

Interactive comment on “A new method to compute the groundwater recharge for the study of rainfall-triggered deep-seated landslides. Application to the Séchilienne unstable slope (western Alps)” by A. Vallet et al.

Anonymous Referee #1

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The paper deals with an interesting topic related to groundwater and deep-seated landslide activity. A new method is presented to link groundwater recharge and landslide displacements. The method is rigorous and formulations seem correctly presented. The paper is readable, although it is complex with too much subparagraphs, but contains several small grammatical errors and some unclear sentences. It could be an important contribution to scientific literature granted that some aspects are clarified.

General Comment:

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1. A major concern is related to the geological and hydrogeological model of the slope. Authors should provide a more clear description on how geology and structural setting influence groundwater circulation and how the groundwater flow path is developed. Figure 3 presents an “unusual” recharge area, because no subsurface watershed divides (that should be incongruent with the surface topography of the area) and groundwater flow paths are reconstructed. The accurate boundary of the recharge area influences the correct application and results of the model;

2. It is not obvious what kind of displacement authors are using in the analysis. Based on their description, it seems that they are using cumulative displacement, however, data from graph (e.g. fig. 6), labeled as “mm”, seems to indicate landslide displacement rate, in other words landslide velocity. In this case, an analysis of landslide response-time should be provided.

3. I may suggest to separate results and discussion sections in order to underline results from modeling and possible improvement or difficulties in method application.

4. I suggest that the text should be corrected and improved by a person whose mother tongue is English.

Specific Comment:

1. Line 16, pg 1: I suggest to add n-dashes “soil-available water-capacity”, please replace all of the occurrence in the text;

2. Line 18, pg 2: suggested reference: Diodato, N., Guerriero, L., Fiorillo, F., Esposito, L., Revellino, P., Grelle, G., Guadagno, F. M., 2014. Predicting monthly spring discharge using a simple statistical model. Water Resource Management 28, 969–978.

3. Line 27, pg 5: replace “whit” with “on”

4. Line 26, pg 11: wrench ?????

5. Line 29, pg 17: deep-seated earthflow or landslide? If you decide to keep “earthflow”

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consider to type it as "earth flow" or add a correct reference for earthflow.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 6343, 2014.

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