**Hydrology and
Earth System
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Discussions**

Interactive
Comment

Interactive comment on "Spatial and temporal variability of rainfall erosivity factor for Switzerland" *by* K. Meusburger et al.

Anonymous Referee #1

Received and published: 30 September 2011

This study provides an overview on the spatial patterns of rainfall erosivity at the country level (Switzerland) based on detailed long-term rainfall records. For few countries such an analysis has been made, often due to a lack of long-term rainfall records with high temporal resolution. Furthermore, this study has such information for tens of stations, making it possible to create sufficiently accurate maps of rainfall erosivity for widely different environments. The applied methodology is sound and the paper is well-written. I have not detected any major shortcomings. On a few points, however, the authors should provide more details behind the methodological and statistical approaches followed. These specific comments are listed below.

1) a Mann-Kendall test has been applied to detect a monotonic trend in rainfall erosiv-

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ity. However, climatic changes often do no exhibit monotonic trends but rather abrubt changes (which could for instance be associated to changes in NAO). I suggest the authors to look for such abrupt changes by carrying out break-point statistical tests such as a Buishand range test, Standart normal homogeneity test or even a non-parametric Petitt rank test to avoid that outliers have too much importance

2) more information on the regression model is needed (eq 4). How were the predictors selected ? Was it forward or backward modeling ? what were the thresholds for inclusion of a variable into the model ? What is the partial R^2 value for each of the variables ? Now only an overall model explanatory value is provided but not the relative contribution of each variable. It should also be indicated how normalised precipitation and topography values were calculated. Especially for elevation I doubt whether it is normally distributed across the entire country ? It is rather surprising to note that an adjusted model that incorporates the residuals of the regression model performs worse than the regression model itself. How does this come ? This needs more clarification.

3) why is the temporal variablility of rainfall erosivity analysed per biogeographic region when only one biogeographic region has shown to be important for understanding the spatial variability in R-values (ie Valais). Why not analysing temporal variability for different altitudenal classes ? One could argue that changes in temperature influences the freezing level and thus the amount of rainfall precipitation instead of snow at various altitudes ?

4) at some points more references to international literature might be useful. For instance, when discussing that most erosion is expected in May on agricultural land, no reference is provided although it has been shown for other regions in temperate Europe.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 8291, 2011.

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