CDC-OpenData-Server

You have free access to the climate data of the DWD Climate Data Center (CDC). Please consider the copyright, as explained in
https://opendata.dwd.de/climate_environment/CDC/Terms_of_use.pdf.

We provide at the CDC-OpenDataServer
https://opendata.dwd.de/climate_environment/CDC/ **:**

- observed parameters from DWD stations
- derived parameters at the station locations
- gridded fields covering Germany
- regional averages for Germany and its federal states
- gridded fields covering Europe
- regional reanalysis
- global climate station data

at hourly, daily, monthly, annual or multi-annual resolution (details see below). 1-minute precipitation measurements and 10-minute measurements of temperature, precipitation, wind and sunshine are also available.

Regularly versioned data are sorted into the two subdirectories: '*recent*' and '*historical*'. *Recent* data have not yet completed the full quality control. *Historical* data have completed the operational quality control. The very latest 1-minute and 10-minute measurements are in the subdirectories 'now'.

As a consequence of our permanent quality control, there may be errors detected at a later stage and subsequently corrected in the archived data. Also, the on-going digitization of historical data extends the time series continuously. Thus, the archived climate data are versioned. At the CDC ftp-server you will find the most recent valid version in the sub-directory 'historical'.

The time series can include inhomogeneities (i.e., caused by change of station location or instrument). Data users are urged to study the accompanying station metadata and the data set descriptions.

Please be aware that not all meteorological parameters are provided at all temporal resolutions, and that release dates of new data may vary.

You may follow changes here:
https://opendata.dwd.de/climate_environment/CDC/Change_log_CDC_ftp.txt

and/or subscribe to the CDC-Newsletter:
https://www.dwd.de/EN/service/newsletter/newsletter_cdc_node.html
Future changes are announced in:
https://opendata.dwd.de/climate_environment/CDC/Announce_log_CDC_ftp.txt
Errors are listed in:
https://opendata.dwd.de/climate_environment/CDC/Error_log_CDC_ftp.txt

Data on the CDC-OpenData-Server

1. Parameters observed at DWD stations and partner stations on equal terms

Historical and recent meteorological parameters, e.g., **air temperature, soil temperature, precipitation, humidity, pressure, wind speed and direction, visibility, solar irradiance, sunshine duration**, and **cloud cover**.

The data are zipped according to station, including the station meta-data (in German language). Available resolution: 10-minutes, hourly, daily, monthly , and multi-annual values (1961-1990, 1971-2000, 1981-2010). Approximately 400 **climate stations** are currently active. The station lists for the respective parameters can be found here.

For a selection of 81 climate stations distributed over Germany, 'Terminwerte' (36 meteorological parameters) are given in the traditional KL-format.

For urban climate monitoring, special stations are collected here in hourly resolution.

Precipitation data from a dedicated precipitation observation network (with about 2000 active stations) and partner stations on equal terms are available at hourly, daily and monthly. The precipitation station lists can be found in https://opendata.dwd.de/climate_environment/CDC/help/. Most recently, also 1-minute and 10-minute precipitation measurements are available.

Snow depth and **water equivalents** are provided at daily resolution.

Phenological data are collected at about 1200 active stations. The state of development of selected plants (e.g., apple, birch, snow drops, goose berry, wheat, vine, etc.) is reported by annual reporters and immediate reporters. The lists of phenological stations can be found in list of phenology annual reporters and list of phenology immediate reporters.

Monthly profiles of air temperature from 12 **radiosonde stations** (balloon soundings) are provided in their original and in a homogenized version.

2. Parameters derived at the station locations

Agrometeorological models deliver **soil parameters**, including the **potential and real evaporation** over grass and sandy clay, **the soil moisture** below sand and sandy clay**, the soil temperatures** at 5, 10, 20, 50 and 100 cm depth below bare soil, and the **maximal frost penetration depth**. Available resolution: daily, monthly and multi-annual. The soil

parameters are calculated at about 320 station locations, the time series start 1991. A list and a map is provided for the locations for which the calculations were performed.

Technical parameters comprise **heating degree days**. **Cooling days** will be added.

3. Gridded fields covering Germany

Gridded fields cover Germany generally at different temporal resolutions (not every parameter is given at all resolutions).

Following **precipitation data** are given: *RADOLAN* precipitation fields are derived from radar together with station data (hourly, daily). *REGNIE* precipitation fields are derived from precipitation stations only (daily, monthly, multi-annual). *Climatological stations* are the basis for grids with monthly, half-year, annual and multi-annual resolution.

Statistics on heavy precipitation (KOSTRA-DWD) provide **return periods for heavy precipitation** in Germany with various duration thresholds.

Agrometeorological models provide soil parameters: **soil moisture, soil temperature at 5 cm depth, potential** and **real evaporation** are available at daily, monthly and multi-annual resolution.

Air temperature (mean, max, min), sunshine duration, drought index, as well as the **numbers of days with snow, frost days, or exceeding certain thresholds** for **temperature** or for **precipitation** are given at monthly, annual or multi-annual resolution.

Gridded solar radiation values (1 x 1 km) comprise **global radiation** (monthly, annual and multi-annual means), **diffuse radiation** (monthly, annual), and **direct radiation** (monthly, annual), all are derived from satellite data and ground based measurements.

Wind energy related parameters derived from station measurements are given as multi-annual mean, for both 1 x 1 km resolution and 200 x 200 m resolution.

In project TRY, for the time span 1995 - 2012 the monthly, daily, hourly grids at 1 x 1 km resolution were calculated for air **temperature, moisture, pressure, dew point, water vapor content, cloud cover, wind direction** and **wind speed**, as well as **direct, solar incoming and long-wave outgoing radiation.**

From the phenological observations over Germany annual grids are derived for approx. 50 **phenological phases**, also **begin of vegetation** (annual, multi-annual) and **end of vegetation** (annual, multi-annual).

4. Regional averages for Germany and its federal states

These monthly, seasonal und annual averages (of **air temperature, precipitation** and **sunshine duration**) are derived from the gridded fields covering Germany.

5. Gridded fields covering Europe

For the time interval 2001 - 2010, a 5 x 5 km grid is given in daily and monthly resolution, for **air temperature (mean, max, min)** at 2 m above ground, and **wind speeds** at 10 m above ground.
Monthly cloud cover is derived from satellite data.

6. Regional reanalysis

Selected parameters of the regional reanalysis COSMO-REA6 are provided at https://opendata.dwd.de/climate_environment/REA/. The hourly fields cover Europe for the time span 1995 - 2016, in 6 x 6 km resolution. The format is the original format of COSMO (DWD grib1, rotated coordinates). Following parameters are provided: **pressure** (reduced and not reduced) at the surface, **precipitation, temperature (min, max, mean), relative** and **specific humidity**, wind components **U** and **V**, **wind gust**, various parameters of **radiation** (diffuse and direct), **planetary boundary layer height**, **integrated water vapor** and **cloud cover**; according to parameter either at the lowest 6 model levels and/or at 10 m height (wind) above model ground and/or 2 m height (temperature) above model ground.

7. Global climate station data

Historical and recent monthly station data from CLIMAT-messages (quality controlled) for **air temperature (mean, max, min)**, **precipitation**, **number of days with precipitation**, **sunshine duration**, **pressure**, **vapour pressure**, and derived multi-annual means. In addition, the monthly files of CLIMAT-messages, checked for month, year and format are provided, these contain **more parameters**.

More ways to access data

DWD provides data access (also to other data) via other systems, see
https://www.dwd.de/EN/climate_environment/cdc/cdc_node.html.

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