



Long-term seasonal variations of surface solar radiation in Europe

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This study is an analysis of the seasonal surface long-term solar radiation variability in Europe beginning in 1960 through the present time using observations from the Global Energy Balance Archive (GEBA). This dataset provides more than 50 years of surface radiative parameters and has been used for validating satellite remote sensing algorithms, radiative transfer models, and to study radiative budget processes at the surface. In particular, the surface solar radiation variability over a global scale has been studied in detail and a decrease in its evolution has been discovered from the 1960's through the 1980's for most sites. Also, an increase since the 1980's have been found which is now referred to as the brightening of this radiative parameter. Using the solar irradiance observations from the GEBA dataset, the time series of their seasonal variations from individual sites as well as regional averages will be presented and references to the decrease and increase from past studies will be used as a comparison. The annual variability will also be evaluated for comparison to the seasonal changes to detect any seasonal characteristics. Linear regression analyses will be used to infer these changes and access any temporal and spatial variability in this radiation parameter.