



Eddy evapotranspiration measures on crop field: comparison between observed and FAO canopy coefficient

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Evapotranspiration (ET) is a physical phenomenon, which is relevant in soil water balance for agricultural practices and in the same time is a key term in the energy balance, where it is meant as latent heat flux (LE). The FAO Penman-Monteith method for the ET estimate uses key coefficients that relate the potential evapotranspiration of the reference grass to the effective ET of whatever plant, grouping several complex phenomena as the stomata dynamic and the crop water demand. An experimental field campaign on latent heat eddy measures, carried on for one year in the plain area of Regione Lombardia (Northern Italy), gave the opportunity to monitor these coefficients for crop and to compare their values with those used in the operational applications.

The measures were carried on with a micrometeorological eddy-correlation based station located in a field cultivated by a typical culture of this region, that is maize. The station is equipped with: a 4-component radiometer, a gas analyzer (Licor 7500) coupled to a 3D sonic anemometer (necessary for the eddy correlation technique), several soil moistures probes, one rain gauge, heat flux plates, soil temperature probes for soil heat flux monitoring, and a PAR sensor. From ET, soil moisture and vegetation growth measurements a validation of the FAO-Penman Monteith method coefficients has been made for the examined area. Consequently new estimates of them have been provided, demonstrating the importance of using on-site measured coefficients.