

Release of extension to the Fundamental Climate Data Record of Microwave Imager Radiances

The CM SAF Fundamental Climate Data Record (FCDR) of Microwave Imager Radiances comprises inter-calibrated brightness temperatures (BTRs) from the SMMR, SSM/I and SSMIS radiometers. The 4th edition covers the time period from October 1978 to December 2020 including all available data from the SMMR radiometer aboard Nimbus-7, the SSM/I radiometers aboard F08, F10, F11, F13, F14, and F15 and the SSMIS radiometers aboard F16, F17, and F18.

This data record has now been extended by two more years of SSMIS (F16, F17, F18) data. This prolongs the end of the covered time period to December 2022.

The data record can be ordered via the [Web User Interface](#). More information on the data record and accompanying documentation is available from the DOI page: [DOI:10.5676/EUM_SAF_CM/FCDR_MWI/V004](https://doi.org/10.5676/EUM_SAF_CM/FCDR_MWI/V004).

Online Short Courses

The EUMETSAT/CM SAF online short course series 2023 continued on 20 June 2023 with the short course on CLARA-A3, the latest edition of our climate data record on cloud, surface and top-of-atmosphere radiation as well as surface albedo products based on AVHRR data. The CM SAF experts got many interesting questions by an engaged audience. If you missed the course, you can re-watch the recording via: <https://training.eumetsat.int/course/view.php?id=488>.

Change in access to earlier releases of our CDRs and ICDRs

In the previous years, CM SAF has been releasing a number of climate data records (CDRs) and interim climate data records (ICDRs). For several parameters, more than one edition of the respective CDR and ICDR has been published with the most recent version having improved quality, better coverage and higher accuracy compared to the previous release(s) of the respective parameter. CM SAF strongly recommends using only the most recent release of the CDRs and ICDRs.

In order to help our users to identify the most recent CDR and ICDR data, we have changed the access to the different data records in our system. Only the most recent edition of the products is available for ordering via our CM SAF Web User Interface. Earlier releases of the respective products are only made available on request. In case users need access to these earlier product versions, please contact the CM SAF User Help Desk via contact.cmsaf@dwd.de.

Information on all released products remain available on the CM SAF webpage (e.g., [change log](#), [documentation](#)). For all CDR versions the respective DOI page includes information about the ordering of the respective products. A list of all CDRs and their DOIs is available on the CM SAF [webpage](#) including information on the access to the products.

Discontinuation of NOAA-15 AVHRR data in CLARA-A3 ICDR processing from 2023-11-10 and advice to use data from July - October 2023 with care due to data gaps

The AVHRR sensor onboard the NOAA-15 satellite has been in service for more than 25 years and its data has been used in all CLARA CDR editions. It is also still used in the ICDR products for CLARA-A3. However, recently problems with the sensor's scan motor have become more serious and it has therefore been decided to discontinue using the data from 10 November 2023. Especially since end of August 2023 scan motor problems became more obvious in the sensor data. Products have been affected in various ways and most clearly by loss of data in segments and stripes, sometimes being directly visible in some products. More problematic is that also navigation information might be affected leading to erroneous projection of data. To prevent from further damages to products, it was decided to stop using NOAA-15 AVHRR data in all CLARA-A3 ICDR products.

Besides the scan motor issue of NOAA-15, increased amounts of data losses for NOAA-15 NOAA-18 and NOAA-19 have been observed since late July 2023 with largest data gaps from mid-September to end of October 2023. This is caused by the transition of these satellites to the POES Extended Life Ground System which will operate on a best-effort basis (see also https://www.ospo.noaa.gov/data/messages/2023/11/MSG_20231101_0100.html). Unfortunately, the period is overlapping with the above mentioned problem of NOAA-15. We thus advice to keep these issues in mind when using ICDR data from CLARA-A3 of the described periods of time.

The loss of observations from NOAA-15 is foreseen to be covered up by introducing observations from the Metop-C satellite which so far has not been used in ICDR production due to previous uncertainties in the applied calibration method. With an updated calibration, Metop-C can now be used and will to a large extend replace observations from NOAA-15, despite a slightly later observation time. The (re-)introduction of Metop-C observations will be communicated in a separate service message as soon as a date for the introduction is set.

Incorrect values in CM SAF CLARA-A3 Surface Solar radiation data records

We are sorry to inform you that due to an inconsistent treatment of missing values, 106 grid boxes of the CLARA-A3 surface irradiance (SIS) daily mean data in the period 1979 – 2022 contain (incorrect) negative values. Our analysis has shown that only grid boxes in the area between 66°N and 71°N in the Northern winter months (November – January) have been affected.

As a consequence of the incorrect daily SIS data, the corresponding grid boxes of the monthly data of surface irradiance (SIS), surface net solar radiation (SNS), and the surface radiation budget (SRB) are also affected (These parameters use the daily SIS data as input.).

Users are advised to disregard the data of the affected grid boxes (in the daily and monthly means) and set their values to missing data. Note, that an impact of the inconsistent treatment of the missing values during the data generation on additional grid boxes of the CLARA-A3 solar surface radiation data record cannot be excluded.

The [list of affected grid boxes](#) will be regularly extended as needed. A detailed list of affected months as well as further information on the provided list is given in our [Service Message 155](#).

The number of grid boxes per time step (i.e., day or month) is larger than 1 million (CLARA-A3 spatial grid: 1440 x 720). Thus, the overall impact of this feature on the data quality is negligible. Due to the insignificant overall impact no update of the data is planned for CLARA-A3.

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. (2023): Validation of the CLARA-A3 Top-of-Atmosphere Radiative Fluxes Climate Data Record. *J Atmos Ocean Technol.*, **40**(11), 1523-1539. DOI: [10.1175/JTECH-D-23-0065.1](https://doi.org/10.1175/JTECH-D-23-0065.1)

Han, C., Hoose, C., **Stengel, M.**, Coopman, Q., and Barrett, A. (2023): Sensitivity of cloud-phase distribution to cloud microphysics and thermodynamics in simulated deep convective clouds and SEVIRI retrievals, *Atmos. Chem. Phys.*, **23**, 14077–14095, DOI: [10.5194/acp-23-14077-2023](https://doi.org/10.5194/acp-23-14077-2023)

Devasthale, A., Karlsson, K.-G. (2023): Decadal Stability and Trends in the Global Cloud Amount and Cloud Top Temperature in the Satellite-Based Climate Data Records. *Remote Sens.*, **15**, 3819. DOI: [10.3390/rs15153819](https://doi.org/10.3390/rs15153819)

Karlsson, K.-G., Stengel, M., Meirink, J. F., Riihelä, A., Trentmann, J., Akkermans, T., Stein, D., Devasthale, A., Eliasson, S., Johansson, E., Håkansson, N., Solodovnik, I., Benas, N., Clerbaux, N., Selbach, N., Schröder, M., Hollmann, R. (2023): CLARA-A3: The third edition of the AVHRR-based CM SAF climate data record on clouds, radiation and surface albedo covering the period 1979 to 2023, *Earth Syst. Sci. Data*, **15**, 4901–4926, DOI: [10.5194/essd-15-4901-2023](https://doi.org/10.5194/essd-15-4901-2023)

Karlsson, K.-G., Devasthale, A., Eliasson, S. (2023): Global Cloudiness and Cloud Top Information from AVHRR in the 42-Year CLARA-A3 Climate Data Record Covering the Period 1979–2020. *Remote Sens.*, **15**, 3044, DOI: [10.3390/rs15123044](https://doi.org/10.3390/rs15123044)

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