



SARAH - A new homogeneous climate data record of surface radiation

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Long-term observations of the surface radiation budget and cloud radiation properties are crucial for climate monitoring. Ground-based measurements provide accurate information for specific sites, but only satellite observations and data from reanalysis can provide consistent spatial information on the surface radiation budget for climate monitoring, in particular in regions with limited coverage of well maintained ground based measurements (e.g. ocean, Africa).

Here, we present the new release of solar surface irradiance and cloud albedo derived from geostationary Meteosat imagery (1983 to 2013) within the EUMETSAT Satellite Application Facility on Climate Monitoring (CM SAF). The first release of the data set is widely used, e.g. in the solar energy community (e.g. PVGIS, <http://re.jrc.ec.europa.eu/pvgis>) and for validation of numerical weather prediction (e.g. ECMWF, DWD).

The data set has a high temporal (hourly, daily and monthly means) and spatial resolution (0.05x0.05 deg) and is available free of charge from www.cmsaf.eu. The data cover Europe, Africa and the surrounding oceans. The quality of the data have been evaluated with surface measurements and compared with other satellite-based data sets. Respective results will be briefly presented. It will be shown that the CM SAF data set is well suited for climate monitoring, e.g for monitoring and analysis of extremes and trends. Within this scope key applications of the data will be presented. These include the analysis of radiation processes, extremes (heat waves) and trends for Europe, Africa and the ocean as well as solar energy applications.