



The CAMS radiation service in a nutshell

Marion Schroedter-Homscheidt (1), Antti Arola (2), Niels Killius (1), Mireille Lefevre (3), Laurent Saboret (4), William Wandji (2), Lucien Wald (3), and Etienne Wey (4)

(1) DLR, German Remote Sensing Data Center, Oberpfaffenhofen, Germany (marion.schroedter-homscheidt@dlr.de), (2) Finnish Meteorological Institute (FMI), (3) Armines, (4) Transvalor S.A.

The atmosphere service of Copernicus combines state-of-the-art atmospheric modeling on aerosols with Earth observation data to provide information services covering European air quality, global atmospheric composition, climate, and UV and solar energy. Besides the radiation service, it provides information on – among others – ultra-violet radiation and aerosol concentration on a global scale as parameters being of interest for the solar energy sector.

Within the radiation service, existing historical databases HelioClim-3 and SOLEMI for monitoring incoming surface solar irradiance have been further developed. The new service is jointly provided by DLR, Armines, and Transvalor. The Monitoring Atmospheric Composition and Climate (MACC) project series has been preparing for the service provision, which is now operational as part of the Copernicus programme. Data are made available both via the Copernicus portal and the SODA portal.

The radiation service consists of an all-sky radiation time series service taking satellite-based cloud parameters into account and a clear-sky radiation time series service for cloud-free skies. Quality of the service is ensured by regular input quality control, regular quarterly benchmarking against ground stations, and regular monitoring of the consistency in order to detect possible trends.

The fast clear-sky model called Copernicus McClear implements a fully physical modeling replacing empirical relations or simpler models used before. It exploits the recent results on aerosol properties and total column content in water vapor and ozone produced by the Copernicus service. Details of the clear-sky radiation service are the same as the all-sky service, but the spatial coverage is global and any point of interest can be interpolated. Data elements provided are clear sky (i.e. cloud free) global, direct, diffuse and direct at normal incidence irradiances, and a verbose mode with all atmospheric input parameters used for clouds, aerosols, ozone, water vapor and the surface reflective properties.

The paper will summarize the new service capabilities and illustrate quality control and validation results.