

# ***Interactive comment on “Projected intensification of sub-daily and daily rainfall extremes in convection-permitting climate model simulations over North America: Implications for future Intensity–Duration–Frequency curves” by Alex J. Cannon and Silvia Innocenti***

## **Anonymous Referee #3**

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Intensity, duration and frequency curves of extreme precipitation are important tools for designing water management structures and other engineering design applications. However, unavailability of long data both in the observation and high resolution climate model simulations is a major issue in estimating precipitation quantiles for longer return periods. The paper attempts to address this "key problem of shortage of data" by pooling the data from different durations to fit a robust GEV distribution. The GEVSS model based upon the simple scaling hypothesis seems to provide a nice framework

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for assessing changes in specific characteristics of IDF curves .

The paper is nicely written with the strengths and weaknesses of the method discussed in the text. However, anticipating a wide reach of the paper, explanation to a couple of technical words used in the paper is required.

I suggest that this paper be published with the following minor comments:

- 1) How do the station-specific estimates based upon GEVSS compare with the estimates based upon the regional frequency analysis?
- 2) As mentioned in line 12 of the manuscript, what interpolation method did you use to interpolate the data from grid points to the station locations? Did you try considering different interpolation schemes to see which scheme introduces the least error?
- 3) Are there any significance tests for the statistics MLAR and MALAR? If yes, it would be better to include results of the tests in figures 5,7-8.
- 4) Please explain in detail how did you perform "permutation test" mentioned in line 26.
- 5) Please explain the term "Pseudo-global warning".
- 6) please explain the term "convection-permitting".

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