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Forecasting the weather
- ensemble techniques
in probabilistic weather prediction

A new satellite-based surface solar irradiance data set for climate analysis.

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Long-term observations of the surface radiation budget are crucial for climate monitoring. Ground-based measurements locally provide accurate information of the solar and thermal surface radiation budgets. However,
only satellite observations and data from reanalysis can provide consistent information on the surface radiation budget for climate monitoring in regions with limited coverage of well maintained ground based measurements (e.g. ocean, Africa).
Here, we present a new data set of the solar surface irradiance derived from geostationary Meteosat measurements from 1983 to 2005 within the EUMETSAT Satellite Application Facility on Climate Monitoring (CM SAF). The data set has a high temporal (hourly, daily and monthly means) and spatial (0.03 x 0.03 degree) resolution and is available free of charge from www.cmsaf.eu. The quality of this data have been evaluated with surface measurements and compared with other satellite-based data sets (e.g., GEWEX, ISCCP, ERA-Interim). 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.
First applications of this new data set will be presented. These include the analysis of the solar surface irradiance in regions with limited coverage by surface stations, e.g., in Africa and over the oceans. The high spatial resolution of the data set will be used to focus on regional aspects of the surface radiation climatology.