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Evaluation of 28 years of CM SAF global cloud products derived from AVHRR

M. Lockhoff (1), M. Stengel (1), A. Kniffka (1), F. Kaspar (1), and K.-G. Karlsson (2)

(1) Deutscher Wetterdienst (DWD), Offenbach, Germany (Maarit.Lockhoff@dwd.de), (2) Swedish Meteorological and Hydrological Institute (SMHI), Norrköping, Sweden

The Satellite Application Facility on Climate Monitoring (CMSAF), as part of EUMETSAT's SAF network, provides satellite-derived data sets of energy and water cycle related geophysical parameters and thereby contributes to the operational monitoring of the climate system. Recently the processing of the first global data set of cloud and surface radiation products based on AVHRR (Advanced Very High Resolution Radiometer) GAC (Global Area Coverage) data has been completed. The data set is based on homogenised and inter-calibrated radiances from AVHRR-2 and AVHRR-3 instruments and covers the years 1982 to 2009.

In this study the focus is on the evaluation of the derived cloud fractional coverage and cloud top height information. The AVHRR-GAC data set is compared with cloud observations made at meteorological surface stations (synoptic observations), other satellite-based cloud products such as ISCCP (International Satellite Cloud Climatology Project) as well as with ECMWF Interim Re-Analysis (ERA interim) products. Special emphasis is put on the evaluation of the temporal stability of the AVHRR-GAC data set. Furthermore regional characteristics of the two cloud parameters are intercompared between the different data sets.