

Dear Dr. Pfister:

Please find attached a revision of the manuscript entitled “Recent changes and drivers of the atmospheric evaporative demand in the Canary Islands” to be considered for publication in Hydrology and Earth System Sciences. In the revised manuscript, we have addressed all comments and suggestions provided by the reviewer. You will also find enclosed a letter that includes a detailed response to his/her comments.

We look forward to hearing from you at your earliest convenience, and if you have any questions please feel free to contact me.

Sincerely,

Sergio M. Vicente-Serrano and co-authors.

**Following specific comments made by one referee, there now remain only some minor edits that need to be made to your manuscript. Before final publication, you would have to focus on a few specific points:**

**- develop in the manuscript on the non-linearity of the PM equation**

We have included the following new information in the revised manuscript:

*“The FAO-56 PM is an equation initially designed for crop monitoring and irrigation operation at daily and sub-daily scales. This equation involves non-linear relationships among the variables used for calculation and averaging these variables for long-term intervals could affect the reliability of the ETo estimations. Nevertheless, Allen et al. (1998) indicated that the FAO-56 PM equation can be used for daily, weekly, ten-day or monthly calculations, and several previous studies have computed the Penman Monteith ETo using monthly values for some variables (e.g., Sheffield et al., 2012; Dai, 2013). We have found that using monthly averages instead of daily records for the different variables has not a relevant influence on the ETo estimations in the Canary Islands. Figure 2 shows an example using two of the available stations (Los Rodeos and Izaña) for the 1978-2010 period. The relationship between the monthly sum of the daily ETo calculations and the ETo calculation from the monthly averages, justifies the equality of applying both procedures. This is observed for the ETo monthly values (including seasonality) but also considering monthly standardized anomalies in which seasonality is removed. Moreover, there are other technical reasons that recommend the use of monthly instead daily records to calculate ETo since testing and correcting the temporal homogeneity of the necessary variables on a daily basis is highly problematic, whereas testing and correcting homogeneity using monthly records is reliable (e.g. Venema et al., 2012).”*

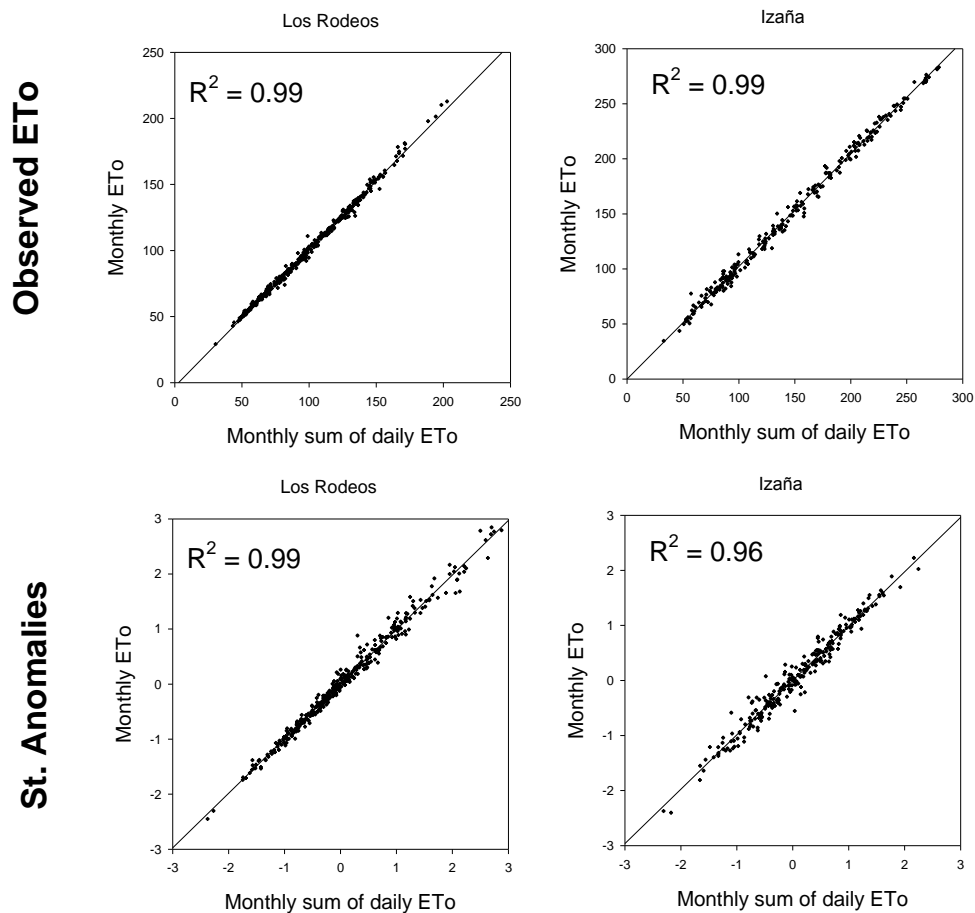


Figure 2. Comparison between the average monthly ETo obtained from daily meteorological records and the ETo directly calculated from monthly meteorological variables. Two meteorological stations in the Canary Islands are used for the period 1978-2010 (Los Rodeos and Izaña). The figure shows the relationship between monthly ETo series but also between the series of standardized anomalies in which seasonally is removed.

**- improve the figure captions for figs. 7 and 8**

We have changed the figure captions for figs. 7 and 8 (Figures 8 and 9 in the revised version):

Figure 8: Relationship between the observed change in ETo (mm. year<sup>-1</sup>) in each meteorological station and the change in simulated ETo considering each one of the meteorological variables used to calculate ETo as constant for the period 1961-2013. Black dots indicate significant differences in the trends.

Figure 9: Seasonal and annual evolution of the observed regional ETo compared to the evolution of simulated ETo considering each one of the meteorological variables used to calculate ETo as constant for the period 1961-2013.