General comment

This study analyses the streamflow elasticities (considered as sensitivities) to climate described as observed percentage changes in river flow per percentage change of a climate driver. The autors have used a large hydrometeorological dataset to draw data from over 8,000 catchments, and provide a pan-European quantification of elasticities of annual mean and extreme streamflow to precipitation and temperature. In a second part, they intend to analyze the dependence of the elasticities to precipitation in using a random forest model with 20 climate and catchment factors to explain regional difference in elasticity value.
The objective is to demonstrate that such empirical strategy advances understanding of hydrological resilience of stream flows to climate change highlighting amplified and dampened streamflow response to climate which can ultimately support water management and disaster risk mitigation across Europe.

I acknowledge that the authors have addressed most of my previous comments, thereby improving the clarity, readability, and precision of the manuscript, and I thank them for that. After this second round of review, however, I consider that additional discussion and clarification are still necessary before the paper can be published in the journal. I summaries my comments below in the hope that they will help the authors prepare an improved version of the manuscript.

Main comments:

(line number refer to the track-changed version of the manuscript)

1) The authors do not sufficiently explain several key statistical and data-analysis concepts:

- The p-value (L 185) is given without the statistic test used nor the null-hypothesis that is tested
- The importance plot (L473) is presented without explaining how feature importance is computed in the random forest model (i.e. what exactly “importance” refers to and how it is measured).

2) The authors introduce the significance of their estimates, but do not consistently account for it in the analysis. As a result, some interpretations may sound overstated:

- Are the given elasticity mean value (L257, L426) computed only based on the significant number ? This information must be explicitly stated.
- Is the seasonal dominance computed even when one of the seasonal sensitivities is not significant?
- In the random forest analysis, is the model trained on all sensitivity estimates, or only on the significant ones?
- Concerning sensitivity to temperature, fewer than 30%, and in some cases as low as 10%, of the sensitivity estimates are significant.

I encourage the authors to better distinguish between significant and non-significant values in their figures, for example by using larger markers for significant estimates, and to nuance the discussion in the main text accordingly. I acknowledge that the fraction of significant estimates is reported in the figure captions, but this point deserves more explicit treatment in the main text.

3)-L394: the added paragraph remains rather unclear, and I do not fully follow the logic behind expressions such as “reflected by” (L395) and “This is consistent with” (L397).
Why does the weak correlation between annual precipitation maxima and (annual mean ?) flow support the statement regarding antecedent wetness and maximum streamflow? Also, the sentence “their correlations with the elasticity of maximum flows to mean precipitation (Spearman r = 0.14)” seems to refer to two quantities: i) the correlation between elasticity and mean precipitation, and ii) the correlation between elasticity and maximum precipitation. this paragraph is unclear and should be revised following the clearer (and similar) paragraph L323.

Specific comments:

(line number refer to the track-changed version of the manuscript)

- Abstract L17 : what does the *tilde* symbol in “\tilde{\epsilon}” represent ? The mean is usually indicated by “\bar” not tilde, if it is the median value, it mist be specified.
- Eq.1 and L145: *hat{P}*, usually, *hat{.}* refers to an estimate (as \hat{Q}), use *bar{}* for mean.
- Eq. 2 can be simplified in s= (|e_c|-|e_w|) / (|e_c|+|e_w|)
- Table 1: What is meant by “precipitation seasonality” in the random forest analysis? Does it refer to seasonal precipitation across the 12 calendar months (i.e. a vector of 12 values), to 3-month aggregated values, or to the variance across seasons? This information is important to understand how dependent this predictor is on the sensitivity computed with respect to mean precipitation.
- L 434-435: it is no more a multiple linear regression if only one predicant is used.