

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC1  
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## Comment on nhess-2022-82

Anonymous Referee #1

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Referee comment on "Investigation of an extreme rainfall event during 8–12 December 2018 over central Vietnam – Part 1: Analysis and cloud-resolving simulation" by Chung-Chieh Wang and Duc Van Nguyen, Nat. Hazards Earth Syst. Sci. Discuss.,  
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Article: "Investigation of An Extreme Rainfall Event during 1 8-12 December 2018 over Central Vietnam. Part I: Analysis and Cloud-Resolving Simulation" Research on the problems of record heavy rainfall in the central part of Vietnam is very interesting for the readers.

This rain is caused by the influence of cold air and strong high-altitude westerly wind, followed by strong easterly winds, so from the evening of December 7, it was heavy rain in Quang Tri. After that, it rained heavily, until 3 am on December 8, it rained heavily in Da Nang until about 9 am, then it rained heavily on the coast of the Quang Nam Sea. Rain mainly concentrated from the evening of December 8 to the end of December 10, and on December 11 and 12, the area still had rain but the intensity decreased.

## COMMENTS

- After reading the article, readers have some comments as follows:
- - Part 1: The overview of the article has not mentioned much about the situation causing heavy rain and the ability to solve the problem of heavy rain caused by this weather pattern in Vietnam.
- - Part 2: It is necessary to describe more clearly the two options for removing terrain and not removing terrain in the experiment. Additional options for physics of Cress model.
- - Part 3: analyzes a lot about the weather patterns that cause rain but still does not explain the cause of rain for this period.

- - Part 4: The forecasted rainy area with the case of keeping the topography (Ctl) gives the rain center deviation from reality and also does not simulate the rain well in the Truong Son mountain range. It should be noted that in this case of heavy rain, the topography is not the main factor, as evidenced by very heavy rains at coastal stations (400-600mm/day) and less rain at stations in mountainous areas.
- - Note the activities of weather patterns such as the combination of cold air with the high easterly wind and the activity of the westerly wind channel.

**Question:**

1/ It is necessary to clarify how many hours are the rain analysis periods of the cress model? Rain spreads from the north to the south, but it shows as cumulative rain in the article, so can the model describe this phenomenon?

2/ Compare the experiment with keeping the terrain with removing the terrain to explain what?

3/ In fact, the time of heavy rain of the rain being studied is short, the center of heavy rain moves from north to south, so the total of 3 days in the article is heavy rain on a large scale, not suitable for this rain. What is the cause of the occurrence of heavy rainfall in a short period of time on a small scale in this case?

Please also note the supplement to this comment:

<https://nhess.copernicus.org/preprints/nhess-2022-82/nhess-2022-82-RC1-supplement.pdf>