

## ***Interactive comment on “A nonlinear modelling-based high-order response surface method for predicting monthly pan evaporations” by Behrooz Keshtegar and Ozgur Kisi***

**Anonymous Referee #1**

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This manuscript deals with the estimation of monthly pan evaporations using high-order response surface (HORS) function along with three machine-learning algorithms. The abstract is clear and well written. Its not clear whether pan evaporation or total pan evaporation is estimated. Difference between these two terms is not clear. Introduction: Page 3, line 56 Authors stated that the main disadvantage of the ANFIS and ANN methods are their complex formulations. How proposed HORS is simple formulations in compare to ANFIS and ANN. This needs clarification. It is useful to mention about studies carried out using HORS in water resources. Why HORS is chosen? Section 2, page 3-5 High-order response surface method -This is lengthy, difficult to read. It is suggested to provide flow chart of methodology. Section 4: Comparative statistics

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Statistical parameters such as RMSE, MAE and others are commonly available. Thus, may be deleted. Page 9, line 199- “A program code was developed by MATLAB language for HORS models based on algorithm of high-order RSF”. Authors may include program code as an appendix for general benefit of readers of this journal. Page 9, Line 195- Why Mersin’s pan evaporations were approximated using input climatic data from both Antalya and Mersin stations. Did authors tried-Antalya’s pan evaporations estimation using input climatic data from Mersin stations? Why only 3-order RSF and 4-order RSF models were used in this study.

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