

WEEKLY WEATHER AND CROP BULLETIN

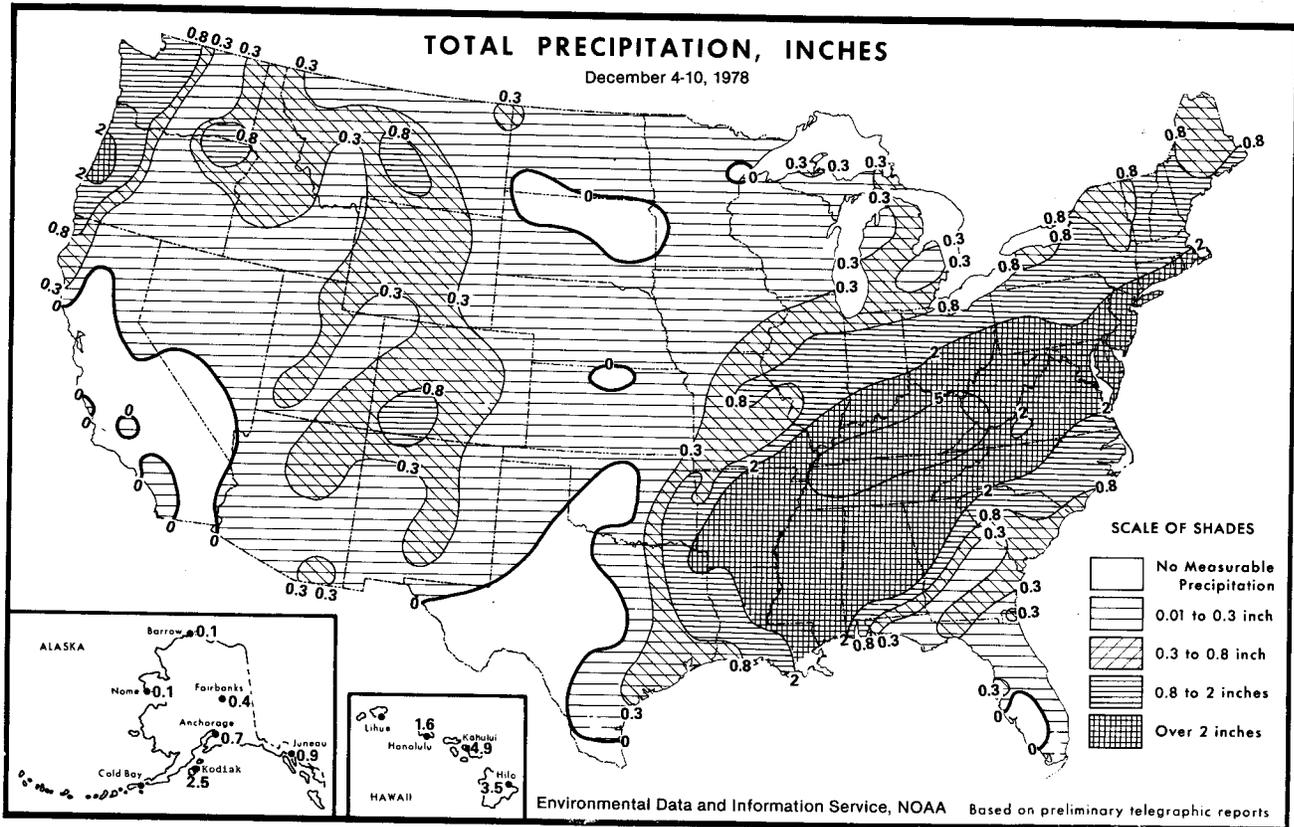
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National Weather Summary

December 4 - 10

HIGHLIGHTS: Extremely cold air enveloped all the West from the Plains to the Pacific Ocean as record-breaking warm air flowed through the eastern United States. The unusual extreme cold was particularly damaging to portions of California and Arizona. Before replacement by cold weather, temperatures hovered well above normal in the East.

Heavy rains fell ahead of the eastward-moving cold air causing severe flooding in many parts of the west central Appalachians.

Record warmth and rain ranged from the Deep South up the Atlantic Coast to New York on Monday.

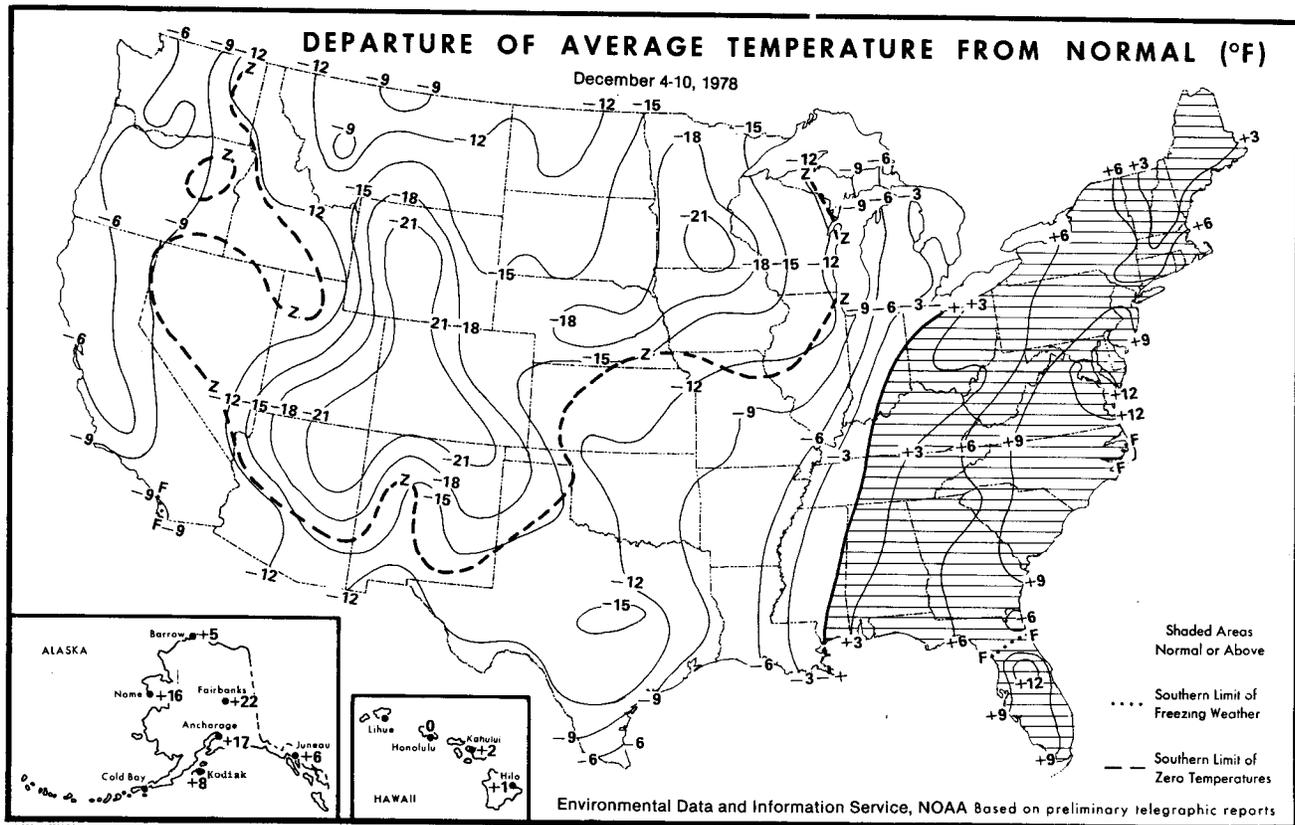
One-half to more than an inch of rain dampened an area from New Orleans eastward to the Atlantic Seaboard and northward through the Tennessee Valley to the Nation's Capital. As much as 5 inches drenched central Tennessee swelling some rivers past bankful.

Meantime high winds, bitter cold, and snow raced through the northern tier of States from Montana to Iowa.

Sioux Falls, southeastern South Dakota, hit a record low -13° which undercut the 1897 mark by one. Sioux City, western Iowa, at -9° , equaled its 1902 record.

By contrast, the unseasonable surprise of springlike temperatures spanned the East Coast including 86° at Daytona Beach, 79° at Raleigh, N.C., Baltimore's 71° which shot past the old record by 7 degrees, 70° at Wilmington, Del., and New York City's 67° .

Nearly all the country's precipitation on Tuesday was associated with a storm system centered over eastern Colorado. High winds and sharply plummeting temperatures combined with up to 7



inches of snow to whiten a region from the northern half of the Plateau and Rockies across Nebraska to Iowa.

Less than a half-inch of rain dotted the East Coast from North Carolina to Rhode Island.

Miami, Fla., notched a record high reading of 87°.

On Wednesday, the complex storm system spread rain, snow, or freezing rain from the Arizona mountains northward to Wyoming and as far east as the Mississippi Valley.

Portions of Colorado and New Mexico reported a foot of snow; freezing rain glazed Missouri; and Harrison, northwestern Arkansas, measured 1.1 inches of rain.

Snowfall persisted Thursday from New Mexico to Michigan; Chicago's new snow brought the ground total to 14 inches.

East of the major winter storm, thunderstorms, rain, and tornadoes made for an unsettled day. Up to an inch and one-quarter of rain fell from Arkansas to the Ohio Valley; some waterways rose past flood stage. Twisters touched down in Louisiana, Mississippi, Alabama, and Tennessee.

Extremely unusual temperatures were recorded in various sections of the Nation. More than a dozen record warm readings highlighted the Gulf Coast States. Lake Charles, southwestern Louisiana, noted its warmest December reading ever at 82°. Huntsville, northern Alabama, saw its new record jump by 5° to 72°, and Orlando, Fla., basked under 90°.

By contrast, especially cold air gripped part of the Rockies, the extreme Southwest, and California. Grand Junction, western Colorado, hit a record low of zero. In Arizona, Phoenix dipped to a new low mark of 27° and Douglas, in the eastern part of the State on the border of Mexico, shivered at a record 5°. The entire State of

California approached freezing; Santa Maria, along the coast north of Santa Barbara, was chilled by its coldest temperature ever, 20°.

An icy chill swept over lower California and Arizona on Friday with record low readings. Los Angeles, at 30°, hit its lowest temperature ever breaking its 1882 mark by 5. Fresno shivered at 25° and San Diego's record dipped to 34°. Arizona records included 21° at Tucson and -23° at Flagstaff. Alamosa, south central Colorado, chipped 14 degrees off its old record notching -42°.

Meantime unsettled weather stirred through the South, Ohio Valley, and Appalachians. Up to 5 inches of rain touched off flooding in Kentucky and Tennessee. Eight tornadoes clipped the South--5 in Alabama, 2 in Mississippi, and one in Louisiana.

Temperatures reached record high levels along the Gulf Coast through Florida and northward to West Virginia. Orlando, at 88°, chalked up its sixth record high in 10 days. Columbia, S.C., at 83°, equaled its all-time December high reading. Other records showed 71° at Beckley, southern West Virginia, 74° at Cape Hatteras, N.C., and 83° at Jacksonville, Fla., and New Orleans.

On Saturday, rain continued to fall from the South through the Appalachians to the Atlantic Coast adding one to more than 2 inches. By nightfall, snow reached from the Great Lakes to New England; Detroit collected 2 inches and Boston, 5 inches.

Extensive flooding damaged parts of Kentucky, West Virginia, and Virginia.

Much of the Nation fell under a cold spell including the East and South after a cold front edged through those regions. Before the cold air made headway, however, record high readings warmed an area from Virginia to Florida. A sampling

(continued on page 9)



National Agricultural Summary

December 4 - 10

HIGHLIGHTS: Low temperatures nipped citrus groves and vegetables in California, Arizona, and parts of Texas. Subnormal temperatures, rain, and snow surged through the Nation's mid-section. The extreme temperatures stressed live-stock, but snow protected most winter wheat stands on the Great Plains. Harvests were virtually complete, however, rains eroded some fields and floods damaged some isolated river bottom corn. The cotton harvest was complete in the eastern half of the Nation, but rains and low temperatures delayed picking in the West. Winter wheat lay dormant and snow-covered on the northern Great Plains while cold slowed growth on the southern Plains. Southern growers continued to seed late winter wheat. Rains improved southern pastures; virtually no grazing was available in northern areas. Low temperatures slowed grass growth in the Southwest. Tillage operations came to a standstill. California and Arizona citrus was damaged by low temperatures, but the extent is unknown at this time.

SMALL GRAINS: Winter wheat was snow-covered on the Great Plains from Kansas northward. Southern stands rated fair to good with some isolated fields rating poor because of earlier dry weather. Seeding continued in some southern States including Florida, Alabama, and Mississippi.

Kansas wheat rated good although top growth stayed short. Most fields were snow-covered, but a little pasture was available. The Nebraska crop was dormant with the ground frozen. Texas wheat rated fair to excellent, but record low temperatures slowed development. Grazing was available from the northern High Plains to South Texas. Farmers sprayed for greenbugs and grain mites. Unirrigated stands on the High Plains need moisture while some southern fields were too wet to support livestock. Arizona farmers prepared land and planted small grains. Cold, dry weather in California slowed earlier planted seedings; growers continued to prepare and seed fields. In the Pacific Northwest, snowcover protected the winter wheat.

COTTON: Cotton picking was virtually complete from the Delta States eastward. The Georgia harvest stood at 98% and North Carolina at 92%. Rains delayed picking in Arkansas where harvest stood at 98%. The severe weather delayed the Oklahoma harvest. Texas growers made good progress until rain and snow halted activity; progress stood at 47%, far short of the 97% last year and the 83% average. Some gins on the High and Low Plains developed substantial backlogs before picking stopped. Cold and snow delayed the New Mexico harvest and held picking to only 30%. The California harvest advanced to 82%, but wet ground delayed plowdown; the plowdown date was extended.

OTHER CROPS: Very little corn remained in the fields. Some harvesting occurred in Indiana and Ohio, but rains slowed harvest at the end of the week. Floods damaged remaining corn in low-lying fields. In the South, corn harvest ranged from 96 to 98%.

Some soybeans remained for harvest across the South. Georgia was 93% complete, North Carolina 77%, Virginia 92%, Arkansas 96% and Mississippi 99%. Farmers continued combining as conditions permitted.

Severe weather delayed the grain sorghum harvests in Oklahoma and Texas. Cold slowed the Texas harvest at 97% complete. Lodging and high moisture content of the grain also presented problems.

Farmers in Kentucky, Tennessee, North Carolina, and Virginia stripped and marketed tobacco.

The sugarcane harvest moved actively in Florida and Louisiana.

FRUITS AND NUTS: Deciduous fruit growers pruned orchards in New Jersey, South Carolina, Virginia, and Washington. The pecan harvest continued across the South and ranged from 40% complete in Arkansas to 74% in Alabama and 75% in Georgia.

Florida citrus groves needed rain; growers irrigated to increase fruit size and improve tree condition. The orange harvest increased; tangelos and tangerines moved into fresh market channels. Texas subfreezing temperatures caused some leaf damage on young trees but no significant damage to fruit. Prolonged low temperatures in California on the 6th, 7th, 8th, and 9th frosted the citrus crop. The extent of the damage was not known.

VEGETABLES: Florida vegetable crops rated mostly good; some crops were up to two weeks ahead of schedule because of the unseasonable warm weather. Harvest actively advanced with overall shipments up 11% from the previous week. Cabbage supplies increased considerably with more moderate increases for carrots, celery, escarole, lettuce, radishes, peppers, and tomatoes. Supplies of other vegetables held steady or declined. Florida strawberries showed good growth with light harvest expected in late December. Watermelon planting began.

Low temperatures in Texas injured top growth on onions, many greens, and tender vegetable crops. Bell peppers in the lower Rio Grande Valley were lost to the cold weather.

In California, freezing temperatures slowed growth, delayed harvests, and badly damaged tender crops. The market tomato harvest was about terminated. Artichokes sustained heavy frost damage. Lettuce sustained minimal damage.

PASTURES AND LIVESTOCK: Virtually no grazing was available in northern areas because of the extensive snowcover. Across the South, pastures scored fair to good and improving because of recently improved soil moisture. Low temperatures limited growth. Texas cattle moved to small grain pastures as native rangelands became short or frozen out. In California, pastures continued to green but grew slowly because of low temperatures. Winds depleted soil moisture, and some areas needed rain.

Temperature and Precipitation Data for the Week Ending Midnight, l.s.t., Dec. 10, 1978

States and Stations	Temperature °F		Precipitation Inches		States and Stations	Temperature °F		Precipitation Inches		States and Stations	Temperature °F		Precipitation Inches	
	Average	Departure	Total	Departure		Average	Departure	Total	Departure		Average	Departure	Total	Departure
ALA. Birmingham	48	+ 2	3.0	+ 1.8	LA. Baton Rouge	50	- 4	.8	- .3	Youngstown	35	+ 4	1.7	+ 1.1
Mobile	57	+ 3	1.8	+ .5	Lake Charles	47	- 8	.6	- .7	OKLA. Okla. City	30	-12	T	- .3
Montgomery	55	+ 5	2.5	+ 1.4	New Orleans	56	0	3.1	+ 1.9	Tulsa	31	-11	T	- .1
ALASKA Anchorage	32	+17	.7	+ .4	Shreveport	44	- 7	1.3	+ .4	OREG. Astoria	39	- 5	1.6	- .8
Barrow	- 5	+ 5	.1	- .6	MAINE. Caribou	20	+ 1	.6	- .1	Burns	23	- 7	.1	- .3
Fairbanks	14	+22	.4	+ .3	Portland	34	+ 5	1.2	+ .2	Medford	34	- 5	.3	- .5
Juneau	35	+ 6	.9	- .2	MD. Baltimore	48	+11	2.0	+ 1.2	Pendleton	28	- 9	1.5	+ 1.1
Kodiak	39	+ 8	2.5	+ 1.3	MASS. Boston	42	+ 6	1.9	+ .9	Portland	36	- 6	1.7	+ .3
Nome	22	+16	.1	- .1	Chatham	42	-	3.9	-	Salem	36	- 6	1.7	+ .2
ARIZ. Flagstaff	12	-19	.5	0	MICH. Alpena	23	- 3	.4	- .1	PA. Allentown	41	+ 8	2.2	+ 1.4
Phoenix	44	-10	.1	0	Detroit	27	- 4	.6	0	Erie	34	+ 3	1.1	+ .4
Tucson	40	-13	.2	0	Flint	26	- 3	.2	- .2	Harrisburg	43	+ 8	1.4	+ .7
Winslow	15	-21	.3	+ .2	Grand Rapids	25	- 5	.5	0	Philadelphia	47	+10	3.1	+ 2.3
Yuma	47	-10	T	- .1	Houghton Lake	19	- 6	.2	- .3	Pittsburgh	36	+ 4	2.5	+ 1.9
ARK. Fort Smith	34	- 9	.8	+ .1	Lansing	24	- 5	.2	- .3	Scranton	37	+ 6	1.2	+ .6
Little Rock	36	- 7	3.8	+ 2.9	Marquette	16	-10	.1	- .4	R.I. Providence	45	+11	2.6	+ 1.6
CALIF. Bakersfield	44	- 5	T	- .2	Muskegon	24	- 7	.4	- .2	S.C. Charleston	61	+11	.5	- .2
Eureka	44	- 5	.5	- 1.0	S. Ste. Marie	17	- 6	.6	0	Columbia	58	+11	.6	- .1
Fresno	41	- 6	T	- .4	MINN. Duluth	2	-15	T	- .4	Greenville	49	+ 5	1.8	+ .9
Los Angeles	49	-10	0	- .5	Internatl Falls	- 5	-17	.1	- .1	S.D. Aberdeen	5	-15	T	- .1
Red Bluff	44	- 4	0	- .8	Minneapolis	4	-18	T	- .2	Huron	8	-14	T	- .1
San Diego	51	- 7	T	- .4	Rochester	1	-21	.1	- .1	Rapid City	14	-15	T	- .1
San Francisco	45	- 6	T	- .8	St. Cloud	- 1	-20	T	- .2	Sioux Falls	6	-17	T	- .2
Stockton	42	- 5	0	- .6	MISS. Jackson	47	- 3	3.3	+ 2.2	TENN. Chattanooga	48	+ 6	2.8	+ 1.6
COLO. Denver	18	-16	.5	+ .4	Meridian	47	- 2	3.2	+ 1.9	Knoxville	47	+ 4	3.1	+ 2.1
Grand Junction	11	-21	.4	+ .3	MO. Columbia	26	- 9	.9	+ .5	Memphis	41	- 3	4.4	+ 3.3
Pueblo	13	-22	.5	+ .4	Kansas City	23	-12	.1	- .3	Nashville	42	0	6.2	+ 5.2
CONN. Bridgeport	42	+ 6	2.7	+ 1.9	St. Louis	27	-10	.3	- .2	TEX. Abilene	35	-13	T	- .2
Hartford	35	+ 4	1.8	+ .8	Springfield	27	-11	.4	- .2	Amarillo	23	-17	.1	0
D.C. Washington	51	+12	2.1	+ 1.4	MONT. Billings	12	-17	1.0	+ .8	Austin	41	-13	T	- .5
FLA. Apalachicola	61	+ 5	.1	- .7	Glasgow	9	-11	.1	0	Beaumont	54	- 1	.8	- .3
Daytona Beach	69	+ 8	T	- .4	Great Falls	18	-11	.5	+ .3	Brownsville	60	- 4	0	- .3
Ft. Myers	76	+10	T	- .3	Havre	14	- 7	.2	+ .1	Corpus Christi	52	- 8	.2	- .2
Jacksonville	61	+ 5	.1	- .4	Helena	18	- 8	.1	0	Del Rio	45	- 9	T	- .1
Key West	80	+ 8	.1	- .3	Kalispell	14	-12	.2	- .1	El Paso	37	- 9	T	- .1
Lakeland	-	-	-	-	Miles City	11	-14	.1	0	Fort Worth	39	-11	T	- .4
Miami	78	+ 9	.1	- .3	Missoula	13	-14	.4	+ .2	Galveston	52	- 7	.3	- .5
Orlando	74	+12	.3	- .1	NEBR. Grand Island	11	-19	.1	0	Houston	45	-11	.7	- .3
Tallahassee	59	+ 5	.5	- .5	Lincoln	15	-15	T	- .2	Lubbock	30	-13	T	- .1
Tampa	70	+ 7	.3	- .2	Norfolk	10	-17	.1	0	Midland	33	-14	T	- .1
W. Palm Beach	76	+ 8	.2	- .2	N. Platte	10	-19	.1	0	San Angelo	36	-14	T	- .1
GA. Atlanta	50	+ 5	2.5	+ 1.6	Omaha	12	-17	.1	- .1	San Antonio	43	-12	T	- .4
Augusta	55	+ 7	.2	- .5	Valentine	8	-19	.1	0	Victoria	46	-12	.4	- .1
Macon	55	+ 6	.7	- .2	NEV. Ely	19	- 9	T	- .2	Waco	37	-15	T	- .5
Savannah	62	+11	.6	- .1	Las Vegas	37	-10	T	- .1	Wichita Falls	33	-13	T	- .3
HAWAII. Hilo	73	+ 1	3.5	- .3	Reno	28	- 6	T	- .2	UTAH. Blanding	-	-	-	-
Honolulu	74	0	1.6	+ .8	Winnemucca	22	-10	.2	0	Salt Lake City	23	- 9	.2	- .2
Kahului	75	+ 2	4.9	+ 4.3	N.H. Concord	30	+ 2	1.2	+ .4	VT. Burlington	30	+ 4	.5	- .1
Lihue	-	-	-	-	N.J. Atlantic City	46	+ 9	2.1	+ 1.1	VA. Lynchburg	48	+ 9	2.1	+ 1.4
IDAHO. Boise	24	-10	.4	0	Trenton	46	+ 9	3.4	+ 2.6	Norfolk	56	+12	1.6	+ .9
Lewiston	26	-10	.6	+ .3	N. MEX. Albuquerque	25	-13	.1	0	Richmond	52	+11	2.5	+ 1.7
Pocatello	19	-10	.1	- .1	Roswell	25	-16	.3	+ .2	Roanoke	46	+ 7	1.1	+ .4
ILL. Cairo	34	- 7	4.1	+ 3.2	N.Y. Albany	37	+ 8	.8	+ .1	WASH. Colville	17	-12	.2	- .3
Chicago	19	-12	.8	+ .3	Binghamton	35	+ 7	.9	+ .2	Omak	21	- 8	.2	- .2
Moline	16	-13	.4	0	Buffalo	35	+ 5	.7	0	Quillayute	38	- 4	2.0	- 1.5
Peoria	18	-12	.8	+ .4	New York	46	+ 8	2.7	+ 1.8	Seattle-Tacoma	39	- 3	1.0	- .4
Rockford	14	-14	.3	- .1	Rochester	35	+ 4	.5	- .1	Spokane	18	-13	.4	- .1
Springfield	24	- 9	.9	+ .4	Syracuse	37	+ 6	.9	+ .2	Walla Walla	31	- 8	1.3	+ .9
IND. Evansville	33	- 4	2.6	+ 1.8	N.C. Asheville	47	+ 7	2.4	+ 1.6	Yakima	29	- 4	.1	- .1
Ft. Wayne	28	- 3	.9	+ .4	Charlotte	53	+ 9	1.8	+ 1.0	W. VA. Beckley	42	+ 8	2.9	+ 2.2
Indianapolis	31	- 2	.9	+ .3	Greensboro	50	+ 9	3.1	+ 2.4	Charleston	41	+ 3	4.9	+ 4.2
South Bend	24	- 7	.7	+ .1	Hatteras	59	+10	1.3	+ .2	Huntington	40	+ 2	5.4	+ 4.7
IOWA. Burlington	16	-14	.4	0	Raleigh	53	+10	1.8	+ 1.1	Parkersburg	39	+ 2	3.8	+ 3.2
Des Moines	14	-14	.1	- .2	Wilmington	59	+10	.4	- .4	WISC. Green Bay	11	-13	.1	- .3
Dubuque	10	-16	.1	- .4	N. DAK. Bismarck	8	-11	T	- .1	La Crosse	10	-15	T	- .3
Sioux City	7	-19	.2	0	Fargo	1	-16	T	- .1	Madison	13	-12	.1	- .3
KANS. Concordia	21	-12	T	- .2	Williston	6	-12	T	- .1	Milwaukee	17	-10	.3	- .1
Dodge City	23	-12	T	- .1	OHIO. Akron-Canton	35	+ 3	1.6	+ 1.0	WYO. Casper	7	-21	.4	+ .3
Goodland	17	-15	.3	+ .2	Cincinnati	37	+ 1	2.5	+ 1.9	Cheyenne	14	-17	.2	+ .1
Topeka	22	-12	T	- .4	Cleveland	35	+ 3	1.1	+ .5	Lander	4	-21	.6	+ .5
Wichita	24	-13	.1	- .2	Columbus	36	+ 3	2.1	+ 1.5	Sheridan	12	-15	.4	+ .2
KY. Lexington	39	+ 2	4.8	+ 4.0	Dayton	35	+ 2	1.1	+ .6	P.R. San Juan	81	+ 4	.6	- .5
Louisville	40	+ 3	3.2	+ 2.4	Toledo	28	- 2	.8	+ .3					

Based on 1941-70 normals

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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 ESCS State offices in cooperation with the National Weather Service.

ALABAMA: Temperatures variable, averaged 2° above normal. Record highs 8th, coldest weather of season 9th and 10th. Rainfall statewide 4th and 9th, heaviest totals northern areas.

Fieldwork: 2.7 days suitable. Soil moisture adequate. Livestock care, small grain seeding main activities. Small grains 87% seeded. Pecans 74% harvested, 88% 1977. Wheat, livestock, pastures fair condition.

ARIZONA: Strong, low pressure midweek. Northeast, central, White Mountains rain amounts 0.50 to 1.00 in., snowfall to 10 in. Precipitation southeast ranged from 0.25 to 1.25 in., snowfall to 18 in. Temperatures 1 to 20° below normal.

Abnormally low freezing temperatures all crop-land areas. Cotton harvest active conditions permitting. Sorghum harvest virtually complete. Sugarbeet harvest stopped, snowcover. Spring beets good progress. Alfalfa haying seasonally slow. Preparations well advanced small grains, some planting underway. Early morning lettuce harvest delayed or halted Yuma, Salt River Valley, due to ice. Harvest other mixed vegetables equally difficult due to weather conditions. Harvest early oranges, lemons, grapefruit, tangerines continued weather, field conditions permitting. Subfreezing temperatures caused some damage fruit, trees. Recent snowstorms left ample snowpack. Cattle, calves on winter pastures in good to excellent condition. Ranges improved substantially; unusually cold temperatures prevented forage growth. Ranchers feeding supplements.

ARKANSAS: Cold, wet, frozen precipitation common. Temperatures ranged slightly below normal to well below normal. Extremes: 77 and 9°. Rainfall abundant; amounts between 0.58 to 6.52 in.

Fieldwork minimal. Harvest activities slow early week; no activity after 6th. Few cotton fields picked, 98% harvested. Soybeans 96% harvested. Pecans 40% harvested; quality and crop condition good; harvest slowed due to wet weather. Wheat stands and growth good. Oats good condition. Fall seeded pasture condition good. Livestock receiving supplemental feed; condition generally good.

CALIFORNIA: Strong winds followed by very cold temperatures. Strong, gusty and dry northerly winds prevailed 5th and 6th. Good radiation conditions prevailed and as winds decreased at night temperatures dropped to well below freezing 7th and 8th mornings.

Cotton 82% harvested; cotton plowdown slow due wet ground. Plowdown date extended. Small grain fields prepared planting central coast, Sacramento Valley. Winds, rains delayed planting south coast. Cold temperatures, lack of moisture restricted growth small grains north coast. Alfalfa cutting continued. Corn being harvested, sugarbeet harvesting slow San Joaquin Valley. Late planted milo harvest continued Imperial Valley. Milo harvest virtually completed San Joaquin Valley. Prolonged low temperatures 6th, 7th, 8th, and 9th caused frost damage to citrus crop. Amount of damage not yet known. Avocados also damaged but less severe. Low temperatures brought needed dormancy deciduous trees and grape vines. Pruning and dormant spraying continued. Some wind damage to fruit trees. Date harvest continued. Some vineyards being irrigated. Navel

oranges coloring fast. Rind spotting in mandarins. Quality normal. Freezing temperatures slowed growth, delayed harvest, cold weather crops. Remaining tender crops badly damaged. Artichokes heavy frost damage. Broccoli, cauliflower, celery harvest slowed. Lettuce harvest slowed but damage minimal. Market tomato harvest about terminated. Ranges, pastures continue to green; growth slow due low temperatures. Rain needed some areas; soil moisture depleted by winds. Supplemental feeding necessary. Calving, lambing continued.

COLORADO: Major storm system beginning of week produced very heavy snowfall in mountains and moderate amounts at lower elevations. Snowfall ranged from 2 to 10 in. 4th, 7 to 16 in. 5th, and 3 to 20 in. 6th. Temperatures 14 to 19° below normal.

FLORIDA: Rainfall generally light. Temperatures continued above normal until a strong cold front pushed through end of week, bringing subfreezing temperatures to northern areas morning of 10th and a return to near normal readings elsewhere. Temperatures overall few degrees above normal. Rainfall generally light averaging near 0.50 in. with locally heavier amounts over 1.00 in. along southeast coast.

Soil moisture mostly adequate in west, central and south but continues short in many areas of north. Soybean harvest about complete. Sugar-cane and cotton harvest active. Small grain planting resumed. Early planted grains improving after recent rainfall. Pasture grazing improved; condition poor to fair north, fair central and good south. Cattle generally good condition. Rain need continues for citrus; growers irrigating to increase fruit sizes and improve tree condition. Orange harvest increasing; tangelos and tangerines moving for fresh use. Vegetable crops mostly good condition; some crops one to two weeks ahead of schedule due to unseasonably warm weather. Harvest continued very active. Overall shipments up 11% from last week. Cabbage supplies up considerably. Carrot, celery, escarole, lettuce, radishes, peppers, tomatoes increased. Shipments snap beans, chinese cabbage, cucumbers held steady. Sweet corn, eggplant, okra, squash supplies decreased. Quality, size, yields continue good. Harvest slowed some crops due to poor market conditions. Plantings continued active several crops. Strawberry crop making good growth. Fruit set improved most fields. Light harvest expected late December. Planting early spring watermelon crop underway.

GEORGIA: Temperatures 5 to 8° above normal north to 10° above normal south. Rainfall totals 2.00 in. or more occurred in north; elsewhere, rainfall totals near 0.50 in.

Soil moisture adequate. Fieldwork: 3 days suitable. Corn 98% harvested, same as last year. Soybeans poor to mostly fair; 93% combined, 81% last year. Cotton mostly fair to good; 98% picked, 85% last year. Apple harvest virtually complete. Pecans mostly fair to good; 75% gathered, 81% last year. Wheat 80% seeded, 93% last year. Rye 82% seeded, 97% last year. Other small grain 82% seeded, 95% last year. Pastures poor to fair condition, slightly improved. Cattle fair to good. Hogs fair to mostly good.

HAWAII: Weather wet, windy. Heavy rains early week.

Taro dikes, fields damaged second time recent weeks, Waipio Valley, Hawaii. Macadamia seedling beds sustained partial washouts, North Hawaii. Rains also heavy other islands. Spoilage losses reducing yields some crops. Crops bruised exposed areas from strong gusty winds. Spraying frequent disease control. Vegetable supplies light. Banana supplies light to moderate. Papayas spraying intensified, supplies light. Pineapple harvesting down. Sugar harvesting declining, more mills stopped grinding.

IDAHO: Temperatures 5 to 10° below normal. Precipitation light but general. Snow accumulation common in higher elevations.

Farm activity seasonally light. Cattle and sheep in good condition. Marketing cattle and potatoes continued.

ILLINOIS: Temperatures 5 to 15° below normal; north lows below 0° first time. Precipitation less than 0.10 in. extreme northwest, extreme south more than 4.00 in., 0.33 to 0.80 in. elsewhere. Snowfall 4 to 10 in. north, 1 in. central.

Farmwork mainly general chores. Winter wheat mostly good condition. Livestock good condition; soil moisture adequate.

INDIANA: Cold week. Soggy in south where rainfall averaged 2.00 in. Central reported 1.00 in. and in north 0.90 in. with several inches snow and freezing rain in northwest weekend. Temperatures several degrees below normal. Temperatures ranged 2 to 58°.

Some harvesting, tilling, stalk chopping early in period. Most activities halted later in week. Activities: Equipment maintenance, hauling manure, readying livestock for winter, and usual chores.

IOWA: Cold, dry. Temperatures around 15° sub-normal. Subzero temperatures frequent in north and spread elsewhere on 10th with minima to -16°. Snowcover 3 to 7 in.

KANSAS: Snows statewide 6th to 8th, preceded by freezing rain southeast. Snow accumulations 3 to 6 in. northwest, 1 to 3 in. elsewhere. Water equivalent generally less than 0.25 in. ranging from few hundredths southwest to 0.40 in. northwest and locally over 0.50 in. southeast. Temperatures ranged from 18° northwest to 28° southeast, 10 to 14° below normal.

Sharply colder temperatures stressing livestock, increased feed requirements and reduced gains. Wheat generally good condition although much has short top-growth, very little being pastured. Partial snowcover. Western third mostly short topsoil moisture. Subsoil short all areas except northeast. Hay shortages south central and southeast. Pond water supplies low.

KENTUCKY: Temperatures 7° above normal first 5 days and 10° below normal last 2 days. Precipitation much above normal, ranging from nearly 4.00 in. to nearly 11 in. with much flooding weekend. Heaviest rainfall over central.

Heavy rain and flooding causing soil erosion. Most row crops harvested, greatest crop damage may be to large roll hay bales left in field. Some livestock losses reported, but not believed extensive. Loss and damage to fences may be most extensive.

LOUISIANA: Temperatures normal to 7° below normal. Extremes: 83 and 17°. Rain statewide.

Farm activities: Sugarcane and pecan harvest, care of livestock.

MARYLAND & DELAWARE: Temperatures 8° above normal, ranging from high in upper 50's to mid-60's and low upper 30's to 40's. Precipitation widespread with all stations reporting 1.00 to 2.00 in. rainfall. Rain off and on 9th; 10th sunny but breezy and cold.

MICHIGAN: Temperatures ranged from 14° below normal southwest Upper to 5° below normal south central Lower and eastern Upper. Maximum 30's, minimum near zero. Snow depth ranged 3 ft. along Lake Superior to 6 in. along Lake Michigan shore with lesser amounts elsewhere. Most precipitation fell late week and varied from 1.75 in. on Keweenaw Peninsula to 0.05 in. southwestern Upper. Lower Peninsula precipitation ranged from 0.75 in. southern Lower to 0.25 in. northeastern Lower. Most precipitation fell as snow with some rain and freezing rain.

Farming activities: Feeding livestock and farm chores.

MINNESOTA: Temperatures 16° below normal. Extremes: 3 and -28°. Precipitation averaged 0.20 in. below normal. Precipitation total ranged trace to 0.11 in. Snowfall totaled less than 2 in. south and extreme north, less than 1 in. elsewhere. Snow depth 4 to 6 in. west and central, 5 to 9 in. southeast, 8 to 15 in. north central and northeast.

MISSISSIPPI: Temperatures 2 to 10° above normal. Extremes: 22 and 84°. Rainfall widespread, abundant. First snowfall of season in north.

Soil moisture adequate with few scattered locations surplus. Fieldwork: 1.7 days suitable. Winter grazing crops much improved after recent rains but mild temperatures needed for continued growth. Most fall tillage stopped due to wet fields. Soybeans 99% harvested, 85% 1977, 89% average. Cotton 100% harvested, 97% 1977, 93% average. Winter wheat 97% planted; crop in fair condition. Hay and roughage supplies mostly adequate with scattered locations short due to dry summer. Feed grain supplies adequate to short. Pastures fair to poor condition; livestock fair.

MISSOURI: Temperatures 19° below normal except 2° above normal Bootheel. Precipitation mixed, rain early week, snow, sleet and freezing rain 7th and 8th. Heavy glazing ice central and southwest. Precipitation less than 0.25 in. northwest, 1.50 to 2.00 in. east Ozarks, up to 10.00 in. Bootheel with local flooding, 0.75 to 1.00 in. elsewhere.

Above normal supplemental feeding of cattle required since snow and heavy ice limited grazing.

MONTANA: Bitter cold midweek. Temperatures 10° below normal north to 17° below normal southwest and south central. Precipitation heaviest over south central where over 1.00 in. moisture fell. Strong winds caused considerable drifting over weekend.

Harsh winter conditions continue to challenge farmers and ranchers. Livestock in good condition but require supplemental feeding and care.

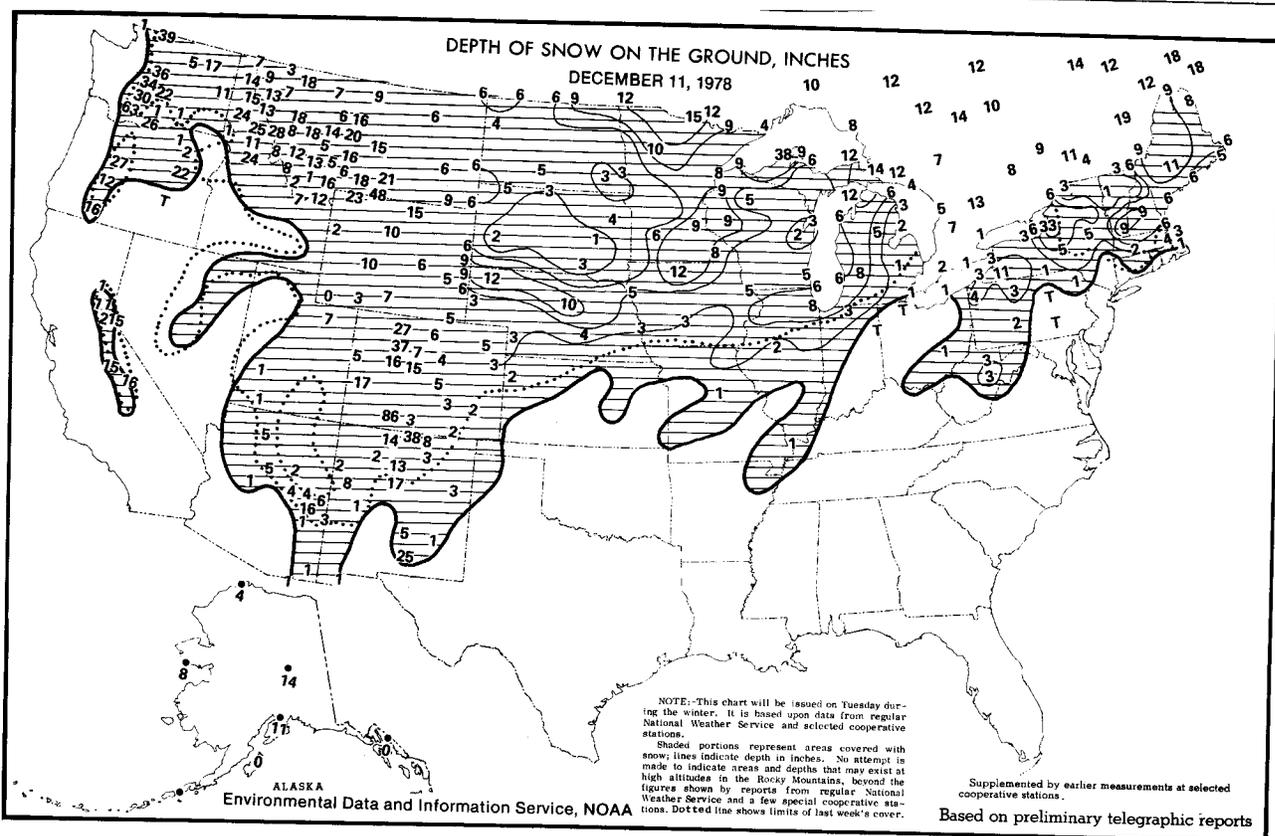
NEBRASKA: Temperatures 15 to 20° below normal. Light snow first and midweek.

Ground frozen, wheat dormant. Farm activities mostly care of livestock.

NEVADA: Cold, dry beginning, more moderate end of week. Light precipitation north, none south. Temperatures averaged 5 to 15° below normal. Extremes: 65 and -17°.

Cotton harvest continued.

NEW ENGLAND: Precipitation 1.00 to 3.00 in. in south, 0.50 to 1.00 in. north. Snow 3 to 7 in. 9th



tapering to less than 1 in. extreme north and south. Above normal temperatures early week, colder by weekend.

NEW JERSEY: Temperatures 5 to 7° above normal, averaging 39° north, 44° south and 45° coastal. Extremes: 20 and 70°. Precipitation well above normal, averaging 1.67 in. north, 2.89 in. south and 2.73 in. coastal. Snow 11th trace to 1 in.

Farm activities: Fruit pruning, machinery repairs, caring for livestock, field corn and soybean harvesting.

NEW MEXICO: Major winter storm beginning midweek with extensive snow north 6th and south 7th. Accumulations from few inches lower elevations south to more than 20 in. higher mountains. Bitterly cold temperatures last half of week with below zero most areas. Temperatures 10 to 20° subnormal.

Cold and snow again interrupted cotton, grain sorghum, pecan, peanut and chile harvests. Harvest will again resume actively as fields permit. About 30% of cotton ginned. Peanut and sorghum grain harvest about 90% complete. Wheat and barley good. Ranges fair, livestock good.

NEW YORK: Temperatures 5 to 10° above normal; mainly in 30's to mid-40's. Precipitation above normal with mostly rain at beginning of week and snow over weekend ranging from 0.50 in. north and west to 2.75 in. New York City.

NORTH CAROLINA: Temperatures above normal. Precipitation 1.00 to 3.00 in.

Fieldwork: 1.8 days suitable. Soil moisture adequate. Condition wheat poor to fair; oats, barley and rye fair to mostly good; pasture fair to good. Harvested: Soybeans 77%, 1977 76%,

average 82%; cotton 92%, 1977 92%, average 92%; sorghum nearing completion. Small grain seedings nearing completion.

NORTH DAKOTA: Continued cold. Temperatures more than 10° below normal. Temperatures ranged from near 0° northeast to 10° southwest. Extremes: -24 and 36°. New snowfall insignificant.

Farm activities centered around winter chores. Transportation a problem, causing slow grain movement. Feed supplies still adequate and accessible. Livestock good condition. Snow depth receding, but all areas have some snowcover.

OHIO: Temperatures 3° below normal north, 1° above south. The mean ranged from 27 to 36°. Extremes: 63 and 4°. Rainfall last half week averaged 0.20 in. above normal northwest to 3.00 in. above normal south.

Flood damage to some standing corn along the Scioto and Ohio River bottoms. Limited number of livestock turned on frozen but good pastures in south central. Tobacco stripping slightly behind schedule.

OKLAHOMA: Midweek thunderstorms pushed rainfall totals above the inch mark in several locations in southeast. Elsewhere precipitation was generally held to less than 0.50 in. Most was in form of freezing rain and snow. Temperatures considerably below normal; ranging from 10° below normal east central to 17° below normal Panhandle.

Cotton and grain sorghum harvests delayed by weather. Cattle in good condition.

OREGON: Temperatures 3 to 8° below normal. Coastal precipitation in 1.00 to 2.00 in. range. Willamette Valley received 0.80 in. Precipitation north of the est ranged from 0.70 to 1.30 in.,

elsewhere 0.20 to 0.50 in. Extremes: Mid-50's, low 20's west; high 50's, below zero east.

Fieldwork slowed almost to halt as extensive rain prevailed. Fieldwork limited to livestock feeding; mending fence. Feed supply good. Storage crops, onions and potatoes, moving to market. Lambing coming along well.

PENNSYLVANIA: Partly cloudy and mild through 8th turning much colder and windy 9th with 10° drop in temperature. Extremes: 68 and 2°. Major weekend storm produced 1.00 to nearly 3.00 in. rainfall before turning to snow. Several inches new snow many places with up to 10 in. Erie County.

Normal winter chores.

PUERTO RICO: Island average rainfall 0.86 in. or 0.23 in. below normal. Temperatures averaged about 77 to 79° on coasts and 73 to 75° interior. Extremes: 96 and 60°.

SOUTH CAROLINA: Warmer than normal; 9th colder with general freeze in west 10th. More than usual rainfall most areas; heaviest 2.00 to 3.00 in. mountains.

Cotton scrapping virtually complete ahead of usual. Soybean harvest continued as conditions permitted. Seeding small grains completed; stands improving with moisture now available. Tobacco bed preparation, liming, pruning peach trees, apple trees, grapevines.

SOUTH DAKOTA: Subnormal temperatures. Readings 4 to 18° were 8 to 19° subnormal. Extremes: -22 and 43°. Little significant snowfall except in Black Hills and southwest where over 5 in. received.

TENNESSEE: Heavy rain; amounts 8.50 in. middle, 4.00 in. west, 1.75 in. east. Flash flood warnings several days. Temperatures above normal most of week. Weekend temperatures 8 to 15° below normal.

Harvest of row crops complete. Burley tobacco stripping winding up. Pastures poor. Cattle on supplemental feed. Soil moisture surplus. Farmers busy with general chores and care of livestock.

TEXAS: Very cold air entered Panhandle 5th covered most of State by 6th. Below normal temperatures statewide for remainder week. Rains triggered by cold front with heaviest amounts falling East Texas, upper Coast. Rainfall below normal West Texas, South Texas, lower Valley, and Coastal Bend. Temperatures below normal statewide, ranging from 4° below normal lower Valley, to 15 to 16° below normal upper Coast, East Texas.

Cotton, sorghum, soybean, sugarbeet harvest fair to good progress early in week before cold front stopped field activity. Wheat, oats good growth, grazing above last year most areas. Cotton harvest rapid progress early week before severe cold spell stopped most field activity. Some gins High, Low Plains starting build up substantial backlogs by 5th. Little precipitation fell north, western areas so farmers should move back into fields as weather warms up. Sorghum harvest continued to hover near completion mark. Severe cold weather drove harvest equipment from fields about midweek. Some remaining stands lodging and high moisture noted. Wheat growth fair to excellent but development slowed by record cold. Grazing available from northern High Plains to South Texas. Some greenbugs, grain mites in Blacklands, southern areas; farmers spraying where necessary. Parts of High Plains need moisture on non-irrigated stands, while some fields southern areas too wet to graze. Cotton harvested 47%, 97% 1977, 83% average. Peanuts harvested 99%, 99% 1977, 100% average. Pecans

harvested 69%, 80% 1977, 74% average. Sorghum harvested 97%, 100% 1977, 100% average. Soybeans harvested 97%, 100% 1977, 100% average. Sugarbeets harvested 82%, 100% 1977, 95% average. Flax planted 68%, 78% 1977, 69% average. Oats planted 100%, 100% 1977, 99% average.

Lower Rio Grande Valley sub-freezing temperatures over weekend caused some leaf damage, especially on young trees, but no significant citrus fruit damage expected. Remaining bell pepper fields lost to cold weather. Onions received top growth injury. Many greens, tender vegetables suffered leaf top damage, mature lettuce fields probably received wrapper and some cap leaf burn. Prior to cold front, cabbage, broccoli, lettuce harvest active. Some cabbage fields plowed under result of weak market. Onions making good progress. Citrus harvest active with rust mite infestations increasing, particularly in some eastern Valley groves. Coastal Bend windbreaks up, land preparation for spring vegetables, melons completed. San Antonio-Winter Garden freezing temperatures caused injury to onion tops, leaf damage to lettuce, other tender vegetables. Cabbage, carrot harvest continued, slowed by low markets. Spinach harvest active with some fields plowed under result severe rust, mold damage. Onion planting active. High Plains carrot harvest complete. Trans-Pecos onions up to good stand, cabbage harvest active at El Paso. Bell pepper harvest complete at Pecos. Pecan harvest continued increase most areas, however, wet conditions in east, southeast slowed activities.

Most livestock in fair to good condition, increase in shrinkage and loss of life, particularly among newborn may be expected result of cold, damp weather and hard freeze over much of State past weekend, accompanied by snow, freezing rain on High Plains. Supplemental feeding increased with colder weather in all areas. More cattle moved to small grain pastures in central and east as native pastures became short or froze out.

UTAH: Recurring scattered rain and snow showers. Amounts very variable generally light to moderate but locally very heavy. Temperatures coldest of season ranging between 3 and 15° below normal.

Routine chores: Caring for livestock and poultry. Sugarbeet processing continued, also sorting, grading and marketing potatoes, onions and apples from storage.

VIRGINIA: Temperatures above normal. Warm with record high temperatures on 8th. Much colder end of period. Extremes: 80 and 13°. Rainfall averaged 1.50 in.

Topsoil moisture mostly adequate. Pastures, winter grains and grazing good. Some excess small grain growth eastern areas. Fieldwork: 2.5 days available. Harvest progress: Corn 96%, soybeans 92%, sorghum 77%. Wet fields limited outside work. Some winter plowing for spring crops, liming, fertilizing, orchard pruning. Improved pastures and warm weather cutting livestock feeding in a few central Piedmont areas. Chores: Tobacco grading and marketing, livestock care and marketing, spreading manure, calving.

WASHINGTON: West: Temperatures 2 to 3° below normal. Precipitation ranged from 0.40 to 2.60 in. below normal.

Some raspberry caning continued. Livestock on supplemental feed.

East: Temperatures 5 to 10° below normal. Precipitation ranged from 0.10 to 0.50 in. below normal.

Pruning underway despite leaves not fallen in some orchards. Scattered corn and sugarbeet har-

vests continued. Snow provided protective cover for winter grain. Cattle on winter feed programs.

WEST VIRGINIA: Temperatures 12° above normal. Precipitation well above normal. Extremes: 73 and 19°.

Fieldwork: 3.0 days suitable. Soil moisture adequate to surplus. Small grains good condition. Hay supply adequate to surplus. Grain supply mostly adequate. Livestock good condition.

WISCONSIN: Temperatures well below normal, especially after midweek when daytime highs 15° or less. Extremes: 35 and -25°. Warmest 5th, coldest 10th.

Below zero readings every morning northwest. No major storms. Light snow and flurries 4th, 5th, 7th. Heaviest snow 1 to 3 in. extreme southeast early 7th.

WYOMING: Precipitation widespread; above normal amounts. Temperatures 15 to 20° below normal. Maximums mostly 30's with minimums 10 to 20° below zero on average.

Winter wheat fair to good condition, mostly snowcovered. Ranges, pastures mostly good although many have heavy snowcover making supplemental feeding necessary. Livestock generally good although storms causing some loss in condition.

World Weather and Crop Update

December 4 - 10

USSR. Normal snowfall continued over the Ukraine and lower Volga Valley, adding additional protective cover for the wheat crop as temperatures continued below freezing. Snowfall to the north in Belorussia and the Central Region was below normal, but amounts of 5 to 15 mm in the New Lands ranged above normal for this season.

PEOPLE'S REPUBLIC OF CHINA. Widespread, above-normal rains of 5 to 15 mm dampened the lower half of the Yangtze Valley late in the period, helping to maintain water supplies. Dry conditions continued elsewhere, which was normal to the north and west, but below a normal of 8 to 12 mm along the southeastern coast.

AUSTRALIA. Very little rain fell in the northerly wheat areas, allowing wrap-up of harvest operations. Early in the week rains in the wheat belt of Victoria and New South Wales were light (5 to 10 mm) as the harvest continued. Only along the coast did substantial amounts of 20 to 30 mm dampen the region.

INDIA. All areas except the southern tip were nearly rainless, but such conditions are normal for this season; the outlook for the wheat crop continues to be optimistic. Rainfall along the extreme southern east coast held mostly a normal 25 to 30 mm.

SOUTHEAST ASIA. Most of the area was rainless as the rice harvest continued in full swing.

AFRICA. Above-normal rains of 25 to 35 mm fell only in widely-separated Mediterranean coastal areas in northern Africa. Morocco's central and southern wheat areas received only light amounts of 5 to 10 mm. In much of South Africa's Maize Triangle, rains were normal (30 to 40 mm), but much below normal in a strip across the north. Only a few areas should have moisture shortages, considering rainfall patterns of the past several weeks.

EUROPE. Precipitation over much of Europe neared normal with amounts reaching 10 to 15 mm. These amounts stayed below normal in the vicinity of the Alps; below-normal amounts also dotted parts of eastern Europe and southeastern Spain. Above-normal precipitation of 25 to 100 mm doused the UK and western half of the Iberian Peninsula. Soil moisture probably remained inadequate in southwestern France; southeastern Spain continues quite dry.

SOUTH AMERICA. Rainfall for the week was above the normal of 25 to 40 mm in northern and southern soybean areas of Brazil, but only 5 to 15 mm fell from northern Rio Grande do Sul north into southern Parana. Some localities in this drier area may be short of moisture, however, the outlook for the crop as a whole remains optimistic. In Argentina, a broad band of heavy rain drenched the corn belt early in the week. This undoubtedly caused more trouble for soybean planting and wheat harvesting operations, although areas just to the south in Buenos Aires state remained much drier.

(continued from page 2)

revealed 79° at Norfolk, 76° at Raleigh, and Orlando's 87°.

Moving west, cold air remained in California, but records were set in Colorado, Texas, and Minnesota. In the Lone Star State, Amarillo managed -4°, Austin hit 24°, and San Antonio and Wichita Falls tied records at 23° at 13°. Alamosa recorded a frosty -39°, 13 degrees under the 1964 mark; Minneapolis opened the record books to a record-tying -14°.

Snow whitened the country from the Great Lakes to New England on Sunday; Cleveland's total mounted to a foot. Between one-half and three-quarters inch of rain dampened the Pacific Northwest changing to snow as the moisture moved over the Cascade

Mountains. The Southwest remained cool, but southern California began returning to normal with high readings in the 60's.

A strong high pressure system pumped cold air into the South and East. Records fell from Texas to Florida as freezing temperatures dipped by dawn into the lower Rio Grande Valley and extreme northern Florida. Among them, Austin tallied 19°; Corpus Christi, at 21°, noted its coldest reading this early in December; Shreveport, northwestern Louisiana, fell below its 1898 mark by one to 17°; and Pensacola, Fla., was nipped by a record-equaling 26°. For the third consecutive day, Alamosa broke a record low---this time at -24°. All three readings toppled records set in 1964.



BRAZIL: WEATHER, CLIMATE, AND
SOYBEAN PRODUCTION

Brazil stands as third largest producer of soybeans in the world, following the United States and the People's Republic of China (table 1). These three countries produce more than 90 percent of the world's soybeans. Of the "Big Three", Brazilian production areas hold the distinction of having the largest year-to-year variations in production because of a wide range of weather conditions. Therefore Brazil plays a major role in determining supplies and ultimately prices of the world soybean crop. Last year, drought reduced total soybean production to approximately 9.5 million metric tons compared to a record 12 million metric tons in 1977. The outlook so far for the 1979 crop appears promising (table 2) with potentially record crops in both the two key producing states--- Rio Grande do Sul and Parana (figure 1) where 84 percent of the Nation's crop is grown. This article provides a perspective of the weather and climate in the soybean producing areas of Brazil and discusses some features of soybean production practices.

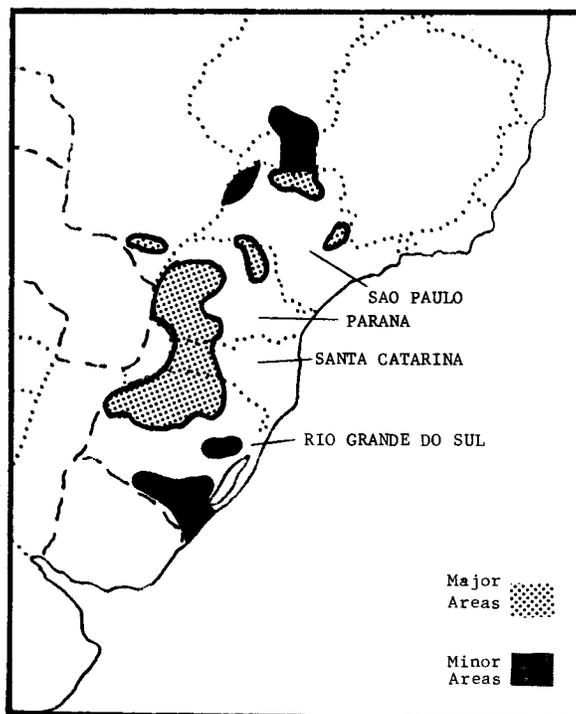
Table 1. Annual production of soybeans in the United States, People's Republic of China (PRC), and Brazil for the years 1974, 1975, and 1976. (in 1000 MT)

Country	Production (1000 MT)			Average
	1974	1975	1976	
U.S.	33062	42079	34425	36522
PRC	11867	12062	12143	12024
Brazil	7876	9892	11227	9742
World	56969	12062	12143	12024

Table 2. Area, yield, and production of soybeans by State in Brazil (anticipated for the January to April 1979 harvest).

	Area (1000 ha)	Yield (kg/ha)	Production (1000 MT)
Rio Grande do Sul	3,938	1,571	6,187
Parana	2,460	2,101	5,168
Sao Paulo	500	1,783	892
Mato Grosso	363	1,501	545
Santa Catarina	367	1,276	468
Others	154	1,225	189
Totals	7,782	9,474	13,449

Figure 1. Principal soybean producing areas of Brazil.



In general, acreage continues to increase for soybeans. A rise of approximately 5 percent is expected in Rio Grande do Sul this year with most of the increase coming in nontraditional areas in the south central and southeastern part of the State. The increases will come primarily in the western part of Parana; limited upturns are also expected in the south central and southwestern regions. Plantings are declining somewhat in northern areas of Parana in favor of cotton and corn. Decreases are also anticipated in the southern part of Sao Paulo for the same reason. However, plantings in the northeastern areas of Sao Paulo will likely increase. In terms of long-range development, Mato Grosso will become increasingly important.

Climate Perspective

The soybean-growing region of Brazil is located in a transition zone of rainfall regimes. Annual precipitation ranges from 1200 to 1700 mm in a rather complex geographic pattern, but more important, the seasonal distribution of rainfall shows a marked gradient as one moves south and north.

Closer to the equator, the northern growing areas of southern Mato Grosso, Sao Paulo, and northern Parana, mark warm-season rains as the rule. Monthly totals range from 20 mm in July to 200 mm in December and January, and are greater than 100 mm per month throughout the growing season of October to March giving an annual total of about 1300 mm. Further to the north, the seasonal rainfall extremes are even more pronounced (4 and 349 mm) with an annual total of nearly 1700 mm; conditions there are not favorable for soybean cultivation.

As one moves southward into the main growing area of Parana, annual rainfall increases to about 1700 mm, but the seasonal distribution is more uniform. There the seasonal minimum in July approaches 80 mm, and there are double maximums of about 240 mm in October and February with a dip to 150 mm in between. Further to the south, in northern Rio Grande do Sul, the maximum value in February disappears, and only a reduced maximum of 180 mm in October is left. However, the wintertime minimum is still 80 mm, and the annual total is 1600 mm. Lastly in southern Rio Grande do Sul, the seasonal distribution is even more uniform with monthly values ranging from 60 to 140 mm.

The South Atlantic Ocean serves as the moisture source for precipitation in southern Brazil. Strengthening of the sub-tropical high pressure system in the South Atlantic during the warm season transports this moisture inland and southward along the coast. Apparently the system stays consistently strong enough in the summer to supply moisture to the northern portion of the soybean-growing region. However, a weakening of the system in the middle of the warm season results in reduced moisture moving to central portions of the region. Strong frontal activity spawns greater wintertime precipitation in areas farther south.

Agricultural Perspective

Soybean planting in Brazil normally starts in late September and continues through early December. The bulk of the planting occurs in October and early November. Harvest normally begins in February and winds down in March.

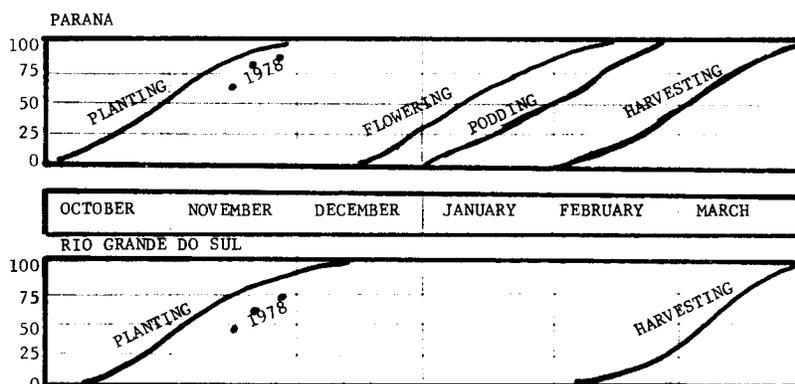
In the past two or three years, planting dates have been moved forward, especially in Parana and

Sao Paulo. In some cases, this is being done to accommodate double cropping with wheat. Wheat needs to be planted early if the risk of frost is to be avoided or minimized. Thus some fields are harvested as early as mid-January in parts of northern Parana and Sao Paulo. However, there is a movement away from double cropping. Approximately 40 percent of the 1978 crop was double cropped compared with 50 percent in 1977. While this was due in part to the difficult and late planting season in

1978 (planted late 1977), it falls in line with trends. Planting longer-season, higher-yielding varieties may outproduce short-season varieties by 25 percent in some years.

The rate of development also varies because of the broad areas over which soybeans are grown. A general "crop calendar" is shown for Parana and Rio Grande do Sul in Figure 2. Overall about a month's difference in planting and harvesting separates the two areas.

Figure 2. General crop calendars for soybeans in the States of Parana and Rio Grande do Sul, Brazil (including 1978).



1978-79 Growing Season (facing page)

Prior to planting the 1978-79 crop in southern Mato Grosso and western Parana and Sao Paulo, rainfall moved above normal until the middle of September (see figure 3a). At that time, a three-week dry spell began delaying planting in early October. Since October 10 rainfall in that area has been normal. This short dry spell therefore held little consequence; growing conditions in that area appear much better than a year ago. The less-important growing area in eastern Parana has been a little drier. The dry spell in September/October lasted longer with the last several weeks of November relatively dry. Conditions are perhaps a little worse than a year ago (see figure 3b),

though still not as dry as western Parana at that time.

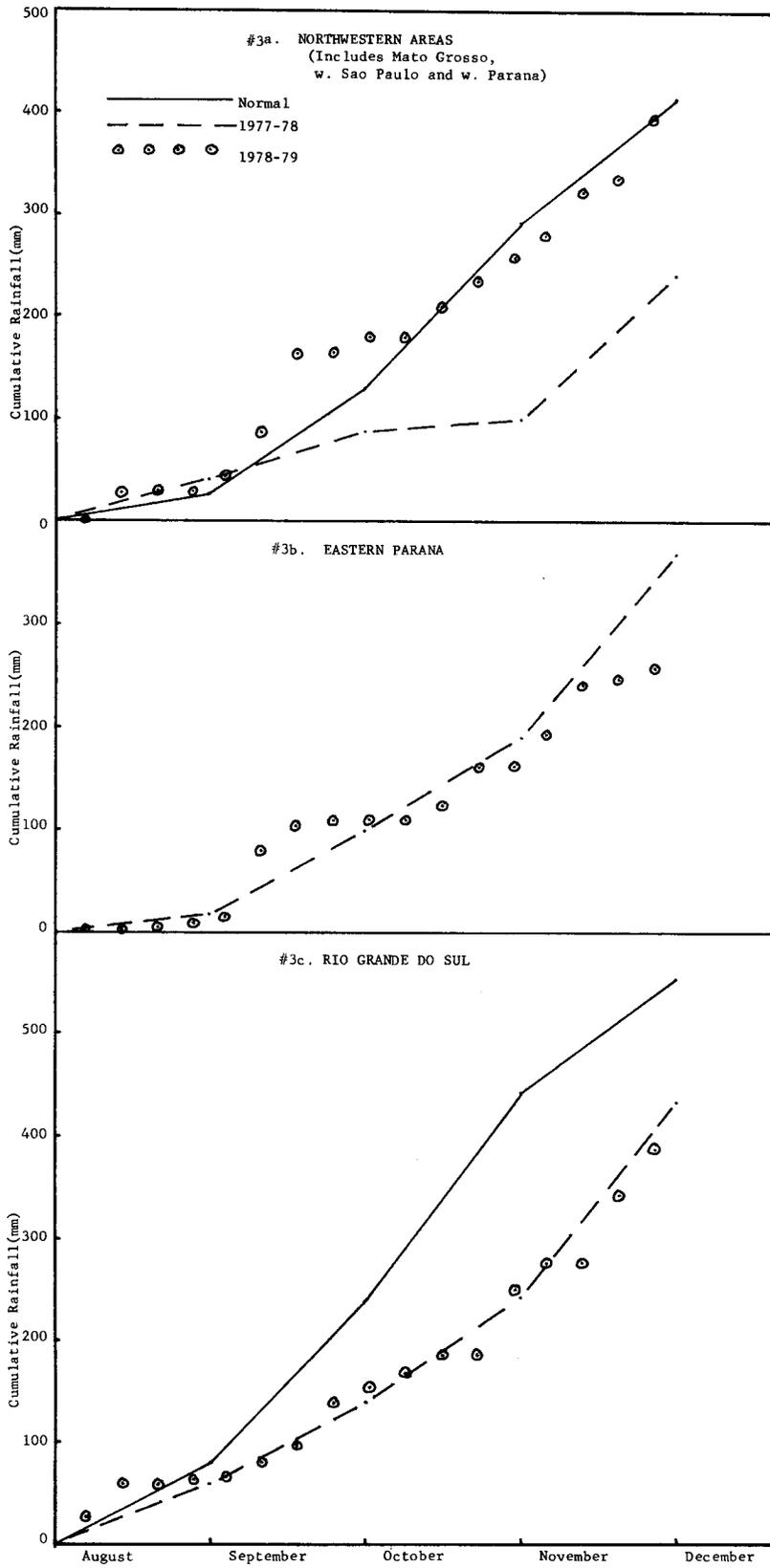
In Rio Grande do Sul, cumulative rainfall was little more than half of normal by the end of October (see figure 3c), following a trend similar to a year ago. However, soil moisture remained adequate for planting with seemingly normal rainfall in this area making conditions too wet for cultivation of soybeans. Rainfall increased in November, continuing the trend of last year, but was concentrated mostly in a two-week period causing concern about possible damage to the crop. Reports of damage have conflicted, however, and widespread replanting is not anticipated.

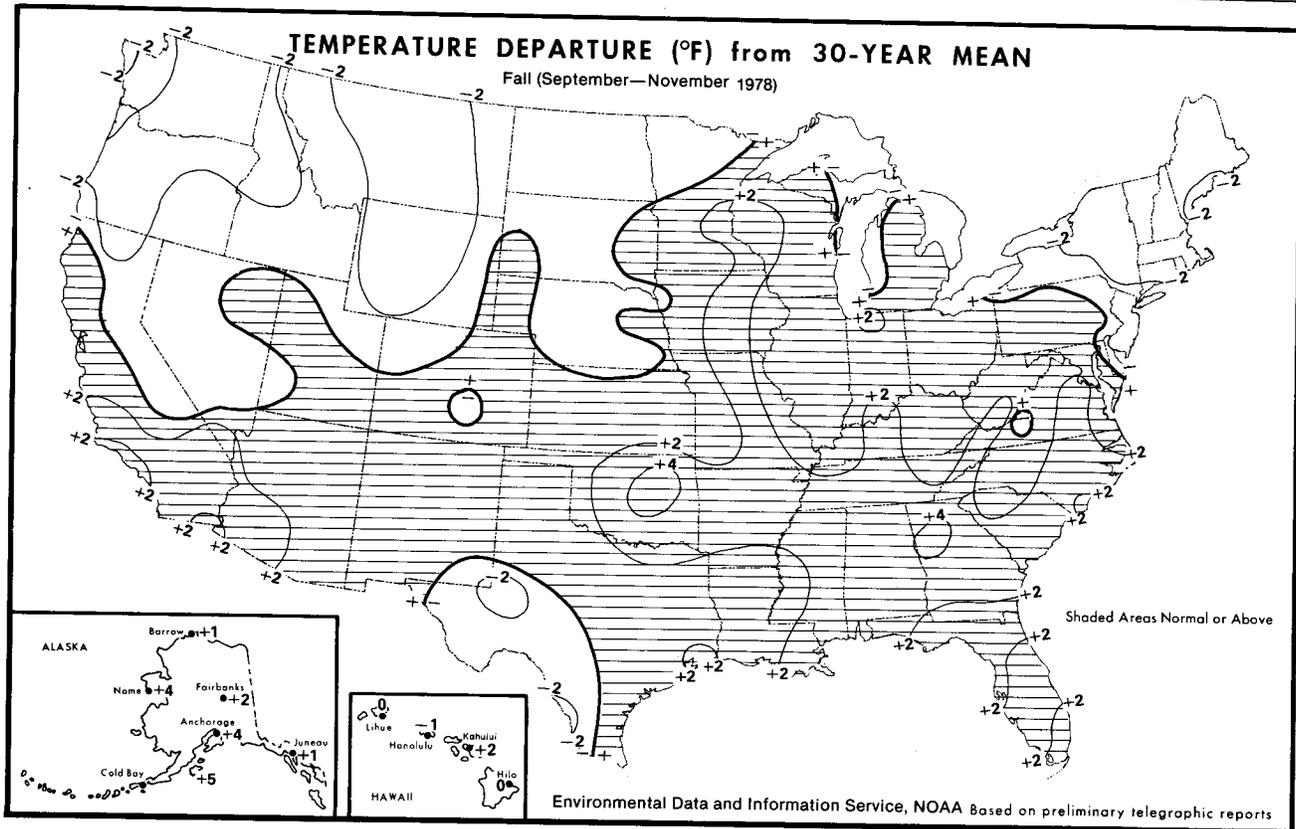
Summary

Brazil is a major producer of soybeans and will play an increasingly important role in world markets in the future. While soils and climate are generally well-adapted to soybean production, yields are highly dependent on good moisture, particularly early in the season. Early rainfall is needed for germination and development because "winter" is typically very dry. Delays in the

start of the rainy season usually result in difficulties later in the season, as happened in 1977.

Prospects for this year's crops continue favorable. Although there has been concern about some dryness early and recent heavy rains, very little replanting may be necessary. Soil moisture is now at near normal levels and should provide an excellent basis for future crop development.





Fall Weather Review

(September, October, November)

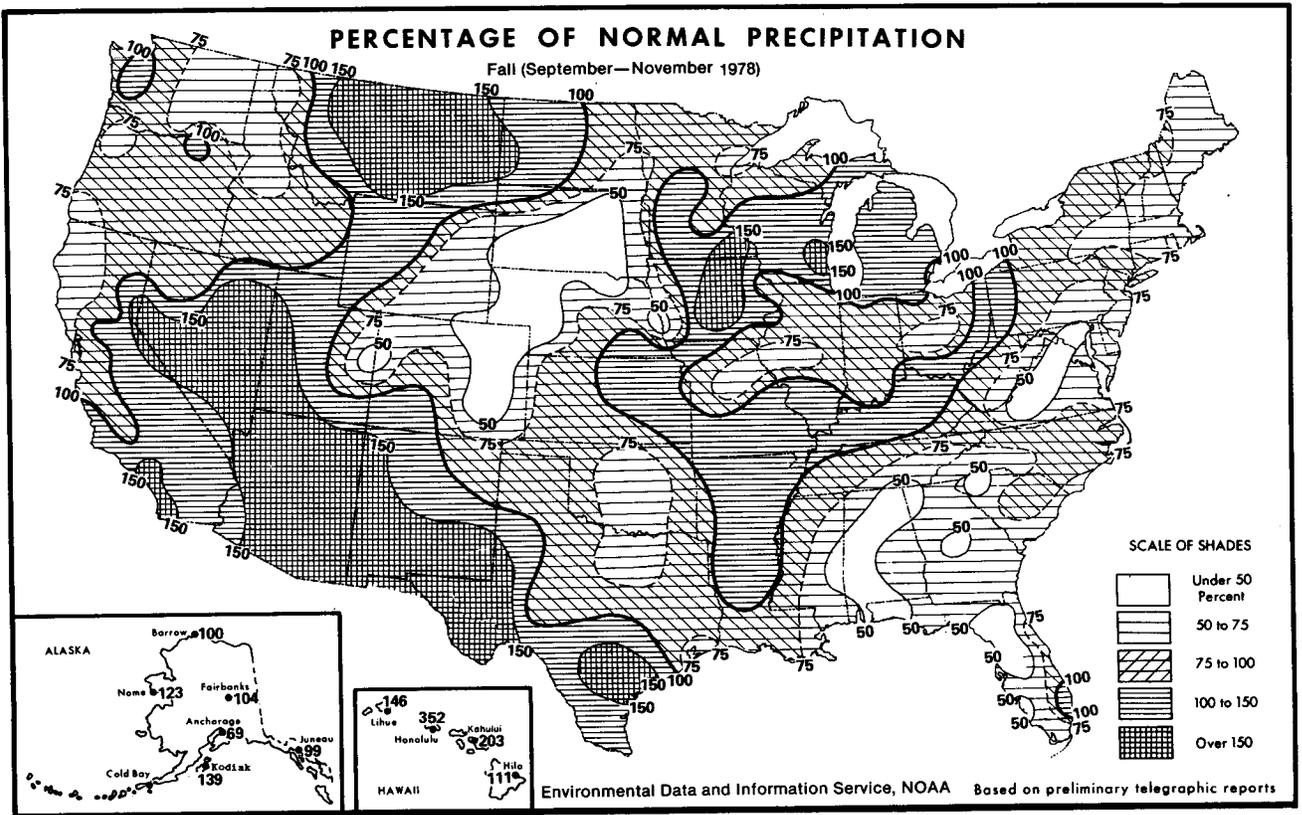
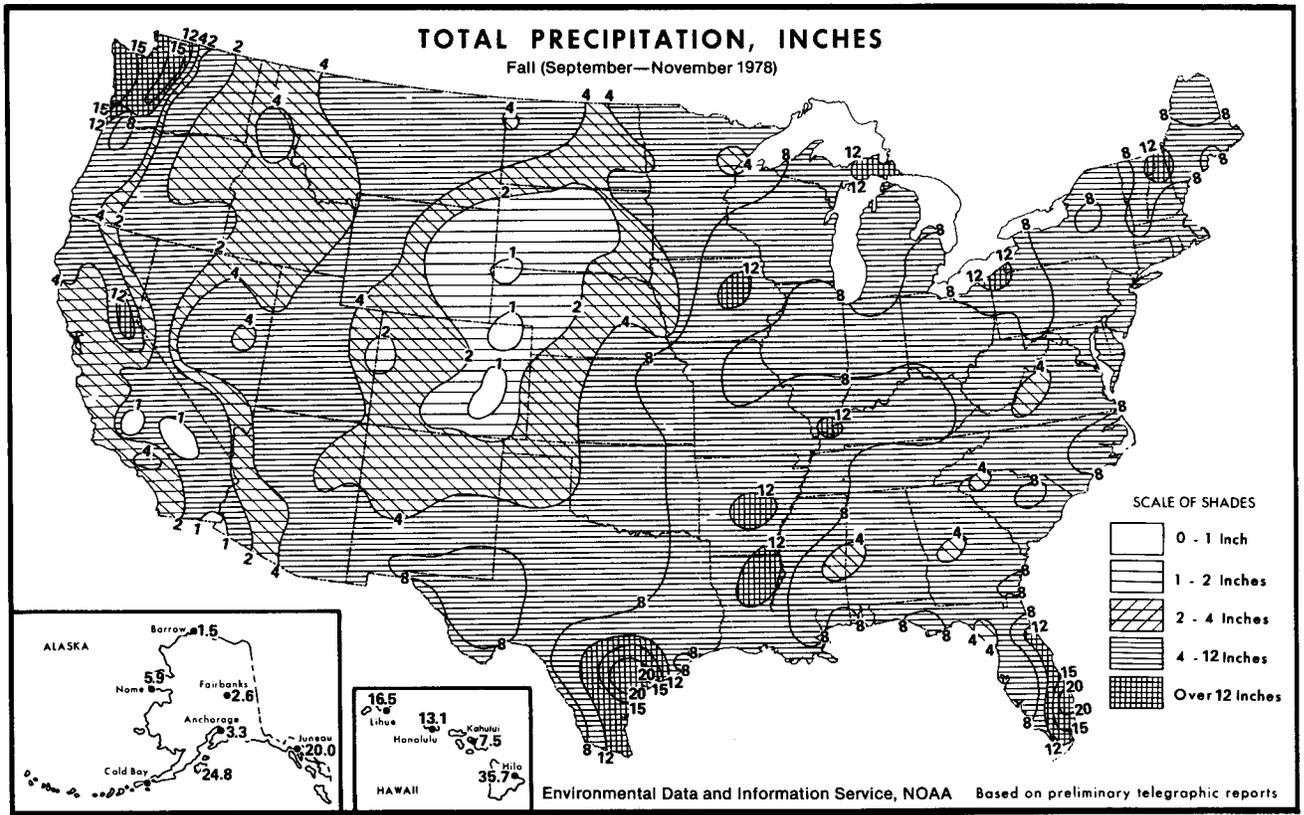
HIGHLIGHTS: The fall season was generally good for most agricultural activity. Ample warm and dry weather allowed most crops to mature and be harvested before freezing weather became a threat. Only cotton lagged the normal harvest date. The South and East averaged much drier than normal, but some rain fell in these areas during the latter part of the period to help alleviate the dry weather. Heavy rain in eastern Oklahoma did a lot to offset the drought there, but more rain is needed to replenish the subsoil moisture. Temperatures averaged warmer than normal in most of the Nation, however, the northern Plains and Pacific Northwest averaged cooler than normal. New England also noted a cool fall season.

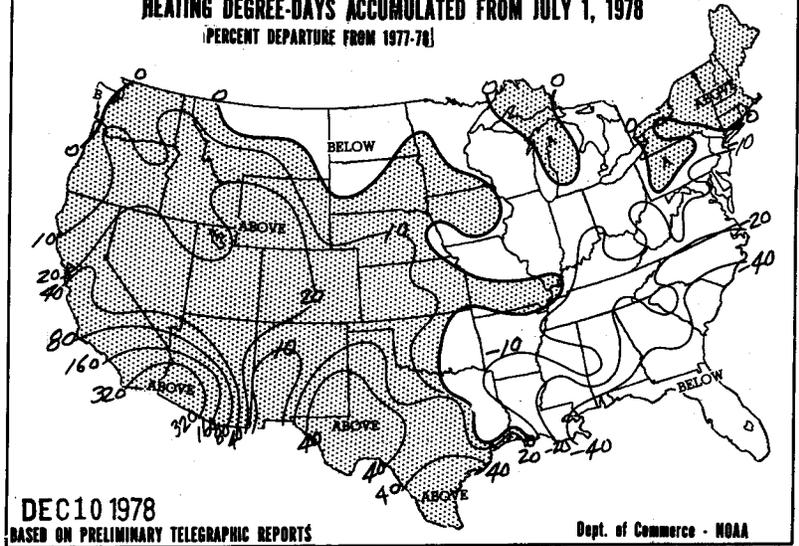
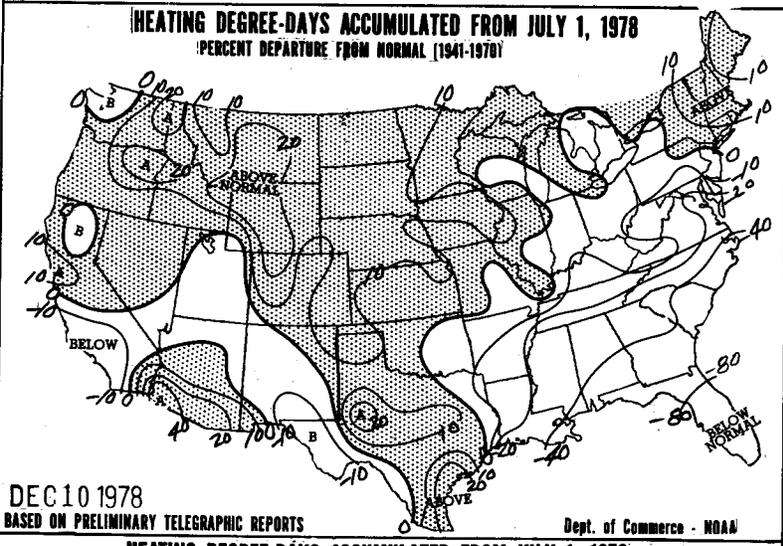
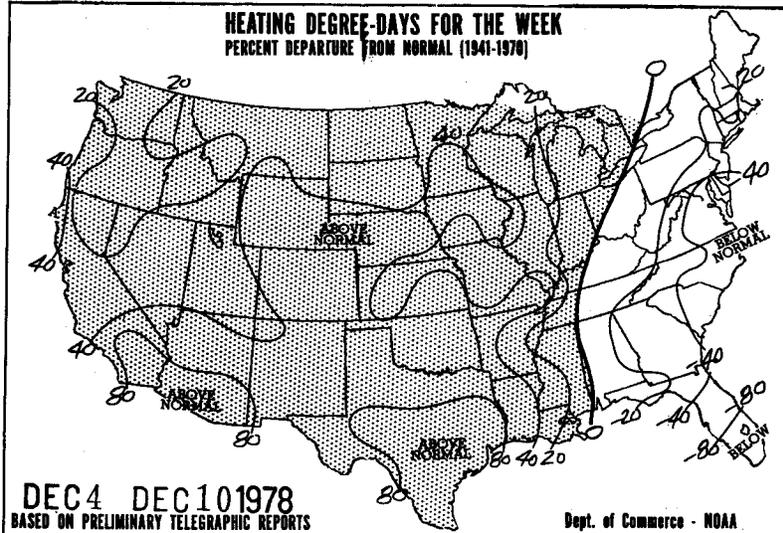
The first month, September, was introduced by a tropical storm—"Norman"—dissipating along the southern California Coast. The storm dumped unseasonable amounts of rain from San Diego through the San Joaquin Valley and northward. Coming at a time when little or no rain is expected in that area resulted in some heavy damage to crops. Elsewhere weather was generally good for the spring wheat harvest which was virtually completed during September. Harvest of other crops and planting of winter wheat got underway during the month. Precipitation ranged well above normal in much of the West. Significant amounts of rain also fell from Southwest Texas to the Great Lakes. Excluded from this band of normal rain was the already dry area of southeastern Kansas, eastern Oklahoma, southwestern Arkansas, and northeastern Texas. Most of the area east of the lower Mississippi Valley, the Ohio Valley, and the Appalachians were drier than normal. Surges of cool air into the Pacific Northwest spread through the Plateau

and western Rockies keeping that area cooler than normal, but the East remained generally warm.

The mid-fall month of October was generally a very dry month. Exceptions included the Southwest where some heavy showers occurred in parts of Nevada, Arizona, New Mexico, and in central Colorado; the area from southern Illinois through New England notched above normal rain. Elsewhere heavy rain fell in the Rio Grande Valley where some flooding was reported. Winter wheat planting neared completion during October while harvest of other crops advanced rapidly in the dry weather. The dry areas of eastern Oklahoma and southeastern U.S. got even drier. Especially dry were the eastern slopes of the Appalachians where fire danger was rising, and Georgia where drought continued its plague. October temperatures were warmer than normal in the West and cooler in the East. South central California and southwestern Arizona averaged 6 to 9 degrees warmer than normal while parts of the Ohio Valley and Southwest Texas showed 4 to 5 degrees cooler.

Precipitation became widespread in November. Harvesting of corn, soybeans, and sorghum was virtually complete before the end of the month. Only cotton was lagging—Texas and Oklahoma fell far behind and waiting for a killing frost to defoliate the plants. Rains fell in the drought areas of the eastern central Plains, where almost twice the normal amount of rain was recorded, and in southern U.S. where near to above normal amounts quenched the dry earth and wet the fire-prone valleys of western Virginia. Cold air pushed into the northern Rockies and spread through the Pacific Northwest and northern Plains, but the Southwest, South, and East, except for New England, averaged warmer than normal.

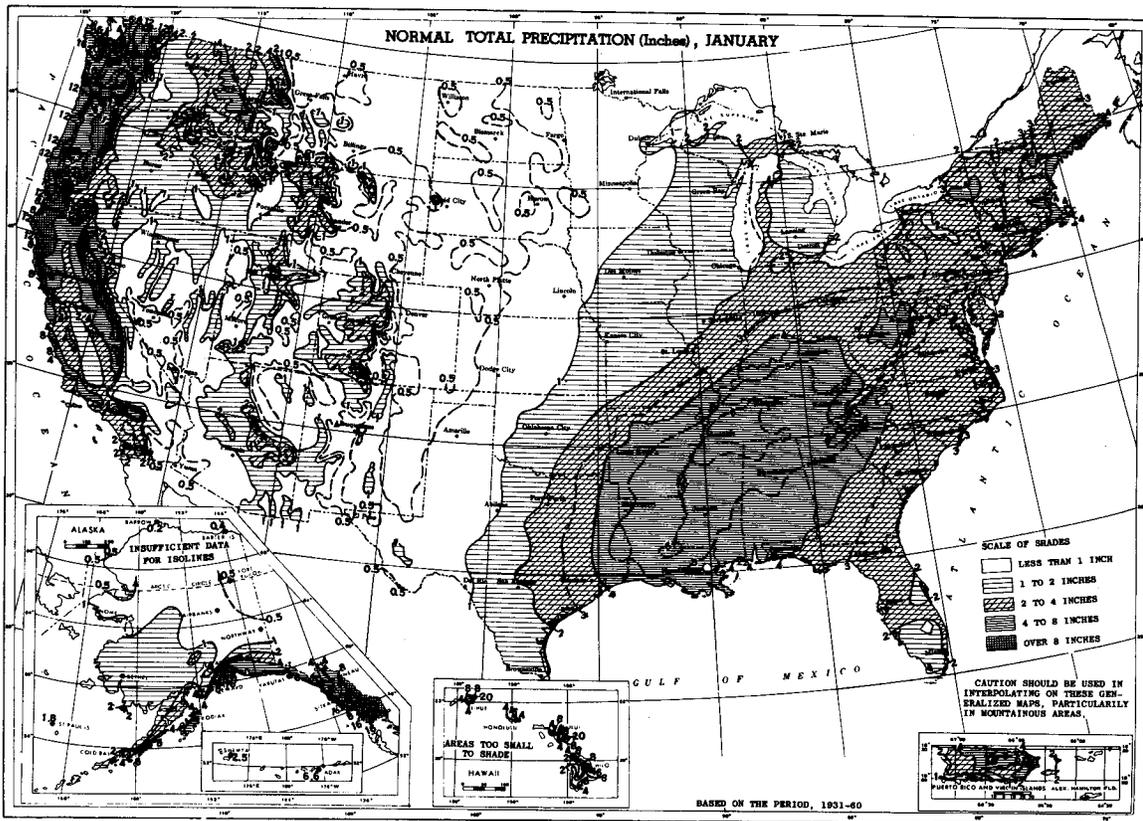
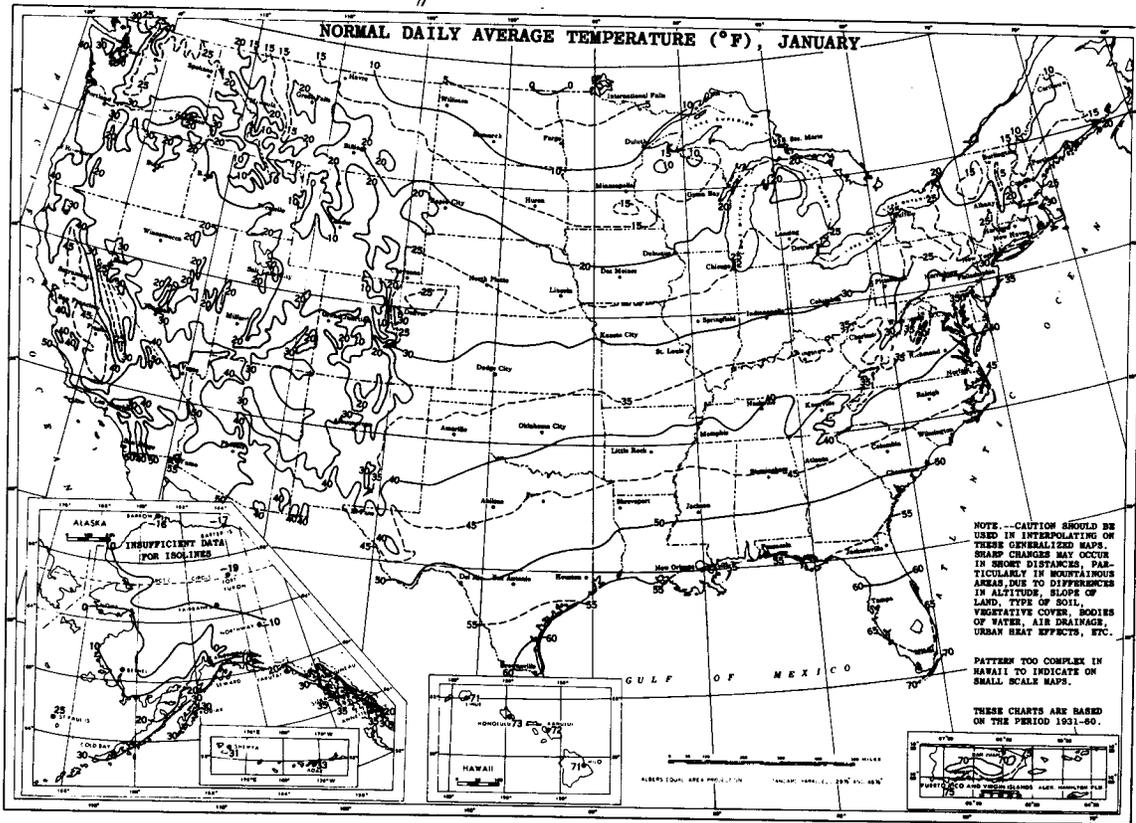


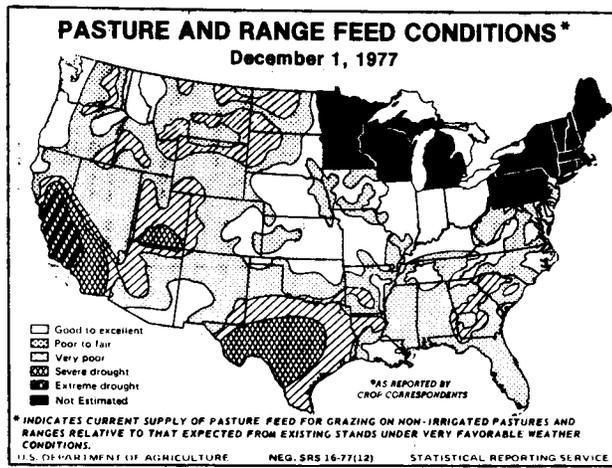
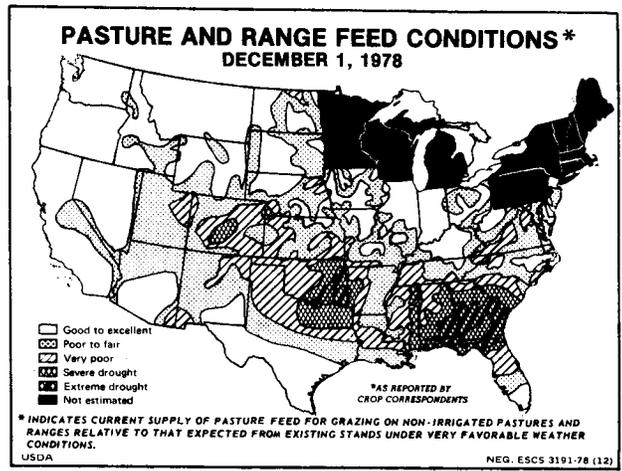


HEATING DEGREE DAYS (BASE 65°) FOR WEEK ENDING DEC. 10, 1978.*

STATES AND STATIONS	WEEKLY		SEASONAL ACCUMULATION +			STATES AND STATIONS	WEEKLY		SEASONAL ACCUMULATION +			STATES AND STATIONS	WEEKLY		SEASONAL ACCUMULATION +		
	TOTAL	DEPARTURE*	TOTAL	DEPARTURE*	DEPARTURE FROM 1977-78		TOTAL	DEPARTURE*	TOTAL	DEPARTURE*	DEPARTURE FROM 1977-78		TOTAL	DEPARTURE*	TOTAL	DEPARTURE*	DEPARTURE FROM 1977-78
ALA. BIRMINGHAM.....	121	71	538	179	120	MAINE. CARIBOU.....	212	57	2916	271	326	YOUNGSTOWN.....	206	32	1557	54	35
MOBILE.....	121	71	155	159	199	PORTLAND.....	212	57	2020	259	259	OKLA. OKLAHOMA CITY.....	242	81	844	16	6
MONTGOMERY.....	121	71	281	269	107	MD. BALTIMORE.....	113	81	983	132	56	TULSA.....	238	81	824	24	16
ARIZ. FLAGSTAFF.....	365	128	2154	26	598	MASS. BOSTON.....	162	44	1452	185	270	OREG. ASTORIA.....	280	33	1466	9	46
PHOENIX.....	365	128	325	17	247	MICH. ALPENA.....	162	44	2073	213	275	BURNS.....	280	33	1466	9	46
TUCSON.....	365	128	444	77	271	DETROIT.....	162	44	1642	191	131	WEDFORD.....	280	33	1466	9	46
WINSLOW.....	365	128	1219	104	222	GRAND RAPIDS.....	162	44	1924	243	243	PENDLETON.....	280	33	1466	9	46
YUMA.....	365	128	235	104	235	HOUGHTON LAKE.....	162	44	2313	243	243	PORTLAND.....	280	33	1466	9	46
ARK. FORT SMITH.....	214	63	750	35	39	LANSING.....	162	44	1454	155	105	SALEM.....	280	33	1466	9	46
LITTLE ROCK.....	214	63	672	129	42	MARQUETTE.....	162	44	120	58	58	PA. ALLENTOWN.....	167	51	1345	84	43
CALIF. BAKERSFIELD.....	45	4	426	57	142	MUSKOGEE.....	162	44	2333	120	120	ERTS.....	167	51	1345	84	43
EUREKA.....	45	4	111	97	111	S. STE. MARIE.....	162	44	2632	158	76	HARRISBURG.....	167	51	1345	84	43
FRESNO.....	45	4	630	21	120	MINN. DULUTH.....	440	103	2816	149	105	PHILADELPHIA.....	167	51	1345	84	43
LOS ANGELES.....	45	4	300	68	184	INTERNATIONAL FALLS.....	440	103	3213	281	41	PITTSBURGH.....	167	51	1345	84	43
RED BLUFF.....	45	4	1750	111	1750	MINNEAPOLIS.....	440	103	1213	42	42	SCRANTON.....	167	51	1345	84	43
SAN DIEGO.....	45	4	240	37	179	ROCHESTER.....	440	103	2439	317	95	R. I. PROVIDENCE.....	167	51	1550	141	192
SAN FRANCISCO.....	45	4	901	92	253	ST. CLOUD.....	440	103	2588	184	98	S. C. CHARLESTON.....	45	57	215	272	202
STOCKTON.....	45	4	691	63	202	MISS. JACKSON.....	131	27	403	135	141	COLUMBIA.....	64	61	357	270	293
COLO. DENVER.....	327	110	1738	135	275	MERIDIAN.....	123	20	432	168	22	GREENVILLE.....	110	118	604	177	101
GRAND JUNCTION.....	327	110	1644	175	406	MO. COLUMBIA.....	271	61	1189	27	115	S. DAK. ABERDEEN.....	127	111	2507	258	1
PUEBLO.....	327	110	1655	238	261	KANSAS CITY.....	271	61	1305	90	109	HURON.....	127	111	2361	290	142
CONN. BRIDGEPORT.....	158	114	1147	5	116	ST. LOUIS.....	271	61	1170	33	140	RAPID CITY.....	127	111	2361	290	142
HARTFORD.....	158	114	1830	283	353	SPRINGFIELD.....	271	61	1170	25	117	STOUX FALLS.....	127	111	2361	290	142
DEL. WILMINGTON.....	118	79	1068	73	172	MONT. BILLINGS.....	118	79	2501	532	278	TENN. CHATTANOOGA.....	124	34	657	239	176
D. C. WASHINGTON.....	100	80	738	227	120	GLASSBORO.....	118	79	2501	430	179	KNOXVILLE.....	130	26	704	174	160
FLA. PALM BEACH.....	40	25	99	171	178	GREAT FALLS.....	118	79	2501	430	179	MEMPHIS.....	130	26	704	174	160
DAYTONA BEACH.....	40	25	15	133	133	HAYRE.....	118	79	2501	430	179	NASHVILLE.....	130	26	704	174	160
FORT MYERS.....	40	25	74	133	133	HELENA.....	118	79	2501	430	179	TEXAS. ABILENE.....	208	89	623	31	63
JACKSONVILLE.....	40	25	176	133	133	KALISPELL.....	118	79	2501	430	179	AMARILLO.....	208	89	1179	145	229
KEY WEST.....	40	25	0	0	0	MILES CITY.....	118	79	2501	430	179	AUSTIN.....	208	89	372	1	103
LAKELAND.....	40	25	16	0	0	MISSOULA.....	118	79	2501	430	179	BEAUMONT.....	208	89	249	4	42
MIAMI.....	40	25	10	0	0	NEBR. GRAND ISLAND.....	128	187	254	232	232	BROWNSVILLE.....	208	89	63	22	25
ORLANDO.....	40	25	151	113	73	LINCOLN.....	128	187	171	174	6	CORPUS CHRISTI.....	208	89	661	16	16
PALM SPRINGS.....	40	25	151	113	73	NORFOLK.....	128	187	1931	164	80	DEL RIO.....	208	89	661	16	16
TAMPA.....	40	25	14	104	107	NORTH PLATTE.....	128	187	1579	114	25	FORT WORTH.....	208	89	661	16	16
WEST PALM BEACH.....	40	25	1	41	30	OMAHA.....	128	187	2208	274	110	GALVESTON.....	208	89	661	16	16
GA. ATLANTA.....	108	33	457	294	250	VALENTINE.....	128	187	2208	274	110	HOUSTON.....	208	89	661	16	16
AUGUSTA.....	108	33	412	204	120	NEV. ELV.....	329	68	2440	202	492	LUBBOCK.....	208	89	661	16	16
MACON.....	108	33	316	222	163	LAS VEGAS.....	329	68	571	40	252	MIDLAND.....	208	89	661	16	16
SAVANNAH.....	108	33	169	219	219	RENO.....	329	68	1816	76	323	SAN ANGELO.....	208	89	661	16	16
IDAHO. BOISE.....	232	34	1758	149	208	WINNEHUCCA.....	329	68	2047	124	423	SAN ANTONIO.....	208	89	661	16	16
LEWISTON.....	232	34	1734	215	173	N. H. CONCORD.....	241	20	2188	282	145	VICTORIA.....	208	89	661	16	16
POCATELLO.....	232	34	2167	204	377	N. J. ATLANTIC CITY.....	126	70	1216	76	98	WICHITA FALLS.....	224	91	729	82	68
ILL. CHICAGO.....	336	67	950	44	16	TRENTON.....	126	70	1059	67	118	UTAH. SALT LAKE CITY.....	291	61	1516	98	240
MOLINE.....	336	67	1300	14	81	N. MEX. ALBUQUERQUE.....	277	85	1048	63	98	VT. BURLINGTON.....	229	45	2234	249	248
PEORIA.....	336	67	1758	128	141	ROSMELL.....	268	97	986	10	10	VA. LYNCHBURG.....	100	79	903	155	173
ROCKFORD.....	336	67	1901	70	70	N. Y. ALBANY.....	201	52	1928	218	210	NORFOLK.....	75	72	544	193	96
SPRINGFIELD.....	336	67	1343	4	130	BINGHAMTON.....	201	52	1880	23	23	RICHMOND.....	95	74	764	171	132
IND. EVANSVILLE.....	21	12	1087	60	48	BUFFALO.....	201	52	1703	38	38	ROANOKE.....	131	52	1038	35	105
FORT WAYNE.....	21	12	1528	119	119	NEW YORK.....	201	52	1599	34	34	WASH. QUILLAYUTE.....	187	22	1941	2	125
INDIANAPOLIS.....	21	12	1305	32	32	ROCHESTER.....	201	52	1698	107	107	SEATTLE-TACOMA.....	187	22	1521	59	228
SOUTH BEND.....	21	12	1510	88	128	SYRACUSE.....	201	52	1698	107	107	SPOKANE.....	187	22	2453	430	219
IOWA. BURLINGTON.....	61	11	166	171	14	N. C. ASHEVILLE.....	123	53	879	248	221	HALLA HALLA.....	187	22	1554	204	139
DES MOINES.....	61	11	1703	174	174	CHARLOTTE.....	123	53	950	236	221	YAKIMA.....	187	22	1997	218	108
DUBUGUE.....	61	11	1980	126	126	GREENSBORO.....	123	53	880	236	221	W. VA. BECKLEY.....	163	53	1236	290	236
STOUX CITY.....	61	11	2032	289	170	HATTERAS.....	123	53	880	236	221	CHARLESTON.....	163	53	1044	124	129
KANS. CONCORDIA.....	30	7	1477	103	52	RALEIGH.....	44	94	842	296	229	HUNTINGTON.....	163	53	110	58	36
DOGGE CITY.....	30	7	1739	173	213	WILMINGTON.....	47	94	842	296	229	PARKERSBURG.....	163	53	1022	167	204
GOODLAND.....	30	7	1468	127	75	N. DAK. BISHARCK.....	396	74	2705	298	24	WIS. GREEN BAY.....	378	90	2226	136	27
TOPEKA.....	30	7	1468	127	75	FARGO.....	396	74	2705	298	24	LACROSSE.....	378	90	1841	147	312
WICHITA.....	30	7	86	85	135	HILLISTON.....	396	74	2705	298	24	MADISON.....	378	90	2153	147	98
KY. LEXINGTON.....	182	13	1110	62	12	OHIO. AKRON-CANTON.....	208	25	1485	64	64	MILWAUKEE.....	378	90	1825	36	118
LOUISVILLE.....	182	13	981	168	121	CINCINNATI.....	208	25	1485	64	64	WYO. CASPER.....	416	155	2501	404	412
LA. BATON ROUGE.....	102	25	233	136	74	CLEVELAND.....	208	25	1485	64	64	CHEYENNE.....	416	155	2501	404	412
LAKE CHARLES.....	102	25	246	161	21	COLUMBUS.....	208	25	1485	64	64	LANDER.....	416	155	2501	404	412
NEW ORLEANS.....	102	25	146	161	105	DAYTON.....	208	25	1485	64	64	SHERIDAN.....	416	155	2566	408	179
SHREVEPORT.....	102	25	417	72	84	TOLEDO.....	208	25	1485	64	64						

BASED ON 1941-70 NORMALS. + ACCUMULATION FROM JULY 1, 1978.
 *Table published on page 15 Volume 65 No. 49 dated Dec. 5, was in error. This table contains the correct information.





Agricultural Weather Facility
USDA South Bldg., Room 1248
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