

Interactive comment on “Complementary principle of evaporation: From original linear relationship to generalized nonlinear functions” by Songjun Han and Fuqiang Tian

Anonymous Referee #2

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The authors present a very detailed review on the studies and developments of the complementary relationship of evaporation. Although the review is very detailed and scientifically well supported on the existing literature, I think it is too heavy due to the load of parameters introduced and unexplained, the long list of studies mentioned and a weak coherency when enumerating the studies. Can the authors make this easier for the reader to read through?

Furthermore, I am completely missing the incites and perspectives from the authors. It would be very nice to see the opinion from the authors regarding the benefits of the framework. I suggest an extra section discussing 1) the best approach according

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to the authors criteria, 2) the future of the CR for E estimation, and 3) a comparison highlighting the advantages, disadvantages and opportunities of using the CR principle against other methods of Evaporation estimation that are not mentioned here. After this, the review should be ready for publication.

L. 24 State if it is a positive or negative feedback.

L. 27 To understand, so the differences between Epa and Epo is just that Epa is small and local and Epo large-scale? Can you provide more explanation on what these two variables really mean since they are so important for this discussion? Specially for understanding Figure 1.

L. 32 What complex formulations?

L. 35-39 Please rephrase, it is difficult to understand.

L. 38 If there is a Penman calculation variable Epen, then how do you estimate Epa and Epo, that is different from Penman. Please specify.

Table 1. Nice table!, but refer to the Appendix for the unexplained parameters.

L. 69 why “basin-wide water balance” results? You said before that Epa is from a “small saturated surface”.

L. 70-75 But have these estimates been validated in some way?

L. 75 When they found that it is overestimating or underestimating E, how did these studies obtain the real E then?

L. 78 IMPORTANT. Since you are constantly introducing many parameters related to actual or potential evaporation, please include in the appendix a detailed explanation on the difference between each E parameter. For instance, to know how Epan differs from Epa.

L. 88 Do you mean that they change in opposite directions with increasing water avail-

ability? L95 “the governing changes”

L. 98 Why does Morton say that it is unrealistic and does not have proof, and argue against it, since you are performing a review on the subject.

L. 113 You mention an asymmetry, but before you were talking about symmetry?

L. 136 So when is E_PT different from Epo. In other words, more clarity between these terms.

L. 135-156 IMPORTANT I find these paragraphs hard to read and somehow “boring”. As in a review, it would be very good if you can try to articulate all the studies in a more consistent way so that it does not become a list of studies and references each with a brief explanation. Also, many, many terms that have not been previously explained, only in an appendix. As it is, the review paper is now more focus to experts in the CR that common hydrologists.

Section 3. I don't see the rationale behind the selection of the subtitles 3.1 and 3.2. A brief explanation is needed. Why these subtitles, I assume 3.1 are the symmetric approaches and 3.2 the asymmetric ones? Think on the reader that is reading this review.

L.164 so $b=1$ means symmetry?

L. 167. “The asymmetric CR is widely used?”

Can you make a paragraph saying in your point of view which approach is better and why, symmetric or asymmetric?

Can you make a similar Table 1 but for the non-linear relationships? I think that you mention many approaches that are not included in Table 2.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2019-545>, 2019.