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

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We appreciate this thorough review and the reviewer's assessment that the topic of the paper does fit properly into the scope of the journal. We comment on the reviewer's comments and suggestions as follows: We will check chapters 2 and 3 once more for potentially summarizing and condensing the information. Basically, we consider the content of chapters 2 and 3 as necessary background information to understand the statements in subsequent chapters, in particular addressing those readers who are not familiar with treelines and climate change in the Himalaya. The quantitative values referring to the occurrence of various treeline types (p. 14) represent best estimates based on extensive field experience in the Himalaya and Karakoram for the past 30 years (first author) or even longer (fifth author). Collectively, the team of authors has

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acquired intimate regional knowledge along the Himalayan arc, from E Hindu Kush to SE Tibet, during extensive field trips and excursions. According to our observations, topographic settings or morphodynamic processes which potentially affect treeline formation are mainly concentrated in the upper alpine and nival belts, way above the alpine treeline. We rarely found treelines in the field which are prevented from reaching distinctly higher elevations by steep rock walls, talus cones, slope debris and the like. According to our best knowledge, the percentage of orographic treelines will not be substantially higher than c. 15 %. As for the seed-based regeneration, our conclusions of fairly high levels of tree recruitment are not only based on our data sampling and evaluation in Langtang and Rolwaling, but also on the cited studies from the W, Central, and E Himalaya which reflect more or less consistent results. We explicitly express that we consider these results as preliminary evidence regarding the use of recruitment as an indicator of treeline sensitivity (p. 18). As for tree growth-climate relationships, the conclusion of growth patterns in W and Central Himalaya being particularly responsive to pre-monsoon temperature and humidity conditions is indeed robust since it is based on consistent results from a considerable number of studies. The manuscript is currently being revised. During this process we will go thoroughly through the reviewer's specific comments on single pages and lines, and conduct necessary corrections and modifications wherever appropriate.

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