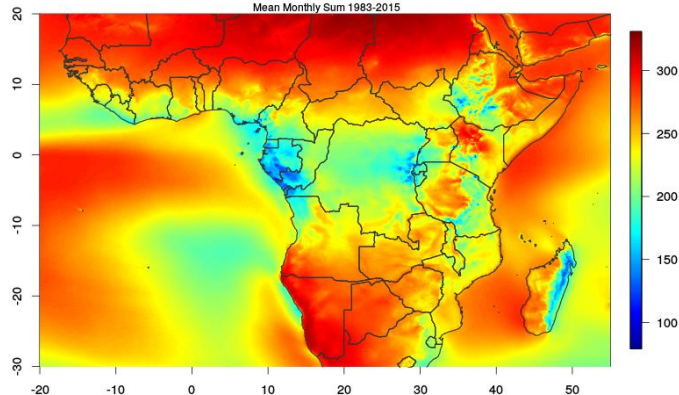




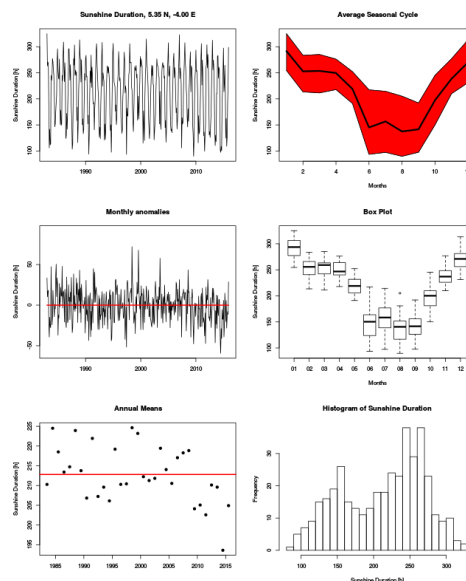
R-based tools for an easy usage of CM SAF NetCDF data

CM SAF Sunshine Duration [h]

Mean Monthly Sum 1983-2015



The CM SAF R TOOLBOX can be used to prepare, analyse and visualize CM SAF NetCDF data.



Overview

In the framework of the CM SAF product and service portfolio, the CM SAF R TOOLBOX and the ‘cmsaf’ R-package were developed as tools for an easy usage of CM SAF NetCDF data. The ‘cmsaf’ R-package contains a collection of more than 50 functions for basic analysis and manipulation of CM SAF NetCDF formatted data. The package is part of the CM SAF R TOOLBOX, which consists of the ‘cmsaf’ R-package and a set of prepared R-scripts, which are helpful to work with CM SAF NetCDF data. There are R-scripts, which can be used to prepare, analyse and visualize CM SAF NetCDF data, and it includes R-scripts, which help inexperienced R-users to apply easily the functions of the ‘cmsaf’ R-package.

Quick start manual

1. Install R
www.r-project.org
2. Install R-Studio
(recommended for R beginners)
www.rstudio.com/products/rstudio/download3/
3. Get CM SAF R TOOLBOX
www.cmsaf.eu/tools
4. Start R or R-Studio and source the script
Install.Packages4Toolbox.R
5. Open a script and edit the User Define Section
if necessary
6. Start the script with source
7. Have fun

Free Data Access & Contact

In case that a question or problem can not be solved by help of the README or the ‘cmsaf’ R-package manual contact the CM SAF User Help Desk.

www.cmsaf.eu/wui

User help desk: contact.cmsaf@dwd.de



Prepare

CM SAF data records can be ordered free of charge via www.wui.cmsaf.eu. The data are provided via ftp as tarball. Use the Prep.Data.R script to:

- Extract
- Unzip
- Select time range
- Select region

CM SAF R TOOLBOX scripts

The CM SAF R TOOLBOX consists of several prepared R-scripts, which require no R or scripting experience. After starting the script the user is guided through all options.

Analyse

The Apply.Function.R scripts serve as an interface to the diversity of functions of the ‘cmsaf’ R-package.

cmsaf R-package

The cmsaf R-package is a collection of functions for basic analysis and manipulation of CM SAF NetCDF data. It contains more than 50 useful functions, such as:

- dayrange – diurnal range
- fldmean – mean of a 2d field
- mon.anomaly – monthly anomalies
- monmean – monthly means
- monsum – monthly sums
- ncinfo – content of a NetCDF file
- remapbil – bilinear interpolation
- seas.anomaly – seasonal anomalies
- seasmean – seasonal means
- sellonlatbox – select a region
- selpoint – extract a point or time series
- timmean – temporal mean
- trend – linear trend
- wfldmean – weighted 2d field mean
- year.anomaly – annual anomalies
- yearmean – annual means
- yearsum – annual sums
- ymonmean – long-term monthly means

Visualize

Scripts for the visualization of CM SAF data are for instance **Plot.Region.R** for plotting 2d arrays or **Analyse.TimeSeries.R** to plot statistical figures of 1d time series. The scripts offer several possibilities of adaptations, but can also easily started using the default settings. The **CMSAF_Visualizer.R** script offers interactive plotting of 3d, 2d and 1d CM SAF NetCDF data.

