

Release of CM SAF TCDR CLARA-A2.1: CM SAF cCloud, Albedo and surface Radiation dataset from AVHRR data - Edition 2.1

The CLARA-A2.1 record provides cloud properties, surface albedo and surface radiation parameters derived from the AVHRR sensor onboard polar orbiting NOAA and METOP satellites. It includes and temporally extends the second version of the record (Karlsson et al., 2017; CLARA-A2 DOI: [10.5676/EUM_SAF_CM/CLARA_AVHRR/V002](https://doi.org/10.5676/EUM_SAF_CM/CLARA_AVHRR/V002)) now providing data from 1982/01 to 2019/06, i.e., for 37.5 years. Original visible radiances were inter-calibrated and homogenised, using MODIS data as a reference, before applying the various parameter retrievals. The inter-calibration was based on an original method introduced by Heidinger et al. (2010) which was updated (MODIS Collection 6) and extended. CLARA-A2.1 features a range of cloud products: cloud mask, cloud top temperature/pressure/height, cloud thermodynamic phase, and (for liquid and ice clouds separately) cloud optical thickness, particle effective radius and cloud water path. Cloud products are available as monthly and daily averages as well as as daily resampled global products (Level 2b) for individual satellites. Cloud parameter results are also presented as multi-parameter distributions (i.e., joint frequency histograms of cloud optical thickness, cloud top pressure and cloud phase) for daytime conditions. Surface albedo is presented as monthly and pentad (5 day) averages of the broadband black-sky albedo and is derived using all available data during the studied period. Surface radiation products are provided as monthly averages for the downwelling shortwave (including also daily averages) and the down- and upwelling longwave components. The monthly and daily averages are available on a 0.25°x0.25° global grid. Surface albedo and cloud products are also provided in two equal area grids with a resolution of 25 km x 25 km covering the polar regions. Daily resampled cloud products (level 2b) are provided in a global grid with a resolution of 0.05°x0.05°. For the latter, also a probabilistic cloud mask is added as an experimental product. A summary of the CLARA-A2.1 characteristics and a comprehensive evaluation of the data are available through a comprehensive set of documents including user guides and, validation reports and algorithm descriptions.

The data record can be ordered via the [Web User Interface](#). More information on the data record is available from the DOI page: [10.5676/EUM_SAF_CM/CLARA_AVHRR/V002_01](https://doi.org/10.5676/EUM_SAF_CM/CLARA_AVHRR/V002_01)

Dissemination of additional products of surface solar radiation via EUMETCast since 20 August 2020

Additional products of surface solar radiation data from CM SAF have become available via EUMETCast on 20 August 2020.

These products are:

- Daily Mean Surface Incoming Shortwave Radiation (CM-5210, SIS)
- Daily Sum Sunshine Duration (CM-5280, SDU)
- Monthly Sum Sunshine Duration (CM-5280, SDU)

The products are part of the Interim Climate Data Record (ICDR) SEVIRI Surface Solar Radiation Data Set based on SARA-2 methods. This ICDR is designed to extend the Thematic Climate Data Record (TCDR) SARA-2.1 continuously in time. Products from the SARA-2.1 TCDR (available for 1983-2017) together with the corresponding products from the ICDR (available from 2018 onwards), can therefore be combined for various climate analysis applications. To work with the data, CM SAF provides the [CM SAF R Toolbox](#), which is an easy-to-use tool to prepare, analyse, and visualize CM SAF data. The Toolbox comes as part of the CM SAF R-package, which is a collection of more than 60 functions for analysis and post-processing of CM SAF NetCDF formatted data.

Access to the archived ICDR data record, more details and documentation (user manual, validation report, ATBD) are available from the [ICDR landing page](#).

More information on the SARA-2.1 TCDR and access to the archived data record is available from the corresponding DOI landing page:

[10.5676/EUM_SAF_CM/SARA-2/V002_01](https://doi.org/10.5676/EUM_SAF_CM/SARA-2/V002_01)

Example filenames:

```
S-CM_SISdm202004160000410231000101MA.nc  
S-CM_SDUs202004070000401231000101MA.nc  
S-CM_SDUs202003010000401231000101MA.nc
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These data are distributed on the following EUMETCast Europe Basic and EUMETCast Africa services:

EUMETCast Europe

Channel: E1B-SAF-4

PID: 500

Multicast address: 224.223.222.28

EUMETCast Africa

Channel: A1C-SAF-4

PID: 100

Multicast address: 224.223.225.3

Update of CM SAF R-Toolbox

The latest update of the CM SAF R-Tools introduced some new features to support climate monitoring and a more flexible work with the CM SAF R Toolbox. Besides the NetCDF format, there is now the possibility to export data into GeoTiff, KML or CSV format, which gives users the freedom to work with CM SAF data in their preferred tools. Graphical output can now be saved in PNG, JPEG or PDF format. Another new feature provides an easy-to-use way to create graphics and animations of climate anomalies. Users can now produce anomaly plots of parameters, such as accumulated daily sunshine duration, with just a few clicks. This feature can be applied using the CM SAF R Toolbox or as a batch job using a configuration file.

All information on the latest updates and more is available at the [CM SAF R Toolbox website](#).

Publications by CM SAF team

The following list gives an overview of some recently published papers by the CM SAF team covering CM SAF products and developments. Authors from the current CM SAF team are marked in bold:

Akkermans, T., Clerbaux, N.: Narrowband-to-Broadband Conversions for Top-of-Atmosphere Reflectance from the Advanced Very High Resolution Radiometer (AVHRR), *Remote Sens.*, **12(2)**, 305, DOI: [10.3390/rs12020305](https://doi.org/10.3390/rs12020305), 2020.

Clerbaux, N., Akkermans, T., Baudrez, E., Velazquez Blazquez, A., Moutier, W., Moreels, J., Aebi, C.: The Climate Monitoring SAF Outgoing Longwave Radiation from AVHRR. *Remote Sens.* **12(6)**, 929. DOI: [10.3390/rs12060929](https://doi.org/10.3390/rs12060929), 2020.

Mialhe, P., Pohl, B., Morel, B., **Trentmann, J.,** Jumaux, G., Bonnardot, F., Bessafi, M., Chabriat, J.-P.: On the determination of coherent solar climates over a tropical island with a complex topography. *Sol. Energy*, **206**: 508–521. DOI: [10.1016/j.solener.2020.04.049](https://doi.org/10.1016/j.solener.2020.04.049), 2020.

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