

Michigan Weather Stations by County

County	Station Name
Alger	Grand Marais 2 E Munising
Allegan	Allegan 5 NE
Alpena	Alpena Phelps Collins Arpt Alpena Wastewater Pl
Bay	Essexville
Benzie	Frankfort 2 NE
Berrien	Benton Harbor Ross Field
Calhoun	Battle Creek 5 NW
Charlevoix	Boyne Falls
Cheboygan	Cheboygan
Chippewa	Sault Ste Marie Sanderson Field Whitefish Point
Clinton	Lansing Capital City Arpt St Johns
Dickinson	Iron Mtn-Kingsford WWTP
Eaton	Charlotte
Emmet	Cross Village
Genesee	Flint Bishop Arpt
Gogebic	Ironwood
Gratiot	Alma
Houghton	Hancock Houghton Co Arpt
Huron	Bad Axe
Ingham	East Lansing 4 S
Iosco	East Tawas
Iron	Stambaugh 2 SSE
Kalamazoo	Gull Lake Biol Sta
Kent	Grand Rapids Kent County Intl
Lapeer	Lapeer WWTP
Lenawee	Adrian 2 NNE
Livingston	Milford Gm Proving Ground
Marquette	Champion Van Riper Prk Marquette Marquette County Arpt
Mecosta	Big Rapids Waterworks

County	Station Name
Menominee	Stephenson 8 WNW
Muskegon	Muskegon County Arpt
Oceana	Hart
Ontonagon	Bergland Dam
Oscoda	Mio Hydro Plant
Ottawa	Holland
Roscommon	Houghton Lake Roscommon Co Arpt
Schoolcraft	Manistique
Shiawassee	Owosso Wwtp
St. Clair	Port Huron
St. Joseph	Three Rivers
Tuscola	Caro Regional Center
Washtenaw	Ann Arbor Univ of Mich Ypsilanti E Mich Univ
Wayne	Dearborn Detroit Metropolitan Arpt Grosse Pointe Farms

Michigan Weather Stations by City

City	Station Name	Miles
Ann Arbor	Ann Arbor Univ of Mich	1.9
	Detroit Metropolitan Arpt	20.0
	Milford Gm Proving Ground	21.4
	Ypsilanti E Mich Univ	6.6
Battle Creek	Battle Creek 5 NW	5.3
	Charlotte	24.9
	Gull Lake Biol Sta	11.4
Canton	Ann Arbor Univ of Mich	12.5
	Dearborn	12.2
	Detroit Metropolitan Arpt	9.3
	Milford Gm Proving Ground	21.8
	Ypsilanti E Mich Univ	9.3
Clinton	Dearborn	24.3
	Grosse Pointe Farms	13.8
Dearborn	Dearborn	1.0
	Detroit Metropolitan Arpt	9.9
	Grosse Pointe Farms	16.6
	Ypsilanti E Mich Univ	21.4
Detroit	Dearborn	8.2
	Detroit Metropolitan Arpt	17.2
	Grosse Pointe Farms	10.6
Farmington Hills	Ann Arbor Univ of Mich	21.5
	Dearborn	13.8
	Detroit Metropolitan Arpt	18.6
	Milford Gm Proving Ground	17.8
	Ypsilanti E Mich Univ	21.2
Flint	Flint Bishop Arpt	5.2
	Lapeer WWTP	20.1
	Owosso Wwtp	24.7
Grand Rapids	Grand Rapids Kent County Intl	8.7
Kalamazoo	Allegan 5 NE	23.2
	Battle Creek 5 NW	17.8
	Gull Lake Biol Sta	13.6
	Three Rivers	23.9
Lansing	Charlotte	17.9
	East Lansing 4 S	4.9
	Lansing Capital City Arpt	5.1
	St Johns	21.1
Livonia	Ann Arbor Univ of Mich	18.9
	Dearborn	8.9
	Detroit Metropolitan Arpt	12.4
	Grosse Pointe Farms	24.0
	Milford Gm Proving Ground	21.2
	Ypsilanti E Mich Univ	16.9
Macomb Twp	Grosse Pointe Farms	18.9
Novi	Ann Arbor Univ of Mich	17.1
	Dearborn	16.6
	Detroit Metropolitan Arpt	19.0
	Milford Gm Proving Ground	13.6
	Ypsilanti E Mich Univ	18.1

City	Station Name	Miles
Pontiac	Dearborn	23.2
	Milford Gm Proving Ground	21.3
Rochester Hills	Dearborn	24.5
	Grosse Pointe Farms	23.6
Royal Oak	Dearborn	13.8
	Detroit Metropolitan Arpt	22.5
	Grosse Pointe Farms	15.4
Saginaw	Essexville	14.3
Shelby	Grosse Pointe Farms	20.6
	Dearborn	11.4
Southfield	Detroit Metropolitan Arpt	19.0
	Grosse Pointe Farms	19.2
	Milford Gm Proving Ground	23.9
	Dearborn	21.0
St. Clair Shores	Grosse Pointe Farms	7.5
	Dearborn	20.9
Sterling Heights	Grosse Pointe Farms	15.1
	Ann Arbor Univ of Mich	23.5
Taylor	Dearborn	6.2
	Detroit Metropolitan Arpt	4.3
	Grosse Pointe Farms	21.5
	Ypsilanti E Mich Univ	17.9
Troy	Dearborn	18.9
	Grosse Pointe Farms	18.5
Warren	Dearborn	16.1
	Grosse Pointe Farms	10.0
Waterford	Dearborn	24.8
	Milford Gm Proving Ground	17.0
West Bloomfield Twp	Ann Arbor Univ of Mich	24.9
	Dearborn	18.8
	Detroit Metropolitan Arpt	24.1
	Milford Gm Proving Ground	16.1
Westland	Ann Arbor Univ of Mich	17.2
	Dearborn	7.5
	Detroit Metropolitan Arpt	7.3
	Grosse Pointe Farms	24.9
	Milford Gm Proving Ground	24.5
Ypsilanti E Mich Univ	Ypsilanti E Mich Univ	13.4
	Allegan 5 NE	22.2
	Grand Rapids Kent County Intl	9.5
Wyoming	Holland	22.5
	Ann Arbor Univ of Mich	8.5
	Dearborn	20.0
Ypsilanti Twp	Detroit Metropolitan Arpt	12.7
	Ypsilanti E Mich Univ	1.7

Note: Miles is the distance between the geographic center of the city and the weather station.

Michigan Weather Stations by Elevation

Feet	Station Name
1,564	Champion Van Riper Prk
1,560	Stambaugh 2 SSE
1,430	Ironwood
1,415	Marquette County Arpt
1,299	Bergland Dam
1,149	Houghton Lake Roscommon Co Arpt
1,074	Hancock Houghton Co Arpt
1,060	Iron Mtn-Kingsford WWTP
990	Milford Gm Proving Ground
959	Mio Hydro Plant
930	Battle Creek 5 NW
930	Big Rapids Waterworks
910	Gull Lake Biol Sta
901	Charlotte
899	Ann Arbor Univ of Mich
879	East Lansing 4 S
865	Frankfort 2 NE
840	Lansing Capital City Arpt
819	Lapeer WWTP
810	Three Rivers
784	Grand Rapids Kent County Intl
779	Ypsilanti E Mich Univ
766	Flint Bishop Arpt
759	Adrian 2 NNE
759	Alma
750	Allegan 5 NE
743	Cross Village
743	St Johns
734	Boyne Falls
729	Owosso Wwtp
717	Sault Ste Marie Sanderson Field
714	Bad Axe
709	Stephenson 8 WNW
700	Hart
688	Alpena Phelps Collins Arpt
680	Munising
669	Caro Regional Center
665	Marquette
632	Detroit Metropolitan Arpt
627	Benton Harbor Ross Field
625	Muskegon County Arpt
624	Grand Marais 2 E
620	Manistique
612	Grosse Pointe Farms
609	Holland
604	Dearborn
604	Whitefish Point
589	Alpena Wastewater Pl
589	Cheboygan
589	Port Huron
587	Essexville
585	East Tawas

Alpena Phelps Collins Airport

The city of Alpena lies on the northwest shore of Thunder Bay, eight miles from the open waters of Lake Huron. Lake Huron and Thunder Bay lie at an elevation of 580 feet above sea level. Generally, the land slopes up westward from the lakeshore to 689 feet at the airport. Farther to the west and southwest the land becomes higher and more rolling. A range of hills with tops 1,000 to 1,350 feet lies northwest to southeast about 25 miles southwest of the station.

Summer showers moving from the southwest weaken and sometimes dissipate as they approach Alpena. Winter storms often bring winds with an easterly component. Precipitation from these is increased by moisture and instability picked up from Lake Huron and by forced upslope flow.

The normal wintertime storm track is south of the city, and most passing storms bring snow. Rain, freezing rain, and sleet are uncommon, but not unknown, in winter. In summer, most storms pass to the north, often bringing brief showers to the area, but occasionally, heavy thunderstorms with damaging winds occur. The Great Lakes modify most climatic extremes. Precipitation amounts are distributed evenly throughout the year. The lake effect is most pronounced in early winter, before ice forms. Minimum temperatures during this season are higher than would be expected at this latitude.

Summers in Alpena are warm and sunny. Brief showers usually occur every few days, often falling on only part of the area. Hailstorms average less than one a year. During prolonged heat waves the highest temperatures in Michigan often occur in the forest area southwest of Alpena. Winter months are cloudy and marked by frequent snow flurries. Storms bring heavier snowfall. Snow cover is sufficiently deep and persistent to provide good protection for grasses and winter grains.

The climate along the immediate Lake Huron shore is semi-maritime and lacks the temperature extremes experienced just a few miles inland. Maximum temperatures near the lake shore average 1.6 degrees lower than those at the airport, minimum temperatures average five degrees higher. Afternoon lake breezes which are strongest in the late spring and early summer cause lake shore maximum temperatures to average 3.6 degrees lower during the month of May.

Freezing temperatures have occurred as late as late June and as early as late August. Principal crops in the area are hay, potatoes, berries, and apples.

Prevailing winds are from the northwest except during May and June when southeast winds predominate. Southeast winds are common in the afternoon during all the summer months.

Alpena Phelps Collins Airport *Alpena County* Elevation: 688 ft. Latitude: 45° 04' N Longitude: 83° 35' W

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Mean Maximum Temp. (°F)	27.3	29.6	38.3	52.5	64.9	74.9	79.8	77.4	69.4	56.2	43.4	32.1	53.8
Mean Temp. (°F)	19.4	20.4	28.7	41.7	52.6	62.2	67.5	65.6	57.9	46.3	35.8	25.1	43.6
Mean Minimum Temp. (°F)	11.3	11.2	19.0	30.9	40.3	49.5	55.3	53.7	46.5	36.4	28.3	18.1	33.4
Extreme Maximum Temp. (°F)	52	65	80	90	93	103	102	102	94	90	75	65	103
Extreme Minimum Temp. (°F)	-28	-25	-17	-7	21	29	37	30	25	16	-6	-18	-28
Days Maximum Temp. ≥ 90°F	0	0	0	0	0	2	3	1	0	0	0	0	6
Days Maximum Temp. ≤ 32°F	21	18	9	1	0	0	0	0	0	0	4	15	68
Days Minimum Temp. ≤ 32°F	30	27	28	18	5	0	0	0	1	11	21	29	170
Days Minimum Temp. ≤ 0°F	7	6	3	0	0	0	0	0	0	0	0	2	18
Heating Degree Days (base 65°F)	1,409	1,254	1,120	694	389	137	40	65	230	574	868	1,229	8,009
Cooling Degree Days (base 65°F)	0	0	0	2	13	61	125	91	25	3	0	0	320
Mean Precipitation (in.)	1.65	1.30	1.87	2.46	2.63	2.55	2.95	3.25	2.86	2.58	2.10	1.76	27.96
Maximum Precipitation (in.)*	3.3	3.2	4.4	4.1	8.3	8.4	7.2	6.3	7.1	6.5	7.4	4.4	35.2
Minimum Precipitation (in.)*	0.2	0.1	0.3	1.2	1.0	0.2	0.2	0.9	0.3	0.6	0.6	0.4	21.4
Extreme Maximum Daily Precip. (in.)	1.41	1.51	1.85	1.22	2.11	1.55	2.59	2.01	1.54	3.44	1.58	1.28	3.44
Days With ≥ 0.1" Precipitation	5	4	5	6	6	6	6	6	6	6	6	5	67
Days With ≥ 0.5" Precipitation	0	1	1	2	2	2	2	2	2	1	1	1	17
Days With ≥ 1.0" Precipitation	0	0	0	0	0	0	1	1	1	0	0	0	3
Mean Snowfall (in.)	21.4	18.0	11.0	na	na	na	na	na	<i>trace</i>	0.4	8.0	19.3	na
Maximum Snowfall (in.)*	44	33	36	13	4	0	0	0	<i>trace</i>	4	35	46	146
Maximum 24-hr. Snowfall (in.)*	16	11	17	11	4	0	0	0	<i>trace</i>	2	15	16	17
Maximum Snow Depth (in.)	28	37	28	na	na	na	na	na	<i>trace</i>	1	12	26	na
Days With ≥ 1.0" Snow Depth	29	27	21	na	na	na	na	na	0	0	7	20	na
Thunderstorm Days*	< 1	< 1	1	2	4	5	7	6	4	1	< 1	< 1	30
Foggy Days*	10	9	13	12	13	14	14	17	16	14	14	12	158
Predominant Sky Cover*	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR
Mean Relative Humidity 7am (%)*	81	80	82	80	78	81	85	90	91	86	84	83	83
Mean Relative Humidity 4pm (%)*	67	62	59	53	51	53	54	59	61	62	68	72	60
Mean Dewpoint (°F)*	13	12	20	29	40	51	57	56	50	39	29	19	35
Prevailing Wind Direction*	WNW	WNW	WNW	WNW	ESE	SE	WNW	SW	W	WSW	WNW	SW	WNW
Prevailing Wind Speed (mph)*	10	9	10	10	9	8	8	7	7	8	9	8	9
Maximum Wind Gust (mph)*	53	54	54	60	53	58	53	60	45	47	56	54	60

Note: (*) Period of record is 1959-1995

Detroit Metropolitan Airport

Detroit and the immediate suburbs, including nearby urban areas in Canada, occupy an area approximately 25 miles in radius. The waterway, consisting of the Detroit and St. Clair Rivers, Lake St. Clair, and the west end of Lake Erie, lies at an elevation of 568 to 580 feet above sea level. Nearly flat land slopes up gently from the waters edge northward for about 10 miles and then gives way to increasingly rolling terrain. The Irish Hills, parallel to and about 40 miles northwest of the waterway, have tops 1,000 to 1,250 feet above sea level. On the Canadian side of the waterway the land is relatively level.

Northwest winds in winter bring snow flurry accumulations to all of Michigan except in the Detroit Metropolitan area while summer showers moving from the northwest weaken and sometimes dissipate as they approach Detroit. On the other hand, much of the heaviest precipitation in winter comes from southeast winds, especially to the northwest suburbs of the city.

The climate of Detroit is influenced by its location with respect to major storm tracks and the influence of the Great Lakes. The normal wintertime storm track is south of the city, which brings on the average, about three inch snowfalls. Winter storms can bring combinations of rain, snow, freezing rain, and sleet with heavy snowfall accumulations possible at times. In summer, most storms pass to the north allowing for intervals of warm, humid, sunny skies with occasional thunderstorms followed by days of mild, dry, and fair weather. Temperatures of 90 degrees or higher are reached during each summer.

Local climatic variations are due largely to the immediate effect of Lake St. Clair and the urban heat island. On warm days in late spring or early summer, lake breezes often lower temperatures by 10 to 15 degrees in the eastern part of the city and the northeastern suburbs. The urban heat island effect shows up mainly at night where minimum temperatures at the Metropolitan Airport average four degrees lower than downtown Detroit. On humid summer nights or on very cold winter nights, this difference can exceed 10 degrees.

The growing season averages 180 days and has ranged from 145 days to 205 days. On average, the last freezing temperature occurs in late April while the average first freezing temperature occurs in late October. A freeze has occurred as late as mid-May and as early as late September.

Detroit Metropolitan Airport *Wayne County* Elevation: 632 ft. Latitude: 42° 13' N Longitude: 83° 21' W

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Mean Maximum Temp. (°F)	32.1	35.1	45.4	58.7	69.9	79.2	83.3	81.3	74.1	61.2	48.6	36.3	58.7
Mean Temp. (°F)	25.3	27.7	36.6	48.7	59.4	69.0	73.3	71.8	64.2	51.9	41.1	29.9	49.9
Mean Minimum Temp. (°F)	18.4	20.3	27.8	38.7	48.8	58.7	63.3	62.2	54.2	42.5	33.6	23.5	41.0
Extreme Maximum Temp. (°F)	64	70	81	87	93	104	102	100	94	90	75	69	104
Extreme Minimum Temp. (°F)	-21	-15	-4	10	29	38	44	38	33	20	12	-10	-21
Days Maximum Temp. ≥ 90°F	0	0	0	0	0	3	5	3	1	0	0	0	12
Days Maximum Temp. ≤ 32°F	16	12	4	0	0	0	0	0	0	0	1	10	43
Days Minimum Temp. ≤ 32°F	28	25	22	7	0	0	0	0	0	3	14	25	124
Days Minimum Temp. ≤ 0°F	2	1	0	0	0	0	0	0	0	0	0	1	4
Heating Degree Days (base 65°F)	1,224	1,048	874	488	210	36	3	8	102	408	709	1,081	6,191
Cooling Degree Days (base 65°F)	0	0	0	7	41	162	267	225	83	8	0	0	793
Mean Precipitation (in.)	1.95	1.98	2.37	2.96	3.31	3.55	3.31	3.18	3.25	2.53	2.70	2.49	33.58
Maximum Precipitation (in.)*	3.9	5.0	4.5	5.4	6.2	7.0	6.0	7.8	7.5	4.9	5.7	6.0	42.6
Minimum Precipitation (in.)*	0.3	0.1	0.8	0.9	0.9	1.0	0.6	0.7	0.4	0.3	0.8	0.5	21.0
Extreme Maximum Daily Precip. (in.)	1.59	2.28	1.69	3.58	1.78	2.59	4.34	2.51	3.71	2.02	2.30	1.45	4.34
Days With ≥ 0.1" Precipitation	6	5	6	7	7	6	7	6	6	5	6	6	73
Days With ≥ 0.5" Precipitation	1	1	1	2	2	2	2	2	2	2	2	1	20
Days With ≥ 1.0" Precipitation	0	0	0	0	1	1	1	1	1	0	0	0	5
Mean Snowfall (in.)	12.3	10.1	7.3	1.8	trace	trace	0.0	0.0	trace	0.3	1.5	9.8	43.1
Maximum Snowfall (in.)*	30	21	16	9	trace	0	0	0	0	3	12	35	75
Maximum 24-hr. Snowfall (in.)*	11	8	8	5	trace	0	0	0	0	3	6	18	18
Maximum Snow Depth (in.)	24	18	9	6	trace	trace	0	0	trace	1	3	12	24
Days With ≥ 1.0" Snow Depth	17	12	6	1	0	0	0	0	0	0	1	8	45
Thunderstorm Days*	< 1	< 1	2	3	4	6	6	5	4	1	1	< 1	32
Foggy Days*	12	11	13	11	12	12	13	17	15	15	14	14	159
Predominant Sky Cover*	OVR	OVR	OVR	OVR	OVR	OVR	SCT	OVR	OVR	OVR	OVR	OVR	OVR
Mean Relative Humidity 7am (%)*	80	79	79	78	78	79	82	86	87	84	82	81	81
Mean Relative Humidity 4pm (%)*	67	63	58	53	51	52	52	54	54	55	64	69	58
Mean Dewpoint (°F)*	17	18	26	35	46	56	61	60	53	42	32	22	39
Prevailing Wind Direction*	WSW	SW	WNW	WSW	WSW	SW	SW	SW	SW	SW	SW	SW	SW
Prevailing Wind Speed (mph)*	14	14	14	14	13	10	9	9	10	12	13	13	12
Maximum Wind Gust (mph)*	66	64	64	66	61	94	71	69	54	52	58	61	94

Note: (*) Period of record is 1958-1995

Flint Bishop Airport

Flint, Michigan, is located in the Flint River Valley, in the center of Genesee County. Lake Huron lies approximately 65 miles to the east, while Saginaw Bay is about 40 miles to the north. The surrounding terrain is generally level with a slight rising tendency to a range of hills 15 to 20 miles southeast of the city.

Flint is generally under the climatic influence of the Great Lakes. Temperatures of 100 degrees or higher are rare and cold waves are less severe than expected. During the winter months, snow showers occur with strong northwesterly winds, and Lake Michigan, lying 120 miles to the west, causes a tempering effect upon cold waves coming from the northwest. The lake effect also results in delaying the coming of spring and prolonging warmer weather in late autumn. This results in conditions favorable for orchards and small fruit.

Precipitation is usually ample for growth and development of vegetation. The wettest periods normally occur in the late spring, early summer, and early fall. The driest period is normally during the winter, and although there is an occasional heavy snowfall, most of the snow occurs in the form of frequent light flurries.

Winter months are marked by considerable cloudiness and rather high relative humidity, while during the summer relative humidity is usually not excessive and sunshine is plentiful.

Violent windstorms associated with thunderstorms and squall lines occasionally hit this area. Tornadoes are infrequent but have caused extensive property damage and loss of life.

Weather changes are frequent throughout the year, since a majority of atmospheric disturbances moving eastward across the country pass near enough to affect the weather in Flint.

Flint Bishop Airport *Genesee County* Elevation: 766 ft. Latitude: 42° 58' N Longitude: 83° 45' W

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Mean Maximum Temp. (°F)	30.2	33.2	43.5	57.3	68.9	78.2	82.2	79.9	72.7	59.7	46.9	34.5	57.3
Mean Temp. (°F)	23.0	25.2	34.4	46.7	57.3	66.9	71.0	69.2	61.6	49.7	39.2	27.9	47.7
Mean Minimum Temp. (°F)	15.8	17.3	25.1	36.0	45.8	55.4	59.7	58.5	50.4	39.8	31.5	21.2	38.0
Extreme Maximum Temp. (°F)	61	68	80	87	93	101	101	98	94	89	75	70	101
Extreme Minimum Temp. (°F)	-21	-19	-11	6	23	33	40	37	26	20	9	-13	-21
Days Maximum Temp. ≥ 90°F	0	0	0	0	0	2	4	2	1	0	0	0	9
Days Maximum Temp. ≤ 32°F	18	14	5	0	0	0	0	0	0	0	2	12	51
Days Minimum Temp. ≤ 32°F	29	25	24	11	1	0	0	0	0	7	17	27	141
Days Minimum Temp. ≤ 0°F	4	3	1	0	0	0	0	0	0	0	0	2	10
Heating Degree Days (base 65°F)	1,294	1,117	944	549	264	59	12	25	151	472	766	1,142	6,795
Cooling Degree Days (base 65°F)	0	0	1	6	33	121	203	162	55	6	0	0	587
Mean Precipitation (in.)	1.64	1.46	1.96	2.94	3.01	3.04	3.42	3.28	3.78	2.46	2.63	1.96	31.58
Maximum Precipitation (in.)*	3.2	5.3	4.2	5.6	6.8	6.5	7.9	11.0	10.9	4.2	4.9	4.7	45.4
Minimum Precipitation (in.)*	0.3	0.2	0.3	1.0	0.3	0.6	0.7	0.4	0.3	0.4	0.7	0.4	18.1
Extreme Maximum Daily Precip. (in.)	1.17	1.49	1.37	2.25	2.23	3.46	2.72	3.89	3.62	1.90	1.87	0.96	3.89
Days With ≥ 0.1" Precipitation	5	4	5	7	6	6	6	6	6	6	6	6	69
Days With ≥ 0.5" Precipitation	1	1	1	1	2	2	3	2	2	2	1	1	19
Days With ≥ 1.0" Precipitation	0	0	0	0	1	1	1	1	1	0	0	0	5
Mean Snowfall (in.)	13.0	10.3	6.8	2.6	trace	trace	trace	trace	0.0	0.4	2.5	11.8	47.4
Maximum Snowfall (in.)*	29	21	19	17	1	0	0	0	trace	4	16	25	84
Maximum 24-hr. Snowfall (in.)*	15	10	13	12	1	0	0	0	trace	4	11	9	15
Maximum Snow Depth (in.)	18	12	10	7	trace	trace	trace	trace	0	2	6	20	20
Days With ≥ 1.0" Snow Depth	21	17	8	1	0	0	0	0	0	0	2	13	62
Thunderstorm Days*	< 1	< 1	1	3	4	6	6	6	4	1	1	< 1	32
Foggy Days*	11	10	12	11	10	10	12	16	14	14	13	13	146
Predominant Sky Cover*	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR
Mean Relative Humidity 6am (%)*	81	81	81	80	81	85	88	91	90	86	83	83	84
Mean Relative Humidity 3pm (%)*	70	67	60	53	51	53	52	55	56	57	65	72	59
Mean Dewpoint (°F)*	17	18	25	34	45	55	60	59	52	42	31	22	38
Prevailing Wind Direction*	SW	WSW	WNW	WSW	WSW	WSW	SW	SW	S	S	SW	SW	SW
Prevailing Wind Speed (mph)*	12	12	14	13	12	10	9	8	9	10	13	12	12
Maximum Wind Gust (mph)*	61	54	69	68	56	76	73	71	63	49	63	69	76

Note: (*) Period of record is 1949-1995

Grand Rapids Int'l Airport

Grand Rapids, Michigan, is located in the west-central part of Kent County, in the picturesque Grand River valley about 30 air miles east of Lake Michigan. The Grand River, the longest stream in Michigan, flows through the city and bisects it into east and west sections. High hills rise on either side of the valley. Elevations range from 602 feet on the valley floor to 1,020 feet in the extreme southern part of Kent County, southwest of the airport.

Grand Rapids is under the natural climatic influence of Lake Michigan. In spring the cooling effect of Lake Michigan helps retard the growth of vegetation until the danger of frost has passed. The warming effect in the fall retards frost until most of the crops have matured. Fall is a colorful time of year in western Michigan, compensating for the late spring. During the winter, excessive cloudiness and numerous snow flurries occur with strong westerly winds. The tempering effect of Lake Michigan on cold waves coming in from the west and northwest is quite evident.

The tempering effect of the lake promotes the growth of a great variety of fruit trees and berries, especially apples, peaches, cherries, and blueberries. The intense cold of winter is modified, thus reducing winter kill of fruit trees. Summer days are pleasantly warm and most summer nights are quite comfortable, although there are about three weeks of hot, humid weather during most summers. Prolonged severe cold waves with below-zero temperatures are infrequent. The temperature usually rises to above zero during the daytime hours regardless of early morning readings.

July is the sunniest month and December is the month with the least sunshine. November through January is usually a period of excessive cloudiness and minimal sunshine.

Precipitation is usually ample for the growth and development of all vegetation. About one-half of the annual precipitation falls during the growing season, May through September. Droughts occur occasionally, but are seldom of protracted length. The snowfall season extends from mid-November to mid-March. Some winters have had continuous snow cover throughout this period, although there is usually a mid-winter thaw. The Grand River flows through the city and reaches critical heights a couple of times each year. Overflow is generally limited to the lowlands of the flood plain.

November is one of the windiest months and although violent windstorms are infrequent, gusts have on occasion exceeded 65 mph. Summer thunderstorms occasionally produce gusty winds over 60 mph.

Grand Rapids Int'l Airport Kent County Elevation: 784 ft. Latitude: 42° 53' N Longitude: 85° 31' W

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Mean Maximum Temp. (°F)	30.4	33.2	43.6	57.5	69.2	78.5	82.4	80.1	72.6	59.6	46.6	34.4	57.3
Mean Temp. (°F)	23.8	26.0	34.7	47.1	58.0	67.6	71.8	70.1	62.2	50.1	39.3	28.4	48.3
Mean Minimum Temp. (°F)	17.1	18.7	25.8	36.6	46.8	56.6	61.1	60.0	51.7	40.6	32.0	22.4	39.1
Extreme Maximum Temp. (°F)	63	69	78	86	91	98	100	98	92	88	74	69	100
Extreme Minimum Temp. (°F)	-22	-17	-7	3	26	35	41	41	27	18	9	-18	-22
Days Maximum Temp. ≥ 90°F	0	0	0	0	0	3	4	2	0	0	0	0	9
Days Maximum Temp. ≤ 32°F	18	14	5	0	0	0	0	0	0	0	2	13	52
Days Minimum Temp. ≤ 32°F	28	26	23	10	1	0	0	0	0	5	17	27	137
Days Minimum Temp. ≤ 0°F	3	2	0	0	0	0	0	0	0	0	0	1	6
Heating Degree Days (base 65°F)	1,272	1,096	933	537	246	50	8	18	140	460	763	1,127	6,650
Cooling Degree Days (base 65°F)	0	0	1	7	36	134	225	182	61	6	0	0	652
Mean Precipitation (in.)	2.11	1.77	2.39	3.33	3.92	3.63	3.81	3.63	4.33	3.23	3.44	2.53	38.12
Maximum Precipitation (in.)*	4.4	3.3	5.8	6.1	8.3	8.2	8.8	8.5	11.8	8.3	7.8	6.6	47.5
Minimum Precipitation (in.)*	0.3	0.3	0.7	1.8	0.9	0.3	0.6	0.1	trace	trace	0.6	0.7	22.8
Extreme Maximum Daily Precip. (in.)	2.15	2.96	1.36	2.35	4.15	3.17	3.56	3.61	3.21	2.83	2.94	1.51	4.15
Days With ≥ 0.1" Precipitation	6	5	6	7	7	6	6	6	7	7	7	7	77
Days With ≥ 0.5" Precipitation	1	1	1	2	2	3	3	3	3	2	2	1	24
Days With ≥ 1.0" Precipitation	0	0	0	1	1	1	1	1	1	1	1	0	8
Mean Snowfall (in.)	20.8	14.2	8.3	2.0	trace	trace	trace	trace	trace	0.6	6.8	21.9	74.6
Maximum Snowfall (in.)*	46	30	36	16	2	0	0	0	trace	8	27	51	118
Maximum 24-hr. Snowfall (in.)*	16	9	10	12	1	0	0	0	trace	8	10	10	16
Maximum Snow Depth (in.)	20	21	14	7	trace	trace	trace	trace	trace	1	11	17	21
Days With ≥ 1.0" Snow Depth	23	17	8	1	0	0	0	0	0	0	3	16	68
Thunderstorm Days*	< 1	< 1	2	4	4	6	6	5	4	2	1	< 1	34
Foggy Days*	11	11	12	11	10	10	12	15	13	13	12	13	143
Predominant Sky Cover*	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR
Mean Relative Humidity 7am (%)*	82	81	81	79	79	81	84	89	89	85	83	83	83
Mean Relative Humidity 4pm (%)*	72	66	61	54	50	51	53	56	58	59	68	74	60
Mean Dewpoint (°F)*	17	17	25	34	45	55	60	60	53	41	31	22	39
Prevailing Wind Direction*	WSW	WSW	ENE	WSW	WSW	WSW	WSW	WSW	S	S	WSW	WSW	WSW
Prevailing Wind Speed (mph)*	14	13	12	13	12	10	10	10	8	9	13	13	12
Maximum Wind Gust (mph)*	62	62	71	68	68	63	61	61	61	48	78	62	78

Note: (*) Period of record is 1948-1995

Houghton Lake Airport

Houghton Lake is located in north-central lower Michigan. The present station is on the northeast shore of Houghton Lake, the largest inland lake in Michigan, with a circumference of about 32 miles. The Muskegon River source is Higgins Lake, eight miles to the north. It flows through Houghton Lake, then southwestward to Lake Michigan. The station lies within an elongated bowl shaped 1,000-foot plateau, which extends roughly 50 miles north, 75 miles southwest, and about 20 miles southeast of Houghton Lake. In the immediate area, the land is level to rolling, but there are hills and ridges from 100 to 300 feet higher in elevation surrounding the station. Soils are generally sand, or sandy loam supporting little agricultural production, but the area is rich in natural resources of forests, lakes, and streams.

The interior location diminishes the influence of the larger Great Lakes, which lie 70 to 80 miles east and west of Houghton Lake. Hence, the daily temperature range is larger, especially in summer, and temperature extremes are greater than are found nearer the shores of either Lake Michigan or Lake Huron. Temperatures reach the 100 degree mark about one summer out of ten, and at the other extreme, fall below zero an average of 22 times during the winter season.

Precipitation is normally a little heavier during the summer season. About 60 percent of the annual total falls in the six-month period from April through September. The heaviest precipitation occurs with summertime thunderstorms.

Snowfall averages above 80 inches per year at Houghton Lake, with considerable variation from year to year. Much heavier snows, averaging over 100 inches a season, fall within a 30- to 60-mile radius to the north and west of Houghton Lake. Seasonal totals have ranged from 24 inches to over 124 inches. Measurable amounts of snow have occurred in nine of the 12 months, and the average number of months with measurable snowfall is six.

Cloudiness is greatest in the late fall and early winter, while sunshine percentage is highest in the spring and summer. Cloudiness is increased in the late fall due to the moisture and warmth picked up by the westerly and northwesterly winds while crossing Lake Michigan.

The growing season is normally quite short, averaging about 90 days between spring and fall freezes.

Houghton Lake Airport Roscommon County Elevation: 1,149 ft. Latitude: 44° 22' N Longitude: 84° 41' W

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Mean Maximum Temp. (°F)	26.5	29.6	39.5	54.0	66.5	75.7	79.9	77.3	69.2	55.7	42.5	30.8	54.0
Mean Temp. (°F)	18.7	20.5	29.5	43.0	54.5	63.4	67.7	65.6	57.9	46.4	35.5	24.5	43.9
Mean Minimum Temp. (°F)	10.9	11.4	19.4	31.9	42.4	51.1	55.4	53.8	46.6	37.0	28.5	18.1	33.9
Extreme Maximum Temp. (°F)	54	59	76	86	90	103	98	96	92	85	70	64	103
Extreme Minimum Temp. (°F)	-26	-31	-20	2	22	29	34	29	21	18	-5	-18	-31
Days Maximum Temp. ≥ 90°F	0	0	0	0	0	1	2	1	0	0	0	0	4
Days Maximum Temp. ≤ 32°F	23	18	8	1	0	0	0	0	0	0	4	17	71
Days Minimum Temp. ≤ 32°F	30	27	28	16	4	0	0	0	2	10	22	29	168
Days Minimum Temp. ≤ 0°F	7	6	3	0	0	0	0	0	0	0	0	2	18
Heating Degree Days (base 65°F)	1,428	1,252	1,095	656	336	111	40	68	231	573	878	1,249	7,917
Cooling Degree Days (base 65°F)	0	0	0	3	18	70	129	93	26	2	0	0	341
Mean Precipitation (in.)	1.55	1.22	1.85	2.51	2.79	3.05	2.63	3.41	3.13	2.57	2.32	1.67	28.70
Maximum Precipitation (in.)*	3.1	3.4	5.7	4.7	6.0	6.7	5.3	7.2	9.5	8.1	5.1	4.5	37.7
Minimum Precipitation (in.)*	0.6	0.3	0.6	1.0	0.4	0.8	0.5	0.8	trace	0.5	0.4	0.5	20.2
Extreme Maximum Daily Precip. (in.)	0.93	1.45	1.55	1.81	1.85	2.84	3.55	3.12	2.30	3.47	1.65	1.20	3.55
Days With ≥ 0.1" Precipitation	5	4	5	6	6	6	5	7	6	6	6	5	67
Days With ≥ 0.5" Precipitation	1	0	1	1	2	2	2	2	2	1	1	1	16
Days With ≥ 1.0" Precipitation	0	0	0	0	0	1	1	1	1	0	0	0	4
Mean Snowfall (in.)	18.0	12.0	8.7	na	na	na	na	trace	trace	0.7	9.2	16.4	na
Maximum Snowfall (in.)*	38	24	29	12	2	0	0	0	trace	4	42	30	117
Maximum 24-hr. Snowfall (in.)*	15	7	12	6	2	0	0	0	trace	4	14	13	15
Maximum Snow Depth (in.)	21	20	18	na	na	na	na	trace	trace	1	17	22	na
Days With ≥ 1.0" Snow Depth	29	27	18	na	na	na	na	0	0	0	7	22	na
Thunderstorm Days*	< 1	< 1	1	2	4	5	6	6	4	1	1	< 1	30
Foggy Days*	11	10	12	10	11	12	12	17	16	14	14	13	152
Predominant Sky Cover*	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR	OVR
Mean Relative Humidity 7am (%)*	83	82	84	80	78	81	85	91	91	88	87	85	85
Mean Relative Humidity 4pm (%)*	72	66	61	53	47	51	52	58	61	62	72	76	61
Mean Dewpoint (°F)*	13	13	21	30	41	52	58	57	50	39	29	19	35
Prevailing Wind Direction*	W	W	W	NW	W	W	SW	WSW	SW	SW	W	W	W
Prevailing Wind Speed (mph)*	12	9	9	12	9	9	8	8	9	10	13	12	10
Maximum Wind Gust (mph)*	62	48	61	61	60	58	58	59	48	54	61	43	62

Note: (*) Period of record is 1964-1995

Lansing Capital City Airport

The climate at Lansing alternates between continental and semi-marine, depending on meteorological conditions. The marine type is due to the influence of the Great Lakes and is governed by the force and direction of the wind. When there is little or no wind, the weather becomes continental in character, which means pronounced fluctuation in temperature, hot weather in summer and severe cold in winter. On the other hand, a strong wind from the Lakes may immediately transform the weather into a semi-marine type.

Since large bodies of water are less responsive to temperature changes, the Great Lakes hold the winter cold longer in the spring and the summer heat longer in the fall than do the land areas. This fact is illustrated by looking at some monthly mean temperatures at Lansing as compared to similar latitudes west of the Lakes. Such a comparison shows cooler summers and milder winters in Lansing because of the lake effect.

Based on the 1951-1980 period, the average first occurrence of 32 degrees Fahrenheit in the fall is September 30 and the average last occurrence in the spring is May 13.

Precipitation is fairly well distributed through the year, and no conspicuous annual variation is noted, although there is about one inch less per month in winter than in summer. The heavier amounts in summer occur in thunderstorms. The wettest months are May and June. Snowfall for Lansing is moderate, averaging about 52 inches per year.

There are almost twice as many cloudy days as clear days throughout the year. Much cloudiness prevails during the winter season, but sunshine is abundant during the summer months. Similarly, relative humidity remains rather high during the winter, but is only moderate in summer.

Tornadoes sometimes occur in this area, but their frequency is less than in states farther to the south and west. Destructive thunder and wind storms are not uncommon. Flooding of streams and rivers in the upper grand Basin occurs in about one year out of three, with floods causing considerable damage in about one year out of ten.

Lansing Capital City Airport *Clinton County* Elevation: 840 ft. Latitude: 42° 47' N Longitude: 84° 35' W

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Mean Maximum Temp. (°F)	30.1	33.1	43.7	57.5	68.9	78.3	82.3	80.0	72.7	59.6	46.6	34.3	57.3
Mean Temp. (°F)	22.8	25.0	34.1	46.5	57.0	66.7	70.8	69.1	61.3	49.4	38.8	27.6	47.4
Mean Minimum Temp. (°F)	15.3	16.8	24.4	35.4	45.2	55.1	59.2	58.0	49.8	39.2	30.9	20.8	37.5
Extreme Maximum Temp. (°F)	62	69	79	86	91	99	100	100	93	87	74	69	100
Extreme Minimum Temp. (°F)	-29	-25	-13	-2	23	33	38	36	22	19	8	-18	-29
Days Maximum Temp. ≥ 90°F	0	0	0	0	0	2	4	2	1	0	0	0	9
Days Maximum Temp. ≤ 32°F	18	14	6	1	0	0	0	0	0	0	2	13	54
Days Minimum Temp. ≤ 32°F	29	26	25	12	2	0	0	0	1	8	18	27	148
Days Minimum Temp. ≤ 0°F	5	3	1	0	0	0	0	0	0	0	0	2	11
Heating Degree Days (base 65°F)	1,303	1,124	952	555	272	62	14	29	160	483	780	1,153	6,887
Cooling Degree Days (base 65°F)	0	0	1	6	32	120	200	162	55	6	0	0	582
Mean Precipitation (in.)	1.64	1.46	2.11	3.02	3.28	3.45	2.89	3.37	3.44	2.50	2.73	1.92	31.81
Maximum Precipitation (in.)*	3.6	4.2	4.4	5.2	6.6	10.2	6.4	9.8	8.3	5.6	5.4	4.7	39.6
Minimum Precipitation (in.)*	0.4	0.2	0.9	1.1	0.6	0.2	0.5	0.2	trace	0.3	0.5	0.4	21.2
Extreme Maximum Daily Precip. (in.)	1.59	2.14	1.24	2.10	3.22	4.95	2.12	2.70	3.43	1.43	2.16	1.02	4.95
Days With ≥ 0.1" Precipitation	4	4	5	8	7	6	6	6	6	6	6	6	70
Days With ≥ 0.5" Precipitation	1	1	1	2	2	2	2	2	2	2	2	1	20
Days With ≥ 1.0" Precipitation	0	0	0	0	1	1	1	1	1	0	1	0	6
Mean Snowfall (in.)	13.7	11.0	7.3	2.1	trace	trace	trace	0.0	trace	0.4	3.5	13.2	51.2
Maximum Snowfall (in.)*	34	24	20	17	trace	0	0	0	trace	8	17	28	80
Maximum 24-hr. Snowfall (in.)*	15	8	14	10	trace	0	0	0	trace	8	8	9	15
Maximum Snow Depth (in.)	23	17	13	6	trace	trace	trace	0	trace	1	7	16	23
Days With ≥ 1.0" Snow Depth	23	17	8	1	0	0	0	0	0	0	2	15	66
Thunderstorm Days*	< 1	< 1	1	3	4	6	6	6	4	1	1	< 1	32
Foggy Days*	13	12	13	12	11	11	12	16	14	14	14	14	156
Predominant Sky Cover*	OVR	OVR	OVR	OVR	OVR	OVR	SCT	OVR	OVR	OVR	OVR	OVR	OVR
Mean Relative Humidity 7am (%)*	83	82	83	80	79	81	85	90	90	87	85	84	84
Mean Relative Humidity 4pm (%)*	72	67	62	55	52	53	53	56	58	59	68	74	61
Mean Dewpoint (°F)*	17	17	25	35	45	56	60	60	53	41	32	22	39
Prevailing Wind Direction*	W	W	W	W	W	W	W	W	SSW	SW	SSW	SW	W
Prevailing Wind Speed (mph)*	14	14	14	14	12	10	10	9	10	12	12	13	12
Maximum Wind Gust (mph)*	60	52	64	70	62	69	64	54	48	55	60	62	70

Note: (*) Period of record is 1948-1995

Marquette County Airport

The Marquette County Airport lies about 7.5 miles southwest of the nearest shoreline of Lake Superior and about eight miles west of the city of Marquette. Lake Superior is the largest body of fresh water in the world and the deepest and coldest of the Great Lakes. An irregular northwest-south-east ridge line lies just to the east of the airport. There are several water storage basins in the vicinity of the station. One basin, about 20 miles long, is three miles northwest and another, about eight miles in diameter, is three miles west.

The climate is influenced considerably by the proximity of Lake Superior. As a consequence of the cool expanse of water in the summer, there is rarely a long period of sweltering hot weather. Periods of drought are extremely rare. In the winter, cold outbreaks are tempered considerably by the waters of Lake Superior if the lake is unfrozen. However, winds blowing across these relatively warmer waters pick up moisture and cause cloudy weather throughout the winter, as well as frequent periods of light snow. Lake-formed snow showers and snow squalls are intensified near the station by upslope winds, especially from the northwest through northeast. With a northeast through east wind, especially in autumn, the upslope condition will cause light snow at the airport, while along the lakeshore, only drizzle or no precipitation may occur.

The growing season averages 117 days. Precipitation is rather evenly distributed throughout the year, with an average precipitation of four inches or more in June and September and less than two inch averages only in January and February. One hundred inches or more of snow occur in nine of ten winter seasons.

Marquette County Airport Marquette County Elevation: 1,415 ft. Latitude: 46° 32' N Longitude: 87° 33' W

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Mean Maximum Temp. (°F)	22.2	25.9	34.6	48.0	62.2	71.9	76.4	74.2	65.8	51.8	37.5	26.0	49.7
Mean Temp. (°F)	14.1	16.3	24.5	38.0	50.8	60.4	65.2	63.5	55.7	43.1	30.6	18.9	40.1
Mean Minimum Temp. (°F)	6.0	6.6	14.3	27.9	39.3	48.8	54.0	52.8	45.5	34.4	23.6	11.8	30.4
Extreme Maximum Temp. (°F)	49	61	71	92	93	96	99	96	93	87	73	59	99
Extreme Minimum Temp. (°F)	-27	-32	-30	-9	17	28	36	34	24	14	-8	-28	-32
Days Maximum Temp. ≥ 90°F	0	0	0	0	0	1	2	1	0	0	0	0	4
Days Maximum Temp. ≤ 32°F	26	21	13	3	0	0	0	0	0	0	10	23	96
Days Minimum Temp. ≤ 32°F	31	28	29	22	8	0	0	0	2	15	26	30	191
Days Minimum Temp. ≤ 0°F	10	10	5	0	0	0	0	0	0	0	0	0	7
Heating Degree Days (base 65°F)	1,571	1,373	1,250	806	447	182	80	106	295	673	1,026	1,424	9,233
Cooling Degree Days (base 65°F)	0	0	0	2	12	51	95	68	22	2	0	0	252
Mean Precipitation (in.)	2.43	2.07	3.00	3.09	3.06	2.71	2.77	3.10	3.72	3.85	3.18	2.53	35.51
Maximum Precipitation (in.)*	4.5	3.6	6.1	6.6	7.9	12.3	5.6	8.6	7.6	7.6	8.3	6.9	51.6
Minimum Precipitation (in.)*	0.6	0.5	0.3	0.9	0.1	0.6	0.6	0.6	1.2	0.9	1.0	0.4	22.7
Extreme Maximum Daily Precip. (in.)	2.21	1.53	2.42	3.09	3.15	1.87	2.46	2.30	4.29	2.89	2.18	2.30	4.29
Days With ≥ 0.1" Precipitation	7	5	7	7	6	7	7	6	8	8	7	7	82
Days With ≥ 0.5" Precipitation	1	1	1	2	2	2	2	2	2	2	2	1	20
Days With ≥ 1.0" Precipitation	0	0	1	1	1	0	0	1	1	1	1	0	7
Mean Snowfall (in.)	43.4	35.8	34.8	14.5	1.3	trace	trace	trace	0.1	6.4	24.5	42.2	203.0
Maximum Snowfall (in.)*	69	64	61	29	23	trace	0	0	2	19	49	83	269
Maximum 24-hr. Snowfall (in.)*	23	18	21	16	14	trace	0	0	2	11	18	24	24
Maximum Snow Depth (in.)	45	44	63	41	17	trace	trace	trace	trace	10	24	47	63
Days With ≥ 1.0" Snow Depth	31	28	30	14	1	0	0	0	0	3	16	29	152
Thunderstorm Days*	< 1	< 1	1	1	3	6	6	5	4	2	< 1	< 1	28
Foggy Days*	7	7	9	9	10	11	10	13	14	12	11	9	122
Predominant Sky Cover*	na	na	na	na	na	na	na	na	na	na	na	na	na
Mean Relative Humidity 7am (%)*	na	na	na	na	na	na	na	na	na	na	na	na	na
Mean Relative Humidity 4pm (%)*	na	na	na	na	na	na	na	na	na	na	na	na	na
Mean Dewpoint (°F)*	na	na	na	na	na	na	na	na	na	na	na	na	na
Prevailing Wind Direction*	na	na	na	na	na	na	na	na	na	na	na	na	na
Prevailing Wind Speed (mph)*	na	na	na	na	na	na	na	na	na	na	na	na	na
Maximum Wind Gust (mph)*	na	na	na	na	na	na	na	na	na	na	na	na	na

Note: (*) Period of record is 1963-1995