

Review of: "Assessment of soil erosion in the Cesar watershed, an initial step toward the restoration of the Cesar River"

Jianting Zhu¹

¹ University of Wyoming

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In this study, the author analyzed soil erosion rates in the Cesar watershed by using the RUSLE-GGS (RUSLE-GIS-GLUE-SDR) erosion model and the Getis-Ord statistical analysis. In particular, the erosion model was used to estimate the average rate while the Getis-Ord statistical analysis was intended for identifying the locations where soil erosion was most severe. My main suggestions for improvement are as follows.

1. While the main objective of the study was for the Cesar watershed, the author should at least discuss how the approaches could potentially have general appeal to other watersheds. How to choose an appropriate USLE model in relation to watershed characteristics could be highlighted to enhance the insights useful for other areas. The author may want to articulate how USLE models evolve and eventually converge to the most suitable model currently applied to the study area. What kinds of watershed characteristics could benefit from the use of this erosion model? Overall, many aspects of the model selection were very unclear in the current version. These are the main areas that could be significantly improved so the article could have broader contributions to the understanding of soil erosion in a watershed than just a case study.
2. In addition to the justifications in selecting the suitable model, the adopted RUSLE-GGS (RUSLE-GIS-GLUE-SDR) was not clearly explained either. It was briefly mentioned that the RUSLE model has been used in conjunction with geographic information system (GIS) image interpretation. GLUE and SDR were, however, not sufficiently described.
3. The fact that the model needs to be calibrated should be made clear very early in the Abstract and the method overview before the more detailed description of approaches in the next section. At the end of Introduction, a big-picture outline of the integrated approaches to achieve the study objective(s) could be highlighted so there were no surprises later. General vague statements such as "This provides an opportunity to implement targeted erosion control strategies in areas of the watershed most prone to erosion. This article presents a preliminary iteration of the soil erosion diagnosis for the Cesar watershed so that future work can analyze restoration scenarios for the Cesar River." don't add much to the science advance from this study. If they are necessary, they are better to be stated when discussing potential future studies.
4. The results have been calibrated by comparing the sediment concentration data obtained in the local stations with the sediment production estimated by the sediment transfer rates (SDR). There were 24 realizations of LS, 3 realizations of R

and 2 realizations of C, which resulted in a total of 144 realizations of models. Combined with the 5 SDR models, the author performed 720 sediment yield samples. By comparing with the station data, the author concluded that 135-SDR4 best represented the simulated erosion rate in the watershed. In this sense, it was not a calibration, but a simple comparison to narrow the combinations to one.

5. Before jumping to use 135-SDR4 for the subsequent analysis, there could be more in-depth analysis of what 135-SDR4 was in relation to which LS, which R and which C and why these representations were reasonable for the watershed. Currently, it basically assumed if one combination out of the total 720 matched well for the selected stations well, then it was good for subsequent spatial and temporal variations analysis. This needs to be better justified. In this way, the conclusions would be more supported and convincing. While the author called it a realization, the combination might be more appropriate as it represented one of the many possible combinations. Since it was concluded that slope was most dominant factor, at least it should discuss how the slope in realization 135 was like.

In summary, many aspects of the article could be improved to demonstrate more insights and have a broad appeal to the studies watershed erosion.