

Interactive comment on “HESS Opinions: A perspective on different approaches to determine the contribution of transpiration to the surface moisture fluxes” by S. J. Sutanto et al.

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Received and published: 16 April 2014

We would like to thank the reviewer for the comments and valuable suggestions. We agree with and took into account the suggestions to improve our manuscript. In the following, we provide detailed information about the changes.

Comments: 1. Section 2.1 and/or linked to section 4: It would be important also to clearly refer to the accuracy (or the lack of it) of sap flow measurements and discrepancies among different techniques. Kathy Steppe's paper in *Agricultural and Forest Meteorology* (2010; vol 150) would be an appropriate reference. Moreover it needs to

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be explained more clearly that sap flow measurements mainly work for woody species – it is said somehow in the table (representative only for one vegetation type) but it might be made clearer.

AC: We added a short section on the accuracy of the sapflow method using different techniques according to Steppe et al. (2010) in section 2.1 (now 2.2). We also added a short discussion of the discrepancies between different sapflow techniques as one of the possible measurement errors in section 4. The disadvantage of the sapflow method in table 1 has been re-written, stating that the sapflow method is mainly used for woody trees.

2. Section 2.2: For the reader not into stable isotopes, we might need a sentence in that section explaining why transpiration does not affect the isotopic composition of soil water. It might be trivial but helpful for a broader audience.

AC: The explanation and references have been added in section 2.2 (now 2.1).

3. Section 2.2. (p. 2592; line 3): Isn't it however more important to derive the isotopic composition of transpiration water under non-steady state conditions than that of leaf water (δL)? I fully agree that this is linked and also described in the cited paper of Lukas Cernusak and Graham Farquhar. It would, however, be more clear in my opinion to state that directly: //just an example //: “According to Farquhar and Cernusak (2005) the degree of isotope enrichment of transpired water above source water under non-steady state conditions is related to the isostorage (i.e the leaf water content and its isotopic enrichment above source water) and its change over time in the leaf.” This might also be linked more closely to the assessment of potential errors of the isotope method in section 4.

AC: The isotopic composition of transpiration (δT) is calculated from the modeled values of leaf water enrichment (δL) either under non-steady state or steady state conditions. Thus in principle, the calculation of δT requires the calculation of δL . We agreed that δT changes over time during the day. We elaborate this in section 2.2 (now 2.1)

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and also in section 4.

4. Section 3: I think it would be good to acknowledge here that the different numbers of studies applying the different methods might introduce a bias.

AC: We included this in the second sentence in section 4.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 2583, 2014.