18-Feb-2019

Comments to Authors:

Manuscript: ‘Development of a Large Flood Regionalisation Model Considering Spatial Dependence – Application to Ungauged Catchments in Australia’

In this work has been formulated a Large Flood Regionalization Model (LFRM) based on observed flood data derived from basins whose areas range between 0.1 and 7,406 km² in Australia. Unlike other similar works, the LFRM is enhanced by adding a spatial dependence model which accounts for the net information available for regional analysis. The study addresses a quite interesting topic; it offers an alternative method for the estimation of rare to very rare flood frequencies. Furthermore, this is a relevant topic lies within the scope of the MDPI water journal. The article is well organized and neatly written with the appropriate scientific content. Based on the above, I support the publication of this manuscript, but only after a minor revision.

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Title: it fits perfectly the paper content.

Abstract: it is quite adjusted to the paper content, but authors should add some metrics such as the average or median for bias and relative errors (lines 21 and 22).

Introduction: this section provides sufficient background and includes relevant references about some methods used to estimate rare, very rare and extreme floods; particularly at Australia. Objectives clearly stated.

Data description: the description of the data sets is clearly stated. To improve the clarity of Figure 1 authors should use unshaded dots (line 126).

Methods: in my opinion, the research shows a design appropriated and its methods have been adequately described, but for the sake of clarity, I think that this section could be significantly improved if the authors add a flow chart with the different methods described in text, highlighting inputs, applied analysis/procedure, and outputs so that readers could understand this section easier. On the other hand, authors should use a same nomenclature for Ne in lines 133, 147, 154, 159, 168, 171, 191, 193…and others; i.e., subscript ‘e’.

Line 238: what does ‘black line’ mean? Please, indicate in caption (e.g., the black line represents a 1:1 line).

Results: the results have been presented clearly, but I have some specific comments:

Table 2: authors should add the names of columns 3 and 4 (i.e., ‘alpha’ and ‘psi’).

Line 271: what does ‘red line’ mean? Please, indicate in caption (e.g., the red line represents the line of best fit).

Line 387: fix this sentence. Figure 5 shows the behavior...

Conclusions: they’re clear and concise and are supported by the results.