Comment on gmd-2022-213

Anonymous Referee #1

Referee comment on "Customized deep learning for precipitation bias correction and downscaling" by Fang Wang et al., Geosci. Model Dev. Discuss., https://doi.org/10.5194/gmd-2022-213-RC1, 2022

Review

For local scale studies, current precipitation datasets are crucial for bias correction and downscaling. By using customized loss functions et al. to bias correct and downscale hourly precipitation data, the authors developed a customized DL model based on the SRDRN architecture. This model provides better precipitation estimates at fine spatial and temporal resolutions.However, there are still some problems need to be solved:

- Page 5,Line 130. Although the authors acknowledge that SRDRN performs better than conventional methods, they do not discuss its benefits over other types of deep learning models, and it is unclear why SRDRN was selected.
- Page 6,Line 158. The authors mention that the precipitation classification task and the correction and downscaling tasks are highly relevant. Is this an empirical or theoretically based judgment?
- Page 7,Line 191. How does weighted cross-entropy as a loss function penalize the heavy rain category more?
- Page 11,Line 296. The author should explain the exact meaning of TP, FP and FN, similar to TP (prediction=1, truth=1).
- Section 3. No subsection 3.1, layout error or omission?
- Table 2. The authors need to have described the units of each variable in the table.
- Figure 2,3,7 and 8. The authors should label the units of the physical quantities represented in the figure next to the legend.