

Hydrol. Earth Syst. Sci. Discuss., referee comment RC2
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Comment on hess-2021-24

Anonymous Referee #2

Referee comment on "Adapting potential evapotranspiration from climate stations to the urban canyon for hydrological models" by Merle Koelbing et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-24-RC2>, 2021

Nice paper- but still some improvements have to be done: I start with the most important one:

I suggest modifying the title: Problems in downscaling potential evapotranspiration to an urban canyon

Otherwise I would expect at the end of this paper a first concept how to modify ET₀ for street canyons with (i) different types of street sizes and (ii) buildings heights. I like to encourage you to do this final step with the help of your experiences and ET₀ sensitivity analysis of cited papers.

You already wrote: Daily E_p is calculated with meteorological data from a reference climate station and is then multiplied by k_{mc}. This coefficient ranges between 0.5 and 1.4 and thereby 60 decreases or increases E_p depending on whether the location is e.g. shaded or influenced by strong winds, respectively (Costello et al., 2000).

So justify and combine this frame with your results and experiences!

Some more suggestions:

Please change the abbreviations of the street names (HS and ES) into their atmospheric orientations, which are much more relevant than the street names: thus HS becomes NS and ES becomes EW

Table 3, especially the ET₀ results of the summer days are from my point of view much more relevant than the paper reflects at the moment. Question: why is in one street E_p > E_pcont. while in the other street the opposite is true. Does the orientation play a role? So please look to ET₀ sensitivity analysis and combine it with the street conditions, i.e. shading conditions and street size.

3. I miss the information on standard climate parameter: both (i) long-term means, and (ii) for the years of your experiments of ET₀, summer precipitation, T, net radiation, and climate water balance.

4. I encourage you to give a first recommendation or frame, how people should modify

(downscale) ET_0 for urban street conditions. Better or first frame for discussing than nothing!