

# Seasonal frost depths, midwestern USA, 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:

Haugen, R. 1998. *Seasonal frost depths, midwestern USA, Version 1*. [Indicate subset used].  
Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center.  
<https://doi.org/10.7265/1mcs-q536>. [Date Accessed].

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

FOR CURRENT INFORMATION, VISIT <https://nsidc.org/data/GGD498>



National Snow and Ice Data Center

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**Notice:** This data set was first published on the [1998 CAPS CD](#).

The text for this document was taken unchanged from that CD.

# 1 DETAILED DATA DESCRIPTION

Frost tube data from 18 stations in the upper Midwestern USA: Minnesota, North Dakota, Wisconsin, and Michigan. The responsible agency was the St. Paul District of the U.S. Army Corps of Engineers. These data were collected during 1971-1981 (no data for 1976/77) by cooperative observers who gathered the data for use in their spring run-off hydrologic predictions. The observers had frost tubes installed by District personnel in their back yards. The early penetration of frost at the beginning of the freezing season was not observed, but most observers picked up the record when 1 or 2" of frost had occurred. This data base, a preliminary version, was constructed by Richard K. Haugen and Glenn King from the manuscript records of the cooperative observers and is presented on the CAPS Version 1.0 CD-ROM, June 1998.

## 1.1 Station Locations

<b>North Dakota</b>	<b>1,Minot</b>	<b>,48.18,101.3,1769,38</b>
North Dakota	2,Bottineau	,48.83,100.4,1640,38
North Dakota	5,Langdon	,48.75,98.33,1615,41
North Dakota	6,Valley City	,46.97,98.03,1210,41
Minnesota	8,Crookston	,47.80,96.62, 883,38
Minnesota	10,Morris	,45.58,95.88,1140,40
Minnesota	15,Lamberton	,44.25,95.32,1144,40
Minnesota	16,Winnebago	,43.77,94.17,1110,39
Minnesota	17,N. Mank	,44.17,94.03, 785,40
Minnesota	24,Duluth WSO	,46.83,92.18,1428,43
Minnesota	26,St. Paul	,44.98,93.08, 920,40
Minnesota	27,Rochester	,43.92,92.50,1297,
Minnesota	28,Winona	,44.05,91.63, 652,42
Wisconsin	30,Neillsville	,44.53,90.63,1045,41
Wisconsin	31,Glen Flora	,45.47,91.08,1158,41
Michigan	32,Bessemer	,46.47,90.18,1430,39
Minnesota	35,Wheaton	,45.80,96.48,1018,35
Minnesota	36,Waseca	,44.07,93.52,1153,36

where

21, 23 = no information

38 = clay

39 = clay/silt

40 = silt

41 = silt/sand

42 = sand

## 2 DOCUMENT INFORMATION

### **Please cite these data as follows:**

Haugen, R. and King G. 1998. Seasonal frost depths, midwestern USA. In: International Permafrost Association, Data and Information Working Group, comp. Circumpolar Active-Layer Permafrost System (CAPS), version 1.0. CD-ROM available from National Snow and Ice Data Center, [nsidc@kryos.colorado.edu](mailto:nsidc@kryos.colorado.edu). Boulder, Colorado: NSIDC, University of Colorado at Boulder.

### 2.1 Publication Date

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1998

### 2.2 Date Last Updated

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2021