

Interactive comment on “Three perceptions of the evapotranspiration landscape: comparing spatial patterns from a distributed hydrological model, remotely sensed surface temperatures, and sub-basin water balances” by T. Conradt et al.

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General remarks:

I do not doubt that this could be a valuable paper, once it is made better. A huge amount of work appears to have been made by the authors (SWIM model; 2000 + sub-basins, concatenated into 133; 175+/- references), but the argument, instead of being crisp and neat in explanation, is swamped by too many words and side-tracks. The inter-correlations between the methods are generally poor except when comparisons

C761

were made between remote sensing and the modelled basins restricted to the German Elbe as shown in Figure 12. It is not convincing that the relatively high correlation between the German sub-basins' remote sensing and quasi ground-based estimates of Eta shows that the water balance calculations are not to be trusted.

Why was the observation input not used, to at least check the ET₀? Why was the excellent work of Tom McMahon et al. ignored? [see McMahon, T. A., Peel, M. C., Lowe, L., Srikanthan, R., and McVicar, T. R.: Estimating actual, potential, reference crop and pan evaporation using standard meteorological data: a pragmatic synthesis, Hydrol. Earth Syst. Sci. Discuss., 9, 11829-11910, doi:10.5194/hessd-9-11829-2012, 2012.]

The 'Conclusions' read inconclusively and vaguely with too many words. Aren't 133 basins too many? Would spatial clustering to 30 (say) not provide better averages and get away from the 'leaky aquifer' syndrome? Why not make direct ET_a estimates from EUMETSAT's LSA SAF product?

I would like to see a 'leaner and meaner' paper and recommend resubmission after making it a better read by drawing tighter conclusions and using less verbosity.

In particular:

1128:15 I'm not sure what this sentence means; it makes better sense if 'epistemic' is omitted from the abstract. The Webster dictionary definition of epistemic is: 'of or relating to knowledge or knowing' and this usage only clouds the message.

1135:11 Why not include wind speed? This is a richly instrumented basin.

1135:18 Aha - no wind data. However, it may be of interest that we found that Weather forecast wind data are very good for calculating ET₀ - see: Sinclair S. and G. G. S. Pegram (2010) A comparison of ASCAT and modeled soil moisture over South Africa, using TOPKAPI in land surface mode, Hydrol. Earth Syst. Sci., 14, 613-626

1151:25 The correlation is 0.613 for the German part of the Elbe basin - see Figure

C762

12. But does high correlation between these estimates really justify the mistrust of the water-balance method? Wouldn't concatenation of the 133 small subcatchments into fewer larger ones with trusted gauging sites remove some of the difficulty of coping with 'leakage' at the small catchment boundaries?

1152:12 This is a pedantic description. Try: These uncertainties might be driven by randomness or by lack of knowledge. Webster says 'aleatoric' is a musical term: aleatoric: adj: characterized by chance or indeterminate elements ~ music. Also, 'epistemic' is not negative: epistemic: adj (1922) : of or relating to knowledge or knowing : cognitive

1170: Fig 1 has very faint plotted points - difficult to read

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