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Comment

# ***Interactive comment on “Evaluating intense precipitation in high-resolution numerical model over a tropical island: impact of model horizontal resolution” by N. Yu***

## **Anonymous Referee #3**

Received and published: 2 July 2014

The paper “Evaluating intense precipitation in high-resolution numerical model over a tropical island: impact of model horizontal resolution” by Yu et al. presents a case study for an event with very extreme precipitation amounts over the island of La Réunion in the Indian Ocean. This topic fits to the journal, as it addresses the simulation of serious natural hazards for tropical islands. The case study has been presented sufficiently with respect to concept, results and conclusion. Specific remarks can be found below. The language is partly of lower quality and should be improved. I consider this paper acceptable after revisions.

Specific points

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## Chapter 2.2.

- For clarification: Was the analysis used as large-scale forcing throughout the episode or only for the initialization?
- Where the finer scale simulations nested within the 4 km or the 2 km simulation?
- Who high is the model top located? Is it high enough to sufficiently resolve tropical deep convection?
- Is the vertical resolution the same for all horizontal resolutions? Wouldn't at least the highest horizontal resolution simulations require also an increased vertical resolution?
- Is there any adaptation to the extreme high resolution

## Chapter 3.2

- Page 1009 line 14: Presumably you meant 4 and 2 km instead of 1 and 2 km, consider also reordering the sentence
- Page 1009: Consider rephrasing the sentence starting line 19

## Chapter 4

- Page 1010/1011 and Fig. 12: What is the effect of averaging the 2 stations especially on the wind? The statement of a "good agreement" for the wind seems not obvious and needs at least more explanation.

## Chapter 5

- Page 1012 line 18: Which improvements do expect from the larger parent domain and why?

## Figures:

- Are Figure 5a and 6a with the 24h resolution really needed, when you provide the 12-hourly resolution in Figure 5b/6b. It might be more helpful to include a graphic with

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the absolute rainfall amounts in the observation and simulations.

Language:

The text contains many errors (precipitations, rainfalls, are showed) or missing articles (the) and other language related problems. Not all are mentioned here specifically. This should be checked and improved thoroughly.

- Page 1000 line 23: consider using kilometer scale instead of kilometric
- Page 1000 line 26: consider putting citation after hydrological models
- Page 1008: Consider completing the sentence Starting line 10: “Growth of temporal. . .”
- Page 1008 line 25: Sentence needs to be corrected
- Page 1009 line 8: Consider reordering the sentence to: “20% of the record a daily. . .”
- Page 1010 line 8/9: replace “are showed” with “are shown”
- Page 1010 line 25: The “5” has to be removed.
- Page 1011 (and elsewhere): replace “precipitations” with “precipitation”
- Page 1011 lines 17/19: Consider rephrasing the sentence “Interistingly, . . .”
- Page 1011 lines 20/22: Consider rephrasing the sentence starting with “these results suggest. . .”
- Page 1011 lines 26/28: Consider rephrasing the sentence starting with “The deep convection. . .” and reduces its complexity by splitting it in two or more sentences.
- Page 1011 lines 27/29: There is also something wrong with this sentence.
- Page 1012 lines 21/22: Consider rephrasing the sentence starting with “This maybe do to the. . .”

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- Page 1012 lines 23/26: Consider rephrasing this long sentence. Use something like “using advanced statistical methods” instead of “with advanced stat. method”.
- Page 1012 lines 27/28: Consider rephrasing the sentence starting with “The physical mechanism”. Did you mean to point to the mechanism represented by the higher but not with the lower resolution?
- Page 1013 line 7/8: Consider reordering the sentence “The coarse resolution sim. . .”
- Page 1013 line 9: better “fails” than “is failed completely”.
- Page 1013 lines 13/14: better “with an extension up to 1000 km.” than “of which the special scale reaches up to 1000km.”
- Page 1013 lines 15/16: Consider rephrasing the last sentence.

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Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 999, 2014.

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