Deutscher Wetterdienst
Wetter und Klima aus einer Hand

DATA SET DESCRIPTION

Monthly grids of mean monthly soil temperature in 5 cm depth under uncovered typical soil of location

Version 0.x

Cite data set as: DWD Climate Data Center (CDC): Monthly grids of mean monthly soil temperature in 5 cm depth under uncovered typical soil of location, version 0.x, current date.

INTENT OF THE DATASET

The grid is interpolated from the soil temperatures derived at a fixed selection of stations. The soil temperature was calculated by the model AMBETI, 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 - end of penultimate month

Spatial resolution   1 x 1 km

Temporal resolution   monthly

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 in the grid must be divided by 10 to get correct unit of °C.

Uncertainties   The grids contain uncertainties concerning calculation and also from interpolation. From nearly 280 locations 360000 grid points were interpolated. As soil temperature depends on the irradiance and the temperatures, it does not vary too strongly spatially. The resulting grids should be plausible, with larger deviations to be expected in winter with variable snow cover.

Quality information   without quality flags

DATA ORIGIN

The calculations at the locations were made by the agrometeorological model AMBETI. All calculations were made for uncovered typical soil at location of weather station. 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

Braden, H., 1995: The model AMBETI. - A detailed description of a soil-plant-atmosphere model, Berichte des Deutschen Wetterdienstes, Nr. 195.

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REVISION HISTORY

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