Interactive comment on "Vegetation-climate feedbacks modulate rainfall patterns in Africa under future climate change" *by* M. Wu et al.

Anonymous Referee #2

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This paper presents a future prediction study on climate-vegetation interactions in Africa. While the concept is not new, it does add to an emerging body of literature on interactive vegetation-climate predictions and will be of interest to many readers of ESD. The paper potentially merits publication, but quite a few major issues need to be addressed:

(1) Introduction: The flow of thought is very hard to follow. Part of the reason has to do with a rather liberal use of terminology. Probably a more strict use of the words "change" "variability" "pattern" "feedback" will help. The way it is now, many sentences are either vague or not accurate, which does not serve the readers well. Needs a better organization.

(2) Introduction: An important body of literature (e.g., Claussen 1997 climate dynamics,

Claussen 1998 global change biology; Zeng et al., 1999 science; Alo & Wang, 2010 climate dyamics; Yu et al., 2015 climate dynamics) on vegetation-climate interactions is missing, although some of them are later mentioned in the Discussion section. The introduction part of a paper should be the place where the status of science is conveyed and gaps identified. Otherwise it will be misleading for readers who are new to the topic.

(3) Partly related to (2), the statement in lines 111-112 is misleading. The first several sentences in section 4.1 should be moved here to provide readers an accurate description of the status of science, and the authors need to further elaborate to explain why this study adds values to existing literature.

(4) Fig.1: The color scale is very difficult to read if one were to try to figure out the actual magnitude of the model biases. Should use more distinguishable color scales/ use stronger contrast between the colors.

(5) Fig.1 and 2 showed severe bias of the model in capturing the spatial pattern of precipitation distribution and vegetation distribution. Essentially, LAI has negligible difference between the Sahelian savannan and the central Africa forest. The discussion and statement about model performance in Section 3.1 significantly downplayed the severity of this model biases.

(6) The model biases in precipitation and more importantly in vegetation could significantly influence the location and magnitude of the difference between FB and NFB, and need to be discussed explicitly.

(7) Lines 315-320: The albedo difference is negligible? One would think that albedo changes can be significant in areas with increase of vegetation cover.

(8) Lines 448-453: This is not true. The state of the vegetation is very important in determining the interannual variability of vegetation and the vegetation feedback effects. This is why the issue of severe model bias needs to be acknowledged and its implication explicitly discussed, as suggested in comment 6).

Minor comments: Lines 92-94: " . . .. are important to . . ." is rather awkward. You mean " . . . are important determining factors for . . ." ? Fig. A4: "temperature gradient" should be changed to "temperature contrast" as y-label.

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