EMS Annual Meeting Abstracts
Vol. 12, EMS2015-175, 2015
15th EMS / 12th ECAM

A new CM SAF Solar Surface Radiation Climate Data Set derived from Meteosat Satellite Observations

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The incoming surface solar radiation has been defined as an essential climate variable by GCOS. It is mandatory to monitor this part of the earth's energy balance, and thus gain insights on the state and variability of the climate system. In addition, data sets of the surface solar radiation have received increased attention over the recent years as an important source of information for the planning of solar energy applications.
The EUMETSAT Satellite Application Facility on Climate Monitoring (CM SAF) is deriving surface solar radiation from geostationary and polar-orbiting satellite instruments. While CM SAF is focusing on the generation of high-quality long-term climate data records, also operationally data is provided in short time latency within eight weeks.
Here we present SARAH (Solar Surface Radiation Dataset – Heliosat), i.e. the new CM SAF Solar Surface Radiation data set based on Meteosat satellite observations. SARAH provides instantaneous, daily- and monthly-averaged data of the effective cloud albedo (CAL), the direct normalized solar radiation (DNI) and the solar irradiance (SIS) from 1983 to 2013 for the full view of the Meteosat satellite (i.e, Europe, Africa, parts of South America, and the Atlantic ocean). The data sets are generated with a high spatial resolution of 0.05 deg allowing for detailed regional studies, and are available in netcdf-format at no cost without restrictions at www.cmsaf.eu.
We provide an overview of the data sets, including a validation against reference measurements from the BSRN and GEBA surface station networks.