Deutscher Wetterdienst
Wetter und Klima aus einer Hand

DWD

DATA SET DESCRIPTION

Multi-annual grids of soil moisture in 5cm depth under grass and sandy loam

Version 0.x

Cite data set as: DWD Climate Data Center (CDC): Multi-annual grids of soil moisture in 5cm depth under grass and sandy loam, version 0.x, current date.

INTENT OF THE DATASET

The grid is interpolated from the soil moisture in 60 cm depth under grass which was derived at a fixed selection of stations. Only locations with complete data sets from 1.1.1991 till now have been used. The soil moisture under grass is calculated by the model AMBAV, which was developed at the agrometeorological research centre in Braunschweig. The interpolation method is a regional multiple linear regression with geographical longitude, latitude and height of location as input variables and a subsequent triangulation, covering Germany with a resolution of 1x1 km.

POINT OF CONTACT

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DATA DESCRIPTION

Spatial coverage	grids over Germany
Temporal coverage	01.01.1991 - 31.12.2010
Spatial resolution	1 x 1 km
Temporal resolution	multi-annual, for each month of the calendar
Projection	Gauss Krüger 3. meridian strip. The PRJ-file can be downloaded here: ftp://ftp-cdc.dwd.de/pub/CDC/help/gk3.prj.
Format(s)	The grids are in ascii format. The first six rows describe the grid definition, including the upper left corner, spatial resolution und amount of rows and columns. Grid points outside Germany are marked as missing numbers. The grid can be read with ArcGis.
Parameters	Values are in percent plant useable water (% NFK), where the used soil has a wilting point of 13 volume% and a field capacity of 37 volume%.
Uncertainties	The grids contain uncertainties concerning calculation and also from interpolation. From nearly 280 locations 360000 grid points were interpolated. As the soil moisture depends strongly on precipitation which has large spatial variability, the interpolated grids cannot be expected to be exact.
Quality information	without quality flags

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DATA ORIGIN

The calculations at the locations were made by the agrometeorological model AMBAV. The interpolation was made in two steps. Dividing Germany in 20 different regions by overlapping circles and making a multiple linear regression with all locations in each circle. Regression coefficients are the height, the longitude and latitude of the location. The calculated regression coefficients of the four surrounding circles for a given location were weighted in dependence from the distance to circle centres. In a last step the differences between calculated values and the interpolated values at the calculation locations are distributed by a triangulation into the grid.

VALIDATION AND UNCERTAINTY ESTIMATE

The resulting grids depend strongly on the used interpolation. Plausibility tests showed very good performance.

REFERENCES

Löpmeier, F.-J. (1994): Berechnung der Bodenfeuchte und Verdunstung mittels agrarmeteorologischer Modelle. Zeitschrift f. Bewaesserungswirtschaft, 29, 157–167.

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REVISION HISTORY

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