Geophysical Research Abstracts
Vol. 21, EGU2019-15462, 2019
EGU General Assembly 2019

Testing the capabilities of the "Analytical Approach" to estimate evapotranspiration in semi-arid irrigation districts

Giuseppe Peschechera (1), Nicola Lamaddalena (2), and Umberto Fratino (3)

(1) Politecnico di Bari, DICATECh - Department of Civil, Environmental, Land, Construction and Chemistry, Italy (giuseppe.peschechera@poliba.it), (2) Department of Land and Water Resources Management CIHEAM - Mediterranean Agronomic Institute Bari, Italy (lamaddalena@iamb.it), (3) Politecnico di Bari, DICATECh - Department of Civil, Environmental, Land, Construction and Chemistry, Italy (umberto.fratino@poliba.it)

The evapotranspiration (ET) represents the Crop Water Requirements that must be provided by rainfall and/or irrigation to ensure the crop yield. A critical need for farmers and water managers is to have a reliable, accurate and reasonably accessible estimation of the ET rates of crops to optimize their irrigation scheduling and ensuring long-term water sustainability. This is true especially for arid and semiarid areas characterized by limited availability of water resources and high competitiveness among users and different sectors. Remote sensing provides reliable information for the quantification of ET over large areas and the availability of free of charge high-resolution remotely sensed imagery provides the possibility of better understanding of seasonal climate and vegetation variability.

In the present work were tested the capabilities of the "Analytical Approach" to estimate the seasonal ET at irrigation district scale over a complex agro-climatic study area characterized by an extremely heterogeneous, fragmented landscape and a semi-arid Mediterranean climate. The method is based on the logic of the Penman-Monteith equation and on the standard single crop coefficient (Kc) approach proposed by the Food and Agriculture Organization (FAO). It combines agrometeorological data measured in-situ (air temperature and humidity, solar radiation and wind speed) with surface reflectance satellite derived data: the albedo (α) of the crop-soil surface and the Leaf Area Index (LAI).

The test was conducted over the Irrigation scheme "Sinistra Ofanto" (northern of the Apulia Region, Italy) using the Sentinel-2 derived biophysical vegetation's parameters and the agrometeorological data measured by the "Consorzio per la Bonifica della Capitanata" which manage the irrigation scheme. Results were compared at irrigation district scale using the global MODIS ET products (MOD16A2 and MYD16A2 Version 6) characterized by lower spatial resolution (500 meters) and daily temporal resolution.