Biogeosciences Discuss.,
https://doi.org/10.5194/bg-2019-85-RC2, 2019

Biogeosciences
Discussions

Interactive comment on "Reviews and syntheses: Turning the challenges of partitioning ecosystem evaporation and transpiration into opportunities" *by* Paul C. Stoy et al.

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Received and published: 4 May 2019

In this study, the authors reviewed current progress in partitioning soil/canopy interception evaporation and canopy transpiration. The review is impressive and I suspect that it will stand out among previous studies. In addition, they also provided a perspective on how to improve the involved theory and observations. it is well written, organized, and easy to understand. I think a minor revision is required before it can be considered for a publication in Biogeosciences.

Major Comments:

1. The manuscript structure is a little bit confusing. In my opinion, the title of Sec. 3.2 should be changed in order to distinguish from 3.1. Or simply merge 3.1 and 3.2 together. It is better to move Sec. 3.6 to other section.

2. It is better to briefly introduce the method performance at different time scales. For example, a stable state isotopic assumption may work well in daily time scale but fail in an hourly or sub-hourly time scale. While Zhou et al. (2015) and (2016) found the underlying water use efficiency method works well at the half-hourly and daily time scales both.

3. Additional review of a novel and direct method for ET partitioning method proposed by Or and Lehmann (2019) is suggested. This method is useful and Unique. This will make the paper more complete.

Or, D., & Lehmann, P. (2019). Surface evaporative capacitance: How soil type and rainfall characteristics affect global- scale surface evaporation. Water Resources Research, 55. https://doi.org/10.1029/2018WR024050

Minor comments:

1. P2L2 some ecosystems, but other ecosystems do: please specify.

2. P2L28 I suggest adding the method proposed by Or, D., & Lehmann, P. (2019) in Table 1.

3. P3L3 The ratio of transpiration to evapotranspiration: long term?

4. P4L7 Rn-G is another uncertainty source, especially for the wetland.

5. P7L12 (Perez-Priego et al., 2018): Perez-Priego et al. (2018)

6. P9L24 Alemohammad et al., 2017; Damm et al., 2018; Lu et al., 2018; Pagán et al., 2019; Shan et al., 2019): (Alemohammad et al., 2017; Damm et al., 2018; Lu et al., 2018; Pagán et al., 2019; Shan et al., 2019)

7. P9L32 FCOS (pmol m-2 s-1): FCOS (pmol mËĘ{-2} s{-1})

8. P14 Sec.4.2 This question is great. For some vegetation types, T/ET is easy to reach unity not only because of high canopy conductance but also e.g. tree morphological, soil/root condition and human impact. For example, crops have high T/(E + T) under low LAI conditions potentially influenced by human effects (a high water use efficiency and less constrained by environmental stresses). Please check Wei et al. (2017) for further information.

9. P17L25: Please also introduce the measurement of radiometric surface temperature.

10. P18L19 gsurf: g_{surf}

11. P16L14 (Fisher et al., 2008): Fisher et al. (2008)

12. P16L15 (Jarvis, 1976) : Jarvis (1976)

13. P17L24 Norman et al.)1995): Norman et al. (1995)

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