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Discussions

Interactive comment on "A coupled modeling framework of the co-evolution of humans and water: case study of Tarim River Basin, western China" *by* D. Liu et al.

Anonymous Referee #1

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This study presents a novel socio-hydrologic model from co-evolution perspective. The results are interesting, and the mathematical framework and insights generated are valuable contribution to the hydrology community. I would recommend acceptance contingent on satisfactorily addressing the following comments, mainly on the presentation side.

1. Line 8-9, it'd better to provide more solid reason other than "for a start". Actually the authors did so at L18-20, P3919;

2. L8, P3919, "mainly comes from"→ "is mainly satisfied by";

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3. L22, P3919, “water storage” is used a representative variable, which is slightly inconsistent with previously usage of “stream discharge” (e.g., L16, P3912).

4. Line 12-13. The logic is not clear. Is it simply an assumption that evolution of irrigated crop are can be described with a logistic type equation (to be consistent with that of natural vegetation and of population)?

5. L16-17. Contradictory with earlier L6-7. Please rephrase.

6. L24, P3932. Don’t understand the terminology “runoff frequency”. Please define or rephrase.

7. L 25-28, P3932. I don’t feel a smooth transition between the baseline and revised model results. Here it might be a good place to provide adequate transition.

8. L2-3, P3933. “are repeated 4 times”→ “are repeated another 4 times after 1951-2010”. Again, I don’t feel a clear and smooth transition between the baseline and revised models. The major difference is whether the environment protection policy is explicitly accounted for or not. This environment protection policy is somewhat mentioned a few times earlier already, e.g., L2-4, P3926. It is not until later stage of this story (Section 5) this distinction has been brought up. Maybe stating this upfront would make it easier for the readers to follow.

9. L15, P3935. “irrigation coefficient will decrease” →”. . . will increase”.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 3911, 2014.