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Interactive comment on "Assessment of uncertainties in soil erosion and sediment yield estiamtes at ungauged basins: an application to the Garra River basin, India" *by* Somil Swarnkar et al.

Anonymous Referee #1

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This manuscript present a methodology in quantifying uncertainties in soil erosion, SDE and SY estimate. The RUSLE-SDR model was employed in the Grra River basin with upper hilly and lower alluvial plains. The manuscript gives general SE and SY for the study area. The topic is interesting, while there are a variety of questions related modeling when there isn't enough calibration and validation.

(1) Page 2, The main objective of the manuscript is presented in lines 10-12. However, there are repeated detailed objectives below. I would suggest a more clear structure for the Introduction section.

(2) As for R in RUSLE, is it a rainfall and runoff erosivity factor according to the original model concept?

(3) In page 5, line 26, the discharge and sediment load records for 16 years are available at the stations. The manuscript should give more details on model calibration and validation.

(4) There is a large reservoir built in 1962, which may play an imporant role in sediment trapping. The sedimentation rate data can be used for sediment yield calibration. The SDR should also consider the effect of reservoir trapping, though the model is empirical.

(5) when compared the annual rainfall and rainfall erosivity, I found the R factor is much lower than the regions with similar rainfall amount, I doubt the proposed the method for R estimation. As well, the very coarse rainfall data might be the dominant factor influencing the simulation results, rather then the R factor itself.

(6) soil map is rough too, I would suggest to do a field survey for sampling, or obtain a relative detailed soil data.

(7) as for LS factor, the maximum value is around 2500, this is extremely high due to the high gradients. This means the LS factor may be overestimated for the steep area, since the RUSLE model was originally developed for estimating soil erosion in relative gentle arable land.

(7) When I saw the data listed in Table 2, the resolution for different data may cause high uncertainties for modeling results. The resolution of the spatial data highly infuence the data quality, such as LS factor, K-factor, C and P factor.

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