Author response to the comments from referee #2

General comments response:

S/N	Page number	Line number	Referee comment	Correction made / Sentence added to the paper	Response
1	2	33-35	Provide overview of the potential application of the model in the introduction.		A sentence is already written in the introduction naming some potential applications of the model (page 2, line 33-35). We also provide further details of potential applications in the discussion.
2	8		Wouldn't be more interesting a comparison with a different stochastic source? E.g. Hargreaves computed PET with input from a stochastic weather generator (at higher computational cost)?		What we wanted to show in Fig. 5 is that the stochastic PET generates PET values that are consistent with separately calculated PET. Comparing it with other stochastic PET formulations is not possible because we are aware of no other global stochastic PET generator. Furthermore, other methods for PET estimation (e.g., Hargreaves) are not directly comparable to values generated by the Penman-Monteith method.
3	14	1	About method 3, adoption of linear trends for timeseries of complex variables can hardly be considered robust.		Thank you for pointing out this. The model provides three options to modify PET, of which the use of linear trend is one. The idea is to provide users more flexibility to generate stochastic PET which accounts for potential future changes. In our analysis of hPET we recognized that many locations

			4.1.3 when do you consider the beginning for the historical PET start and how long is it?		exhibited linear trends (associated with increases in atmospheric temperature), so providing the option for a linear trend seemed sensible. We are considering adding additional methods in subsequent versions as suggested by another referee. One such method would account for year-to-year variable temperature changes rather than using a single value of step change in temperature for all years. The historical hPET data used is the paper is a 40-year long record (1981 to 2020). However, hPET is updated till 2021 now.