The CM SAF R Toolbox for NetCDF data preparation, analysis and visualization

Benjamin Würzler and Steffen Kothe

Deutscher Wetterdienst, Climate and Environment, Offenbach am Main, Germany (benjamin.wuerzler@dwd.de)

R is a free software environment for statistical computing and graphics. It is also a very powerful tool to handle remote sensing data for climatic and atmospheric studies. The mandate of the Satellite Application Facility on Climate Monitoring (CM SAF) is to develop, generate, archive and distribute high-quality satellite-derived products of the energy and water cycle in support to monitor, understand and adapt to climate variability and climate change (www.cmsaf.eu). For the full exploitation of the CM SAF data records the R Toolbox can be used. It is an easy-to-use tool, which helps unexperienced R-user to start working with CM SAF NetCDF formatted data by performing the fundamental steps of data preparation, analyzation and visualization.

The data preparation includes to untar, unzip and merge the data and an optionally temporal and spatial selection. For the analysis and manipulation of NetCDF data the toolbox offers an interface to the 'cmsaf' R-package. This package is a collection of more than 50 operators, which are developed to handle gridded NetCDF data records. This R-package is the core of the functionality of the toolbox. For visualization of CM SAF NetCDF data the toolbox offers a shiny-based interface for interactive plots and a set of specialized prepared R-scripts for the plotting of spatial data or 1D-timeseries.

In the presentation we will introduce the main functions and perform a typical case study from the data preparation until the visualization.