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Partitioning the solar fluxes in forest canopies in the presence of snow

Bernard Pinty (1), Thomas Lavergne (2), Thomas Kaminski (3), Nadine Gobron (1) and Malcolm Taberner(1)

(1) Global Environment Monitoring Unit, IES, EC Joint Research Centre, TP 440, Ispra, VA 21020, Italy, (2) Norwegian Meteorological Institute, P.O. Box 43 Blindern, Oslo 0313, Norway, (3) FastOpt, Schanzenstrasse 36, Hamburg 20357, Germany.

(Bernard.pinty@jrc.it)

The main goal of this study is to help bridge the gap between available remote sensing products and large-scale global climate models. We present 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. These results are derived for complex geophysical scenarios involving snow occurrence in mid and high-latitude 3-dimensional evergreen and deciduous forest canopy systems. The occurrence of snow during the winter and spring seasons is based on the analysis of the MODIS snow products which assimilation 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 background conditions of the forest floor. Our results illustrate the capability of the inversion package to retrieve meaningful land vegetation fluxes and associated model parameters (such as the effective LAI) along the year despite the rather high variability in the input products. This variability is mostly related to the occurrence and melting of snow which implies drastic changes in the radiative and hydrological properties of the background below the vegetation layer. We will discuss results of the estimated partitioning between the vegetation and soil layers over selected instrumented sites.