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Interactive comment on "Changes in Andes Mountains snow cover from MODIS data 2000–2014" *by* Freddy A. Saavedra et al.

Anonymous Referee #2

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I agree with the first referee that the length of the study period (14 y) is short to analyze trends in the snow cover, especially in the Andes where the climate has a strong interannual variability due to the influence of ENSO. However, the authors did test the significance of the trends hence I do not think that it is a methodological flaw, but rather a strong limitation of the study that would indeed deserve a better discussion.

My main concern is the lack of literature review in the introduction. This was also noted by the first referee but in my opinion this is the main issue with this paper. Some relevant studies are cited in the Discussion, but the authors should use them in the introduction to better establish the current knowledge gaps. There are not so many papers about the snow cover variability in the Andes (especially at this scale). Therefore, the scope of the literature review could be extended to the climate, hydrology,

glaciology studies. A fair review of the existing knowledge is necessary to identify knowledge gaps beyond this unjustified statement "The impacts of climate change on snow covered areas in South America have not been studied in detail due to sparse and unevenly distributed climate data" and would help define the contribution of this paper.

I see also an issue with the MODIS snow cover data. The authors used the MOD10A2 v5 snow product "to minimize cloud impairment". However there remain gaps due to cloud obstruction in this product, which is a composite over an 8-day period. I wonder if even a relatively low number of cloud pixels could generate spurious trends, in particular in this region, where the cloud cover can be correlated with ENSO (cloud cover seasonal distribution is not random). Many gap filling techniques exist and could be used to generate a cloud-free dataset before performing trend analyses.

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