



Irrigation Advisory service based on Satellite Data



Carlo De Michele

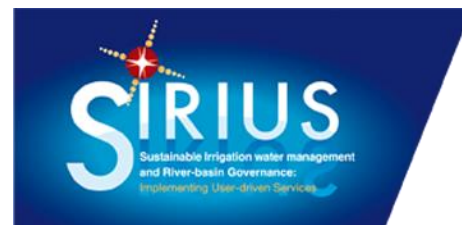
ARIESPACE s.r.l., Spin off Company UNINA

carlo.demichele@ariespace.com – www.ariespace.com

A Multidisciplinary Team



EU H2020 – PSR 2007-2013



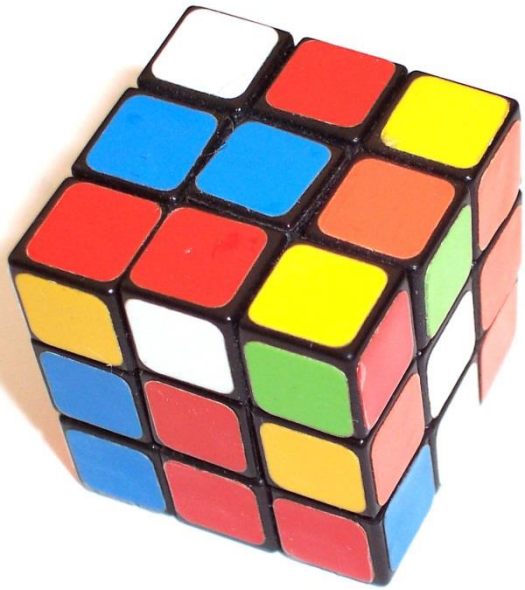
Fondo europeo agricolo
per lo sviluppo rurale:
l'Europa investe nelle zone rurali



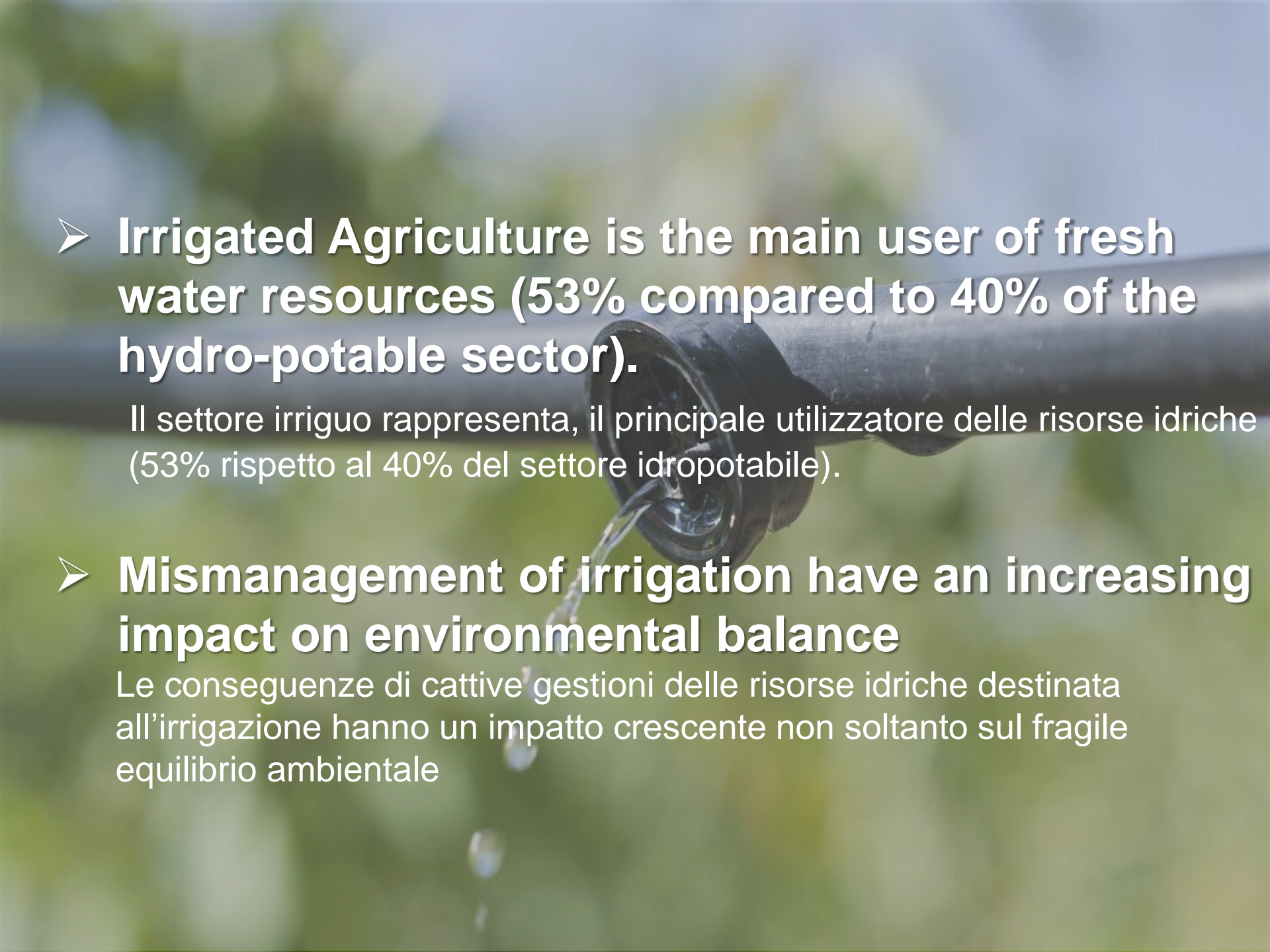
Programma
di Sviluppo Rurale
PSR CAMPANIA
2007/2013



Assessorato Agricoltura



The challenge

- 
- A black irrigation pipe with a nozzle is shown leaking water into a green field. The water is dripping from the nozzle, and the background is a blurred green landscape.
- **Irrigated Agriculture is the main user of fresh water resources (53% compared to 40% of the hydro-potable sector).**

Il settore irriguo rappresenta, il principale utilizzatore delle risorse idriche (53% rispetto al 40% del settore idropotabile).

- **Mismanagement of irrigation have an increasing impact on environmental balance**

Le conseguenze di cattive gestioni delle risorse idriche destinata all'irrigazione hanno un impatto crescente non soltanto sul fragile equilibrio ambientale

Do you irrigate?





How do you decide?

Looking at the leafs?

A close-up photograph of a person's hand pointing their index finger towards a dark, rocky soil in a pot. The soil is composed of small, dark grey and black particles, with some dried plant matter and roots visible. The hand is light-skinned and is positioned on the right side of the frame, with the finger pointing towards the center-left. A green banner with white text is overlaid at the top of the image.

How do you decide?

Looking at the soil?



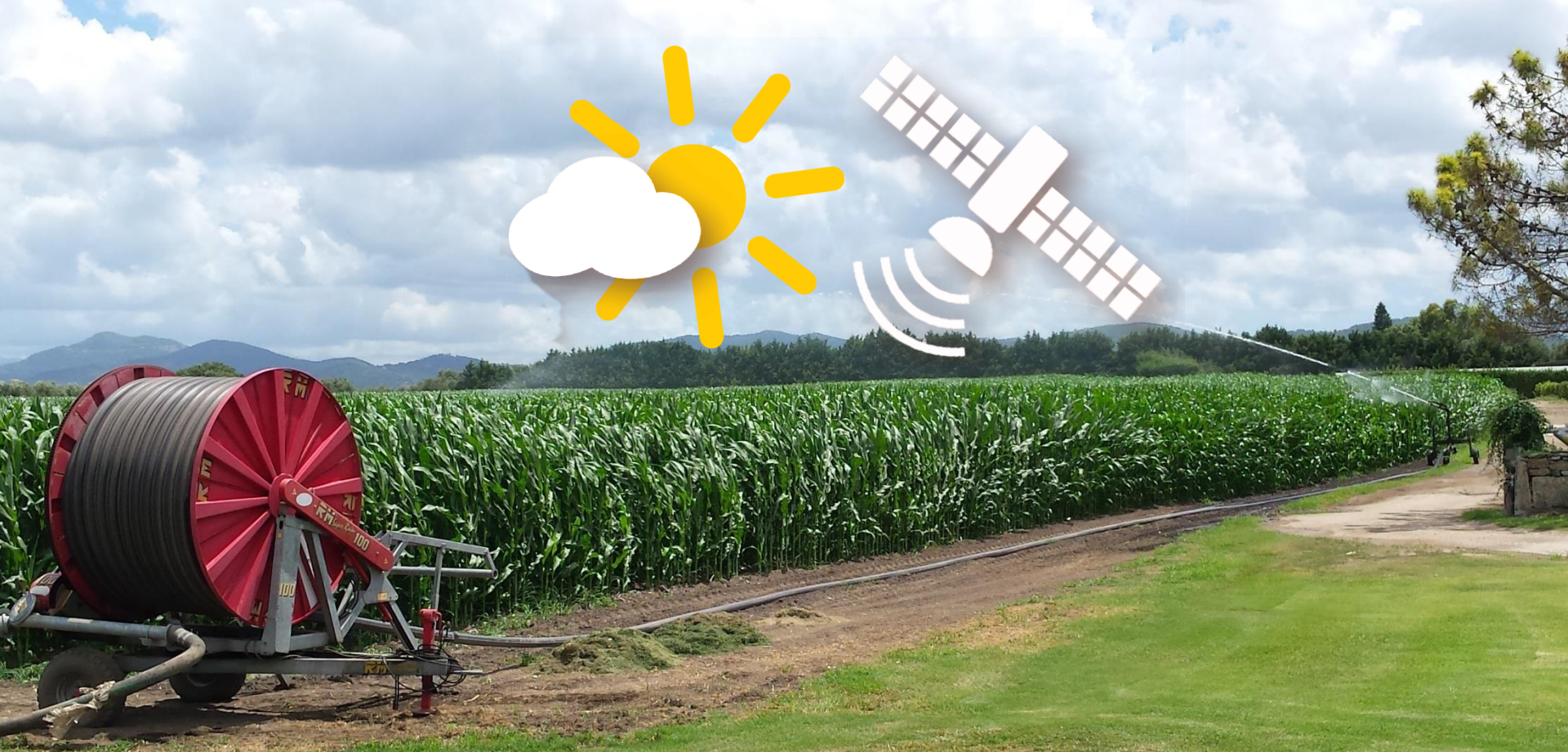
Meteo Forecasts?





The solution

Satellite technologies

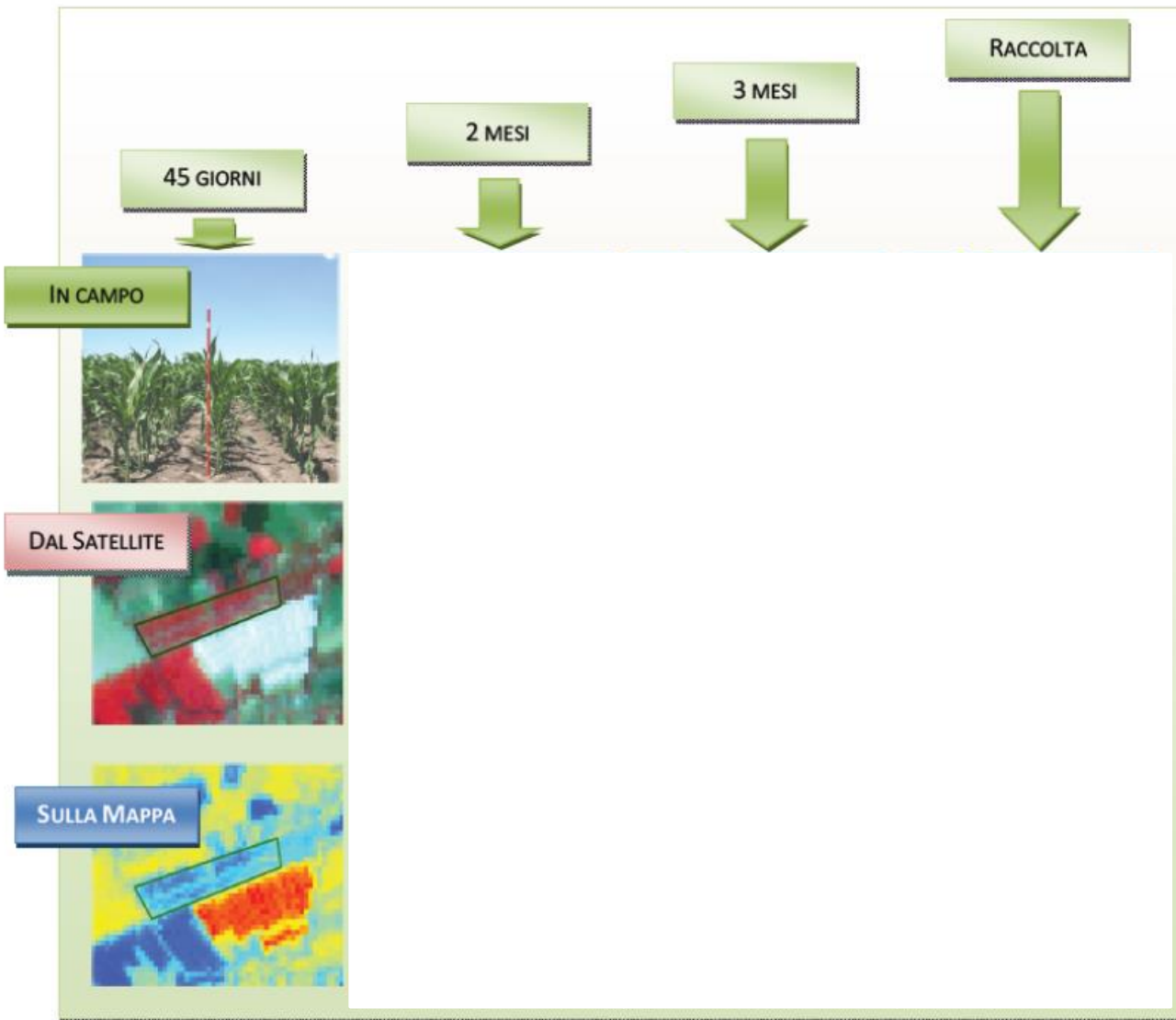


Irrigation Water Requirement?



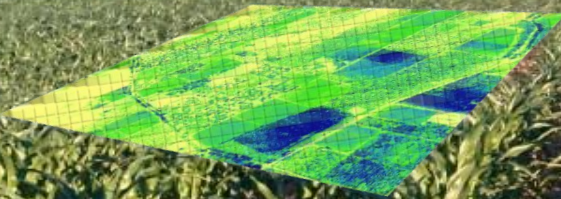
IRRISAT tells you!

IRRISAT



Satellites follow the crop development

Crop development measurement



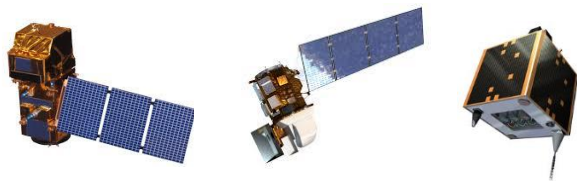
**Satellite data are equivalent to
a measurement every ten meters**



Vision

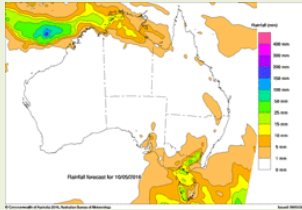
Provide each farmer with satellite information on crop developing

Technology



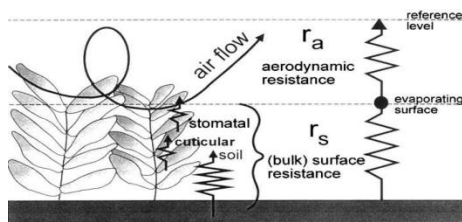
Satellite virtual constellation

High-resolution multispectral radiometric images of **Landsat8** (30x30m, every 16 days) , **Sentinel2** (10x10m), **DEIMOS-1** (22x22), **Rapid Eye** (6x6m), **geoeye**, **worldview**, delivered in near real time and processed;
custom selection of resolution and revisit time



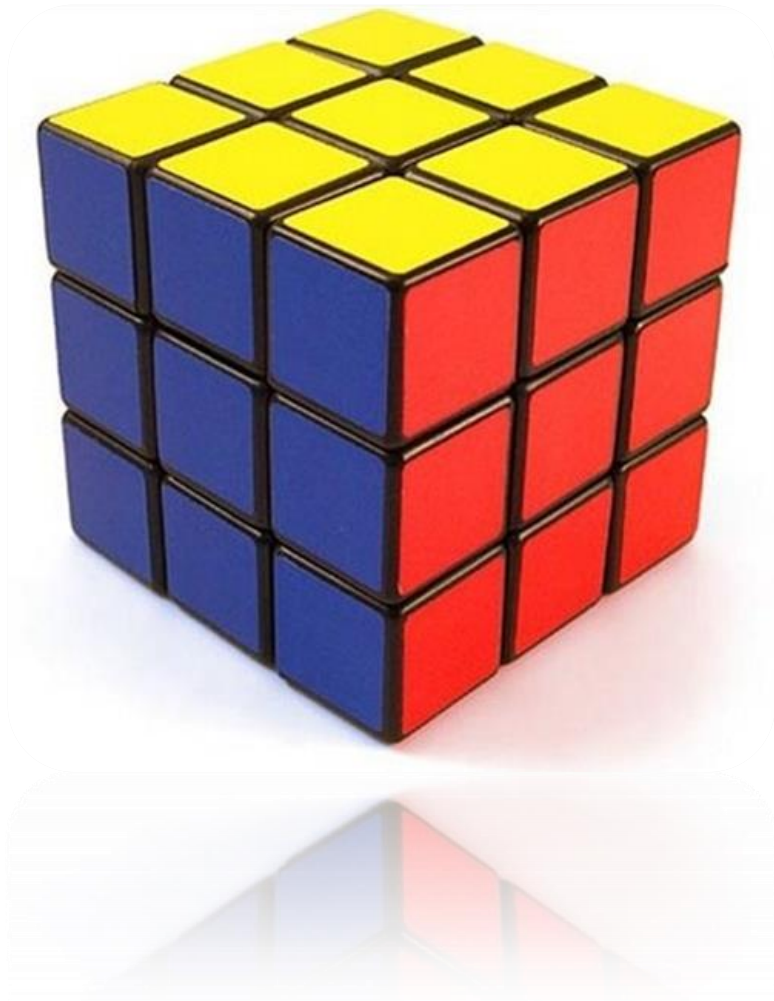
Meteo data and Weather Forecast (5-7 days ahead)

In-situ agro-meteorological variables and meteo data forecasting is provided by selected Numerical Weather Prediction (NWP) Products



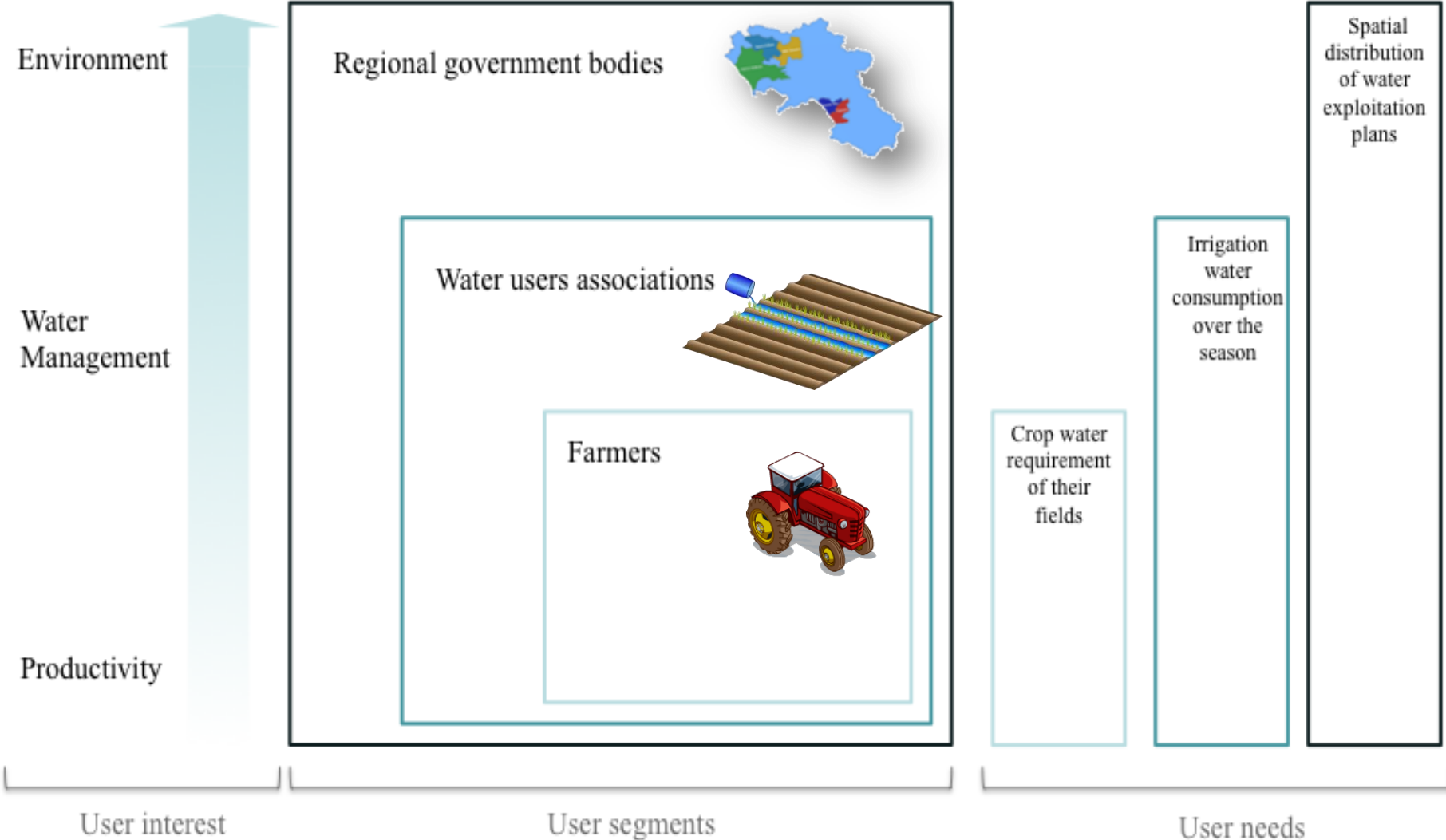
Standard FAO-56 procedures

Direct calculation of Potential Evapotranspiration by the Penman Monteith equation by combining in-situ agro-meteorological variables, meteo data forecasting, satellite data. Water Balance modelling.



Results

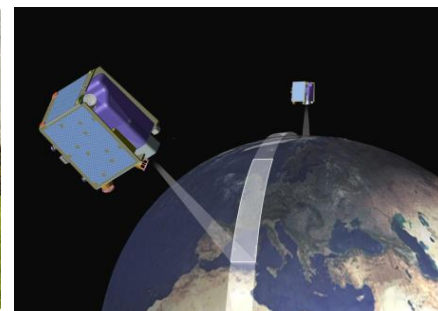
Users' needs at different levels





IRRISAT nella Regione Campania

Psr 2007-2013



Aziende iscritte

Appezamenti monitorati

Ettari aziendali

Immagini satellitari
acquisite (nella
stagione irrigua
2016)

2500

7500

76050

12



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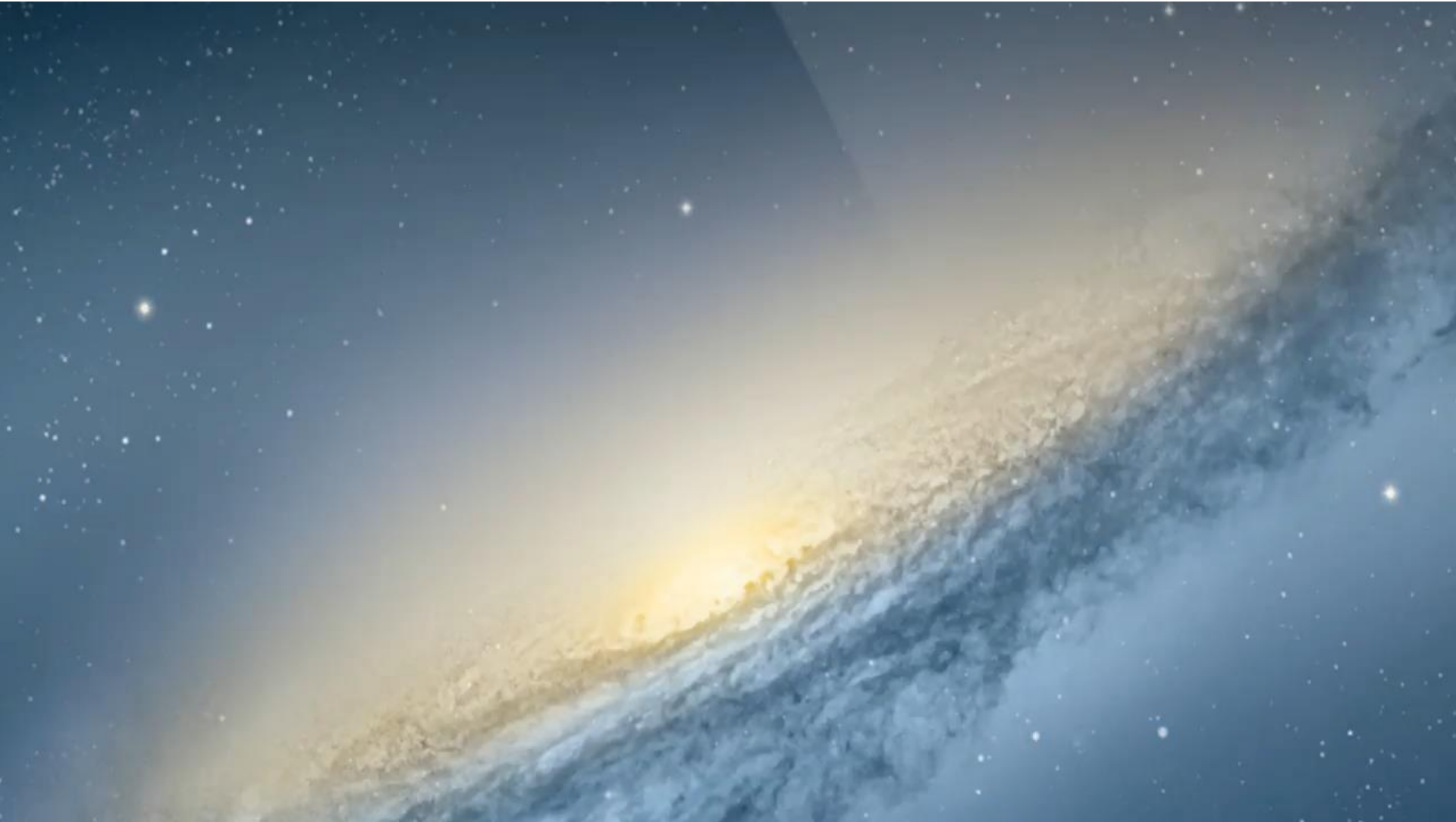
Information

- Daily Evapotranspiration map
- Crop Vigour map
- Irrigation crop requirement,
- Meteo Forecasts 5 days ahead,
- Nitrogen prescription map

Technology

- Satellite data every 10 days
- Cosmo Leps meteo model
- Water balance model
- Field validation





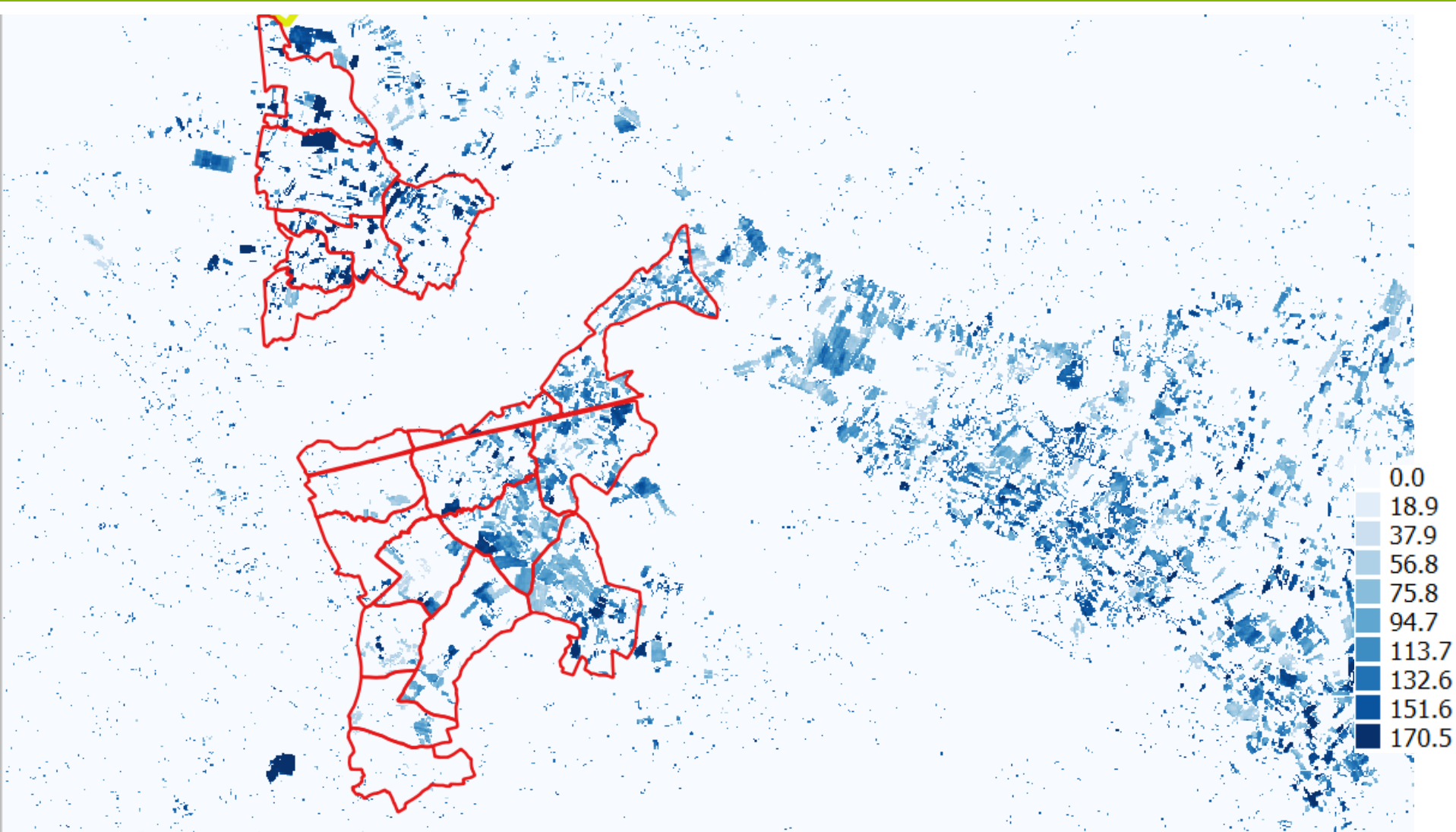


La misura dei volumi irrigui con dati da satellite

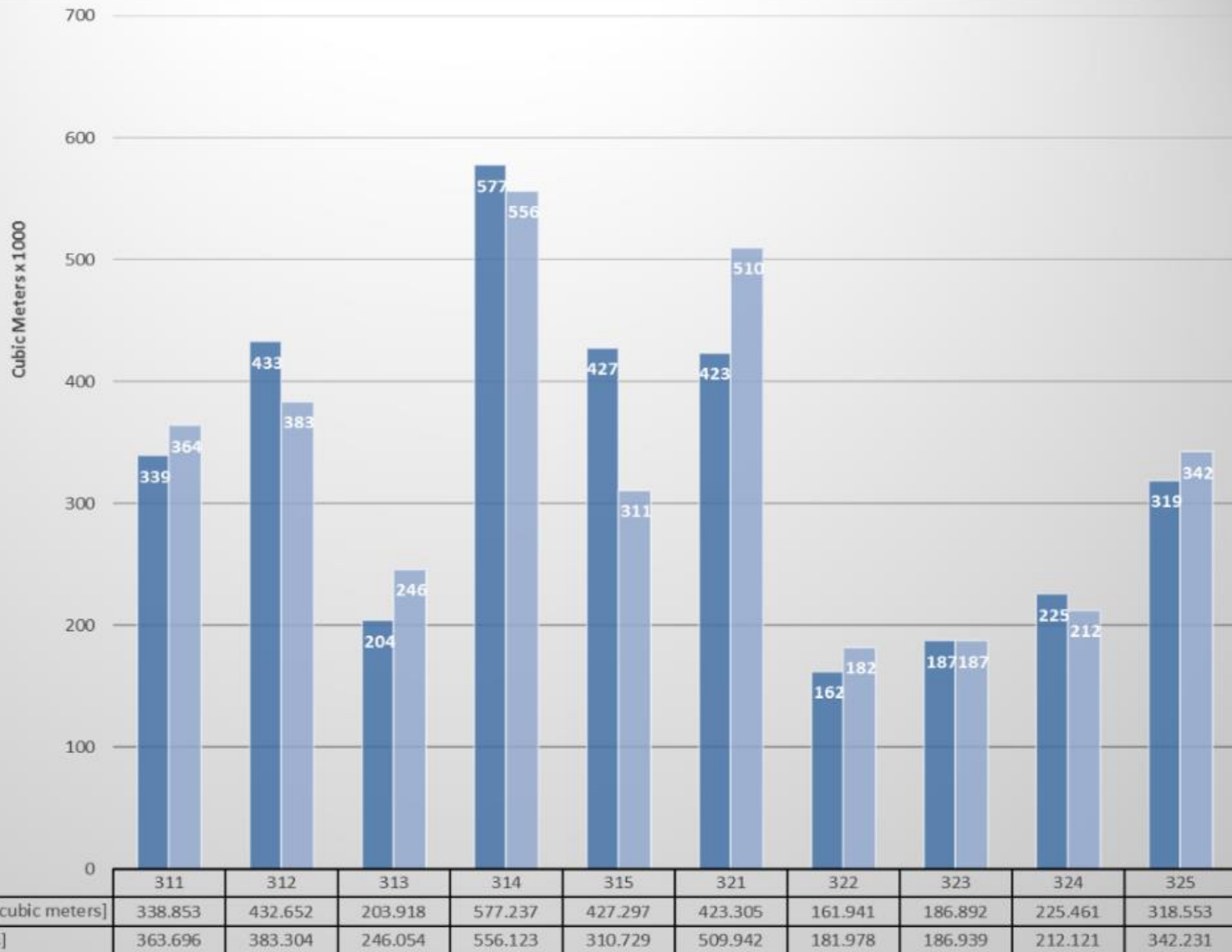
“Linee Guida per la Regolamentazione da parte delle Regioni delle modalità di quantificazione dei volumi idrici a scopo irriguo”, approvate con Decreto Mi.P.A.A.F. del 31/7/2015 (G.U. 14/9/2015), che richiedono “il monitoraggio quantitativo dei volumi irrigui”,

Fabbisogni irrigui totali mese di luglio 2016

Consorzio Sannio Alifano (dati in mm)



Confronto tra volumi misurati e stimati da satellite in alcuni distretti irrigui





Consorzio Bonifica del Volturno

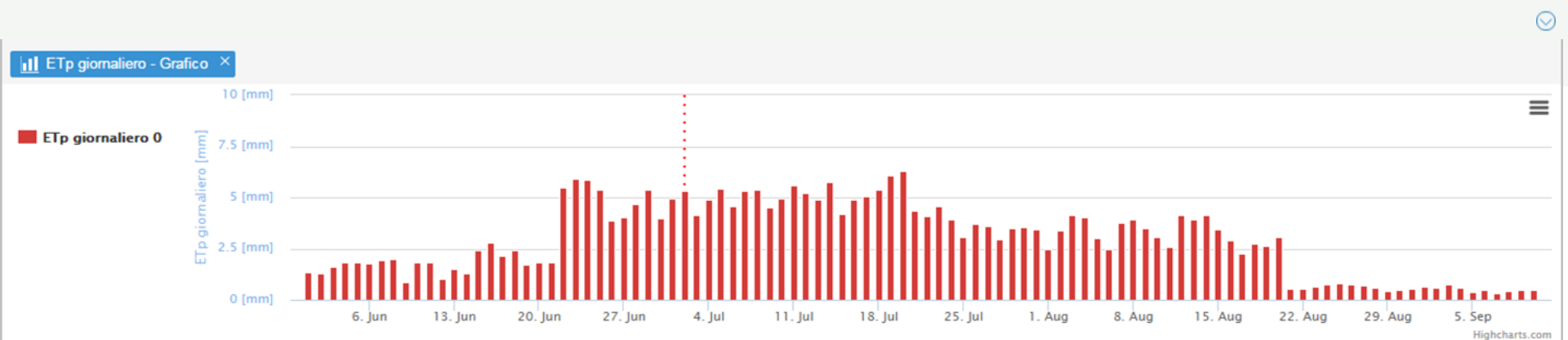
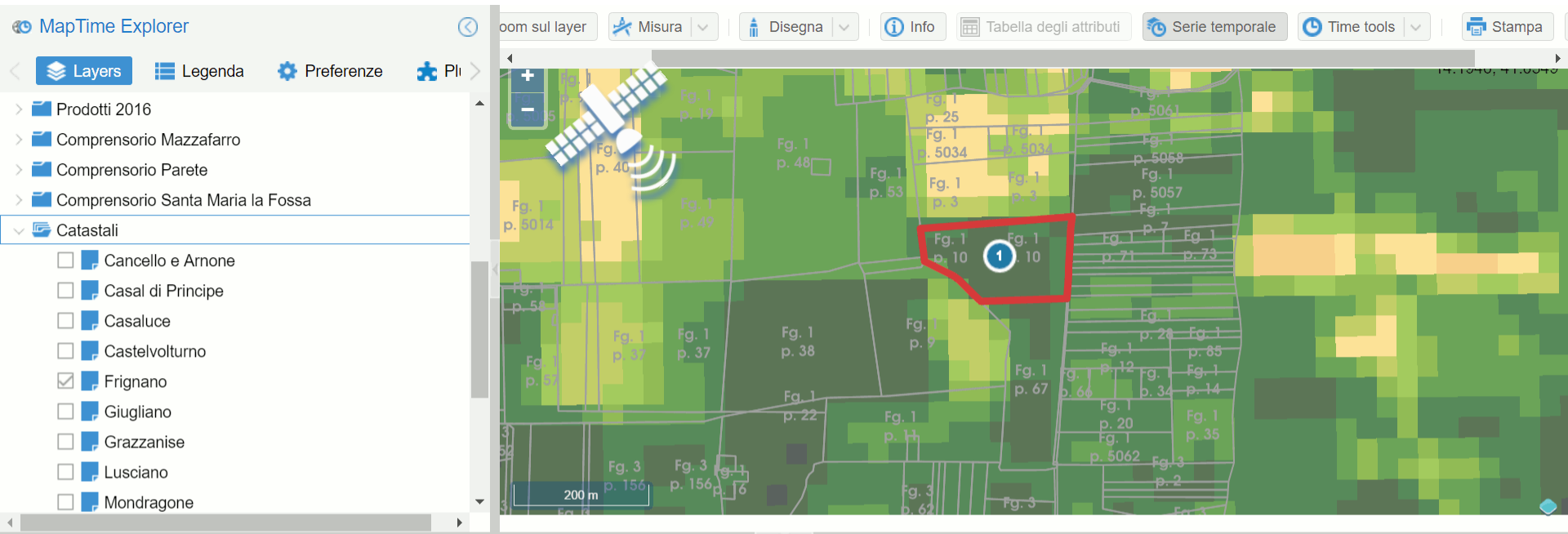
La Gestione del Contatore

Manomissione del contatore
Presenza in campo per uso e/o mal funzionamento del dispositivo
Vigilanza e controlli

**Oltre il 10%
del costo per mc**



Controllo delle Aree Irrigate



Inquadramento comprensoriale

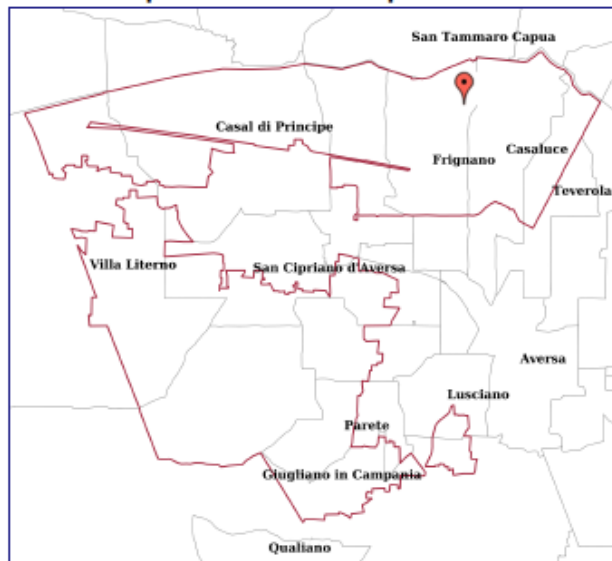
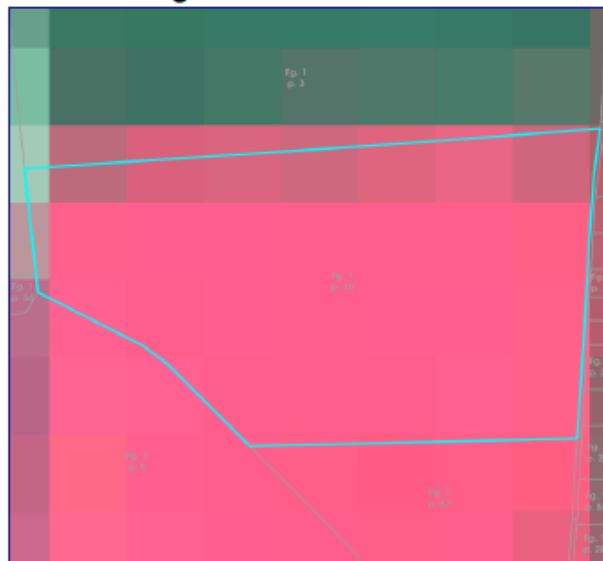


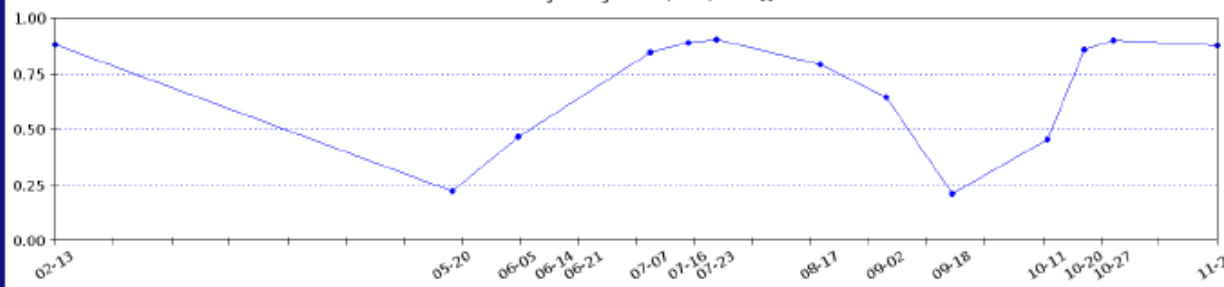
Immagine satellitare 23-07-2014



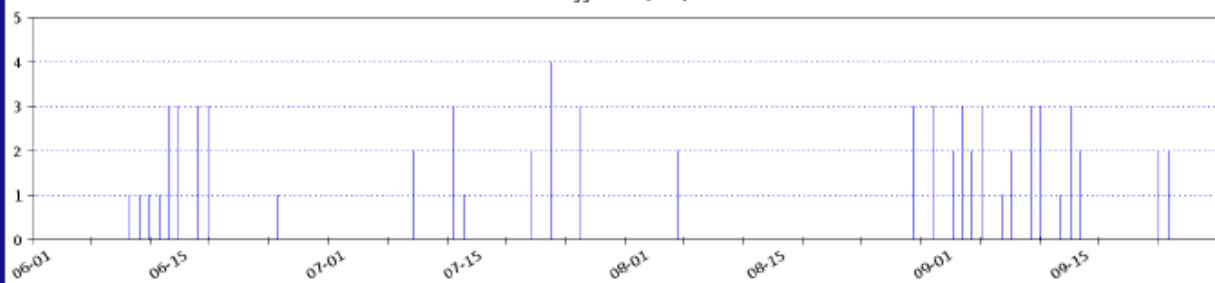
Ortofoto agosto 2014



Indice di vigore vegetativo (NDVI) 2014 []



Pioggie 2014 [mm]

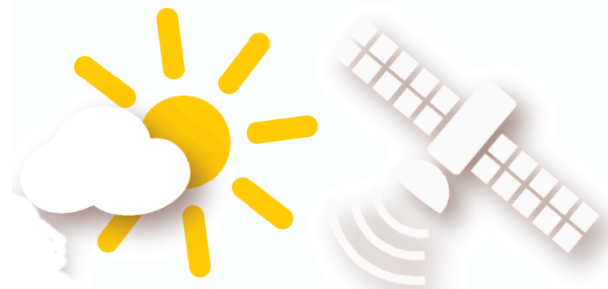


Comp.	Comune	Foglio	Particella
Parete	Frignano	1	10
100%			
Area [ha]	Suolo nudo [ha]	Erbaceo [% o ha]	Arboreo [% o ha]
2.1634	----	----	----
	2600	310	320
Fab. Irr. [m3 totali stimati]	ETp [mm totali]	ETo [mm totali]	P [mm totali]
----	----	----	69



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Irrigation Advisory service based on Satellite Data



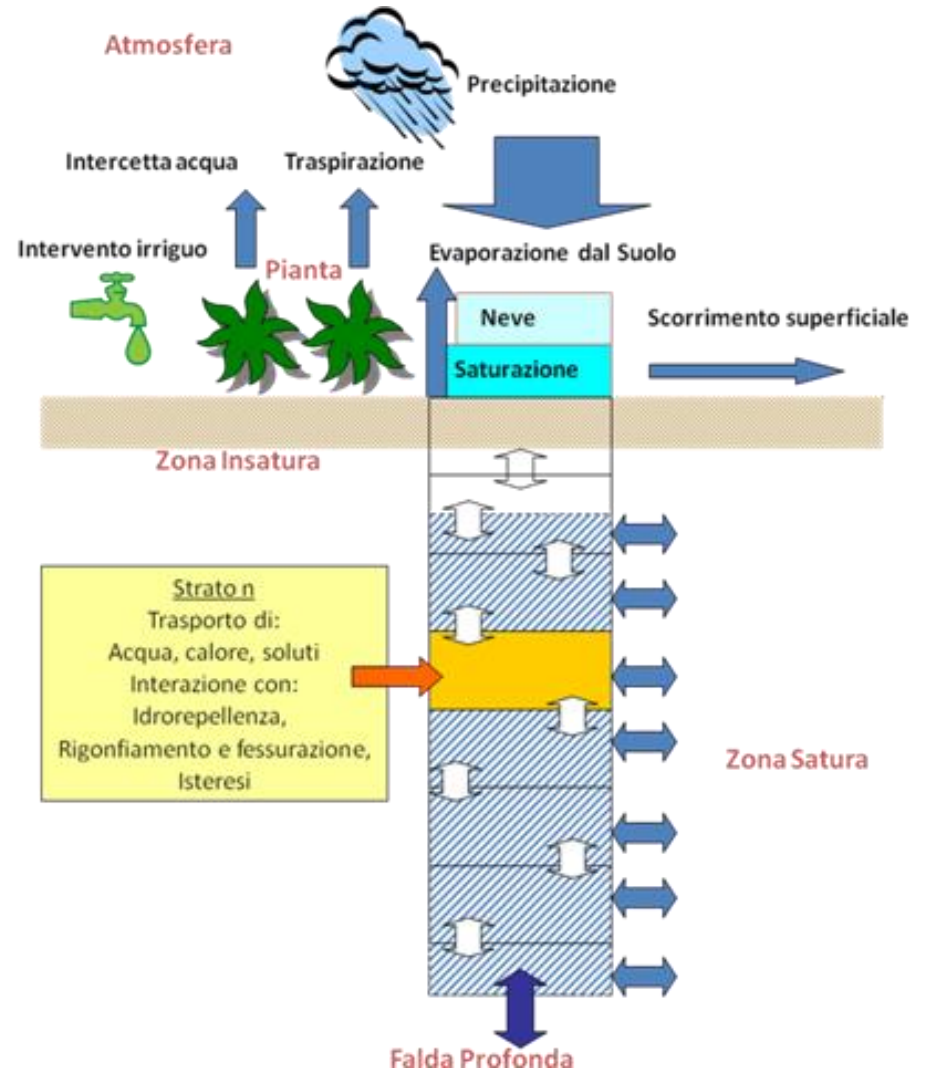
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www.irrisat.com

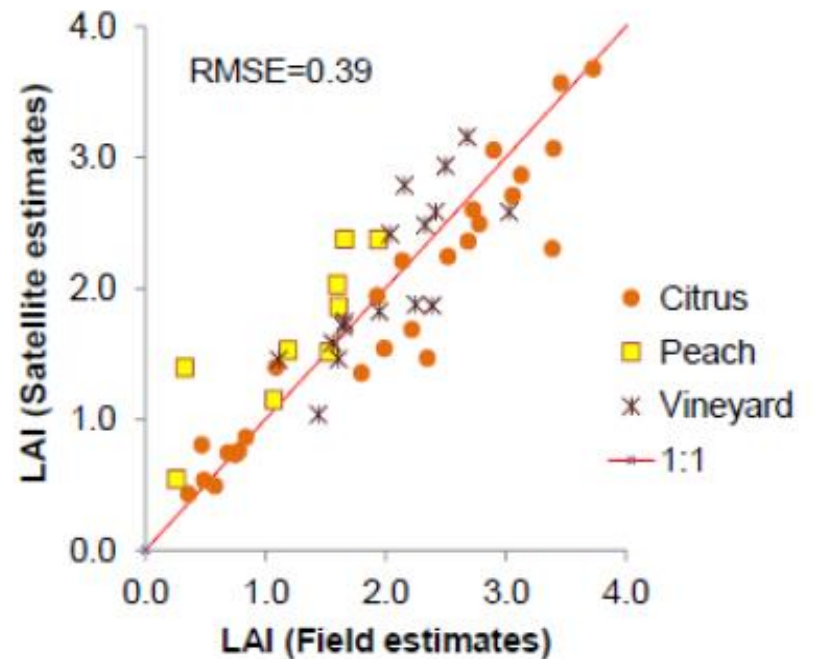
Thanks for your attention

EXTRAS

Soil - Plant - Atmosphere models



Model Validation



Model Validation

