

A COMPARISON OF TOTAL SHORTWAVE SURFACE ALBEDO RETRIEVALS FROM MODIS AND TM DATA

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ABSTRACT:

Total shortwave albedo is one key variable controlling the radiation energy budget of the land surface. Thus, the monitoring of its spatial and temporal variations is one important issue e.g. for the application of climate models. Routine albedo products are available from the MODIS sensor, e.g. MODIS MCD43A3 as 16 days 500-meter combined product generated from Terra and Aqua data. Furthermore, surface spectral reflectances from monotemporal multispectral sensor data may be used to estimate broadband albedos using conversion formulae that have been developed for a number of sensors. Mismatches between different albedo products may arise e.g. from the atmospheric correction process, different scan view geometries, BRDF adjustments, the range of wavelengths used or the particular narrowband to broadband conversion formulae. In this study, albedo retrievals from TM data and MODIS data/products were analysed for their consistency. In detail, the following MODIS products were considered: MOD09 - daily bidirectional surface reflectance, MCD43A4 - 16-day composite of nadir BRDF-adjusted reflectance, and MCD43A3. To allow a comprehensible comparison between TM and MODIS, TM data have been aggregated to 500m MODIS resolution after smearing by the MODIS Point Spread Function (PSF). The analysis was performed for different study areas and acquisition periods, which resulted in different levels of consistency and thus uncertainties associated with the particular products.

TOPIC: Multi-spectral and hyperspectral remote sensing

ALTERNATIVE TOPIC: Multi-spectral and hyperspectral remote sensing