For Authors

"The effect of natural infrastructure on water erosion mitigation in the Andes"

This study shows interesting results through a systematic review of 121 case-studies from the Andes to define useful "erosion indicators" i) Effectiveness of natural infrastructure? Ii) Impact of working with natural infrastructure on on-site and off-site erosion mitigation? Iii) locations and types of studies necessary to complete knowledge and research.

- Weak point: some information or references about sites/countries and rain characteristics are unclear or missing because the research of the studies is done by a specific selection of key words.
- Strong point: the overview of the selected references is very well analysed.

The document could be improved following the comments below:

- **Introduction**

  Line 54: a large research and applied project was conducted in Ecuador to protect Quito City, cf. *Perrin JL, Bouvier C, Janeau JL, Menez G, Cruz F. Rainfall/runoff processes in a small peri-urban catchment in the Andes mountains. The Rumihurcu Quebrada, Quito (Ecuador). Hydrological processes 2001; 15: 843-854.*

  I noted that you mentioned this study in the supplement D.

- **Materials and methods**

  Line 102 then line 110 to 115 and Supplement C:

I can understand that you selected studies due to absence of quantitative on-site or off-site soil erosion or soil quality measurements and I know that it is difficult to collect all the studies carried out on your topic, however it seems that some studies, are missing despite using your key words:

land use*, *Ecuador, infiltration*, *soil erosion

Buytaert W, Wyseure G, De Bievre B, Deckers J. The effect of ***land-use*** changes on the hydrological behaviour of Histic Andosols in south Ecuador. Hydrological processes 2005; 19: 3985-3997.

Janeau JL, Grellier S, Podwojewski P. Influence of rainfall interception by endemic plants versus short cycle crops on water ***infiltration*** in high altitude ecosystems of Ecuador. Hydrology Research 2015; 46: 1008-1018.

Poulenard J, Podwojewski P, Janeau JL, Collinet J. Runoff and ***soil erosion*** under rainfall simulation of Andisols from the Ecuadorian Paramo: effect of tillage and burning. Catena 2001; 45: 185-207.

Data base development – line 161 to 170:

In this paragraph, I appreciated the definition of the soil indicators, but I suggest providing more explanation for the role of the rain (different intensities and duration depending on altitude…) and the role of the vegetal cover (throughfall/stemflow for infiltration, soil protection by different type of covers…), the broad range of bulk density (type of volcanic ashes).
This complement of explanation could be useful to explain your result Line 284 to 291 in **Results and Discussion** and your Figure 4.

- **Results and Discussion**

3.4.1 Representation of natural variability in environmental conditions within the Andean region

The runoff and erosion processes decrease significatively (excepted exceptional events) with appropriate technique to protect the soil (cultural, terraces, etc.), with vegetal cover (natural or anthropized origin).

This is not a surprise, and your review shows that what has already been studied on these "parameters".

However, the rainfall characteristics (intensity, concentration of precipitation, etc.) seem little mentioned. Is it correct?

3.4.2 Gap between plot-scale and catchment-scale erosion assessments, apparently, we have a “confusion” about erosion processes depending on the studied scale.

- ✓ Micro-plots ≤ 1 m^{-2} to 10 m^{-2}, generally the authors are studying Detachability and/or Erodibilty expressed in gramme per m^{-2}
- ✓ Catchment scale the authors are interested by erosion expressed in tons per hectare.

Due to this difference in scale, it is therefore very difficult to compare the studies with each other.

Can you be more specific on how you compare these two spatial scales?

- **Conclusion and perspectives.**

It is a long conclusion about the contains of this review, maybe too long. On the other hand, the research perspectives look few and insufficiently precise.

Could you add/suggest some specific studies should be done on the rainfall intensity thresholds corresponding to the effect of soil erosion parameter. (Which ones? How?)?

Is it desirable to mention more studies related to climate change?

- **Figure 3**

A small green circle is in Argentina but apparently far away of Andes mountains. Is it really related with your keywords and/or scientific questions?