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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Analysing surface energy balance closure and partitioning over a semi-arid savanna FLUXNET site in Skukuza, Kruger National Park, South Africa" *by* N. P. Majozi et al.

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General comments

The main strength of the paper is, as the other two reviewers remarked, the long term dataset from the African savanna. For me, this is in itself sufficient although I would also prefer to see a better analysis. It may be difficult, however, to say much more than what has been said without becoming speculative. So if a deeper analysis is possible, I would definitely recommend that. If that can only be done in a speculative way, then the value would not be large. What should happen is publication of the dataset itself so

everyone can use it from now on. That would make the value so much higher.

Besides this, my main concern is that the ground heat flux G is, as usual, the step child of the energy balance. I understand that over longer periods, G becomes negligible but nothing is said about how it is measured at all. G may be part of the night time problems. Please describe the method. Heatflux plates are mentioned in a table but need to be in text as well. Heatflux plates are not really a good way to measure soil heatflux over any area (see, for example gentine et al in doi 10.1029/2010WR010203 and Jansen et al in GRACE, Remote Sensing and Ground-based Methods in Multi-Scale Hydrology (Proceedings of Symposium J-H01 held during IUGG2011 in Melbourne, Australia, July 2011) (IAHS Publ. 343, 2011)). Over periods of 30', G can be very important.

Minor comments

It is a bit a matter of taste but the word 'evapotranspiration' is not a happy one. See doi 10.1002/hyp.5563 for arguments.

21: 'extent'

26: Not sure what is meant with 'under development' here. Seems vague and does not add information.

29: Introduce 'EB' at first use of energy balance.

38: Leave out: 'for transformation [. . .] i.e.'

49: Leave out 'Hence'

57: Change to: 'the measured available energy'

62: Is high frequency transport also not underestimated?

80: Replace 'Hence, the need to' with 'Here, we' (the 'hence' was not really a logical connection,

82: 15 years: This is really a unique aspect and should also enter the abstract etc.

151: ‘evaluated at different’

177: The standard deviation is not really something of interest here, I would think.

187: The range is not described well as 2013 is not part of it.

223: Summer & winter is a bit confusing here. Later it becomes clear which months are which but as summer is hot&wet and winter is warm&dry, it differs from what many other places experience as summer & winter. Perhaps better stick to wet & dry season.

248: ‘and as each’

261: This paragraph and associated figure is not helpful. There is no comparison between weather and results (may be the most obvious point of entry to deepen the analysis) so just a climate picture does not help the reader. As mentioned before, the data should be made available on-line.

315: Here and elsewhere, it is not clear why the examples from the literature were chosen. One could expect more examples from the savanna or a structural overview of different climates but now it seems a bit random.

321: Please rethink this part. I agree that the transitions are indeed interesting, it becomes difficult to interpret with this normalization. It is said that ‘sensible heat flux is dominant’ etc but when the net radiation is near zero, the normalization does strange things and that is all the figures then say.

Figure 1,2,3: please use ‘heat plots”, the ones where you see small individual points where there is space and where the color changes from blue to red depending on the density of the dots where they can no longer be discerned.

Figures 7 8: Bigger lettering

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