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Discussions



# *Interactive comment on* "Socio-hydrologic drivers of the Pendulum Swing between agriculture development and environmental health: a case study from Murrumbidgee River Basin, Australia" *by* J. Kandasamy et al.

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This paper describes the evolution of the Murrumbidgee river basin as a human-water systems. I found this study very interesting and matching the scope of HESS. I think that this study can contribute to a better understanding of the dynamic behavior of human-water systems, which is crucial to advance water resources management.

MINOR COMMENTS

I think that numerous downstream regions of European and North American countries have had similar experiences To go beyond site-specific conclusions, I think that the paper can benefit from a wider discussion of the dynamics of Murrumbidgee river basin that can generalized and the ones that are specific for this case study. For instance, in a review paper on HESS, Di Baldassarre et al. (2013) discuss the so-called "levee effect" and the fact that in many areas of the world the continuous heightening of flood protection structures, i.e. "fighting floods", has been partly replaced with different policies of "living with floods", e.g. "floodplain reconnection", in the USA; "room for the river" in the Netherlands, making space for water", in the UK. I think that there is a strong analogy between these policy shifts and the pendulum swing described by Kandasamy et al. also in view of their relationships with the environmental concerns underpinning both of them.

The paper states that the "Lowbidgee Flood Control and Irrigation District" was established in 1945. In Australia, as in many parts of the world, flood risk and irrigation are two main (interrelated) topics in the management of downstream river reaches. I appreciate that this paper gives emphasis to the irrigation issues, but I believe that it would be worth mentioning the link with flood risk. Besides the aforementioned relationship with the "levee effect", it would be important to understand how flood control is framed in this region and whether the occurrence of extreme events may (or not) have changed the policy discourse. For instance, it is mentioned in the paper that the "reduction of flows significantly reduced the frequency and duration of inundation" that negatively impacted the environment, including fauna and flora. In addition to that, it would be interesting to know if such a reduced frequency and duration of inundation was actually meant to reduce potential flood damage to people and infrastructures.

TECHNICAL COMMENTS

Would be possible to express the figures in page 7202, lines 11-17, in relation to Australian GDP?



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The paper would benefit from a double check of the text. I found a few minor typos (e.g. "This emergent dynamics"; Sentence in page 7206, lines 5-7, check the use of "here" after "in this paper").

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 7197, 2013.