



Trends and variability of radiation and clouds based on CM SAF's satellite climate data records

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The EUMETSAT Satellite Application Facility on Climate Monitoring (CM SAF) generates satellite-based, high-quality climate data records, with a focus on the energy balance and water cycle. Here, multiple of these data records are used to assess their consistency in trends and variability. This multi-parameter analysis focuses on Europe and covers a time period of at least 25 years.

The climate data records of surface solar radiation, top-of-atmosphere radiation and cloud fraction are analyzed in a common framework to check the consistency of spatial trends among different data records and parameters.

Various statistics are presented and trends are also compared against ground-based measurements. It will be shown that there is a good agreement between trends in surface solar and top-of-atmosphere radiation. Positive trends in surface solar radiation are accompanied by negative trends in cloud fractional cover. However the observed trends show remarkable seasonal and spatial variability.

This contribution will not only give new insights on the quality and consistency of CM SAF's climate data records, but will also contribute to the ongoing research on possible reasons for the observed brightening in Europe during the last 3 decades.