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Reed (Pragmites australis) crop coefficient and evapotranspiration at the surroundings of Lake Balaton

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Reed evapotranspiration, ETm as measured by Thornthwaite-Matter compensation evapotranspirometer of modified water supply, was detected at Keszthely (Hungary) Meteorological Research Station, between 2005 and 2011 growing seasons. Meteorological elements were sensed locally (latitude: 46°44', altitude: 17°14', elevation: 124 m above sea level) by a QLC-50 automatic climatic station equipped with a CM-3 pyranometer. The monthly weather of the studied seasons was characterized by the Thorthwaite Index. Reference evapotranspiration (ETo) was calculated using the Penman–Monteith equation (FAO 56 method). Dimensionless indicator, the crop coefficient, Kc was expressed as the ratio of ETm and ETo. To study the impact of weather on ET correlation analysis was applied. In comparison of ETm and ETo linear regression forced through the origin was used.
Out of six meteorological variables included, net radiation impacted ET the most. The average seasonal water loss of reed of studied seasons ranged from 566 to 1008 mm irrespective to weather conditions. On a daily basis, ETo was on average 70% that of ETm. The Penman-Monteith equation underestimated reed ET in the place of the study, mainly on extremely hot time periods.
Similarly to ET variations, the Kc values also varied in different growing seasons. Seasonal Kc values ranged from 0.73 to 1.37 with an average of 1.23 for the whole term of the study. Monthly variation in reed Kc obtained (0.6-1.62) indicated that consistent Kc throughout the whole vegetation period was not appropriate for determining actual reed ET.
Our observations covering a longer time period may be closer to ET estimates than other measurements found in the earlier publications thus far, majority of which presented a shorter observation.

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