

IRIDA

Innovative Remote and ground sensors, data and tools Into a Decision support system for Agriculture water management



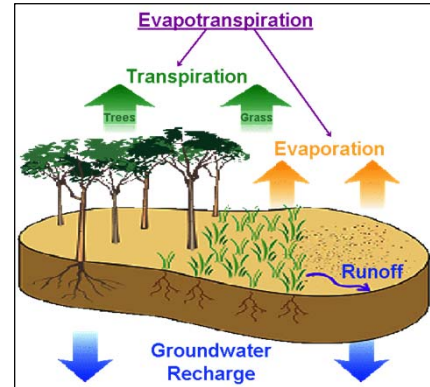
Budget: 1.4 M€ - Duration: 36 month (2016-2019)
E-mail contact dintri@cebas.csic.es



Challenges

In Europe, 24% of water abstraction is used by agriculture, and in Southern European Member States, which are often characterized by chronic water scarcity, agriculture accounts for 74% of the total water use.

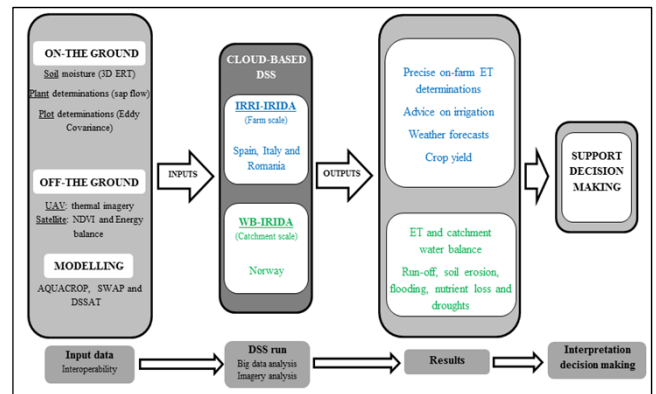
There are still uncertainties in correctly determining the components of the water balance and particularly evapotranspiration (ET) in order to:
-improve irrigation efficiency
-determine the ecosystem water balance for better prediction of runoff soil erosion, and nutrients leaching to the environment.



The IRIDA solution

Developing and validating procedures for determining ET and soil and plant water status to be incorporated into a Decision Support System (DSS) to provide end-users with recommendations for:

- 1) on-farm irrigation scheduling in semi-arid and humid regions of Southern and Northern Europe.
- 2) farming practices and catchment scale water management for the humid Northern Europe agriculture-forestry areas



Demo areas



Southern Europe
(citrus and peach orchards and irrigation districts)

Eastern Europe
(Cereal crops)

Northern Europe
(Agro-forestry systems)

Expected results

- A low-cost sap flow sensor equipped with a single thermocouple per gauge able to continuously determine the water status of stand trees
- Innovative procedures for determining soil moisture temporal dynamics using minimally invasive 3D micro-electrical and geophysical Electrical Resistivity Tomography (ERT).
- Procedures for mapping the spatial variability of water status and irrigation needs by using high-resolution thermal and hyperspectral imagery to detect representative locations for on-the ground sensors installation.
- Relations between continuous on-the ground ET measurements and actual ET obtained by SEBAL model and triangle method from thermal and hyperspectral images
- A DSS able to: 1) deliver recommendations for on-farm irrigation scheduling, 2) determine and visualize ET from the plot to the catchment scale to estimate potential soil erosion and nutrient pollution risks.

