

Climate Data Records and user services of the EUMETSAT SAF on Climate Monitoring

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The Satellite Application Facility on Climate Monitoring (CM SAF), as part of EUMETSAT's SAF network, exploits satellite based remote sensing data to derive Climate Data Records (CDR) and Interim Climate Data Records (ICDR) of Essential Climate Variables (ECV) and other parameters with high relevance to the climate system. The main focus of the CM SAF Continuous Development and Operations Phase 3 (CDOP-3, 2017-2022) is to develop and improve methods to produce CDRs on an operational basis in a sustained mode. Data records are compiled from different sensor types on operational geostationary and polar orbiting meteorological satellites including instruments such as MVIRI, SEVIRI, GERB, AVHRR, HIRS, SSM/I, and SSMIS.

Climate Data Records...

CM SAF's climate data records are based on carefully (inter-) calibrated satellite data using the latest version of the respective algorithms. The data records are generated in dedicated re-processing events. After a thorough validation and review by external experts, the data records are released and available to the users via the CM SAF data portal.

Already released CDRs...

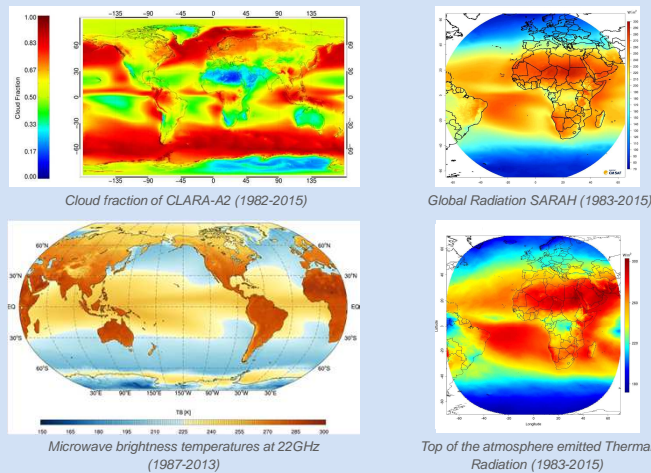
Along with the provision of its Environmental Data Records (EDR), CM SAF has already released several CDRs, summarised in Table 1. Further information can be found via the corresponding Digital Object Identifiers (DOI) available at www.cmsaf.eu/doi.

www.cmsaf.eu/

| Sensor | Parameter | Period | Coverage |
|---|--|-----------|-----------------------|
| Fundamental Climate Data Record (FCDR) | | | |
| SMR, SSM/IS | Microwave Radiances | 1979-2015 | global |
| Thematic Climate Data Records (TCDR) | | | |
| SSM/IS | Total integrated water vapour, evaporation, precipitation, freshwater flux, latent heat flux, near surface wind speed and humidity | 1987-2015 | global ice free ocean |
| ATOVS | Vertically integrated water vapour, humidity and temperature at pressure levels and layers | 1999-2011 | global |
| AVHRR GAC | Cloud parameters, surface radiation parameters, incl. albedo | 1982-2015 | global |
| SEVIRI | Cloud parameters, aerosol optical depth and free tropospheric humidity | 2004-2015 | Europe & Africa |
| GERB/SEVIRI | Top of atmosphere radiative fluxes | 2004-2015 | Europe & Africa |
| MVIRI | Surface Radiation | 1983-2005 | Europe & Africa |
| MVIRI/SEVIRI | Cloud parameters, surface radiation parameters, incl. albedo and land surface temperature | 1983-2015 | Europe & Africa |
| | Daylight | 1983-2011 | |
| | Top of atmosphere radiative fluxes | 1982-2015 | |

Table 1: List of selected CM SAF CDRs until now

Climatological means



To be released in CDOP-3...

During CDOP-3 (2017-2022), CM SAF will continue to develop capabilities for a sustained generation and provision of CDRs derived from operational meteorological satellites. In particular, the generation of long term data records will be pursued. CM SAF will update several already released CDRs and will provide CDRs of additional parameters after careful validation and review of the data records. These data records will be based on calibrated and inter-calibrated data, too. A list of climate data records to be released until the end of CDOP-3 is given in Table 2. So-called Interim Climate Data Records (ICDRs) will be generated based on the respective algorithms of the previously released TCDR to allow continuation of the time series in shorter time latency.

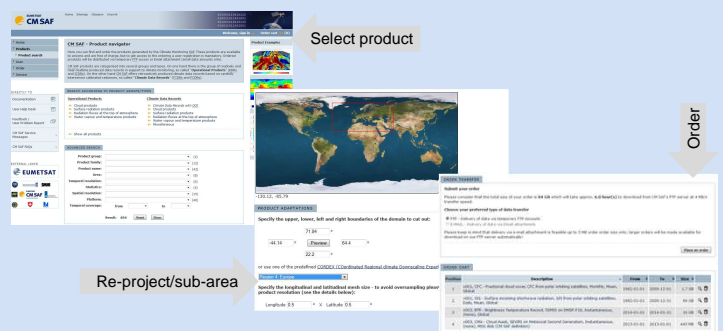
For CDOP-3 ICDRs using MSG/SEVIRI (based on CLAS-2 and SARAH-2) and AVHRR (based on CLARA-A2) will be generated. Updates based on the TCDRs released in CDOP-3 are foreseen for CDOP-4.

User Help Desk

Data can be ordered through the CM SAF webpage wui.cmsaf.eu and are provided free of charge to any interested user (user registration is mandatory). A selection of sub-regions and re-projection of data is possible during the ordering process. Add-on products and ancillary data (e.g., lat/lon, land/sea mask, etc.) as well as example files are available on the webpage. Additionally, service messages, information on changes in processing, known product disruptions as well as a newsletter and documentation on the products is available on www.cmsaf.eu.

| Sensor (Name) | Parameter | Period | Coverage |
|---|--|-----------|-----------------------|
| Fundamental Climate Data Record (FCDR) | | | |
| SMR, SSM/IS | Microwave Radiances | 1987-2019 | global |
| Thematic Climate Data Records (TCDR) | | | |
| SSM/IS (HOAPS) | Precipitation, evaporation, freshwater flux, latent heat flux, near surface wind speed and humidity, liquid water path, vertically integrated water vapour | 1987-2019 | global ice free ocean |
| Microwave Imager | Global precipitation | 2002-2019 | global |
| Various for 183.31 +/- 1 GHz Channel | Upper tropospheric humidity | 1992-2020 | global |
| HIRS (HECTOR) | Cirrus cloud amount, cloud top level | 1980-2013 | global |
| AVHRR GAC (CLARA) | Cloud parameters, surface albedo, surface radiation parameters, top of the atmosphere | 1978-2018 | global |
| SEVIRI(CLAAS) | Cloud parameters | 2004-2020 | Europe & Africa |
| MVIRI/SEVIRI | Land Fluxes, free tropospheric humidity, Top of the atmosphere | 1983-2020 | Europe & Africa |
| MVIRI/SEVIRI (SARAH) | Solar surface radiation parameters | 1983-2020 | Europe & Africa |

Table 2: List of CM SAF CDR releases planned in CDOP-3



Screenshots of ordering process via the CM SAF Web User Interface

