**Climate
of the Past
Discussions**

Interactive comment on "The effect of a dynamic background albedo scheme on Sahel/Sahara precipitation during the mid-Holocene" by F. S. E. Vamborg et al.

Anonymous Referee #1

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This paper presents the results of a new parametrization scheme of the soil albedo in the land surface scheme of the MPI-ESM. The new scheme models the soil albedo as function of the organic matter and litter or dead biomass covering the ground. The new model is compared to the previous version for two time slices: pre industrial and mid holocene. The results show increased precipitation during these two periods and increased vegetation variability in better agreement with pollen records. The paper is clearly written and very relevant within the scope of CP. The results shown are substantial and the analysis and discussions are convincing for a non specialist of past climate modeling. However , I have some questions on the albedo model developed : - the albedo seems to be separated in two components: visible and near infrared,

but these two spectral bands don't cover the whole solar spectra. Could the authors explain how these two spectral bands are composed (or used) to compute the solar albedo (integrated on the solar spectrum), value which is needed for the energy budget modelisation. - the modelisation of the soil albedo function of the organic matter could have been more detailed: How equation 5 has been fitted ? how the parameters a and Clim have been defined ? one should give some references to justify the chosen values of these two parameters. - the modelisation of the albedo of the litter is not clear (Eq 6), the specific LAI (SLAi) is not defined Figure 6 is too small and should be clarified