Earth Syst. Dynam. Discuss., 5, C617–C619, 2014
www.earth-syst-dynam-discuss.net/5/C617/2014/

Earth System Dynamics
Discussions

Interactive comment on "Do Himalayan treelines respond to recent climate change? An evaluation of sensitivity indicators" *by* U. Schickhoff et al.

Anonymous Referee #2

Received and published: 10 December 2014

The paper presented by Schickhoff et al., represent a review of tree lines studies in Himalaya arc. Throughout field survey and experiment measurement of seedling at differents plots located in east-central Nepal and along altitudinal gradient; authors report data about the typology of tree lines in Himalayan, the capacity of seedling/germination. Based a compressive review of existing publication, authors additionally provide evidence about the response of tree to climate as well as the causes of tree lines shifts. The key issue about if CC is responsible of tree lines shifts is in the ms addressed and partially rejected. Authors suggest, by contrast, that tree lines shifts are related with decline in the land use and call for studies carry out in "near-natural or less disturbed" areas. Therefore, they suggest a low response in those tree lines areas (natural or less disturbed areas) to significant move up. Based on their data, the also report conclusion about the role of site-specific issues controlling seedling. Along the paper, they also

suggest some "scientific gaps". The thematic of the paper fit properly in the target journal and it is generally well writing (although some issues still need to be addressed). The structure of the paper don't follow to a classical study, but a mix between a depth review with new contribution (which include some method). Under my point of view, the ms is quite dense and probably the 2 and 3 could be summarized to make the ms more attractive. Nevertheless, I have some concerns related with the basis to reach the conclusions. To simplify, authors address here the tree line typology, the seed-based regeneration and tree growth-climate relationship. For the first factor, authors report some values (page 14, line 18). I have some concerns about that: first I can not see on which observation /methods etc.. authors base their observation. This should be clarifying. Moreover, for me it is complex to imagine that in one of the most active neo-tectonic area, where geomorphic processes are well presented everywhere, the % of orographic/edaphic tree lines (related with external process) is so low. Second: the seed-based regeneration: Authors provide data from two new sites, which it is good. However, they say that data in Himalaya is scarcity or "hardly available". According with their own statement "Pag 17, line 26-28, etc.." where they affirm that many environmental factors, some of them site-specific, my issue here is to really understand if they have enough observation to draw conclusion at Himalaya scale. The same observation can be done to tree growth-climate relationship. Along the ms, authors say that there are not many studies dealing with this issue so far. However, conclusion provided by authors looks so robust. I was wondering if there is room here for doubts. . .

Major revision Specific comments: 1) Short points 1,2,3, specifically 2,3 to be more concise and less repetitive with other sections. Pag 2, line 9: extensive. In the ms is not clear where and "how much" field observation was performed.. page3, line 1-5: this sentence is not clear. Please rewrite it. (from passive to active voice) Pag 3, line8: in this sentence looks like something is missed Page 3, line 24-28: I miss some reference here Page 4, line 13: here there is a room from geomorphic processes? Page 6, line 8-12: This sentence is difficult to follow. It is too large. Page 6, line16: I will not say "infancy" Page 10; line 2 " Juniperus sp" Idem line 4 Page 11, line 10 : Include some

references in this statement? Page 11, lines 10-30: here, there are statements without references. Page 14: line 18: For me this is difficult to accept. I don't know in what studies /observation authors base their observation, but in the Himalayan arc, I am expecting more orographic treelines since this area is completely affected by geomorphic processes (not only snow avalanches). SO I am wondering which data /methods are below this. Page 15, line 4: I don't know in what you base your statement. Reference here? Page 15, line 18: You say that "% anthropogenic tree lines in north-face slopes is slightly lower.." However, I cannot see on what data are your statements based. It is an existing inventory of tree lines, your observation? This should be clarify. Page 15, line 19: "south –east faces" Page 16, line 29, page 17 line 2: What is the role of natural processes as snow avalanches, rock falls etc.. here? Page 20, line 10: include the scientific name Page 21, line 12: Negative correlation: I cannot see quantitatively these values. Page 21 line 17: I cannot see these results. Page 23, line 7: Tree physiognomy is generally controlled by climatic and mostly geomorphic factors. Page 27, line 10-17: this sentence is too long! Page 28, line 18: Schickhoff et al., in review (cite the ms in review) In conclusions, section between 17-27. I think here you need also to highlight the some of the conclusion you are suggestion are based on evidence from existing documents/studies. For instance tree growth-climate relationship. You did not such as analysis, but conclude those trees are high sensitivity??? It is honest indicating that your conclusions are based on previous works, at some stage.

Interactive comment on Earth Syst. Dynam. Discuss., 5, 1407, 2014.