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Comment on hess-2021-332

Priscilla Minotti (Referee)

Referee comment on "Easy-to-use spatial Random Forest-based downscaling-calibration method for producing precipitation data with high resolution and high accuracy" by Chuanfa Chen et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-332-RC1>, 2021

The paper is well designed, nicely written, and presents a novel way to downscale precipitation data by combining semivariogram modeling into spatial random forest with well-known precipitation predictors. Although I consider the paper can be published "as is", I have suggestions for the authors:

- The proposed method could be given a name.
- In 5.5. Further Research, the authors could also address some of the following:

The upscaling from 1 km to the 10 km IMERG grid was done by pixel averaging. If some other aggregation stats were used (eg. median, max, mode), would the performance of some of the environmental predictors improve (eg. aspect)?

Some other predictors could also be included, such as position based on metric distances instead of latitude-longitude, EVI (with is better related to water content in plants or soil than NDVI), wind or atmospheric pressure features.

The proposed method could be transferred to use with CHIRPS or TRMM data in other parts of the world, particularly in large tracts of South America, which have complex topography and sparse gauging stations.