



# GLERL Great Lakes Air Temperature/Degree Day Climatology, 1897-1983, Version 1

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## USER GUIDE

### How to Cite These Data

As a condition of using these data, you must include a citation:

Assel, R. A. 1995. GLERL Great Lakes Air Temperature/Degree Day Climatology, 1897-1983, Version 1. [Indicate subset used]. Boulder, Colorado USA. NSIDC: National Snow and Ice Data Center. <https://doi.org/10.7265/N5VD6WCJ>. [Date Accessed].

FOR QUESTIONS ABOUT THESE DATA, CONTACT [NSIDC@NSIDC.ORG](mailto:NSIDC@NSIDC.ORG)

FOR CURRENT INFORMATION, VISIT: <https://nsidc.org/data/G00801>



National Snow and Ice Data Center

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# 1 DATA DESCRIPTION

## 1.1 Summary

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The data set of daily minimum and maximum air temperatures at 25 locations on the perimeter of the Great Lakes for the period 1897 to 1983 can be used to calculate freezing degree-days (FDD's) and thawing degree-days (TDD's).

Stations are: Rochester, NY, Kingston, Ont., Port Dover, Ont., Buffalo, NY, Oswego, NY, Detroit, MI, Chicago, IL, Cleveland, OH, Toledo, OH, Erie, PA, Alpena, MI, Bay City, MI, Port Huron, MI, Green Bay, WI, Milwaukee, WI, Parry Sound, Ont., Fort William, Ont., Thunder Bay, Ont., Escanaba, MI, Traverse City, MI, Muskegon, MI, Toronto, Ont., Houghton, MI, Marquette, MI, Sault Ste. Marie, MI, Duluth, MI.

## 1.2 Parameters

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The parameters are air temperature, degree days, maximum/minimum temperature.

## 1.3 File Information

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### 1.3.1 Format

The data files are in ASCII text format. The first number in the data record denotes the station number where temperatures were recorded, the second the month (1-12) recorded, and the third the year. The remainder of the record contains 31 sets of daily maximum and minimum temperatures in degrees Fahrenheit. Records for months with less than 31 days end in zeros for both maximum and minimum temperatures to make the record the same lengths as 31 day months. Note: For the files covering 1977 to 1983 for the stations in Ontario Canada, the data is reported in degrees C to the nearest 0.1 degree. For example, -110 indicates -11.0 °C.

### 1.3.2 File Contents

The data set consists of files in the table below, and a FORTRAN routine for accessing the data. Note that this code was developed on an SGI running IRIX 4.0.1 and is only intended as a template and may require updates by the user for the appropriate operating system. The files containing "77" within the file name refer to the data used for Assel, 1980 (GLERL-15) while the "83" files refer to the updates used for Assel, 1986 (GLERL-29). The data for 1977 contained in the "83" files supersedes the 1977 data in the "77" file. Note that the data for Escanaba, MI was supplemented with data from Fayette, MI for 1978 to 1980. The data from stations in Midland, Ontario and

Standish, MI were used to replace data from Parry Sound, Ontario, and Bay City, MI respectively. Note that for the files covering 1977 to 1983 for the stations in Ontario Canada, the data is reported in degrees C to the nearest 0.1 degree. For example, -110 indicates -11.0 C.

Table 1. File Name and Description

<b>File</b>	<b>Description</b>	<b>File</b>	<b>Description</b>
alp77.dat	Data for Alpena, MI from 1897 to 1977	mil77.dat	Data for Milwaukee, WI from 1897 to 1977
alp83.dat	Data for Alpena, MI from 1977 to 1983	mil83.dat	Data for Milwaukee, WI from 1977 to 1983
bci77.dat	Data for Bay City, MI from 1897 to 1977	mqt77.dat	Data for Marquette, MI from 1897 to 1977
buf77.dat	Data for Buffalo, NY from 1897 to 1977	mqt83.dat	Data for Marquette, MI from 1977 to 1983
buf83.dat	Data for Buffalo, NY from 1977 to 1983	msk77.dat	Data for Muskegon, MI from 1897 to 1977
chi77.dat	Data for Chicago, IL from 1897 to 1977	msk83.dat	Data for Muskegon, MI from 1977 to 1983
chi83.dat	Data for Chicago, IL from 1977 to 1983	osw77.dat	Data for Oswego, NY from 1897 to 1977
clv77.dat	Data for Cleveland, OH from 1897 to 1977	osw83.dat	Data for Oswego, NY from 1977 to 1983
clv83.dat	Data for Cleveland, OH from 1977 to 1983	pas77.dat	Data for Parry Sound, Ontario from 1897 to 1977
det77.dat	Data for Detroit, MI from 1897 to 1977	pas83.dat	Data for Parry Sound, Ontario from 1979 to 1983
det83.dat	Data for Detroit, MI from 1977 to 1983	ptd77.dat	Data for Port Dover, Ontario from 1897 to 1977
dul77.dat	Data for Duluth, MN from 1897 to 1977	ptd83.dat	Data for Port Dover, Ontario from 1977 to 1983
dul83.dat	Data for Duluth, MN from 1977 to 1983	pth77.dat	Data for Port Huron, MI from 1897 to 1977
eri77.dat	Data for Erie, PA from 1897 to 1977	pth83.dat	Data for Port Huron, MI from 1977 to 1983
eri83.dat	Data for Erie, PA from 1977 to 1983	roc77.dat	Data for Rochester, NY from 1897 to 1977
esc77.dat	Data for Escanaba, MI from 1897 to 1977	roc83.dat	Data for Rochester, NY from 1977 to 1983
esc83.dat	Data for Escanaba, MI from 1977 to 1983	ssm77.dat	Data for Sault Ste. Marie, MI from 1897 to 1977

File	Description	File	Description
ftw77.dat	Data for Fort William/Thunder Bay, Ontario from 1897 to 1977	ssm83.dat	Data for Sault Ste. Marie, MI from 1977 to 1983
ftw83.dat	Data for Fort William/Thunder Bay, Ontario from 1977 to 1983	stn83.dat	Data for Standish, MI from 1977 to 1983
grb77.dat	Data for Green Bay, WI from 1897 to 1977	tol77.dat	Data for Toledo, OH from 1897 to 1977
grb83.dat	Data for Green Bay, WI from 1897 to 1977	tol83.dat	Data for Toledo, OH from 1977 to 1983
hou77.dat	Data for Houghton, MI from 1897 to 1977	tor77.dat	Data for Toronto, Ontario from 1897 to 1977
hou83.dat	Data for Houghton, MI from 1977 to 1983	tor83.dat	Data for Toronto, Ontario from 1977 to 1983
kin77.dat	Data for Kingston, Ontario from 1897 to 1977	tvc77.dat	Data for Traverse City, MI from 1897 to 1977
kin83.dat	Data for Kingston, Ontario from 1977 to 1983	tvc83.dat	Data for Traverse City, MI from 1977 to 1983
mid83.dat	Data for Midland, Ontario from 1976 to 1981	degree_day.f	FORTRAN routine to extract data

### 1.3.3 File Size

The entire data set is 14.8 MB.

## 1.4 Spatial and Temporal Information

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Daily minimum and maximum air temperatures at 25 locations on the perimeter of the Great Lakes for the period 1897 to 1983.

## 2 DATA ACQUISITION AND PROCESSING

### 2.1 Processing

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The FORTRAN routine, `degree_day.f`, will read an input data file and extract the minimum and maximum temperatures and place these into an array. This program was developed on a SGI running IRIX 4.0.1 and is intended only as a template for the user.

## 2.2 Instrumentation

### 2.2.1 Description

Thermometers were used to measure air temperature.

## 3 VERSION HISTORY

Table 2. Version History Summary

Version	Release Date	Description of Changes
1.0	1995	Initial release
	July 2006	This document was reformatted. F. Fetterer reviewed this document.
	July 2017	A. Windnagel fixed broken links in References section.
	November 2020	Converted to PDF

## 4 RELATED DATA SETS

- [GLERL Radiation Transfer Through Freshwater Ice](#)
- [GLERL Great Lakes Ice Thickness Data Base, 1966-1979](#)
- [GLERL Great Lakes Ice Concentration Data Base, 1960-1979](#)
- [Great Lakes Surface Ice Reports from U.S. Coast Guard](#)

## 5 CONTACTS AND ACKNOWLEDGMENTS

### NOAA/GLERL

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### Acknowledgments

This data set is maintained at NSIDC with support from the NOAA National Geophysical Data Center.

## 6 REFERENCES

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Assel, R.A. 1986. Great Lakes Degree-Day and Winter Severity Index Update: 1897-1983. *NOAA Data Report ERL GLERL-29*, May 1986 NTIS number: PB86-22243.

## 7 DOCUMENT INFORMATION

### 7.1 Author

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Assel, R. A.

### 7.2 Publication Date

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1995

### 7.3 Revision History

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