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Deutscher Wetterdienst
Wetter und Klima aus einer Hand

DATASET DESCRIPTION

SNOWRAS_DE

Version: v1.0

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Dataset-ID:	urn:wmo:md:de-dwd-cdc:95fcc1d2-552f-4646-919d-1bd6c5cef5d6
Dataset-URL:	https://opendata.dwd.de/climate_environment/CDC/grids_germany/daily/snowras_de/snow_depth

ABSTRACT

Daily snow depth fields valid at 06:00 UTC for Germany (September to May) on a 1 km polar stereographic grid from 1950.

POINT OF CONTACT

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DATASET DESCRIPTION

Parameter	snow depth
Unit(s)	cm
Statistical processing	daily value
Temporal coverage	1950-09-01 -- ...
Temporal resolution	24 hours
Spatial resolution	1 km x 1 km
Format description	Grid of daily snow depth distributions for Germany : Daily snow depth distributions, valid at 06:00 UTC for Germany (September to May), on a 1-km polar stereographic grid from 1950 onwards. The data is provided as NetCDF4 file with the variable snow_depth.

DATA ORIGIN

SNOWRAS is based on daily snow-depth observations from the German Weather Service (DWD), complemented by data from partner networks in Germany and neighbouring countries. The latter are used solely to improve interpolation near national borders; the published product is restricted to Germany.
Prior to processing, observations and metadata were harmonized and quality controlled. Spatially or physically implausible values were excluded. Snow depth was then mapped to a regular grid using local optimal interpolation. First, a background field depending on geographic location and terrain elevation is estimated; deviations of station observations from this background field are subsequently interpolated spatially.

RESOURCE MAINTENANCE

SNOWRAS is updated on a yearly basis. Each snow season covers the period from 1 September to 31 May. After the end of a season, data for the preceding snow season are checked, processed, and added to the existing dataset. Earlier periods may also be updated when additional or revised observations become available, for example through the digitisation of historical measurements or subsequent quality-control procedures. Such updates may result in changes to previously published gridded values.

VALIDATION AND UNCERTAINTY ESTIMATE

The quality of SNOWRAS was assessed through a comparison with the CERRA reanalysis and validation against station observations withheld from the interpolation. The comparison with CERRA shows generally good agreement in large-scale snow-depth patterns, while regional differences occur particularly in low mountain ranges and the Alpine region. Leave-one-out validation confirms that station observations are reproduced well: 83% of the evaluated stations show mean errors within 1 cm. Across the validated winter seasons, the mean bias is -0.1 cm, the RMSE is 5.0 cm, and the correlation is r=0.89. Larger deviations occur mainly at high snow depths and in complex terrain.

UNCERTAINTIES

The quality of the gridded values depends on the availability, spatial distribution, and representativeness of station observations. Uncertainties are generally higher in regions with sparse station coverage, complex terrain, and highly variable snow conditions. Grid-cell values represent area-based estimates and may differ from local point observations. Changes in the station network, measurement practices, or metadata over the long record may additionally affect temporal homogeneity.

CONSIDERATIONS FOR APPLICATIONS

SNOWRAS is particularly suitable for climatological analyses of the spatial and temporal variability of snow depth in Germany, for example studies of snow-cover statistics, anomalies, trends, or individual events. For local-scale applications, gridded values should not be interpreted as a substitute for station observations. When analysing long time series, potential changes in the underlying observations and spatially varying station density should be considered. Values outside Germany and missing values, including those occurring outside the dataset's seasonal coverage from 1 September to 31 May, must not be interpreted as snow-free conditions.

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REVISION HISTORY

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