



# ET monitoring in Garonne catchment using SEBAL and Irrilook, France

Location	Garonne catchment, France
Contractor	Association Climatologique de la Moyenne-Garonne (ACMG-Agralis)
Period	2010

## Scope of the project

ACMG provides irrigation advice to farmers in the Garonne catchment (Southwest of France). Currently, this irrigation advice is based (in combination with a weather forecast) on a network of multi-layer soil moisture probes that are maintained by ACMG – Agralis. The crop evapotranspiration (ET) and irrigation requirements are derived from these soil moisture profiles. However, the representativeness of a single soil moisture probe in a field is limited. Satellite remote sensing using high resolution thermal images, such as the SEBAL model (WaterWatch) can provide detailed spatial information at field scale (~30m). The objective of this study is to investigate whether the combination of the soil moisture measurements and ET measurements from remote sensing can further improve the consultancy to farmers.

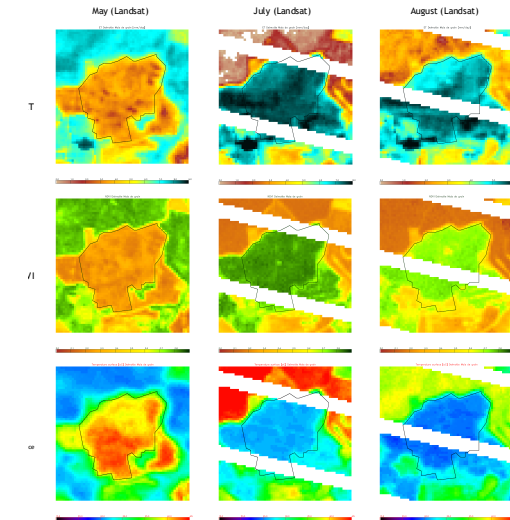
## Study approach

WaterWatch has collected cloud free high resolution satellite images of the period June – September 2010 and has determined the actual daily ET for approximately 50 fields (maize, tabac, hazelnut), where also soil moisture data is collected. In addition Irrilook, an irrigation scheduling tool has been demonstrated for linking soil moisture to ET. Irrilook can be considered as the

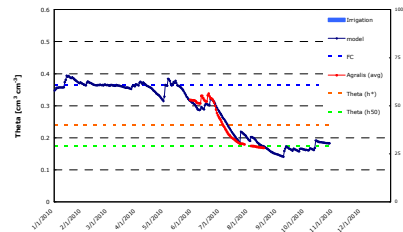
integrator between soil moisture measurements and the satellite derived ET.

## Results

The figure on the right shows the ET, NDVI and surface temperature for three satellite images (May, July and August 2010) for 1 of the 50 fields (maize). This sort of figure will become part of the irrigation advice provided to the farmers in the near future. The figure below shows the preliminary results of the soil moisture content in the root zone modeled by Irrilook (blue line) and the measurements (red line).



SEBAL ET, NDVI and surface temperature of 1 field for three images (May, July and August)



## Conclusions

2010 has been a pilot year, and it is planned to continue next for more fields. Limitations of SEBAL are at this moment the availability of cloud free high resolution thermal images. The limitations of Irrilook is at this moment the soil map, which needs to be improved.

