

U. S. DEPARTMENT OF COMMERCE

LUTHER H. HODGES, Secretary

WEATHER BUREAU

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# STORM DATA

DECEMBER 1960

Volume 2 No. 12



ASHEVILLE: 1961

# STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1960

PLACE	DATE	TIME	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED DAMAGE		CHARACTER OF STORM		
					KILLED	INJURED	PROPERTY	CROPS			
<u>ALABAMA</u>			None	Reported							
<u>ALASKA</u>			None	Reported							
<u>ARIZONA</u>			None	Reported							
<u>ARKANSAS</u>			None	Reported							
<u>CALIFORNIA</u>											
San Francisco Bay Region	1	8 am - noon			1	0	4	0	Wind and rain		
			Wind damaged small craft, small aircraft, and tore off a roof. One man was killed when struck by a boom blown from a farm building.						lines, destroyed seven roofs. One man was killed when struck by a boom blown from a farm building.		
San Bernardino, Los Angeles, Orange, and Riverside Cos.	6				0	0	5	0	Wind		
			Strong winds, particularly in the foothill and beach communities damaged small craft, buildings, and utilities.						Wind		
<u>COLORADO</u>			None	Reported							
<u>CONNECTICUT</u>											
Statewide	11-12	Late on the 11th thru most of 12th			2	0	5	0	Snow and Wind		
			Beginning late on the 11th and continuing through most of the 12th, the first major snowstorm of the season brought 10 to 15 inch falls over most of Connecticut except between Bridgeport and Groton where 8 to 9 inches occurred and over the higher terrain in the Litchfield Hills where falls of 16 to 19 inches were recorded. Northerly winds up to 30 mph with some gusts of 15 mph combined with low temperatures to whip the snow into drifts 4 to 6 feet deep. Most surface and air transportation was paralyzed. Schools and business establishments closed. At least two deaths were directly attributable to the storm. One was caused by carbon monoxide poisoning due to a snow blocked exhaust and the second was the result of the freezing of a thirteen year old boy in a snowbank near his home.								
<u>DELAWARE</u>			None	Reported							
<u>FLORIDA</u>			None	Reported							
<u>GEORGIA</u>			None	Reported							
<u>HAWAII</u>			None	Reported							
<u>IDAHO</u>			None	Reported							
<u>ILLINOIS</u>											
Entire State	20	Most of Day			7	21	5		Snow		
			A deepening storm center passing south of Illinois blanketed the state with about 2" of snow in the south to over 12" in the north-east. Heaviest snows in the storm occurred north of a line from Peoria to Kankakee. Numerous driving accidents occurred with 7 killed and 21 injured at various locations around the state. 2 men died of heart attacks while shoveling snow. (A severe cold wave following the snow dropped the temperature to -25 at Joliet on December 23, coldest in the U.S. on that day.)								
<u>INDIANA</u>			None	Reported							
<u>IOWA</u>			None	Reported							
<u>KANSAS</u>											
Linn County	4	evening							Electrical		
			A bolt of lightning in Prescott caused damage at several nearby homes. Electrical wiring and appliances were the major loss.						Electrical		
<u>KANSAS (Cont'd.)</u>											
South Central and Eastern Counties	10-11	9am 10th-early am of 11th.						12	Glaze		
			A storm beginning as rain early on the 10th moved northeastward across Kansas the rest of that day and ended early on the 11th. Freezing began about 9am in the Stafford-Preston County area and moved gradually eastward to McPherson County by afternoon and in the Kansas City area late Saturday evening. The glazing was followed by 1 to 4 inches of snow. Areas most affected were eastern Stafford, northern McPherson, southeastern Saline and southwestern Dickinson Counties. Western Geary and Morris Counties, parts of Johnson and Wymore Counties also reported heavy glazing. Other south central counties had some glaze and sleet but without as much resulting damage. Temperatures were only 3° or 4° below freezing. Thickness of the glaze was about 1 inch in the Hutchinson and McPherson areas and about 1/2 inch in Geary County with lesser deposits in other places. The heavy wet snow following, also along to trees and wires and the rising northwest winds of 25 to 30 mph caused additional damage.								
			Both telephone and power lines were broken by the weight of the glaze disrupting service up to 12 hours or more locally. Numerous tree branches were broken littering yards and streets and causing transmission breaks. Slick streets and highways resulted in numerous falls and automobile accidents. In the Hutchinson-McPherson area this was accounted the worst glaze storm in 20 years. Estimates of damage in these counties was placed at about \$300,000.00 of which \$200,000.00 was to utilities.								
<u>KENTUCKY</u>			None	Reported							
<u>LOUISIANA</u>											
Jefferson, Orleans, St. Charles, Lafourche, Terrebonne Parishes	31	7:30-8:30 AM			15	*40	0	0	6	0	Line squall
			Line squall developed ahead of cold front in a rapidly developing Gulf low. It was oriented NE/SW, and extended from the Houma-Schriever area almost to the south shore of Lake Pontchartrain. It moved eastward about 15 miles before dissipating. Damage occurred along the entire line at about the same time but was heavier in some spots than at others. There was no evidence of a tornado as all debris was carried in the same general direction. There was evidence of circulation about a horizontal axis with surface wind from the south and southeast all along the "line". Thunder occurred as a brief rumbling sound. Small wisps of cloud below main mass was mistaken for funnels. A "pressure jump" of .14 inch at West End in New Orleans preceded the cold front by 30 minutes without high winds. The "pressure jump" at Premier to west of "Line Squall" and at Paris Road Bridge to east of New Orleans were each only .04 inch. The Climatologist estimated wind in Metairie, where some heavy damage occurred, at 70 miles per hour for one or two minutes. Highest winds recorded were 44 miles per hour at Moisant Airport; 45 miles per hour on south drawbridge Lake Pontchartrain Causeway; 30 miles per hour at West End, and 24 miles per hour at City Office--all with frontal passage. Damage to homes was general along entire path but was heaviest in Destrehan, Harahan, Metairie, and New Orleans. Damage to homes occurred generally when partly enclosed carports were ripped loose by trapped wind, often carrying roof of home with it. Back wall of one building blown out after windows on windward side blown in. In Destrehan, 40 homes were damaged. Trees were uprooted, signs, and telephone and power poles were blown down.								
<u>MAINE</u>											
Coastal and southern interior	12-13	Early a.m. to early a.m.						0	4	0	Snow, blizzard
			Unusually heavy snowstorm for so early in the season reached blizzard intensity along the coast. Average depths ranged from about 15 inches along the coast to about 6 inches in central parts of the state. More northerly areas received less than 5 inches. Northeasterly gales, especially along the coast, piled the snowfall into huge drifts and transportation was paralyzed. Temperatures dropped to 10° or lower during the storm. In many communities school sessions were canceled, stores and offices remained closed with little activity in the downtown areas, mail deliveries were delayed. Cars that were abandoned where stalled in streets and highways seriously hampered snow clearance and removal. Some tide damage to coastal installations was reported. Several fatalities due to over-exertion reported.								
Southwestern portion	16	Midday							0	0	Glaze
			Freezing light rain glazed much of area.								Glaze
Farlington	21	Evening							0	0	Glaze
			Light glazing from freezing rain.								Glaze

See reference notes at end of table.

# STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1960

PLACE	DATE	TIME	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	
<b>MARYLAND</b>			None	Reported					
<b>MASSACHUSETTS</b> Entire state	12	All day	—	—	6	—	5	0	Snow, Blizzard Unusually heavy snowstorm for so early in the season reached severe blizzard intensity over eastern sections where storm yielded 12 to 20 inches. Nearly as much fell over north-central parts of the state. Elsewhere, with the exception of extreme western portions where less than 10 inches fell, totals ranged mostly from 10 to 14 inches. At many eastern areas, including Boston and Nantucket Island, this was the heaviest December snowstorm of record. Northeasterly gales whipped the snow into huge drifts, while temperatures were near or lower than 10°. Walking in such conditions, as many were forced to do, was extremely difficult and exhausting, and several fatalities resulted. At least 16 other deaths were attributed to over-exertion resulting from shoveling or pushing stalled cars. Six additional deaths were directly attributed to the storm and were due to exposure in all cases. Many cars were abandoned where stalled on streets and highways, and these seriously hampered the job of snow clearance and removal. In a few cases, stranded cars on city streets prevented firemen from reaching the scene of a fire and several deaths by fire were attributed to this cause. Public school sessions were canceled (for the entire week in Boston). Transportation was paralyzed, factories, stores and offices remained closed, mail deliveries were delayed. Tide damage to some coastal installations was reported. At Nantucket Island, considerable damage to boats and public utilities was experienced. Snow clearance and removal costs involved in this storm caused upward revisions of such earmarked budgetary allocations by city and state administrations.
State, except Berkshire County	16	Morning	—	—	0	0	0	0	Glaze Freezing rain in many parts of area preceded or followed occurrence of rain or snow; formed icy crust on snow surfaces and glazed bare roads and walks. Many skidding accidents, mostly minor, reported.
Most of state	21	All day	—	—	0	0	4	0	Rain, wind, floods Storm began as snow, soon changed to heavy rain as temperatures rose into 40°. Much melting of snow cover combined to cause flooding of low spots on streets and highways. Southerly gales raised high tide level 1 or 2 feet above normal height. Low lying coastal areas were flooded; some roads became impassable and were closed to traffic. Many cellars in the low areas through the state were also flooded.
Extreme north	21	Morning	—	—	0	0	0	0	Glaze Freezing rain glazed surfaces at a few stations in this area.
<b>MICHIGAN</b>			None	Reported					
<b>MINNESOTA</b>			None	Reported					
<b>MISSISSIPPI</b>			None	Reported					
MISSOURI Richmond (SW of), Ray County	4	8:30 p.	—	—	—	—	—	4	Tornado Damage reported to dwelling and outbuilding.
<b>MONTANA</b> Missoula County	11	—	—	—	1	—	0	0	Unusually Cold One death from exposure. Due to temperatures falling to below zero.
<b>NEBRASKA</b>			None	Reported					
<b>NEVADA</b>			None	Reported					
<b>NEW HAMPSHIRE</b> Southern portion	12-13	Early a.m. to early a.m.	—	—	1	—	4	0	Snow, Blizzard Unusually heavy snowstorm for so early in the season reached blizzard intensity over much of affected area. Average depths ranged from around 10 inches over extreme south and southeast to around 6 inches over central portions. Amounts diminished farther north to around 4 inches or less. Northerly gales piled the snow into huge drifts especially in southeastern N. H., while temperatures dropped to lower than 10° during the storm. Transportation was paralyzed. In many communities, school sessions were canceled. Downtown areas were deserted and factories, stores and offices remained closed as most people remained at home. Some power failures occurred but these were not widespread or prolonged. Heavy surf pounded the coastal area, doing some damage. One death by exposure was reported, while a number of others resulted from over-exertion caused by pushing stalled cars or by shoveling.
<b>NEW HAMPSHIRE</b> (Cont'd.) Northern and eastern portions	16	Midday	—	—	—	—	0	0	Glaze Freezing rain glazed surfaces in many parts of area.
East-central portion	21	Evening	—	—	—	—	0	0	Glaze Freezing rain glazed surfaces in scattered parts of area.
<b>NEW JERSEY</b> Statewide	11-12	Sunday morning to Monday afternoon	—	—	52	—	5	—	Snow & Strong Winds Snowfall from 7 to 31 inches, with winds from 28 to 55 mph. The greatest statewide snowstorm so early in the season. In some localities it was the greatest snowfall of record for any month during a period of 24 hours or less. Persistently strong winds caused much drifting of the snow, prolonging the paralysis of all forms of traffic. Bitterly cold weather followed the snowstorm. A total of 52 deaths was attributed to the storm. Most of these were due to exposure, exhaustion, and heart attacks from over-exertion. Only one traffic fatality was reported during the storm, although a few traffic fatalities were reported from accidents on icy roads after the storm. Pre-Christmas shopping was halted; banks, stores and industrial plants were closed. Some schools remained closed for the entire week.
<b>NEW MEXICO</b> Entire State	6-10	—	—	—	0	1	6	0	Heavy snow and glaze Almost continuous snow from the 6th through the 9th. Many communities in the southern part of the State had the heaviest 24-hour snowfall of record. Freezing rain in southeastern counties on the 7th and 8th caused widespread damage. Power and telephone lines were down isolating many small communities. Rural areas depending on electrical power for farm operations were especially hard hit. All highways were closed at times and many schools were closed for several days. A TV tower near Roswell collapsed from ice, injuring one person. Several deaths and injuries were attributed indirectly to the storm.
<b>NEW YORK</b> Southeastern New York	11-12	late pm 11th and most of 12th	—	—	—	—	1	6	Heavy snow, gale winds Heavy snowstorm extending from Rivington to Utica to Albany and southeastward through the southeastern counties, Long Island and New York City. Snow depths ranged from 3 to 6 inches in north and west portions to 17 to 20 inches in the Long Island - New York City metropolitan area. Near to almost complete paralysis of transportation and traffic movement. Many businesses and schools closed in heavy snow area. Storminess was especially severe and near blizzard conditions with gale winds, temperatures in the teens for many hours, and drifts up to 5 feet. 19,000 workmen in the New York City area were engaged in snow removal taking several days to restore near normal conditions. 1 death due to drowning when a boat capsized, at least 32 deaths from over-exertion and at least 3 deaths in skidding accidents attributed to the storm.
<b>NORTH CAROLINA</b>			None	Reported					
<b>NORTH DAKOTA</b> Eastern half state	5	all day	—	—	0	2	5	—	Blizzard, heavy snow In this storm snow depths ranged from 4 to 12 inches, with heavier snows along a line extending from Oakes to Devils Lake. Heaviest damage mostly to communication, power and transportation facilities. Roads in storm impassible for several days.
<b>OHIO</b>			None	Reported					
<b>OKLAHOMA</b> West half of State	9-10	—	—	—	0	0	4	0	Glaze, sleet, snow Light freezing rain afternoon of 9th to mid-morning of 10th changed to heavy snow through 10th. Glaze accumulated up to one-half inch which damaged utility lines, trees, shrubs and Christmas decorations with greatest damage reported from Elaine, Kingfisher, Major, Garfield, Woods, and Alfalfa Counties. Slippery roads brought on a rash of auto accidents which resulted in two deaths and several injuries. Snow accumulated from 5 to 12 inches over western half of the area including Panhandle and up to 4 inches over eastern half of the area. Strong winds late the 10th drifted snow up to 4 feet deep in extreme western and Panhandle sections. Several roads were closed by drifts.

See reference notes at end of table.

# STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1960

PLACE	DATE	TIME	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED DAMAGE		CHARACTER OF STORM	PLACE	DATE	TIME	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED DAMAGE		CHARACTER OF STORM							
					KILLED	INJURED	PROPERTY	CROPS							KILLED	INJURED	PROPERTY	CROPS								
<u>OREGON</u>									No report received by printing deadline.	<u>SOUTH DAKOTA</u>																
<u>PENNSYLVANIA</u>										Southwest, Central, and North Central	4-5	a.m. of 4th to late p.m. of 5th						4	Snow							
Western Counties	1	2:50 PM				5	5		Numerous accidents resulted in three injuries and accounted for all the property damage.																	
State-wide	11-Moon	to noon			14	16	4		A crippling snowstorm, accompanied by strong winds, paralyzed communities in almost all sections. Transportation was severely curtailed, especially in eastern sections, where snowfall measured up to 15 inches with drifts several feet high, forcing schools, business offices, airports and industry to close for several days. Many auto accidents, mostly of a minor nature, resulted, however, traffic accidents attributed to the storm took the lives of four persons, while ten other fatalities resulted from heart attacks brought on by overexertion in shoveling snow.											Storm covering entire state with precipitation yielded 5 to 10 inches of snow to the affected area. Heaviest amount occurred in the extreme southwest and in the triangular area—Pierre, Mbridge, Aberdeen—of the north central counties. The snow, blown by winds of 30 to 40 m.p.h., caused extensive drifting of streets and highways. Brief period of freezing rain preceding snow also added to hazardous, if not impassable, driving conditions. Schools closed for one to two days, with 27 towns reporting closed schools in Aberdeen area alone. Telephone and power disruption widespread in central and north central counties, as poles and wires broken by combination of ice, snow, and wind. Storm produced mostly rain extreme eastern counties with narrow band of freezing rain preceding light snow immediately to the west. No serious auto accidents or property damage reported in latter area. Lightning and thunder widely observed in southeast both dates and marked first December occurrence on record at Sioux Falls.						
Southeast	21	Morning					5		During early morning hours, rain hitting the cold streets coated them with ice, which resulted in minor but numerous auto accidents.																	
Southeast	29	Throughout day					5		Slippery streets due to snow and freezing rain resulted in numerous auto accidents.																	
<u>PUERTO RICO</u>	Nov. 29 to Dec. 4				4	1	*6	C	Rain, Wind and Flood	<u>TENNESSEE</u>									None Reported							
									Two cold fronts and a polar trough combined, during the period from November 29 through December 4, to bring heavy rainfall and several flood situations to Puerto Rico. On November 30 flood waters blocked traffic in the south-eastern portion of the island but no serious damage or loss of life were reported. The most serious flood situation developed on December 5 and affected quite a large part of the island's rivers and streams. Several factors combined to bring damage, loss of life and injury to the island and the total damage cannot be attributed to any one of these. The manner in which the deaths were caused illustrated this very well. One death and one injury were caused by a landslide in Utuho where there were no reports of actual flood conditions. One man was electrocuted at Vega Baja when he was struck by a live wire which had been broken as a result of strong winds which were reported to have reached between 40 and 50 mph. In quite a few sections of Puerto Rico, the remaining two deaths may be attributed to flood waters. At Conaynes a young man on a motorcycle was swept off the road by the flood waters of the Rio Grande de Lajas and drowned. At Gurabo, a young man 21 years of age was drowned while trying to cross the Rio Gurabo. Traffic between many towns was blocked and once again there were various causes. In the lower sections flood waters and damaged bridges rendered the roads impassable while in other sections landslides blocked the highways. In the Penuelas area strong winds blew down some trees which fell across the road. Telephone and electric service was interrupted in some localities and sewer facilities were damaged at Guayama and Santa Isabel. The runway at Ponce-Mercedita airport on the south coast was underwater for a time. There were a few reports of damage to homes and business establishments but preliminary reports do not indicate that damage was extensive. A number of tourists en route to the Virgin Islands by way of San Juan were delayed by the heavy rains which closed the airports in St. Thomas and St. Croix. There have been a number of reports of damage to agriculture as a result of the wind, rain and floods with losses claimed to sugar cane, pastures, coffee, shade trees, tobacco and minor crops. Farm roads were damaged and the sugar cane harvest which was scheduled to begin had to be postponed. General farm work was delayed. Six day rainfall totals between November 29 and December 4 reached as high as 17.25 inches at Yurel in the south-eastern section of the island with eleven other stations receiving more than 14 inches. The greatest daily total was 7.78 inches at Aguirre.	<u>TEXAS</u>																
<u>RHODE ISLAND</u>	11-12	Late on the 11th thru all of 12th			0	0	5	0	Snow and Wind	Yoakum County	6-10				0	0	4	0	Ice, snow							
Statewide									Beginning late on the 11th and continuing through the 12th, the first major snowstorm of the season brought 10-15 inches throughout Rhode Island except 6-7 inches at Block Island. Northerly winds up to 30 mph with some gusts to 50 mph over the mainland and to 77 mph over Block Island combined with low temperatures to whip the snow into drifts 3 to 6 feet deep. As a result of the wind, sections of Warwick and North Kingstown as well as most of Block Island were without electric power during the night. Most surface transportation was snarled, air traffic postponed and business establishments and schools closed.	Molan County	6-10				0	0	5	0					Ice, snow			
<u>SOUTH CAROLINA</u>									NONE REPORTED	Bailey County	6-10				0	0	4	0	Ice, snow							
										Alpine, Marfa, Brewster, Presidio Counties	7-10				0	0	4	0	Ice, snow							
										Anderson and Freestone Counties	7-17								Rain, flooding							
										Palacios (near) Jackson County	27	1:00 p.							Funnel aloft							
										Muscos and San Patricio Counties	28-29					0		C	Rain & flooding							
										<u>UTAH</u>									None Reported							
										<u>VERMONT</u>																
										Extreme southeastern and southern portions	12	Nearly all day			0		3	0	Snow, blizzard							
																			Blizzard conditions obtained as northerly gales piled the dry heavy snow into high drifts. Temperatures fell to lower than 10° during the storm. Average depths ranged from around 12 inches in the southeast corner to around 6 inches in the northern and western parts of the affected area. Transportation was paralyzed and school sessions canceled. Rest of state escaped brunt of storm.							

See reference notes at end of table.

# STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1960

DELAYED DATA

PLACE	DATE	TIME	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS				ESTIMATED DAMAGE	CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS		
<u>U.S. VIRGIN ISLANDS</u>	Nov. 29 to Dec. 4							*4	C	Rain, Wind and Flood
	<p>During the period from November 29 to December 4, two cold fronts and a polar trough in the Puerto Rico-Virgin Islands area brought heavy rainfall and stronger than normal winds to the U. S. Virgin Islands with six day rainfall totalling more than twelve inches at some locations on St. Thomas and St. Croix and just slightly below twelve inches on St. John. No injuries or loss of life were reported but there were several close calls. A small automobile was swept off the road in St. Croix and its two occupants narrowly escaped drowning and on St. Thomas a boulder was dislodged and crashed through the roof of a house and almost hit the four persons inside. ST. THOMAS: Reports of property damage do not indicate any very extensive losses. Several houses were flooded in the low section of French Village as has happened several times earlier this year in heavy rainfall and losses of bedding and other household effects were reported there and in a few other locations. Large rocks and other debris blocked roads and the runway at Harry Truman Field was underwater for a time which made it impossible for inbound and outbound tourist flights between St. Thomas and San Juan, Puerto Rico to take off and land. Even after the flood waters had subsided gusty winds made it necessary to cancel flights. Some telephone lines were damaged and open sewers were blocked by rocks, branches and other debris. ST. CROIX: Ten young goats and fifteen baby pigs were drowned and a few acres of sugar cane were knocked down but it was anticipated that the loss was minor. Roads, both municipal and secondary, suffered erosion damage and traffic was halted for a time. Two lighters in Frederickstad Harbor broke in half and sunk. In a few sections telephone and electric service was interrupted. In Christiansted many homes and shops suffered minor flooding. ST. JOHN: Some local flooding was reported with damage to a few homes. Power and telephone service was interrupted. The greatest damage was to the Island's roads.</p>									
<u>VIRGINIA</u> State wide	11-12				7	7				Heavy snow, sleet and freezing rain.
	<p>Heavy snow in the northern and western parts of the state brought accumulations of 4 to 13 inches, while the east and south had smaller accumulations mixed with sleet and freezing rain. Telephone and power lines were down in north central Virginia. Traffic accidents due to icy roads were numerous, particularly in the Richmond, Petersburg and Lynchburg areas. 7 deaths resulted from these accidents, and more than 17 were injured.</p>									
<u>WASHINGTON</u>										None reported.
<u>WEST VIRGINIA</u>										No report received by printing deadline.
<u>WISCONSIN</u>										None Reported
<u>WYOMING</u> Southeast Wyoming	4-5				0	1	0	0		Blizzard
	<p>Light snow began early on the 4th with falling temperatures and increasing winds. Snow and blowing snow continued until mid-afternoon of the 5th. One person was injured in a car accident due to low visibility. The impact of the storm was lessened by the light amounts of snow, from 3 to 5 inches.</p>									
<p>* Miles instead of yards.                  ° Includes crop damage.                  C Crop damage.                  † Storm damages are placed in categories varying from 1 to 9 as follows:                  1 Less than \$50                  2 \$50 to \$500                  3 \$500 to \$5,000                  4 \$5,000 to \$50,000                  5 \$50,000 to \$500,000                  6 \$500,000 to \$5,000,000                  7 \$5,000,000 to \$50,000,000                  8 \$50,000,000 to \$500,000,000                  9 \$500,000,000 to \$5,000,000,000.</p>										
<p>Note: This publication contains our best information on storms but, due to the difficulties inherent in collection of this type of data, it is not all-inclusive. Delayed data and corrections will be carried in the June and December issues of this publication.</p>										
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<u>OKLAHOMA</u> Boise City, 7 miles southwest, Cimarron County	April 12	6:30 p.	4	300	0	0	3	0		Tornado
	Buildings on farmstead damaged. Storm moved northeastward.									
<u>COLORADO</u> Logan County	June 29	Late afternoon		*5	0	0	3	4		Hail
	Hail accompanied by high wind and rain, damaged crops, cars and buildings. Much of the hail was marble sized, but some of the size of baseballs, fell. The heaviest crop damage was reported to be in the Padron - Illiff area.									
<u>Michigan</u> Coloma	June 4	8:30P						4		Lightening
	Lightening struck Hamilton substation power building igniting gas jet causing fire to flash out all sides of the building which disrupted the power for Coloma. Lightening also damaged roofs of few homes.									
<u>Southeastern Lower</u>	14	early morning						4		Thunderstorm with high winds & rain
	High wind blew roof off bowling alley. Heavy rains flooded and damaged roads within the area.									
<u>Jackson (rural area south of Jackson)</u>	15	6:30P	5	17-33	0	0	4			Tornado
	Tornado south of Jackson in suburban area with 2 funnels sighted traveled from W to E through 5 mile path. Twenty-two homes partially damaged. No injuries or deaths reported.									
<u>Southern lower</u>	15	4 - 7P					5	5		High winds, heavy rain & hail
	Hail damaged field grain crops, tree fruit crops and strawberry crop. High winds with heavy rain damaged numerous barns, buildings and homes. A few cattle were killed within wind damaged barns.									
<u>All of lower</u>	16	3 - 9P					3	6	5	High winds, hail lightning, and heavy rain
	Severe thunderstorms with high winds, hail, heavy rain and lightning occurred throughout all of lower Michigan. High winds tipped over house trailers causing damage, barns, homes and other buildings were damaged by the high winds and heavy rain. Numerous cattle and sheep were killed by lightning. Heavy rains damaged roads. Telephone lines were severed cutting off service to thousands of homes. Lightning struck homes and buildings causing damage. Field grain crops and fruit tree crops were damaged by hail.									
<u>Miles (rural area northwest of Miles)</u>	16	5:58P			0	0	3			Tornado
	Two farmers observed approach of the tornado with one reporting the tornado approached with a roaring noise like a freight train. Trees were uprooted and several homes damaged by falling trees. The tornado wrecked a barn. Funnel cloud observed.									
<u>Carson City</u>	23	6P			0	0	3			Tornado
	Tornado traveled from 1 mile W of Carson City north northeastward to 6 miles north of Carson City. One small barn demolished, 1 silo severely damaged, 1 corn crib demolished and 4 new mobile homes overturned and damaged. Funnel was sighted.									
<u>Harbor Beach</u>	23	1:25E								Waterspout
	US Coast Guard reported water spout ENE Coast Guard station moving north.									
<u>KANSAS</u> Lane County	July 25	Late afternoon								Electrical (6)
	Five places suffered damage from lightning during the afternoon in various parts of the county, near Alameda 2 T. V. towers were damaged, a barn was burned, a cow was killed west of town, 2 grass fires and some stock killed north of town.									
<u>Sheridan and Gove Counties</u>	25	4:00p-4:30p	several miles							Hail
	Crops were damaged severely from a few miles north of Grinnell to south of Grainfield. Farm buildings were dented, roofs broken, windows and car windshields shattered. Some stones were the size of hens eggs. A few chickens were killed.									
<u>Riley County</u>	29	noon						4		Electrical (2)
	One large storage building in Ft. Riley was gutted by fire after being struck by lightning. Contents of Army hospital bedding were destroyed. Minor damage was done to a second building at Marshall Field.									
<u>Marshall County</u>	29	noon								Electrical
	A church in Marysville was struck by lightning. Damage was done to the tower, east wall and roof.									
<u>MONTANA</u> Near Butte, Silver Bow County	July 29	1:30 - 1:35 p.m.	5	125	0	0	1	0		Tornado
	Storm about 3 miles from Bull Ranch. A large number of trees blown over in forested areas. Some twisted off 10 feet from ground. Plate glass window broke in ranch home.									

# STORM DATA AND UNUSUAL WEATHER PHENOMENA

DELAYED DATA

PLACE	DATE	TIME	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED DAMAGE		CHARACTER OF STORM	
					KILLED	INJURED	PROPERTY	CROPS		
<b>SOUTH DAKOTA</b> North Central	July	Evening					4	5	Hail, electrical, wind	
	Severe hail damage to grain and corn crops occurred in an area 16 miles long and 2 miles wide in Edmunds County and also in scattered areas of Corson County. Hail the size of golf balls caused heavy to total loss of crops on some forty farms in the former county, representing about 20,000 acres. Extensive damage to automobiles, windows and buildings occurred in the Ipswich area and an unreported number of chickens were killed. Lightning-caused fire destroyed 800 bales of hay and bolt damaged home, both near McLaughlin, Corson County. Lightning damage estimated near \$1,000. Winds blew out large window in bank at McLaughlin and caused some damage to trees.									
Beadle, Spink and Hamlin Counties	2	Early A.M.					4		Electrical	
	Lightning-caused fires destroyed 1800 bales of hay at Redfield, Spink County and damaged grain storage elevator at Broadland, Beadle County. Total loss near \$17,500. Further east lightning caused structural damage to two homes in Estelline, Hamlin County.									
Campbell and Grant Counties	2	Early A.M.				1	4	5	Hail, wind	
	Hail of up to baseball size struck in two widely separated areas: near Pollock, Campbell County in the north central section and near Big Stone Lake and Ortonville area of Minnesota. In Pollock area some 15 farms in an 8 mile strip suffered moderate to total loss of crops and one person injured by hail when caught in field. Damage to windows and buildings also occurred. On South Dakota side of Big Stone Lake hail and high winds damaged crops and trees in small area as storm moved into Minnesota with greater fury.									
Philip, Haakon County	6	6 P.M.					3		Electrical	
	Fire resulting from lightning bolt destroyed 30 tons of hay for estimated loss of \$1500. This was second haystack destroyed by lightning-caused fire on same farm in ten days.									
Marshall County	8	P.M.					3		Electrical	
	Lightning-caused fire destroyed stack of about 20 tons of hay east of Britton. A number of cormorants were reported killed by bolt in same area.									
Kingsbury County	11	Early A.M.					4	4	Electrical, hail	
	Barn destroyed by lightning-caused fire near De Smet. Loss included several hogs, one horse and baled hay. Hail struck area about 2 miles square west of Arlington resulting in moderately heavy crop damage.									
Lincoln County	11	Afternoon					3	5	Hail, electrical	
	Moderate to heavy hail damage to grain and corn crops occurred on some ten farms east of Lemox. Hail stones reported of golf-to baseball size. Lightning bolts damaged wiring, appliances and structure of several homes in Canton but fire damage was minor.									
Walworth County	15	Evening					4	4	Hail	
	Small area north northwest of Selby hit by hail with moderately heavy damage to crops.									
Central and Northeast	16-17	P.M. on 16th to P.M. on 17th					3	6	Hail	
	A broad area from Tripp County on the south to the North Dakota line and then into the northeast quarter was affected by widely separated but locally very severe storms. Hail damage to crops ranging from 25 to 100 per cent occurred on numerous farms in each of the following counties: Tripp, Jones, Ziebach, Walworth and McPherson in the central third and Spink, Brown, Clark, Marshall, Day & Roberts in the northeast quarter. A strip 50 miles by 2 miles wide in Tripp County alone sustained 70 to 100 per cent damage to crops by hail.									
North Central	24	Early P.M.					4	5	Hail, wind, electrical	
	Severe hail damage to crops was concentrated northeast of Miller, Hand County, east of Selby, Walworth County and near Herreid, Campbell County. About 15 farms reported 50 to 100 per cent loss of crops, although some damage due to very high winds. Hay bales & windrowed grain scattered and broken and granary blown over by wind in Miller area. Lightning fired large hay stack near Miller for loss of about \$2000. A flock of 300 or more gulls killed by hail while feeding in alfalfa field. Unofficial measurement of four inches of rain locally in Campbell County.									
Vivian, Lyman County (near)	25	6-7 P.M.	10	2*			4	5	Tornado, hail	
	Tornado moving in easterly direction destroyed two farm buildings and two garages on separate farms. Some 500 acres or more of windrowed hay and grain were blown away for total loss. Hail accompanied tornado (path dimensions include both phenomena) and completed destruction of grain and corn.									
<b>SOUTH DAKOTA (Cont'd.)</b> Central	25	P.M.					4	6	Hail, wind, electrical	
	Second severe hail storm in 24 hours accompanied by high winds, struck north central counties. Areas of Bennett and Haakon Counties also affected. A total of some 60 farms, mostly in north central reported heavy to total losses of corn and grain from golf ball-size hail. Unreported number of chickens near Hoven, Walworth County and many pheasants and rodents killed by hail in Bennett County. High winds obliterated hay stack at Pollock, Campbell County. Lightning-caused fire destroyed large hay stack at Bowdle, Edmunds County. Light hail damage to crops was reported in Bon Homme County and lightning killed calf in Gregory County in south central portion of state.									
Grant County	28	Afternoon	10	2*			4	5	Hail	
	Moderate to very heavy hail damage to grain, flax and corn crops in area north of Milbank and northeasterly to Big Stone Lake. Leaves on corn plants were stripped and stalks splintered or broken by egg-size hail. Buildings and cars also suffered considerable damage to windows, walls, roofs and paint.									
<b>ARKANSAS</b>	Oct. 1960								NONE REPORTED	
<b>DELAWARE</b>	Nov. 1960								NONE REPORTED	
<b>KANSAS</b> Much of eastern half of Kansas	Nov. 1960	27-6:00 PM-28 12:30 AM					5	6	3	8 tornadoes, 6 funnel clouds, 1 electrical, and numerous local severe winds.
	A squall line passing across the state from west to east caused minor damage in a number of western counties late in the afternoon but developed more severe proportions about 6pm in central Kansas, causing locally severe damage from then till the squall line reached the Missouri border about 10:00pm near St. Joseph, 10:30pm near Kansas City, and 12:30am of the 28th in extreme south east Kansas.									
	Severe west and northwest winds caused the most damage. In some west central areas Russian thistles were driven into wire fences and with the added resistance the fences were laid flat. Broken trees, transmission lines and poles, blown down sheds, unroofed houses, damaged signs were reported from many localities east from Scott County to the Missouri line. Tornado like winds were estimated at velocities ranging from 60 to 85 miles per hour. In addition there were numerous squall line damages especially from south central Kansas northward to Marshall County and in eastern Brown and Doniphan Counties.									
	A number of small tornadoes and at least one major well developed tornado occurred the evening of the 27th as follows: 5 PM A small tornado passed between the house and barn on a farm a few miles northwest of Spearville in Ford County. Trees were up rooted and several sheds damaged. 6:30PM A tornado struck at a farm near Chase in western Rice County tearing off a corner of the barn and uprooting several trees. 6:30pm-7:15pm A damage path of 30 miles from southwest to northeast across Kingman County was due partially to tornadoic action. The loud roar was heard in several places and debris gave evidence of rotary action. 7:00PM A funnel cloud with a loud whistle struck ground momentarily 4 miles east of McPherson, causing damage at 2 or 3 nearby farms. 7:30PM A small tornado damaged several buildings on a farm 6 miles southwest of Herington in Dickinson County. This appears to have been part of the squall that caused damage from Barber County northeast across Kingman, Reno, and McPherson Counties and northwest Marion County just preceding. 7:52PM-8:05PM A well defined funnel cloud struck the south edge of Concordia in Cloud County near the airport and followed a north northeast path across the city almost parallel to Highway # 81. The path was 30 to 300 yards wide and 1/2 miles long through the city. In and near Concordia 3 homes had major damage and 150 minor damage; 2 farm buildings were destroyed, 10 suffered major damage and 10 minor damage and 15 minor damage. Approximately 150 families were affected. Few persons were injured. Trees appeared to have been "chewed" and many were uprooted, transmission lines were broken, loose objects were picked up and blown away and many windows broken. The principal damage to buildings was the unroofing of houses. Also several airplanes and trailer homes were badly damaged. Streets were filled with debris. Losses were estimated at \$500,000.									

# STORM DATA AND UNUSUAL WEATHER PHENOMENA

DELAYED DATA

PLACE	DATE	TIME	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED DAMAGE		CHARACTER OF STORM	
					KILLED	INJURED	PROPERTY	CROPS		
<b>- KANSAS (Cont'd.)</b>										
		8:00PM-8:30PM				2				
		A funnel cloud came to earth about 3 miles south of Mulvane in Sumner County and terminating 1 mile south of Augusta in Butler County. Its northeast path was about 22 miles long and at 1 point was 75 yards wide through a shelter belt. Greatest damage was in an area about 5 miles east of Mulvane. Some additional damage was done a few miles south of Eldorado and west of Rosalia. Near the point of inception 3 miles south of Mulvane a car was blown from the highway and the 2 occupants injured. Numerous farm buildings were damaged and several head of livestock killed. This appears to have been part of a squall line originating southeast of Anthony and moving northeast across Harper, Sumner and Butler Counties.								
		8:00PM-8:20PM					4			
		Damage from a tornado extended intermittently from about 2 miles southwest of Grenola to a few miles northeast of Howard in Elk County. Violent winds damaged many buildings, trees, and transmission lines along this squall line from Cowley County northeastward across Elk, Wilson, Woodson and Allen Counties.								
		Partial estimated tornado damage \$535,000.00								
		In addition to these tornadoes there were several areas of severe wind damage with some evidence of tornadic action from incipient tornadoes or from funnel clouds that came close to earth as follows:								
		6:00PM								
		A severe wind damage path extended from southwest Pratt County to central Stafford County. Debris left in a circular pattern and blown out windows indicated tornadic effects.								
		6:45PM-7:00PM				1				
		Western Reno County. Along a path from Arlington to Hickerson numerous barns and sheds were unroofed. A number of large trees were reported torn from the ground and a terrific roar was heard at several points along the path. A woman was injured by flying debris in Hutchinson.								
		9:15PM-10:30PM					5			
		Marshall, Nemaha, Brown and Doniphan Counties. In addition to the wide spread severe wind damage across these counties, there were reports of loud roars in several localities and numerous explosive effects of windows blown out, doors blown open or off sliding tracks and buildings being exploded or bulged out on all sides. At Atwell the trunk door of an automobile was sucked open and reformed over the car's top.								
		10:30PM					4			
		Johnson County. A corner of the Meadow Brook Jr. High school was torn off and a house unroofed in Kansas City, Kansas by what was termed a near tornado by local reports.								
		11:00PM								
		Crawford County, some local damage southeast of Girard. Many people in Pittsburg reported hearing sounds like "a large jet airplane" flying very low.								
		Partial estimated wind damage, property \$208,850.00 and crops \$ 1,200.00								
		7:00PM					3			
		Reno County. Lightning struck a farm house northwest of Hutchinson resulting in an estimated loss of \$5,000.00								
		9:30PM-10:00PM								Hail
		Large hail stones, but few in number, damaged roofs in Doniphan County.								
		A railroad box car was driven by the strong west wind from Ellis to Hays, a distance of 13 miles, on the Union Pacific tracks.								
<b>MARYLAND</b>										
	Nov	1960								
	19	2:30PM	1	20-50	0	0	3			Incipient Tornado
		An intense thunderstorm accompanied by a severe windstorm in the nature of an incipient tornado lashed through an eastern section of Frederick County ripping up trees and leveling buildings in a narrow strip from 20-50 yards in width. The storm moved from west to east. Thunder and lightning preceded the storm and very heavy rain occurred during the trister which lasted for only a minute or two. Many trees 15 to 20 inches in diameter were ripped out of the ground. Sheets of roofing torn from building were carried as far as a half mile by the winds. A piece of lumber about 2 x 4 inches was driven through the side of a wooden porch as if it had been hammered in like a nail.								

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