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Hydrology and Earth System Sciences Discussions

Interactive comment on "Assessing the sources of uncertainty associated with the calculation of rainfall kinetic energy and the erosivity $\vec{R}$ factor. Application to the Upper Llobregat Basin, NE Spain" *by* G. Catari et al.

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We appreciate the comments and suggestions provided by Reviewer # 2; some changes addressed to respond to these remarks will be integrated in the upcoming revised manuscript. Below, we enclose our reactions to the two main observations (shown between quotation marks).

“The presented paper contains an uncertainty analyses of results that were already published by the authors (Catari & Gallart, Pirineos, 2010).” Both articles are quite different. The article published in Pirineos mostly addresses the determination of the R value for the studied basin and to a less extent analyses the variabilitity and uncertainty related to the R value in that particular area, being a paper intended to be useful mainly for users working in the area. Then we realised that we did not take into account the uncertainty introduced when we calculated the kinetic energy from the precipitation data, and that there was practically no information about this source of uncertainty. We carried out new research using available datasets from different locations worldwide and included the analysis of the uncertainty due to the instrumental device. This new research was possible by the collaboration of a new co-author. Therefore, the article submitted to HESSD pays special attention to uncertainties linked to the calculation of the rainfall erosivity (kinetic energy and intensity) from rainfall data by using the Kinell’s type of equations, which is new. This makes the article of interest for any researcher estimating kinetic energy from rainfall data (as done by most of the erosion models) as well as the erosivity R factor, everywhere.

“The method of integrating uncertainties from different sources is not novel”.

We did not try to develop a new method but to apply known methods to the field of rainfall erosivity, as this was a clear lack in the literature.

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