

# ***Interactive comment on “Climate elasticity of streamflow revisited – an elasticity index based on long-term hydrometeorological records” by V. Andréassian et al.***

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We thank Francis Chiew (FC) for his detailed review and relevant comments, which we will take into account in the revised version of the paper. We give here a rapid answer to the main comments:

1. We agree that it is natural to have much larger variations in the real world than in the model world, and we are not overly surprised by the lack of clear correlation between the empirical and the model elasticity (see Fig. 8).
2. We agree that introducing seasonality to the too simple water balance formula is a

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good idea, it could perhaps improve the link between theoretical and empirical elasticity.

3. We agree that OLS and GLS are neither strictly empirical nor distribution-free. But these are probably the simplest models available to describe the elasticity of stream-flow, at least much simpler than the available alternatives. And in comparison with the methods of Fu et al. (2007) - which we will discuss in the revised version of the paper - there are no numerical instabilities at the origin.

4. We will look at the elasticity of more complex models in the future. For this paper, our purpose was to focus on the empirical elasticity that can be derived with as little model as possible.

5. Last, we did check (see attached file) whether the link between empirical and model-elasticity is a function of the aridity index  $P/E0$ . Indeed, as underlined by Alberto Viglione in his review, there is a clear pattern in the theoretical elasticity that can be deduced from the Turc-Mezentsev formula. But as shown by the attached figures, the aridity ratio does not explain much of the large differences between empirical and model-based elasticities.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 12, 3645, 2015.

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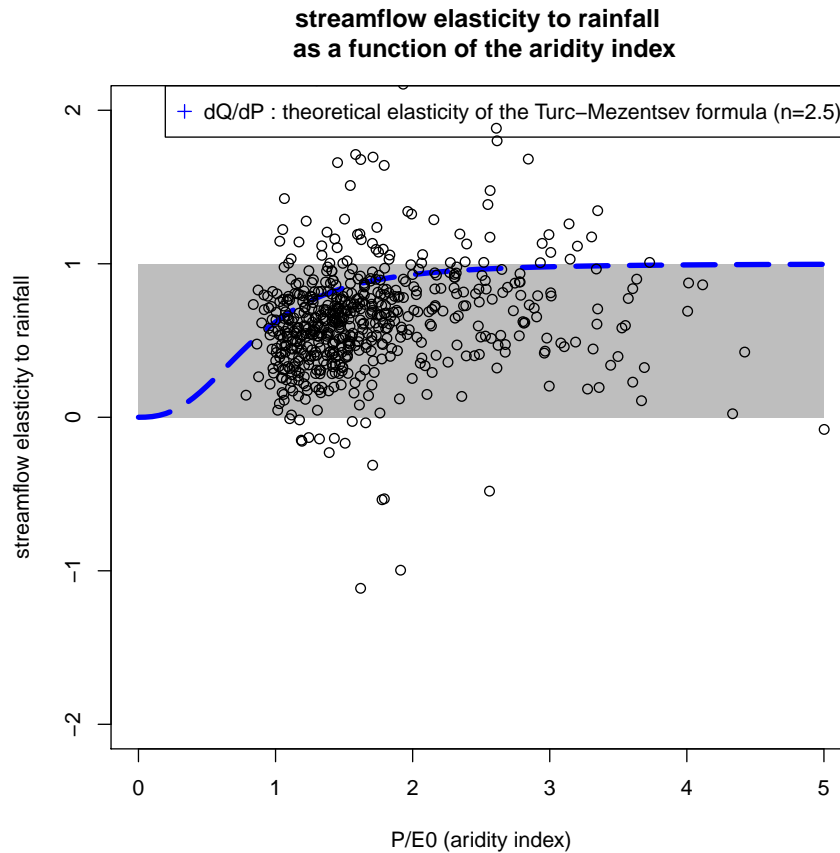


Fig. 1.

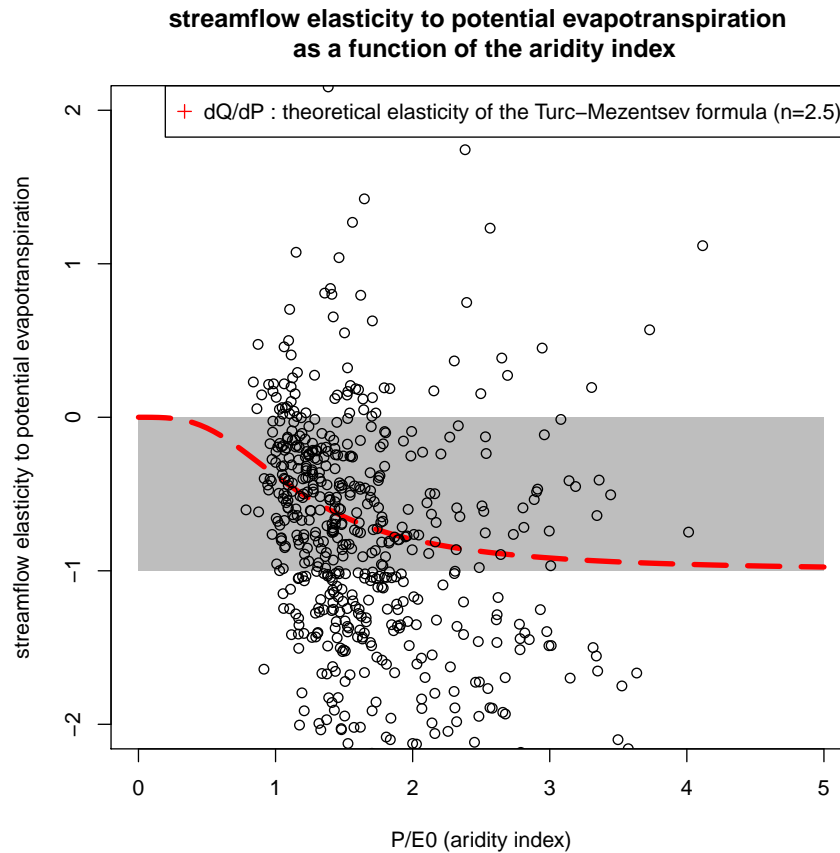


Fig. 2.

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