CM SAF Newsletter 21
July 2015

Availability of new CM SAF FCDR: Fundamental Climate Data Record of SSM/I / SSMIS Brightness Temperatures

The CM SAF Fundamental Climate Data Record (FCDR) of SSM/I and SSMIS brightness temperatures covers the time period from July 1987 to December 2013 including all available data from the six SSM/I radiometers aboard F08, F10, F11, F13, F14, and F15 and from the three SSMIS radiometers aboard F16, F17, and F18.

The SSM/I part remains unchanged compared to the existing CM SAF SSM/I FCDR (http://dx.doi.org/10.5676/EUM_SAF_CM/FCDR_SSMI/V001).

The new FCDR provides homogenised and inter-calibrated brightness temperatures in a user friendly data format. The improved homogenization and inter-calibration procedure ensures the long term stability of the FCDR for climate related applications. All available raw data records have been reprocessed to a common standard, starting with the calibration of the raw Earth counts, to ensure a completely homogenized data record. The data processing accounts for several known issues with the SSM/I and SSMIS instruments and corrects calibration anomalies due to along-scan inhomogeneity, moonlight intrusions, sunlight intrusions, and emissive reflector. Furthermore, the inter-calibration model incorporates a scene dependent inter satellite bias correction and a non-linearity correction to the instrument calibration. The data files contain all available original sensor data and metadata to provide a completely traceable climate data record. Inter-calibration and Earth incidence angle normalization offsets are available as additional layers within the data files in order to keep this information transparent to the users. The data record is complemented with radiometer sensitivities, quality flags, surface types, and Earth incidence angles.

The data records can be ordered via the Web User Interface (link). More information on the dataset is available from the DOI page
http://dx.doi.org/10.5676/EUM_SAF_CM/FCDR_MWI/V002

Effects of decontamination of Meteosat-10 SEVIRI instrument from 02-08 December 2014 on CM SAF EDR products TRS and TET

The decontamination of the SEVIRI instrument onboard Meteosat-10 affected the processing of the SEVIRI-based CM SAF Environmental Data Records (EDR) of TRS and TET. There are no daily mean products available for the time frame 02-08 December 2014. As a consequence the monthly mean as well as the monthly mean diurnal cycle products are based on a reduced amount of input data for December 2014. Users should be aware of the effects when interpreting the SEVIRI-based EDR products TRS and TET from December 2014.

New feature on annotating data sets on CM SAF DOI page

CHARMe (Characterization of Metadata to enable high-quality climate applications and services) has been a 2-year EU FP7 (SPACE) funded programme. CHARMe aims to link climate datasets with complementary information like publications, user feedback and other relevant annotations (so-called “commentary metadata”).It helps users to learn from previous community experience and select datasets that best suit their needs. It also provides direct traceability between conclusions and the data that supported them. A plug-in developed within the CHARMe project has been implemented at the CMSAF DOI page to link the CHARMe annotation data base and the CM SAF climate data records. Users can find annotations to the CM SAF data sets provided by the data provider as well as by other users and can add their own annotations, e.g., publications, results of assessments or any other comment concerning the respective dataset which might be interesting for other users or the data provider.

Visualization of CM SAF SARAH data set on youtube

Shortly after the release of the data set EUMETSAT prepared a visualisation of the SARAH data set and made it available via YouTube. The visualisation shows the mean average surface irradiance from 1983 to 20113 of areas in Africa.

Case study using CM SAF SARAH dataset

Features seen in the CM SAF climate data sets haven been explained by looking at real-time data in a case study performed by a member of the Latvian Meteorological Service. In this case study the CM SAF SARAH dataset (see Newsletter 20) has been used. More details on the case study can be found at the EUMETSAT webpage.

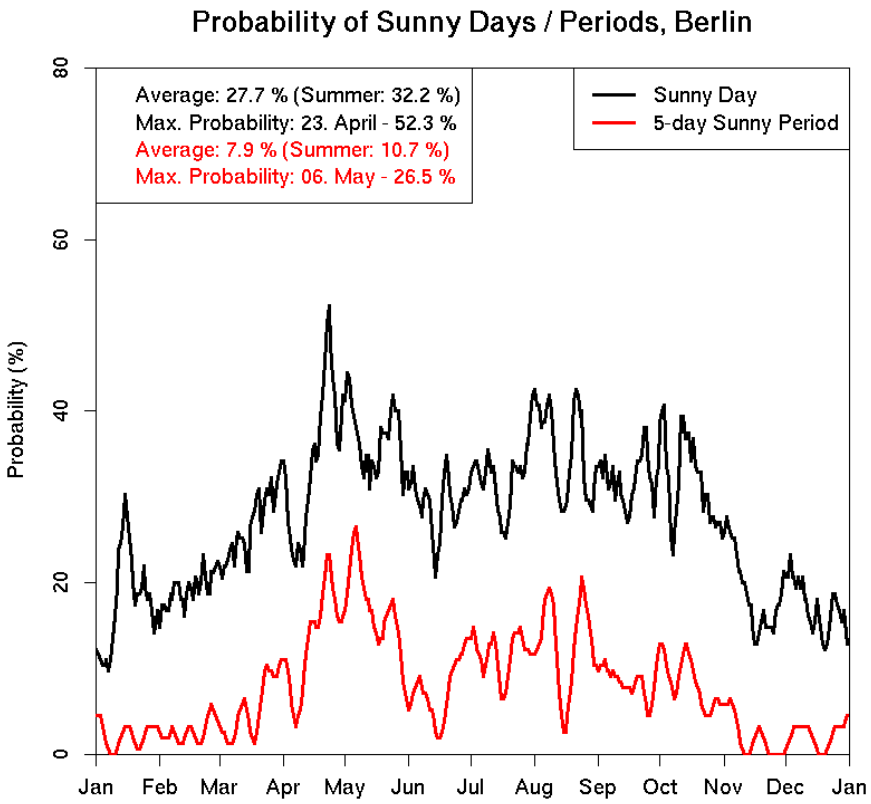
Climatology of Sunny Days in Europe based on SARAH

The CM SAF SARAH data set provides climate-quality data of the surface solar radiation from 1983 to 2013, i.e., for more than 30 years. This long term data record allows for climatological analyses of the surface solar radiation.

In cooperation with the University of Frankfurt, Institute for Atmospheric and Environmental Sciences, the CM SAF has derived the climatological annual cycle of sunny days in Europe. For each day of the year the probability for a sunny day was calculated and is made available for selected European cities.

For each city, this analysis indicates certain periods during the year with a higher or lower likelihood of being sunny than other periods. While on the shorter-term weather forecasts provide reliable information, this analysis makes available information on the climatological expectations.

The figure below shows an example for Berlin, Germany.



Sunny days for Berlin, Germany, source: DWD

An interactive map of European cities can be accessed via the following link: www.cmsaf.eu/tools > Map sunny days

Release of 'cmsaf' R-package

The 'cmsaf' R-package is now available via CRAN (http://cran.r-project.org/). The package contains a collection of functions for basic analysis and manipulation of CM SAF netcdf formatted data. The operation and functions are inspired by the Climate Data Operatores (cdo).
The 'cmsaf' R-package is part of the CM SAF R TOOLBOX, which consists of the R-package and a set of R-scripts, which are helpful to work with CM SAF netcdf data. There are R-scripts, which can be used to analyse and plot CM SAF netcdf data, and it includes R-scripts, which help unexperienced R-users to easily apply the functions of the 'cmsaf' R-package. The CM SAF R TOOLBOX is freely available on request and in the near future via the CM SAF homepage (www.cmsaf.eu).
The CM SAF R TOOLBOX has proven its worth during the CM SAF Training Workshop, which has been held in Pretoria, South Africa, from 8 – 12 June 2015.

New documents available on the CM SAF webpage

With the release of the new FCDR (see above) new documents became available on the CM SAF webpage in the Documentation section

- Algorithm Theoretical Basis Document (ATBD) :: SSMIS
- Product User Manual (PUM) :: SSMIS
- Validation Report :: SSMIS
- Validation Report Annex :: SSMIS

The next three documents have already been part of the earlier FCDR based on SSM/I only, but are still valid for the SSM/I part of the FCDR

- Algorithm Theoretical Basis Document (ATBD) :: SSM/I
- Product User Manual (PUM) :: SSM/I
- Validation Report :: SSM/I

CM SAF presentations at upcoming conferences

Presentations on CM SAF topics will be given at a number of upcoming conferences presenting the latest results of our work, among others:

- 07-11 Sep 2015, 15th EMS Annual Meeting & 12th European Conference on Applications of Meteorology (ECAM), Sofia, Bulgaria
- 21-25 Sep 2015, EUMETSAT Meteorological Satellite Conference 2015, Toulouse, France
- 20-23 Oct 2015, Earth Observation for Water Cycle Science 2015, ESA-ESRIN, Frascati, Italy
- 28 Oct – 3 Nov 2015, International TOVS Study Conference 20, Lake Geneva, Wisconsin, USA
- 04-05 Nov 2015, 5th G-VAP Workshop, Madison, Wisconsin, USA

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