

## ***Interactive comment on “Treeline dynamics with climate change at Central Nepal Himalaya” by N. P. Gaire et al.***

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Anonymous Referee 2

Thank you so much for appreciative comments to improve the quality of our manuscript of paper. We positively consider all these comments and incorporated them in our revised manuscript. Following is the point by point response to your comments.

COMMENT 1: Check all Harsh et al. quotes. If I remember correctly, these papers, or part of them, are for seedlings only and not for trees. But maybe I'm wrong.

RESPONSE: We checked Harsch et al quotes. In some papers they have used data of the seedlings establishment to assess the either treeline is shifting or not. We also used the age of seedlings and trees to assess the treeline dynamics and upward shifting of

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the upper distribution limit in our study area.

COMMENT 2: The confounding of climatic drivers could be discussed more openly. Lower temperatures may coincide with more precipitation and, thus, more clouds and, thus, less light etc. Hence, temperature is unlikely to operate independently, and it is not a given which of these different climatic factors is most influential.

RESPONSE: Now we have discussed all these confounding climatic factors in details and incorporated in the discussion section of revised manuscript. We think that both temperature and its interaction with precipitation has main role in the growth and regeneration of the *A. spectabilis*.

COMMENT 3: The treeline will always lag behind any climatic change, depending on tree definition. So if trees are, for instance, defined by a minimum 3 m height as some authors suggest, it takes several decades at treeline to reach that size. Hence the current position of the treeline may refer to temperatures some 30 or 50 years ago, with small seedlings (not yet trees) found at higher elevation?

RESPONSE: Yes, you are right that current position of the treeline may refer to temperatures some 30 or 50 years ago depending upon the definition of the tree used. We have also tried to link with the treeline position with the climate during which trees at our sites were established and incorporated in the discussion of our revised paper.

COMMENT: I remember a paper by Paulsen et al. (2000, *Arct. Antarct. Alp. Res.* 32:14-20) that may contain data on treeline dynamics of interest for this paper. Age structures of treeline populations had also been discussed in Korner's 2012 treeline book with Springer.

RESPONSE: Thank you for suggesting the useful references. We also studied and incorporated the paper by Paulsen et al. (2000, *Arct. Antarct. Alp. Res.* 32:14-20) and other more papers having data on treeline dynamics of our interest.

Reference added:

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