

Satellite monitoring of agriculture to optimize the use of irrigation water.

The availability of robust conceptual frameworks to estimate the water consumption of crops together with the availability of satellite vegetation indices allow estimating irrigation needs in real time.

The development of crops can be monitored with satellite images which together with environmental demand allow to establish water consumption.

The implemented initiative

The objective of this project is to increase efficiency in the use of water using new precision technologies applied to the agricultural systems of LAC countries. The project develops pilots in Chile, Argentina, Colombia and Uruguay, where conceptual frameworks and new precision technologies for water management will be implemented at two work scales, plot and basin. The main

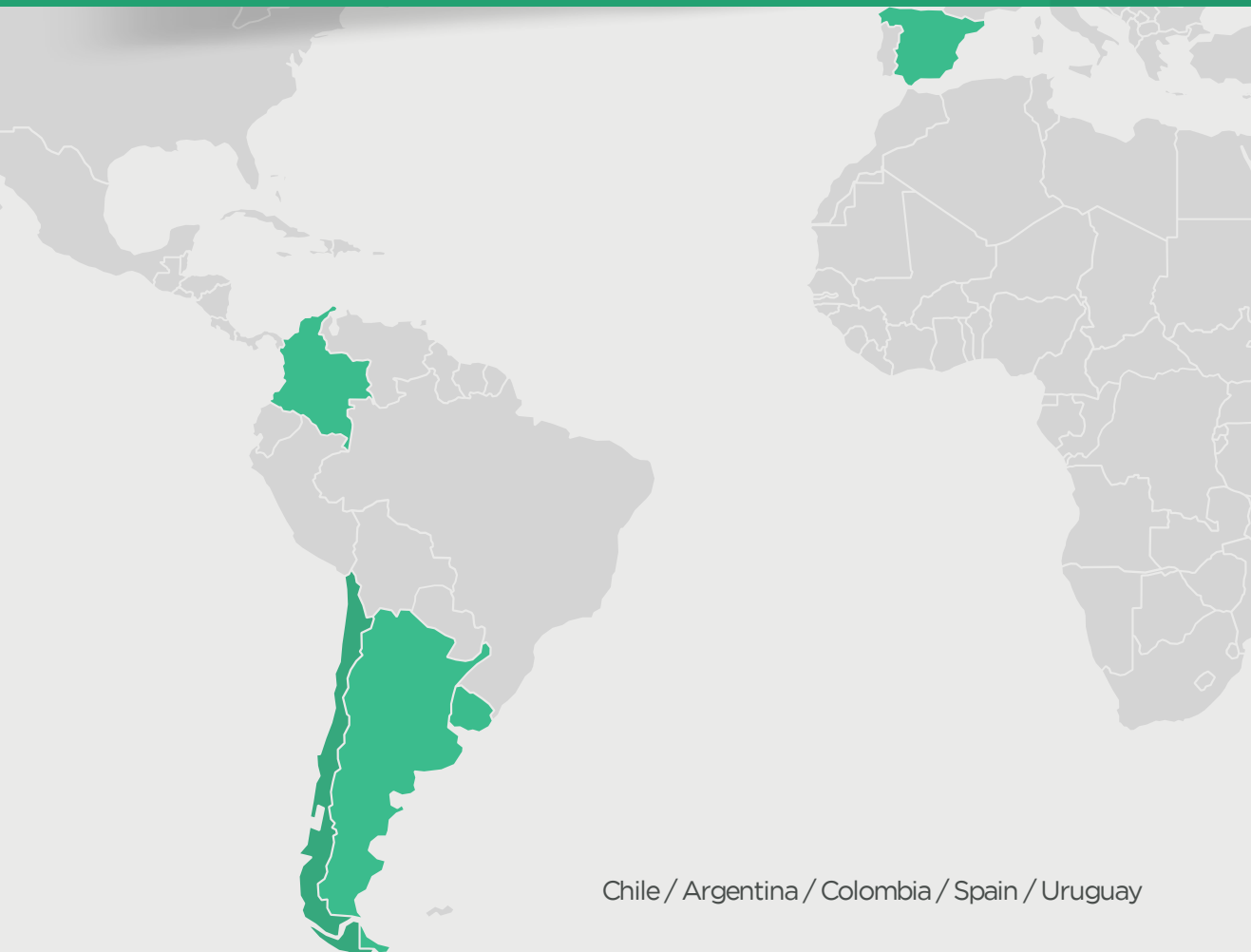
technological tools are the analysis of satellite images, online platforms (MapServer), field sensors, all this to have information with high spatial and temporal resolution in production systems, transforming traditional irrigation management systems into systems of high precision, informed and in order to improve the efficiency of the use of water resources.

Vegetation indices from satellite images allow monitoring the development of crops that, together with the weather, make irrigation management operational.

The technological solution

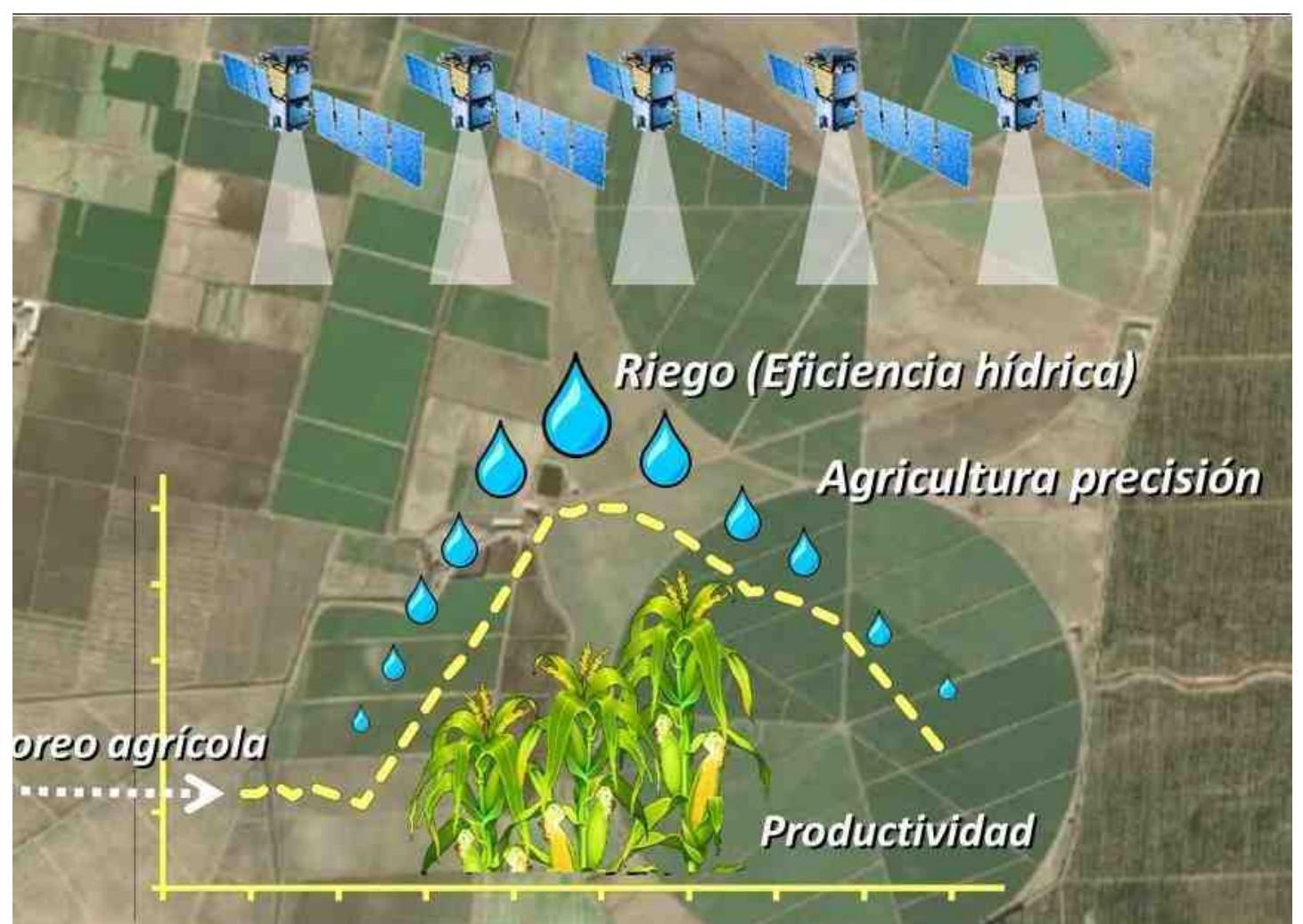
The ability of vegetation indices to evaluate crop development and estimate their evapotranspiration (ETc) has been demonstrated in satellite remote sensing investigations. The foundation of these skills is based on the ability of IVs to estimate the crop cover fraction, the absorption of photosynthetically active radiation (fPAR) or the leaf area index, all parameters that drive biomass production and the process of transpiration in the plants. From the sequence of satellite images it is possible to estimate the amount of vegetation displayed

by the crop and therefore its ability to transpire against the demand of the environment. The PLAS FONTAGRO Platform is routinely updated with NDVI vegetation index images from the Sentinel 2A and 2B satellites. The transformation of the NDVI to a strategic parameter of irrigation such as the crop coefficient (Kc), which together with environmental demand allows estimating the water consumption of crops, which must be replaced through irrigation.



Chile / Argentina / Colombia / Spain / Uruguay

SATELLITE AGRICULTURAL PLATFORM TO ESTIMATE THE IRRIGATION NEEDS OF CROPS



+100
Water efficiency

+11
Satellite Agricultural Platform PLAS FONTAGRO

+22
Technological pilot field

+11
Precision irrigation

MÁS INFO



Results

The accumulated experiences support the operational use of spectral images for irrigation scheduling. The operational use of dense time series of satellite images with high spatial resolution allows the monitoring of biophysical parameters related to crop water use, throughout the growing season with an unprecedented temporal and spatial resolution. This information is very useful for farmers, professionals or decision makers (end users) since it allows the quantitative management of

irrigation to be operationalized. The use of the online platform PLAS FONTAGRO (Web-GIS) allows users easy and fast access to the time series of images, almost in real time. In this way, advances in the evaluation of ET of crops, the accessibility to satellite images and the availability of meteorological information, allow to have an unprecedented access to sources of information on crops and to estimate accurately the water needs like never before it had been achieved.

Main donors



Participating Organizations

