



## **The effect of ancillary data on components of the earth's radiation budget as computed from satellite measurements**

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Various ancillary data, describing the radiative transfer properties of the atmosphere and of the Earth's surface, are required to determine the cloud field properties within the atmosphere and the radiation budget components at its boundaries from related satellite measurements. These is in particular. information on the surface reflectance and skin temperature to identify clouds and aerosols in the troposphere. Vertical profiles of atmospheric gas concentrations and of the aerosols as well are often proscribed from direct sampling over a small ensemble of areas. Most quantities undergo in particular over continents strong diurnal variations.

Such information on quantities, which often vary strongly in space and time, needs also be derived from satellite measurements. Thus it is expected that it contains systematic errors and also artefacts which are expected to propagate into the final results on the Earth's cloud fields and radiation budget components.

With examples from the International Satellite Cloud Climatology Project (ISCCP), from the GEWEX Surface Radiation Budget Project (SRB) and the Cloud and Radiation Experiments (CERES), which all aim for global fields and long time series, we were able to identify error sources, which if not corrected already lead to erroneous conclusions in the interpretation of time series.

During the presentation several examples will be discussed including also methodological errors (e.g. computation of the insolation at the Top of the Atmosphere and of

the Pinatubo aerosol clouds). We conclude, that at least all data of these three projects need to be re-analysed preceded by a reanalysis of all ancillary data. This conclusion hold also for all other project making use of the results of all three projects including the retrieval of aerosols from satellite measurements. The presently available data sets of all three projects should not yet be used for analyses of longer time series.

Our efforts are part of a complete assessment of all GEWEX cloud and radiation products.