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**HESSD**

9, C6504–C6505, 2013

Interactive  
Comment

## ***Interactive comment on* “On the contribution of groundwater storage to interannual streamflow anomalies in the Colorado River basin” by E. A. Rosenberg et al.**

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On the contribution of groundwater storage to interannual streamflow anomalies in the Colorado River basin

E. Rosenberg et al.

The authors investigate the contribution of groundwater storage to interannual streamflow anomalies in the Colorado River Basin (CRB), using different approaches including satellite estimates. They find that all methods provide similar estimates and that the groundwater component does not play a major role in the interannual variability of the

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Colorado River Basin. This is an important and useful study that I support. People have wondered about groundwater storage in the CRB at interannual time scales and this study shows that it is not a factor. I have few comments listed below.

1. Several methods are proposed and used in computing the groundwater storage, which can be confusing and a bit overwhelming to the reader. I would suggest if a couple of them could be moved to appendix with description of their results in the text.
2. The authors should provide a robust discussion on the physical mechanism of the limited role of groundwater storage. Is it due to the subsurface geology? soil type? etc.?
3. It is not clear if the authors compute the groundwater component over the entire period or record (1958 - 2008)? or do they compute just the climatology?
4. If there is a criticism of this study, it would be that the validation is not done with 'actual' observations. The comparisons and validations are across the methods but not with actual observations. I would like the authors to address this.
5. Does groundwater play a role at decadal or multi-decadal time scales? Also what does it do to the runoff efficiency?

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 13191, 2012.

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