

The study downscaled a 6 km² daily meteorological dataset based on a geopotential-guided attention network (GeoAN) in Asia, covering the period from 1940 to 2023. The dataset is likely to be valuable for a wide range of applications, including climate change studies and extreme weather events analysis. However, the precision and validation of the downscaled dataset require more comprehensive evaluation. Additionally, the methodology could benefit from more detailed comparisons with alternative approaches to further highlight its advantages. The English presentation of the also requires significant improvement. Below are my specific comments:

1. The English presentation in the manuscript should be much more formal and precise.

For example:

- line 29: Replace 'kind of research' with a more formal term.
- line 31: 'kinetic downscaling' should be corrected.
- line 125: The phrase 'in this paper for the downscaling task, and SwinLR 125 can be found in' should be corrected.
- Line 135: The phrase 'this phenomenon may caused by the that' contains a grammatical error, 'the' should be removed.
- Line 76: why mentioned 'For the TP (mm), the day sum is adopted' again after line 70 ? consider removing line 76.

2. The introduction requires more comprehensive structured and detailed descriptions.

- Lines 24–27 and 44-47: While these lines list several studies, the authors should provide more detailed information about each study and explain their relevance to this research.
- The author should clearly outline the research gaps and demonstrate the unique advantages of their methodology.

3. For the methodology, the study only used daily data from 2020–2022 for training and daily data from 2023 for validation, to downscale 60 years of data since 1940. This raises concerns about whether the training and validation dataset is sufficient to ensure the accuracy of the downscaled dataset. I suggest:

- Use a larger training and validation dataset to improve reliability.
- Consider the leave-one-out cross-validation method to enlarge the training dataset.

4. Fo results,

- Quantitative results (e.g., R^2 , PSNR) demonstrate the effectiveness of GeoAN, but the discussion of why GeoAN outperforms other methods could be expanded.

- The visual comparisons (Fig.3-5) look impressive; however, it would be useful to provide more quantitative evidence to support claims about GeoAN's ability to restore fine details.
5. The decision not to include precipitation data is understandable but significant limits the dataset's utility for hydrological modelling applications. Future plans to address this gap would be valuable.
6. The Discussion section should give more information about:
- Comparison of the methodology with other downscaling methods or downscaled datasets.
 - Advantages and limitations of the proposed methodology should be explicitly described.
 - The author could consider referencing recent methodologies, such as '*Multiple-point geostatistics-based spatial downscaling of heavy rainfall fields*' (Doi: 10.1016/j.jhydrol.2024.130899), to provide a broader context for their work.