

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

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The authors provide a comprehensive and well-written comparison of two independently derived water balance formulas: Turc-Mezentsev versus Tixeront-Fu. The authors show that the two formulas are numerically equivalent (also in their partial differentials), and even though the Tixeront-Fu formula can be characterized as slightly more general, hydrologists can feel free to choose either one of them. An interesting analogy is made between the mathematical characteristics of the shape of the formulas and their hydrological meaning. Additionally, the Appendix provides an overview of the history and derivation of the formulas. I enjoyed reading this comprehensive com-

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parison of the two water balance formulas with a clear final message and I therefore recommend the publication of this manuscript after only a few minor corrections.

Comments:

- Line 24: Apostrophe s is missing in: “Turc’s work”
- Line 86: ‘than’ instead of ‘that’?
- Line 97: It is mentioned that both formulas are equivalent except for very low values of the humidity index and I wonder if there is an explanation to this observation.
- Section 4.3 (line 163-180): This section makes an interesting mathematical analysis of the hydrological formulas, but it would make it easier for the reader to explicitly refer to Eq. 2 and Eq. 4 to explain the analogy with Eq. 15 and Eq. 16.
- Line 255: I believe a typo was introduced in this formula and that the authors meant $E/E_0 \sim P/E_0$ instead of P/E_x
- Line 259: here also I think a typo was introduced and that the formula should read $x = P/E_0$ instead of $x = P/E$

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