

Reviewer's original comment in black

Our response to each comment in blue

This paper is well written with appropriate methods and datasets. However, the focus is on the comparison of different gridded rainfall datasets rather than the actual estimation (methods) on rainfall erosivity. Thus, I suggest to narrow down the title to truly reflect the actual content of the manuscript, the current title (Rainfall erosivity estimation using gridded daily precipitation datasets) is too broad. I also suggest the authors to clearly specify the differences of this research from previous studies and the implications to international readers, and add the aims and objectives in the last paragraph under the Introduction section.

Thank you for the review and valuable comments.

We will revise the objectives of this study in the revised version to make these clearer as we have found that the objectives were not clearly stated in the manuscript as follows:

- (1) to contrast the gridded daily precipitation products with gauge data in terms of PDFs and extreme precipitation amounts, and to evaluate the smoothing effect of interpolation when areal precipitation for grid cells were generated using point (gauge) observations;
- (2) to evaluate the magnitude of underestimation of rainfall erosivity calculated using gridded daily precipitation products compared with that produced by spatial interpolation of rainfall erosivity computed using point (gauge) observations;
- (3) to establish bias correction factors to improve the accuracy of rainfall erosivity maps where only gridded precipitation products were available for estimating rainfall erosivity over large areas.

Comparing different gridded rainfall products, or identifying which gridded products is the best for China, is not one of our research objectives. We aim to explore the differences between various gridded data sources and how they differ from gauge data, and give the point that gridded data is inherently less extreme, which leads to underestimation of rainfall erosivity calculated using gridded products.

The difference between this research and previous studies and the implications of this research to a wider community internationally are:

- (1) because the gridded precipitation products (represent areal average precipitation over a grid cell) are generally unable to capture the extreme precipitation amount, compared to gauge observations, care needs to be taken to avoid systematic bias when using gauge-based, satellite-based gridded precipitation products, reanalysis products and outputs of climate models as inputs to nonlinear models often found in hydrology and agriculture;
- (2) when empirical models, such as the daily rainfall erosivity model considered in this study, are developed based on point observations, and gridded precipitation is the only available data source, bias correction is absolutely needed, or alternatively the model needs to be re-calibrated at a commensurate spatial scale.

We intend to change the title to: Evaluation of gridded precipitation products for rainfall erosivity estimation.

Some minor issues for authors consideration: Line 203: please differentiate the parameters in Eq. 9 ($R_{ref} = a R_{ref}$) Fig. 3-6: improve/change the fonts to make the figures clearer Check the unit for the R-factor: is hm^{-2} really km^{-2} or just use ha.

Sorry for our mistake. The equation 9 should be $R_{gri} = a \cdot R_{ref}$.
This typo will be corrected in the revised manuscript.