



A note on optical properties of plant functional types employed in land surface modeling and weather and climate research

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Vegetation optical properties have a direct impact on canopy radiation absorption and scattering and are thus needed for modeling surface fluxes. Although Plant Functional Type (PFT) classification varies between different land surface models, they all must specify optical properties of their PFTs. The aim of this study is to revisit the ‘time-invariant optical properties table of SiB’ (later referred as ‘SiB-table’) presented 30-years ago (in 1989) by Dorman and Sellers, which have been adapted to suit different land surface models such as Community Land Models (CLMs) or land surface model developed at the Institut d’Astronomie et de Ge’ophysique Georges Lemaitre (IAGL). The revisit is needed, as some of data underlying the SiB-table is not formally reviewed or published, or is based on earlier research citing even older papers or personal communications (i.e. the validity of the source data cannot be rigorously examined due to a lack of transparency and diversity in methods used to measure or obtain the data). As many of today’s land surface models either rely on the optical properties tracing back to the original SiB-table, or data which are not well-documented or made readily transparent, there is clear need to verify (and confirm or correct) the validity of the PFT-dependent optical properties based on data collected and stored using present-day research norms and documentation standards. We base our assessment of the PFT-dependent optical properties on reputable data stored into openly available online archives using CLM PFT-classification as an example, as it is well known and provides sufficient differentiation between different vegetation covers.