



Evaluation of the EUMETSAT Meteosat Surface Albedo Climate Data Record

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Understanding the climate system, with its variability and changes, requires a joint long-term international commitment from research and governmental institutions. The Global Climate Observing System (GCOS) formulated scientific requirements for the needed global observations and products including a list of relevant parameters, the so called Essential Climate Variables (ECVs). The Sustained and Coordinated Processing of Environmental Satellite Data for Climate Monitoring (SCOPE-CM) activity, is answering to these requirements by establishing an international network of facilities to ensure a continuous and sustained generation of high-quality Climate Data Records (CDR) from satellite data in compliance with the GCOS principles and guidelines. Currently, SCOPE-CM represents a partnership between operational space agencies to coordinate the generation of CDRs.

Within the SCOPE-CM framework the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) has generated the Meteosat Surface Albedo (MSA) Climate Data Record that comprises up to 25 years (1982-2010) of continuous surface albedo coverage for large areas of the Earth. As part of the SCOPE-CM activity on land surface albedo, involving the operational meteorological satellite agencies in Europe (EUMETSAT), in Japan (JMA: Japanese Meteorological Agency) and in the USA (NOAA: National Oceanic and Atmospheric Administration), the MSA CDR contributes to the creation of a global harmonised surface albedo record derived from all satellites in geostationary orbit.

This presentation discusses the results of an evaluation study for the MSA CDR that has been performed by independent researchers in Europe and the US. The MSA CDR has been evaluated in terms of its internal consistency, its compatibility to other satellite-derived surface albedo products, its validity against in-situ observations of superior quality, and its temporal homogeneity. The evaluation of the MSA data record has revealed a number of specific strengths and weaknesses that will be outlined in the presentation. The study showed that the MSA data record agrees well with corresponding values from satellite-derived and ground-based observing systems under many observation conditions. The long-term consistency is very high and meets the GCOS stability requirements for desert reference sites. It also meets WMO observing thresholds requirements (provided by the WMO Rolling Review of Requirements process) for spatial and temporal resolution as well as uncertainty. Some issues of the MSA CDR quality concerning cloud detection and aerosol related effects were also reported. While the strengths underline the already high value of the MSA CDR for climate applications, the weaknesses need to be considered for specific applications and will be addressed in the context of a future re-processing within SCOPE-CM. The recommendations devised by the independent experts strongly support the improvement of the MSA CDR quality and its utility.