

# ***Interactive comment on “Estimation of predictive hydrologic uncertainty using quantile regression and UNEEC methods and their comparison on contrasting catchments” by N. Dogulu et al.***

## **Anonymous Referee #2**

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The authors propose a comparison of two methods for hydrologic uncertainty estimation, namely Quantile Regression (QR) and UNcertainty Estimation based on local Errors and Clustering (UNEEC). Both the methods and their performances have already been presented and analyzed in several papers proposed within the scientific literature. The comparison is performed by considering four catchments featuring different hydrological characteristics in order to identify possible correlations among the performances of the method used for the hydrologic uncertainty estimation and the catchment characteristics. Even though the topic is definitively of interest, the novel contribution of the proposed manuscript for the advancement of the knowledge and for

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practical purposes is rather limited. Indeed, the author state that “The motivation here is to identify possible advantages and disadvantages of using QR and UNEEC methods based on their comparative performance, especially during flooding conditions (i.e. for the data cluster associated with high flow/water level conditions)”, but the analysis performed are rather confusing and lead to some questionable conclusions. In short, the lack of a significant novel contribution and the questionable analysis and conclusion provided affect the quality of the proposed manuscript making it not a valuable contribution for the advancement of knowledge. In the following some other detailed comments are provided.

Sect. 4.1 statistical error analysis: it seems that homoscedasticity/ heteroscedasticity of the error is an important aspect affecting the performances of the models; with respect to this, the authors could considered the comments provided in Coccia and Todini (2011) concerning the QR.

p.10202, line 20 and Table 3: why only training results are presented? What about validation results?

p.10202, lines 20-22: why is the relationship between PICP and MPI contradictory?

p.10203, lines 2-4: I disagree with the final conclusion provided by the author about the performances of the two compared method with respect to the Brue catchment. In fact, they state that in general UNEEC shows a better performance since it yields a higher NUE value, but it is worth noting that an uncertainty estimation method should first of all provide correct PICP values (and being the PICP correct, lower MPI or ARIL values are worth wishing for); indeed, according to Table 3, UNEEC generally provides less correct PICP values than QR, particularly for cluster 4: it is worth noting that this cluster includes high flows/high rainfalls, that, according to the authors, are those of major concern.

p. 10205, lines 13-24: it is almost impossible observing in figure 14 the considerations and comments provided in the manuscript; please modify the figure making it more

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clear.

p. 10206 and Table 4: as for Table 3, why only training results are presented? What about validation results?

p. 10207-10208 Sect. Conclusions: a clear and robust conclusion addressing the problem presented in the introduction (see my general comment) is missing.

p. 10208, lines 8-15: this aspect could be of interest, but the hypothesis is supported just by one case study. It is worth noting that in the study by López López et al. (2014) (featuring several authors in common with this one and that, according to the authors themselves, is accompanying it – see page 10207 line 7) many other Severn catchments, most of them characterized by low lag times, were considered (see Table 1 of López López et al. (2014)): these catchments could be considered to support and make more robust the hypothesis provided.

p.10186: Q should be theta

p. 10191, lines 18-20: “Nasseri and Zahraie (2011) recommend that methods with the higher NUE should be preferred over those with the lower NUE. . .”. I did not find such a recommendation in Nasseri and Zahraie (2011)

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