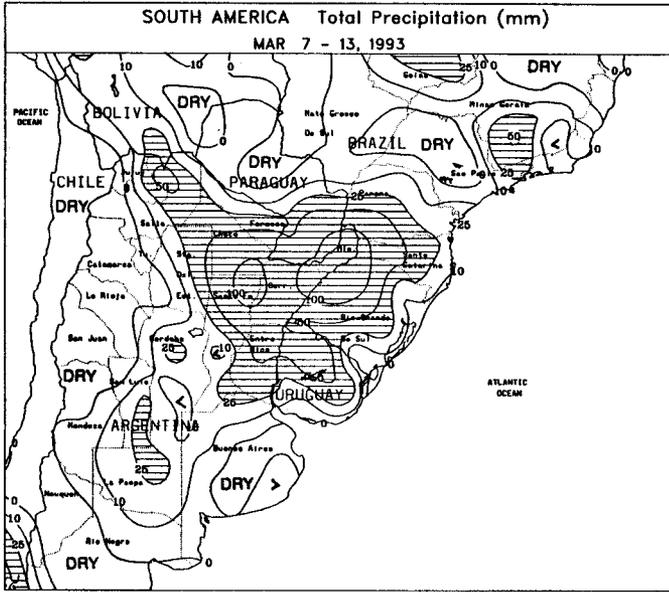


**EASTERN ASIA:** Mild temperatures (2-4 degrees C above normal) continued to prompt the greening of winter wheat across the North China Plain. Light to moderate rain (3-20 mm) fell across most of the region, with Henan and Anhui receiving heavier rain (21-60 mm), benefiting vegetative wheat. Moderate showers (25-100 mm) fell across central China, favoring reservoir levels and moisture for early transplanted rice. During February, near- to above-normal precipitation fell across the southern half of the North China Plain, central China and portions of southwest China. This moisture should ensure a favorable start to China's rice growing season. Above-normal precipitation also increased potential soil moisture reserves across Manchuria.

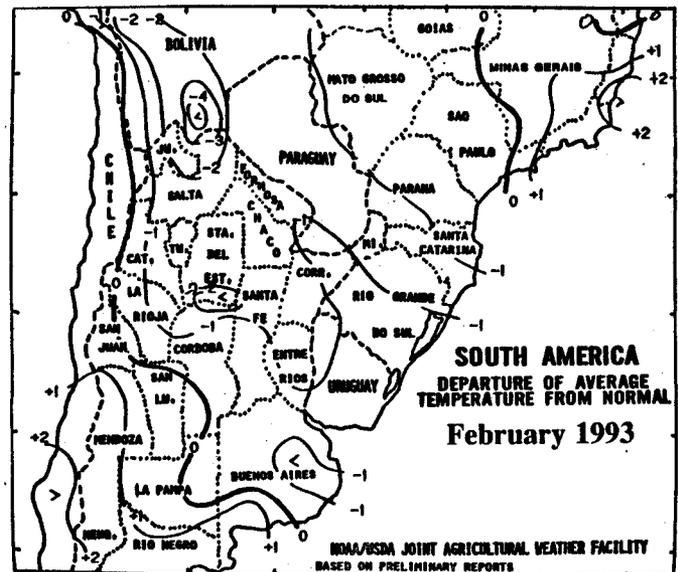
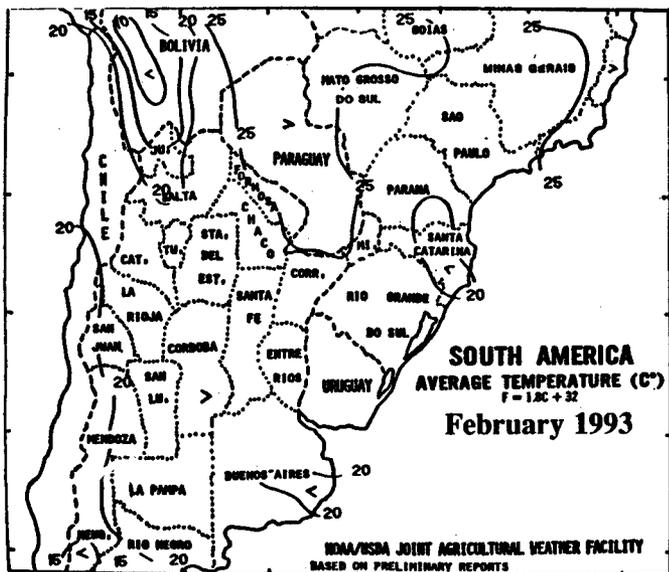
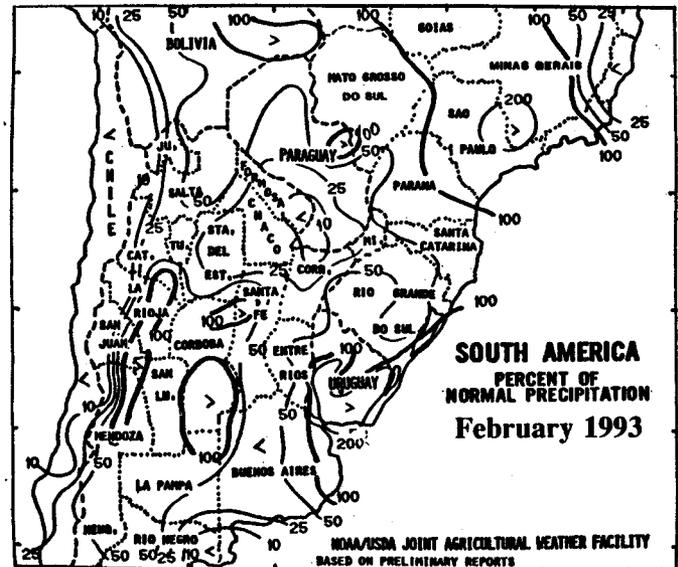
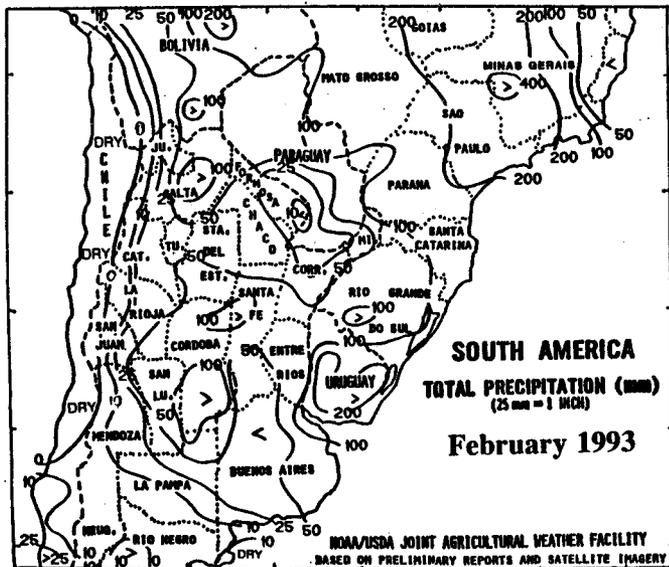


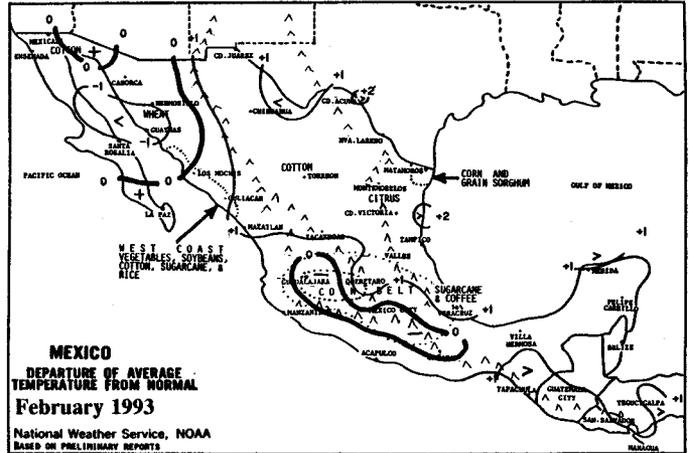
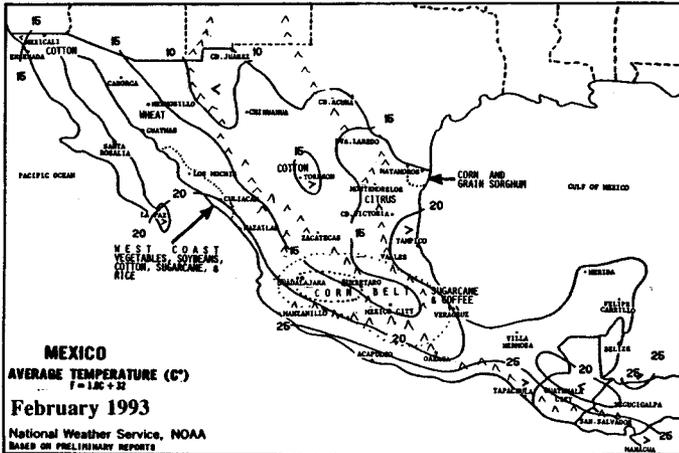
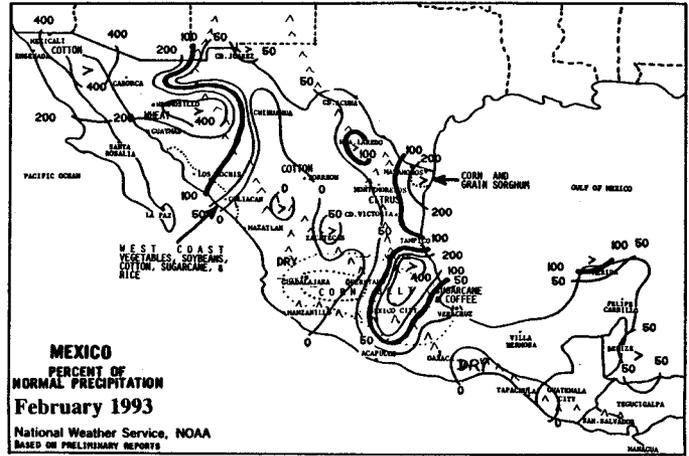
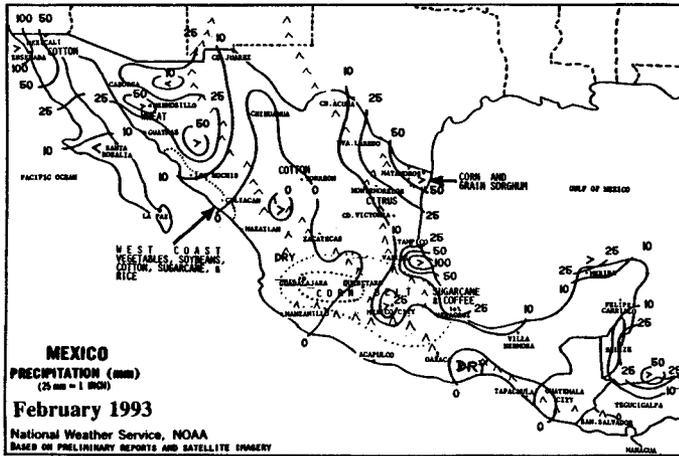
**AUSTRALIA:** Dry weather covered most of southern Queensland, aiding early harvesting of summer crops. Northern New South Wales received light rain (5-15 mm), slowing harvesting. February rainfall across this region ranged from 20 to 60 percent, while isolated areas received near-normal rainfall in southwestern Queensland. The dryness sharply reduced yield prospects for cotton and sorghum. Coastal northeastern Queensland received only light rain this past week, continuing the drier-than-normal February trend (20 to 50 percent of normal). The remainder of northern Australia received near- to above-normal February rainfall, indicative of an active monsoon. Typically, the monsoon across northern Australia remains active into early April.

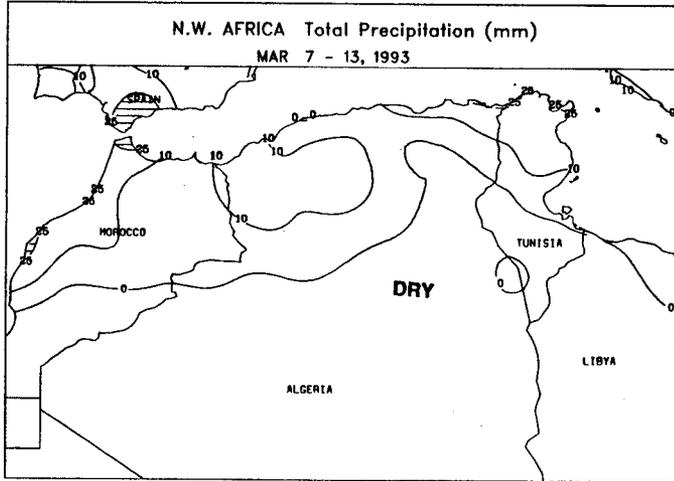




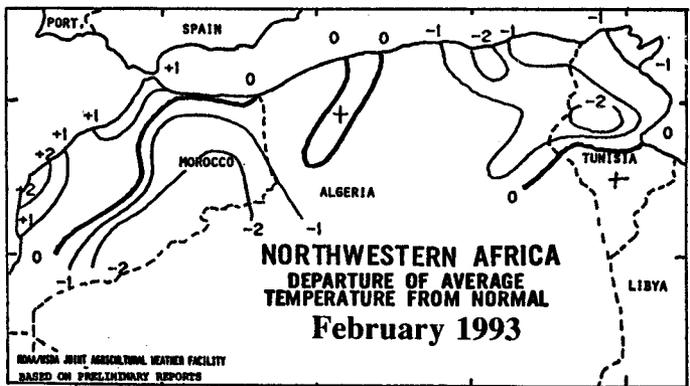
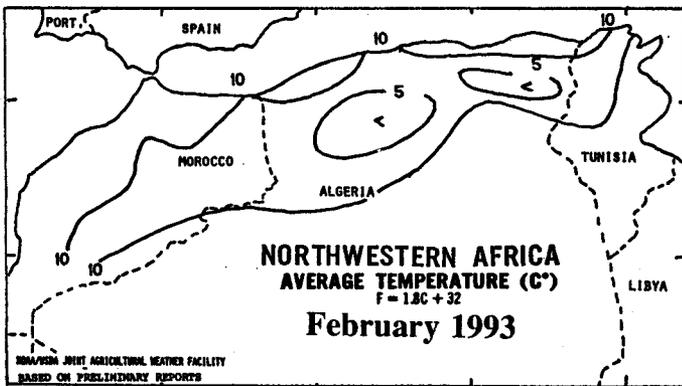
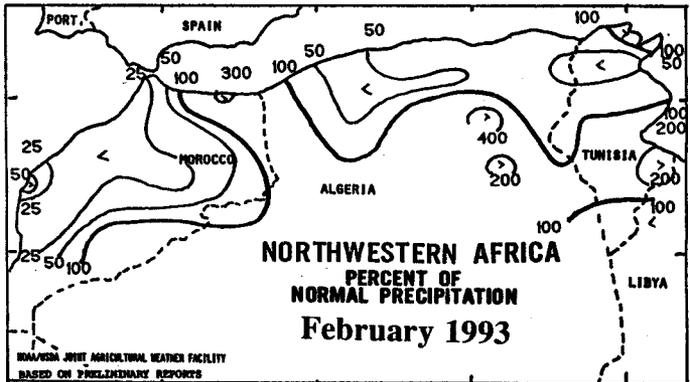
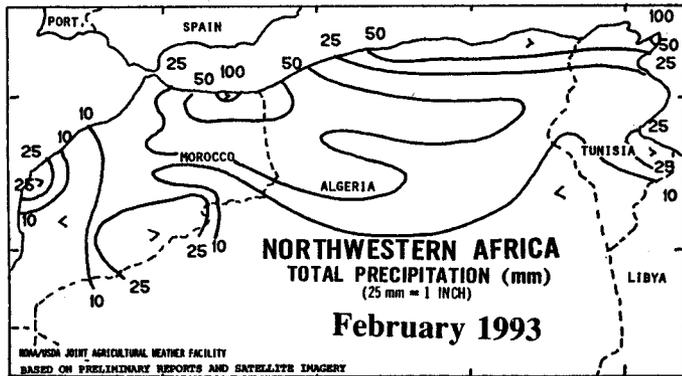
**SOUTH AMERICA:** Late-week scattered showers fell across southern Santa Fe and northern Buenos Aires, favoring reproductive to pod-filling double-crop soybeans. Main-season soybeans should have had adequate soil moisture for pod-filling, but double-crop soybeans will still need some additional moisture despite the recent rains. Continued wet weather (35-115 mm) this week across northern Argentina and southern Paraguay, caused flooding, cotton harvesting delays, and possible cotton damage. Weekly temperatures averaged 2-4 degrees C above normal (maximum temperatures ranged from 30 to 35 degrees C) across central Argentina. During February, rainfall was 50 percent of normal across southern Santa Fe and western Buenos Aires, but cool weather reduced crop water use. However, southern Cordoba and northern La Pampa received near-normal rains, aiding sorghum and corn. Northern Argentina experienced dry weather during February (less than 25 percent of normal), which favored cotton maturation. Across southern Brazil, moderate to heavy showers (20-125 mm) covered western Rio Grande do Sul and western Parana, possibly causing flooding and disease problems for soybeans. These rains should ensure adequate moisture for soybeans during the remainder of the growing season. Elsewhere in southern Brazil, scattered light rain (5-20 mm) slowed soybean and corn harvesting. February rainfall averaged near normal across most of southern Brazil, except for Rio Grande do Sul which experienced below-normal rains.



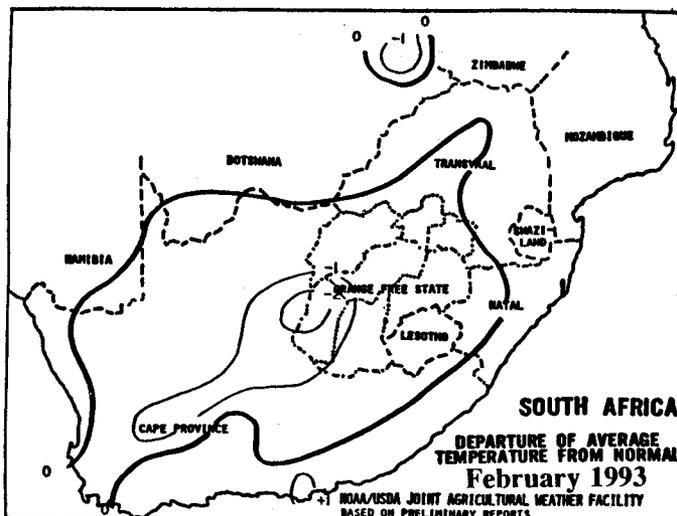
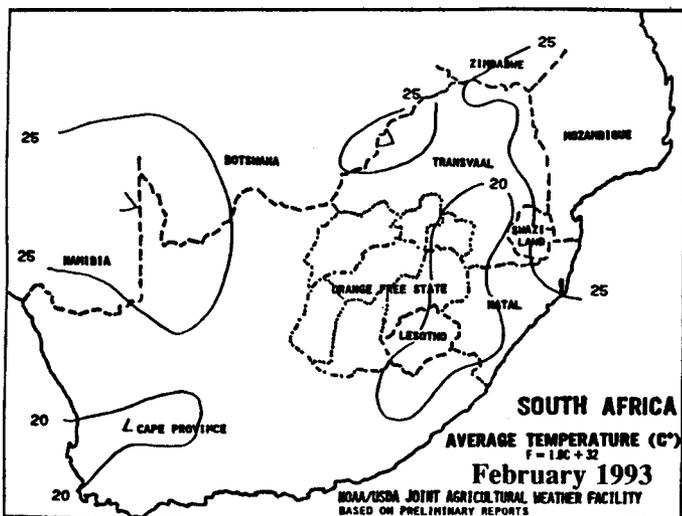
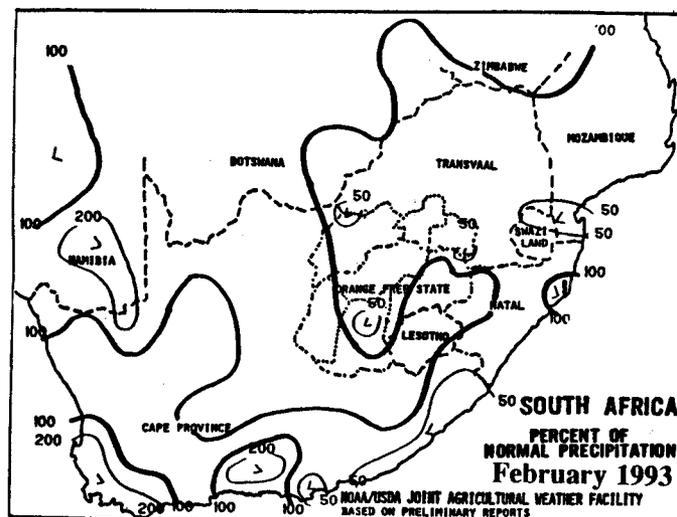
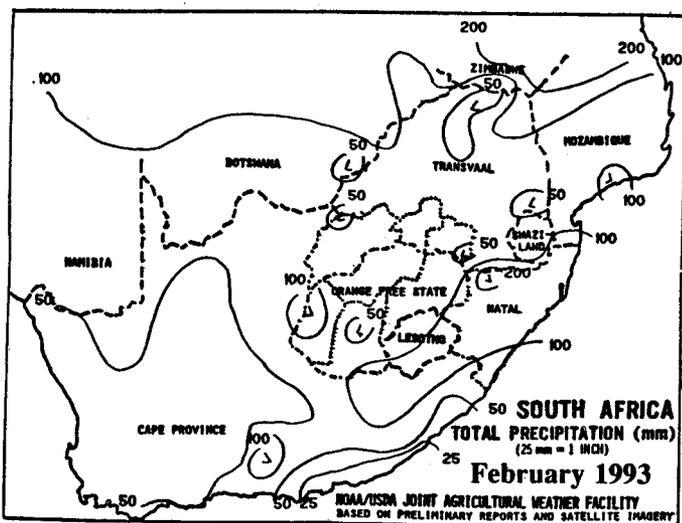
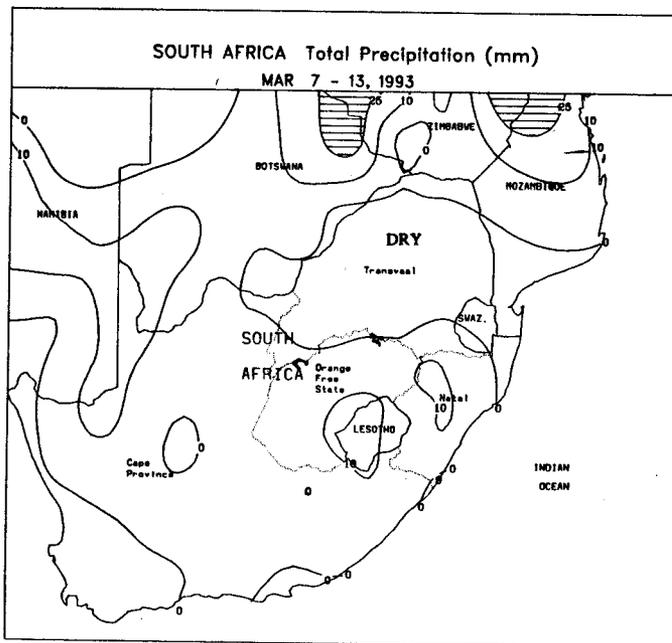




**NORTHWESTERN AFRICA:** Light showers (around 10 mm) continued to dampen topsoils in Morocco and western Algeria, easing long-term dryness. Further east, winter grain areas in central Algeria were mostly dry, while light rain (10-25 mm) benefited winter grains in eastern Algeria and northern Tunisia. While light precipitation this past week favored winter grains over most of the region, subsoil moisture remains limited and timely rains will be needed in the next several weeks as winter grains advance through the critical reproductive phase. In February, drought continued over Morocco and western Algeria, reducing yield prospects for winter grains, lowering reservoirs to critical levels, and causing pasture and range conditions to deteriorate. By February 27-28, moderate rain (20-50 mm) improved moisture conditions in western Algeria, while lesser amounts of rain (around 10 mm) covered Moroccan winter grain areas. Further east, below-normal precipitation in February covered winter grains in central and eastern Algeria, and Tunisia, reducing moisture reserves. On February 24-26, sub-freezing temperatures (-1 to -3 degrees C) covered interior crop areas of Algeria and Tunisia. Although the cold weather may have burned tender vegetative growth in some areas, temperatures did not fall low enough to cause significant damage to winter grains.



**SOUTH AFRICA:** Light rain (3-20 mm) fell across the primary grain areas of Orange Free State and Natal, aiding filling corn. Dry weather covered most of Transvaal, where earlier moisture continued to favor summer grains. Temperatures averaged slightly above normal (1-2 degrees C), aiding early maturing corn. During February, rainfall averaged near to slightly above normal across the southwestern corn area and slightly below normal in the northeast. Moisture was adequate for crop growth as cool temperatures reduced crop water use.



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(Continued from front cover)

NE. By Tuesday, colder air and snow arrived in the **North Central States**, while record warmth briefly spread across the **South**. **Madison, WI**, reported 9 inches of new snow by midweek. Farther south, **El Dorado, AR**, attained 83°F and **Laredo, TX**, soared to 98°F. Meanwhile, the ingredients for a major storm were mixing in the Nation's mid-section. First, an upper air disturbance drifted southeastward across the **central Rockies**, dropping up to 8 inches of snow. Second, a surge of arctic air plunged southward through the **Plains**. Thunderstorms developed in **eastern Texas**, and light snow dusted the **central Plains**. By Friday morning, an intensifying storm was situated in the **western Gulf of Mexico**, drawing the rain/snow line southward into **central Mississippi**. The sheer strength of the system was best shown by the string of all-time minimum barometric pressure records that were shattered from **Florida to New Hampshire**. The storm's central pressure fell from 1,000 millibars on Friday morning to 960 millibars on Saturday evening, when the center was situated near the **Delmarva Peninsula**. A sampling of pressure records included 28.79 inches (of mercury, corrected to sea level) in **Tallahassee, FL**, and 28.54 inches at **Washington National Airport, VA**. In the **Carolinas**, the storm broke pressure records set by notable hurricanes, such as "Hazel" in **Raleigh-Durham, NC**, and "Hugo" in **Columbia, SC**. Heavy snow and high winds pummeled areas from **Alabama to Maine**, and more than 25 tornadoes ravaged **Florida**. Dozens of 24-hour and monthly snowfall records were demolished. With a 4-inch snowfall, **Montgomery, AL**, had its greatest total since 1914.

**Birmingham, AL**, with 13 inches, topped its seasonal snowfall record. **Albany, NY** (27 inches), withstood its heaviest snowfall since the blizzard of 1888. Winds gusted above hurricane force along the **Atlantic coast** and in the **Appalachian highlands**. As the storm lifted northward, it drew extreme cold deep into the **South**. Already by Saturday morning, more than a dozen daily record lows were set from **Minnesota to Missouri**, with dozens more to be set in the **East** over the next two mornings. Lows on Saturday included -15°F in **Devil's Lake, ND**, and 10°F in **Columbia, MO**.

(Continued from p. 19)

**WYOMING:** Temperatures 2 to 6° above normal across most of the State. The exception was isolated areas in the far northwest which were 1 to 2° below normal. Precipitation below normal with only isolated areas above normal.

1993 Winter wheat crop fair to good. Supplemental feeding continuing. Hay supplies are short in several regions. Farm, ranch activities include feeding, caring for livestock, routine maintenance. Producers are calving, lambing. Some farm flocks in the southeast are already done lambing. Higher than normal calving, lambing losses in some areas.

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