

UPDATE OF EMPIRICAL RELATIONSHIPS FOR CALCULATION OF FREE WATER SURFACE EVAPORATION BASED ON OBSERVATION AT HLASIVO STATION

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Evaporation from free water surface is one of the essential components of water circulation in nature and significantly affects the overall water balance of the catchment. Due to the complicated direct measurement, it is often calculated from formulas that require available meteorological variables as input data.

The paper describes the method to obtain empirical relations for the estimation of evaporation as functions of available meteorological data in the Hlasivo station. Multiple linear and non-linear regression technique is used for fitting the best model forms. The best results were obtained using the formula based on global solar radiation and water temperature and the formula based on the combination of water temperature, relative air humidity and air temperature (or wind speed).

The formulas were evaluated by mean relative error (MRE) and Kling-Gupta efficiency (KGE). The formulas were validated on a historical data set from the canceled Tišice evaporation station. The results show that it is preferable to use formulas based on simple paired regression with one meteorological variable (water temperature or air temperature) to calculate the evaporation for another site, as opposed to equations obtained by multiple regression. When using empirical formulas, it is always necessary to verify their validity.