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Interactive comment on "Dynamic soil feedbacks on the climate of the mid-Holocene and the Last Glacial Maximum" *by* M. Stärz et al.

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Dear Pascale Braconnot,

We would like to thank you and the reviewers for the constructive and helpful comments. We realize that the present manuscript has to be shortened to provide a conscious message. In the revised manuscript we will include structural changes to provide a more precise focus on the link of changes in soil characteristics and climate/vegetation response. We agree on the comments of referee#1, that we have to state one clear research question in the beginning, which will be answered within the manuscript. Therefore, we will shift our focus from the "equable climate enigma" (tectonic time-scale) related effects in the introduction to the actual time slices that are investigated in this study (i.e. LGM and Mid Holocene) .The advantage is that more

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data evidence and model studies are available for these time slices. Ongoing studies utilizing the soil scheme will address the “equable climate enigma” later on. Furthermore we do not focus on a model-data comparison and we do not address the mid Holocene African Monsoon in detail, thus we delete this paragraph in the introduction as well.

Regarding the section of methods, we will describe in more detail the calculation of soil parameters in Table 1 as recommended by referee#1. At page 6 line 21âĂŠ25 we write “JSBACH [. . .] incorporates an energy and water balance, photosynthesis, phenology (not used in our approach because of dynamic vegetation)”. Phenology is calculated within JSBACH and also used for our model studies. We want to state that if calculation of dynamical vegetation is switched off, the model takes use of a static phenology dataset. This static phenology dataset includes a seasonal cycle derived from satellite data measurements (Rechid et al., 2009). Since terrestrial vegetation in our model studies is dynamically computed, this information is of minor importance. In the revised version, we will remove this part of the manuscript.

Based on the comments of the referees we will restructure and rewrite parts of the section of results in order to show the soil impact on climate/vegetation, as recommended by referee#2. We will also give a more detailed description of the factor separation technique (Stein and Alpert, 1993) and how it is used in order to interpret our results. Furthermore we will include a zero dimensional energy balance model into the manuscript in order to relate global soil impact to vegetation/climate changes and in order to make our results more comparable and transparent to past and future model studies. Last but not least we will follow the advice of referee#2 in restructuring and proofreading of the revised manuscript by a native speaker. Furthermore, we will carefully define all missing abbreviations and to clarify which model studies are actually discussed.

The manuscript needs some rewriting and therefore the revised version of the manuscript will be submitted at a later stage during the next months.

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Rechid, D., Raddatz, T. J., and Jacob, D.: Parameterization of snow-free land surface albedo as 30 a function of vegetation phenology based on MODIS data and applied in climate modelling, Theor. Appl. Climatol., 95, 245–255, doi:10.1007/s00704-008-0003-y, 2009.

Stein, U. and Alpert, P.: Factor separation in numerical simulations, J. Atmos. Sci., 50, 2107–2115, doi:10.1175/1520-0469(1993)050<2107:FSINS>2.0.CO;2, 1993.

Interactive comment on Clim. Past Discuss., 9, 2717, 2013.