Biogeosciences Discuss., 8, C5501–C5502, 2012
www.biogeosciences-discuss.net/8/C5501/2012/

Biogeosciences Discussions

Interactive comment on "Role of land surface processes and diffuse/direct radiation partitioning in simulating the European climate" *by* E. L. Davin and S. I. Seneviratne

Anonymous Referee #2

Received and published: 26 January 2012

This is an extremely well-written manuscript, with clear methods, results, and conclusions. The authors make two points that are quite relevant to the biogeosciences community. First is that the representation of surface fluxes (i.e., a particular LSM) matters for regional climate simulation and that differences in simulated climate can be as large as differences due to atmospheric parameterizations. The authors are quite correct to note that the importance of land surface processes has been somewhat ignored by the regional climate modeling community and those models tend to use simple LSMs. Second is that correct partitioning of direct and diffuse radiation and its impact on surface fluxes does matter. Correctly accounting for this partitioning affects evapotranspiration and improves the simulation. The authors thoroughly doc-

ument model performance, especially comparisons with observations, for the various simulations and clearly identify the causes of model improvement. I have only minor comments on the manuscript.

Figure 8. The discussion on page 11613 is inconsistent with the panels, i.e., the panels are mislabeled in the text with respect to photosynthesis and evapotranspiration. Also, why is ET shown as an absolute difference, but transpiration and photosynthesis are percentage differences? Consistent use of absolute difference might be clearer to readers.

Figure 9. The difference between the two simulations is quite small. A third panel that shows this difference is needed.

Interactive comment on Biogeosciences Discuss., 8, 11601, 2011.