

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC2
<https://doi.org/10.5194/nhess-2022-114-RC2>, 2022
© Author(s) 2022. This work is distributed under
the Creative Commons Attribution 4.0 License.

Comment on nhess-2022-114

Anonymous Referee #2

Referee comment on "Spatiotemporal seismicity pattern of the Taiwan orogen" by Yi-Ying Wen et al., Nat. Hazards Earth Syst. Sci. Discuss.,
<https://doi.org/10.5194/nhess-2022-114-RC2>, 2022

In the paper by Wen et al., Spatiotemporal seismicity pattern of the Taiwan orogen, the RTL algorithm is applied to the seismicity of Taiwan to investigate the seismicity patterns prior to $M > 6$ events. Based on this analysis, the authors recognize two types of events, the ones that experience seismic quiescence before the mainshock (Q-type) and the ones that show seismic activation prior to the mainshock (A-type). Although the results seem interesting, there are some major issues with the analysis, which are discussed in the following. Therefore, I recommend major revisions before the paper can be reconsidered for publication.

1) Revise the Introduction section and discuss the main objectives of the paper and how these will be accomplished.

2) The RTL algorithm is based on characteristic parameters, such as the characteristic distance and time. The authors adopt these parameters based on previous studies in Taiwan. However, it should be shown and discussed how sensitive are the results of the RTL algorithm on these parameters.

3) The authors discuss that a complete catalogue is a significant factor for the RTL analysis and use the events with $M \geq 2.5$. Is this the magnitude of completeness since 1991 for Taiwan? Please justify.

4) The results of the RTL analysis, presented in Fig.2, further show negative RTL values and seismic quiescence stages prior to the quiescence stage identified and marked by the authors. How can these stages affect future large events and the main conclusions of the paper?

- 5) The resolution of Fig.2 should be improved.
- 6) Discuss how the spatial variations of the b-value, shown in Fig.3, were calculated.
- 7) In Fig.3, spatiotemporal clustering of seismicity is still visible following large events, although the catalogue is declustered. Are the aftershocks effectively being removed?
- 8) Line 133. How the four years time span prior to the investigated events was selected?
- 9) Lines 139-143. How the criteria i) and ii) were selected? Are the results sensitive to these criteria?
- 10) In Fig. 4, explain what the colorbars represent. Similarly for Fig.6.
- 11) Overall, a better justification of the presented results is required.

Some minor comments to the text concern:

- 1) A few issues with English language throughout the text should be improved.
- 2) Spatiotemporal rather than Spatiotemporial.
- 3) In Page 2, Lines 32-34, refer to the full names of these methods before using the abbreviations. Also add a brief discussion to introduce them properly.
- 4) Add Rundle et al. (2000) to the list of references.