Hydrology and
Earth System
Sciences

Discussions

Interactive comment on "Rainfall erosivity factor
in the Czech Republic and its Uncertainty" *by*
M. Hanel et al.

Anonymous Referee #1

Received and published: 17 May 2016

Rainfall Erosivity in Czech Republic.

This is a very interesting paper as it discuss the development of rainfall erosivity dataset
based on high temporal resolution data at a national level. Moreover, the manuscript
has presented the main sources of uncertainty in R-factor maps. There are some
issues to be addressed and reviewed before the manu8script gets published.

Find below the main points to be corrected: 1. Measurement Unit: R-factor is further
expressed in MJ ha−1 cm h−1 (equivalent to kJ mm m−2 h−1), which is the unit
most often used in the Czech Republic. However, here you address your result to the
International public and you should adapt it to the most used measurement unit (please
replace cm with mm and multiply by 10).

2. Comparison with other datasets: You estimated the mean R-factor in Czech Re-

public around 640 MJ mm ha-1 h-1 yr-1 using 10-minutes data. The Mean R-factor
in Czech Republic at 30 minutes is 524 MJ mm ha-1 h-1 yr-1 according to the rainfall
erosivity map of Europe. If you take into account the calibration factor used by Panagos
et al (2016) for transferring data between 10-minutes and 30-minutes is 0.8205 then
both datasets (Czech republic, European) have the same Mean (640 * 0.8205 = 525).
Taking into account that for the European application another dataset has been used,
both results are similar. Congratulations for the results.

3. Length of time-series and short period of stations (Paragraph P2L3-13): You need
to restructure this paragraph somehow. Panagos et al (2015) have used the best avail-
able high temporal resolution data at European scale and according to Table 1 in their
publications the mean length period is more than 17.5 years (half of the countries had
records more than 20 years). Only countries with low erosivity (Finland, Estonia, Latvia,
Romania) had records covering short periods. Angulo-Martinez (2009) estimated the
R-factor in Ebro based on 10 years data. So, you cannot compare the data availability
in Europe (or in one country or at regional level) with the 1 station made available by
Verstraeten(2006). Moreover, your estimates are based on 14 years data.

4. Whole section 3.2: You need to restructure this section by giving a short description
of each model used (IDW, GLS, OK, RK. Etc) and avoid the whole part on Fixed and
stochastic component. Those 2 parts seems like "technical note" from the geostatistical
books. References will be enough while you have simply to describe the models used
in your case. 5. Figures should be self-explained. So In Figure 3, the reader cannot
understand what 'GLS' , SK, etc is….Please put the explanations in the caption.

Some additional adjustments requested: P1, L17: Soil erosion by water is a
widespread problem throughout Europe (Van der Knijff et al., 2000). Citation to the
paper of 2000. There is a more recent and accurate development of soil erosion map
in Europe (2015) and you should update this citation with the new one.

L2P28: Replace datastes with datasets.

In the introduction, I would also expect one sentence (plus necessary citations) regarding other recently developed rainfall erosivity datasets at national scale. There are new R-factor datasets for Italy, Greece, Brazil, Chile, China, Australia, New Zealand etc.

P3 L8-9: "The trends in rainfall erosivity were studied by Hanel et al. (2015), who found significant a positive trend (= 4% per decade) in 51-year records for 11 stations (more than a half of the considered stations).". Trend on what? And compared to what? Increase or decrease?

Please replace sub-title: 2.3 Spatial Data" with "Precipitation maps" or "Precipitation Spatial datasets". Spatial data can be everyting. . ...

P7L24: REML stands for??? Please explain

Figure 1: please delete the word "The map" and rephrase the caption.

P15 : Last paragraph: The ranges you presented are quite wide. I doubt that with 80-year data records the range can be +-15%.

Conclusions: what is the "areal-average". Please correct it.

———————————————————