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Interactive comment on “Validation of digital elevation models (DEMs) and comparison of geomorphic metrics on the southern Central Andean Plateau” by Benjamin Purinton and Bodo Bookhagen

Anonymous Referee #2

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This paper presents an interesting contribution to the journal. The authors provide a detailed overview of DEMs from different sources (commercial and open), at different resolution, and they provide an evaluation of the DEM quality compared to a large dataset of dGPS point, as well as a further analysis on the possible quality of derived topographic parameters.

I have overall some minor comments that should help to improve this work before publication. Other than these minor comments, I found the paper was very well written and interesting, providing useful guidelines for geomorphometry researchers in the

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future, when dealing with this type of data.

Abstract:

I think the abstract is quite complex and its complexity prevents the reader from really gathering the purpose of the paper. I suggest the authors clarify better the aim of the study and organise the results presented by, for example, DEM resolution, rather than specifying the analysis for each DEM source. I believe the authors could skip the exact measurements of the errors in the abstract, in favor of a more general overview of their results. This should help improving the readability of the abstract.

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Introduction:

I suggest some further scientific literature to consider, that is in my opinion important to provide a complete framework for this study, and might also help in improving the discussion when comparing this work to others. Recent challenges in geomorphometry have been shown in (Sofia et al., 2016). As well, aside from transient landscapes (Andreani and Gloaguen, 2016) and channel network analysis, new challenges in geomorphometry includes modelling anthropogenic landscapes (Tarolli, 2014; Passalacqua et al., 2015; Tarolli and Sofia, 2016). Concerning DEM errors, numerous studies provide interesting analysis, both on DEMs themselves and on the derived topographic parameters such as slope, curvature or other attributes (Albani and Klinkenberg, 2003; Albani et al., 2004; Raaflaub and Collins, 2006; Temme et al., 2006; Xuejun and Lu, 2008; Heritage et al., 2009; Fisher et al., 2013; Sofia et al., 2013)

Methods:

I wonder why the authors only considered a simple analysis based on the SD of residual, and do not consider a complete analysis of errors such as that presented for example in (Höhle and Höhle, 2009). I am also curious to see the differences in errors before filtering the outliers. A further commenting on what DEM presented the highest changes in accuracy after filtering should be done, to provide the reader with an idea

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of the general quality of the datasets as well.

Results:

In some instances, I found a bit of confusion between grid resolution increasing/ grid size decreasing, please double check on this.

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