The title (العنوان):

Daily reference evapotranspiration estimation based on a different input combination using an artificial neural network. Case study of the Mitidja plain (N. Algeria)

APA Citation (توثيق APA):

Gherbi Khadidja, Ammari Abdelhadi, Meddi Mohamed (2023). Daily reference evapotranspiration estimation based on a different input combination using an artificial neural network. Case study of the Mitidja plain (N. Algeria). *Research Square,* DOI ou URL : https://www.researchgate.net/publication/369124130_Daily_reference_evapotranspiration_estimation_based_on_a_different_input_combination_using_an_artificial_neural_network_Case_study_of_the_Mitidja_plain_NAlgeria

Abstract : The estimation of reference evapotranspiration ET0 is required to know the water needs of crops in advance and to plan and manage water resources. However, to obtain reliable irrigation management results, simplified artificial neural networks models and prediction algorithms must be applied and evaluated. These models were examined by comparing the multilayer perceptron network, and the radial basis function network, to estimate the reference evapotranspiration for planning tool irrigation, The Standardized Penman-Monteith evapotranspiration equation has been recommended by the American Society of Civil Engineers and Hargreaves-Samani were used to calculate the daily reference evapotranspiration values. Due to a lack of meteorological dataset, NASA Prediction of Worldwide Energy Resources NASA POWER database was used and validated by comparing it with observed values. These daily sets of meteorological data included the minimum and maximum air temperature, the temperature of the dew point, solar radiation, and the wind speed of three stations Mouzaia, Soumaa, and Boukourdane in the Mitidja plain, Algeria. The validity of 4 combinations scenarios was investigated, and the performance of the models was assessed with the coefficient of determination, the average quadratic error, and the mean absolute percentage error, between the estimated and calculated reference evapotranspiration values. The results confirm the feasibility of obtaining appropriate level estimates of ET0 based on the agroclimatological POWER-NASA archive, even for some Mediterranean countries where climate variables are not available at a large scale, which can help us understand the mechanism of reference evapotranspiration and use it for water irrigation estimation doses

Key words : Daily reference evapotranspiration ; Artificial neural network ; North of Algeria ; Standardized ; Penman-Monteith equation ; Hargreaves-Samani equation ; The POWER-NASA