

## ***Interactive comment on “Recent changes and drivers of the atmospheric evaporative demand in the Canary Islands” by S. M. Vicente-Serrano et al.***

### **Anonymous Referee #2**

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The manuscript deals with an analysis of the atmospheric evaporative demand (AED) over the Canary Island for the period 1961-2013. Basis are meteorological data (monthly, p4|96) from 8 stations which are used as inputs for the FAO-56 Penman-Monteith equation to derive monthly AED. While the paper is generally well written, I feel there are a number of conceptual issues that need to be resolved and addressed before a possible acceptance.

- As the FAO-56 is a non-linear equation that has been developed for daily inputs, how do authors justify the application of monthly average input values?
- As some of the input variables ( $R_n$ ) have to be estimated from other parameters, some of the discussion about these relationships (p.14) need to be provided earlier in the text.

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- While in general there are many graphical illustrations for plenty of aspects, I actually miss graphs with the temporal dynamics and developments of input variables into the FAO-56 equation. Where can I see the trend for  $R_n$ ,  $T$ , wind speed,  $rH$ ? This would be important as they are the controlling variable in the equation.

- Why are authors relating calculated  $ET_0$  with variables that have been used to calculate  $ET_0$  before (or used to derive inputs from where  $ET_0$  is calculated) - see for example Fig. 6. Why don't authors simply calculate the sensitivities (partial derivatives) of FAO-56 with respect to the driving variables. I simply did that and only from using a temperature increase of  $0.6\text{ }^\circ\text{C}$  (keeping specific water content constant) and some realistic  $R_n$ ,  $T$ ,  $r_a$ ,  $r_s$  - values (I used the original PM formula) I could derive the changes in  $ET_0$  stated by the authors. I feel a sensitivity study in this way including trend analysis of the inputs would be more compact and informative for the readers.

- Authors state they applied the Mann-Kandell - did they check and correct for auto-correlation?

Overall, I feel there is still a large potential to improve the overall structure/concept of the manuscript as outlined above. As a result I suggest major revisions to the manuscript before publication.

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