



Climatological Analysis of Solar Surface Irradiation Data Sets for Central Europe

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There are indications that extreme anomalies of surface incoming solar radiation (SIS) during summer in Europe occur during years, in which the entire seasonal cycle of SIS is above or below average. I.e. an above (below) average solar irradiation early in the year is often proceeded by an above (below) average solar irradiation during summer.

Different data sets of solar surface irradiation have been evaluated regarding their ability to address the above hypothesis. According to the evaluation results the Heliosat solar irradiation data, based on observations from the Meteosat satellite, are used to analyse the period from 1995 to 2005. For the analysis of the time period 1958 to 2001, ECMWF's re-analysis dataset ERA-40 is used.

The annual cycles of the entire time period (1958 to 2005) as well the average annual cycle of this 48 year period are calculated for Central Europe. The years with annual cycles clearly above (below) average are selected and means of the solar irradiation for the summer season are determined. An acknowledgement of the above hypothesis would justify further research to find a) correlations between solar irradiation and other meteorological / climatological parameters and b) an approach to statistically forecast the (characteristic of) summer solar irradiation in Europe based on observational data.