



Estimation of potential evapotranspiration with minimal data dependence

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We develop a parametric expression which approximates the Penman-Monteith equation thus providing easy estimation of the potential evapotranspiration with minimal data requirements. Namely, the method requires as inputs the mean temperature and the extraterrestrial radiation, from which only the temperature needs to be measured. The model was applied on a monthly step in 37 meteorological stations of Greece for the periods 1968-1983 (calibration period) and 1984-1989 (validation period). The results are satisfactory as the efficiency is greater than 0.97 for all stations and for both calibration and validation periods. Initially, the parametric expression involves three parameters but regional analysis indicates that reduction to one or two parameters is possible and does not increase the error substantially. Using optimization and geographic interpolation through a geographical information system, the parameter values were mapped for the entire territory of Greece, which makes the method directly applicable to any site in the country, the only requirement being that mean temperature data be available.