

Interactive comment on “A hydrological framework for persistent river pools in semi-arid environments” by Sarah A. Bourke et al.

Anonymous Referee #2

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In “A hydrological framework for persistent river pools in semi-arid environments,” Bourke et al. provide a framework for classifying various types of persistent pools encountered in the Hamersley Basin (Western Australia), and then suggest diagnostic tools that may be used to investigate and describe these different systems. Potential implications of a changing hydrologic regime are presented, and the discussion focuses largely on the next steps in the study of these pools.

I struggled to find novelty in this manuscript. Aside from perched pools, the persistent pools described by the authors are groundwater fed features, thus springs. The authors cite several studies that describe and/or classify springs based on (among other criteria) geomorphic features, and all the persistent pools they describe can fit into one existing category or another (n.b.: I would say that the type they claim has not been de-

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scribed in the literature is a limnocene as described by Springer et al. 2009). Instead of relating their descriptions to one or another of these systems, the authors present a new classification framework without providing a compelling reason to abandon existing classification systems.

The diagnostic tools presented are wide ranging, and the fact that the manuscript include methods that are not often used together is a positive. The drawback to this presentation, though, is the lack of either data and rigorous analysis or extensive literature review on the use and limitations of those methods. The manuscript describes in a qualitative way different physical processes and posits how those processes would affect data collected by the different methods. Those descriptions are certainly reasonable and are largely intuitive, but they lack details and are unsupported by data from the study area. Almost no data are presented; the data that are presented are not rigorously analyzed but instead are used to superficially illustrate one of the posited phenomena. The discussion of climate change is similar – qualitative changes are presented with no real quantitative data about what has changed to date or expectations for future changes.

In the discussion section, the authors certainly note that there is significant work to do and suggest several next steps that are both logical and important. The results of those next steps would contribute to the literature in a way that this manuscript does not. Overall, the manuscript seems more like the introduction to a larger paper or to a proposal than it does a work that can stand on its own.

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