



Standardized reference evapotranspiration in Southern Spain at different computational timesteps

P. Gavilán and J. Estévez

Natural Resource Dep. IFAPA. Centro de Investigación y Formación Agraria “Alameda del Obispo”, Córdoba, Spain

(pedrod.gavilan@juntadeandalucia.es / Phone: +34 957016055)

Meteorological data from 31 automatic weather stations were used to compare ASCE and FAO-56 standardized reference evapotranspiration (ET_0) equations in Andalusia. This region is located in Southern Spain. Comparisons were made between daily ET_0 obtained by summing hourly standardized ASCE-Penman-Monteith estimations and calculated from addition of hourly FAO56-Penman-Monteith estimations, daily ET_0 estimated on a daily basis and calculated by Hargreaves equation. On an hourly basis, the FAO-56 version estimated lower than the ASCE version as 6% in some locations, with a difference of 4% on the average, mainly due to the higher surface resistance (70 s/m) used in the FAO-56 version during daytime periods, as opposed to the 50 s/m r_s value used by the ASCE version. Differences between both estimates were higher when evaporative demand increases. The level of agreement improved when the two computational timesteps were compared, because differences were lower (2% on the average) and did not depend on the wind speed or ET_0 values. The Hargreaves equation showed a higher spatial variability. At coastal areas, the equation generally underpredicted ASCE Penman-Monteith ET_0 and provided good estimations for inland locations. Accuracy of the equation was affected by annual averages of wind speed and evaporative demand.