

Interactive comment on “Assessing the determinants of rill erosion on roadcuts in the south eastern region of South Africa” by K. E. Seutloali and H. R. Beckedahl

Anonymous Referee #2

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Comment on “Assessing the determinants of rill erosion on roadcuts in the south eastern region of South Africa” by K. E. Seutloali and H. R. Beckedahl

This paper aims to investigate the relationship between the characteristics of roadcuts and the rill erosion. Degraded (i.e. with rills) and non-degraded roadcuts (i.e. without rills) have been compared. The results of this study could help to design roadcuts that are less vulnerable to erosion. Some points need to be addressed, however, before this paper can be considered for publication. My major concerns are: 1. The major results of the paper are not novel (as expected): rill formation is higher in longer, steeper and with a lower percentage of vegetation cover roadcuts. It will be great if the authors could highlight the novel aspects of the study. 2. It seems the study is based on the as-

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sumption that soil characteristics, techniques of surface shrink eventually used and climate conditions were constant for all the roadcuts examined. I think the authors should clearly specify if it is. 3. The description of the experiment is not sufficiently complete; authors should add details on: roadcut soil characteristics, techniques of surface shrink eventually used, precipitation characteristics, rill measurement technique, etc. Other specific comments for the authors: P394, L20-21: Quotable literature on the topic is very extensive, I suggest to add "among others". P396, L22: The value of 300 MJ mm ha⁻¹ h⁻¹ yr⁻¹ does not seem very high. Please check. P397, L20: Add "natural" before "herbaceous vegetation cover". P398, L3 and Fig. 2: The first transect is named "2nd" in Figure 2. P398, L8-9: The roadcut length was calculated by averaging the length of the three transects. Does it mean that the ratio between the lengths of the three transects is almost constant in all the roadcuts examined? Otherwise, it wouldn't be more meaningful to use the maximum length? P398, L15: 0.5 m width or length? P399, L22, and Fig. 4. It is not clear what means bars in Fig. 4. P401, L15-23. The influence of the slope length on rill width and depth is well known (e.g. in Rejman, J., Brodowski, R., 2005. Rill characteristics and sediment transport as a function of slope length during a storm event on loess soil. *Earth Surface Processes and Landforms* 30, 231–239; C. Di Stefano, V. Ferro, V. Pampalone, F. Sanzone, 2013. Field investigation of rill and ephemeral gully erosion in the Sparacia experimental area, South Italy. *Catena* 101, 226–234). I think authors should try to explain their contrasting results in terms of length values of roadcuts examined in comparison to other studies. P401, L24-28: Some authors showed the angle of the slope was one of the main factors influencing vegetation on motorway slopes. E.g. Bochet, E. and García-Fayos, P., in *Factors controlling vegetation establishment and water erosion on motorway slopes in Valencia, Spain*, *Restor. Ecol.*, 12, 166–174, 2004, showed vegetation was almost completely lacking on roadcuts with slopes greater than 45°. From the statistical point of view, the effects of the interaction between slope angle and vegetation constitute a case of spurious correlation. Authors should check which part of the variance is explained by the slope and vegetation, respectively.

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Interactive comment on Solid Earth Discuss., 7, 393, 2015.

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