

Abstract:

Soil Vegetation Atmosphere Transfer(SVAT) models have been used for a long time to provide realistic descriptions of surface processes in order to simulate energy and water fluxes at the interface soil-vegetation-atmosphere. The initialization of biophysical variables of slow temporal variation, mainly root zone soil water content ($w_{\text{sub } 2/}$) and biomass, has an operational interest in atmospheric and hydrological models since they condition the surface fluxes. Therefore their correct initialization constitutes an important issue for short to medium term meteorological modelling. In this paper a first approach to assimilate remote sensing data in the Interaction Soil Biosphere Atmosphere SVAT model of Meteo-France, modified to account for the carbon dioxide concentration (ISBA-A-gs) [J.-C Calvet, 1998], is addressed in order to describe the slow temporal evolution of $w_{\text{sub } 2/}$ and the biomass. The experimental set-up at the south of Toulouse, SMOSREX (Surface Monitoring of the Soil Reservoir Experiment), is providing continuous data of meteorological forcing, energy fluxes, soil water content, soil temperature profiles and vegetation biomass. Moreover the addition in 2003 of a new very precise radiometer (LEWIS) is supplying radiometric measurements in L-band, reinforced by measurements in the infrared and solar domain by respectively an infrared radiometer and a reflectance-meter. All these continuous measurements will permit to test the assimilation techniques of multi-spectral remote sensing data in the surface models over fallow and bare soil with the goal of analyzing the soil water content in the root zone and the biomass.

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