

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) of Essential Climate Variables (ECV) and other parameters with high relevance to the climate system. Since 2004, CM SAF has been providing environmental data records (EDRs) of ECVs (e.g., cloud, radiation, atmospheric profiles). CM SAF develops and improves methods to derive CDRs on an operational basis in a sustained mode. In March 2012, CM SAF started its Continuous Development and Operations Phase 2 (CDOP-2, 2012-2017). Products covering cloud parameters, surface albedo, radiation fluxes at the top of the atmosphere and at the surface, atmospheric temperature and water vapour profiles as well as vertically integrated water vapour are derived from different sensor types on operational geostationary and polar orbiting meteorological satellites including instruments such as ATOVS, AVHRR, SSM/I, GERB, SEVIRI and MVIRI.

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 sets are processed in dedicated reprocessing events. After careful validation and review by external experts, the data sets are released and available to the users via the CM SAF data ordering page.

...already released CDRs

In its Continuous Development and Operations Phase (2007-2012), CM SAF released several CDRs along with the provision of its EDRs:

The SSM/I-based Climate Data Record from HOAPS has been released as HOAPS v3.2 with the following parameters: near surface wind speed, near surface humidity, precipitation, latent heat flux, evaporation and freshwater flux. The CDR covers the time period from 1987 until 2008 and covers the global ice-free ocean using observations from F08, F10, F11, F13, F14 and F15. Input to this TCDR is a Fundamental Climate Data Record (FCDR) which has also been processed at CM SAF.

Effective cloud albedo, surface direct incoming and shortwave radiation derived from MFG/MVIRI onboard Meteosat-2 to Meteosat-7 are available for the time period 1983 to 2005. The products cover the field of view of the MVIRI instrument.

Examples of released data sets:

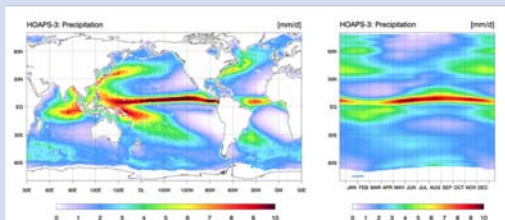


Figure 1: SSM/I derived precipitation [mm/d], average (1987-2008): global distribution (left), zonal mean of annual cycle (right)

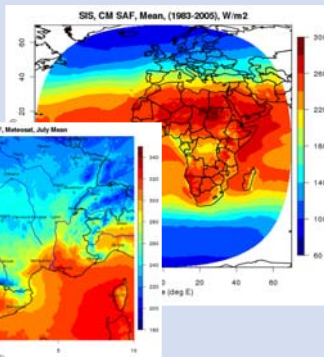


Figure 2: MVIRI based CDR mean of SIS (1983-2005) and monthly mean of July for France (1983-2005)

Sensor	Parameter	Release date	Period	Coverage
Fundamental Climate Data Record (FCDR)				
SSM/I, SSMIS	Microwave Radiances	Edition 1 2014	1987-2012	global ice free ocean
		Edition 2 2016	1987-2014	
Climate Data Record				
SEVIRI	Cloud parameters, aerosol optical depth	2015	2004-2014	Europe & Africa
GERB/SEVIRI	Top of atmosphere radiative fluxes	2015	2004-2014	Europe & Africa
MVIRI/SEVIRI	Cloud parameters, surface radiation parameters, incl. albedo and land surface temperature, FTH	Edition 1 2014 Edition 2 2016	1983-2012 1983-2015	Europe & Africa
MVIRI/SEVIRI/GERB	Top of atmosphere radiative fluxes	2015	1982-2014	Europe & Africa
AVHRR GAC	Cloud parameters, surface radiation parameters, incl. albedo	Edition 1 2014 Edition 2 2016	1982-2013 1982-2015	global
TOVS/ATOVS	(High) cloud amount and top	2016	1984-2009	global
SSM/SSMIS	Total integrated water vapour, precipitation, evaporation, freshwater flux, latent heat flux, near surface wind speed and humidity	Edition 1 2015	1987-2012	global ice free ocean
		Edition 2 2017	1987-2014	

Table 2.: List of CM SAF CDRs to be released until 2017

.... to be released in 2012

Several CDRs are planned to be released during 2012 after careful validation and review processes. Table 1 gives an overview on the parameters and data sources.

CM SAF CDRs to be released in 2012

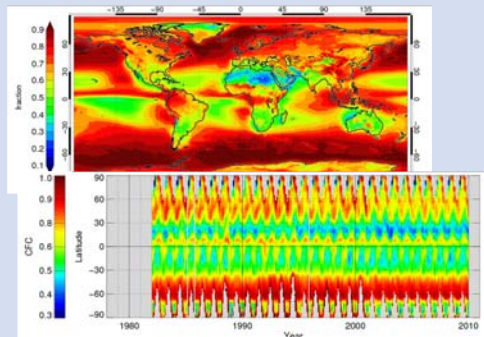


Figure 3: AVHRR GAC based mean daytime cloud fraction (top) and Hovmöller diagram (bottom), 1982-2009

Products	Data records length	Coverage	Data Source
Cloud properties / surface radiation fluxes / surface albedo	1989-2009	Global	AVHRR GAC
Water vapour and temperature parameters at different layers/levels	1998-2010	Global	ATOVS
SSM/I Fundamental Climate Data Record (brightness temperatures)	1987-2008	Global	SSM/I
Cloud properties / TOA and surface radiation fluxes / surface albedo / water vapour / aerosol optical depth	2004-2009	Regional (MSG disk)	SEVIRI + GERB
Daylight, surface net shortwave radiation	1983-2005	Regional	MFG/MVIRI

Table 1: Table of CM SAF CDRs planned to be released in 2012

.... to be released until 2017

During CDOP-2 (2012-2017), 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 sets 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 sets. The data sets will be based on carefully calibrated and intercalibrated data. A list of parameters and planned release dates for the CDRs is given in Table 2.

User Help Desk

Data can be ordered through the CM SAF webpage www.cmsaf.eu. Data are provided free of charge to any interested user (user registration is mandatory). A Graphical User Interface and data conversion tools (CDO) are provided. A selection of sub-regions and re-projection of data is possible during the ordering process. Add-on products and ancillary data (e.g., latitude/longitude, 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.



Figure 4: Screenshots of CM SAF Web User Interface