

Interactive comment on “Sustainability of water uses in managed hydrosystems: human- and climate-induced changes for the mid-21st century” by J. Fabre et al.

Anonymous Referee #2

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General comments:

The paper aims at characterizing the sustainability of water management rules for two Mediterranean basins under the context of global change. This manuscript is well written and well organized and I have only few recommendations before publication. The results presented here, which focus on the future, complement previous published works on the general modelling framework and its former application under past conditions (Fabre et al., 2015; Grouillet et al., 2015).

Details:

P 9252: 18 projections are not enough to consider that they form a “wide” range of C5560

possible climate scenarios”.

P 9254: the Florensac transfer is not displayed on the map (Fig. 1).

P 9255: “by withdrawals inside” = > “by withdrawals inside and outside”

P 9257: it is not clear on which time step the analyses (in particular the comparisons to the thresholds derived from monthly discharges) were carried out (daily, 10-day, monthly).

P 9259: ET₀ is given by Penman-Monteith formula under current conditions for the Herault basin. How are ET₀ values obtained under climate projections since other climate data than temperature are required?

P 9261: how are changes distributed within the two basins? In section 4.1.2, one can find that the increase in irrigated areas (65% and 90%) varies from on sub-basin to another. This is not really consistent with Table 2 (80%).

P 9261: do Q_{min} and Q_{obj} remain unchanged under climate change scenarios?

P 9264: pojected = > projected

P 9264: could you identify the upstream / downstream sections in the graphs?

P 9264: is there any explanation to the decrease in AWD for some sub basins of the Ebro River? (decrease in ET₀?)

P 9265: could you add and comment the changes in total stored water volume in the reservoirs on the graphs?

P 9268: it is not clear for me on which time step the analyses were carried out regarding the environmental flows.

Table 1: Martin et al. is missing

Table 2: “et” should be deleted

Table 3: 2050 = > 2050s

Figure 2: only "Reservoir level" is on the graph. I suggest adding "Transfer". At which time step, return flows are computed? What does dashed arrow mean? One arrow is missing: we do not know where "return flows" flow.

Figure 5: it is difficult to identify points related to "2000s water uses Reference climate". I suspect that polygons and curves overlap.

Figure 7: There are more gauging stations in the two basins than the number of sites displayed. Why do the authors consider this selection of basins?

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