General Comments:

The present manuscript investigates the utilization of hydrological information in Regional Frequency Analysis (RFA) in order to improve homogenous properties of neighborhoods and then improve regional flood estimation. I think that the contribution of the study is relevant, and the authors have adequately responded to almost all the comments of the reviewers. However, I still have one "unfinished" major comment and three specific comments.

Major comments:

The original comment: Since, homogeneity tests (*e.g*. Hosking and Wallis 1997) are generally based on hydrological variables (*e.g*., L1, LCV), these variables should not be used in delineating homogeneous regions. In other words, the same information should not be used for both delineating the homogeneous regions and testing the homogeneity of such regions.

Authors: *the present methodology does not perform any homogeneity test. The criteria used for selecting the size of the neighborhood is the RRMSE and is based on cross- validation, which tends to optimize the prediction corresponding to a specific return period. Consequently, the L-moments are not the variables used in the calibration of the neighborhood.*

The authors replied to this comment that "*the present methodology does not perform any homogeneity test*". However, the comparative study in their manuscript based on four criteria including the AHM which depends on the heterogeneity measure (*H*). Hence, the proposed comparative methodology assesses the considered methods based on the homogeneity of the resulted delineated regions.

Surprisingly, the authors replied here that "*the L-moments are not the variables used in the calibration of the neighborhood*". Nevertheless, the proposed method (RVN) based on reference variables which mainly include the L-moments. Review P11 L3 "*Two initial groups of reference variables are considered. The first group is based on L-moments only and the second is based on the combination of L-moments and site-characteristics.*"

Specific comments:

1. P6 L21. "Calculate the distance between the reference variables". Again, the distance is between locations not between variables. The authors have already agreed that the formulation needs to be changed and distances remain between locations not between variables.

2. Figure 2. I would like to thank the authors for their respond to my recommendation of drawing a map of Quebec showing the location of the selected stations. However, the map should include more labels (*e.g.*, Quebec, Atlantic Ocean, Hudson Bay….). Also, the style of the map looks very old (we should take advantage of the recent technology in map drawing). Please, see Figure 1 (Reprinted from Gado and Nguyen 2016, © ASCE) for a close example of a map of Quebec.

3. Figure 7. Thanks again for accepting my suggestion of using the Q-Q plot. However, I have recommended the Q-Q plot in order to compare the considered methods regarding the estimation of regional flood quantile, not to draw the Q-Q plot for every method separately which does not make sense in assessing the different methods. Please, see Figure 2 (Reprinted from Gado and Nguyen 2015, © ASCE) for an example to clarify my point.

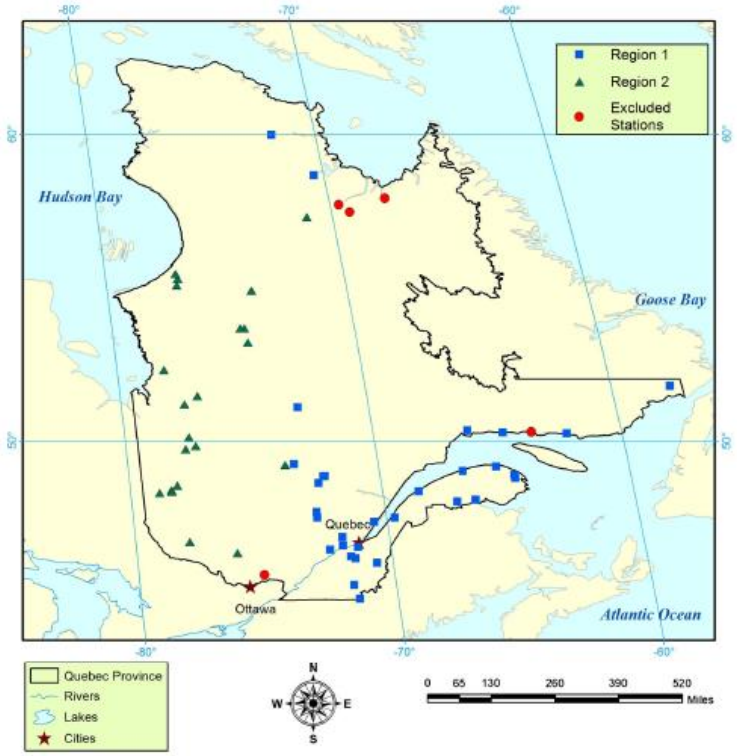

Figure 1 (Reprinted from Gado and Nguyen 2016, © ASCE)

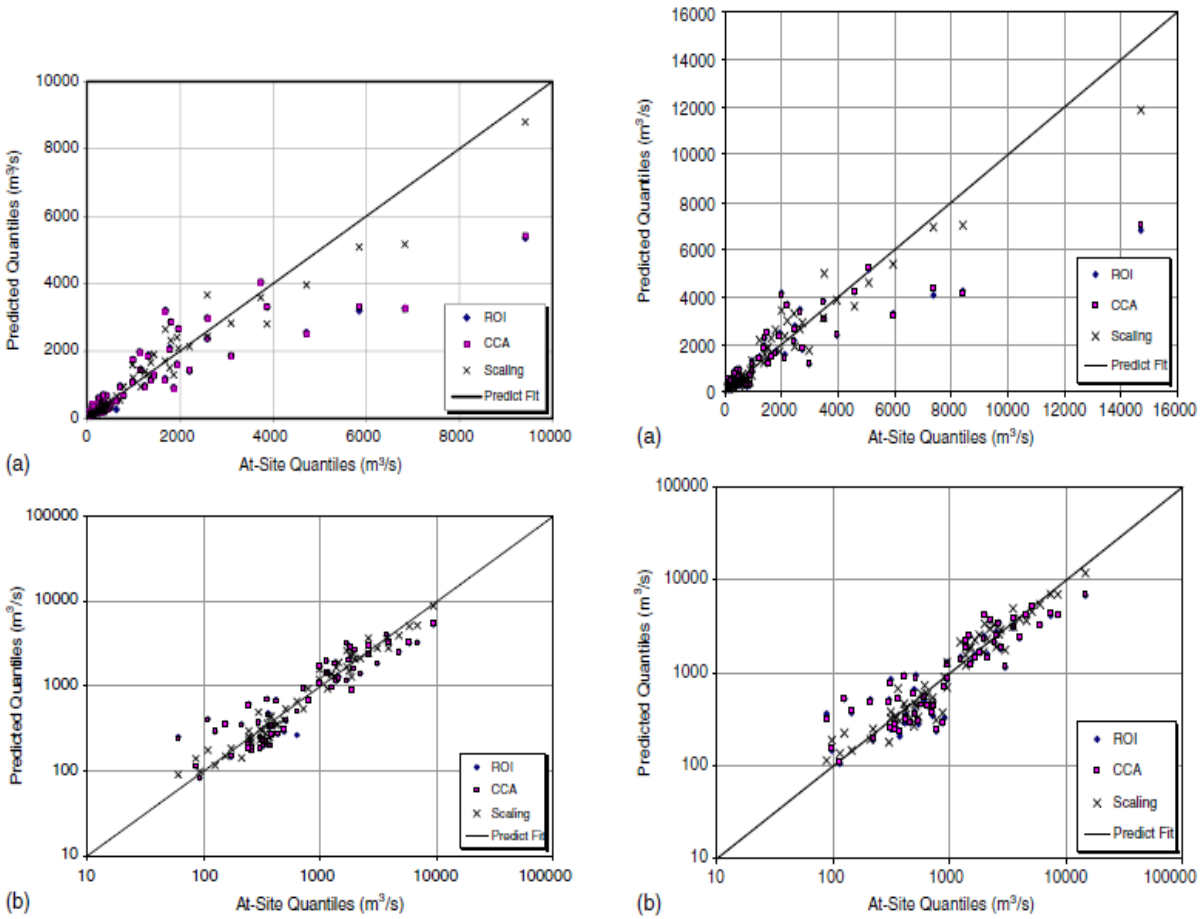

Figure 2 (Reprinted from Gado and Nguyen 2015, © ASCE)

References

Hosking, J.R.M., Wallis, J.R., 1997. Regional frequency analysis: an approach based on L-moments. Cambridge Univ Pr.

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