

Variable: Total cloud cover

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Dataset overview	Last update on 14/05/2021

Basic information about the data (e.g. format, name)

Catalogue entry category	Reanalysis
Description of the catalogue entry category	A reanalysis provides a synthesized estimate of the climate state generated from a combination of a numerical model and as many observations as possible of the Earth system. Observations can be directly assimilated into the numerical simulation or used indirectly through the forcings of the simulation. The climate estimates can be global or regional, spanning from a few years to almost two centuries.
Data format	GRIB, NetCDF
Physical quantity name	Total cloud cover
Physical quantity unit	%
Definition of physical quantity	Percentage of the grid cell for which the sky is covered with clouds. Clouds at any height above the surface are considered.
Summary description of the dataset	The UERRA datasets provide a reanalysis of the atmosphere, the surface, the near-surface and the soil, covering the European domain. The climate variables are generated with the UERRA-HARMONIE and the MSCAN-SURFEX systems. UERRA-HARMONIE is a 3-dimensional variational data assimilation system, while MSCAN-SURFEX is a complementary surface analysis system.
How to cite this dataset?	UERRA - Uncertainties in Ensembles of Regional Reanalyses - FP7 607193
Are there licence conditions or terms of agreement which regulate the use of this dataset?	Yes
Licence	https://cds.climate.copernicus.eu/api/v2/terms/static/licence-to-use-copernicus...
Is the licence a Creative Commons licence?	Not available yet
Variable domain	Atmosphere
Key limitations of the dataset	Changes in the amounts and types of observational data that are assimilated may produce artificial trends or variability. Results in complex terrain, such as mountainous regions or coastal areas, are generally less reliable than results over a more homogeneous terrain. Reanalysis provides gridded data which characterize values valid for grid box, while observations are usually point measurements.
Does the dataset originate from several production streams?	Yes
Description including starting and ending dates for the streams	Several streams were used in production at ECMWF, with four months overlap between the streams to allow spin-up of the slowly varying soil parameters.

Temporal and spatial coverage and resolution		Last update on 14/05/2021
Time and space characteristics of the data		
Temporal coverage	Past	
Record start date	1961-01	
Record end date	2019-07	
Temporal resolution	Sub-daily. This parameter is instantaneous, analyses are available each day at 00, 06, 12 and 18 UTC	
Geographical coverage	Approximately 20° W - 35° E; 20°-60° N	
Horizontal resolution	11 km x 11 km	
Vertical levels	Single levels and three levels for the soil	
Grid description	Lambert conformal conic grid with 565 x 565 grid points	

Providers		Last update on 14/05/2021
Data provider and contact points		
Organization of the producer	Sveriges meteorologiska och hydrologiska institut (SMHI)	
Point of contact	Copernicus User support (copernicus-support@ecmwf.int)	
Is the dataset brokered?	No	

Dataset version		Last update on 14/05/2021
Current version of the data and associated DOI		
System	UERRA-HARMONIE	
Has the dataset DOI associated?	No	

Data update Last update on 14/05/2021

Data status and next releases

Dataset status	Completed
Date/frequency new data is made available in the CDS	July 2020
Date of dataset availability in the CDS	February 2019
Is there a future update planned?	No
Please explain the reason for no update planned	Production of the dataset was stopped in 2019.

 User guide Last update on 14/05/2021

Overview of input data and methods, general guidelines for the data usage, etc

Is there a User Guide?	Yes
Link to User Guide	http://datastore.copernicus-climate.eu/documents/uerra/D322_Lot1.4.1.2_User_gui...
Is there a user forum provided for the dataset?	Yes
Key references	https://confluence.ecmwf.int/display/UER/Forum
Does the dataset have a 'known issues' register?	Yes
Please provide a description	A list of known issues is accessible from the project website.
Key references	https://confluence.ecmwf.int/display/UER/Issues+with+data

 Scientific methodology Last update on 14/05/2021

Description of the physical basis, the algorithm or model used to produce the data record, etc

Is there a reanalysis technical documentation?	Yes
Link to documentation	https://confluence.ecmwf.int/display/UER

Short description of the Methodology and/or Models	The data have been generated using the UERRA-HARMONIE system by combining model data with observations into a complete and consistent dataset using the laws of physics. UERRA-HARMONIE employs a 3-dimensional variational data assimilation method. The observing system has evolved drastically over time, therefore the quality of analyses varies throughout the period, with less accurate estimates in earlier periods. In addition to observations in the model domain, a regional reanalysis needs model data which provide a first estimate of the atmospheric state. For the UERRA-HARMONIE system, this information is taken from ECMWF reanalyses.
Key references	http://uerra.eu/component/dpattachments/?task=attachment.download&id=296
Further details about the main system components?	Yes
Model component name	atmospheric model
Short description of the Model component	The reanalysis was produced using the the HARMONIE system cycle 38h1.1. The ALADIN synoptic scale physics scheme was used together with a three dimensional variational data assimilation (3D-Var) scheme including only conventional observations, and an OI assimilation scheme for the surface observations. The atmospheric model uses the hydrostatic approximation and 65 vertical levels, while the soil model has 3 vertical levels.
Link reference document	http://uerra.eu/component/dpattachments/?task=attachment.download&id=296
Are there physical parameterizations needing further description?	No
Are there Boundary Conditions or External forcings needing further description?	Yes
Boundary Condition / External Forcing Name	ECMWF reanalyses
Short description of the Boundary Condition / External Forcing	Global ECMWF reanalyses are used to provide boundary conditions to HARMONIE: ERA40 (until the end of 1978) and ERA-interim (from 1979 onwards), possibly leading to some discontinuities. In the HARMONIE system, large scales features from the available reanalyses are blended with the simulation by means of an additional term in the assimilation scheme.

Link reference document	http://uerra.eu/component/dpattachments/?task=attachment.download&id=296
Are there Ensemble Members?	No
Is the data interpolated horizontally?	No
Is the data interpolated vertically?	Yes
Specify method of interpolation	Inside the 3D model there are 65 vertical levels. These are on hybrid-sigma coordinates. Only a very restricted amount of parameters is available on these model levels. In addition, data is interpolated inside the 3D model onto 24 pressure levels (1000hPa - 10hPa) as well as 11 height levels (15m - 500m).
Is the data gap-filled horizontally?	No
Is the data gap-filled vertically?	No
Is the data gap-filled temporally?	No
Is any data assimilation performed?	Yes
Description of input datasets, including sources, starting and ending	Conventional observations, such as synoptic stations, ships, drifting buoys, aircraft observations and radio soundings are assimilated, but no remote sensing data is used in the production. For the period 1961-2001 ERA40 observations with addition of Swedish and French observations are used. After 2001 operationally available conventional data are assimilated.
Short description of methodology	3D-Var
Description of Quality Control procedure	Not available yet
Key references	http://uerra.eu/component/dpattachments/?task=attachment.download&id=296

Uncertainty quantification Last update on 14/05/2021

General practices and findings used to characterize and represent uncertainty in the data record

Has an uncertainty characterisation been performed?	No
Is the uncertainty characterisation based on validation data?	No

Validation Last update on 14/05/2021

Details on the validation activities performed to assess the fidelity of the data record

Have validation activities been performed?	Yes
Is there any validation material publicly available?	Yes
Short description of the methodology, including how uncertainties are dealt with	Validation metrics have been computed using ERA-Interim as reference. Results for wind speed, 2m temperature and relative humidity, precipitation, and cloud cover are discussed in the linked document.
Reanalysis system bias summary, include spatial and temporal ranges over which the bias(es) applies	Not available yet
One-off or routine validation	Not available yet
Key references	https://datastore.copernicus-climate.eu/documents/uerra/D322_Lot1.1.1.2_Documen...

Inter-comparison Last update on 14/05/2021

Description of the comparison activities performed against peer datasets

Has a known inter-comparison activity been completed for this reanalysis system?	Not available yet
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Toolbox compatibility Last update on 14/05/2021

Get to know whether the variable can be served through the Toolbox

Is (are) the data file(s) compatible with the toolbox?	monthly: TBD - daily/sub-daily: Yes
Document (monthly)	Not available yet
Document (daily/sub-daily)	reanalysis_uerra_europe_single_levels-uerra_harmonie-total_cloud_cover-toolbox.pdf

Archive

Last update on 14/05/2021

Archiving is associated with the capability to preserve and access CDS data, i.e. data are safeguarded against loss and kept accessible and usable for current and future applications

Description of the archiving and recovery functions and capabilities	All dataset is available in the CDS disks and can be rebuilt from the ECMWF Meteorological Archival and Retrieval System (MARS) tapes, which are physically located in a place where the Copernicus Regulation and related delegated legislation, e.g. the Copernicus Data Policy, can be enforced. The ECMWF MARS tapes have a backup as well.
Duration of the archiving period	The CDS aims to provide access to the data during a period of a few years (between 3 and 7 years). Data on the ECMWF MARS tapes are kept indefinitely.
Are archived data duplicated?	There is more than one copy of the same operational dataset, stored at different geographical locations.

Data check

Last update on 14/05/2021

Data and metadata checks performed

File(s) format(s)	netcdf4, grib2
Standard identified for the dataset category	GRIB2 standard for UERRA
Is(are) the file(s) compliant with the standard identified above?	monthly: TBD - daily/sub-daily: Yes
Document (monthly)	Not available yet
Document (daily/sub-daily)	reanalysis_uerra_europe_single_levels-uerra_harmonie-total_cloud_cover-standard_compliance_grib.pdf
Standard identified for the dataset category	Climate and Forecast Metadata Convention v1.7 (CF-v1.7)
Is(are) the file(s) compliant with the standard identified above?	monthly: TBD - daily/sub-daily: Yes
Document (monthly)	Not available yet
Document (daily/sub-daily)	reanalysis_uerra_europe_single_levels-uerra_harmonie-total_cloud_cover-standard_compliance_netcdf.pdf
Space and time completeness (monthly)	Not available yet
Space and time completeness (daily/sub-daily)	Not available yet
Is (are) the data file(s) temporally consistent with the metadata?	Not available yet
Document (monthly)	Not available yet
Document (daily/sub-daily)	Not available yet
Is (are) the data file(s) spatially consistent with the metadata?	Not available yet
Document (monthly)	Not available yet
Document (daily/sub-daily)	Not available yet
Physical plausibility ranges (monthly)	Not available yet
Physical plausibility ranges (daily/sub-daily)	Not available yet

Expert evaluation

Last update on 14/05/2021

Scientific soundness of the data through standard diagnostics, as evaluated by field experts in the quality control function of C3S independently of the data provider

Not available yet

Not available yet

Dataset maturity

Last update on 14/05/2021

The maturity assessment of the dataset variable is performed in the following five categories: metadata, user documentation, uncertainty characterization, public access/feedback/update, usage. This entry is still under development because there is not an agreed methodology to score the maturity of all dataset types available in the CDS.

Maturity matrix

Description The maturity assessment of the dataset variable is performed in the following five categories: metadata, user documentation, uncertainty characterization, public access/feedback/update, usage. This assessment establishes to what extent the production of a data record follows best practices, based on accumulated experience by the scientific and engineering communities.

Document Not available yet

Maturity matrix inter-comparison

Description Maturity assessment of the same variable for different dataset sources.

Document Not available yet

Guidance document on applying the maturity matrix

Description This is the guidance document used to assess the maturity matrix of the dataset.

Link Not available yet

Key strengths and limitations

Last update on 14/05/2021

Concluding remarks and highlights arising from a basic assessment performed independently of the data provider

The independent assessment is an external and basic revision of the data, which is independent of the provider and is performed by the Evaluation and Quality Control (EQC) function of C3S. The assessment seeks to determine compliance of metadata against community standards, data consistency and unexpected gaps in space and time, data physical plausibility, dataset performance through standard diagnostics and whether the data producer follows good practices. All the details are available in the table cells above. The resulting concluding remarks are reported below and identify key strengths and limitations associated with the dataset that further guide its usage.

Key strengths and limitations

Description	Not available yet
Document	Not available yet
Evaluator names	Not available yet