Hydrol. Earth Syst. Sci. Discuss., 11, C2047–C2048, 2014
www.hydrol-earth-syst-sci-discuss.net/11/C2047/2014/

Hydrology and Earth System Sciences
Discussions

Interactive comment on "Comment on "Technical Note: On the Matt–Shuttleworth approach to estimate crop water requirements" by Lhomme et al. (2014)" *by* W. J. Shuttleworth

Anonymous Referee #1

Received and published: 26 June 2014

The comment made by Shuttleworth on Lhomme et al.'s technical note is in fact a clear and concise summary of the Matt-Shuttleworth method, a method which transforms the tabulated value of crop coefficient into crop surface resistance. This method has been previously described with more details (but maybe in a somewhat confuse way) in Shuttleworth (2006, 2012). From the elements of the discussion following Shuttleworth's paper, it appears that there is no real divergence between Lhomme et al. (2014) and Shuttleworth (2014), but only a simple misunderstanding explained in Lhomme's comment (SC C1551). As also pointed out by Boudhina (SC C1769), there is an agreement on the main point, i.e.: the preferred value of the climatological resistance (inferred from

E0 = EPT) is a default assumption needed because the meteorological conditions under which the Kc values were determined are unknown; and if they were known, the method would be easily adaptable by using the corresponding value of the climatological resistance (preliminary step before deriving the effective value of crop resistance).

As far as I understand, Shuttleworth's paper does not contradict Lhomme et al. (2014) conclusions; it simply synthesizes the main steps of the method and clearly explains the reasons which justify the key assumption (sub-humid conditions with E0 = EPT). From my standpoint, the main interest of this technical note relies more on the clear and concise depiction of the Matt-Shuttleworth method than on the controversy concerning the point of view expressed in Lhomme et al. (2014). Consequently, as admitted by Shuttleworth in his AC C1658, some paragraphs of the paper which could cause "offense" by stressing the contradiction and which are not essential to the main purpose of the paper should be removed before publication: 1. End of section 1 P5369 ". . . but it is never the complex function of weather variables and Kc given as Eq. (10) of Lhomme et al. (2014)". 2. The first paragraph of section 2 (P5369-5370). 3. P5371 Line 13 to 18. 4. P5375 Line 1 to 6.

References:

Lhomme, J. P., Boudhina, N., and Masmoudi, M. M.: Technical Note: On the Matt–Shuttleworth approach to estimate crop water requirements, Hydrol. Earth Syst. Sci. Discuss., 11, 4217–4233, doi: 10.5194/hessd-11-4217-2014, 2014.

Shuttleworth, W. J.: Towards one-step estimation of crop water requirement, T. ASABE, 49, 925–935, 2006.

Shuttleworth, W. J.: Terrestrial Hydrometeorology, John Wiley & Sons Ltd., Chichester, UK, 2012.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 5367, 2014.