IRS2012-78-1
International Radiation Symposium 2012
Dahlem Cube, Berlin, Germany, 06 – 10 August 2012

Outcome of the Third Cloud Retrieval Evaluation Workshop

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Accurate measurements of global distributions of cloud parameters and their diurnal, seasonal, and inter-annual variations are needed to improve the understanding of the role of clouds in the weather and climate system, and to monitor their time-space variations. Cloud properties retrieved from satellite observations, such as cloud vertical placement, cloud water path and cloud particle size, play an important role such studies. In order to give climate and weather researchers more confidence in the quality of these retrievals their validity needs to be determined and their error characteristics need to be quantified. The purpose of the Cloud Retrieval Evaluation Workshop (CREW), which was held from 15-18 November 2011 in Madison, Wisconsin, USA, is to enhance our knowledge on state-of-art cloud properties retrievals from passive imaging satellites, and pave the path towards optimising these retrievals for climate monitoring as well as for the analysis of cloud parameterizations in climate and weather models. CREW also seeks to observe and understand methods that are used to prepare daily and monthly cloud parameter climatologies.

An important component of the workshop is the discussion on the results of the algorithm and sensor comparisons and validation studies. Hereto a common database with about 12 different cloud properties retrievals from passive imagers (MSG, MODIS, AVHRR, POLDER and/or AIRS), complemented with cloud measurements that serve as a reference (CLOUDSAT, CALIPSO, AMSU, MISR), was prepared for a number of “golden days”. The passive imager cloud property retrievals were inter-compared and validated against Cloudsat, Calipso and AMSU observations. In our presentation we will summarize the outcome of the inter-comparison and validation work done in the framework of CREW, and elaborate on the reasons for the observed differences. More in depth discussions were held on retrieval principles and validation, and the utilization of cloud parameters for climate research. This was done in parallel breakout sessions on cloud vertical placement; cloud physical properties, and cloud climatologies. We will present the recommendations of these sessions, propose a way forward to establish international partnerships on cloud research, and summarize the actions defined to tailor the CREW activities to missions of international programs, such as the Global Energy and Water Cycle Experiment (GEWEX) and Sustained, Co-Ordinated Processing of Environmental Satellite Data for Climate Monitoring (SCOPE-CM). Finally, attention will be given to increase the traceability and uniformity of different long-term and homogeneous records of cloud parameters.