

Interactive
Comment

Interactive comment on “Terrestrial ecosystems response to future changes in climate and atmospheric CO₂ concentration” by V. K. Arora and G. J. Boer

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Received and published: 9 May 2014

The paper investigates the response to the terrestrial carbon cycle to future (2006–2100) changes in climate and atmospheric CO₂ from the simulations with CanESM2 for the RCP 2.6, RCP 4.5 and RCP 8.5 climate change scenarios. I particularly liked the clarity and methodology of this paper. I recommend that this paper is accepted. However, I suggest including some comments about the impacts in the Tropical terrestrial carbon pools and sinks. For example, why is there more carbon loss to the atmosphere for the RCP 2.6 case and less carbon loss for the others RCPs for the tropical region? Why the precipitation and soil moisture are decreasing in central-west

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Africa but the vegetation biomass is increasing? The authors might like to consider the points below before resubmitting a final version. Specific Comments: 1. Page 3589, L16: “The difference in the local land carbon change . . . for the “moderately” forced scenario RCP4.5”. I think important put an example with numbers to be clearer. 2. Page 3593, L02-04: “The scenario fluxes for the tropical region (between 30oS and 30oN) are either near neutral or indicate a modest carbon loss to the atmosphere for the RCP 2.6 case.” Why is there more carbon loss to the atmosphere for the RCP 2.6 case and less carbon loss for the others RCPs? Please explain. 3. Page 3593, L18: Change “. . .RCM 8.5” to “. . .RCP 8.5”. 4. Figure 4: the changes are calculated as the difference between 2006-2015 and 2091-2100, but the Figure caption mentions the period 2006-2100. 5. Page 3594, L15-18: The vegetation biomass is increasing over central Africa in the RCP 4.5 and 8.5 scenarios, but in the central-west of this area the precipitation and soil moisture are decreasing. Please explain. 6. Page 3595, L09 and Figure 6: “. . .future climate change”. What is the period? 7. Page 3595, L08-14: I think this paragraph needs more discussion. The authors are presenting only a description of the Figure. For example, how is the response of the “reactivity” of the tropical forests?

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

BGD

11, C1537–C1538, 2014

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