

DANISH METEOROLOGICAL INSTITUTE
MINISTRY OF TRANSPORT

———— **TECHNICAL REPORT** ————
02-15

**Observed Daily Precipitation, Maximum Temperature
and Minimum Temperature from Ilulissat and
Tasiilaq, 1873-2000**

Version 2

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<http://www.dmi.dk/f+u/publikation/tekniskerap.html>

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1. Introduction

This DMI Technical Report 02-15 is version 2 of the DMI Technical Report 01-11 that was released spring 2001.

The data series of the two reports are identical.

The difference consists of a precise data *description* in section 4, 'Contents of CD-rom' in the present report. In DMI TR 01-11 there was, very unfortunate, no mentioning of the fact that the maximum temperature through long periods has been listed on the day previous to the day it was read. Also the distinction between 'hour' at the climate stations 34216 and 34360 compared to the synoptic stations 04216, 04221 and 04360 was not very clear.

In this version 2 these errors have been corrected by extending the data description of section 4, 'Contents of CD-rom', so that the descriptions now are both precise and exhaustive as to our knowledge of the observations.

24 April 2002

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Increased focus on the analysis and modelling of climatic change and the related analysis of observed climatic data calls for long time series of climate data. Until recently many studies have been based on annual and monthly values. But many climatic extreme events with great impact on Society, e.g. maximum precipitation in 24 hours, may be hidden by the aggregation into monthly or annual values. And as climate change has been recognised also to affect climatic extreme events the demand for long time series of observed daily values has increased.

By the present DMI Technical Report, digitised DMI series of observed daily precipitation and extreme temperatures of length more than 100 years from the east coast and west coast of Greenland are made easily available to research.

Most of the station history presented is a result of the NACD¹ project.

Digitisation of the observations is only the first step towards sensible utilisation of the observations for climate change studies. Next follows testing for homogeneity of the series, ensuring that any discovered trend are natural. Thus it must be stressed that the series presented here consist of the values *as observed by the Institute at the time*, and that no testing for homogeneity has been performed on these daily observations. But as help towards such testing, various meta data together with homogeneity test results on relevant series of *monthly* data (and references as to both) have been included in the report.

22 March 2001

Ellen Vaarby Laursen

Weather and Climate Information Division

¹ EU project number EV5V CT93-0277: North Atlantic Climatological Dataset.

2. The observation data

The daily series of maximum temperature, minimum temperature and precipitation from Tasiilaq on the east coast of Greenland were digitised thanks to KVUG.

It was decided to supplement these series with similar series from Ilulissat on the west coast of Greenland. The tables below give an over view of the series.



Site and period	Station	Start	End
Ilulissat, 1873-1991	34216 Ilulissat (Jacobshavn)	1 July 1873	31 December 1960
	04216 Ilulissat	2 January 1961	12 October 1991
Tasiilaq 1897-2000	34360 Tasiilaq (Angmagsalik)	1 October 1897	30 September 1959
	04360 Tasiilaq	1 January 1958	31 December 2000

Table 2.1. Series of daily precipitation 8:00 hours



Site and period	Station	Start	End
Ilulissat, 1873-2000	34216 Ilulissat (Jacobshavn)	1 July 1873	31 December 1960
	04216 Ilulissat	1 January 1961	31 August 1992
	04221 Ilulissat Mittarfia	16 August 1991	31 December 2000
Tasiilaq 1894-2000	34360 Tasiilaq (Angmagsalik)	15 October 1894	30 September 1959
	04360 Tasiilaq	1 January 1958	31 December 2000

Table 2.2. Series of daily minimum temperature 8:00 hours



Site and period	Station	Start	End
Ilulissat, 1877-2000	34216 Ilulissat (Jacobshavn)	1 January 1877	31 December 1960
	04216 Ilulissat	2 January 1961	1 September 1992
	04221 Ilulissat Mittarfia	16 August 1991	31 December 2000
Tasiilaq 1897-2000	34360 Tasiilaq (Angmagsalik)	1 October 1897	30 September 1959
	04360 Tasiilaq	1 January 1958	31 December 2000

Table 2.3. Series of daily maximum temperature 8:00 hours

3. Meta Data

Changes in station position, measuring procedures or observer may all significantly bias a time series of observations. In Table 3.1 is listed information on dates for introduction of the Hellmann rain gauge. A detailed investigation of the various older instruments and instructions for the observer may be found in (Brandt, 1994a (in Danish)). All available information on station positions is included on the CD-ROM, confer with the file description in section 4.

Station No.	Name	Fjord gauge replaced by Hellmann
34216	Ilulissat (Jacobshavn)	1923.08

Table 3.1. Information on station instrumentation. From ‘table 6’ in (Brandt, 1994).

4. Contents of CD-ROM

The CD-ROM contains

- 4 fixed ASCII format data files named P<station number>.dat,
- 5 fixed ASCII format data files named Tn<station number>.dat,
- 5 fixed ASCII format data files named Tx<station number>.dat,
- 1 fixed ASCII format file named St_pos.dat,

Data from the CD-ROM may only be used with proper reference to the accompanying report (Laursen, Ellen Vaarby, 2002. Maximum Temperature and Minimum Temperature from Ilulissat and Tasiilaq, 1873-2000. Version 2. DMI Technical Report No. 02-15).

4.1 Observed daily precipitation files: P<station number>.dat

The observation files contain observed daily precipitation. There are no missing dates between the start and the end date. Any missing observations are filled in by -9999.

File name Station and period (start and end date)

p04216.dat	04216 Ilulissat	2 January 1961	12 October 1991
p04360.dat	04360 Tasiilaq	1 January 1958	31 December 2000
p34216.dat	34216 Ilulissat (Jacobshavn)	1 July 1873	31 December 1960
p34360.dat	34360 Tasiilaq (Angmagsalik)	1 October 1897	30 September 1959

Format of all precipitation observation files:

Position	Format	Description
1-5	F5.0	Station no.
6-9	F4.0	Year
10-11	F2.0	Month
12-13	F2.0	Day
14-15	F2.0	Hour (station 04216 and station 04360: UTC. Station 34216 and station 34360: Local time)
16-20	F5.0	Precipitation previous 24 hours (0.1 mm), -1 means more than 0 mm but less than 0.1 mm, -9999 means missing value. Please note: For station 34216 and station 34360 the 'daily precipitation' may in some cases be the precipitation accumulated for several days.

4.2 Daily minimum temperature files: Tn<station number>.dat

These observation files contain observed daily minimum temperature. There are no missing dates between the start and the end date. Any missing observations are filled in by -9999.

File name Station and period (start and end date)

tn04216.dat	04216 Ilulissat	1 Jan 1961	31 Aug 1992
tn04221.dat	04221 Ilulissat Mittarfia	16 Aug 1991	31 Dec 2000
tn04360.dat	04360 Tasiilaq	1 Jan 1958	31 Dec 2000
tn34216.dat	34216 Ilulissat (Jacobshavn)	1 Jul 1873	31 Dec 1960
tn34360.dat	34360 Tasiilaq (Angmagsalik)	15 Oct 1894	30 Sep 1959

Format of all observation files:

Position	Format	Description
1-5	F5.0	Station no.
6-9	F4.0	Year
10-11	F2.0	Month
12-13	F2.0	Day
14-15	F2.0	Hour (stations 04216,04221 and 04360: UTC. Station 34216 and station 34360: Local time)
16-20	F5.0	Minimum temperature previous 24 hours (0.1°C).

4.3 Daily maximum temperature files: Tx<station number>.dat

These observation files contain observed daily maximum temperature. There are no missing dates between the start and the end date. Any missing observations are filled in by -9999.

File name Station and period (start and end date)

tx04216.dat	04216 Ilulissat	2 January 1961	1 September 1992
tx04221.dat	04221 Ilulissat Mittarfia	16 August 1991	31 December 2000
tx04360.dat	04360 Tasiilaq	1 January 1958	31 December 2000
tx34216.dat	34216 Ilulissat (Jacobshavn)	1 January 1877	31 December 1960
tx34360.dat	34360 Tasiilaq (Angmagsalik)	1 October 1897	30 September 1959

Format of all observation files:

Position	Format	Description
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1-5	F5.0	Station no.
6-9	F4.0	Year
10-11	F2.0	Month
12-13	F2.0	Day
14-15	F2.0	Hour (stations 04216,04221 and 04360: UTC. Station 34216 and station 34360: Local time)
16-20	F5.0	Maximum temperature previous 24 hours (0.1°C). Please note: For the two stations 34216 and 34360 there are the following exceptions: The maximum temperature, covering the previous 24 hours, is read in the morning, local time, at stations 34216 and 34360. During the period 1 Jan 1874 (or when measurements start) - 31 Dec 1912 the maximum temperature, at stations 34216 and 34360, is listed on the date it has been read. During the period 1 Jan 1913 - 1 Jan 1970 (or when measurements end) the maximum temperature, at stations 34216 and 34360, is listed on the previous day (where it most often occurs).

4.4 Station position file: St_pos.dat

The file contains the digitised information on the station positions and thereby on any removals of the stations during the operation period. The file has the following format:

Position	Format	Description
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1-5	F5.0	Station no.
6-35	A30	Station name
36-45	A10	Station type (synop_gr = part of WMO synoptic net, climate_man = manual climate station)
46-56	Date11	Start date (dd-mmm-yyyy)
57-67	Date11	End date (dd-mmm-yyyy)
68-73	F6.0	Elevation (metres above mean sea level)
74-84	F11.0	Latitude, degrees N (dddmmss)
85-95	F11.0	Longitude, degrees E (dddmmss)

5. References

Brandt, Marie Louise, DMI Technical Report 94-20 'Summary of Meta data from NACD-stations in Denmark, Greenland and the Faroe Islands 1872-1994', DMI København 1994.

Danmarks Klimacenter, see <http://www.dmi.dk/dmi/> (in Danish).

Frich, P. (Co-ordinator), H. Alexandersson, J. Ashcroft, B. Dahlström, G. Demarée, A. Drebs, A. van Engelen, E.J. Førland, I. Hanssen-Bauer, R. Heino, T. Jónsson, K. Jonasson, L. Keegan, P.Ø. Nordli, Schmith, T. Steffensen, H. Tuomenvirta, O.E. Tveito, 1996: North Atlantic Climatological Dataset (NACD Version 1) -Final Report. DMI Scientific Report 96-1, 47 pp. A pdf-version of the report may be downloaded from the DMI Internet home site <http://www.dmi.dk/>.

NACD, North Atlantic Climatological Dataset. See (Frich et al. 1996).