

SEVERE LOCAL STORMS, APRIL 1941

[Compiled by Mary O. Souder]

[The table herewith contains such data as has been received concerning severe local storms that occurred during the month. A revised list of tornadoes will appear in the United States Meteorological Yearbook]

Place	Date	Time	Width of path, yards	Loss of life	Value of property destroyed	Character of storm	Remarks
Phillipsburg, Kans., 10 miles south.	2	4 p. m.	8	0	\$300	Tornado	Two funnel clouds seen. An oil derrick wrecked and several fences torn up; path 440 yards in length.
Tyler, Tex.	2	4-6 p. m.	16		125,000	Heavy hail	Property damaged. Loss to crops unknown.
Jefferson County, Kans.	2	4:15 p. m.	16		1,000	Hail	Storm occurred from Valley Falls eastward. Principal damage to roofs, windows and car tops; path 4 miles long.
Wortham, Tex.	2	7:40 p. m.	100	0	15,000	Tornado	Property damaged; 3 persons injured; no crop loss.
Vero Beach, Fla., vicinity of.	3	9 a. m.				Wind	Plane severely damaged and all 16 occupants injured.
Topeka, Kans., 10 miles northwest.	3	4-6 p. m.			5,000	Hail and rain	Most damage resulted from heavy rain washing fields and highways.
Perry County, Ark., and vicinity.	3					Hail	Moderate damage to roofs and gardens.
Fort Pierce, Fla.	3				50,000	do.	Loss in citrus and vegetables.
Waverly, Lake Wales, Lake Alfred and Winter Haven, Fla.	3				1,000,000	do.	Severe loss in citrus; some light roofs damaged; some cloth automobile tops pierced.
Orangeburg, S. C., and vicinity.	4				2,000	Wind	Trees uprooted; buildings unroofed and windows broken.
West Palm Beach, Fla., vicinity of.	5	A. m.			5,000	do.	Airplane overturned; windows broken; roofs damaged; signs and poles blown down; garage blown over.
Scottsbluff, Nebr., vicinity of.	5	7 p. m.	50	0	1,000	Tornado	A small house wrecked; 4 persons injured.
Max, Nebr.	5	10:30 p. m.	100	0	2,000	do.	Barns and small buildings on 3 farms northeast of Max damaged.
Fort Lauderdale, Fla.	7	9:40 p. m.			2,200	Wind and hail	One plane turned over and 3 others damaged. Wind velocity at the Airport estimated as 75 miles per hour in gusts.
Orland, Calif.	9	3 p. m.	50	0		Tornado	Considerable damage to trees and buildings. 1 person slightly injured; path 6 to 8 miles long; damage not estimated.
Minnesota, extreme northwestern Counties.	9-11				27,000	Snow and rain	The melting of a deep snow layer near the close of March and during the first part of April, together with frequent light to moderately heavy rains caused streams to overflow. Highways, roads, and lowlands inundated; basements, houses, and buildings flooded.
Greeley, Wallace, Sherman and Cheyenne Counties, Kans.	12	9-11 p. m.	550	0	100,000	Tornado and hail	The tornado extended from the Greeley County line northeastward through Sharon Springs to slightly west of Edson, then almost due north passing just west of Bird City to Benkleman, Nebr. 5 persons were injured, 20 houses wrecked, 43 Union Pacific box cars blown from the track. Power lines, fences, and occasional farm buildings damaged along the path in Kansas. Estimate given is for damage occurring in Kansas, chiefly at Sharon Springs. Path 150 miles long.
Benkleman, Nebr.	12	9:45 p. m.	100	0	20,000	Tornado	Eight buildings at county fair ground and 4 residences across the street destroyed. 14 persons injured, 2 seriously. Storm entered from Kansas.
Ione, N. Mex.	13	Midnight-1 a. m.			500	Wind	Damage to farm buildings.
New Ulm, Minn., and vicinity.	13	2:40 p. m.			20,000	Thunderstorm	Barn demolished, several windmills blown down, houses and barns damaged, garage and small buildings moved from their foundations, number of trees uprooted, 1 person injured, and path 150 miles long.
Adams, Union, Polk and Marshall Counties, Iowa.	13	3-4:30 p. m.		1	8,500	Wind	Near Van Cleve, in Marshall County, a child of 5 years, was killed when a gust of wind dashed him against a chicken house, fracturing his skull.
Deerbrook, Wis.	13	4 p. m.	167	0	12,000	Tornado	Funnel cloud observed. Property damaged; 11 cattle killed; path 6 miles long.
Hand County, S. Dak., southern portion.	13	7 p. m.	200		5,000	Wind	High southwesterly tornadic wind caused the destruction of several farm buildings.
Montrose, S. Dak., vicinity of.	13		880		500	do.	Barn destroyed; chickens killed.
Plover, Wis.	14	2 p. m.		0	4,000	Tornado	Damage to 7 farms.
Rotan, Tex.	15	2 a. m.	440-880		25,000	Straight-line wind.	Property damaged.
Ahilene, Tex.	15	3 a. m.	33	0	100	Tornado	Barn damaged.
Hillsboro, Tex.	15	7:45-8:05 a. m., 8:45-9 p. m.	15		95,000	Hail	\$20,000 loss to crops, mostly orchards and corn; \$75,000 to buildings and roofs.
Saint Joe, Tex.	17	3:52 p. m.	200	0	2,500	Tornado	Three houses and a number of outbuildings damaged; no estimate of crop loss given.
Brown County, Kans.	17	4-6 p. m.	18		3,000	Hail, wind, and rain.	Hail as large as hulled walnuts and hen eggs fell over most of the path from the southwestern corner of Brown County to north of Robinson. Gardens, fruit trees, and roofs damaged by hail. Heavy rains washed fields, damaged bridges and highways and washed out a section of Grand Island track near Robinson. Path 20 miles long.
Red Oak, Stanton, and Villison, Iowa.	17	4:15 p. m.	115		15,000	Hail and heavy rain.	Property damaged; loss to crops.
Iowa County, Iowa	17	4:30 p. m.	140	0	50,000	Tornado, hail, and rain.	Property damaged; 3 persons injured.
Hico, Tex.	17	4:30 p. m.	12		3,500	Heavy hail	Loss to crops, \$2,500; damage to fences and buildings.
Benton County, Iowa	17	5 p. m.		0	12,000	Tornado, rain and hail.	In Norway about 4 inches of rain fell in an hour. Several roofs damaged and windows broken; oats and small grain washed out. The damage was mostly in the extreme southeastern portion of the county.
Dubuque County, Iowa	17	5:45-9 p. m.			8,000	Heavy rain, electrical.	Fields washed; streets and roads damaged; 2 barns burned after being struck by lightning.
Swisher, Iowa, vicinity of.	17	6 p. m.			595	Wind	Electric railroad poles down; farmhouse overturned.
Springfield, Spring Grove, Walker, and Cedar Rapids, Iowa.	17	6:30 p. m.		0	17,500	Tornado, rain, and hail.	Storm continued movement toward the northeast. Indian Creek flooded at Cedar Rapids. Paving damaged.
Monticello, Langworthy, Anamosa, and Martelle, Iowa.	17	7:15 p. m.		1	35,000	do.	The tornado continued along a path until in vicinity of Langworthy and Monticello, where twisting action disappeared. Power company property damaged at Anamosa, leaving this and other nearby towns without power. Man killed.
Hamilton, Tama, Keokuk, and Worth Counties, Iowa.	17	P. m.			10,000	Hail, rain, and wind.	Property damaged and railroad grades flooded by heavy rain.
Villa Nova, Iowa.	17	do.			25,000	Electrical	Church burned.
Berryville, Ark.	18	A. m.				Wind, electrical.	Several buildings destroyed.
Locust Grove, Okla.	18	6:30 p. m.	880		2,100	Wind and rain	Loss to crops, \$100; property damage, \$2,000.
Sayre, Okla., 6 miles northeast.	18	11 p. m.	440	0	12,500	Tornado	Property damaged; path 2 miles long.
War Eagle, 4 miles southeast, to Grandview, Ark.	18		220-440	0		do.	Stone residence and store completely wrecked; several brooder houses demolished and 2,700 chickens killed. Man seriously injured when his home was damaged. Path 25 feet long.
Frederick and Tipton, Okla.	19	12:40 a. m.	16		25,000	Hail and wind	Loss of grain crops, alfalfa, and fruit, \$15,000; property damage, \$10,000; path 15 miles long.
Cache, Okla.	19	1:10 a. m.	880		1,200	Tornadic wind	Property damage, \$1,000; loss to crops, principally orchards, \$200; path 5 miles long.
Corwin to Anthony, Kans.	19	2 a. m.	15		1,500	Hail	Principal damage to gardens; path 20 miles long.
Clearwater to Wichita, Kans., and vicinities.	19	2-3 a. m.			800	Wind and hail	Hail damaged gardens and blooming fruit trees. Trees, outbuildings, and several residences damaged by violent wind with tornadic characteristics. Path narrow and 25 miles long.

Footnotes at end of table.

SEVERE LOCAL STORMS, APRIL 1941—Continued

Place	Date	Time	Width of path, yards	Loss of life	Value of property destroyed	Character of storm	Remarks
Tulsa, Okla.	19	5 a. m.	13	0	\$300	Tornado	Trees blown down and a garage wrecked; path 67 yards long.
St. Joseph County, Ind.	19	3:40 p. m.			5,000	Wind	Two barns blown down.
Footville, Wis., south of	19	8:30 p. m.	100	0	10,000	Tornado	The funnel cloud lifted and dipped, skipping some farms in its path.
Rock County, Wis., western portion.	19	8:30-8:45 p. m.	16-8		25,000	Wind	Property damaged.
Huntington and Wells Counties, Ind.	19-20				1,000	do	Buildings damaged.
Wisconsin, east-central and southwestern counties.	19-20				50,000	Sleet, snow, and wind.	Hundreds of poles and wires down, mostly as a result of heavy, moist snow that froze and clung to wires, together with high winds. Ice began to freeze about 4 a. m., of the 20th, and remained on wires from 3 to 4 hours. Communication and electric service disrupted. Silo blown down and some wind damage to property.
Des Moines, Iowa.	20				500	Wind	Airplanes staked out at the airport damaged.
Livingston County, Mich.	22			0	100,000	Tornado	The first sign of destructive force exerted by the storm was the complete leveling of a barn in the southwestern end of the storm's path, about 5 miles north of Gregory. From this spot the trail could be plainly traced in a northeastern direction crossing U. S. Highway 16, about a mile west of Howell and apparently terminating about 5 miles east of Oak Grove at the intersection of the Oak-Grove-Argentine roads. Over the first half of the path, many of the buildings were completely demolished. In the latter part of the wake, structures were only partially destroyed and twisted. About 25 separate farms were struck, some being a total loss, while others had only minor damage. The wreckage from those hardest hit was scattered in a northeasterly direction for several hundred yards, with tin roofs being found as far away as a mile. Trees as large as 2 feet were twisted off 10 to 15 feet above the ground and lay in all directions. Many roads were temporarily blocked by fallen trees and telegraph poles. Few persons were injured, none seriously, and some cattle and poultry lost.
Anthony, N. Mex.	26	7 p. m.			1,000	Heavy hail	Loss to crops.
Munday, Tex.	30	9:30-11 p. m.	13		30,000	do	\$20,000 loss to wheat, oats, and barley; \$10,000 damage to buildings.

¹ Miles instead of yards.

² See Climatological Data, June 1941, for detailed report of tornadoes in Iowa, April 1941.

SOLAR RADIATION AND SUNSPOT DATA FOR MAY 1941

SOLAR RADIATION OBSERVATIONS

BY HELEN CULLINANE

Measurements of solar radiant energy received at the surface of the earth are made at 9 stations maintained by the Weather Bureau and at 12 cooperating stations maintained by other institutions. The intensity of the total radiation from sun and sky on a horizontal surface is continuously recorded (from sunrise to sunset) at all these stations by self-registering instruments; pyrheliometric measurements of the intensity of direct solar radiation at normal incidence are made at frequent intervals on clear days at three Weather Bureau stations (Madison, Wis.; Lincoln, Nebr., and Albuquerque, N. Mex.) and at the Blue Hill Observatory at Harvard University. Occasional observations of sky polarization are taken at the Weather Bureau station at Madison and at Blue Hill Observatory.

The geographic coordinates of the stations, and descriptions of the instrumental equipment, station exposures, and methods of observation, together with summaries of the data obtained, up to the end of 1936, will be found in the MONTHLY WEATHER REVIEW, December 1937, pp. 415 to 441; further descriptions of instruments and methods are given in Weather Bureau Circular Q.

Table 1 contains the measurements of the intensity of direct solar radiation at normal incidence, with means and their departures from normal (means based on less than 3 values are in parentheses). At Lincoln, Madison, Albuquerque, and Blue Hill the observations are obtained with a recording thermopile, checked by observations with a Smithsonian silver-disk pyrheliometer at Blue Hill. The table also gives vapor pressures at 7:30 a. m. and at 1:30 p. m. (75th meridian time).

Table 2 contains the average amounts of radiation received daily on a horizontal surface from both sun and sky during each week, their departures from normal and the accumulated departures since the beginning of the year. The values at most of the stations are obtained

from the records of the Eppley pyrheliometer recording on either a microammeter or a potentiometer.

Total solar and sky radiation during May was excessive at most stations, but somewhat below normal at Fairbanks, Blue Hill, and Friday Harbor.

Radiation at normal incidence was somewhat below normal at Madison, but very irregular at Blue Hill.

Polarization observations made at Madison on 9 days gave a mean of 55 percent, 1 percent below normal, with a maximum of 66, 2 percent above the normal maximum for the month.

TABLE 1.—Solar radiation intensities during April 1941

(Gram-calories per minute per square centimeter of normal surface)

Blue Hill Observatory

Date	Sun's zenith distance										Local mean solar time	
	7:30 a. m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°		1:30 p. m.
	75th mer. time	Air mass										
		A. M.					P. M.					
e	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0	5.0	e		
Apr. 3	mm. 3.5	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	mm. 3.0	
Apr. 4	3.6	0.83	0.93			1.18	0.91	0.69	0.55		4.4	
Apr. 8	2.9	.94	1.04	1.14	1.22	1.40	1.20				4.2	
Apr. 9	3.8	.94	1.04	1.14	1.25	1.42					3.8	
Apr. 10	3.6	.69	.79	.90		1.16	1.00	.89			3.5	
Apr. 11	3.5					1.36	1.15	.98	.84	.72	5.4	
Apr. 12	5.2	.78	.88	1.00	1.15		.96	.72	.63	.55	3.8	
Apr. 17	6.8					1.00	.74	.51	.35		6.8	
Apr. 18	6.5	.77	.87	.99	1.16	1.34	1.13	.91	.80	.69	5.8	
Apr. 19	6.3					1.29	1.10	.92	.79	.66	7.1	
Apr. 20	10.7						.81	.69	.57	.45	10.7	
Apr. 21	6.1							.87	.77		4.0	
Apr. 22	3.6	.90	1.00	1.13	1.26	1.48	1.24	1.06	.94	.84	2.8	
Apr. 23	2.5	.88	.98	1.08	1.23						3.2	
Apr. 25	5.0	.77	.86	.94		1.10		.86	.71	.62	6.1	
Apr. 29	3.5	.79	.90								4.2	
Apr. 30	6.1	.58	.69	.83	.99	1.24					4.8	
Means		.81	.91	1.02	1.18	1.36	1.09	.88	.75	.62		
Departures		-.03	-.03	-.06	-.02	-.03	-.03	-.09	-.10	-.07		

*Extrapolated.