

Interactive comment on “Adaptive cycles of floodplain vegetation response to flooding and drying” by R. Thapa et al.

Anonymous Referee #1

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This paper is an interesting and well-argued discussion on floodplain vegetation response to flooding in a semi-arid system in Australia. The paper is well set in context of the existing literature and sets out to examine the response of vegetation productivity (as measured by NDVI) through a hypothesised adaptive cycle (wetting, wet, drying and dry). There are a few minor points toe raised with the authors after reading this manuscript but overall it will provide a useful contribution to the arguments surrounding landscape patterns, drivers of these and responses following disturbance.

While the adaptive cycle is being more widely accepted in landscape ecology, the concept of the exit cycle is less well developed – and this remains so after reading this paper. The phases of the adaptive cycle are well described and justified using the modelling approach and the variable of NDVI as the illustrator. The paper advances

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the work of Thapa et al. (2015) by looking at more than one cycle of flooding and drying. Here 4 cycles are examined and this makes for a solid advance. Site description is very accomplished (although location map was a bit small for decent reproduction) and the discussion on NDVI was comprehensive and I have no editorial review comments to add/make here either.

I was looking for the assertion that the wet phase was more dynamic with a higher frequency of transitions (822: 5-6) to be brought out in more detail in the discussion (825: 17-24) than it was. Also the definition of transitions per se could be more tightly described for the reader. Some of the material in the discussion (827: 14-24) could be better placed or alluded to in the introduction for theoretical background/justification for the approach.

From reading this manuscript I am left with one question that is relatively unanswered: the exit cycle (unsure I like that term for what is essentially a phase shift) is relatively under-discussed and to what extent to transitions and their form translate to ‘exit’/phase shifting per se?

The written English is very solid and I have no significant alterations here. I'd like ‘H’ to be properly defined (perhaps it was but I went back and forth and still couldn't find that so if a definition is there it needs higher profiling). On 815:1, reference is made to examination of ‘the quality and availability’ of the Landsat imagery. Being pedantic, the imagery was already there so availability was not an issue in itself.

Overall: I enjoyed reading this and found it a thought-provoking and competent addition to the debate on adaptive cycles in river-floodplain complexes. In my view, with some minor changes it is publishable in Earth Surfaces Dynamics. Figure 1 would need to be redrawn and Figure 6 is a bit faint. Throughout the Figs the font size is probably too small for successful reproduction.

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