Interactive comment on "A Coupled Modeling Framework for Sustainable Watershed Management in Transboundary River Basins" *by* Hassaan F. Khan et al.

Anonymous Referee #1

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General comments This is a well-written paper that clearly identifies the stakes associated with the approach (I particularly like, in 5.1, the discussion about hydroclimatic uncertainty, about the potential impacts of the use of seasonal forecasts, and of an extension to Bayesian theory), and exemplify its use. Ideally, I would have like a couple of points to be further developed (but this is partly subjective and informed by my own biases, in particular the first two points): - the limitations of the SWAT modeling framework itself, which is a crucial part of the framework, especially when going to higher temporal resolution (it was interesting to see the calibration and validation results), - the limitations of agent-based models (although it is mentioned briefly on line 242), and the fact that they are better as a space explanatory tool (what they are used for

in the paper) than for prediction - the impact of potential seasonal forecasting capacity (e.g. based on El Nino) on agent decisions, - the surveys performed and their use for calibration. The web-app is also intuitive to use (although I could not find the source code on GitHub when going to that page).

Specific comments The hydroclimate time series are said to come from historical data. Could the sources of the data made clearer? Does the series chosen conserve temporal cycles? Maybe it would be interesting to have some plots as well to compare to the results given. Similarly, more detail regarding the IHA-EFC data used would be welcome, as well as some more explanation as to the potential increase in pollution in the delta mentioned on line 424.

Technical corrections In the app, for crop yield, the y axis reads "Crop Yeild" p.6 l.134: "a level of cooperation (LOC) parameter is included that signifies by" "we include a level of cooperation (LOC) parameter that signifies" p.6 l.141: "These input parameters can either be defined by individual users tailored to their specific scenario of interest" by "These input parameters can either be defined by individual users according to specific scenarios of interest"

p.7. l148: "is defined" by "are defined" p.7 l.149: "each of the agents" by "each agent" p.7 l.162: "in each agent" by "by each agent" p.10 l.217: "in the developing countries" by "in developing countries" p.10 l.218: "allow" by "allows" p.10 l.220: "the agents" by "agents" p.10 l.221: "requests by" by "requests from" p.21 l.431: "is conducted" by "was conducted" p. 22 l. 178: sentence lacks a verb