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Deutscher Wetterdienst
Wetter und Klima aus einer Hand

DATASET DESCRIPTION

Daily station observations (temperature, pressure, precipitation, sunshine duration, etc.) for Germany

Version: v24.3

Publication date: 2024

Cite data set as:	Daily station observations (temperature, pressure, precipitation, sunshine duration, etc.) for Germany, Version v24.3
Dataset-ID:	urn:wmo:md:de-dwd-cdc:obsgermany-climate-daily-kl
Dataset-URL:	https://opendata.dwd.de/climate_environment/CDC/observations_germany/climate/daily/kl/recent/
Dataset-URL:	https://opendata.dwd.de/climate_environment/CDC/observations_germany/climate/daily/kl/historical/
Dataset-URL:	https://opendata.dwd.de/climate_environment/CDC/observations_germany/climate/daily/kl //timeseries_overview//

ABSTRACT

These data originate from the stations of the DWD and legally as well as qualitatively equal partner network stations. Extensive station metadata, such as station relocations, instrument changes, reference time changes, algorithm changes or operator information are included.

The dataset is divided into a versioned part with completed quality check, in the directory ./historical/.
And a part for which the quality check has not yet been completed, in the directory ./recent/.

The folder ./timeseries_overview/ contains information about long time series.

POINT OF CONTACT

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DATASET DESCRIPTION

Parameter	precipitation parameters, form of precipitation, relative humidity, vapor pressure, air pressure at station level, sunshine duration, air temperature at 2 m, wind velocity, wind gust, air temperature near ground, snow depth, cloud coverage, precipitation height
Unit(s)	eighth, beaufort, °C, %, mm, m/s, cm, hPa
Statistical processing	daily mean, daily sum, time series, daily min, daily max
Temporal coverage	1781-01-01 -- ...
Spatial coverage	stations in Germany
Projection	WGS 84 (EPSG:4326)
Format description	Recent daily station observations (temperature, pressure, precipitation, sunshine duration, etc.) for Germany, quality control not completed : In the folder recent/ for each station a zip-archive is provided. The zip-archive contains the data and meta information about the station, instruments and algorithms. The naming schema of the zip-archives is: *_{product_code}_{station_id}_akt.zip

Format description

Historical daily station observations (temperature, pressure, precipitation, sunshine duration, etc.) for Germa :
In the folder recent/ for each station a zip-archive is provided.
The zip-archive contains the data and meta information about the station, instruments and algorithms.

The naming schema of the zip-archives is: *_{product_code}_{station_id}_{begin_date}_{end_date}_hist.zip

Format description

timeseries overview :
In the folder ./timeseries_overview, information on long time series is available. The files provided (TimeSeries_[DataType]_[Interval]_GE_[XXXYears]_[Parameter].html or ***.txt) contain a sorted overview of stations for which time series of >=100, >=50 and >=30 years are available. Information on the proportion of missing values is also provided.

Content description
Stations_id := Identifier of the station;
Start := Start date of the time series;
End := End date of the time series;
Number_years := Number of years of measurement operation;
Missing_Years := Number of missing years of measurement operation;
Missing_values := number of missing values ;
max(Missing_period)>=25 := More than 25 years missing in the time series: Indication of start date and end date;
Station name := Station name of the current location ;
Federal state := Name of the federal state

application schema

csv dialect description

delimiter	line terminator	header	quote char
;	\\r\\n	true	\"

csv content description

column name	description	uom	type	format
STATIONS_ID	Station ID		VARCHAR2	
MESS_DATUM	reference date		NUMBER	YYYYMMDD
QN_3	quality level of the following columns		NUMBER	numerical code
FX	daily maximum of windgust	m/s	NUMBER	9990.0
FM	daily mean of wind velocity	m/s	NUMBER	9990.0
QN_4	quality level of the following columns		NUMBER	numerical code
RSK	daily precipitation height	mm	NUMBER	9990.0
RSKF	precipitation form	numerical code	NUMBER	
SDK	daily sunshine duration	h	NUMBER	9990.0
SHK_TAG	daily snow depth	cm	NUMBER	9990.0
NM	daily mean of cloud cover	1/8	NUMBER	9990.0
VPM	daily mean of vapor pressure	hPa	NUMBER	9990.0
PM	daily mean of pressure	hPa	NUMBER	9990.0
TMK	daily mean of temperature	°C	NUMBER	9990.0
UPM	daily mean of relative humidity	%	NUMBER	9990.0
TXK	daily maximum of temperature at 2 m height	°C	NUMBER	9990.0
TNK	daily minimum of temperature at 2m height	°C	NUMBER	9990.0
TGK	daily minimum of air temperature at 5 cm above ground	°C	NUMBER	9990.0

Quality Information

The QUALITAETS_NIVEAU (QN) shows the quality control procedure applied for a data report (of several parameters) for a certain reporting time.

Data before and including 1980 can reach as best quality check level QN=5. Data after 1980 can reach QN=10 as best quality check level.

QN = 1 : only formal control;
QN = 2 : controlled with individually defined criteria;
QN = 3 : automatic control and correction;
QN = 5 : historic, subjective procedures;
QN = 7 : second control done, before correction;
QN = 8 : quality control outside ROUTINE;
QN = 9 : not all parameters corrected;
QN = 10 : quality control finished, all corrections finished.

The QUALITAETS_BYTE (QB) denotes whether the value was objected to and/or corrected.

QB = 0 : denotes not flagged,
QB = 1 : had no objections (either checked and not objected, or not checked and not objected, this can be interpreted only when considering QN);
QB = 2 : corrected;
QB = 3 : confirmed with objection rejected;
QB = 4 : added or calculated;
QB = 5 : objected;
QB = 6 : only formally checked;
QB = 7 : formal objection;
QB = -999 : quality flag does not exist.

DATA ORIGIN

The data are taken from the station measuring networks of Deutscher Wetterdienst as well as its predecessor organisations.
The dataset is regularly updated with recent as well as with recovered historical data.
From 1997 onwards, the data have been imported operationally into the central specialist database and archived, see Behrendt et al., 2011, and Kaspar et al., 2013.
Note that when going back to historical times, guidelines on observation procedure, instruments and observation times were issued by the authority in charge (see, e.g., Freydank, 2014), and might be incompletely recorded in the metadata.
As explained in Kaspar et al., 2013 in the early years numerous meteorological agencies were active in the area of todays Germany. After establishment of the der International Meteorological Organization (IMO) in 1873, the various standards were gradually harmonized, resulting in a single standard 1936.
After 1945, the standards in East and West Germany developed differently, and were harmonized again after re-unification in 1990.
Between the end of the nineties and 2009 many stations were changed from manual to automated.

RESOURCE MAINTENANCE

[Data maintenance]: In the directory recent/ the data files are updated daily. On a rolling basis, the data of the last 500 days - up to yesterday - are exchanged.
Quality control has not yet been completed for these data, so there may always be changes in the values.

In the directory historical/ the data files are updated annually.
Quality control has been completed for this data, so that the values for the version are constant.
During the annual version change, both corrections and historical additions are incorporated.

VALIDATION AND UNCERTAINTY ESTIMATE

The quality control (see Spengler, 2002) of this data is not completed yet. Various levels of quality control (see Kaspar et al., 2013) are in progress.

UNCERTAINTIES

The stations are nowadays selected and operated according to WMO guidelines. Though these guidelines aim at minimizing possible local effects, still some applications of certain parameters may require the consideration of local and regional effects.

CONSIDERATIONS FOR APPLICATIONS

For any data analysis, the metadata available in the *.zip files should be taken into account.

ADDITIONAL INFORMATION

For extending the time series into the past, see subdirectories ../historical/. When data from both directories "historical" and "recent" are used together, the difference in the quality control procedure should be considered. For the long term stability consider the uncertainties explained in the data set descriptions within subdirectories /historical/.

LITERATURE

Behrendt, J., et al.: Beschreibung der Datenbasis des NKDZ, Version 3.5, Offenbach, 15.02.2011.

DWD Vorschriften und Betriebsunterlagen Nr. 2 (VuB 2), Wetterschlüsselhandbuch Band D, Nov 2013.

DWD Vorschriften und Betriebsunterlagen Nr. 3 (VuB 3), Beobachterhandbuch (BHB) für Wettermeldestellen des synoptisch-klimatologischen Mess- und Beobachtungsnetzes, März 2014a.

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Kaspar, F., et al.: Monitoring of climate change in Germany – data, products and services of Germany`s National Climate Data Centre. Adv. Sci. Res., 10, doi:10.5194/asr-10-99-2013, 99–106, 2013.

Spengler, R.: The new Quality Control- and Monitoring System of the Deutscher Wetterdienst. Proceedings of the WMO Technical Conference on Meteorological and Environmental Instruments and Methods of Observation, Bratislava, 2002.

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REVISION HISTORY

This document is maintained by Deutscher Wetterdienst, Climate Data Center (CDC) - Betrieb, last edited at 2024-06-05.