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Discussions

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Interactive comment on "Integration of remote sensing, RUSLE and GIS to model potential soil loss and sediment yield (SY)" *by* H. Kamaludin et al.

Anonymous Referee #2

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General comments

Generally this paper is very simple, straight-forward and easy to follow where an established method is applied in a watershed. However, the main issue is no validation on the RUSLE model had been undertaken.

The paper is publishable only with validation.

Specific comments

Introduction: Introduction section should also discussed on the justification of using this method and also need to briefly discussed their advantages/disadvantages of utilising

RUSLE method. Probably should also stressed on the how remote sensing image is previously utilised in soil erosion studies. The statement of "rate of erosion is determined using satellite images" seems to imply that erosion rate can be directly determined using remote sensing method which is not correct. Only landcover and cover management factors are extracted from remote sensing and the other factors are not from satellite imagery.

Methodology: Derivation of the soil erodibility factor should be described in detail. Is it derived from interpolation of actual field samples? If so, what is the justification in choosing the interpolation methods. Amount of samples utilised to verify the data and the method of validation utilised are not stated as well. Grid size which reflects the scale of the map is also not stated. Justification in choosing the size of grid should be included. Validation which is a crucial part of any similar studies is not been undertaken. Thus, how true is the erosion map remains unknown. It has previously shown that RUSLE soil loss estimation can be up to three times the actual soil loss (Hammad, A.A., Lundekvam, H., Borresen, T., 2005, Adaptation of RUSLE in the Eastern Part of the Mediterranean Region", Environmental Management, Vol. 34, Nr. 6, pp. 829-841, Springer)

Discussion: Each parameter of RUSLE had errors associated with each data sources. Interpolation technique in GIS definitely introduce errors. RUSLE was calculated as the product of all these layers. Thus, the result will produce multiplicative combined effect of errors on the soil erosion map. Discussion on RUSLE limitation due to this error is suggested to be included. It is also suggested to relate the results of this study to similar studies.

Example of good soil erosion studies are suggested :Please note the validation section.

Prasuhn, V, Liniger, H, Gisler, S, Herweg, K, Candinas, A, Clément, JP. A high-resolution soil erosion risk map of Switzerland as strategic policy support system Land Use Policy, 32, p.281-291, May 2013 doi:10.1016/j.landusepol.2012.11.006

de Vente, J., Poesen, J., Verstraeten, G., Van Rompaey, A. and Govers, G., 2008. Spatially distributed modelling of soil erosion and sediment yield at regional scales in Spain. Global and Planetary Change, 60(3-4): 393-415