



Consistency evaluation of surface albedo derived from couples of adjacent geostationary satellites

A. Lattanzio (1) and Y.M. Govaerts (2)

(1) MakaluMedia, Darmstadt, Germany

(2) EUMETSAT, Darmstadt, Germany

An algorithm to derive nearly global surface albedo maps from any geostationary satellites has been developed at EUMETSAT. This algorithm relies on the method proposed by Pinty et al. which characterizes simultaneously the surface anisotropy and atmospheric scattering properties, explicitly accounting for the radiative coupling between these two systems. The proposed approach relies on a daily accumulation of geostationary observations acquired at different illumination conditions to document the angular effects. This algorithm assumes that the reciprocity principle can be applied at a spatial resolution of a few kilometers, i.e., the typical resolution of the geostationary radiometers. Additionally, the daily accumulation principle is very demanding in terms of image rectification accuracy. The objective of this study is to evaluate the consistency of surface albedo product derived from pairs of adjacent satellites, i.e., GOES 8 and 10 located at 75W and 135W respectively and Meteosat-5 and -7 located at 0 and 63E. This study is motivated by the need (i) to verify the algorithm reciprocity assumption, (ii) to assess the impact of the data radiometric accuracy on the retrieved product. The assessment of the consistency is based on the comparison of the albedo retrieved over the common area observed by two adjacent spacecrafts. The differences in surface albedo are checked against its estimated retrieval error, establishing in this way an absolute consistency process. The results show that the surface anisotropy correction is accurate and consistent between two adjacent spacecrafts, demonstrating thereby the veracity of the reciprocity assumption. Further efforts are still necessary to check the consistency between the Meteosat and GOES satellites, but it requires first of all accounting for the spectral difference between the GOES and Meteosat radiometers. This issue will not be addressed in this presentation.