



Trends in the CM SAF surface solar radiation records over Europe validated using a homogenized surface dataset

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A widespread increase of surface solar radiation (SSR) has been well established and documented since the mid-1980s in many regions of the world. This increase in SSR has been defined as “brightening period”, although this phenomenon still has some uncertainties, due to for example the lack of SSR series. Satellite-derived SSR offers an alternative to fill this gap. In this work, the trends of a validated SSR dataset derived from the Satellite Application Facility on Climate Monitoring (CM SAF) over Europe (period 1983-2005) are presented. The CM-SAF SSR product is compared against a homogeneous dataset of surface observations. The validation of the means shows an excellent agreement between both datasets, with only a slight overestimation of the CM SAF records as compared to the surface observations. The temporal stability of the CM SAF SSR is checked against the surface data, and the results point to possible inhomogeneities in the CM SAF records around 1987 and 1994. Consequently, the assessment of the trends in the SSR derived from CM SAF is only suitable for the records after 1994. Overall, the trends of the SSR, over this subperiod 1994-2005, highlight a widespread increase in the major part of Europe, especially in the central and northern regions, with interesting spatial and temporal variations throughout the year.