Methods for the correction of bidirectional reflectance uncertainties present in Meteosat Second Generation data.

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The Spinning Enhanced Visible & InfraRed Imager (SEVIRI) aboard the Meteosat Second Generation (MSG) platform rec7ords the radiance field scattered from the Earth in a number of spectral bands with a 15 minute sampling interval at resolutions no greater than 3km per pixel. The high temporal resolution of SEVIRI allows examination of diurnal variation in the radiance due to changing solar illumination conditions. It is clear from such an examination that the measured radiance experiences a large diurnal variation, something that must be accounted for to maximize the usability of data gathered from SEVIRI. To this end, we have begun exploring the application of the MODIS Bidirectional Reflectance Distribution Function (BRDF) code in order to reduce the diurnal effects across the African continent. This allows us to use a time series of SEVIRI data to produce a number of BRDF parameters that allows normalization of the measured radiances to a preselected set of geometrical conditions, most commonly the Nadir BRDF-Adjusted Reflectance (NBAR) overhead view. This kernel driven model is routinely applied to MODIS data in an operational capacity and has been extensively validated to ensure accuracy under a wide range of conditions. Initial results suggest that applying the MODIS code to the MSG data can dramatically decrease the diurnal effects in areas of Africa that provide a number of cloud-free looks per day. However, some limitations in this method are noticeable in areas around the sub satellite point. An investigation into these problematic areas will be presented along with a comparison of corrected and uncorrected radiance data.

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