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Consistent partitioning of solar fluxes in the Soil-Vegetation-Atmosphere system from satellite observations: Validation against in-situ FLUXNET observations

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We present and evaluate results from the application of an inversion method conducted using both MODIS and MISR derived broadband visible and near-infrared surface albedo products available during a full seasonal cycle over a variety of selected FLUXNET stations, in particular the Hainich forest site. This method enables us to assimilate operational remote-sensing flux products into a state-of-the-art two-stream radiation transfer scheme suitable for Global Climate Models. The occurrence of snow during the winter and spring seasons is based on the analysis of the MODIS snow-products, the assimilation of which by our package translates into an adaptation of the prior values, both the maximum likelihood and width of the 2-D probability density functions (PDF), characterizing the soil background conditions of the vegetation canopy. Our results illustrate the capability of the inversion package to assess a meaningful partitioning of the solar fluxes between the soil, vegetation and atmosphere layers, as well as, the retrieval of associated two-stream model parameters (such as the effective LAI and the albedo of the vegetation background) along the year despite the rather high variability in the input products. Results from applications conducted over sites characterized by evergreen and deciduous forest canopy systems and incorpo-

rated in the FLUXNET context will be discussed as well.