DWD
Deutscher Wetterdienst
Wetter und Klima aus einer Hand

DATASET DESCRIPTION

Daily grids of FAO Grass reference evapotranspiration

Version: v1.0

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Cite data set as:	Daily grids of FAO Grass reference evapotranspiration, Version v1.0
Dataset-ID:	urn:x-wmo:md:de.dwd.cdc::urn:x-wmo:md:de.dwd.cdc::gridsgermany-daily-evaporation_fao
Dataset-URL:	https://opendata.dwd.de/climate_environment/CDC/grids_germany/daily/evaporation_fao

ABSTRACT

FAO grass reference evapotranspiration is a common international calculation form and is often used for reference or standardization purposes of evapotranspiration. In detail, the equations used have been described in FAO paper 56 following Allen et al. (1998). The approaches apply to a normalized grass area that does not change during the year. Many different daily values are needed as inputs for the calculation, some of which are not measured and therefore must be derived. The daily mean temperature and mean vapor pressure of the day are calculated using the minimum and maximum air temperatures, the daily mean wind speed is downscaled to 2 m, the daily mean relative humidity is also used, and the radiation balance is calculated using global radiation as an input. The global radiation was taken instead of the sunshine duration, because it represents the real radiation conditions more accurately than the one about the sunshine duration, which can be high even in the early morning or evening when the radiation is low.

POINT OF CONTACT

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DATASET DESCRIPTION

Parameter	potential evapotransporation
Unit(s)	mm
Statistical processing	daily value
Temporal coverage	1961-01-01 -- ...
Temporal resolution	1 day
Spatial coverage	Germany
Spatial resolution	1 km x 1 km
Projection	DHDN / 3-degree Gauss-Kruger zone 3 (EPSG:31467)
Format description	The daily grids of FAO grass reference evapotranspiration of one year are stored in a netcdf file created according to CF metadata standards. The grid is a Gaus-Krüger projection from the 3rd meridian (EPSG: 31467). Values outside of Germany are marked with an error code -9999. All input variables were interpolated from station values into the grid and used by the grid for the calculation at each grid point. The netcdf files contain a scaling factor of 0.1 that is automatically applied to the data. Filename: - grids_germany_daily_evaporation_fao_{year}_v{version}.nc - {year} is the year in YYYY-Format - {version} is the version number Example:

grids_germany_daily_evaporation_fao_2021_v1.nc

DATA ORIGIN

For the calculations, the equations described in FAO paper 56 following Allen et al. (1998) are used.

RESOURCE MAINTENANCE

The data for the current year is updated on the 3rd of each month.

UNCERTAINTIES

With regard to the crop management, strong simplifications were carried out in the approach, which thereby made a calculation possible in the first place. In reality, the growth height and leaf area index varies constantly throughout the year, so that the real potential evaporation will differ from the calculated value. In addition, the approach does not take into account that grass closes its stomata at high temperatures and reduces evaporation even when water supply is good.

LITERATURE

Allen R.G., Pereira L.S., Raes D., Smith M., 1998. Crop Evapotranspiration. Guidelines for Computing Crop Water Requirements. FAO Irrigation and Drainage Paper 56. Food and Agriculture Organization (FAO) of the United Nations, Rome, 300 S

REVISION HISTORY

This document is maintained by Deutscher Wetterdienst, KU31 Agrarmeteorologie, last edited at 2023-06-14.