



The surface radiation budget from the CM-SAF: Validation of short- and long-wave data sets

H. D. Behr, R. Hollmann, R. W. Müller, and A. Gratzki
Deutscher Wetterdienst, Hamburg, Germany

(hein-dieter.behr@dwd.de / Phone: +49 40 6690 1461 / Fax: +49 40 6690 1499)

Since January 2005, the CM-SAF generates, archives and distributes high-quality satellite-derived products relevant for climate monitoring in operational mode. (CM-SAF, <http://www.cmsaf.dwd.de>), i.e. consistent cloud and radiation products in high spatial resolution for an area covering Europe and parts of the North Atlantic. The mandate of the CM-SAF is climate monitoring at regional scale, realised by generation of validated, homogeneous and consistent data sets with long term processing and reprocessing capability.

The cloud and surface radiation products are based on data from polar orbiting satellites NOAA, and since October 2005, from MSG (METEOSAT-8), in addition. The surface radiation product suite covers the short- and long-wave fluxes as well as radiation budgets and the surface albedo as well. Monthly means, daily means and monthly mean diurnal cycle (MSG only) are retrieved in $15 \times 15 \text{ km}^2$ resolution.

As the algorithms for processing the satellite data were presented at EGU-2005 (Hollmann et al., EGU05-A-07821) the focus of this paper will be the validation of the individual radiation components. Short- and long-wave radiation components recorded at the measuring sites of Payerne, Carpentras, Cabauw, Lindenberg, and Belsk were used for the validation of the satellite derived data on hourly and daily mean scale. As there are two full years of data pairs available for validation now, it is the right time to present relevant results. The goal of the validation procedure is to improve the algorithms for the evaluation of satellite derived products and vice versa to track the effect of their improvements. First results can be given here: the bias of the short-wave components (monthly means) are about $3\text{-}4 \text{ W/m}^2$, for the long-wave (monthly

means) about 9-10 W/m², i.e. the „target accuracy“ of 10 W/m² for monthly means (SIS,SOL,SDL) is in general achieved. Nevertheless, there are still some problems in the Alpine region, especially for the long-wave radiation. An implementation of an altitude correction will be developed additionally. On the other hand there is a striking improvement in our validation results using the MSG-data since October 2005: the target accuracy of the bias can be reduced to 5 W/m².