

## ***Interactive comment on* “Technical Note: On the confounding similarity of two water balance formulas – Turc-Mezentsev vs Tixeront-Fu” by Vazken Andréassian and Tewfik Sari**

### **Anonymous Referee #1**

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This technical note explores the similarity between two commonly-used Budyko-type water balance equations; namely the Turc-Mezentsev and the Tixeront-Fu versions. By several comparisons it is shown that Turc-Mezentsev and Tixeront-Fu are numerically near-identical. It is concluded that therefore both equations are equally good to use.

The technical note is straightforward and there is little to disagree with. However, in its present form, I find it difficult to see the novelty and relevance of this work, and I'd like to see them better clarified. Responding to the following points may help to do so:

- The main point that the Turc-Mezentsev and the Tixeront-Fu are near equivalent has been established previously by Yang et al. (2008). Why is it worth repeating this point?

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What is really the novel addition of this work?

- What is the point of section 4.3: I read this section several times, but the description is not clear enough (for me) to understand what the value is of this paragraph (and I suspect other readers may suffer from the same problem as me).

Detailed suggestions

Line 1: I am unsure that “confounding” is really useful here. Would removing this word not make the title simpler, more accurate, and more objective? The same applies for every time the word “confounding” is used throughout the manuscript.

Line 13: “identified” seems redundant?

L36: why “maximum evaporation”, rather than “potential evaporation”? The latter term seems more consistent with commonly used hydrological terminology.

L65-66: Explain why.

L88: Is this a result from this paper, or is this sourced from literature?

Table 4, property7: this statement is true for “absolute streamflow changes”, not for “relative streamflow changes (i.e. streamflow elasticity)”. Be explicit about this difference.

L138-140: explain in simple terms what is different.

Section 4.3: I don’t understand the point of this section.

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