ABSTRACT

Knowledge of hydrological processes acting in the water balance is determinant for a rational water resources management plan. Among these, the water losses as vapour, in the form of evapotranspiration, play an important role in the water balance and the heat transfers between the land surface and the atmosphere. Mass and energy interactions between soil, atmosphere and vegetation, in fact, influence all hydrological processes modificating rainfall interception, infiltration, evapotraspiration, surface runoff and groundwater recharge.
A numbers of methods have been developed in scientific literature for modelling evapotranspiration. They can be divided in three main groups: i) traditional meteorological models, ii) energy fluxes balance models, considering interaction between vegetation and the atmosphere, and iii) remote sensing based models.
The present analysis preliminary performs a study of fluxes directions and an evaluation of energy balance closure in a typical Mediterranean short vegetation area, using data series recorded from an eddy covariance station, located in the Campania region, Southern Italy. The analysis was performed on different seasons of the year with the aim to assess climatic forcing features impact on fluxes balance, to evaluate the smaller imbalance and to highlight influencing factors and sampling errors on balance closure. The present study also concerns evapotranspiration fluxes assessment at the point scale. Evapotranspiration is evaluated both from empirical relationships (Penmann-Montheit, Penmann FAO, Prestley&Taylor) calibrated with measured energy fluxes at mentioned experimental site, and from measured latent heat data scaled by the latent heat of vaporization. These results are compared with traditional and reliable well known models at the plot scale (Coutagne, Turc, Thorthwaite).