



Determination of surface radiation anomalies

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In the framework of the "SAT-KLIM" project, the German Meteorological Service is aiming at the operational use of satellite based data for climate monitoring. In order to prepare an operational monitoring of surface radiation products this study presents the computation of anomalies of the shortwave and longwave components of earth radiation budget at the surface. The fundament for the computation of anomalies was the creation and test of a longtime reference climatology. Basis for this climatology was the NASA Langley SRB surface radiation budget dataset. In the future it is aspired to use products for radiation budget components of the CM-SAF (Satellite Application Facility on Climate Monitoring) at the German Meteorological Service. For the characterisation of the anomalies we chose the terzile illustration, which is often used for seasonal predictions. From the more than 20 years radiation datasets an upper and lower terzile was determined for every month of the year. This allows to say that the compared monthly average lies within, above or under theses terzile limits. Because of the sampling problem the determination of terziles from a 22 years dataset is afflicted with some uncertainties, as shown with longterm ground station data. For that reason we used a bootstrap technique to determine the 90% confidence intervals of the terziles for every pixel of the investigation area. By means of some examples we showed the importance of the used reference and the influence of the method to compute the terzile limits on the determination of anomalies. The developed anomaly product offers the possibility to get a fast survey about the regions where a particular component of the radiation budget of a month is higher, lower or within average. With the help of some examples we showed in what way this product could be a useful

instrument for climate monitoring.