



## Cloud Albedo - A forgotten Essential Climate Variable ?

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The cloud albedo plays a dominant role in the Earth's radiation and hence energy budget. Without clouds the Earth's albedo would be halved. As a consequence, the reflected Solar energy would drop from 100 to 50 W/m<sup>2</sup> and the absorbed Solar energy would increase from 240 to 290 W/m<sup>2</sup>. In a non-cloud earth this effect could only partly be compensated by an increase of the emitted thermal radiation, which would rise from 230 to 270 W/m<sup>2</sup>. This numbers game illustrates that the cloud albedo leads to a net cooling effect which is approximately 5 times higher as the direct greenhouse effect. Changes in the cloud albedo would significantly affect the climate on a global and regional scale. Monitoring the cloud albedo is therefore a quite important task. So far there has been only little emphasis on cloud albedo, e.g. the cloud albedo is not part of the ISCCP data set and has entered the CM-SAF cloud product suite quite recently.

The very nice feature of the cloud albedo is its clear and strong signal in the visible spectrum. The cloud albedo can therefore be retrieved in high accuracy also from the first generation of Meteosat satellites. This provides the opportunity to generate a long time series of the cloud albedo. Here, the climate version of the well established Heliosat method is applied in order to retrieve a 25 year time series of the cloud albedo and to ensure the homogeneity of the time series across different Meteosat satellites. The method for the retrieval of the long time series of cloud albedo will be briefly described. The main focus of the presentation will be the analysis and discussion of trends in the cloud albedo and their effect on the climate, including the role on global brightening and dimming.