Hydrol. Earth Syst. Sci. Discuss., 3, S1106–S1107, 2006
www.hydrol-earth-syst-sci-discuss.net/3/S1106/2006/

Hydrology and Earth System Sciences Discussions

Interactive comment on "Effect of seasonal dynamics of vegetation cover on land surfacemodels: a case study of NOAH LSM over a savanna farm land in eastern BurkinaFaso, West Africa" *by* F. Bagayoko et al.

Anonymous Referee #3

Received and published: 3 October 2006

The authors test a land surface scheme regarding its capacity to reproduce measured turbulent surface fluxes in a savanna environment in West Africa. Noticing a very low sensitivity of the model with respect to the momentum roughness, they blame the formulation of the coupling coefficient used in the expression for the canopy transpiration [their eq. (6)], and propose an alternative formulation [their eq. (17)].

However, no arguments are given to support the particular choice for eq. (17), apart from the fact that the new formulation appears to generate simulated surface fluxes

that correspond better to the observed values. Eq. (17) is introduced in a highly ad-hoc manner, and it is not clear, for instance, whether it is compatible with the way the potential evaporation (cfr Ek and Mahrt, 1984) is calculated.

Eq. (17) is even plain wrong, as the terms in the denominator have different dimensions (dimensionless terms are added to terms with units s/m), meaning that it is impossible to evaluate the validity of this expression.

In general, it is very difficult to follow the reasoning in this paper. For instance, in line 20 on p 2772 (section 6) it is stated that the underestimation of the observed latent heat flux is due to the use of a constant value for soil moisture. It is difficult, though, to imagine that a seasonal simulation in the Sahel is performed using a constant soil moisture value.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 3, 2757, 2006.