



National Weather Service

Detroit/Pontiac, MI



Climate

“Climate is what you expect, Weather is what you get.”

Detroit Statistics

Length of Record 1874-2009
 Warmest Observed Temperature:
 105 on July 24, 1934
 Coldest Observed Temperature:
 -21 on January 21, 1984
 Average first frost: September 21
 Average first freeze: October 22
 Average last freeze: April 24
 Average last frost: May 15
 Average first trace of snow:
 October 31
 Average first inch of snow:
 November 29
 Average last inch of snow:
 March 22
 Percent of Christmas's with snow on ground: 48 %
 Average Annual Precipitation:
 32.89 inches
 Average Annual Snowfall:
 44.0”
 Highest Daily Rainfall:
 4.74 inches July 31, 1925
 Highest Daily Snowfall:
 24.4 inches April 6, 1886



Climate is the type of weather experienced in a region over a long period of time and takes into account the temperature, humidity, precipitation, wind, and degree of cloudiness. Climate is a function of 5 major factors including the latitude, altitude, topography, proximity to large lakes or oceans, and the large scale circulation of the atmosphere for any particular region. As the “Great Lakes State”, the climate of Michigan is largely affected by the surrounding lakes including Lake Superior, Lake Michigan, Lake Huron, Lake St. Clair, and Lake Erie. The lakes impact the climate by having an effect on the long term temperature and precipitation patterns observed over the state. The Great Lakes also impact our **weather** as differing air masses interact with the lakes to create such phenomena as lake effect snows, lake breezes, changes in cloud cover, and many other factors.



Michigan is classified as having a **Humid Continental Climate** which is characterized by having distinct summers and winters with a fairly even distribution of precipitation throughout the year. The mean temperature for Detroit varies from 24.5 degrees in January to 73.5 degrees in July. Precipitation largely falls in the form of snow during the winter months while showers and thunderstorms are common during the summer months.

National Weather Service Detroit/ Pontiac, MI

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The climate of a region has many influences on our daily lives. Here are some examples:

- Houses are designed based on the climate where we live.
- Farmers decide which crops to grow based on the length of the growing season and the average annual precipitation.
- Utility companies base power supplies on the typical need for heating and cooling during the winter and summer months.
- Clothing is sold to match the needs of the people living in a particular region.
- Local governments have to plan for snow removal, extreme heat, ice storms, etc.

Average monthly climate data for Detroit, Flint and Saginaw

Temperature	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Detroit	31.1 17.8	34.4 20.0	45.2 28.5	57.8 38.4	70.2 49.4	79.0 58.9	83.4 63.6	81.4 62.2	73.7 54.1	61.2 42.5	47.8 33.5	35.9 23.4
Flint	29.2 13.3	32.3 15.3	43.1 24.3	56.2 34.6	69.0 45.2	77.0 54.6	82.0 59.1	79.5 57.4	71.9 49.4	59.7 38.6	46.3 29.8	34.2 19.1
Saginaw	27.9 14.9	30.7 16.8	41.3 25.6	55.0 35.9	68.4 46.8	77.5 56.0	81.9 60.4	78.9 58.5	70.9 50.5	58.8 40.1	44.8 31.1	33.0 20.9

Precipitation	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Detroit	1.91"	1.88"	2.52"	3.05"	3.05"	3.55"	3.16"	3.10"	3.27"	2.23"	2.66"	2.51"
Flint	1.57"	1.35"	2.22"	3.13"	2.74"	3.07"	3.17"	3.43"	3.76"	2.34"	2.65"	2.18"
Saginaw	1.77"	1.57"	2.42"	2.82"	2.89"	3.06"	2.50"	3.38"	3.95"	2.49"	2.65"	2.11"

Snowfall	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Detroit	11.9"	9.3"	7.0"	1.7"	Trace	0"	0"	0"	0"	0.3"	2.7"	11.1"
Flint	13.2"	9.4"	7.7"	2.6"	Trace	0"	0"	0"	0"	0.3"	3.5"	11.6"
Saginaw	11.8"	8.3"	8.0"	2.2"	Trace	0"	0"	0"	0"	0.2"	3.8"	10.2"

Climate Web Sites

1. Local Climate Data at www.weather.gov/dtx
 - Daily and Historical Climate Information/Records
 - Local Seasonal Outlooks and Reviews
2. Great Lakes Environmental Research Laboratory (GLERL)
At www.glerl.noaa.gov/seagrant/Publications/ClimateChange.html
 - Great Lakes climatology on water levels, ice cover, and water temperatures.
3. Midwest Regional Climate Center at <http://mcc.sws.uiuc.edu>
4. National Climatic Data Center at www.ncdc.noaa.gov
5. NOAA Climate Information www.noaa.gov/climate.html
5. Climate Prediction Center www.cpc.ncep.noaa.gov
 - Long range forecasts
 - Global weather patterns
 - Drought monitor
6. Michigan State Climatologist at <http://climate.geo.msu.edu/index.html>
 - Historical climatological tables
7. Climate Diagnostic Center (CDC)
www.cdc.noaa.gov/index.html
 - Analyze, interpret, study, and forecast climate

Climate in the World Today

What is Climate Change?

Climate change is the long-term shift in the climate for a particular location. The global climate is currently undergoing a change. The last decade of the 20th century and the beginning of the 21st century have been the warmest period in the global instrument temperature record since starting in the mid-19th century.

Climate change can be both a Natural and Human-Induced process. Geological records indicate that significant warm and cool periods exist in the earth's history. Human-Induced warming processes are a result of the increased emission of greenhouse gases into the atmosphere. These gases absorb heat and essentially act to warm the atmosphere and oceans. The Fourth Assessment Report released by the

Intergovernmental Panel on Climate Change stated "that most of the observed increase in the 20th century is very likely due to the observed increase in greenhouse gas concentrations."

What is El Niño/La Niña?

El Niño/La Niña refers to warming/cooling of the eastern equatorial region of the Pacific Ocean. These warm or cool episodes can have an effect on global weather patterns. Some effects of an El Niño on the United States include increased precipitation along the west coast, mild winters for the northern states, and a decrease in the number of Atlantic Hurricanes. La Niña can lead to below normal winter temperatures across the northern tier of the United States and above

normal precipitation through the Mid-Mississippi and Ohio Valleys. Many other impacts can be recognized across the United States and around the world.

What is the Urban Heat Island?

The Urban Heat Island refers to the increased air temperatures observed in urban areas compared to surrounding rural areas. The effect is a result of modification of the natural land surface to materials that absorb and store more heat like concrete and blacktop. The urban heat island causes a gradual change in the climate of a city that is most noticeable by slightly warmer temperatures overnight.

