

## ***Interactive comment on “Methodology based on modelling processes and the characterisation of natural flows for risk assessment and water management under the influence of climate change” by Sara Suárez-Almiñana et al.***

**Anonymous Referee #2**

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First, and from the point of view of the structure of the paper, its title is too long and inaccurate. The work contains, in addition to the methodology, a case study and results obtained after applying the developed methodology. Second, there is confusion between sections 2, Material and methods, and 3, Case study, since subsections 3.1 and 3.2, and perhaps 3.3, would be better classified as Material and methods. As for figures, figure 1 does not seem necessary and figure 2 is difficult to understand. The introduction lacks the reference to similar works that have incorporated climate change projections in decision-making processes in other basins, not just those in the Mediter-

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anean environment. And this is important since the results of the work show a great dispersion (see figure 12). The Material and methods section is quite robust since this work group has implemented numerous modules, already contrasted, in the Aquatool Decision Support System and now used (hydrological model; management model; water allocation model; stochastic model and risk assessment model) This paper provides the integration of climate projections into the model and its impact on future flows in the basin and on the storage of water in the system. In this sense, it uses nine Ensemble members (table 1) that cause a great dispersion of results, as already mentioned, and an inaccuracy in the conclusions. Would it be possible to use only those that have given better results in the Mediterranean region? On the one hand, they work with flow data in the basin between 1980-2012 and, on the other hand, the reference period is reduced to the 1980-2000 period. However, as can be seen in Figure 5, there are differences in the average year inflows between the different periods. Can the use of these different periods have an influence on the results obtained? The results obtained in figures 6, 7 and 8 are only visually compared. In the text it is written, for example, (lines 353-354): “There can be seen how both HBV models results are generally close to the observed flow values”. Would it be possible to specify, from a statistical point of view, the term “close”? The results of figure 9 show a great variability between options A and B, mainly in the two head reservoir, Alarcon and Contreras. In view of the results in Figure 12, could one option be recommended over another? Some minor comments would be: - Figure 2: the acronyms of P and T have not been previously defined - Line 133: the acronym RCM is defined later (see line 236) - Lines 223-226: There are several references to geographical names such as the Albufera of Valencia that are not shown on the map in Figure 4

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