

# Climate Data Records of the EUMETSAT Satellite Application Facility on Climate Monitoring

N. Selbach, P. Fuchs, K. Fennig, D. Stein, B. Thies, J. Tan

Deutscher Wetterdienst

The Satellite Application Facility on Climate Monitoring (CM SAF), as part of EUMETSAT's SAF network, exploits satellite based remote sensing data to derive Environmental Data Records (EDR) and Climate Data Records (CDR) 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 2 (CDOP-2, 2012-2017) is to develop and improve methods to derive CDRs on an operational basis in a sustained mode. Data records 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 re-processing 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...

Along with the provision of its EDRs, 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](http://www.cmsaf.eu/doi)

Sensor	Parameter	Release date	Period	Coverage
<b>Fundamental Climate Data Record (FCDR)</b>				
SSM/I, SSMIS	Microwave Radiances	Ed. 1 2014 Ed. 2 2016	1987-2012 1979-2014	global
<b>Climate Data Record (CDR)</b>				
SSM/I, SSMIS	Total integrated water vapour, precipitation, evaporation, freshwater flux, latent heat flux, near surface wind speed and humidity	Ed. 2 2015 Ed. 3 2017	1987-2012 1987-2014	global ice free ocean
TOVS/ATOVS	(High) cloud amount and top	Ed. 1 2016	1984-2009	global
AVHRR GAC	Cloud parameters, surface radiation parameters, incl. albedo	Ed. 2 2015	1982-2013	global
SEVIRI	Cloud parameters, aerosol optical depth	Ed. 2 2015	2004-2014	Europe & Africa
GERB/SEVIRI	Top of atmosphere radiative fluxes	Ed. 2 2015	2004-2014	Europe & Africa
MVIRI/SEVIRI	Cloud parameters, surface radiation parameters, incl. albedo and land surface temperature, FTH	Ed. 2 2014 Ed. 3 2016	1983-2012 1983-2015	Europe & Africa
MVIRI/SEVIRI/GERB	Top of atmosphere radiative fluxes	Ed. 1 2015	1982-2014	Europe & Africa

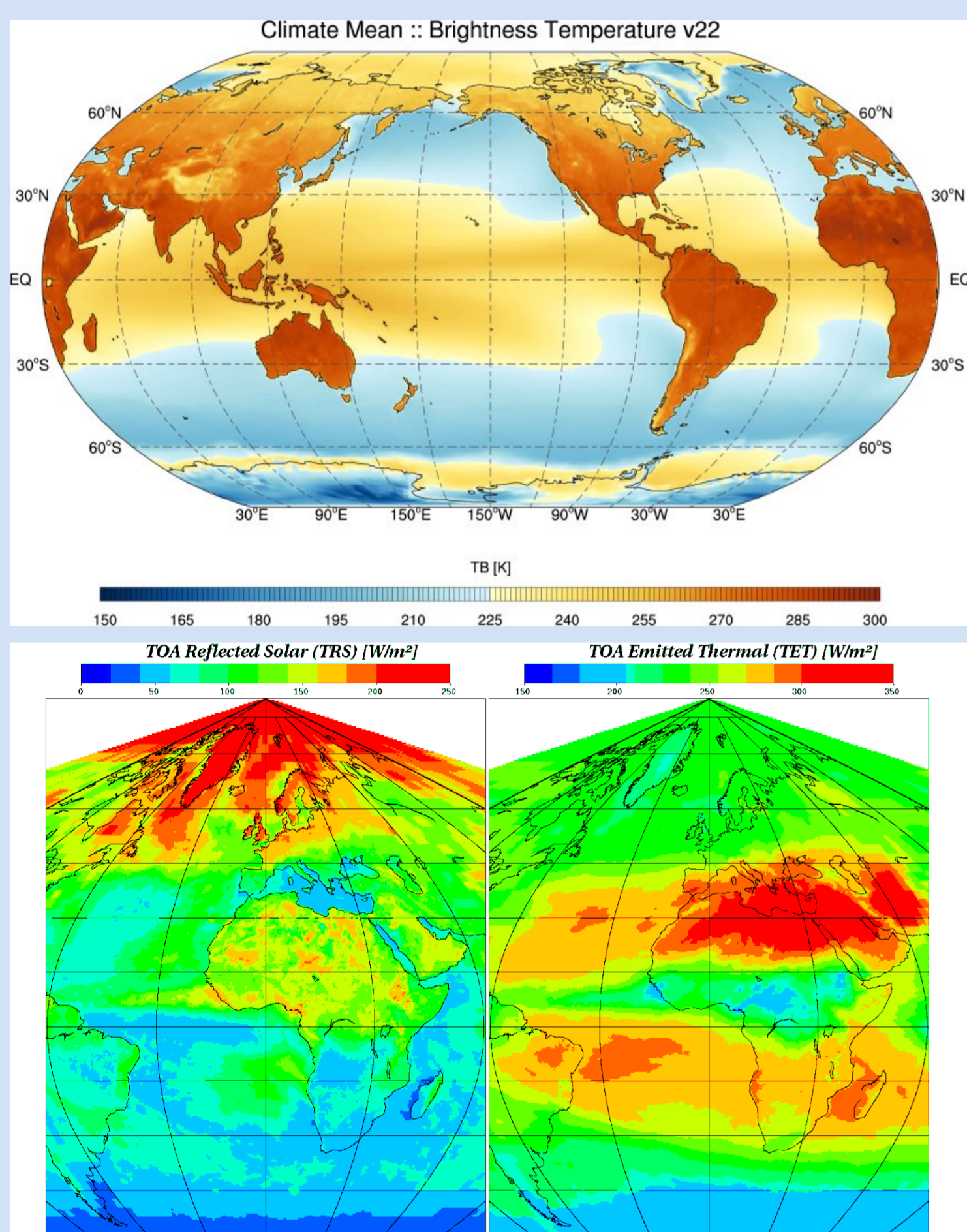
Table 2: List of CM SAF CDRs to be released in CDOP-2 until 2017

## To be released until 2017...

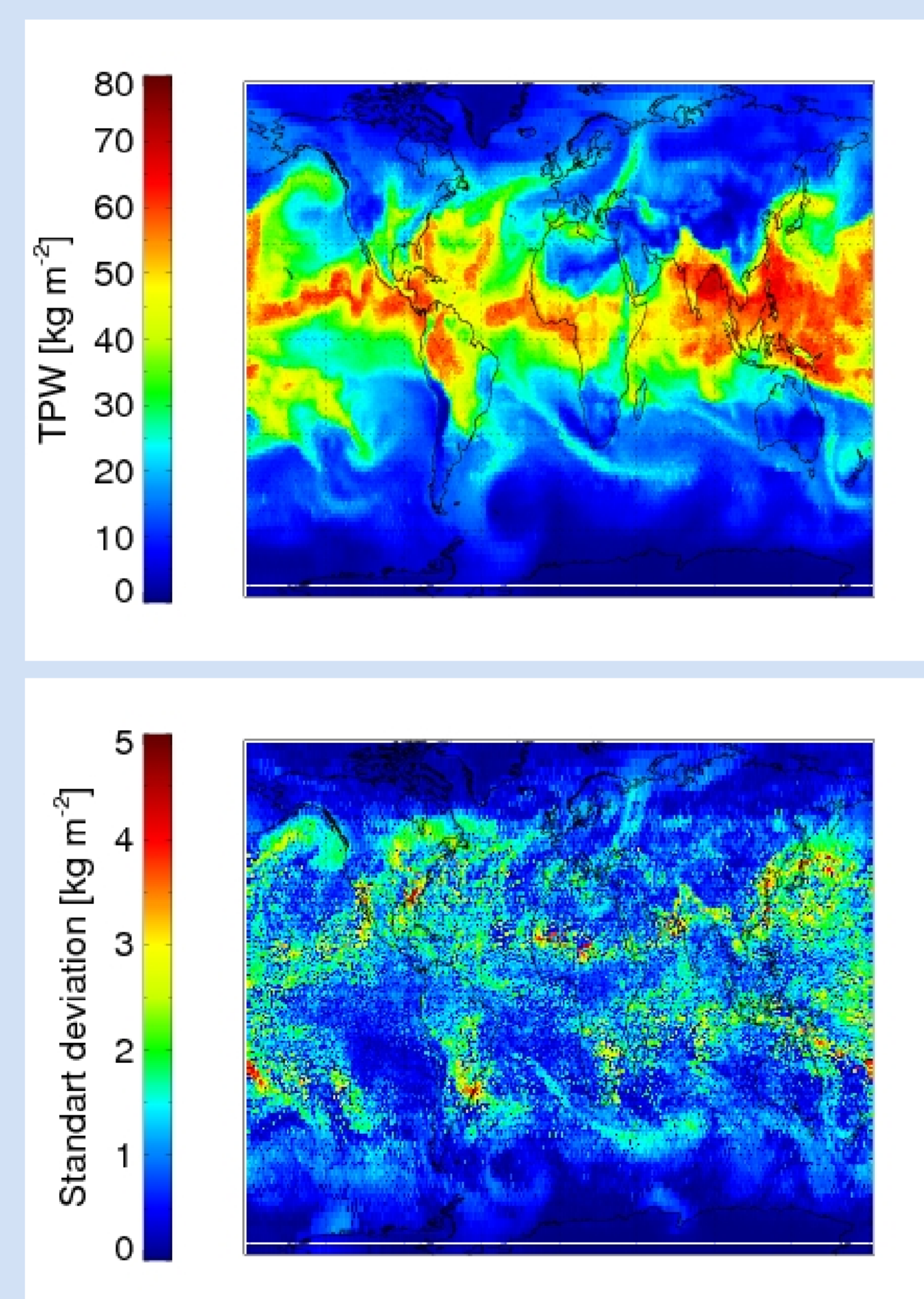
During CDOP-2 (2012-2017), CM SAF will continue to develop capabilities for a sustained generation and provision of CDRs derived from operational meteorological satellites. In particular, the generation of long term data sets will be pursued. CM SAF will update several already released CDRs and will provide CDRs of additional parameters after careful validation and review of the data sets. The data sets will be based on carefully calibrated and inter-calibrated data. A list of parameters and planned release dates for the CDRs is given in Table 2.

## User Help Desk

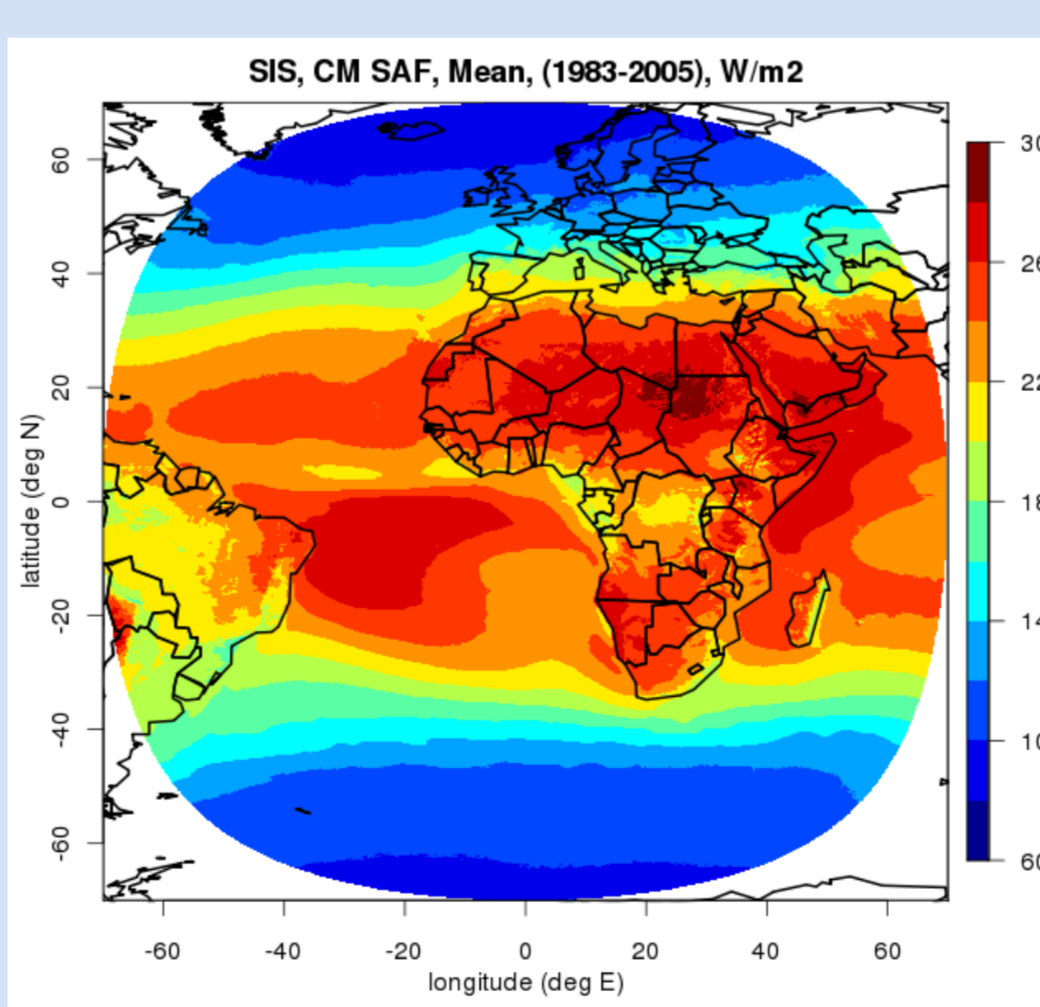
Data can be ordered through the CM SAF webpage [wui.cmsaf.eu](http://wui.cmsaf.eu). Data are provided free of charge to any interested user (user registration is mandatory). A Graphical User Interface and data conversion tools (CDO) are provided. A selection of sub-regions and re-projection of data is 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 on [www.cmsaf.eu](http://www.cmsaf.eu).



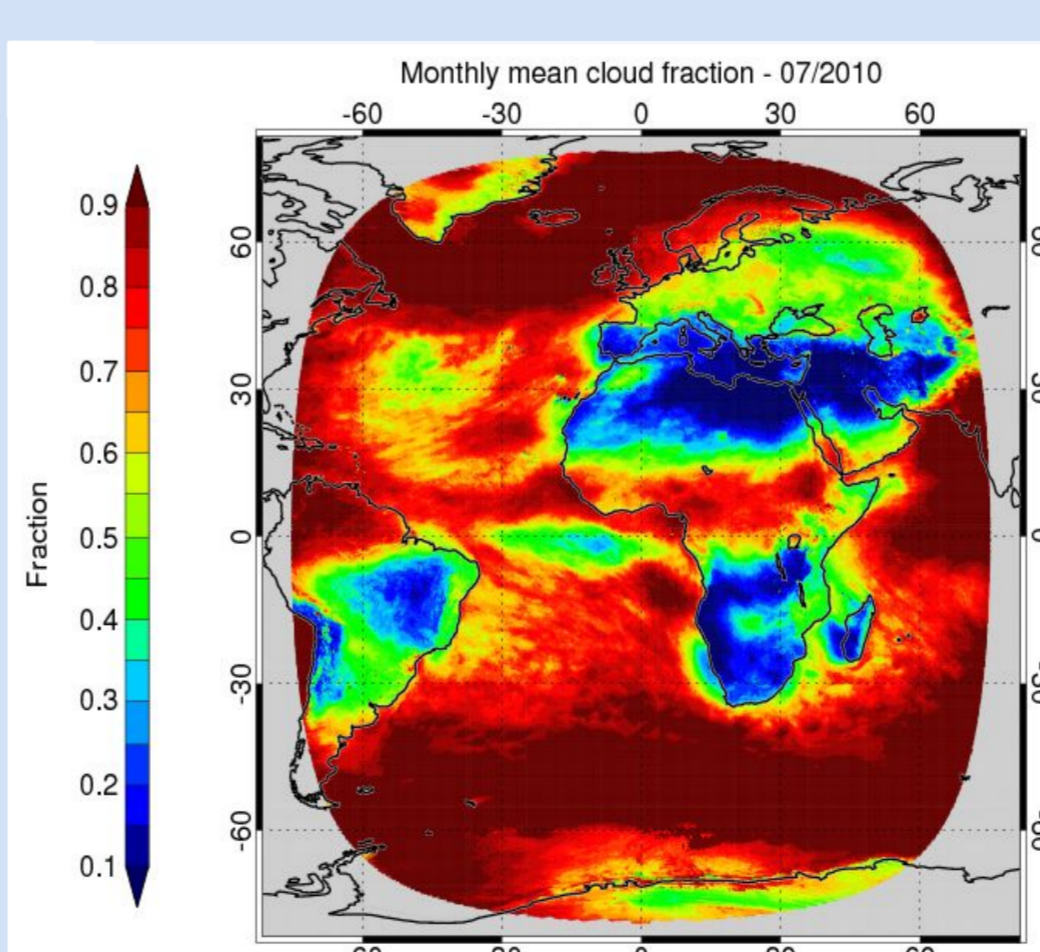
Climatological mean (1992-2008) of SSM/I brightness temperature at 22 GHz ( $\nu$ ) (top), monthly mean of TOA Reflected Solar (left) and TOA Emitted Thermal Radiation derived from GERB+SEVIRI, July 2007 (bottom)



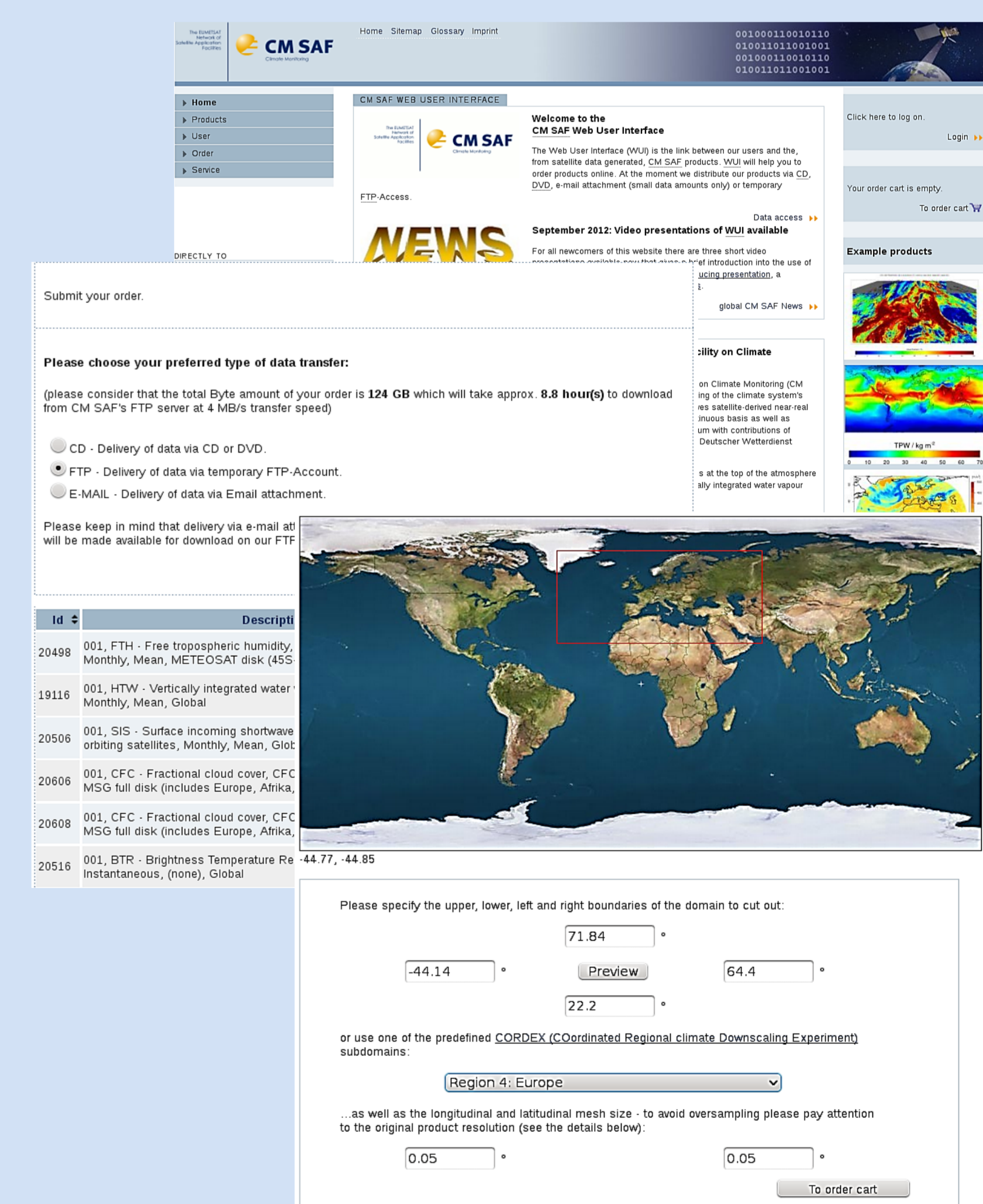
Daily Mean of Total Precipitable Water vapour (top) and its standard deviation (bottom) for 20 Sep 2007 derived from ATOVS



MVIRI based CDR mean of SIS (1983-2005)



Monthly mean of cloud fractional cover as seen by SEVIRI, July 2010 (from Stengel et al. 2013)



Screenshots of ordering process via the CM SAF Web User Interface

Stengel, M., Kniffka, A., Meirink, J.F., Lockhoff, M., Tan, J., Hollmann, R., 2013: CLAAS: The CM SAF cloud property dataset using SEVIRI, Atmos. Chem. Phys. Discuss., 13, 26451-26487, doi:10.5194/acpd-13-26451-2013, 2013.

