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Interactive comment on "Terrestrial ecosystems response to future changes in climate and atmospheric CO_2 concentration" *by* V. K. Arora and G. J. Boer

Anonymous Referee #1

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I think this paper is a good example of how to use a model to explore the possible role of the land in the global carbon balance. The model used is a fully integrated land-atmosphere-ocean model. It does not include some possibly important factors such as Nitrogen and Permafrost (fully acknowledged by the authors), but can be used to explore the links between the future physical climate on the vegetation dynamics and the subsequent impact on the carbon budgets. They note that the Amazon region is less sensitive to the strength of possible climate change - mainly because their model predicts a massive die-back for all scenarios - Figure 7a (as with many climate models, it tends to run a bit dry over the Amazon region, so a small reduction in rain is simulated to be catastrophic for the region's vegetation). However, the African tropical rainforest

is predicted (by this model) to increase its carbon uptake and it is sensitive to the scenario - Figure 7b. The model results are very model-dependent, and only one model is used and so the results do not constitute a major breakthrough in understanding of the behaviour of the coupled climate-carbon system as we currently understand it. However, the paper represents a good examplar study of the coupled system as represented by this model. I therefore recommend that the paper is published. It is well written, well researched and presents the science in a clear manner.

Interactive comment on Biogeosciences Discuss., 11, 3581, 2014.