

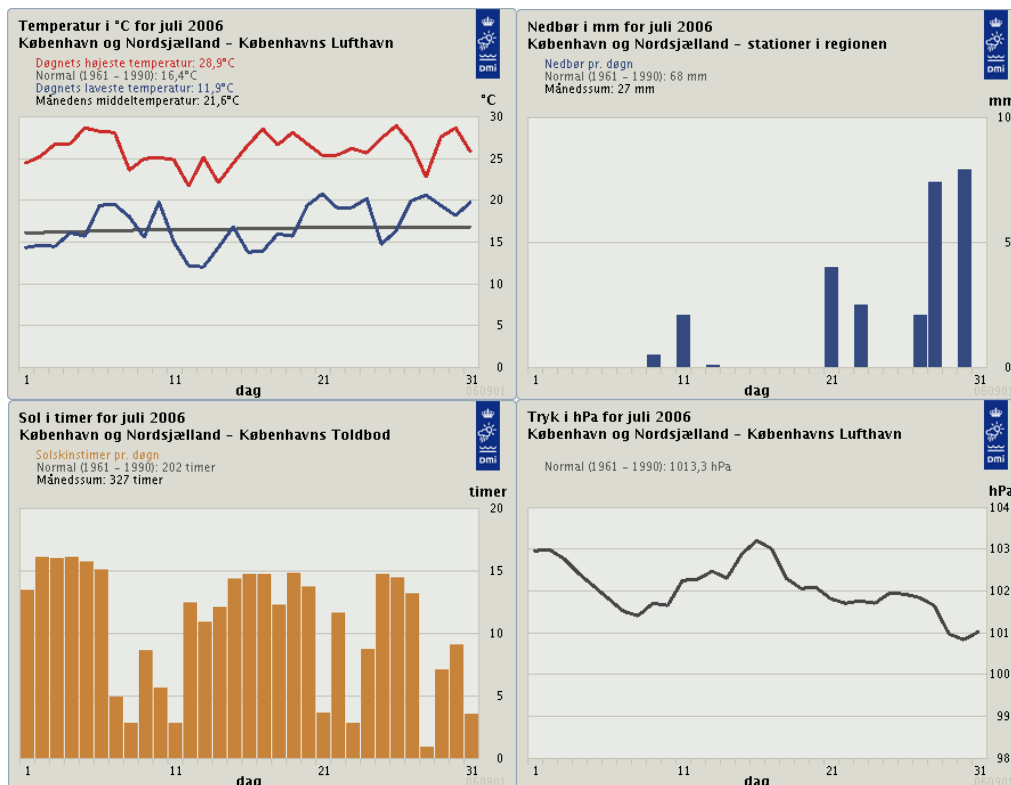


Technical Report 11-07

Guide to Climate Data and Information from the Danish Meteorological Institute

Updated May 2011

John Cappelen (ed)



Colophon

Serial title:

Technical Report 11-07

Title:

Guide to Climate Data and Information from the Danish Meteorological Institute

Subtitle:

Updated May 2011

Author(s):

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Responsible institution:

Danish Meteorological Institute

Language:

English

Keywords:

Climate, Publications, General information, Guide, Denmark, The Faroe Islands, Greenland

Url:

www.dmi.dk/dmi/tr11-07

ISSN:

1399-1388

Version:**Website:**

www.dmi.dk

Copyright:

Danish Meteorological Institute

Important note:

This report is an annual update (2010) of the “DMI Guide to Climate Data and Information” published for the first time in that form in DMI Technical Report 06-12: Guide to Climate Data and Information from the Danish Meteorological Institute. Copenhagen 2006.



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Abstract

This report presents the kind of climate data and services the Danish Meteorological Institute can provide, suitable for climate information and research.

Resumé

Denne rapport præsenterer hvilken klimadata og -information Danmarks Meteorologiske Institut kan levere til brug indenfor området klimainformation og -forskning.



1. Introduction

Data management is essential to good science. Data management is the key to ensuring data are preserved, understandable, and available in the future, thereby providing future generations with a relevant data collection.

Many national and international climate data management mechanisms currently exist or are going to be developed. Good examples are the European Climate Support Network ECSN <http://www.eumetnet.eu/contecsn.html> projects:

European Climate Assessment & Dataset ECA&D <http://eca.knmi.nl>

European Climate System Monitoring ECSM <http://www.dwd.de/ecsm>

all of which Denmark are a part of. In time it will lead to European Climate Information System (EuCLIS), still under development.

The aim of all these initiatives is to provide climate monitoring products at national and European levels on a routine basis. Therefore should the Network of European Meteorological Data Providers continuously be encouraged to provide data, metadata, identification of archives and other data management requirements to ensure a general overview of data availability.

Ideally the Network of European Meteorological Data Providers should develop a common outreach strategy to inform data providers and users on the value of data management and the importance of making data promptly available. The strategy should recognize and work within existing disciplinary practices where possible.

The main task for the climate responsible part of a national meteorological institute has always been as follows:

- Produce high quality climate data sets and information
- Support various climate assessments and research
- Secure a general overview and accessibility of climate data and information

But with growing amounts of data and more and more demands from the society to get them it is essential for both data providers and users that more focus are put on the last “data discovery” item in the future.

This report presents the kind of data and services the Danish Meteorological Institute can provide, suitable for climate information and research.

The report is an annual update (2010) of the “DMI Guide to Climate Data and Information” published for the first time in that form in DMI Technical Report 06-12: Guide to Climate Data and Information from the Danish Meteorological Institute. Copenhagen 2006.



2. How to read the guide

Ideally a guide/catalogue to climate data and information should be based on a database containing all key variables such as locality, parameters, time period, resolution, quality, data formats and metadata etc.

In absence of such a database a simple guide in form of a report is the second best thing. In this guide the locality is the first key variable, the next are what kind of information you can get i.e. a data collection, data survey or the actual observations and the regularities.

Today a growing part of the DMI climate data and services can be found on the Internet (<http://www.dmi.dk>), freely available. The rest can be found through Customers Service for a fee dependent on the use of the data or in case of older material through the library. For that reason this data discovery guide will focus on the kind of availability too and the data policy and practices for data and services not freely available through the Internet will be presented.

Furthermore nearly every link in this guide has the most important keywords attached.

Through the different links to the Internet you can go directly to the information you are interested in. You can also search the document for all links with a specific content i.e. “precipitation” or “daily climate data”.

3. Denmark

3.1. Observations and various derived climate data, statistics and surveys not mentioned in the other sections below (observations mainly digitised since 1961) are available through DMI Customers Service (Data and Climate Information) for a fee

These data are available through DMI Customers Service (Data and Climate Information) for a fee: phone +45 3915 7500, Fax +45 39 27 75 01, by post: DMI, Data and Climate Information, Data & Climate Division, Lyngbyvej 100, DK 2100 Copenhagen, Denmark or web-mail:

http://www.dmi.dk/dmi/index/danmark/kontakt_dmi_webmail.htm

For research and education purposes data are free of charge, except for the delivery costs. See Section “Data Policy and Practice” and Appendix 1. Policy, Definitions and Conditions concerning free and unrestricted access to climatologically data and products from DMI for educational and research purposes (English and Danish versions).

Catalogue of Meteorological Stations in Denmark: Overview of Observation Sites and Parameters by January 2011 are available on the internet:

<http://www.dmi.dk/dmi/tr11-09.pdf>

Older original, not digitised observations/data can be found via the Danish National Archive

<http://www.sa.dk>



3.2. Data Surveys (regularly updated derived data), www.dmi.dk (freely available)

Daily Data Survey from 1997 (graphics, Danish only):

<http://www.dmi.dk/dmi/index/danmark/vejrarkiv.htm>

Keywords: Daily climate data from 1997, Denmark, regions, temperature, precipitation, hours of bright sunshine, wind, atmospheric pressure

Weekly Data Survey from 2003 (Danish only):

<http://www.dmi.dk/dmi/index/danmark/ugeberetning.htm>

Keywords: Weekly climate data, Denmark, daily precipitation, counties, temperature, hours of bright sunshine, wind, relative humidity, heating degree days

Weekly Data Survey from October 1998 to 2002 (Danish only):

<http://www.dmi.dk/dmi/tr04-15.pdf> (report)

http://www.dmi.dk/dmi/uge_beretning_1998.zip (data)

http://www.dmi.dk/dmi/uge_beretning_1999.zip (data)

http://www.dmi.dk/dmi/uge_beretning_2000.zip (data)

http://www.dmi.dk/dmi/uge_beretning_2001.zip (data)

http://www.dmi.dk/dmi/uge_beretning_2002.zip (data)

http://www.dmi.dk/dmi/uge_beretning_2003.zip (data)

Keywords: Weekly climate data, Denmark, daily precipitation, counties, temperature, hours of bright sunshine, wind, relative humidity, heating degree days

Monthly, seasonal and annual Data Survey from 2003 (Danish only):

<http://www.dmi.dk/dmi/index/danmark/oversigter/maanedberetning.htm>

Keywords: Monthly climate data, seasonal climate data, annual climate data Denmark, counties, precipitation, temperature, hours of bright sunshine, wind, relative humidity, heating degree days, frequency of wind direction and -force

Monthly Data Survey October 1998-2002 (Danish only):

<http://www.dmi.dk/dmi/tr04-16.pdf> (report)

http://www.dmi.dk/dmi/md_beretning_1998.zip (data)

http://www.dmi.dk/dmi/md_beretning_1999.zip (data)

http://www.dmi.dk/dmi/md_beretning_2000.zip (data)

http://www.dmi.dk/dmi/md_beretning_2001.zip (data)

http://www.dmi.dk/dmi/md_beretning_2002.zip (data)

http://www.dmi.dk/dmi/md_beretning_2003.zip (data)

Keywords: Monthly climate data, Denmark, counties, precipitation, temperature, hours of bright sunshine, wind, relative humidity, heating degree days, frequency of wind direction and -force

Monthly seasonal and annual Weather Survey from August 2003 (Danish only):

http://www.dmi.dk/dmi/index/danmark/maanedens_vejr_-_oversigt.htm

Keywords: Monthly country-wise climate data, seasonally country-wise climate data, annual country-wise climate data Denmark, precipitation, temperature, hours of bright sunshine, weather description in text

Monthly Weather Survey 1998-July 2003 (Danish only):

<http://www.dmi.dk/dmi/tr03-31.pdf> (report)

Keywords: Monthly country-wise climate data, Denmark, precipitation, temperature, hours of bright sunshine, weather description in text



Monthly reports to the international community (CLIMAT) from 2004:

<http://www.dmi.dk/dmi/index/danmark/oversigter/climat.htm>

Keywords: Monthly climate data, CLIMAT, WMO, international community, Denmark, The Faroe islands, Greenland, precipitation, temperature, atmospheric pressure, vapour pressure

The annual climate of Denmark [year] with Tórshavn, the Faroe Islands and Nuuk, Greenland as a Supplement:

2000: <http://www.dmi.dk/dmi/tr01-06.pdf> (report) (Danish only)

2001: <http://www.dmi.dk/dmi/tr02-01.pdf> (report) (Danish only)

2002: <http://www.dmi.dk/dmi/tr03-02.pdf> (report)

2003: <http://www.dmi.dk/dmi/tr04-02.pdf> (report)

2004: <http://www.dmi.dk/dmi/tr05-01.pdf> (report)

2005: <http://www.dmi.dk/dmi/tr06-01.pdf> (report)

2006: <http://www.dmi.dk/dmi/tr07-01.pdf> (report)

2007: <http://www.dmi.dk/dmi/tr08-01.pdf> (report)

2007: <http://www.dmi.dk/dmi/tr08-01.zip> (data)

2008: <http://www.dmi.dk/dmi/tr09-01.pdf> (report)

2008: <http://www.dmi.dk/dmi/tr09-01.zip> (data)

2009: <http://www.dmi.dk/dmi/tr10-01.pdf> (report)

2009: <http://www.dmi.dk/dmi/tr10-01.zip> (data)

2010: <http://www.dmi.dk/dmi/tr11-01.pdf> (report)

2010: <http://www.dmi.dk/dmi/tr11-01.zip> (data)

Keywords: The annual climate of Denmark, Nuuk, Greenland, Tórshavn, The Faroe Islands, country-wise values, normals, temperature, precipitation, hours of bright sunshine, global temperature

Annual Bulletin 1999 - : Automatic Raingauge Network of The Water Pollution Committee of The Society of Danish Engineers (Danish abbreviation SVK):

1999: <http://www.dmi.dk/dmi/tr00-03.pdf> (report)

2000: <http://www.dmi.dk/dmi/tr01-01.pdf> (report)

2001: <http://www.dmi.dk/dmi/tr02-04.pdf> (report)

2002: <http://www.dmi.dk/dmi/tr03-04.pdf> (report)

2003: <http://www.dmi.dk/dmi/tr04-04.pdf> (report)

2004: <http://www.dmi.dk/dmi/tr05-07.pdf> (report)

2005: <http://www.dmi.dk/dmi/tr06-03.pdf> (report)

2006: <http://www.dmi.dk/dmi/tr07-03.pdf> (report)

2007: <http://www.dmi.dk/dmi/tr08-06.pdf> (report)

2008: <http://www.dmi.dk/dmi/tr09-03.pdf> (report)

2009: <http://www.dmi.dk/dmi/tr10-03.pdf> (report)

2010: <http://www.dmi.dk/dmi/tr11-03.pdf> (report)

Keywords: Rain intensity, Accumulated precipitation, Extreme statistics, Record breaking events, Denmark, Automatic Raingauge Network, The Water Pollution Committee of The Society of Danish Engineers, SVK

Heating degree days from September 2003 (Danish only):

<http://www.dmi.dk/dmi/index/danmark/oversigter/graddage.htm>

Keywords: Monthly accumulated heating degree days, Denmark, normals, temperature, wind correction, radiation

Heating degree days September 1997 – August 2003 (Danish only):

<http://www.dmi.dk/dmi/tr04-19.pdf> (report)

<http://www.dmi.dk/dmi/data04-20.zip> (data)

Keywords: Monthly accumulated heating degree days, Denmark, normals, temperature, wind correction, radiation

Monthly key climatic country-wise values Denmark 1970-1979:

<http://www.dmi.dk/dmi/tr03-14.pdf> (report)

Keywords: Country-wise values, Denmark, normals, temperature, precipitation, weather, hours of bright sunshine, cloud cover, wind, atmospheric pressure, humidity

Monthly key climatic country-wise values Denmark 1980-1989:

<http://www.dmi.dk/dmi/tr03-15.pdf> (report)

Keywords: Country-wise values, Denmark, normals, temperature, precipitation, weather, hours of bright sunshine, cloud cover, wind, atmospheric pressure, humidity

Monthly key climatic country-wise values Denmark 1990-1999:

<http://www.dmi.dk/dmi/tr00-08.pdf> (report)

Keywords: Country-wise values, Denmark, normals, temperature, precipitation, weather, hours of bright sunshine, cloud cover, wind, atmospheric pressure, humidity

Monthly key climatic country-wise values Denmark 2000-2009:

<http://www.dmi.dk/dmi/tr10-10.pdf> (report)

Keywords: Country-wise values, Denmark, normals, temperature, precipitation, weather, hours of bright sunshine, cloud cover, wind, atmospheric pressure, humidity

Monthly and annual climatological standard normals for Denmark 1961-90 – regions and country-wise values (Danish only):

<http://www.dmi.dk/dmi/index/danmark/klimanormaler.htm>

Keywords: Monthly and annual climatological standard normals 1961-90, Denmark, regions, country-wise values, temperature, precipitation, hours of bright sunshine

Climate extremes in Denmark since 1874 (Danish only):

http://www.dmi.dk/dmi/index/danmark/meteorologiske_ekstremer_i_danmark.htm

Keywords: Climate extremes, Denmark, temperature, precipitation, hours of bright sunshine, atmospheric pressure, wind speed, wind gust, water level

Storms in Denmark since 1891:

<http://www.dmi.dk/dmi/storme-2.pdf> (report)

Keywords: Historical Storm classification, Denmark, wind direction, wind speed, wind force Beaufort, snow storm

Storms and extreme wind in Denmark:

<http://www.dmi.dk/dmi/tr11-12.pdf> (report)

Keywords: Storm, extreme wind, Denmark, Status

Extreme precipitation in Denmark:

<http://www.dmi.dk/dmi/tr11-13.pdf> (report)

Keywords: Extreme precipitation, Denmark, Status

Past Climate (theme) (Danish only):

http://www.dmi.dk/dmi/index/klima/klimaet_indtil_nu.htm

Keywords: Denmark, Global, temperature, precipitation, hours of bright sunshine, wind, storms, water level



Weather observations, Denmark (Danish only):

<http://www.dmi.dk/dmi/index/danmark/vejrobservationer.htm>

Keywords: Weather observations every 10 minutes, temperature, wind, precipitation, clouds, weather type, humidity, air pressure, visibility, Denmark

Weather observations - land, Denmark (Danish only):

<http://www.dmi.dk/dmi/index/danmark/vejrobservationer/vejrobservationer-land.htm>

Keywords: Weather observations every 3 hours, temperature, precipitation, wind, gust, weather type, humidity, air pressure, Denmark

Weather observations - coast, Denmark (Danish only):

<http://www.dmi.dk/dmi/index/danmark/vejrobservationer/vejrobservationer-kyst.htm>

Keywords: Weather observations every 3 hours, coastal stations, temperature, precipitation, wind, gust, weather type, humidity, air pressure, Denmark

Wind observations every 10 minutes, Denmark (Danish only):

<http://www.dmi.dk/dmi/index/danmark/borgervejr.htm?param=wind&map=undefined&dmiobs=true>

Keywords: Wind observations every 10 minutes, Denmark

Weather observations, Denmark (Danish only):

<http://www.dmi.dk/dmi/index/danmark/borgervejr.htm>

Keywords: Weather observations every 10 minutes, temperature, precipitation, wind, humidity, additionally not DMI private observations, Denmark

METAR and TAF, Denmark (Danish only):

http://www.dmi.dk/dmi/index/danmark/metar_og_taf.htm

Keywords: Weather observations from airports every 15 minutes, Metar, taf, meteorological aerodrom report, Terminal Aerodrome Forecast, temperature, wind, clouds, dewpoint, air pressure, visibility, Denmark

Nautical information: Sea level in Denmark (Danish only):

<http://www.dmi.dk/dmi/index/danmark/vandstand.htm>

Keywords: Sea level, Denmark, regions, station data, nautical data

Nautical information: Water temperature and current in Denmark (Danish only):

<http://www.dmi.dk/dmi/index/danmark/havobservationer.htm>

Keywords: Water temperature, current, Denmark, regions, station data, nautical data

Ligthning information, Denmark (Danish only):

<http://www.dmi.dk/dmi/index/danmark/lyn.htm>

Keywords: Cloud to ground Lightning, Denmark

Ozone information, Denmark (Danish only):

http://www.dmi.dk/dmi/index/danmark/ozonlaget_maaling.htm

Keywords: Ozone, Denmark

UV-index, Denmark (Danish only):

<http://www.dmi.dk/dmi/index/danmark/solvarsel.htm>

Keywords: UV-index, Denmark

Pollen, Denmark (Danish only):

http://www.dmi.dk/dmi/index/danmark/dagens_pollental.htm

Keywords: Pollen, Denmark

Weather radar, Denmark (Danish only):

<http://www.dmi.dk/dmi/index/danmark/radar.htm>

Keywords: *Weather radar, Precipitation, animation, Denmark*

Drought index, Denmark (summer season) (Danish only):

<http://www.dmi.dk/dmi/index/danmark/torkeindex.htm>

<http://www.dmi.dk/dmi/tr09-08.pdf> (methods)

Keywords: *Drought, irrigation, Denmark*

Satellite observations (Danish only):

<http://www.dmi.dk/dmi/index/danmark/satellit.htm>

Keywords: *Satellite observations, Denmark, North Europe, Europe, full Earth, NOAA, METEOSAT, animations, visual, infrared*

Algae surveillance, Denmark (Danish only):

<http://www.dmi.dk/dmi/index/danmark/algekort.htm>

Keywords: *Satellite based Algae surveillance, Denmark*

Snow depth, Denmark (winter season) (Danish only):

<http://www.dmi.dk/dmi/snedybder.htm>

Keywords: *Snow depth, Denmark*



3.3. Data collections (regularly updated derived data), www.dmi.dk (freely available)

Daily Data Collection 1873-2010, including Air Pressure Observations 1874-2010 (update WASA Data Sets):

<http://www.dmi.dk/dmi/tr11-06.pdf> (report)

<http://www.dmi.dk/dmi/tr11-06.zip> (data)

Keywords: Daily Climate Data, Temperature, Atmospheric Pressure, Precipitation, Cloud Cover, Denmark, The Faroe Islands, Greenland, NACD, WASA, ACCORD, ECSN, ECA&D

Monthly Data Collection 1768-2010:

<http://www.dmi.dk/dmi/tr11-05.pdf> (report)

<http://www.dmi.dk/dmi/tr11-05.zip> (data)

Keywords: Monthly Climate Data, Temperature, Atmospheric Pressure, Precipitation, Snow Cover, Cloud Cover, Denmark, Greenland, The Faroe Islands, NACD, REWARD, NORDKLIM, NARP

Annual Data Collection 1873-2010:

<http://www.dmi.dk/dmi/tr11-04.pdf> (report)

http://www.dmi.dk/dmi/tr11-04_data.zip (data)

http://www.dmi.dk/dmi/tr11-04_graphics.zip (graphics)

Keywords: Annual Climate Data, Time series, Temperature, Precipitation, Hours of Bright Sunshine, Cloud Cover, Graphics, Denmark, The Faroe Islands, Greenland

Monthly collection of the country-wise values of temperature, precipitation and hours of bright sunshine plus a short description of the weather since 1874:

<http://www.dmi.dk/dmi/tr11-02.pdf> (report)

<http://www.dmi.dk/dmi/tr11-02.zip> (data)

Keywords: Country-wise monthly values, temperature, precipitation, hours of bright sunshine, description of the weather, The weather during Eastern, Christmas and Midsummer Day, Record breaking events



3.4. Data collections (irregularly updated derived data), www.dmi.dk (freely available)

Metadata, selected climatological and synoptic stations, 1750-1996.

<http://www.dmi.dk/dmi/tr03-24.pdf> (report)

<http://www.dmi.dk/dmi/tr03-24.zip> (data)

Keywords: Metadata, NACD, Denmark, The Faroe Islands, Greenland, time series

Weather Statistics for Airports 1996-2001 Denmark, Faroe Islands and Greenland:

<http://www.dmi.dk/dmi/tr03-03.pdf> (report)

Keywords: Weather statistics 1996-2001, seasons, airports, Denmark, Faroe Islands, Greenland, METAR, Key Climatic Figures, temperature, humidity, wind, days with fog and snow, clear and cloudy days, precipitation, frequencies, visibility, cloud heights, wind speed, wind direction, hourly and monthly distribution of observations

3.5. Data collections (stand alone and not planned to be updated), www.dmi.dk (freely available)

Climate data set 1971-2000 gathered in connection with the EUMETNET/ECSN programme "European Climate Atlas":

<http://www.dmi.dk/dmi/tr05-15.pdf> (report)

<http://www.dmi.dk/dmi/tr05-15.zip> (data)

Keywords: European climate normals 1971-2000, ECSN, EUMETNET, European Climate Atlas, The climate in Europe, Temperature, Precipitation, Hours of bright sunshine, wind and occurrence of thunder, hail, snow falling and fog

Danish Climatological Normals 1971-2000 for European Climate Atlas:

<http://www.dmi.dk/dmi/tr03-21.pdf> (report)

<http://www.dmi.dk/dmi/tr03-21.zip> (data)

Keywords: Danish Climate normals 1971-2000, European climate normals 1971-2000, ECSN, EUMETNET, European Climate Atlas, The climate in Europe, Temperature, Precipitation, Hours of bright sunshine, wind and occurrence of thunder, hail, snow falling and fog

Danish Monthly Climate Statistics 1971-2000 to ECMWF - for verification and development in connection with the set-up of a "Severe Weather Forecasting System"

<http://www.dmi.dk/dmi/tr02-14.pdf> (report)

<http://www.dmi.dk/dmi/tr02-14.zip> (data)

Keywords: Danish Monthly Climate Statistics 1971-2000, ECMWF, Denmark, temperature, wind, precipitation, percentiles

New monthly accumulated hours of bright sunshine normals for Denmark (Star level), 1961-1990:

<http://www.dmi.dk/dmi/tr02-25.pdf> (report)

Keywords: New standard monthly and annual normals 1961-1990, Denmark, converted from Casella to STAR level

Country-wise new monthly and annual values of hours of bright sunshine 1920-2002 – converted to STAR level (Danish only):

<http://www.dmi.dk/dmi/tr03-19.pdf> (report)

<http://www.dmi.dk/dmi/tr03-19.zip> (data)

Keywords: Countrywise monthly and annual values of sunshine, Denmark, converted from Casella to STAR level

Monthly and annual hours of bright sunshine in Denmark (Casella-level), 1961-1990. Country-wise standard normals and maps (Danish only):

<http://www.dmi.dk/dmi/tr01-08.pdf> (report)

Keywords: Monthly and annual hours of bright sunshine, standard normals 1961-90, Denmark, country-wise values, maps

The global climate – climate normals 1931-60. Guide to weather and climate in 156 countries (Danish only):

<http://www.dmi.dk/dmi/tr01-17.pdf> (report)

Keywords: Global monthly and annual standard normals 1931-60, temperature, precipitation, hours of bright sunshine, relative humidity, wind, days with frost, water temperature

Daily Temperature Normals 1961-90 - Denmark, The Faroe Islands and Greenland:

<http://www.dmi.dk/dmi/tr00-17.pdf> (report)

<http://www.dmi.dk/dmi/tr00-17.zip> (data)

Keywords: Daily Temperature Normals 1961-90, Denmark, The Faroe Islands and Greenland, smoothing technics

CLIMATE GRID DENMARK - monthly and annual normals 1961-90. Precipitation 10*10, 20*20 & 40*40 km, Temperature and potential evaporation 20*20 & 40*40 km (Danish only):

<http://www.dmi.dk/dmi/tr00-11.pdf> (report)

<http://www.dmi.dk/dmi/tr00-11.zip> (data)

Keywords: Climate grid Denmark, normals 1961-90, precipitation, temperature, potential evaporation

World Weather Records 1991-2000 - Denmark, The Faroe Islands and Greenland.

<http://www.dmi.dk/dmi/tr03-34.pdf> (report)

<http://www.dmi.dk/dmi/tr03-34.zip> (data)

Keywords: Climate Monthly and Annual Data sets 1991-2000, World Weather Records, WMO, Denmark, Greenland, The Faroe Islands, Atmospheric pressure, Temperature, Precipitation

Danish Monthly and Annual Climatological Normals 1971-2000 - for selected stations

<http://www.dmi.dk/dmi/tr02-12.pdf> (report)

<http://www.dmi.dk/dmi/tr02-12.zip> (data)

Keywords: Danish monthly and annual climate normals 1971-2000, European Climate Atlas, Temperature, Precipitation, Hours of bright sunshine, wind and occurrence of thunder, hail, snow falling and fog

Observed Wind Speed and Direction in Denmark 1961-1998 - with Climatological Standard Normals, 1961-90:

<http://www.dmi.dk/dmi/tr99-13.pdf> (report)

http://www.dmi.dk/dmi/data_files.zip (data)

http://www.dmi.dk/dmi/wind_roses.zip (graphical wind roses)

Keywords: Danish monthly and annual wind normals 1961-90, wind roses, monthly and annual climate data set 1961-98, wind speed, wind direction, highest wind gust, most frequent wind direction, number of days with breeze, strong gale and whole gale

Observed Air Temperature, Humidity, Pressure, Cloud Cover and Weather in Denmark 1961-1998 - with Climatological Standard Normals, 1961-90.

<http://www.dmi.dk/dmi/tr99-5.pdf> (report)

<http://www.dmi.dk/dmi/tr99-5.zip> (data)

Keywords: Danish monthly and annual climate normals 1961-90, temperature, humidity, atmospheric pressure, cloud cover, weather, monthly and annual climate data set 1961-98, frost cycles, average first and last dates of frost, average first and last dates for summer days, daily variation in relative humidity, absolute humidity, number of days with thunder, fog, frost, ice days, tropical nights, cold days, snow falling, clear and cloudy days and heating degree days

Observed Hours of Bright Sunshine in Denmark 1876 – 1997 (Casella level) - with Climatological Standard Normals, 1961-90.

<http://www.dmi.dk/dmi/tr98-4.pdf> (report)

<http://www.dmi.dk/dmi/tr98-4.zip> (data)

Keywords: Hours of bright sunshine, Casella level, monthly and annual climate normals 1961-90, Denmark, monthly and annual climate data set within the time period 1876-1997



Observed Precipitation in Denmark, 1961-90:

<http://www.dmi.dk/dmi/tr97-8.pdf> (report)

<http://www.dmi.dk/dmi/tr97-8.zip> (data)

Keywords: Precipitation, monthly and annual climate normals 1961-90, Denmark, counties, maps, shelter class, data quality, monthly and annual climate data set 1961-90

North Atlantic-European Pressure Observations 1868-1995 (WASA Dataset Version 1):

<http://www.dmi.dk/dmi/tr97-3.pdf> (report)

<http://www.dmi.dk/dmi/data97-3.zip> (data)

Keywords: Mean sea level atmospheric pressure observations 1868-1995, 3-4 observations/day, 22 stations in the Atlantic-European region, reduction to mean sea level

North Atlantic Climatological Dataset 1890-1990 (NACD Version 1) - Final Report:

<http://www.dmi.dk/dmi/sr96-1.pdf> (report)

<http://www.dmi.dk/dmi/sr96-1.zip> (data)

Keywords: NACD, Monthly climatological dataset 1890 - 1990, Northern North Atlantic Region, 388 time series of air temperature, air pressure, precipitation, days with snow cover and cloud cover, data quality

Temperature measurements in Copenhagen from 1767 to 1860:

<http://www.dmi.dk/dmi/tr06-13.pdf> (report)

http://www.dmi.dk/dmi/rundetaarn_data.zip (data)

Keywords: Temperature measurements, Denmark, Copenhagen, Astronomical tower Rundetårn, Old Botanical Garden.

Hourly values of sea level observations from two stations in Denmark - Hornbæk 1890-2005 and Gedser 1891-2005.

<http://www.dmi.dk/dmi/tr07-09.pdf> (report)

<http://www.dmi.dk/dmi/tr07-09.zip> (data)

Keywords: Sea level observations, hourly values, Denmark, Hornbæk, Gedser.

Extreme value analysis of daily and five days accumulated precipitation for 112 selected Danish precipitation series 1961-2010 (Danish only):

<http://www.dmi.dk/dmi/tr10-17.pdf> (report)

<http://www.dmi.dk/dmi/tr10-17.zip> (data)

Keywords: Extreme precipitation, Denmark



3.6. Miscellaneous (stand alone and not to be updated), www.dmi.dk (freely available)

Daily Climate Data to Odense Pilot River Basin, 1990-2003:

<http://www.dmi.dk/dmi/tr04-24a.pdf> (report)

<http://www.dmi.dk/dmi/data04-24.zip> (data)

Keywords: climate data set 1990-2003, Odense Pilot River Basin, European Union, Water Framework Directive (WFD), Integrated river basin management for Europe, daily precipitation, temperature, solar radiation, resulting wind vector speed, resulting wind direction vector, relative humidity and potential evaporation.

Climate Meta Data Information Example (Monthly Time Series Database):

<http://www.dmi.dk/dmi/tr03-33.pdf> (report)

Keywords: metadata-information, DMI Monthly Time Series database

Downscaling of wind speed from 06159 Røsnæs Fyr (Danish only):

<http://www.dmi.dk/dmi/tr03-17.pdf> (report)

Keywords: Wind speed, downscaling, WASP

Recalculation of hours of bright sunshine – from Casella instrument to Star pyranometer (Danish only):

<http://www.dmi.dk/dmi/tr02-23.pdf> (report)

Keywords: Technical details, casella, Star, re-calculation factors

Calculation results concerning the water balance in Denmark – Climate grid Denmark, precipitation and evaporation 1990-2000 (Danish only)

<http://www.dmi.dk/dmi/tr02-03.pdf> (report)

Keywords: Water balance, Denmark, technical note, precipitation, evaporation, Climate grid Denmark

CLIMATE GRID DENMARK - Comparison between potential evaporation calculated from Makkinks formula and modified Penman formula (Danish only):

<http://www.dmi.dk/dmi/tr01-19.pdf> (report)

Keywords: Climate grid Denmark, Potential evaporation, comparison, Makkinks formula, modified Penman formula

CLIMATE GRID DENMARK - Comparison between potential evaporation calculated from the modified Penman formula with and without a revised regulation of the air humidity (Danish only):

<http://www.dmi.dk/dmi/tr01-18.pdf> (report)

Keywords: Climate grid Denmark, potential evaporation, comparison, modified Penman formula, humidity

CLIMATE GRID DENMARK – Practical use of corrections of precipitation on grid values (Danish only):

<http://www.dmi.dk/dmi/tr00-21.pdf> (report)

Keywords: Climate grid Denmark, correction of precipitation, grid values

CLIMATE GRID DENMARK - Precipitation 10*10 km – description of method (Danish only):

<http://www.dmi.dk/dmi/tr99-15.pdf> (report)

Keywords: Climate grid Denmark, precipitation, grid values, methods

CLIMATE GRID DENMARK - precipitation, temperature and potential evaporation 20*20 & 40*40 km - description of method (Danish only):

<http://www.dmi.dk/dmi/tr99-12.pdf> (report)

Keywords: Climate grid Denmark, precipitation, temperature, potential evaporation, grid values, methods

Correction of precipitation: Annual corrections, selected stations, NOVA (Danish Aquatic Monitoring and Assessment Programme) project, 1989-2001:

1989-1999: <http://www.dmi.dk/dmi/tr00-20.pdf> (Danish only)

1999: <http://www.dmi.dk/dmi/tr00-15.pdf> (report) (Danish only)

2000: <http://www.dmi.dk/dmi/tr01-09.pdf> (report) (Danish only)

2001: <http://www.dmi.dk/dmi/tr02-08.pdf> (report) (Danish only)

Keywords: Correction of precipitation, annual corrections, NOVA (Danish Aquatic Monitoring and Assessment Programme), wind effect, wetting lose

Correction of precipitation: Pilot Project: Special report concerning correction on the Danish island Samsø, 1989-2003 (Danish only):

<http://www.dmi.dk/dmi/tr05-16.pdf> (report)

Keywords: Correction of precipitation, Samsø, wind effect, wetting lose

Correction of precipitation: Correction of manually measured precipitation in Denmark and descriptions of sources of errors on calculations (Danish only):

<http://www.dmi.dk/dmi/tr99-07.pdf> (report)

Keywords: Correction of precipitation, wind effect, wetting lose, sources of errors

Correction of precipitation: Description of correction system and methods (Danish only):

<http://www.dmi.dk/dmi/tr98-9.pdf> (report)

Keywords: Correction of precipitation, wind effect, wetting lose, correction system, methods

Correction of precipitation - Standard values 1961-90 (Danish only):

<http://www.dmi.dk/dmi/tr98-10.pdf> (report)

Keywords: Correction of precipitation, Standard values 1961-90, wind effect, wetting lose

Contribution from DMI concerning United Nation Climate Convention UNFCCC - fourth national communication of Denmark (Danish only):

<http://www.dmi.dk/dmi/dkcr05-03.pdf> (report)

Keyword: UNFCC, United Nation, Climate Convention, Denmark, The Faroe Islands, Greenland, climate, future scenarios, climate change, ozone, oceanography, outreach

The weather and climate in Denmark in the 20. Century (Danish only):

<http://www.dmi.dk/dmi/dkc01-5.pdf> (report) (cover with introduction)

<http://www.dmi.dk/dmi/dkc01-5-artikel1.pdf> (report) (Danmarks vejrhistorie i det 20. århundrede - et udpluk)

<http://www.dmi.dk/dmi/dkc01-5-artikel2.pdf> (report) (Danmarks klima i det 20. århundrede)

Keywords: Weather and climate in the 20. Century, Denmark, Danish Meteorological Society, DaMS, The Danish magazine "Vejret", climate change, weather history

Deviations from mean sea level at Danish Coasts (Danish only):

<http://www.dmi.dk/dmi/tr93-02.pdf> (report)

Keywords: Sea level, high water, low water, Denmark, 1970-1990, Esbjerg 1889-1990

Salt and sea temperature conditions in the Danish Sea (Danish only):

http://www.dmi.dk/dmi/tr_94-4.pdf (report)

Keywords: Sea temperature, salinity, water specific gravity, Denmark, 1931-1993

Seafloods:

http://www.dmi.dk/dmi/sr_91-1.pdf (report)

Keywords: The Climate of Denmark, sea floods app. year 350 b.c. - 1981

Danish Weather Observations 1675-1715:

<http://www.dmi.dk/dmi/tr92-3.pdf> (report)

Keywords: weather observations from naval ships, 1675-1715, Danish logbooks, Denmark, cloud cover, weather, snow, rain, fog, thunder, wind direction, wind force

The North Atlantic Climatological Dataset (NACD). Documented Station History, 25140 Nordby, Fanø 1871-1994 (Danish only):

<http://www.dmi.dk/dmi/tr94-13.pdf> (report)

Keywords: Station history, metadata, NACD, Nordby, Denmark

The North Atlantic Climatological Dataset (NACD). Documented Station History, 21100 Vestervig 1872-1994 (Danish only):

<http://www.dmi.dk/dmi/tr94-14.pdf> (report)

Keywords: Station history, metadata, NACD, Vestervig, Denmark

The North Atlantic Climatological Dataset (NACD). Documented Station History, 27080 Tranebjerg, Samsø 1871-1994 (Danish only):

<http://www.dmi.dk/dmi/tr94-15.pdf> (report)

Keywords: Station history, metadata, NACD, Tranebjerg, Denmark

The North Atlantic Climatological Dataset (NACD). Documented Station History, 30380 Landbohøjskole, København 1861-1994 (Danish only):

<http://www.dmi.dk/dmi/tr94-16.pdf> (report)

Keywords: Station history, metadata, NACD, København, Denmark

The North Atlantic Climatological Dataset (NACD). Documented Station History, 32030 Sandvig and light houses at Hammeren, Bornholm 1872-1994 (Danish only):

<http://www.dmi.dk/dmi/tr94-17.pdf> (report)

Keywords: Station history, metadata, NACD, Sandvig, Hammeren, Denmark

The North Atlantic Climatological Dataset (NACD). Instruments and Reconstructions. Illustrated going through of Archive Material (Danish only):

<http://www.dmi.dk/dmi/tr94-19.pdf> (report)

Keywords: Metadata, NACD, instruments, reconstructions, archive material, temperature, barometer pressure, precipitation, wind, sunshine, NACD, WASA

Summary of Meta data from NACD-stations in Denmark, Greenland and the Faroe Islands 1872-1994:

<http://www.dmi.dk/dmi/tr94-20.pdf> (report)

Keywords: Station history, metadata, Summary, NACD, Denmark, The Faroe Islands, Greenland



Brandt, M. L. and T. Schmith (1994): Correction, reduction and Homogenization of Barometer Records:

<http://www.dmi.dk/dmi/tr94-22.pdf> (report)

Keywords: Metadata, barometer pressure, barometer corrections, barometer reductions, adjustments, gravity, index errors, homogenisation

Extreme value analysis of five time series of daily precipitation in Denmark for the years 1874 - 2010 (137 years) (Danish only):

<http://www.dmi.dk/dmi/tr11-11.pdf> (report)

Keywords: Extreme precipitation, Denmark

Analysis of sea level observations from Copenhagen harbour 2005-2009 (Danish only):

<http://www.dmi.dk/dmi/tr10-18.pdf> (report)

Keywords: Sea level observations, 10 minutes values, Copenhagen, Denmark.

Analysis and comparison of Hellmann and Pluvio rain gauges. Data from the period 15 December 2009 - 15 October 2010 (Danish only):

<http://www.dmi.dk/dmi/tr10-16.pdf> (report)

<http://www.dmi.dk/dmi/tr10-16.zip> (data)

Keywords: Precipitation, rain gauge, Hellman, Pluvio, Denmark.

CLIMATE GRID DENMARK – documentation and validation, 1x1 km (Danish only):

<http://www.dmi.dk/dmi/tr10-13.pdf> (report)

Keywords: Climate grid Denmark, precipitation, temperature, wind speed, radiation, grid values, 1x1 km, 10x10 km.



3.7. Older Climate publications (selected) before www.dmi.dk (only on paper if available), Library Danish Meteorological Institute

Available through the DMI Library phone +45 3915 7500 or web-mail: library@dm.dk. Another possibility is <http://bibliotek.dk> or the Danish National Archive <http://www.sa.dk>

3.7.1 Climatological Publications/Data Collections

Colding A.: Nogle undersøgelser over Stormen over Nord- og Mellem-Europa af 12te – 14de November 1872 og over den derved fremkaldte Vandflod i Østersøen. Kjøbenhavn 1881.

Keywords: Storm, storm surge, Baltic Sea, weather, water level, air pressure, wind speed, November 1872

l'Académie Royal Danoise des Sciences; Holten, C (1867): Tables Meteorologiques de Copenhague 1866-70

Keywords: Meteorological Observations and tables 1866-70, Copenhagen

Willaume-Jantzen V.: Det Danske Meteorologiske Institut (1896): Meteorologiske observationer i Kjøbenhavn

Keywords: Observations from Copenhagen 1751-1893, monthly values, temperature, air pressure, wind direction, wind speed, wind frequencies, precipitation, cloud cover, humidity, vapour pressure, number of days with frost, precipitation, snowfall, hail, fog, thunder, clear and dark days

Det Danske Meteorologiske Institut (1933): Danmarks Klima, belyst ved Tabeller og Kort.

Keywords: The Climate of Denmark, monthly values 1873(1876)-1925, stations, air pressure, wind, temperature, cloud cover, hours of bright sunshine, humidity, precipitation, observations from light wessels, climatological tables, climatological maps

Lysgaard L. (1967): The variation of the temperature and the precipitation in Copenhagen. Running normals 1798-1887

Keywords: Normals, Copenhagen, temperature, precipitation, 1798-1887

Lysgaard L: Foreløbig oversigt over Danmarks Klima. Lufttryk, vindforhold, lufttemperatur, solskin, nedbørforhold og luftfugtighed hovedsagelig i perioden 1931-1960.

Det Danske Meteorologiske Institut Meddelelser nr.19, Charlottenlund, 1969.

Keywords: Monthly and annual climatological standard normals 1931-60, Denmark, stations, air pressure, wind, temperature, hours of bright sunshine, humidity, precipitation

Det statistiske Departement: Meteorologiske forhold, Folketal, Areal og Klima. Særtryk af Statistiske undersøgelser nr. 10, 1964.

Keywords: Country-wise climate parameters 1874-1960, monthly values, temperature, precipitation, cloud cover, hours of bright sunshine, summer days, ice days, number of days with snowfall, frost, fog and thunder

Kristensen L., Frydendahl K.: Danmarks vindklima fra 1870 til nutiden.

Havforskning fra Miljøstyrelsen Nr. 2, 1991. Miljøministeriet, Miljøstyrelsen.

(also sold by the Ministry of Environment)

Keywords: Wind, Denmark, 1870-1988

Frydendahl K.: Danmarks Klima I Vind, Standardnormaler 1931-60.

Det Danske Meteorologiske Institut, Klimatologiske Meddelelser no.1, Charlottenlund, 1971.

Keywords: Monthly and annual climatological standard normals 1931-60, Denmark, wind, wind roses, wind maps

Madsen H.: Korrektion af nedbørmålinger - Correction of precipitation measurements.

Det Danske Meteorologiske Institut, Klimatologiske meddelelser no. 2, København 1972.

Keywords: Correction of precipitation measurements, Denmark

Madsen H., Allerup P.: Danmarks Klima, analyse af snedækkedag.

Det Danske Meteorologiske Institut, Klimatologiske meddelelser no. 3, København 1975.

Keywords: Analysis of snow cover days 1937-1971 and 1956-1971

Frydendahl K. (ed): Proceedings of the nordic symposium on Climatic Changes and related problems. Copenhagen 24-28. April 1978.

Det Danske Meteorologiske Institut, Klimatologiske Meddelelser no.4, København, 1978.

Keywords: Climate change, Proceedings, Nordic Symposium

Allerup P., Madsen H.: Accuracy of point precipitation measurements.

Det Danske Meteorologiske Institut, Klimatologiske meddelelser no. 5, København 1979.

Keywords: Point precipitation measurements, Denmark, statistical model, aerodynamic influence, corrections, liquid precipitation, solid precipitation, exposure

Allerup P., Hasholt B., Madsen H.: Investigations of snow cover in the Stevns IHD-representative basin, winter 1977-78.

Det Danske Meteorologiske Institut, Klimatologiske meddelelser no. 6, København 1980.

Keywords: Analysis of snow cover, winter 1977-1978, Denmark, Stevns region

Allerup P.: A Statistical analysis of monthly precipitation in Denmark

Det Danske Meteorologiske Institut, Klimatologiske meddelelser no. 7, København 1981.

Keywords: Precipitation, monthly values, Denmark, statistical analysis

Allerup P., Hasholt B., Madsen H., Søgaard H.: Snow Pack Maximum Water Equivalent in Denmark. Evaluated by a simulation model.

Meteorologisk Institut, Klimatologiske meddelelser no. 14, København 1985.

Keywords: Snow, water equivalent, Denmark

Rosenørn S., Bennedsen B.S.: Klima-paraply – varsling af sen og tidlig nattefrost/Forecast of late and early night frost.

Teknologisk Institut, Opfinderkontoret, 1985.

Keywords: Night frost, Denmark, forecast

Frich P.: Klimatologiske ændringer af standardnormaler fra 1931-60 til 1961-90 for temperatur, nedbør, sol og vind.

Danish Meteorological Institute, Technical Report No. 90-2, Copenhagen 1990.

Keywords: Monthly and annual climatological standard normals, 1931-1960, 1961-1990, Denmark, temperature, precipitation, hours of bright sunshine, wind, progressive wind vector diagram

Frydendal K., Frich, P. and Hansen, C.: Danish Weather Observations 1675-1715.

Danish Meteorological Institute, Technical Report No. 92-3, Copenhagen 1992.

Keywords: weather observations from naval ships, 1675-1715, Danish logbooks, Denmark, cloud cover, weather, snow, rain, fog, thunder, wind direction, wind force

Brandt, M. L. (1994): The North Atlantic Climatological Dataset (NACD). Dokumenteret stationshistorie for 25140 Nordby, Fanø 1871-1994. DMI Technical Report No. 94-13. København.
Keywords: Station history, metadata, NACD, Nordby, Denmark

Brandt, M. L. (1994): The North Atlantic Climatological Dataset (NACD). Dokumenteret stationshistorie for 21100 Vestervig 1872-1994. DMI Technical Report No. 94-14. København.
Keywords: Station history, metadata, NACD, Vestervig, Denmark

Brandt, M. L. (1994): The North Atlantic Climatological Dataset (NACD). Dokumenteret stationshistorie for 27080 Tranebjerg, Samsø 1871-1994. DMI Technical Report No. 94-15. København.
Keywords: Station history, metadata, NACD, Tranebjerg, Denmark

Brandt, M. L. (1994): The North Atlantic Climatological Dataset (NACD). Dokumenteret stationshistorie for 30380 Landbohøjskole, København 1861-1994. DMI Technical Report No. 94-16. København.
Keywords: Station history, metadata, NACD, København, Denmark

Brandt, M. L. (1994): The North Atlantic Climatological Dataset (NACD). Dokumenteret stationshistorie for 32030 Sandvig samt fyrene på Hammeren, Bornholm 1872-1994. DMI Technical Report No. 94-17. København.
Keywords: Station history, metadata, NACD, Sandvig, Hammeren, Denmark

Brandt, M. L. (1994): The North Atlantic Climatological Dataset (NACD). Instrumenter og rekonstruktioner. En illustreret gennemgang af arkivmateriale. DMI Technical Report No. 94-19. København.
Keywords: Metadata, NACD, instruments, reconstructions, archive material, temperature, barometer pressure, precipitation, wind, sunshine, NACD, WASA

Brandt, M. L. (1994): Summary of Meta data from NACD-stations in Denmark, Greenland and the Faroe Islands 1872-1994. DMI Technical Report No. 94-20. Copenhagen.
Keywords: Station history, metadata, Summary, NACD, Denmark, The Faroe Islands, Greenland

Brandt, M. L. and T. Schmith (1994): Correction, reduction and Homogenization of Barometer Records. DMI Technical Report No. 94-22. Copenhagen.
Keywords: Metadata, barometer pressure, barometer corrections, barometer reductions, adjustments, gravity, index errors, homogenisation

3.7.2. Regularly Annual Climate Data Surveys

1861-1872 "Beretninger fra det Kongelige Landhusholdningsselskabs meteorologiske Komité"

Before the start of the Danish Meteorological Institute regularly observations were taken by "Det Kongelige Landhusholdnings-selskabs meteorologiske Komité" among others. This committee has according to knowledge published following:

Annual reports "Årsberetning fra det Kongelige Landhusholdningsselskabs meteorologiske Komité 1861-72"

5 years reports "Femårsberetninger 1861-65 & 1866-70"

Monthly reports "Månedsberetninger 1866-1873"

1868-1872 "Meteorologisk Årbog 1873"

A supplement with data from 3 Danish stations during the years 1868-1872 is a part of "Meteorologisk Årbog 1873".



1873-1983 “Meteorologisk Årbog”

From the start of the institute start year books have been published with varying content and size. A principal rule is that the publications contain descriptions, surveys and observations.

1873 – the very first yearbook, published as a joint volume, covering Denmark, Greenland and the Faroe Islands. Additionally a part is a supplement 1868-1872 with 3 danish stations.

From 1874, the ”Meteorologisk årbog” is divided in “parts”. The principal rule the following years is that:

Part 1 = The Kingdom of Denmark (“Kongeriget Danmark”)

Del 2 = ”The colonies” (“Bilandene (Færøerne, Grønland, Island, Vestindien”)

From 1920 the ”parts” are as follows:

Part 1 = Denmark + The Faroe Islands (“Danmark + Færøerne”)

Part 2 = Greenland (“Grønland”)

Additionally during the years 1880-1896 a part 3 is published:

Part 3 = ”Nautisk-Meteorologiske observationer i Danske Farvande”

This part 3 was published until 1896, where it was replaced by a separate publication.

Additionally for the years 1940-45 a joint wolume was published:

”Meteorologisk Årbog - Tillæg - Færøerne 1940-45”

Summary 1873-1983 “Meteorologisk Årbog”

1873	Joint volume: Denmark, Greenland and the Faroe Islands, supplement 1868-1872 (3 Danish stations)
1874-1879	Part 1 (The Kingdom of Denmark) + Part 2 (The Faroe Islands, Greenland and other colonies)
1880-1896	Part 1 (The Kingdom of Denmark) + Part 2 (The Faroe Islands, Greenland and other colonies) + part 3 (Nautical)
1897-1919	Part 1 (The Kingdom of Denmark) + Part 2 (The Faroe Islands, Greenland and other colonies)
1920-1960	Part 1 (Denmark and The Faroe Islands) + Part 2 (Grønland)
1961-1970	Part 1 (Denmark and The Faroe Islands)
1971-1975	Not published
1976	Part 1 (Denmark and The Faroe Islands), without Greenland
1977-1978	Not published
1979-1983	Part 1 (Denmark and The Faroe Islands), without Greenland
1940-45	Supplement, The Faroe Islands
1987-1999	The Climate of Denmark “Danmarks Klima”

The annual publication “**Danmarks Klima**” has been published since 1987. The layout and content of the publication has during time changed, but generally the publication deals with the climate of Denmark.

Some of them have following supplements:

1987, 1988, 1989	Danish and English text
1988, 1989	Supplement The Faroe Islands and Greenland (Nuuk & Tórshavn)



1994, 1995, 1996	Supplement temperature graphics The Faroe Islands and Greenland (Nuuk & Tórshavn)
1997, 1998, 1999	Supplement The Faroe Islands and Greenland

1989-1998 “Årsnotat - Spildevandskomitéens Regnmålersystem”

Annual Bulletin 1990 - 1998: Automatic Raingauge Network of The Water Pollution Committee of The Society of Danish Engineers (Danish abbreviation SVK). Before 1989 the annual bulletin was published from The Danish Technical University (DTU), Laboratoriet for Teknisk Hygiejne.

3.7.3. Regularly Monthly Climate Data Surveys

1866-1873 “Vejrforholdene i < month><year> paa Landhusholdningsselskabets Stationer”

Before the start of the Danish Meteorological Institute regularly observations were carried out by ”Det Kongelige Landhusholdnings-selskabs meteorologiske Komité” among others. This committee has according to knowledge published following:

Monthly report “Månedsbetretninger 1866-1873”

Annual report ”Årsbetretning fra det Kongelige Landhusholdningsselskabs meteorologiske Komité 1861-72”

5 year report ”Femårsbetretninger 1861-65 & 1866-70”

The monthly reports (every month from 1866 - March 1873) are handwritten/hectographed and include a general description plus monthly tables containing data from a number of stations (typically 11 stations). These monthly reports are replaced from 1. april 1873 by:

1873-1956 “Meteorologisk Institut, Oversigt over Vejrforholdene i < month><year>”

These reports are handwritten/hectographed including monthly means of various parameters from a number of stations (in the beginning 9 stations). The first publications contained 2 pages, but it was expanded and as early as in 1883 the publication included monthly figures, observations, maps and graphics from 104 stations on 10 pages.

From 1 January 1875 the name of the publication changed to:

“Maanedsoversigt over Vejrforholdene”, Meteorologisk Institut < month><year>”

From 1914 – the publication was changed to a typed version including monthly figures and maps as a supplement, but introducing daily observations of precipitation for the danish counties (this was actually the predecessor for the weekly report ”Ugebetretning”). This version continued until December 1956, where following note could be read on the last page: “Hermed ophører udsendelsen af månedsoversigten i den hidtidige skikkelse. Den vil fremtidigt komme som månedstillæg til Meteorologisk Instituts “Ugebetretning om Nedbør mm” som herefter også vil udkomme i vinterhalvåret”. Shortly speaking the monthly report, which have been issued unchanged since 1914, was cancelled but was planned to be continued as a supplement to the weekly report, which also was planned to be issued the year around.

From 1 January 1957 the monthly report was issued as follows:

“Ugebetretning om nedbør mm - Månedstillæg for < month><year>”

Including table surveys of various parameters and a two-sided look-up with daily values of minimum and maximum temperatures observed at many stations.

From January 1971 was extended with isohyet- and isotherm maps. In March 1987 the name of the publication was changed to without a change of the content:



”DK Vejr Månedberetning”

From July 1992 the publication was changed: the isohyet- and isotherm maps on the last page were left out, and the text describing the weather in the previous month was changed to **“Pressemeddelelsetekst Vejret i <month>”** i.e. “Pressemeddelelsetekst - Vejret i juli (The weather in July). In October 1992 the publication was changed again: the two-sided look-up with daily values of minimum and maximum temperatures was left out. Hereafter the content was unchanged until the end of 1998.

1 January 1999 a major change was introduced. The report was no longer issued in a paper version, but only electronically as a pdf-document via DMI Internet/web pages with the name:

”DK Vejr: Månedberetning <year> - <month>”

The publication was adjusted as follows: The front- and last page were left out (result: only 1 page with data!). The text describing the weather in the previous month was changed was separated in a product, accessible via DMI Internet/web pages as the monthly weather **“Månedens vejr”** (i.e. the weather in Denmark July 2006, ”Vejret i Danmark juli 2006”). The electronic version is continuously printed on paper and archived in the library at DMI.

3.7.4. Regularly Weekly Climate Data Surveys

Before 1956 “Maanedsoversigt over Vejrforholdene”, Meteorologisk Institut <month><year>

The publication of weekly reports the year around were started in 1957. Before that year daily observations of precipitation for the danish counties in the period 1914-1956 were included in the monthly report **“Maanedsoversigt over Vejrforholdene”, Meteorologisk Institut <month><year>** (this was actually the predecessor for the weekly report *”Ugeberetning”*). Additionally a separate weekly report **“Ugeberetning om nedbør mm”** was published in the period 1954 – 1956, but according to knowledge only for the months April to September.

1957 – February 1987 “Ugeberetning om nedbør mm”

From Januar 1957 *“Ugeberetning om nedbør mm”* were published every week the year around. From July 1984 the publication was expanded with 7 weather maps (one for each day of the previous week).

March 1987 – April 1992 ”DK Vejr Ugeberetning”

In March 1987 the title was changed to *”DK Vejr Ugeberetning”* – but no change of the content.

April 1992 – now ”Vejret i Danmark uge <week number>”

From week 18/April 1992 the title was changed to *”Vejret i Danmark uge <week number>”* and the weather maps were left out.

1 January 1995 the daily accumulated precipitation was replaced with a map of Denmark showing weekly accumulated precipitation.

1 January 1999 a major change was introduced. The report was no longer issued in a paper version, but only electronically as a pdf-document via DMI Internet/web pages with the name:

”DK Vejr: Ugeberetning <year> - <month>”

The publication was adjusted as follows: The front- and last page were left out (result: 2 pages with data!). The map of Denmark showing weekly accumulated precipitation introduced in 1995 was left

out and the daily accumulated precipitation was reintroduced. The electronic version is continuously printed on paper and archived via the library at DMI.

3.7.5. Regularly Daily Climate Data Surveys and Weather Maps

1876 - 1981 "Meteorologisk Instituts Vejrberetning"

Weather maps and descriptions of the weather can be found as yearly hardback to 1904, hereafter as a quarter yearly hardback.

1984 - 1992 Weather maps in the weekly reports "Ugeberetning om nedbør mm" and "DK Vejr Ugeberetning"

From July 1984 the publication "Ugeberetning om nedbør mm" was expanded with 7 weather maps (one for each day of the previous week). In March 1987 the title was changed to "DK Vejr Ugeberetning" – but no change of the content.

From week 18/April 1992 the title was changed to "Vejret i Danmark uge <week number>" and the weather maps were left out.

Daily (German) weather maps from 1981 -

In 1981 the publication of weather maps and descriptions of the weather "Meteorologisk Instituts Vejrberetning" from Meteorological Institute (MI) came to an end. From 1981 the Danish Meteorological Institute have obtained weather maps from Deutcher Wetterdienst DWD/Germany.

3.7.6. Nautical publications

Nautical Data Collections

Sparre, A: Danmarks Klima Fyrskibsstatistik I. Vind, sigtbarhed, lufttemperatur, skydække og vejr. The Climate of Denmark, Summaries of Observations from Light Vessels I.

Wind, visibility, air temperature, cloud amount and weather.

Det Danske Meteorologiske Institut, Klimatologiske meddelelser no. 8, København 1981.

Keywords: The Climate of Denmark, monthly and annual climatological standard normals 1931-60, Denmark, Danish Light wessel statistics, wind, visibility, air temperature, cloud amount and weather, wind roses

Sparre, A: Danmarks Klima Fyrskibsstatistik II. Bølger og strøm i overfladen.

The Climate of Denmark, Summaries of Observations from Light Vessels II.

Waves and Currents at the surface.

Det Danske Meteorologiske Institut, Klimatologiske meddelelser no. 9, København 1982.

Keywords: The Climate of Denmark, monthly and annual climatological standard normals 1931-60, Denmark, Danish Light wessel statistics, waves, currents at the surface, current roses

Sparre, A: Danmarks Klima Fyrskibsstatistik III, Vandtemperatur.

The Climate of Denmark, Summaries of Observations from Light Vessels III. Sea Temperature.

Det Danske Meteorologiske Institut, Klimatologiske meddelelser no. 10, København 1984.

Keywords: The Climate of Denmark, monthly and annual climatological standard normals 1931-60, Denmark, Danish Light wessel statistics, sea temperature

Sparre, A: Danmarks Klima Fyrskibsstatistik IV. Saltholdighed A.

Midler, ekstremer og hyppigheder.

The Climate of Denmark, Summaries of Observations from Light Vessels IV. Salinity A.

Means, extremes and frequency.

Det Danske Meteorologiske Institut, Klimatologiske meddelelser no. 11, København 1984.

Keywords: The Climate of Denmark, monthly and annual climatological standard normals 1931-60, Denmark, Danish Light wessel statistics, salinity, means, extremes and frequency

Sparre, A: Danmarks Klima Fyrskibsstatistik IV. Saltholdighed B.

Dag til dag ændring. Sammenhørende værdier i overflade og ved bund.

The Climate of Denmark, Summaries of Observations from Light Vessels IV. Salinity B.

Day to day changes. Relations between values at the surface and at the bottom.

Det Danske Meteorologiske Institut, Klimatologiske meddelelser no. 12, København 1984.

Keywords: The Climate of Denmark, monthly and annual climatological standard normals 1931-60, Denmark, Danish Light wessel statistics, salinity, day to day changes, relations between values at the surface and at the bottom.

Gram-Jensen, I: Sea Floods. Contribution to the climatic history of Denmark.

Meteorologisk Institut, Klimatologiske meddelelser no. 13, København 1985.

Keywords: The Climate of Denmark, sea floods

Thomsen, H. og Hansen, B: Middelvandstand og dens ændringer ved de danske kyster.

Meteorologisk Institut. København 1970.

Keywords: Sea level, mean, variation, Denmark 1890-1968

Andersen, I: Middelvandstand – og dens variationer ved de danske kyster 1988.

Danish Meteorological Institute, Technical Report No. 89-6, Copenhagen 1989.

Keywords: Sea level, mean, variation, Denmark, 1890-1988

Andersen, I: Afvigelsen fra dagligvande ved de danske kyster.

Danish Meteorological Institute, Technical Report No. 93-2, Copenhagen 1993.

Keywords: Sea level, high water, low water, Denmark, 1970-1990, Esbjerg 1889-1990

Andersen, I: Salt- og vandtemperaturforhold i de indre danske farvande.

Danish Meteorological Institute, Technical Report No. 94-4, Copenhagen 1994.

Keywords: Sea temperature, salinity, water specific gravity, Denmark, 1931-1993

Year books with nautical information

1880-1896 “Meteorologisk Årbog - Del 3”

During the years 1880-1896 a part of “Meteorologisk Årbog” was published as
Del 3 = Nautisk-Meteorologiske observationer i Danske Farvande,

1897-1898 “Nautisk Meteorologiske Observationer”

But from 1897 these parts were replaced with a ”stand alone” publication

1899-1961 “Nautisk Meteorologiske Årbog”

The title of the publication was changed from 1899

1899-1931 – published as one volume

1932-1941 – published as two volumes (Volume 2 was the meteorological observations)

1942-1961 - published as one volume

+ according to (Lonny Hansen,TK) various unspecified supplements.

1962-1972 “Oceanografiske Observationer”

The title of the publication was changed again from 1862

Additionally there is a yearbook for each year 1962-1974

1962-1974 “Månedlige Overfladetemperaturer i det nordlige atlanterhav”

10-year summary 1961-70 “Månedlige Overfladetemperaturer i det nordlige atlantehav”
- and one volume with a 10 year summary 1961-70 with the same title.

1994-1996 “Månedlige Overfladetemperaturer i det nordlige atlantehav”
From 1994-1996 published as DMI Data Report No. 95-2, 96-5 and 97-2.

1987-1999 “Danmarks Klima”

The annual publication *Danmarks Klima* has been published since 1987. The layout and content of the publication has during time changed, but generally the publication deals with the climate of Denmark. Additionally the publications from 1987-1999 all have a supplement concerning nautical information i.e. sea level.

3.7.7. Aeronautical publications

Chief of Air Staff Denmark (1971): *Climatology Summaries for*

- *Airstation Karup 1959-1968.*
- *Airstation Tirstrup 1959-1968.*
- *Airstation Avnø 1959-1968.*
- *Airstation Værløse 1959-1968.*
- *Airstation Skrydstrup 1959-1968.*
- *Airstation Vandel 1959-1968 <extract>.*
- *Airstation Vandel 1959-1968 <complete>.*
- *Naval Base Grønnedal 1959-1968.*

Statens Luftfartsvæsen (1953): *Aeronautical Climatology of Denmark,*

- *part I Copenhagen Airport.*
- *part II Ålborg Airport.*

Statens Luftfartsvæsen: *Aeronautical Climatology of Denmark 1949-1958,*

- *part I, Copenhagen airport, Kastrup, 1961.*
- *part II, Ålborg airport. 1963.*
- *part III Odense airport, Beldringe (1954-1958 only), Rønne airport. 1963.*
- *part IV, Tirstrup. 1963.*
- *part V Air station Karup. 1963.*
- *part VI Air station Skrydstrup (1954-1958 only), Air station Vandel. 1963.*
- *part VIII Skagen, Lodsbjerg, Blåvandshuk. 1966.*
- *part IX Fornæs, Keldsnor, Dueodde. 1966.*

Statens Luftfartsvæsen, Flyvevejrtjenesten: *Aeronautical Climatology of Denmark 1959-1968,*

- *part I, Copenhagen Airport, Kastrup, 1983.*

Statens Luftfartsvæsen, Civil Aeronautical Meteorological Division:

Summaries of Weather observations at Airway Weather Stations in Denmark, 1939-1947.

- *part I, Copenhagen Airport, 1952.*
- *part II, Ringsted - Møn - Rødbyhavn. 1952.*
- *part III, Røsnæs - Omø - Marslev. 1952.*
- *part IV, Aalborg Airport - Aalestrup - Vemb - Fornæs. 1952.*

Flyverkommandoen:

Foreløbig Oversigt over Landingsvejr ved udvalgte Flyvestationer og Lufthavne. 1970.

Flyverkommandoen:

- *Statistik for Landingsvejr på FSN Karup 1959-1968. 1970.*



- *Statistik for Landingsvejr på FSN Værløse 1964-1968. 1970.*

3.7.8. Radiosonde publications

Flyverkommandoen: *Climatological Summary for Radiosonde station Ålborg 1957-1963. 1965.*

Forsvarskommandoen (1976): *Summaries of Danish Upper Air Observations [Ålborg 1957-70; Jægersborg 1960-67]*



4. Greenland

4.1. Observations and various derived climate data, statistics and surveys not mentioned in the other sections below (observations mainly digitised since 1961) are available through DMI Customers Service (Data and Climate Information) for a fee

These data are available through DMI Customers Service (Data and Climate Information) for a fee: phone +45 3915 7500, Fax +45 39 27 75 01, by post: DMI, Data and Climate Information, Data & Climate Division, Lyngbyvej 100, DK 2100 Copenhagen, Denmark or web-mail:

http://www.dmi.dk/dmi/index/danmark/kontakt_dmi_webmail.htm

For research and education purposes data are free of charge, except for the delivery costs. See Section “Data Policy and Practice” and Appendix 1. Policy, Definitions and Conditions concerning free and unrestricted access to climatologically data and products from DMI for educational and research purposes (English and Danish versions).

Older original, not digitised observations/data can be found in the Danish National Archive

<http://www.sa.dk>



4.2. Data Surveys (regularly updated derived data), www.dmi.dk (freely available)

Daily Data Survey from 2000 (graphics, Danish only):

<http://www.dmi.dk/dmi/index/gronland/vejrarkiv-gl.htm>

Keywords: Daily climate data from 2000, Greenland, temperature, precipitation, wind, atmospheric pressure

Monthly reports to the international community (CLIMAT) from 2004:

<http://www.dmi.dk/dmi/index/danmark/oversigter/climat.htm>

Keywords: Monthly climate data, CLIMAT, WMO, international community, Denmark, The Faroe islands, Greenland, precipitation, temperature, atmospheric pressure, vapour pressure

The annual climate of Denmark [year] with Tórshavn, the Faroe Islands and Nuuk, Greenland as a Supplement:

2000: <http://www.dmi.dk/dmi/tr01-06.pdf> (report) (Danish only)

2001: <http://www.dmi.dk/dmi/tr02-01.pdf> (report) (Danish only)

2002: <http://www.dmi.dk/dmi/tr03-02.pdf> (report)

2003: <http://www.dmi.dk/dmi/tr04-02.pdf> (report)

2004: <http://www.dmi.dk/dmi/tr05-01.pdf> (report)

2005: <http://www.dmi.dk/dmi/tr06-01.pdf> (report)

2006: <http://www.dmi.dk/dmi/tr07-01.pdf> (report)

2007: <http://www.dmi.dk/dmi/tr08-01.pdf> (report)

2007: <http://www.dmi.dk/dmi/tr08-01.zip> (data)

2008: <http://www.dmi.dk/dmi/tr09-01.pdf> (report)

2008: <http://www.dmi.dk/dmi/tr09-01.zip> (data)

2009: <http://www.dmi.dk/dmi/tr10-01.pdf> (report)

2009: <http://www.dmi.dk/dmi/tr10-01.zip> (data)

2010: <http://www.dmi.dk/dmi/tr11-01.pdf> (report)

2010: <http://www.dmi.dk/dmi/tr11-01.zip> (data)

Keywords: The annual climate of Denmark, Nuuk, Greenland, Tórshavn, The Faroe Islands, country-wise values, normals, temperature, precipitation, hours of bright sunshine, global temperature

Monthly and annual climatological standard normals for Greenland 1961-90 – regions and country-wise values (Danish only):

<http://www.dmi.dk/dmi/index/gronland/klimanormaler-gl.htm>

Keywords: Monthly and annual climatological standard normals 1961-90, Greenland, temperature, precipitation, hours of bright sunshine

Climate extremes in Greenland since 1958 (Danish only):

<http://www.dmi.dk/dmi/index/gronland/ekstremer.htm>

Keywords: Climate extremes, Greenland, temperature, precipitation, hours of bright sunshine, atmospheric pressure, wind speed, wind gust

Past Climate (theme) (Danish only):

http://www.dmi.dk/dmi/index/klima/klimaet_indtil_nu.htm

Keywords: Greenland, Global, temperature



METAR and TAF, Greenland (Danish only):

http://www.dmi.dk/dmi/index/gronland/metar_og_taf_gr.htm

Keywords: Weather observations from airports every 15 minutes, Metar, taf, meteorological aerodrom report, Terminal Aerodrome Forecast, temperature, wind, clouds, dewpoint, air pressure, visibility, Greenland

UV-index, Greenland (Danish only):

http://www.dmi.dk/dmi/index/verden/uv_idag.htm

Keywords: UV-index, Greenland

Ice Charts from DMI Ice Service (Maps, English text):

<http://www.dmi.dk/dmi/index/gronland/iskort.htm>

Keywords: Ice maps, navigation, shipping, sailing, satellite based observations, the seas around Greenland, Map Kap Farvel area, Maps covering west- and east coast of Greenland, weekly maps

Satellite observations, North-western Greenland (Danish only):

<http://www.dmi.dk/dmi/index/gronland/noaaglnordvest.htm>

Keywords: Satellite observations, North-western Greenland, NOAA

Satellite observations, North-eastern Greenland (Danish only):

<http://www.dmi.dk/dmi/index/gronland/noaaglnordost.htm>

Keywords: Satellite observations, North-eastern Greenland, NOAA

Satellite observations, South-western Greenland (Danish only):

<http://www.dmi.dk/dmi/index/gronland/noaaglsydvest.htm>

Keywords: Satellite observations, South-western Greenland, NOAA

Satellite observations, South-eastern Greenland (Danish only):

<http://www.dmi.dk/dmi/index/gronland/noaaglsydost.htm>

Keywords: Satellite observations, South-eastern Greenland, NOAA

Satellite observations (Danish only):

<http://ocean.dmi.dk/arctic/modis.php>

Keywords: Satellite observations, MODIS, NOAA, ASAR, TERRA, AQUA



4.3. Data collections (regularly updated derived data), www.dmi.dk (freely available)

Daily Data Collection 1873-2010, including Air Pressure Observations 1874-2010 (update WASA Data Sets):

<http://www.dmi.dk/dmi/tr11-06.pdf> (report)

<http://www.dmi.dk/dmi/tr11-06.zip> (data)

Keywords: Daily Climate Data, Temperature, Atmospheric Pressure, Precipitation, Cloud Cover, Denmark, The Faroe Islands, Greenland, NACD, WASA, ACCORD, ECSN, ECA&D

Monthly Data Collection 1768-2010:

<http://www.dmi.dk/dmi/tr11-05.pdf> (report)

<http://www.dmi.dk/dmi/tr11-05.zip> (data)

Keywords: Monthly Climate Data, Temperature, Atmospheric Pressure, Precipitation, Snow Cover, Cloud Cover, Denmark, Greenland, The Faroe Islands, NACD, REWARD, NORDKLIM, NARP

Annual Data Collection 1873-2010:

<http://www.dmi.dk/dmi/tr11-04.pdf> (report)

http://www.dmi.dk/dmi/tr11-04_data.zip (data)

http://www.dmi.dk/dmi/tr11-04_graphics.zip (graphics)

Keywords: Annual Climate Data, Time series, Temperature, Precipitation, Hours of Bright Sunshine, Cloud Cover, Graphics, Denmark, The Faroe Islands, Greenland

Weather and Climate Data from Greenland 1958-2010. Dataset available for research and educational purposes. Descriptions and Documentation of Observations of Temperature, Precipitation, Wind, Cloud Cover, Air Pressure, Humidity and Depth of Snow.

<http://www.dmi.dk/dmi/tr11-10.pdf> (report)

Keywords: Observations, Dataset, Temperature, Precipitation, Cloud Cover, Air Pressure, Humidity and Depth of Snow, Metadata, Greenland



4.4. Data collections (irregularly updated derived data), www.dmi.dk (freely available)

Metadata, selected climatological and synoptic stations, 1750-1996.

<http://www.dmi.dk/dmi/tr03-24.pdf> (report)

<http://www.dmi.dk/dmi/tr03-24.zip> (data)

Keywords: metadata, NACD, Denmark, The Faroe Islands, Greenland, time series

Weather Statistics for Airports 1996-2001 Denmark, Faroe Islands and Greenland:

<http://www.dmi.dk/dmi/tr03-03.pdf> (report)

Keywords: Weather statistics 1996-2001, seasons, airports, Denmark, Faroe Islands, Greenland, METAR, Key Climatic Figures, temperature, humidity, wind, days with fog and snow, clear and cloudy days, precipitation, frequencies, visibility, cloud heights, wind speed, wind direction, hourly and monthly distribution of observations

4.5. Data collections (stand alone and not planned to be updated), www.dmi.dk (freely available)

The global climate – climate normals 1931-60. Guide to weather and climate in 156 countries (Danish only):

<http://www.dmi.dk/dmi/tr01-17.pdf> (report)

Keywords: Global monthly and annual standard normals 1931-60, temperature, precipitation, hours of bright sunshine, relative humidity, wind, days with frost, water temperature

The Observed Climate of Greenland, 1958-99 - with Climatological monthly and annual Standard Normals, 1961-90:

<http://www.dmi.dk/dmi/tr00-18.pdf> (report)

http://www.dmi.dk/dmi/tr00-18-data_files.zip (data)

http://www.dmi.dk/dmi/tr00-18-wind_roses.zip (graphical wind roses)

Keywords: Greenland, weather, climate, monthly climate data set 1958-99, monthly and annual Climatological Standard Normals 1961-90, temperature, precipitation, hours of bright sunshine, wind, visibility, days with frost, snow falling, fog, thunder etc.

Daily Temperature Normals 1961-90 - Denmark, The Faroe Islands and Greenland:

<http://www.dmi.dk/dmi/tr00-17.pdf> (report)

<http://www.dmi.dk/dmi/tr00-17.zip> (data)

Keywords: Daily Temperature Normals 1961-90, Denmark, The Faroe Islands and Greenland, smoothing technics

World Weather Records 1991-2000 - Denmark, The Faroe Islands and Greenland.

<http://www.dmi.dk/dmi/tr03-34.pdf> (report)

<http://www.dmi.dk/dmi/tr03-34.zip> (data)

Keywords: Climate Monthly and Annual Data sets 1991-2000, World Weather Records, WMO, Denmark, Greenland, The Faroe Islands, Atmospheric pressure, Temperature, Precipitation

North Atlantic-European Pressure Observations 1868-1995 (WASA Dataset Version 1):

<http://www.dmi.dk/dmi/tr97-3.pdf> (report)

<http://www.dmi.dk/dmi/data97-3.zip> (data)

Keywords: Mean sea level atmospheric pressure observations 1868-1995, 3-4 observations/day, 22 stations in the Atlantic-European region, reduction to mean sea level

North Atlantic Climatological Dataset 1890-1990 (NACD Version 1) - Final Report:

<http://www.dmi.dk/dmi/sr96-1.pdf> (report)

<http://www.dmi.dk/dmi/sr96-1.zip> (data)

Keywords: NACD, Monthly climatological dataset 1890 - 1990, Northern North Atlantic Region, 388 time series of air temperature, air pressure, precipitation, days with snow cover and cloud cover, data quality

4.6. Miscellaneous (stand alone and not to be updated), www.dmi.dk (freely available)

Contribution from DMI concerning United Nation Climate Convention UNFCCC - fourth national communication of Denmark (Danish only):

<http://www.dmi.dk/dmi/dkcr05-03.pdf> (report)

Keyword: UNFCCC, United Nation, Climate Convention, Denmark, The Faroe Islands, Greenland, climate, future scenarios, climate change, ozone, oceanography, outreach

Climate Meta Data Information Example (Monthly Time Series Database):

<http://www.dmi.dk/dmi/tr03-33.pdf> (report)

Keywords: metadata-information, DMI Monthly Time Series database

The North Atlantic Climatological Dataset (NACD). Instruments and Reconstructions. Illustrated going through of Archive Material (Danish only).

<http://www.dmi.dk/dmi/tr94-19.pdf> (report)

Keywords: Metadata, NACD, instruments, reconstructions, archive material, temperature, barometer pressure, precipitation, wind, sunshine, NACD, WASA

Summary of Meta data from NACD-stations in Denmark, Greenland and the Faroe Islands 1872-1994.

<http://www.dmi.dk/dmi/tr94-20.pdf> (report)

Keywords: Station history, metadata, Summary, NACD, Denmark, The Faroe Islands, Greenland

Brandt, M. L. and T. Schmith (1994): Correction, reduction and Homogenization of Barometer Records.

<http://www.dmi.dk/dmi/tr94-22.pdf> (report)

Keywords: Metadata, barometer pressure, barometer corrections, barometer reductions, adjustments, gravity, index errors, homogenisation

Station History, Greenland. Documentation for five climate stations (Danish only).

<http://www.dmi.dk/dmi/tr92-2.pdf> (report)

Keywords: Station history, metadata, Summary, NACD, Denmark, The Faroe Islands, Greenland

DMI SYNOP AWS 04416 Summit. Data status March 2010:

<http://www.dmi.dk/dmi/tr10-09.pdf> (report)

Keywords: Metadata, Summit, Greenland, synop, data overview, barometer pressure, air temperature, humidity, wind direction, wind speed, station visits.

Wind statistics for stations 04360 Tasiilaq and 04361 Mittarfik Kulusuk. Data December 2000 - August 2010:

<http://www.dmi.dk/dmi/tr10-14.pdf> (report)

Keywords: Tasiilaq, Kulusuk, radiosonde, wind statistics, strong gale statistics.



4.7. Older Climate publications (selected) before www.dmi.dk (only on paper if available), Library Danish Meteorological Institute

Available through the DMI Library phone +45 3915 7500 or web-mail: library@dm.dk. Another possibility is <http://bibliotek.dk> or the Danish National Archive <http://www.sa.dk>

4.7.1. Climatological Publications/Data Collections

Lysgaard L.: Foreløbig oversigt over Grønlands klima, i perioden 1921-50, 1951-60, 1961-65. Det Danske Meteorologiske Institut, Meddelelser nr. 21, Charlottenlund 1969.

Keywords: Monthly and annual climatological standard normals 1931-60, Denmark, stations, air pressure, wind, temperature, precipitation, aeronautical statistics

U.S. Department of Commerce: Climatological summary Thule, Greenland. Washington 1950.

Keywords: Climate, Thule, Greenland

Hedegaard K.: Wind vector and extreme wind statistics in Greenland. Danish Meteorological Institute, Weather Service Report No. 1, Copenhagen 1982.

Keywords: Wind vector, extreme wind statistics, weibull distribution, return period

Brandt, M. L. (1994): The North Atlantic Climatological Dataset (NACD). Instrumenter og rekonstruktioner. En illustreret gennemgang af arkivmateriale. DMI Technical Report No. 94-19. København.

Keywords: Metadata, NACD, instruments, reconstructions, archive material, temperature, barometer pressure, precipitation, wind, sunshine, NACD, WASA

Brandt, M. L. (1994): Summary of Meta data from NACD-stations in Denmark, Greenland and the Faroe Islands 1872-1994. DMI Technical Report No. 94-20. Copenhagen.

Keywords: Station history, metadata, Summary, NACD, Denmark, The Faroe Islands, Greenland

Brandt, M. L. and T. Schmith (1994): Correction, reduction and Homogenization of Barometer Records. DMI Technical Report No. 94-22. Copenhagen.

Keywords: Metadata, barometer pressure, barometer corrections, barometer reductions, adjustments, gravity, index errors, homogenisation

Brødsgaard, B. (1992): Stationshistorie i Grønland: dokumenteret for 5 klimastationer. DMI Technical Report No. 92-02. Copenhagen.

Keywords: Station history, metadata, Summary, NACD, Denmark, The Faroe Islands, Greenland

4.7.2. Weather observation summaries

1949-1970 “Summaries of Weather observations at weather stations in Greenland”

1 volume 1949-1953

1 volume 1954-1958

1 volume 1951-1960

1 volume 1961-1965

1 volume 1966-1970

1 volume 1949-1970

1961-1965 “Provisional mean temperatures and mean atmospheric pressure at msl at weather stations in Greenland 1961-1965”

Publikationer fra det danske Meteorologiske Institut, Charlottenlund (1967).

1961-1965 “Provisional Total amount of precipitation in mm Greenland 1961-1965”

Publikationer fra det danske Meteorologiske Institut, Charlottenlund (1969).

1966-1981 “Provisional mean temperature and total amount of precipitation in mm, Greenland”

1 volume for each of the years 1966-1981.

4.7.3. Regularly Annual Climate Data Surveys

1873-1983 “Meteorologisk Årbog”

From the start of the institute start year books have been published with varying content and size. A principal rule is that the publications contain descriptions, surveys and observations. Greenland is included in the following parts of “*Meteorologisk Årbog*”:

1873	Joint volume: Denmark, Greenland and the Faroe Islands, supplement 1868-1872
1874-1919	Part 2 (The Faroe Islands, Greenland and other colonies)
1920-1960	Part 2 (Greenland)
1961-1970	without Greenland
1972-1975	not published
1976	without Greenland
1977-1978	not published
1979-1983	without Greenland

1872-1895 ”Meteorologiske Middeltal og Ekstremer for Færøerne, Island og Grønland. Appendix til det danske meteorologiske Instituts Aarbog 1895, II.del”, published 1899.

Additionally a joint volume for the years 1872-1895 was published in 1899.

1988-1999 “Danmarks Klima”

Greenland is included in different ways in the following publications of the year book *Danmarks Klima*:

1988, 1989:	The Faroe Islands and Greenland (Tórshavn & Nuuk) (English and Danish text)
1994, 1995:	Temperature graphics (Tórshavn & Nuuk)
1996:	Temperature graphics (selected stations The Faroe Islands and Greenland)
1997- 1999	The Faroe Islands and Greenland (Tórshavn & Nuuk) (Danish text)+Temperature graphics (selected stations The Faroe Islands and Greenland)

4.7.4. Radiosonde publications

1951-1970 “Summaries of Meteorological upper-air observation <year><station> Greenland”

Meteorologisk Institut.

Angmagssalik	1951-1955
Angmagssalik	1956-1960
Angmagssalik	1961-1970
Danmarkshavn	1951-1960
Danmarkshavn	1961-1970
Nord	1954-1960
Nord	1961-1970



Egedesminde 1951-196
Egedesminde 1961-1970
Kap Tobin 1951-1960
Kap Tobin 1961-1970
Narssarssuaq 1961-1970

4.7.5. Ice Charts (to be corrected according to information from the library)

*1890-1981 (not including 1939-1945) "Ice Charts" published in various forms i.e. 1957-1981
"Isforholdene i de grønlandske farvande", Meteorologisk Institut.*

1982-1998 "Ice Charts" (paper version)

1999 – "Ice charts" (digital version)



5. The Faroe Islands

5.1. Observations and various derived climate data, statistics and surveys not mentioned in the other sections below (observations mainly digitised since 1961) are available through DMI Customers Service (Data and Climate Information) for a fee

These data are available through DMI Customers Service (Data and Climate Information) for a fee: phone +45 3915 7500, Fax +45 39 27 75 01, by post: DMI, Data and Climate Information, Data & Climate Division, Lyngbyvej 100, DK 2100 Copenhagen, Denmark or web-mail:

http://www.dmi.dk/dmi/index/danmark/kontakt_dmi_webmail.htm

For research and education purposes data are free of charge, except for the delivery costs. See Section “Data Policy and Practice” and Appendix 1. Policy, Definitions and Conditions concerning free and unrestricted access to climatologically data and products from DMI for educational and research purposes (English and Danish versions).

Older original, not digitised observations/data can be found via the Danish National Archive

<http://www.sa.dk>



5.2. Data Surveys (regularly updated derived data), www.dmi.dk (freely available)

Daily Data Survey from 2000 (graphics, Danish only):

<http://www.dmi.dk/dmi/index/faroerne/vejrkiv-fo.htm>

Keywords: Daily climate data from 2000, The Faroe Islands, temperature, precipitation, wind, atmospheric pressure, hours of bright sunshine

Monthly reports to the international community (CLIMAT) from 2004:

<http://www.dmi.dk/dmi/index/danmark/oversigter/climat.htm>

Keywords: Monthly climate data, CLIMAT, WMO, international community, Denmark, The Faroe islands, Greenland, precipitation, temperature, atmospheric pressure, vapour pressure

The annual climate of Denmark [year] with Tórshavn, the Faroe Islands and Nuuk, Greenland as a Supplement:

2000: <http://www.dmi.dk/dmi/tr01-06.pdf> (report) (Danish only)

2001: <http://www.dmi.dk/dmi/tr02-01.pdf> (report) (Danish only)

2002: <http://www.dmi.dk/dmi/tr03-02.pdf> (report)

2003: <http://www.dmi.dk/dmi/tr04-02.pdf> (report)

2004: <http://www.dmi.dk/dmi/tr05-01.pdf> (report)

2005: <http://www.dmi.dk/dmi/tr06-01.pdf> (report)

2006: <http://www.dmi.dk/dmi/tr07-01.pdf> (report)

2007: <http://www.dmi.dk/dmi/tr08-01.pdf> (report)

2007: <http://www.dmi.dk/dmi/tr08-01.zip> (data)

2008: <http://www.dmi.dk/dmi/tr09-01.pdf> (report)

2008: <http://www.dmi.dk/dmi/tr09-01.zip> (data)

2009: <http://www.dmi.dk/dmi/tr10-01.pdf> (report)

2009: <http://www.dmi.dk/dmi/tr10-01.zip> (data)

2010: <http://www.dmi.dk/dmi/tr11-01.pdf> (report)

2010: <http://www.dmi.dk/dmi/tr11-01.zip> (data)

Keywords: The annual climate of Denmark, Nuuk, Greenland, Tórshavn, The Faroe Islands, country-wise values, normals, temperature, precipitation, hours of bright sunshine, global temperature

Monthly and annual climatological standard normals for the Faroe Islands 1961-90 (Danish only):

<http://www.dmi.dk/dmi/index/faroerne/klimanormaler-fo.htm>

Keywords: Monthly and annual climatological standard normals 1961-90, The Faroe Islands, temperature, precipitation, hours of bright sunshine

Climate extremes for the Faroe Islands since 1961 (Danish only):

<http://www.dmi.dk/dmi/index/faroerne/fr-ekstremer.htm>

Keywords: Climate extremes, The Faroe Islands, temperature, precipitation, hours of bright sunshine, atmospheric pressure, wind speed, wind gust

Past Climate (theme) (Danish only):

http://www.dmi.dk/dmi/index/klima/klimaet_indtil_nu.htm

Keywords: The Faroe Islands, Global, temperature, precipitation, hours of bright sunshine

METAR and TAF, the Faroe Islands (Danish only):

http://www.dmi.dk/dmi/index/faroerne/metar_og_taf_fo.htm

Keywords: Weather observations from airports every 15 minutes, Metar, taf, meteorological aero-



drom report, Terminal Aerodrome Forecast, temperature, wind, clouds, dewpoint, air pressure, visibility, The Faroe Islands

Satellite observations (Danish only):

<http://www.dmi.dk/dmi/index/danmark/satellit.htm>

Keywords: Satellite observations, the Faroe Islands, North Europe, Europe, full Earth, NOAA, METEOSAT, animations, visual, infrared



5.3. Data collections (regularly updated derived data), www.dmi.dk (freely available)

Daily Data Collection 1873-2010, including Air Pressure Observations 1874-2010 (update WASA Data Sets):

<http://www.dmi.dk/dmi/tr11-06.pdf> (report)

<http://www.dmi.dk/dmi/tr11-06.zip> (data)

Keywords: Daily Climate Data, Temperature, Atmospheric Pressure, Precipitation, Cloud Cover, Denmark, The Faroe Islands, Greenland, NACD, WASA, ACCORD, ECSN, ECA&D

Monthly Data Collection 1768-2010:

<http://www.dmi.dk/dmi/tr11-05.pdf> (report)

<http://www.dmi.dk/dmi/tr11-05.zip> (data)

Keywords: Monthly Climate Data, Temperature, Atmospheric Pressure, Precipitation, Snow Cover, Cloud Cover, Denmark, Greenland, The Faroe Islands, NACD, REWARD, NORDKLIM, NARP

Annual Data Collection 1873-2010:

<http://www.dmi.dk/dmi/tr11-04.pdf> (report)

http://www.dmi.dk/dmi/tr11-04_data.zip (data)

http://www.dmi.dk/dmi/tr11-04_graphics.zip (graphics)

Keywords: Annual Climate Data, Time series, Temperature, Precipitation, Hours of Bright Sunshine, Cloud Cover, Graphics, Denmark, The Faroe Islands, Greenland



5.4. Data collections (irregularly updated derived data), www.dmi.dk (freely available)

Metadata, selected climatological and synoptic stations, 1750-1996.

<http://www.dmi.dk/dmi/tr03-24.pdf> (report)

<http://www.dmi.dk/dmi/tr03-24.zip> (data)

Keywords: metadata, NACD, Denmark, The Faroe Islands, Greenland, time series

Weather Statistics for Airports 1996-2001 Denmark, Faroe Islands and Greenland:

<http://www.dmi.dk/dmi/tr03-03.pdf> (report)

Keywords: Weather statistics 1996-2001, seasons, airports, Denmark, Faroe Islands, Greenland, METAR, Key Climatic Figures, temperature, humidity, wind, days with fog and snow, clear and cloudy days, precipitation, frequencies, visibility, cloud heights, wind speed, wind direction, hourly and monthly distribution of observations



5.5. Data collections (stand alone and not planned to be updated), www.dmi.dk (freely available)

The global climate – climate normals 1931-60. Guide to weather and climate in 156 countries (Danish only):

<http://www.dmi.dk/dmi/tr01-17.pdf> (report)

Keywords: Global monthly and annual standard normals 1931-60, temperature, precipitation, hours of bright sunshine, relative humidity, wind, days with frost, water temperature

The Climate of The Faroe Islands 1922 – 1997 - with Climatological Standard Normals, 1961-1990:

<http://www.dmi.dk/dmi/tr98-14.pdf> (report)

<http://www.dmi.dk/dmi/tr98-14.zip> (data)

Keywords: Monthly and annual climate normals 1961-90, The Faroe Islands, temperature, humidity, precipitation, wind speed and -direction, atmospheric pressure, cloud cover, snow and fog, wind roses, monthly and annual climate data set within the time period 1922-1997

Daily Temperature Normals 1961-90 - Denmark, The Faroe Islands and Greenland:

<http://www.dmi.dk/dmi/tr00-17.pdf> (report)

<http://www.dmi.dk/dmi/tr00-17.zip> (data)

Keywords: Daily Temperature Normals 1961-90, Denmark, The Faroe Islands and Greenland, smoothing technics

World Weather Records 1991-2000 - Denmark, The Faroe Islands and Greenland.

<http://www.dmi.dk/dmi/tr03-34.pdf> (report)

<http://www.dmi.dk/dmi/tr03-34.zip> (data)

Keywords: Climate Monthly and Annual Data sets 1991-2000, World Weather Records, WMO, Denmark, Greenland, The Faroe Islands, Atmospheric pressure, Temperature, Precipitation

North Atlantic-European Pressure Observations 1868-1995 (WASA Dataset Version 1):

<http://www.dmi.dk/dmi/tr97-3.pdf> (report)

<http://www.dmi.dk/dmi/data97-3.zip> (data)

Keywords: Mean sea level atmospheric pressure observations 1868-1995, 3-4 observations/day, 22 stations in the Atlantic-European region, reduction to mean sea level

North Atlantic Climatological Dataset 1890-1990 (NACD Version 1) - Final Report:

<http://www.dmi.dk/dmi/sr96-1.pdf> (report)

<http://www.dmi.dk/dmi/sr96-1.zip> (data)

Keywords: NACD, Monthly climatological dataset 1890 - 1990, Northern North Atlantic Region, 388 time series of air temperature, air pressure, precipitation, days with snow cover and cloud cover, data quality

5.6. Miscellaneous (stand alone and not to be updated), www.dmi.dk (freely available)

Contribution from DMI concerning United Nation Climate Convention UNFCCC - fourth national communication of Denmark (Danish only):

<http://www.dmi.dk/dmi/dkcr05-03.pdf> (report)

Keywords: UNFCC, United Nation, Climate Convention, Denmark, The Faroe Islands, Greenland, climate, future scenarios, climate change, ozone, oceanography, outreach

Climate Meta Data Information Example (Monthly Time Series Database):

<http://www.dmi.dk/dmi/tr03-33.pdf> (report)

Keywords: metadata-information, DMI Monthly Time Series database

The North Atlantic Climatological Dataset (NACD). Documented station history, Torshavn and Mykines, The Faroe Islands 1872-1994 (Danish only).

<http://www.dmi.dk/dmi/tr94-18.pdf> (report)

Keywords: Station history, metadata, NACD, Torshavn, Mykines, The Faroe Islands

The North Atlantic Climatological Dataset (NACD). Instruments and Reconstructions. Illustrated going through of Archive Material (Danish only).

<http://www.dmi.dk/dmi/tr94-19.pdf> (report)

Keywords: Metadata, NACD, instruments, reconstructions, archive material, temperature, barometer pressure, precipitation, wind, sunshine, NACD, WASA

Summary of Meta data from NACD-stations in Denmark, Greenland and the Faroe Islands 1872-1994.

<http://www.dmi.dk/dmi/tr94-20.pdf> (report)

Keywords: Station history, metadata, Summary, NACD, Denmark, The Faroe Islands, Greenland

Brandt, M. L. and T. Schmith (1994): Correction, reduction and Homogenization of Barometer Records.

<http://www.dmi.dk/dmi/tr94-22.pdf> (report)

Keywords: Metadata, barometer pressure, barometer corrections, barometer reductions, adjustments, gravity, index errors, homogenisation

5.7. Older Climate publications (selected) before www.dmi.dk (only on paper if available), Library Danish Meteorological Institute

Available through the DMI Library phone +45 3915 7500 or web-mail: library@dm.dk. Another possibility is <http://bibliotek.dk> or the Danish National Archive <http://www.sa.dk>

5.7.1. Climatological Publications/Data Collections

Lysgaard L.: Foreløbig oversigt over Klimaet på Færøerne. Hovedsagelig baseret på observationer i normalperioden 1931-60 og på en del observationer fra et kortere åremål. Det Danske Meteorologiske Institut Meddelelser nr.20, Charlottenlund, 1969.

Keywords: Monthly and annual climatological standard normals 1931-60, The Faroe Islands, stations, air pressure, wind, temperature, hours of bright sunshine, humidity, precipitation, aeronautical statistics

Brandt, M. L. (1994): The North Atlantic Climatological Dataset (NACD). Dokumenteret stations-historie for klima- og synopstationer i Torshavn og Mykines, Færøerne 1872-1994. DMI Technical Report No. 94-18. København.

Keywords: Station history, metadata, NACD, Torshavn, Mykines, The Faroe Islands

Brandt, M. L. (1994): The North Atlantic Climatological Dataset (NACD). Instrumenter og rekonstruktioner. En illustreret gennemgang af arkivmateriale. DMI Technical Report No. 94-19. København.

Keywords: Metadata, NACD, instruments, reconstructions, archive material, temperature, barometer pressure, precipitation, wind, sunshine, NACD, WASA

Brandt, M. L. (1994): Summary of Meta data from NACD-stations in Denmark, Greenland and the Faroe Islands 1872-1994. DMI Technical Report No. 94-20. Copenhagen.

Keywords: Station history, metadata, Summary, NACD, Denmark, The Faroe Islands, Greenland

Brandt, M. L. and T. Schmith (1994): Correction, reduction and Homogenization of Barometer Records. DMI Technical Report No. 94-22. Copenhagen.

Keywords: Metadata, barometer pressure, barometer corrections, barometer reductions, adjustments, gravity, index errors, homogenisation

5.7.2. Regularly Annual Climate Data Surveys

1873-1983 “Meteorologisk Årbog”

From the start of the institute start year books have been published with varying content and size. A principal rule is that these publications contain descriptions, surveys and observations. The Faroe Islands is included in the following parts of “*Meteorologisk Årbog*”:

1873	Joint volume: Denmark, Greenland and the Faroe Islands, supplement 1868-1872
1874-1919	Part 2 (The Faroe Islands, Greenland and other colonies)
1920-1960	Part 1 (Denmark and The Faroe Islands) + Part 2 (Greenland)
1961-1970	Part 1 (Denmark and The Faroe Islands)
1971-1975	Not published
1976	Part 1 (Denmark and The Faroe Islands)



1977-1978 Not published
1979-1983 Part 1 (Denmark and The Faroe Islands)

1872-1895 "Meteorologiske Middeltal og Ekstremer for Færøerne, Island og Grønland. Appendix til det danske meteorologiske Instituts Aarbog 1895, II.del", published 1899.
Additionally a joint volume for the years 1872-1895 was published in 1899.

1940-1945 Meteorologisk Årbog - Tillæg - Færøerne 1940-45
Additionally a joint volume for the years 1872-1895 was published in 1899.

1988-1999 "Danmarks Klima"

The Faroe Islands is included in different ways in the following publications of the year book "*Danmarks Klima*":

1988, 1989: The Faroe Islands and Greenland (Tórshavn & Nuuk) (English and Danish text)

1994, 1995: Temperature graphics (Tórshavn & Nuuk)

1996: Temperature graphics (selected stations The Faroe Islands and Greenland)

1997- 1999: The Faroe Islands and Greenland (Tórshavn & Nuuk) (Danish text) + Temperature graphics (selected stations The Faroe Islands and Greenland)



6. Data Policy and Practice

6.1. Ordinary Access to Climate data and Services

DMI can for a fee provide custom-made climate data and services for different requirements and users. The data can be delivered in paper or in digital format stand alone or regularly according to a contract.

When required the DMI Customers Service (Data and Climate Information) can be contacted either via phone +45 39 15 75 00, Monday through Friday 9:00 -15:00 or via web-mail:

http://www.dmi.dk/dmi/index/danmark/kontakt_dmi_webmail.htm

For information about the fee for data and services, please contact The DMI Customers Service (Data and Climate Information).

6.2. Climatological Data and Products for educational and research purposes

DMI will provide free and unrestricted access to climatologically data and products for educational and research purposes, provided the right conditions are met.

This free access only applies to data and products. It does not apply to value added services. It does not apply to marginal costs: research and educational projects must pay for the direct costs generated by their requirements.

Read about Policy, Definitions and Conditions concerning free and unrestricted access to climatologically data and products from DMI for educational and research purposes in Appendix 1 (English and Danish versions).

If the right conditions are met please contact DMI Customers Service (Data and Climate Information) (see above). Then DMI will send an offer and a User Statement to the researcher or student filled with all information and prices regarding the delivery costs and the information value (not to be invoiced/DMI contribution to the project).

The researcher or student will have to fill out and sign the User Statement and send it to the DMI Customers Service (Data and Climate Information) by Fax +45 39 27 75 01 or by post: DMI, Data and Climate Information, Data & Climate Division, Lyngbyvej 100, DK 2100 Copenhagen.

Only when the User Statement has been filled out with all information and prices regarding the delivery costs and the information value (not to be invoiced/DMI contribution to the project) and signed by the researcher or student, the data can be delivered.

Should DMI decide that the research will be directly beneficial to its own requirements, it may decide to waive some or all of the direct provision costs.



Previous reports

Previous reports from the Danish Meteorological Institute can be found on:

<http://www.dmi.dk/dmi/dmi-publikationer.htm>



Appendix 1. Policy, Definitions and Conditions concerning free and unrestricted access to climatologically data and products from DMI for educational and research purposes (English and Danish versions).

ENGLISH VERSION:

POLICY

DMI will provide free and unrestricted access to meteorological data and products for educational and research purposes, provided the attached conditions are met.

This free access only applies to data and products. It does not apply to value added services. It does not apply to marginal costs: research and educational projects must pay for the direct costs generated by their requirements.

These supplies only concern data and products that belong to DMI, or those in stock and for which the owner has explicitly given permission for the application of these same conditions. This is the case in particular for data and products exchanged under the auspices of the WMO, and classified as « essential » or « additional ». These conditions do not apply when the common rule is more favourable (case of « essential » data and products for example), or when specific rules are adopted (case of special observing periods of international research experiments for example).

Where DMI accepts that the research will be directly beneficial to its own requirements, it may decide to waive some or all of the direct provision costs.

DEFINITIONS

Free and unrestricted: means “non-discriminatory and without charge, ..., at no more than the cost of reproduction and delivery” (from Resolution 40 of the 12th Congress of the WMO, June 1995). Reproduction and delivery includes all direct costs generated by their requirements; including the cost of distribution media, transmission, documentation and direct labour costs of servicing the request.

Research: any project organised by a university, a scientific institute or similar (private or institutional), for non commercial research purposes only. A necessary condition for the recognition of non-commercial purposes is that all the results obtained are openly available at delivery costs only, without any delay linked to commercial objectives, and that the research itself is submitted for open publication. Research activities as part of an institutions Official Duty is not covered by these conditions.

Education : any use of data and products, by a school, university, scientific institute or similar (private or institutional), solely for educational purposes, without transmission or redistribution of these data and products to any further third party, nor use of them to generate a meteorological value-added service.

CONDITIONS

1. The definitions of research and educational use must be met.
2. Note that open publication of a study is in itself not a sufficient condition, thus for example the following are not regarded as qualifying research or educational projects :
 - studies carried out and published to meet a legal requirement (e.g. site study) ;
 - studies carried out which give an economic advantage for a particular user or group of users. In these cases a specific agreement must be negotiated between DMI and the beneficiary.
3. Note that an activity is considered as being commercial and therefore cannot benefit from these conditions : if it involves any development which will subsequently be the object of, or will contribute to a sale, a licence or a right of use (software, publication, ...), the deposit of a patent, the realisation of tools or teaching material being for sale or contributing to a sale. In these cases a specific agreement must be negotiated between DMI and the beneficiary. If, in an unforeseen manner, research or education projects having benefited from free access, then lead to the development of software, the deposit of patents, the realisation of tools or teaching materials which may then be used for commercial purposes, the beneficiary agrees :
 - to grant to DMI all free licences for the use of these software or patents in the framework of its Official Duty. Thus the beneficiary accepts the reciprocity of its own policy in favour of the non commercial activity of DMI.



- not to authorise such commercial use before having passed a specific agreement with DMI. Should such an agreement prove impossible, the beneficiary must refund to DMI the actual estimated value of the original data and/or products (cf. paragraph 6).
- 4. The intellectual property rights on data and products are retained by DMI. The supply for research or education purposes will not grant or will not have as a consequence the transfer or surrender of such ownership or intellectual property rights.
- 5. The use to be made of the data and/or products provided must be stated precisely. All persons associated with the project must be made aware of the conditions attached. No person associated with the project shall, save with the written permission of DMI, transfer to a third party any data of the supply, or use for any other purpose.
- 6. Data and products supplied under the present conditions may be accompanied by an estimation of their value, based upon what would have been invoiced for the same request to an end user. This estimate is recognised by the beneficiary as a contribution by DMI to the project. It gives DMI the same rights as those granted to other contributors for an equivalent amount.
- 7. The beneficiary accepts responsibility for all conditions attached and shall indemnify DMI for any loss it suffers due to non-compliance of these conditions. DMI reserves the right to ask for the destruction or the restitution of data or products supplied at the end of the research programme or educational activity.
- 8. The beneficiary agrees to make acknowledgement of the origin of the data used in any publication arising out of the use of the data. He will provide a copy of these publications, where requested, to DMI.
- 9. The non-compliance of these conditions is prejudicial not only to DMI but also to the research and education communities. In consequence, DMI reserves the right to withhold either temporarily or permanently access to these conditions, from any establishment which, voluntarily or otherwise, does not respect them.

DANSK VERSION:

POLITIK

DMI stiller gratis og uindskrænket meteorologiske data og produkter til rådighed til brug for uddannelses- og forskningsbrug, såfremt betingelserne herfor er opfyldt.

Den gratis adgang vedrører kun data og produkter. Forsknings- og uddannelsesprojekter skal betale for omkostninger forbundet med frembringelse og levering heraf.

Leveringen vedrører kun data og produkter, der tilhører DMI eller er indhentet af DMI og for hvilke ejeren har givet tilladelse til brug af under samme betingelser som DMI's. Dette gælder specielt for data og produkter udvekslet i WMO's regi, betegnet som "essential" eller "additional". Disse betingelser gælder ikke, når de almindelige regler på området er mere gunstige, eller når særlige regler er vedtaget (fx observationsperioder til brug for international forskning).

I tilfælde, hvor DMI anser forskningen for at være egnet til eget brug, kan instituttet beslutte at afstå fra at opkræve hele eller dele af betalingen for frembringelse og levering af data og produkter.

DEFINITIONER

Uindskrænket adgang uden beregning: Med uindskrænket adgang uden beregning menes, at "data og produkter skal leveres uden diskriminering og uden at prisen overstiger frembringelses- og leveringsomkostningerne" (fra Resolution 40 of the 12th Congress of the WMO, June 1995). Frembringelse og levering inkluderer omkostninger direkte forbundet med hermed; såsom forsendelse, overførsel af data, dokumentation og arbejdstid.

Forskning: Ikke-kommercielle projekter organiseret gennem et universitet, et forskningsinstitut e.l. (privat eller statslig). En nødvendig betingelse for at projektet kan betegnes som ikke-kommercielt er, at alle opnåede resultater er tilgængelig for offentligheden, uden anden betaling end leveringsomkostninger, uden forsinkelser relaterede til kommercielle hensyn og at forskningen er beregnet på publicering. Forskningsaktiviteter der udføres som del af en institutions myndighedsopgaver er ikke omfattet af disse betingelser.

Uddannelse: Skolers, universiteters, videnskabelige institutioners e.l. (privat eller statslig) brug af data eller produkter udelukkende til undervisningsbrug, uden at udleverede data gøres til genstand for videresalg, kopiering eller på anden måde overdrages til tredje part, og som ej heller må bruges til at frembringe en service af meteorologisk værdi.

BETINGELSER

1. Definitionerne på forskning og uddannelse skal være opfyldte.
2. Bemærk at publicering af et studie ikke nødvendigvis er en opfyldelse af betingelserne. F.eks. er følgende ikke anset som kvalificeret forsknings- eller uddannelsesprojekt:
 - studier udført og publiceret for at opfylde lovmæssige krav/betingelser herunder myndighedsopgaver
 - studier som udført giver en økonomisk fordel for en specifik bruger eller brugergruppe. I tilfælde som

- disse kan en speciel aftale forhandles mellem DMI og modtageren.
3. Bemærk at en aktivitet, der betragtes som kommerciel, ikke kan modtage data uden beregning ud fra følgende: En aktivitet, der indeholder et produkt, der efterfølgende vil kunne sælges eller bidrage til salg, til en licens eller ret til brug (software, publikation), patentret, udvikling af værktøj eller undervisningsmateriale beregnet på salg eller som kan bidrage til salg. I tilfælde som disse kan en speciel aftale forhandles mellem DMI og modtageren. Skulle et uddannelses- eller forskningsprojekt, der uindskrænket og uden beregning har modtaget data eller produkter, uforudset udvikle sig til en aktivitet, der indeholder et produkt, der efterfølgende vil kunne sælges eller bidrage til salg, til en licens eller ret til brug (software, publikation), patentret, udvikling af værktøj eller undervisningsmateriale beregnet på salg eller som kan bidrage til salg, forpligter modtageren sig til følgende:
 - at give DMI fri licens til at bruge softwaren eller patentet i DMI's myndighedsopgaver. Således accepterer modtageren gensidigheden af dens egen politik til fordel for DMI's ikke-kommercielle aktiviteter.
 - ikke at påbegynde kommerciel virksomhed uden først at have lavet en specifik aftale med DMI. Hvis ikke det er muligt at forhandle sig til en aftale, er modtageren forpligtet til at betale DMI den faktiske pris for de modtagne data, jf. afsnit 6.
 4. DMI bibeholder ejendomsretten til data og produkter, der er leveret til forskning og uddannelse.
 5. Formålet med forsknings- eller uddannelsesprojektet skal beskrives præcist over for DMI. Alle personer med tilknytning til projektet skal oplyses om betingelserne for modtagelsen. Ingen personer med tilknytning til projektet må, uden skriftlig tilladelse fra DMI, overdrage data eller dele heraf til tredje part, ligesom data ikke må bruges til andre formål end det beskrevne.
 6. Samtidig med levering af data og produkter udleveret under disse betingelser, skal modtageren oplyses om det beløb, der ville være faktureret for en datalevering af denne art til en betalende kunde. Modtageren skal betragte dette beløb som størrelsen på DMI's bidrag til projektet. Det giver DMI de samme rettigheder som de, der gives til andre bidragsydere til projektet.
 7. Modtageren har det fulde ansvar for de udleverede data og produkter og skal erstatte DMI's tab, såfremt betingelserne ikke overholdes. DMI forbeholder sig ret til at kræve data og produkter slettet eller tilbageleveret efter projektets færdiggørelse.
 8. Modtageren forpligter sig, ved publicering af data, til at referere til DMI som kilde. Modtageren skal på opfordring levere en kopi af publikation til DMI.
 9. Ved overholdelse af disse betingelser bidrager modtageren til et godt samarbejde mellem DMI og uddannelses- og forskningsinstitutioner. Såfremt betingelserne ikke overholdes forbeholder DMI sig ret til at tilbageholde data, midlertidigt eller permanent, over for den institution, der frivilligt eller ufrivilligt har overtrådt betingelserne.