Dear Panos Panagos,

thank you very much for your interest in our study and your helpful comments on the manuscript. We agree that a considerable part of the differences between our estimates of rainfall erosivity and yours may be due to the different methodologies. This was also mentioned in the manuscript (l. 296-298). You are right that the two points that you mentioned are important and have to be discussed in more detail.

In order to quantify the effect of using a different equation to calculate specific kinetic energy from rainfall intensity, we used a subset of our data (about 8% of the model domain located partly at the coast and partly in the Alps, covering 30 years from 1971-2000) to recalculate rainfall erosivity with the RUSLE equation (Brown and Foster, 1987) that was used in Panagos et al. (2015). Thus, we could compare the results obtained with the RUSLE equation to the ones obtained in our study (using the original USLE equation (Wischmeier and Smith, 1978)) to isolate the effect of using different equations.

Rainfall erosivities in N h^{-1} a^{-1} calculated with both equations are plotted in the left figure below. The USLE equation, which was used in our study, yields values that are on average 1.23 times higher than values obtained with the RUSLE equation. The right figure shows the cumulative effect of using a different equation and different temporal scaling factors. Here, our values, which were calculated with a scaling factor of 1.9, are 1.49 times higher than values calculated with the RUSLE equation and a temporal scaling factor of 1.56, as was done by Panagos et al (2015).

In total, our values are on average about 2 times higher than the values presented in Panagos et al., 2015. This difference is due to several factors (precipitation data obtained from a climate model vs. observed precipitation data, different temporal coverage of the data, differences in the methodology including the use of different equations and scaling factors). Thus, the two points that you raised explain about half of the difference between our study and the values presented in Panagos et al. (2015). We will add this important finding in a revised version of the manuscript.

Nonetheless, we wish to keep Fig. 3 in the manuscript as it is. We think that it is important to show the differences between the different available rainfall erosivity maps. We will extend the discussion on the reasons for this difference, including a discussion on the important effect of the two factors that you pointed out.

Best regards,

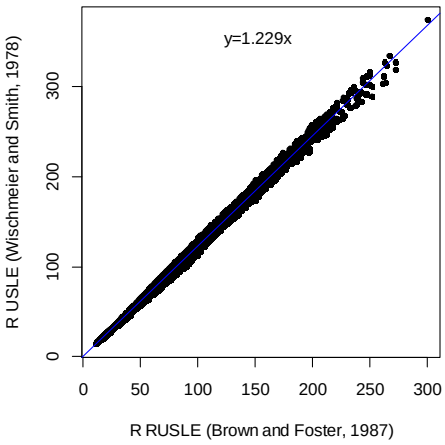
Magdalena Uber on behalf of all authors

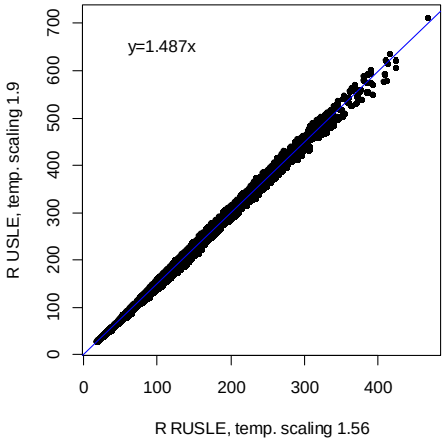
References:

Brown, L. and Foster, C.: Storm erosivity using idealized intensity distributions. TRANS ASAE, 30(2), 378-386, 1987.

Panagos, P., Ballabio, C., Borrelli, P., Meusburger, K., Klik, A., Rousseva, S., Tadić, M. P., Michaelides, S., Hrabalíková, M., and Olsen, P.: Rainfall erosivity in Europe, SCI TOTAL ENVIRON, 511, 801-814, https://doi.org/10.1016/j.scitotenv.2015.01.008, 2015.

Wischmeier, W. H. and Smith, D. D.: Predicting rainfall erosion losses-a guide to conservation planning, United States Department of Agriculture, Agriculture Handbook No. 537, 58 pp., 1978.


y=1.229x
R USLE (Wischmeier and Smith, 1978)
R RUSLE (Brown and Foster, 1987)
0
100
200
300
0
50
100
150
200
250
300


y=1.487x
R USLE, temp. scaling 1.9
R RUSLE, temp. scaling 1.56
0
100
200
300
400
500
600
700
0
100
200
300
400