

PLEIADeS

Participatory multi-Level EO-assisted
tools

for Irrigation water management
and Agricultural Decision-Support

Proyecto de investigación y desarrollo

Sexto Programa Marco, contrato 037095

15 Sept 2006 - 14 Sept 2009

Tecnologías de la comunicación asistidas por satélite para una gestión eficaz y transparente del agua en la agricultura de regadío

Introducción

Objetivos

I+D+ i

implementación operativa

Ampliación y Transferibilidad

Conclusiones

**M^a Anna OSANN JOCHUM,
Alfonso CALERA BELMONTE**

**Universidad de Castilla-La Mancha,
España**

y much@s soci@s en todo el mundo





Gestión eficaz y solidaria del agua

Agricultura de regadío sostenible

Gestión participativa y transparente del agua

Productividad del agua optimizada

mediante

Nuevas Tecnologías:

Satélites de Observación de Tierra

Sistemas de Información Geográfica /online

Tecnología de Información y Comunicación

Aportan conocimiento útil para la gestión, permiten compartir la información base y facilitan el acceso de los/las actores sociales a dicha información

Gestión eficaz y solidaria del agua

Gestión
transp

Gestión adaptativa

mediante

Nuevas Tecnologías:

Satélites de
Observación
de Tierra

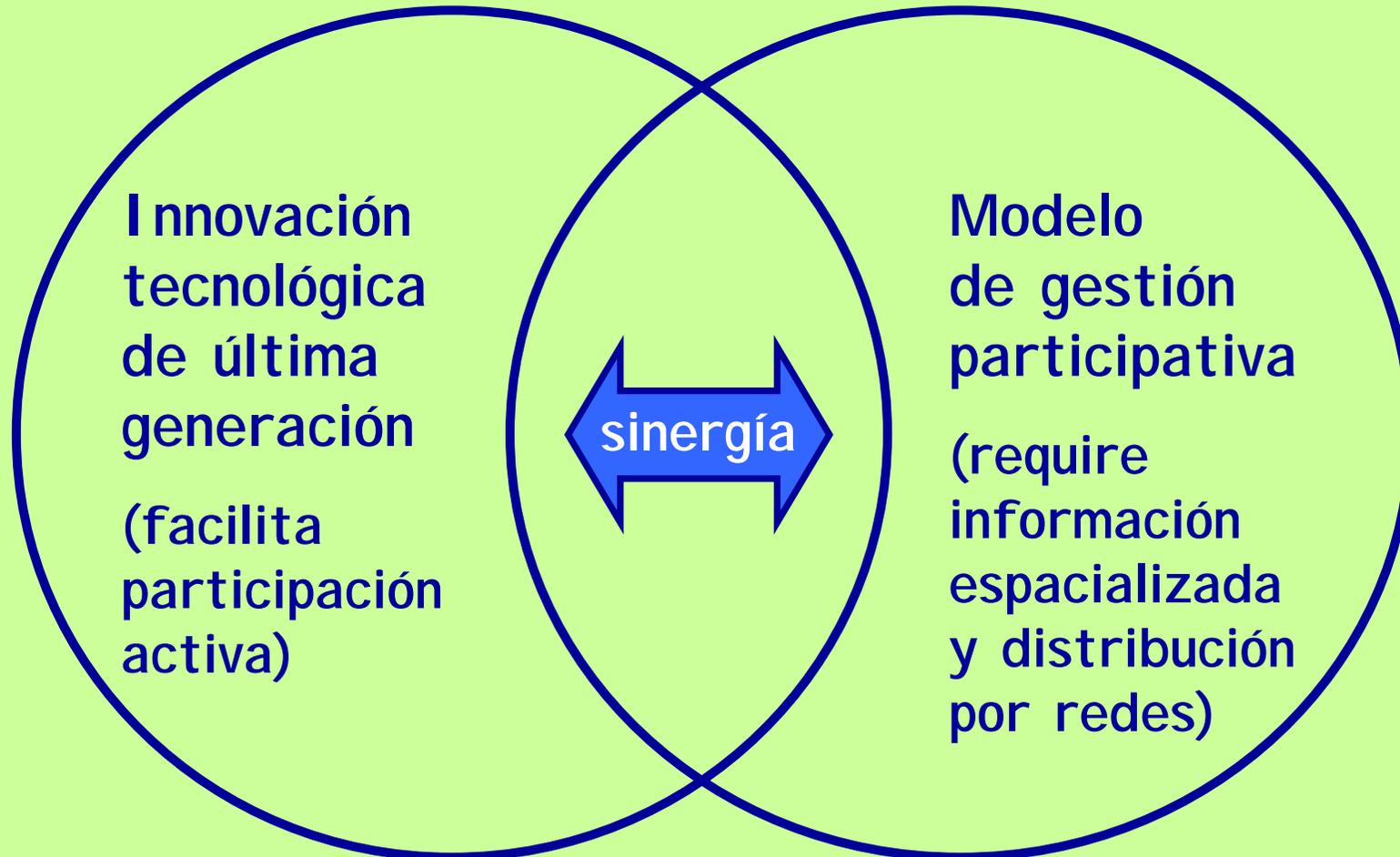
Sistemas de
Información
Geográfica /online

Tecnología de
Información y
Comunicación

Aportan conocimiento útil para la gestión,
permiten compartir la información base y facilitan el
acceso de los/las actores sociales a dicha información



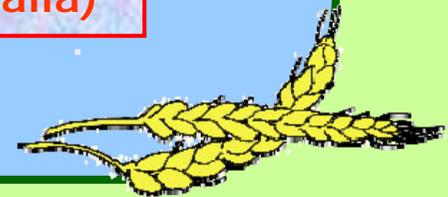
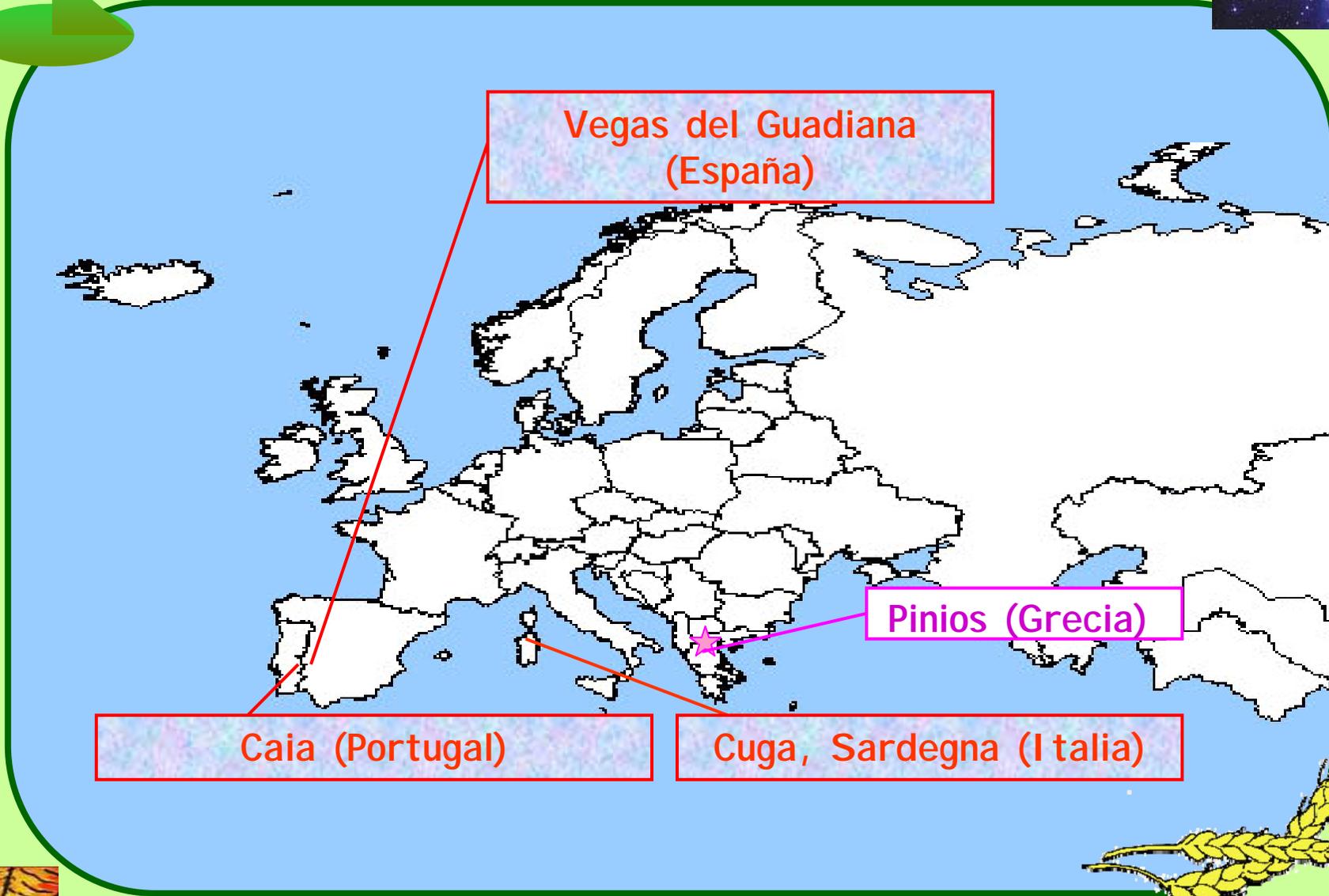
PLEIADeS



Participatory multi-Level EO-assisted tools for Irrigation water management and **Agricultural Decision-Support**

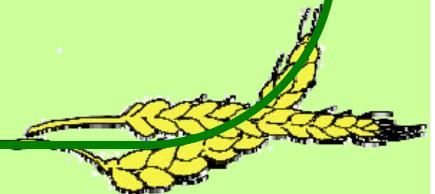


PLEIADeS en Europa



Participatory multi-Level EO-assisted tools for Irrigation water management and Agricultural Decision-Support

PLEIADeS en el mundo





SPI DER
on-line

System of Participatory Information, Decision support, and Expert knowledge for irrigation and River basin water management

Escalas de

cuenca entera,
zona regable,
explotación agraria,
UGH (unidad de gestión hídrica)

Cubriendo p.ej.

Guadiana Alto;
Guadiana Medio (España y Portugal);
Guadiana Bajo (incl Alqueva, Portugal)

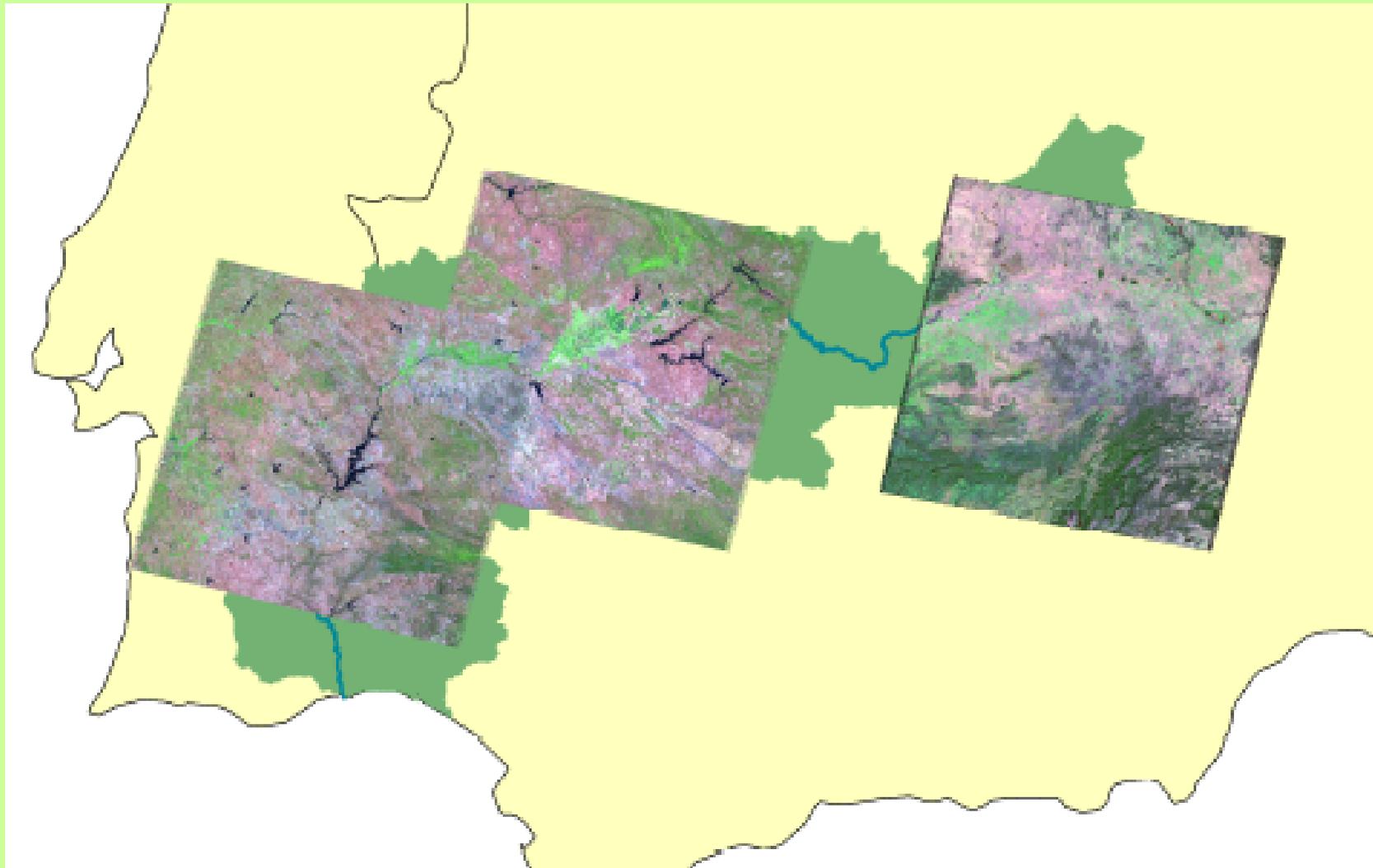
→Gestión transfronteriza ←

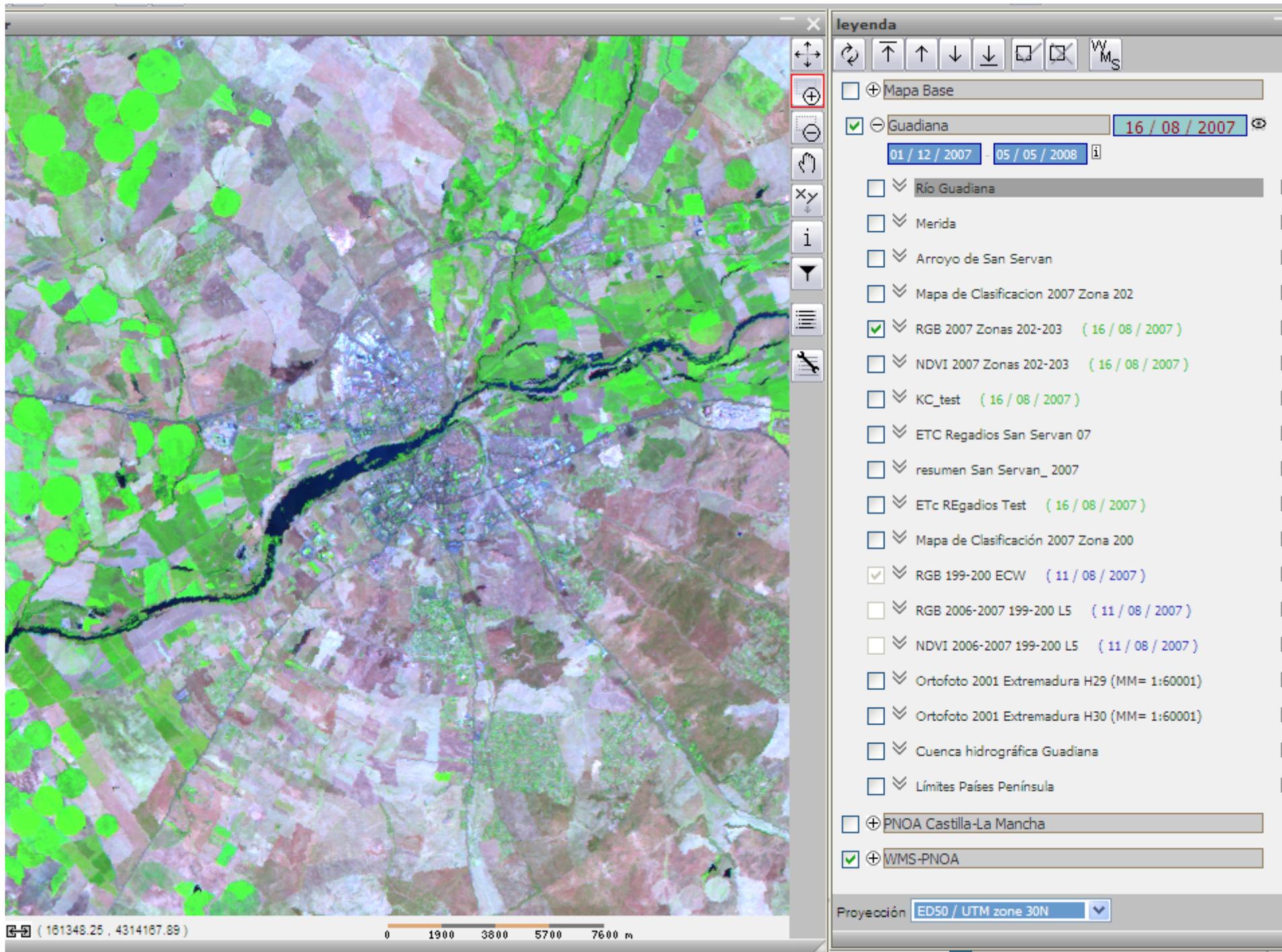


SPI DER

on-line

System of Participatory Information, Decision support, and Expert knowledge for irrigation and River basin water management





leyenda

↻ ↑ ↓ ↩ ↪ WMS

⊕ Mapa Base

⊖ Guadiana 16 / 08 / 2007

01 / 12 / 2007 05 / 05 / 2008 i

∨ Río Guadiana i

∨ Merida i

∨ Arroyo de San Servan i

∨ Mapa de Clasificación 2007 Zona 202 i

∨ RGB 2007 Zonas 202-203 (16 / 08 / 2007) i

∨ NDVI 2007 Zonas 202-203 (16 / 08 / 2007) i

∨ KC_test (16 / 08 / 2007) i

∨ ETC Regadios San Servan 07 i

∨ resumen San Servan_2007 i

∨ ETC Regadios Test (16 / 08 / 2007) i

∨ Mapa de Clasificación 2007 Zona 200 i

∨ RGB 199-200 ECW (11 / 08 / 2007) i

∨ RGB 2006-2007 199-200 L5 (11 / 08 / 2007) i

∨ NDVI 2006-2007 199-200 L5 (11 / 08 / 2007) i

∨ Ortofoto 2001 Extremadura H29 (MM= 1:60001) i

∨ Ortofoto 2001 Extremadura H30 (MM= 1:60001) i

∨ Cuenca hidrográfica Guadiana i

∨ Límites Países Península i

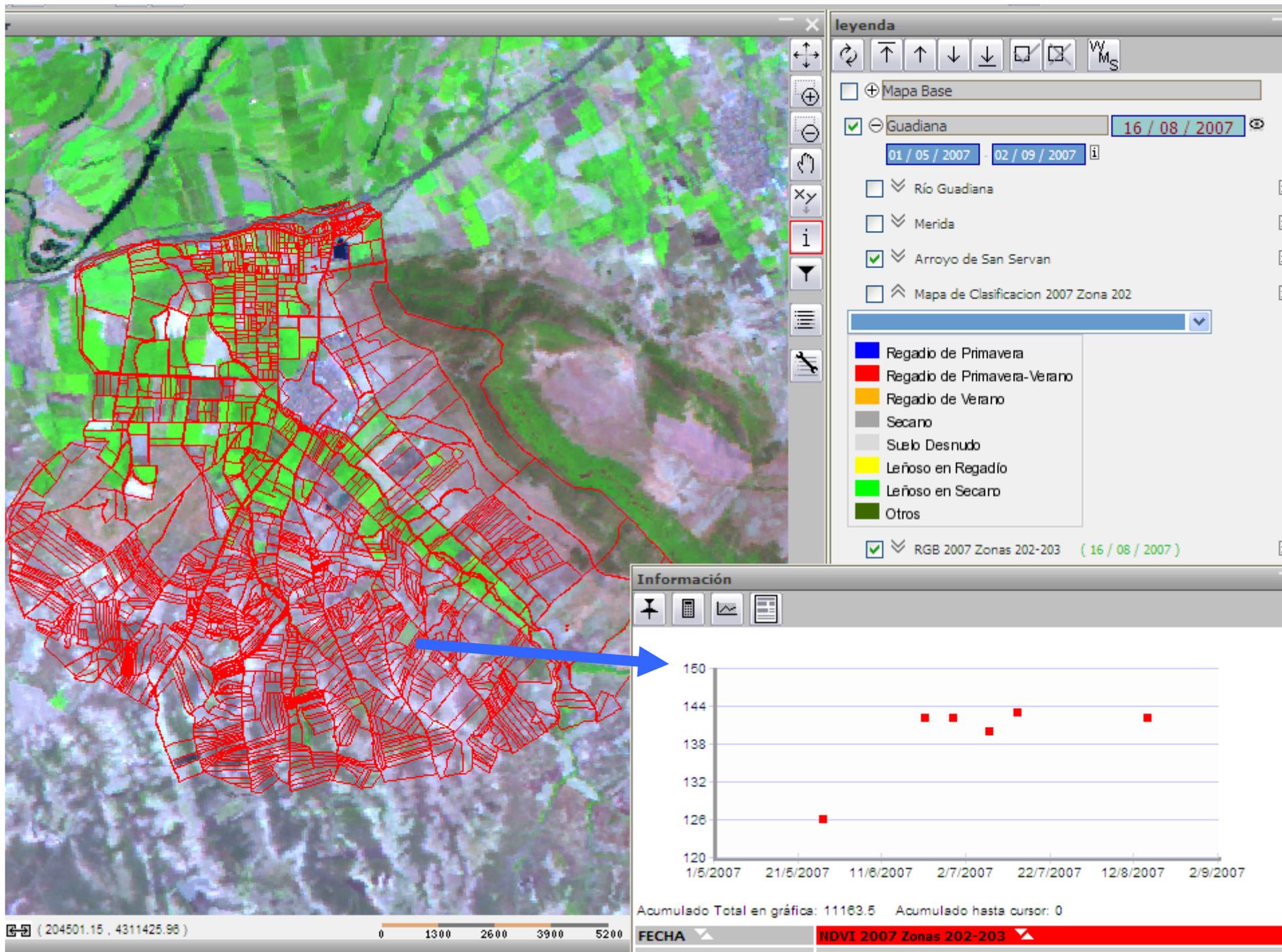
⊕ PNOA Castilla-La Mancha

⊕ WMS-PNOA

Proyección

(161348.25 , 4314167.89)

0 1900 3800 5700 7600 m



filosofía del proyecto

ciencia rigurosa

+

tecnología de punta

+

participación innovadora

Cambio
de
paradigma

conclusiones: "saltos"

- * información (espacial, contenido)
- * acceso a información / transparencia
- * proceso participativo / gobernabilidad
- * concepto eficiencia multi-dimensional

herramienta / instrumento

para

gestión y transición

Aplicaciones clave

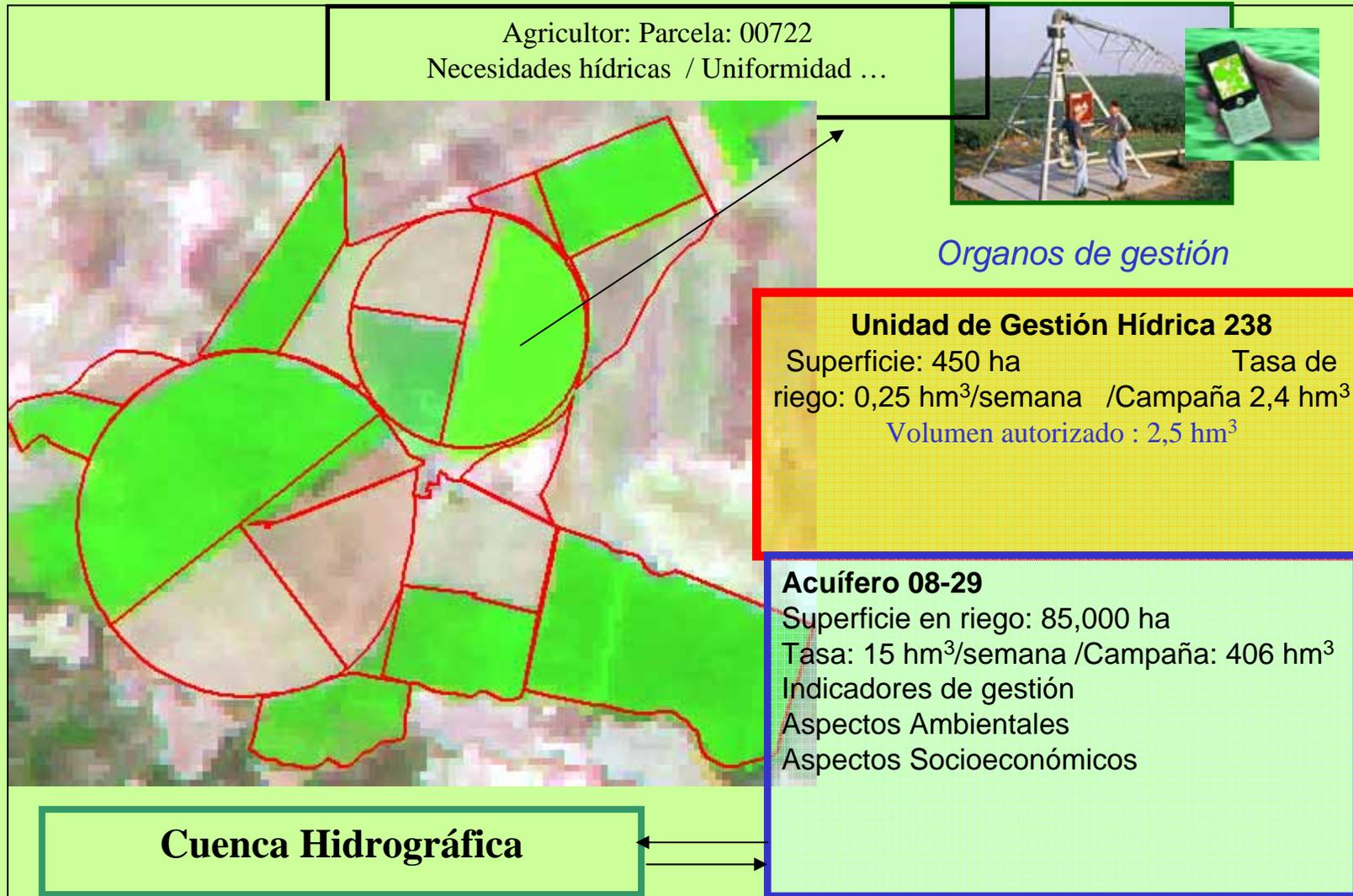
- * Mapa de Cultivos: Control de la superficie regada
 - * Volumen de agua para riego utilizada
 - * Eficiencia en el uso del agua de riego
 - * Servicio de Asesoramiento de Riego SAR / SAF
- ***nuevos indicadores de eficiencia que integran aspectos técnicos, ambientales, sociales, económicos, climáticos y políticos****

Proyectos I+D+i implementación operativa

- * ERMOT (desde 1997-2008) 
- * DEMETER (2002-2005) 
- * HidroMORE (2003-2007) 
- * TeSoRo (2005-2008)
- * PLEIADeS (2006-2009)
- * Aquastar-ALQUEVA (2007-2008) 
- *** y otros proyectos



ejemplo gestor

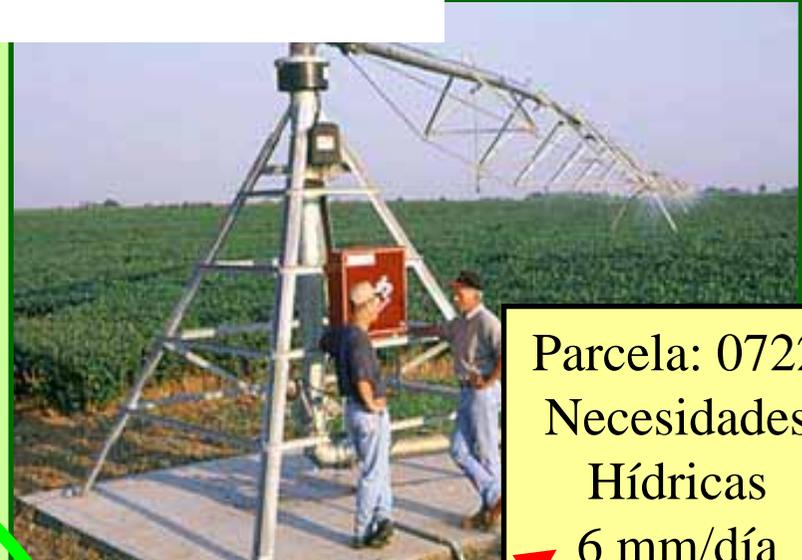




e-Servicio de Asesoramiento de Riegos Asistido por Satélite
e-SARAS



Datos de Satélite



Parcela: 0722
Necesidades
Hídricas
6 mm/día

Campo

Asimilación

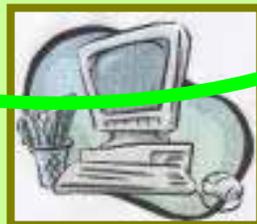


SAR

SIG

Control de Calidad

Información Personalizada





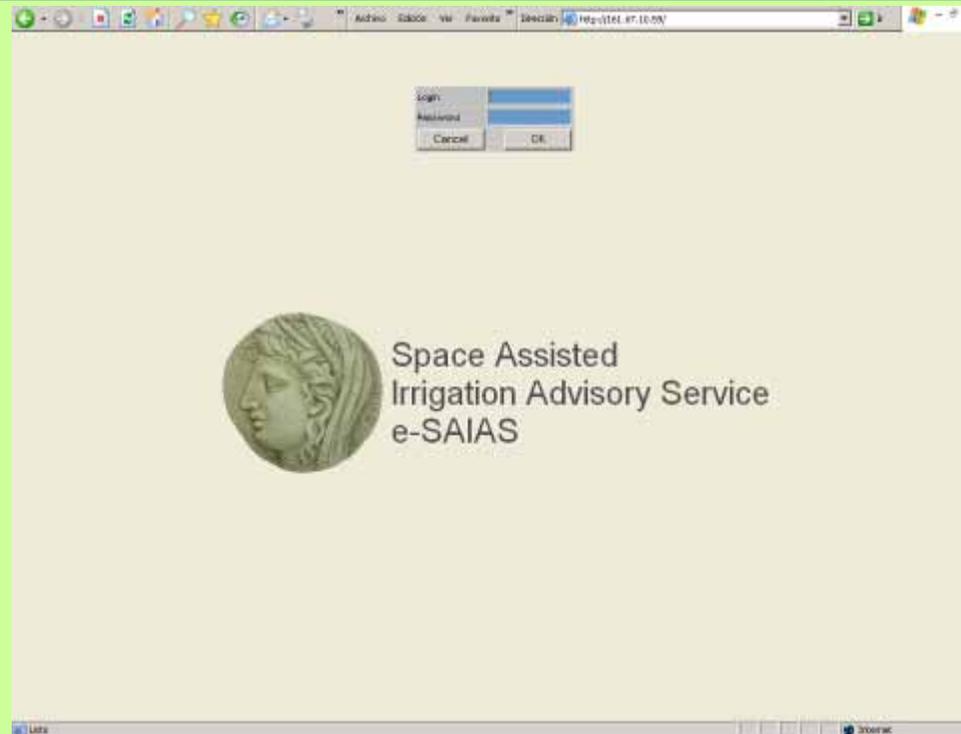
e-Servicio de Asesoramiento de Riegos Asistido por Satélite **e-SARAS**



El inicio de una
nueva dimensión
“Poner el satélite
en la mano del
usuario”



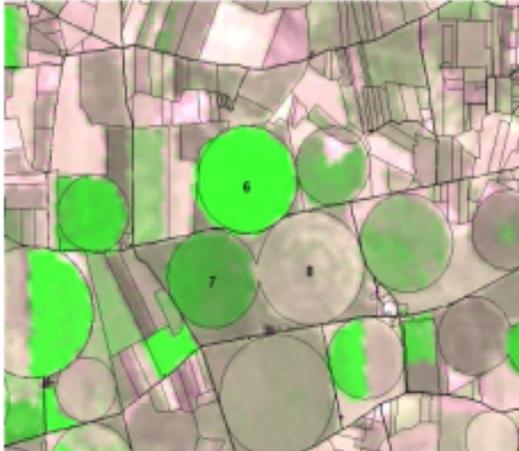
Tecnologías de Información y Comunicación
Servicio de Asesoramiento de Riego
Observación de la Tierra mediante satélites



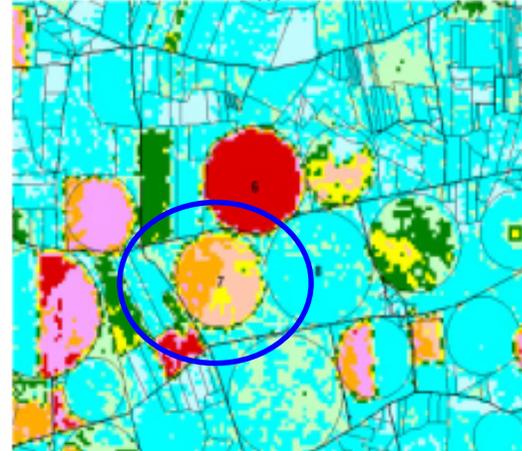
INFORME FINCA AG (1 Julio - 7 Julio)

1 de Julio de 2004

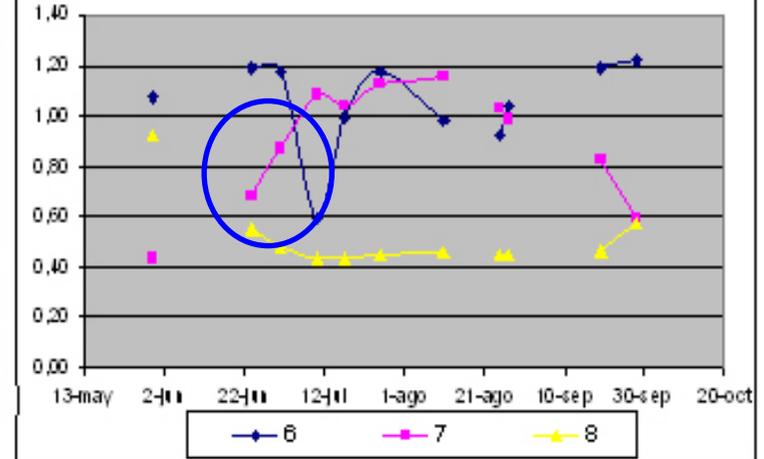
Composición color



Kc

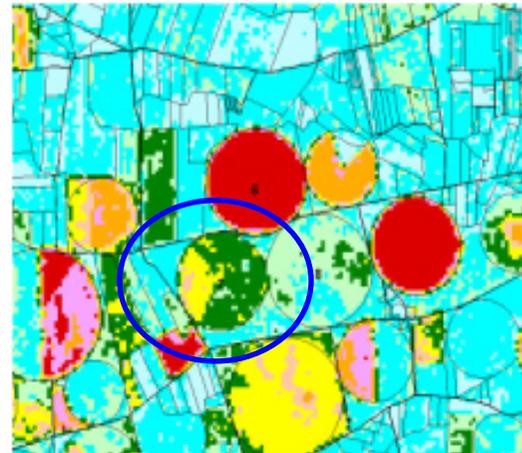
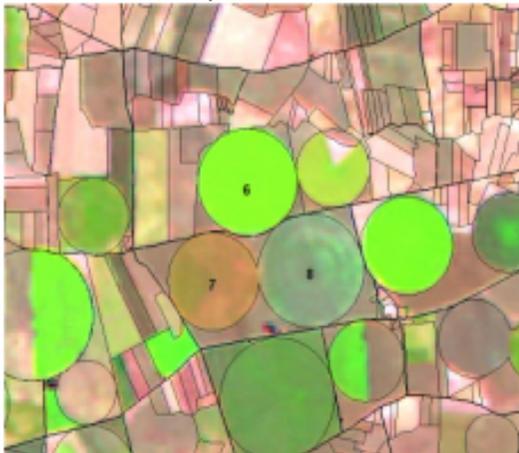


Evolución Kc



24 de Junio de 2004

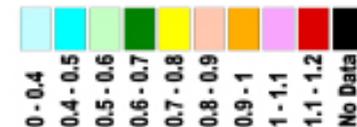
Composición color



Nece sidades Hidricas (mm)	24 Junio - 30 Junio 2004			1 Julio - 7 Julio 2004		
Parcela Cultivo	Kc	Kc X ET0	ITAP	Kc	Kc X ET0	ITAP
6 Alfalfa	1,19	64,65	60,42	1,17	53,39	21,87
7 Maíz	0,68	36,96	44,03	0,87	39,61	41,74
8 Cebada	0,55	28,87	43,76	-	-	-

ET0 (24 Junio - 30 Junio) = 54.23 mm

ET0 (1 Julio - 7 Julio) = 45.48 mm



Archivo Edición Ver Favorito Dirección <http://161.67.10.59/> Ir

Menu **General** Farm **ALL** Date **30 / 3 / 2005** Parameter **Kc NDVI Map** B. Layer **RGB** UPDATE

Name	Pivot 2	Plot	ABGJ02P
Farm	La Grajuela	Variety	700
Crop	Maíz	Perimeter	2209 m.
Station	Anchor		
Area	386426 m ² .		

Date	30 / 3 / 2005	Mean	0,40
Parameter	Kc NDVI Vector	Median	0,38
		Majority	0,38
		STD	0,06

Grid Size **3 x 3**
X: 593742 Y: 4331872

e-SARAS prototipo

Function **Time serie graph** Date1 **30 / 3 / 2005** Date2 **30 / 3 / 2005**

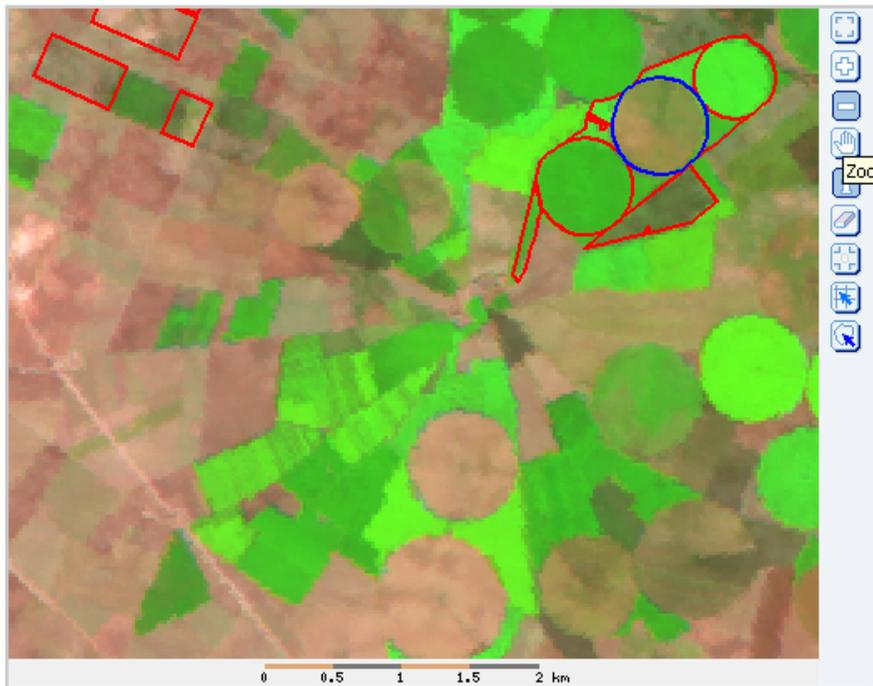
- NDVI Map
- Kc Analytical Map
- Kc NDVI Map
- ETc Weekly Map
- ETc Forecast Weekly Map

Reset GO

Date (2005)	NDVI
20/03	0.14
19/05	0.28
16/06	0.72
14/07	0.78
10/08	0.75
07/09	0.65
05/10	0.32
02/11	0.22

INFO Update Map with Farm (ALL), Date (5 / 11 / 2005), Parameter (3), B. Layer (RGB)
Update Map with Farm (ALL), Date (1 / 4 / 2005), Parameter (3), B. Layer (RGB)

Internet



Name	Pivot 2	Plot	ABGJ02P
Farm	La Grajuela		
Crop	Maíz	Variety	700
Station	Anchor		
Area	386426 m ²	Perimeter	2209 m.

Date	2 / 6 / 2005	Mean	0,68
Parameter	Kc NDVI Vector	Median	0,67
		Majority	0,67
		STD	0,09

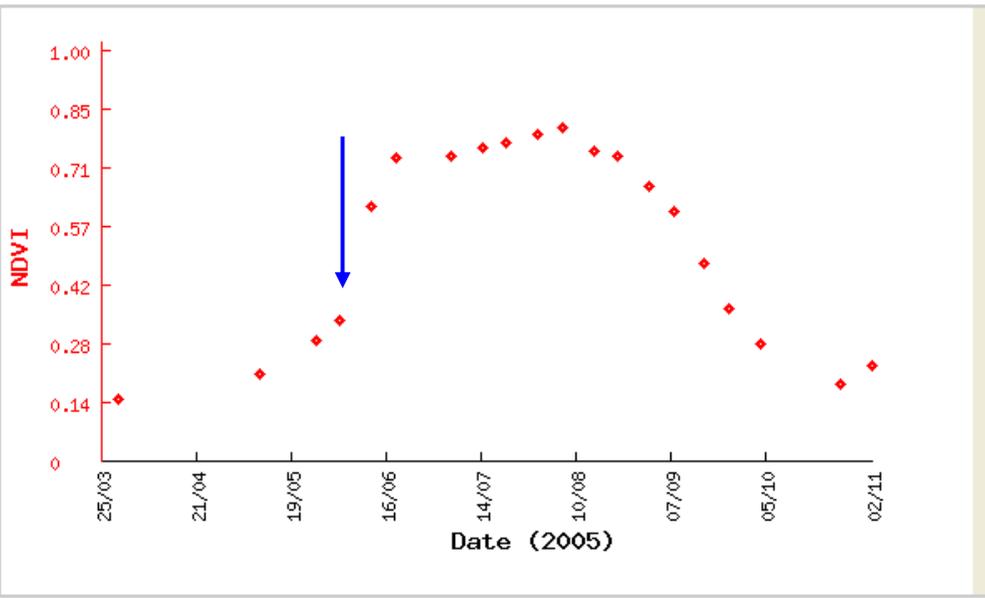
Grid Size **3 x 3**
X: 593742 Y: 4331872

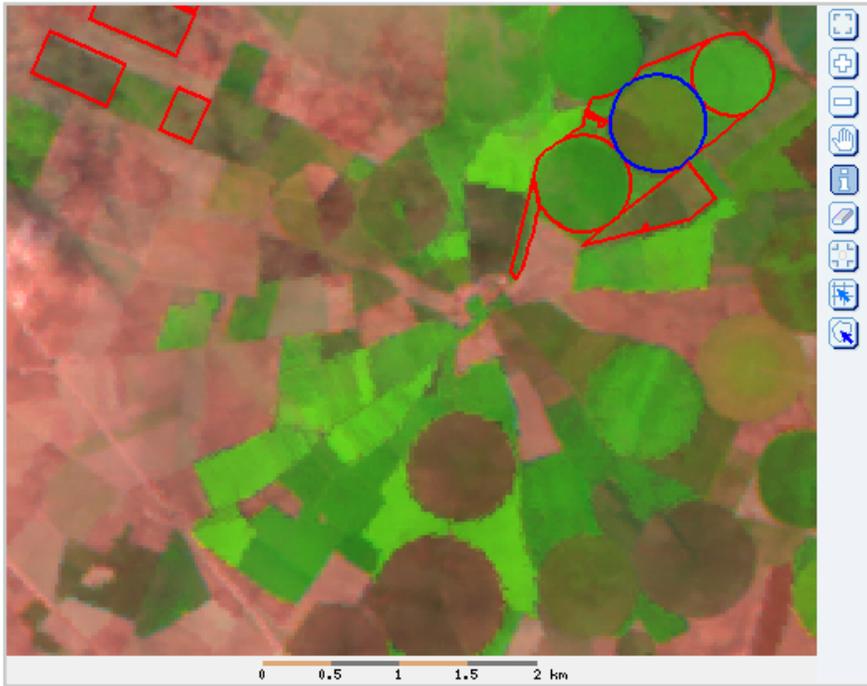
e-SARAS

Function: **Time serie graph** Date1: **2 / 6 / 2005** Date2: **2 / 6 / 2005**

- NDVI Map
- Kc Analytical Map
- Kc NDVI Map
- ETc Weekly Map
- ETc Forecast Weekly Map

Reset GO





Name	Pivot 2	Plot	ABGJ02P
Farm	La Grajuela		
Crop	Maíz	Variety	700
Station	Anchor		
Area	386426 m ²	Perimeter	2209 m.

Date	11 / 6 / 2005	Mean	0,92
Parameter	Kc NDVI Vector	Median	0,93
		Majority	0,96
		STD	0,06

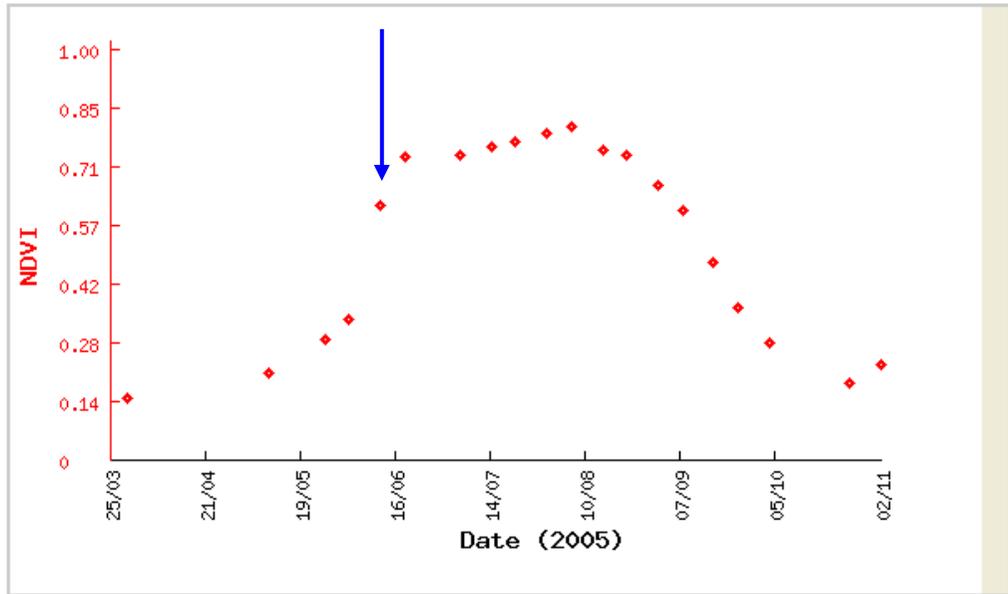
e-SARAS

Grid Size **3 x 3**
X: 593742 Y: 4331872

Function **Time serie graph** Date1 **11 / 6 / 2005** Date2 **11 / 6 / 2005**

NDVI Map
 Kc Analytical Map
 Kc NDVI Map
 ETc Weekly Map
 ETc Forecast Weekly Map

Reset GO



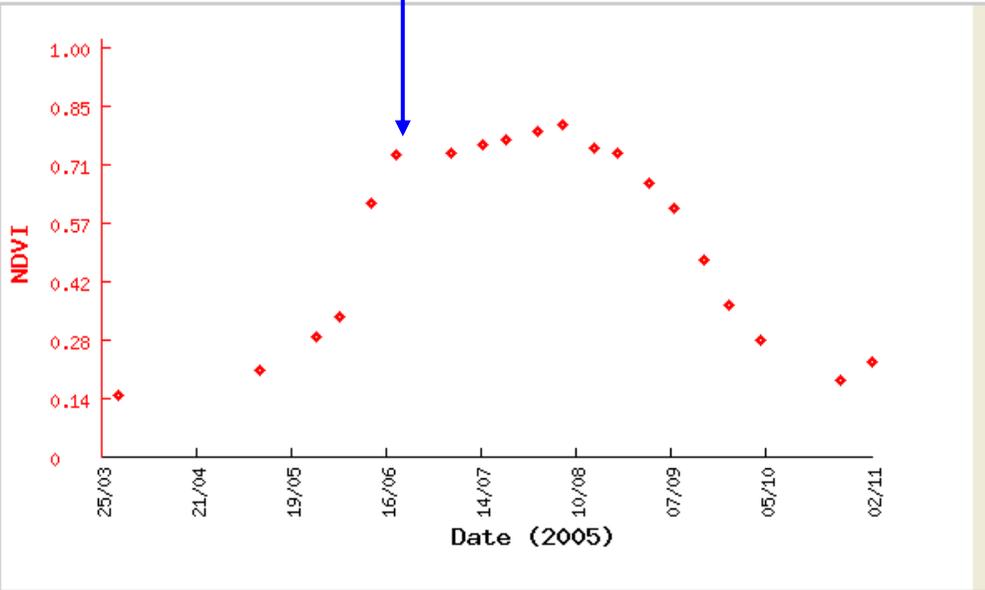


Name	Pivot 2	Plot	ABGJ02P
Farm	La Grajuela		
Crop	Maíz	Variety	700
Station	Anchor		
Area	386426 m ² .	Perimeter	2209 m.

Date	18 / 6 / 2005	Mean	1,02
Parameter	Kc NDVI Vector	Median	1,06
		Majority	1,09
		STD	0,09

Grid Size **3 x 3**
 X: 593742 Y: 4331872

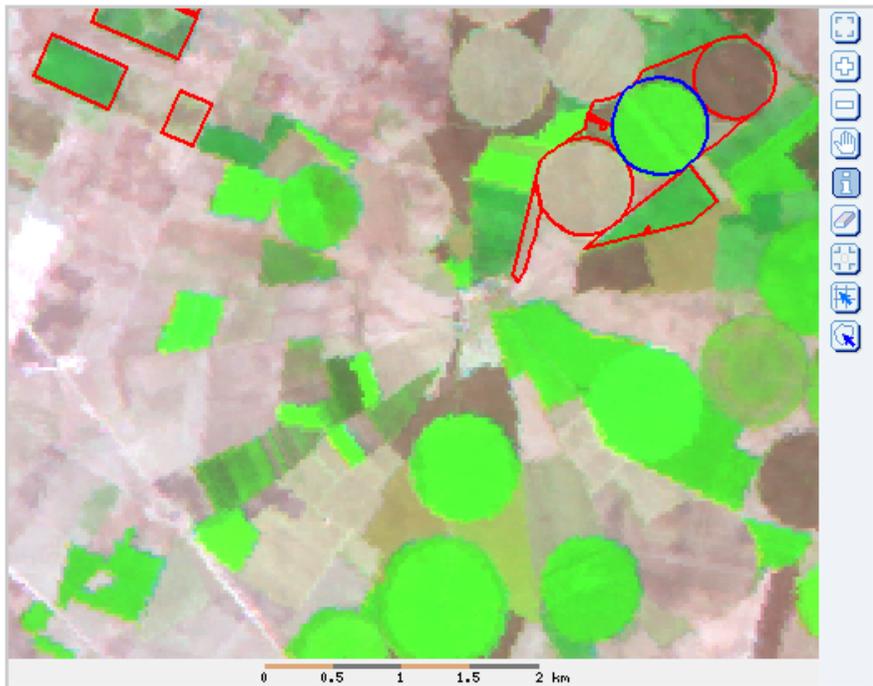
e-SARAS



Function **Time serie graph** Date1 **18 / 6 / 2005** Date2 **18 / 6 / 2005**

NDVI Map
 Kc Analytical Map
 Kc NDVI Map
 ETc Weekly Map
 ETc Forecast Weekly Map

Reset GO

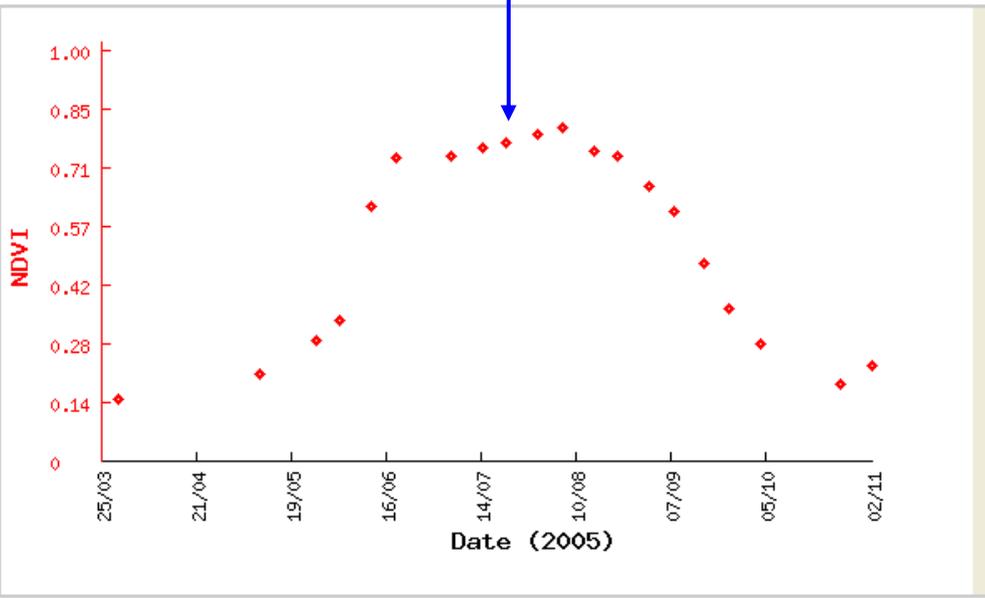


Name	Pivot 2	Plot	ABGJ02P
Farm	La Grajuela		
Crop	Maíz	Variety	700
Station	Anchor		
Area	386426 m ²	Perimeter	2209 m.

Date	20 / 7 / 2005	Mean	1,09
Parameter	Kc NDVI Vector	Median	1,12
		Majority	1,13
		STD	0,10

Grid Size **3 x 3**
 X: 593742 Y: 4331872

e-SARAS



Function **Time serie graph** Date1 **25 / 3 / 2005** Date2 **2 / 11 / 2005**

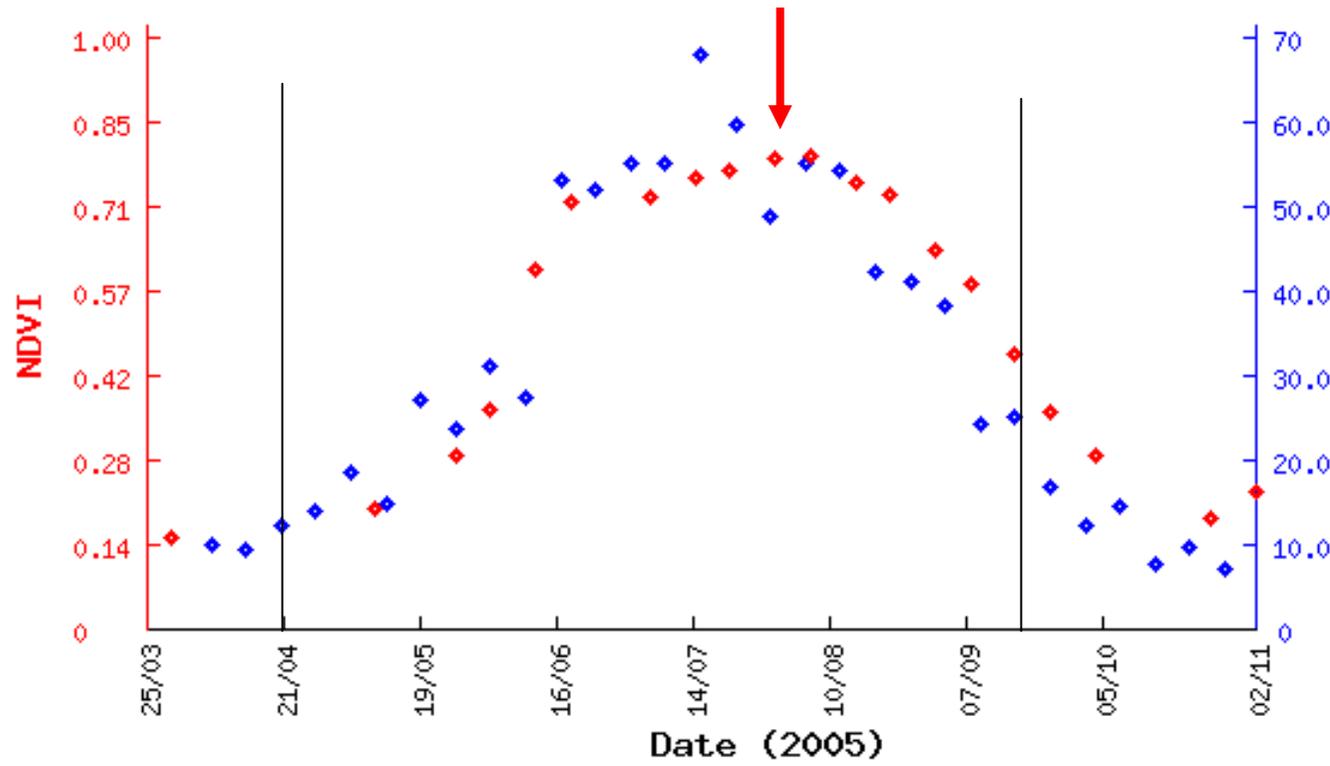
- NDVI Map
- Kc Analytical Map
- Kc NDVI Map
- ETc Weekly Map
- ETc Forecast Weekly Map

Reset GO

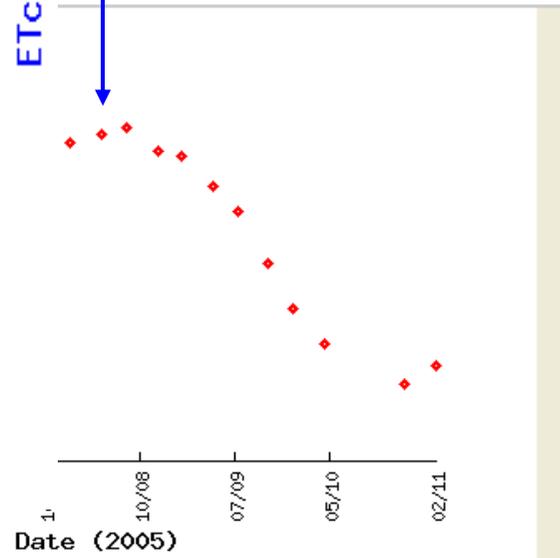


Name	Pivot 2	Plot	ABGJ02P
Farm	La Grajuela	Variety	700
Crop	Maíz	Station	Anchor
Area	386426 m ²	Perimeter	2209 m.

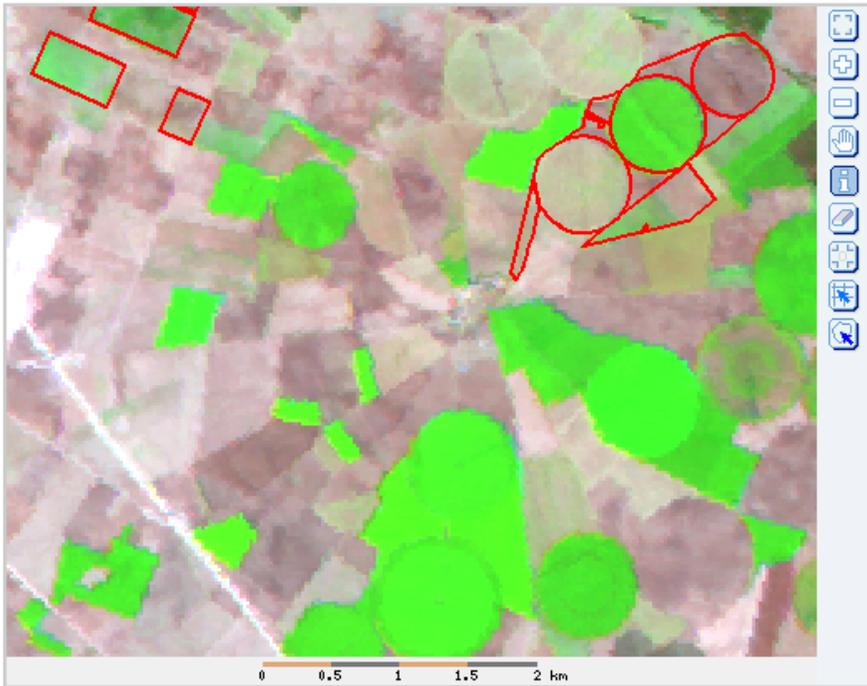
Mean	1,13
Median	1,14
Majority	1,15
STD	0,06



e-SARAS



Reset GO

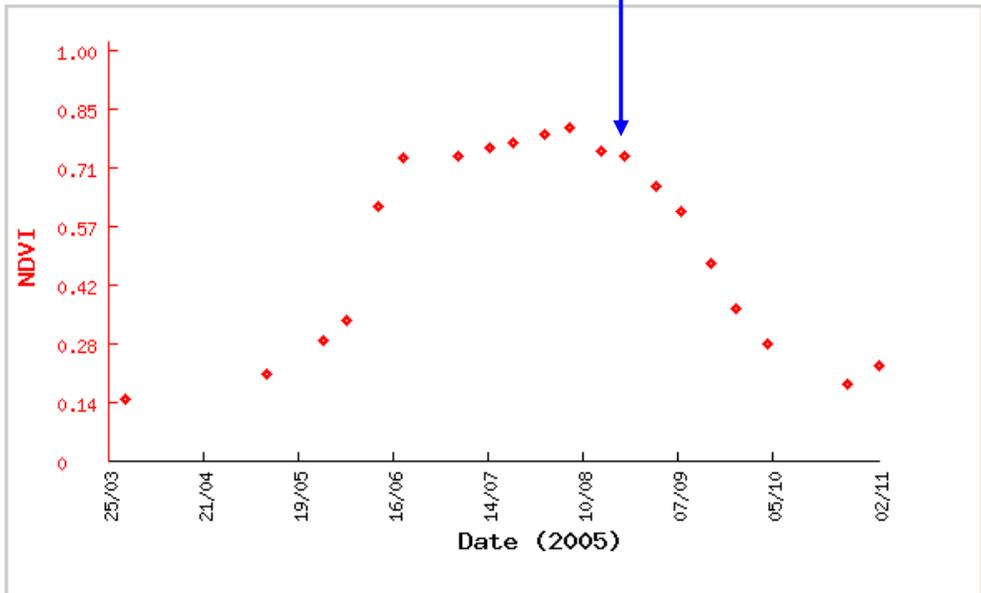


Name	Pivot 2	Plot	ABGJ02P
Farm	La Grajuela		
Crop	Maíz	Variety	700
Station	Anchor		
Area	386426 m ²	Perimeter	2209 m.

Date	21 / 8 / 2005	Mean	1,02
Parameter	Kc NDVI Vector	Median	1,06
		Majority	1,04
		STD	0,13

Grid Size **3 x 3**
 X: 593742 Y: 4331872

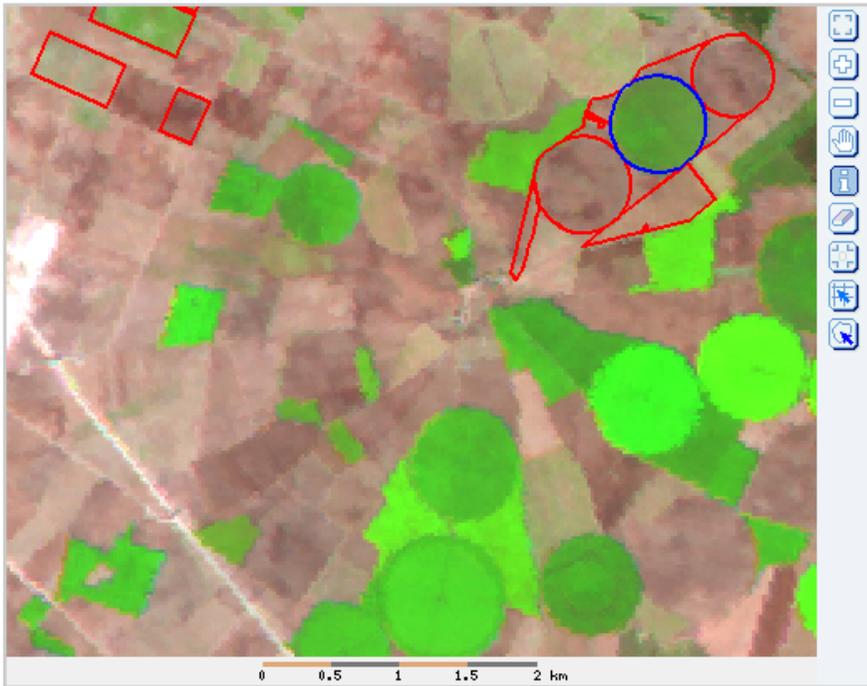
e-SARAS



Function **Time serie graph** Date1 **21 / 8 / 2005** Date2 **21 / 8 / 2005**

- NDVI Map
- Kc Analytical Map
- Kc NDVI Map
- ETc Weekly Map
- ETc Forecast Weekly Map

Reset GO



Name	Pivot 2	Plot	ABGJ02P
Farm	La Grajuela		
Crop	Maíz	Variety	700
Station	Anchor		
Area	386426 m ²	Perimeter	2209 m.

Date	6 / 9 / 2005	Mean	0,84
Parameter	Kc NDVI Vector	Median	0,85
		Majority	0,82
		STD	0,10

e-SARAS

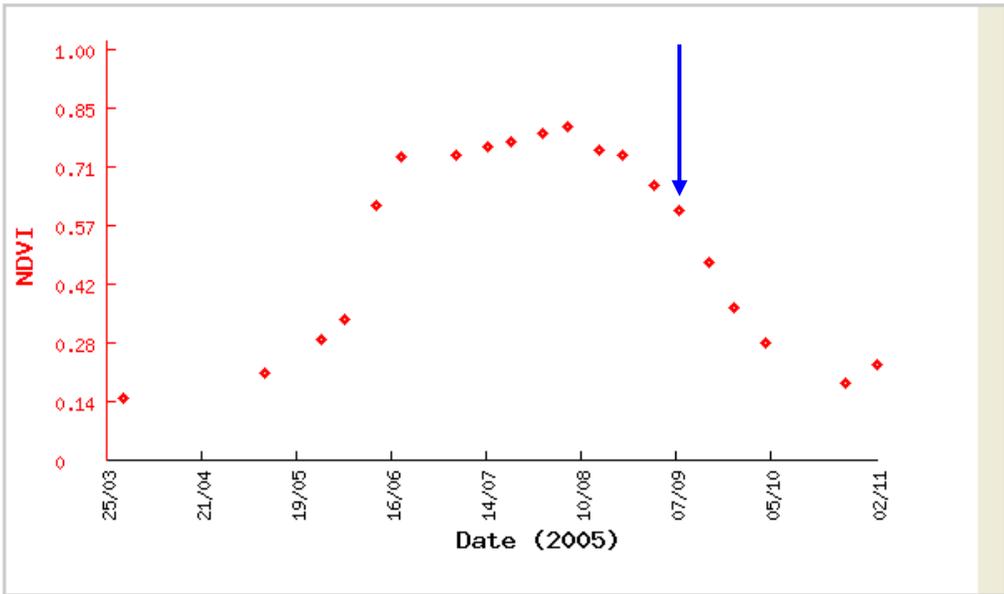
Grid Size **3 x 3**
X: 593742 Y: 4331872

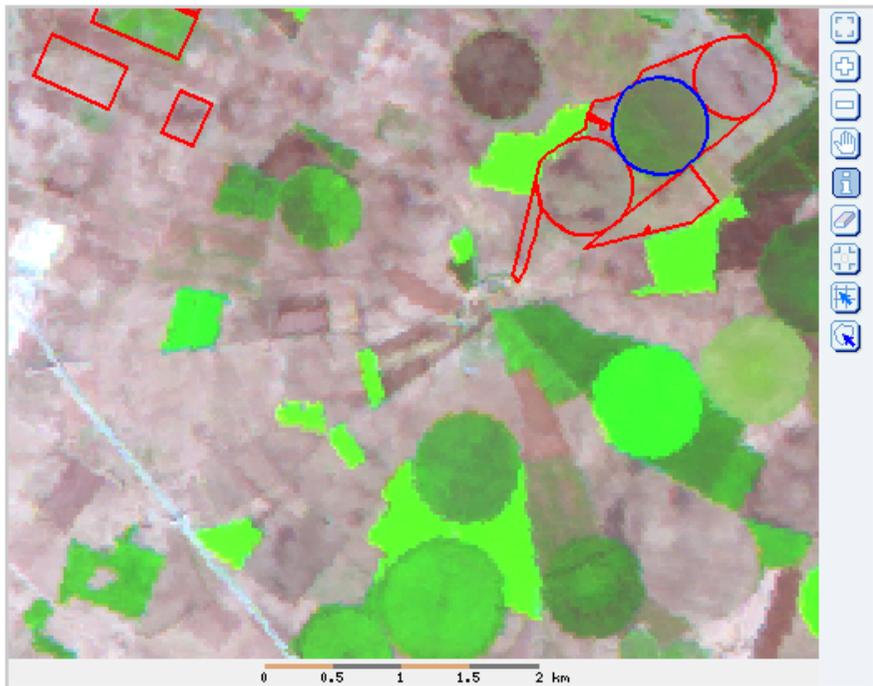
Function: **Time serie graph**

Date1: **6 / 9 / 2005**
Date2: **6 / 9 / 2005**

- NDVI Map
- Kc Analytical Map
- Kc NDVI Map
- ETc Weekly Map
- ETc Forecast Weekly Map

Reset GO





Name	Pivot 2	Plot	ABGJ02P
Farm	La Grajuela		
Crop	Maíz	Variety	700
Station	Anchor		
Area	386426 m ²	Perimeter	2209 m.

Date	22 / 9 / 2005	Mean	0,63
Parameter	Kc NDVI Vector	Median	0,62
		Majority	0,54
		STD	0,07

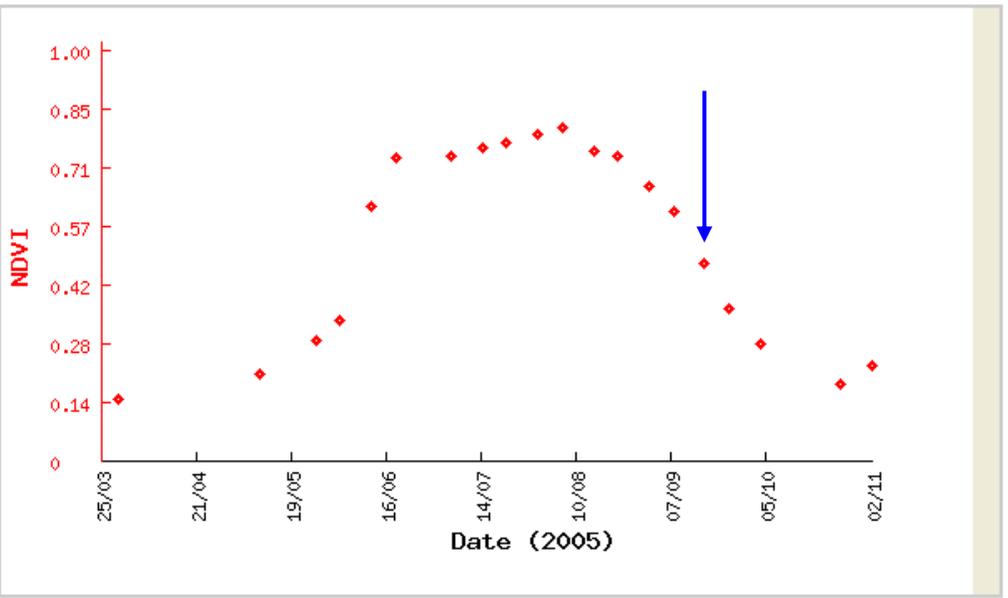
e-SARAS

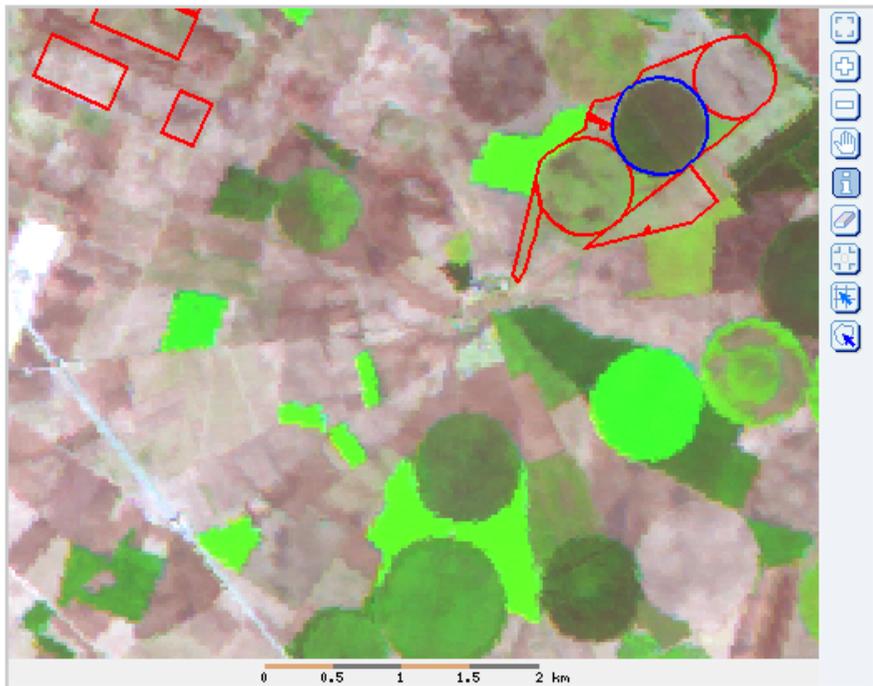
Grid Size **3 x 3**
X: 593742 Y: 4331872

Function **Time serie graph** Date1 **22 / 9 / 2005** Date2 **22 / 9 / 2005**

- NDVI Map
- Kc Analytical Map
- Kc NDVI Map
- ETc Weekly Map
- ETc Forecast Weekly Map

Reset GO





Name	Pivot 2	Plot	ABGJ02P
Farm	La Grajuela		
Crop	Maíz	Variety	700
Station	Anchor		
Area	386426 m ²	Perimeter	2209 m.

Date	1 / 10 / 2005	Mean	0,56
Parameter	Kc NDVI Vector	Median	0,55
		Majority	0,51
		STD	0,06

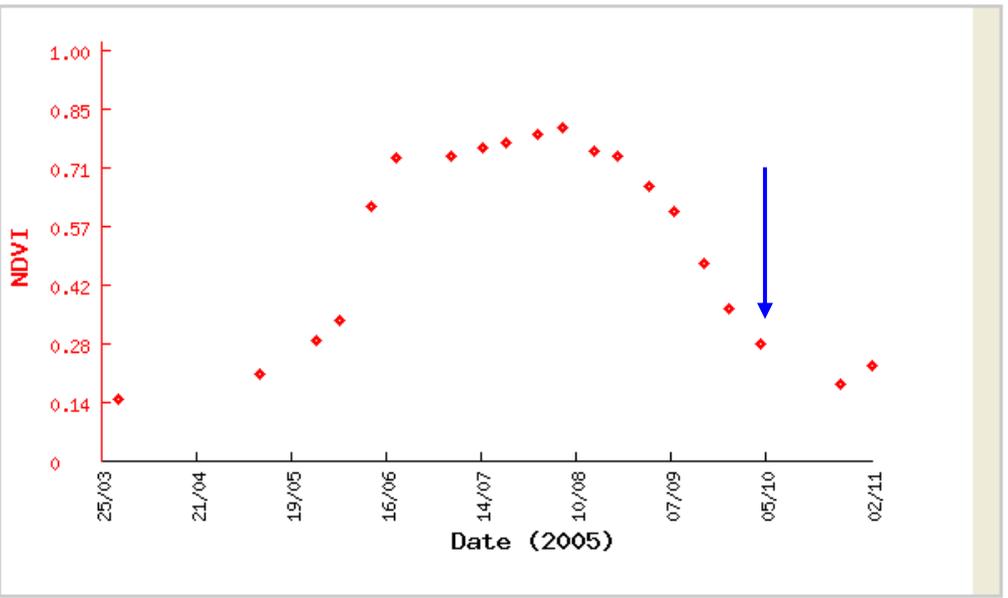
e-SARAS

Grid Size **3 x 3**
X: 593742 Y: 4331872

Function: **Time serie graph** Date1: **1 / 10 / 2005** Date2: **1 / 10 / 2005**

- NDVI Map
- Kc Analytical Map
- Kc NDVI Map
- ETc Weekly Map
- ETc Forecast Weekly Map

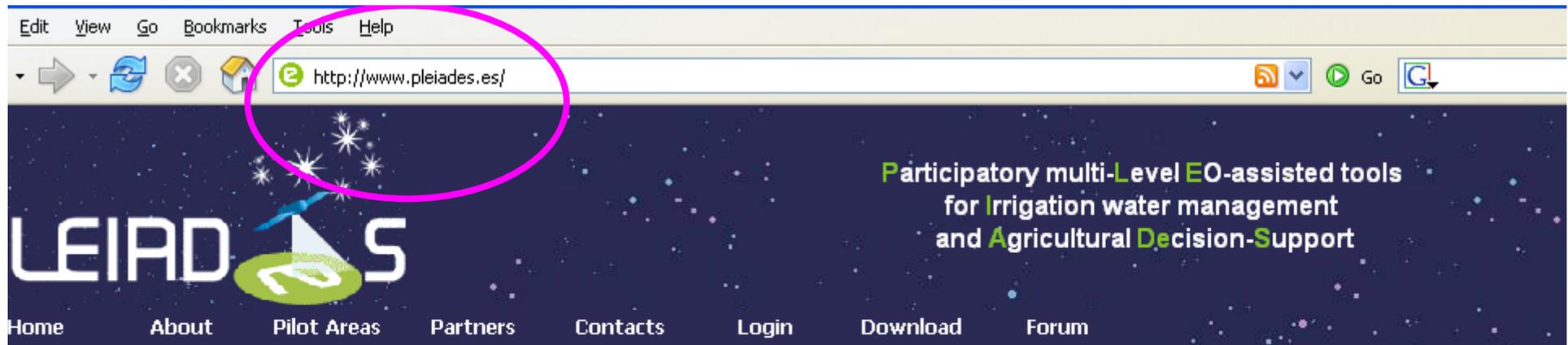
Reset GO



Visualización de mapas



- Explotación delimitada sobre la que se puede hacer zoom
- Sólo se recibe información de la zona

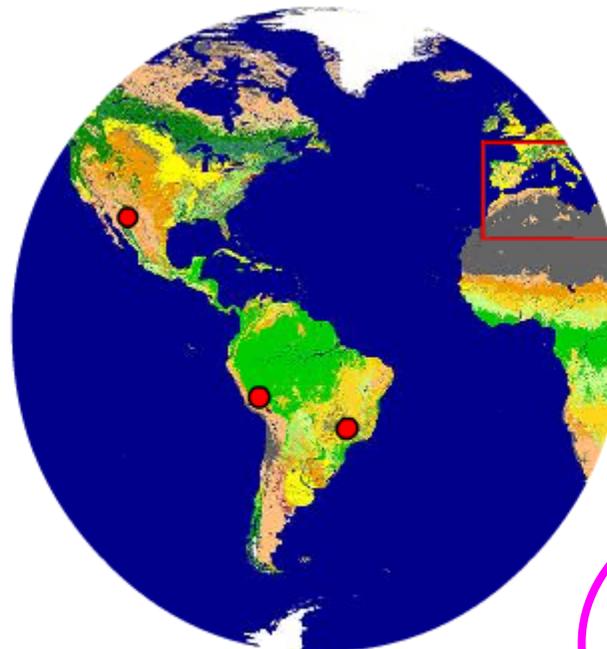


Italiano Español Português Ελληνικά Türkçe العربية

LEIADoS addresses the efficient and sustainable use of water for food production in water-scarce environments. It considers the economic, environmental, technical, social, and political dimensions through a synergy of leading-edge technologies and participatory approaches. These technologies provide easy access to information for all stakeholders while active participation will be effected by spatial information and innovative networking tools.

LEIADoS aims at improving the performance of irrigation schemes by means of a range of measures. Major technical innovation is made possible by the comprehensive space-time coverage of earth observation (EO) data and the interactive networking/connecting capabilities of Information and Communication Technologies (ICT).

A set of pilot Case Studies represents a sample of the wide range of conditions



Click on map to zoom into pilot areas

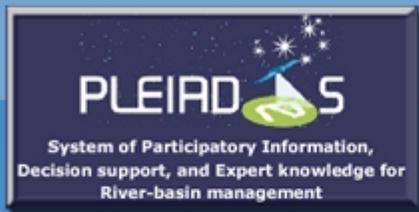
was held in Lima, Lurín, and Ica (Peru) on 9-14 March 2008.
[Read more...](#)

Landsat imagery for everyone

USGS is planning to provide electronic access to any Landsat scene held in the USGS-managed national archive of global scenes dating back to Landsat 1, launched in 1972.



LEIADoS (pública)

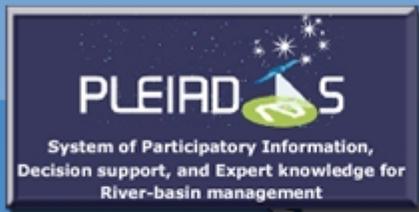


Global SPIDER
or
Choose a Pilot Zone



RTD project co-financed by the European Communities (Contract GOCE 037095)





Global SPIDER
or
Choose a Pilot Zone



RTD project co-financed by the European Communities (Contract GOCE 037095)



PLEIADES

Participatory multi-Level EO-assisted tool
for Irrigation water management
and Agricultural Decision-Support

[to the map](#)

Fixed windows

Group: **Perú**

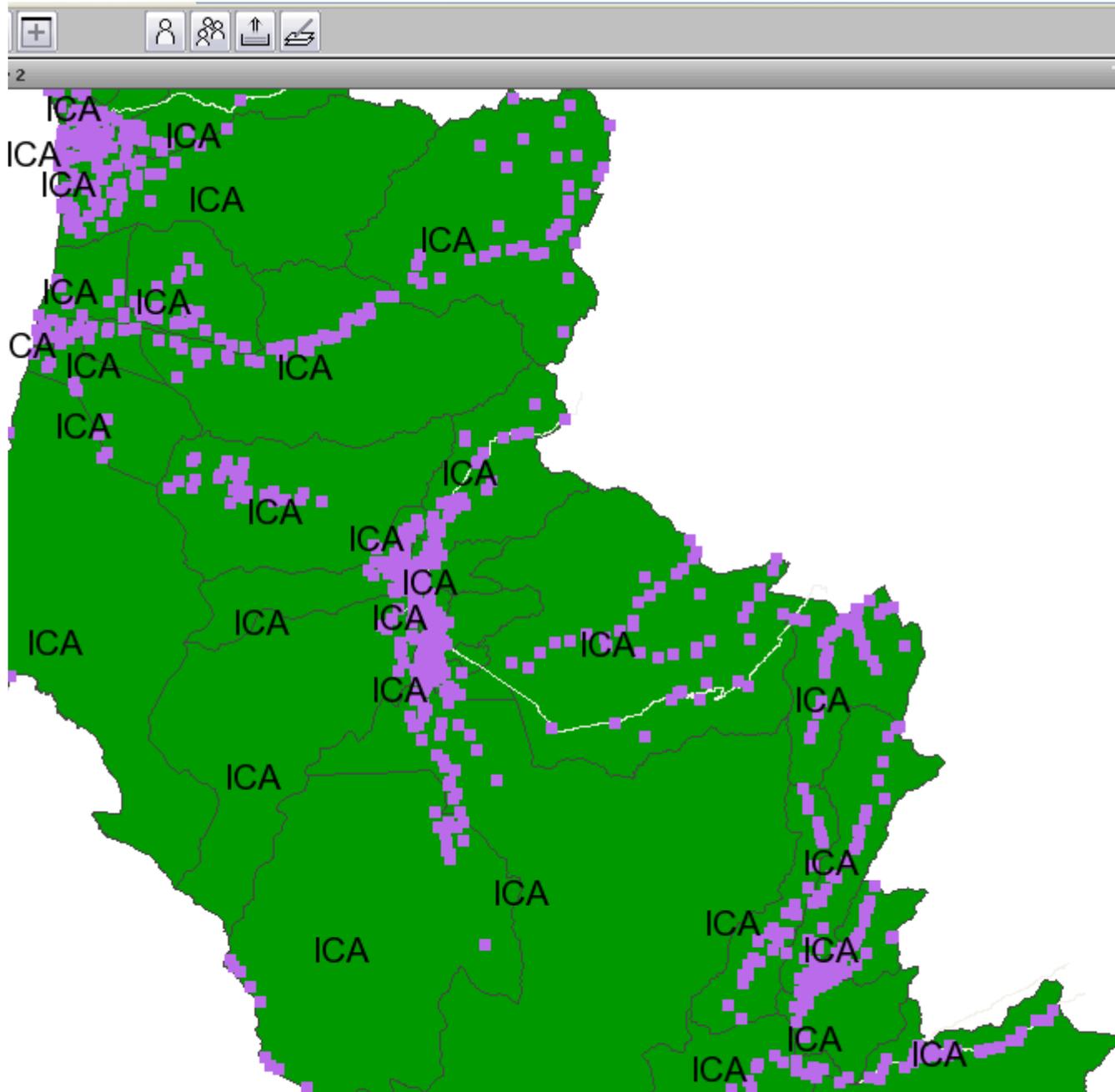
Login:

Password:

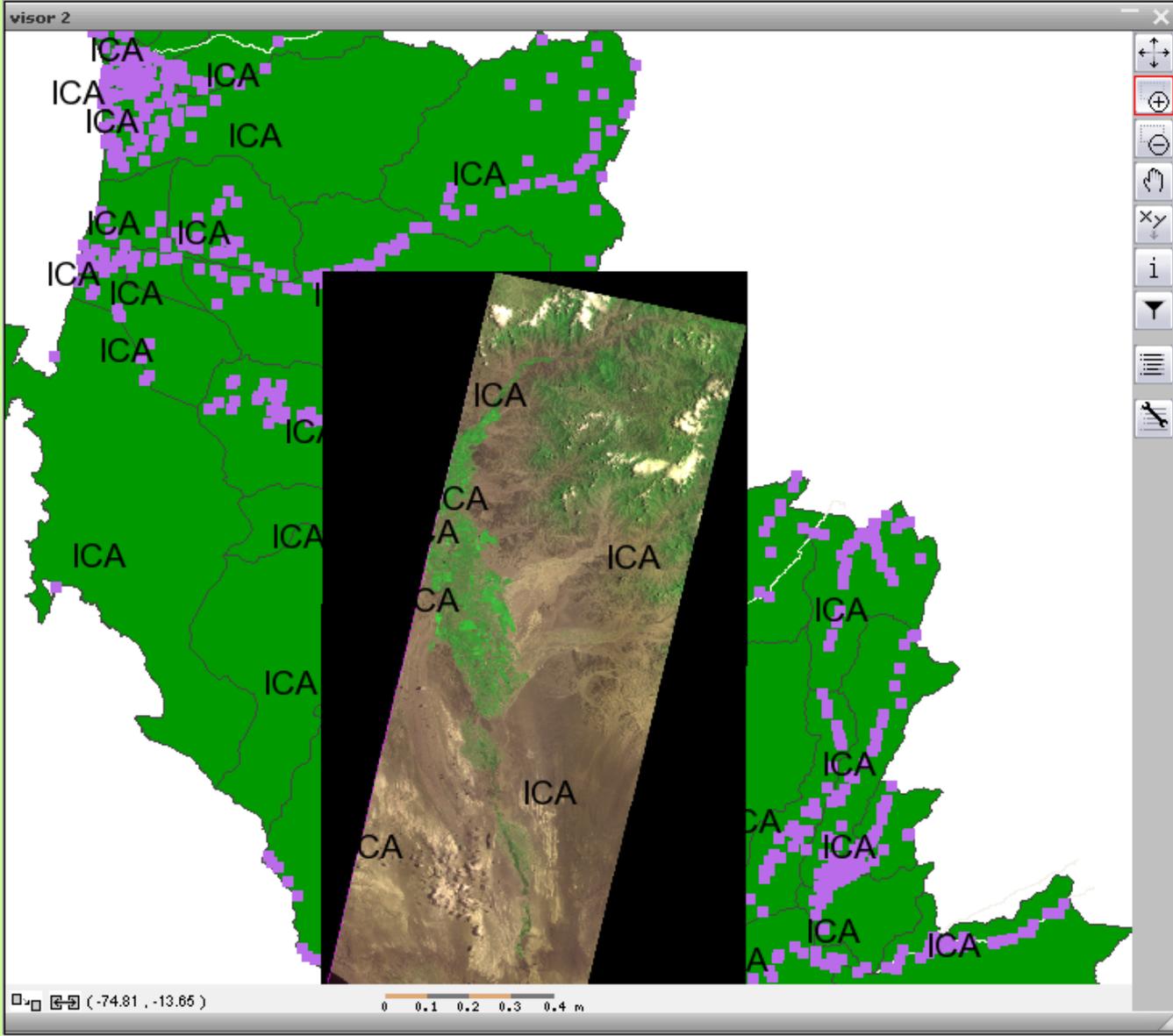


If you want to access the system,
please contact with [Alfonso Calera](#),
PLEIADES Co-coordinator.

	IPROGA	Instituto de Promocion para la Gestion del Agua, Peru	
	UNALM	Universidad Nacional Agraria La Molina Peru	



2008/6/9 , Hora : 4:45:53:859) Respuesta : getlayersids
2008/6/9 , Hora : 4:45:54:171) Respuesta : getlayersids



visor 2

leyenda 2

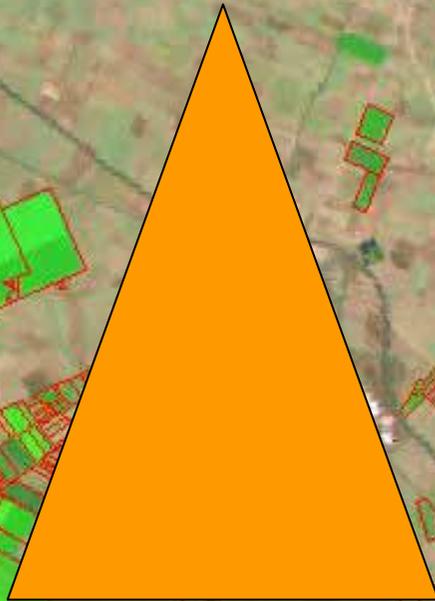
09 / 13 / 2007 - 09 / 06 / 2008

- Ica
- World
- RGB CBERS (13 / 02 / 2008)
- NDVI CBERS (13 / 02 / 2008)
- Centros poblados
- Carreteras Departamentales
- Distritos

Proyección WGS 84

Género y Agua

Cambio de paradigma social/cultural



Hierarquía facilita
(sobre-)explotación
y escasez



Comunidad facilita
actitud de compartir
y abundancia





System of **P**articipatory **I**nformation, **D**ecision support,
and **E**xpert knowledge for irrigation and
River basin water management

S P I D E R

Herramienta participativa

**Compartida por tod@s l@s actores
en una zona piloto**

conclusiones: "saltos"

- * información (espacial, contenido)
- * acceso a información / transparencia
- * proceso participativo / gobernabilidad
- * concepto eficiencia multi-dimensional

herramienta / instrumento

para

gestión y transición

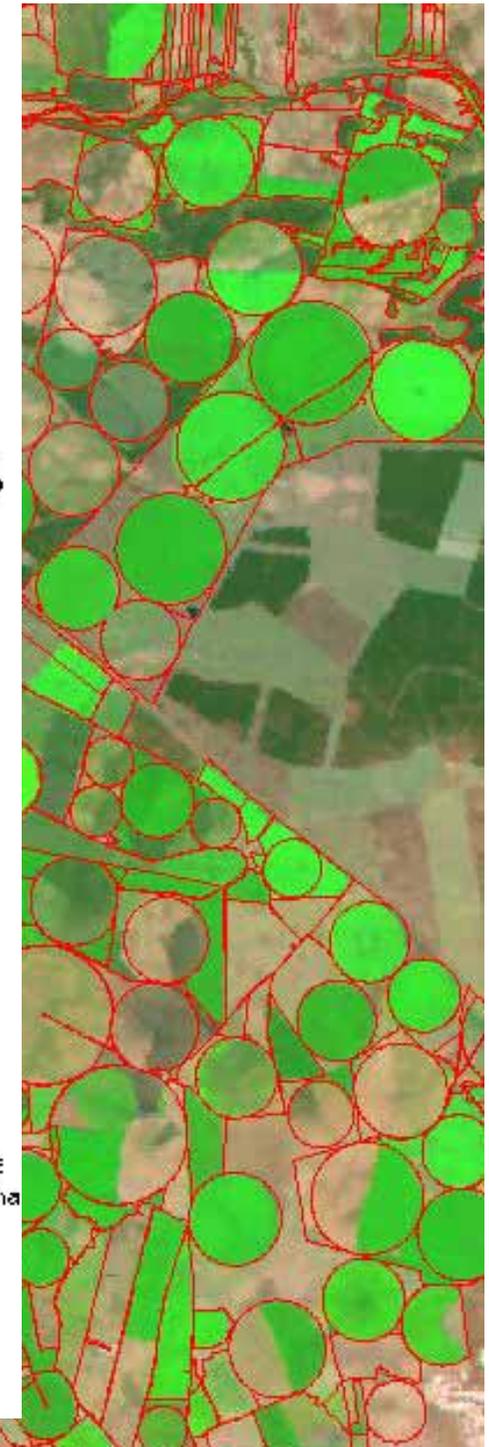
CUENCA HIDROGRÁFICA DEL RÍO GUADIANA



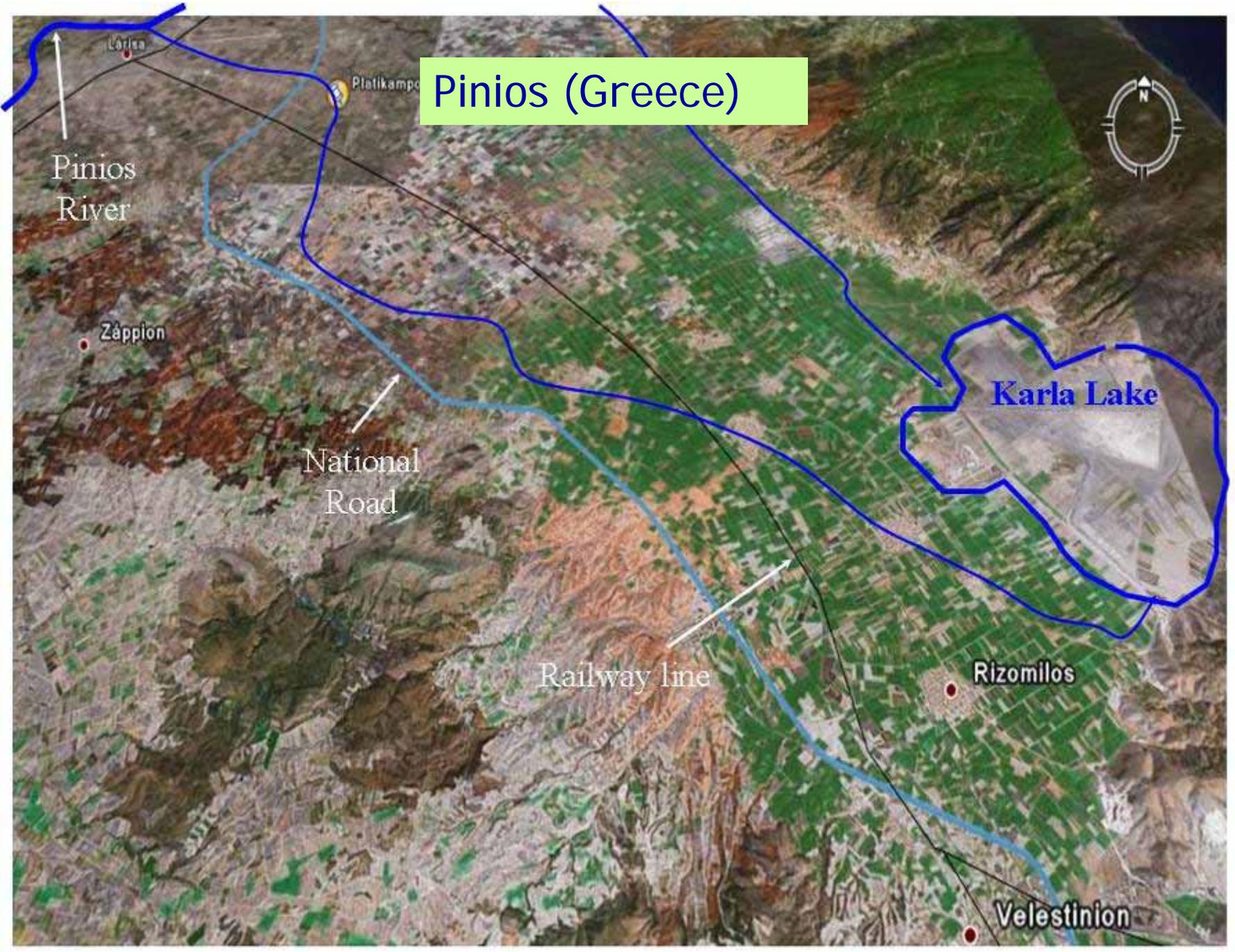
Caia (PT)

LEGENDA:

- ▲ Rega
- ▲ Rega+Ab.Ind
- Energia
- Energia+Rega
- Energia+Rega+Ab.Ind
- Ab.Ind
- Ab.Dom
- Ab.Dom+Rega
- Ab.Dom+Rega+Ab.Ind
- Ab.Dom+Energia
- Ab.Dom+Energia+Rega
- Ab.Dom+Energia+Rega+Ab.Ind



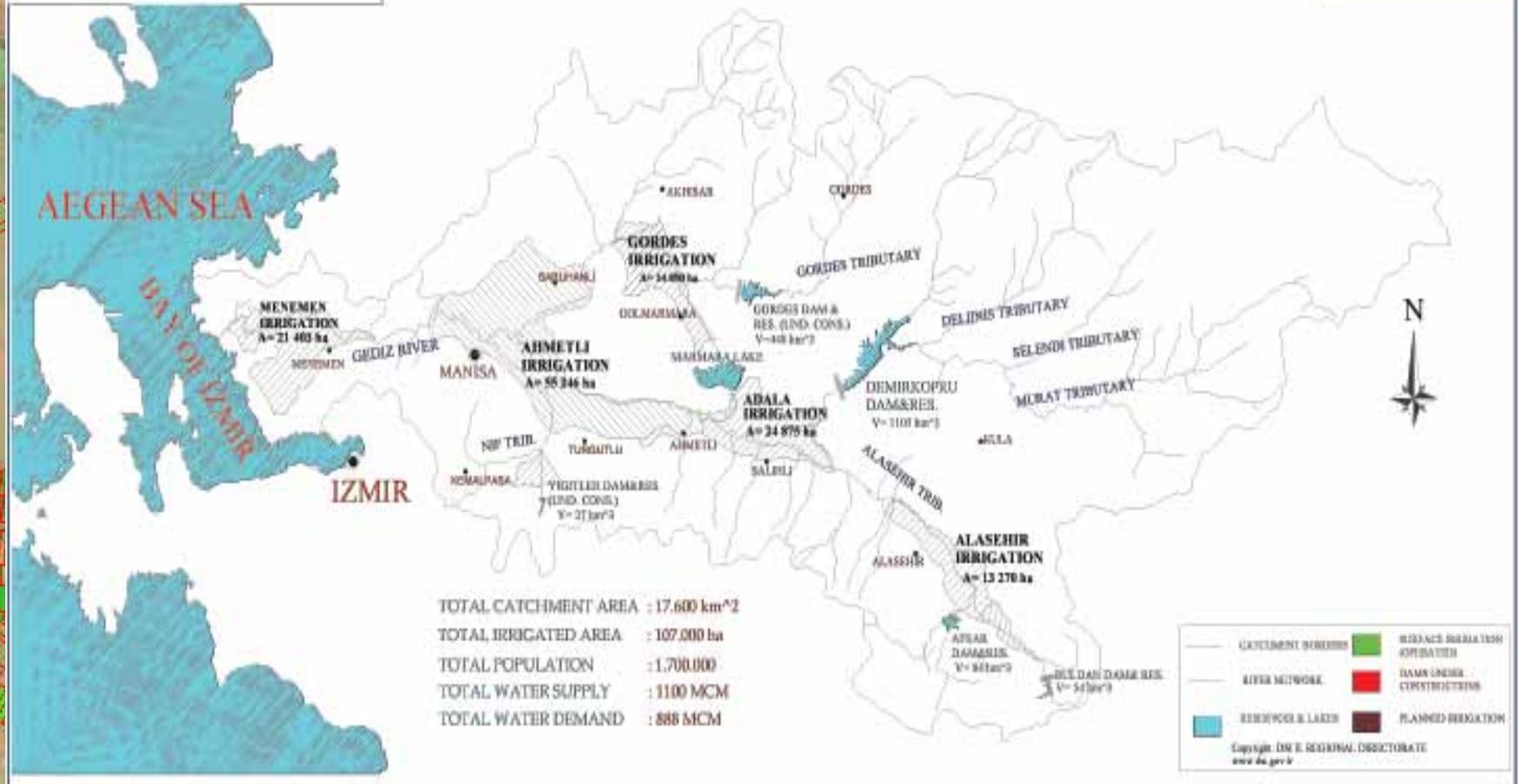
Pinios (Greece)





GEDIZ RIVER BASIN DAMS & RESERVOIRS AND IRRIGATIONS

Source: State Hydraulic Works (DSI)





Université Cadi Ayyad
de Marrakech
Maroc

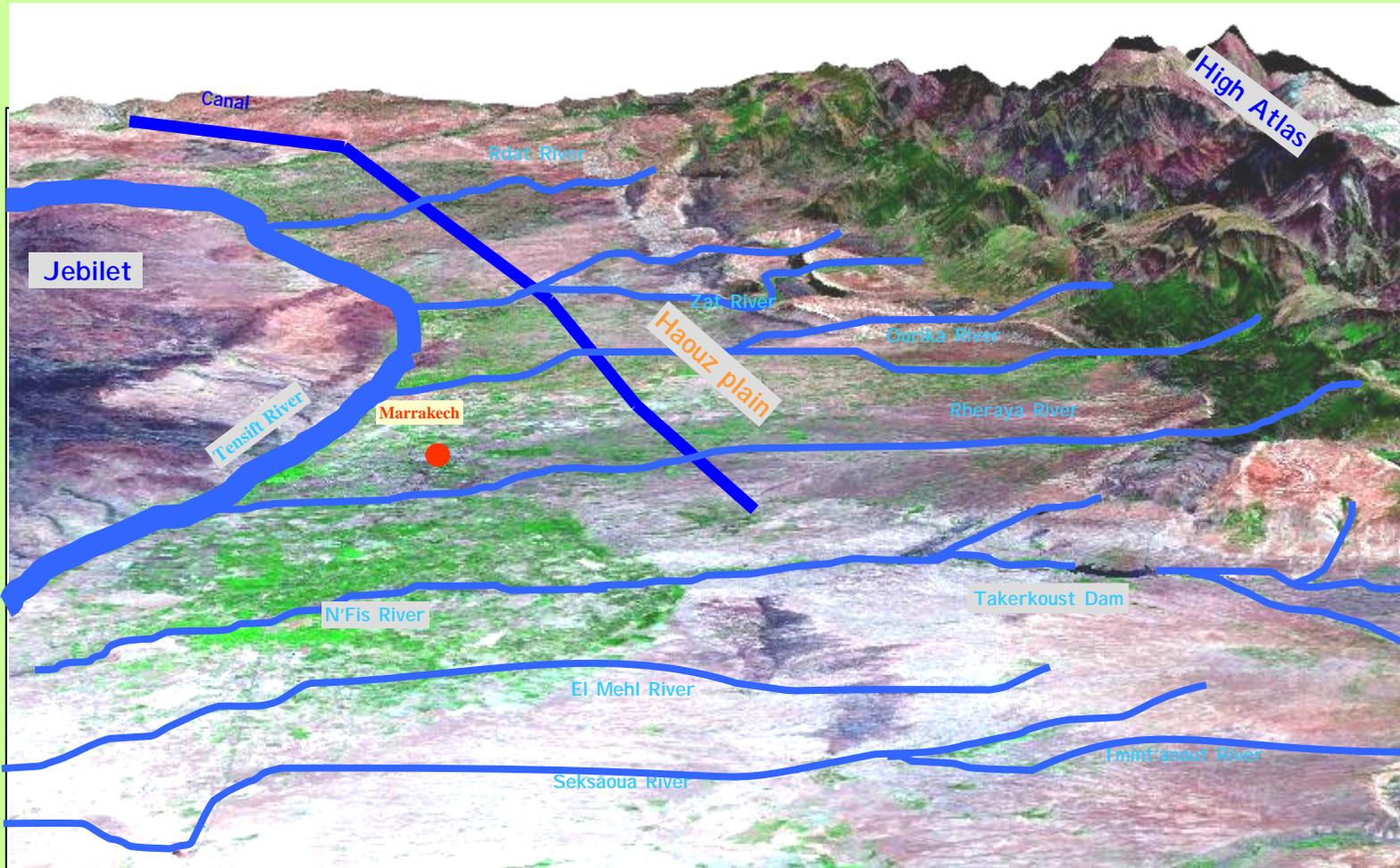


Faculté des Sciences et Techniques
de Marrakech Maroc

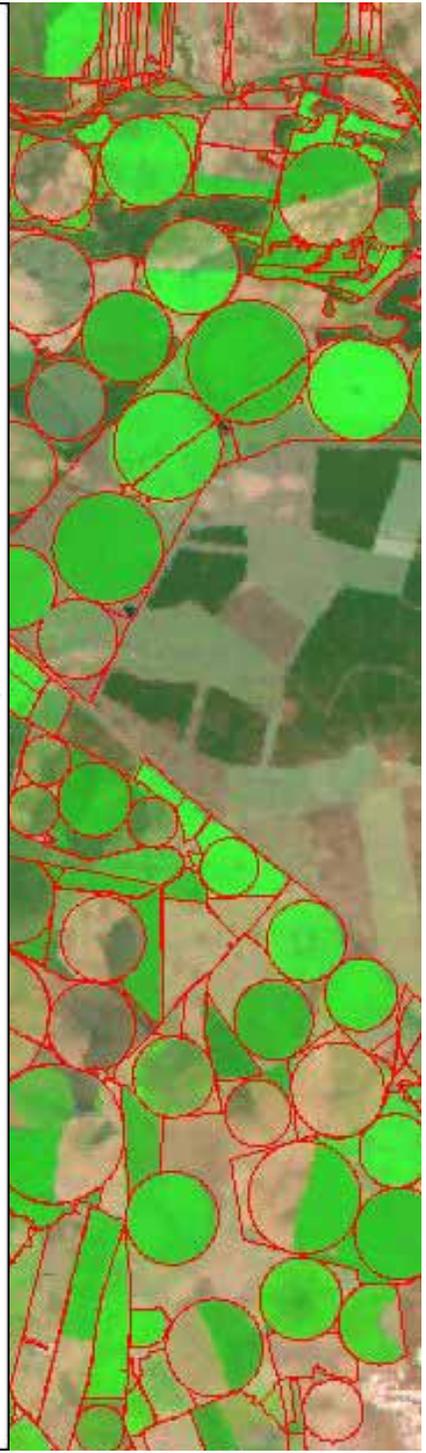
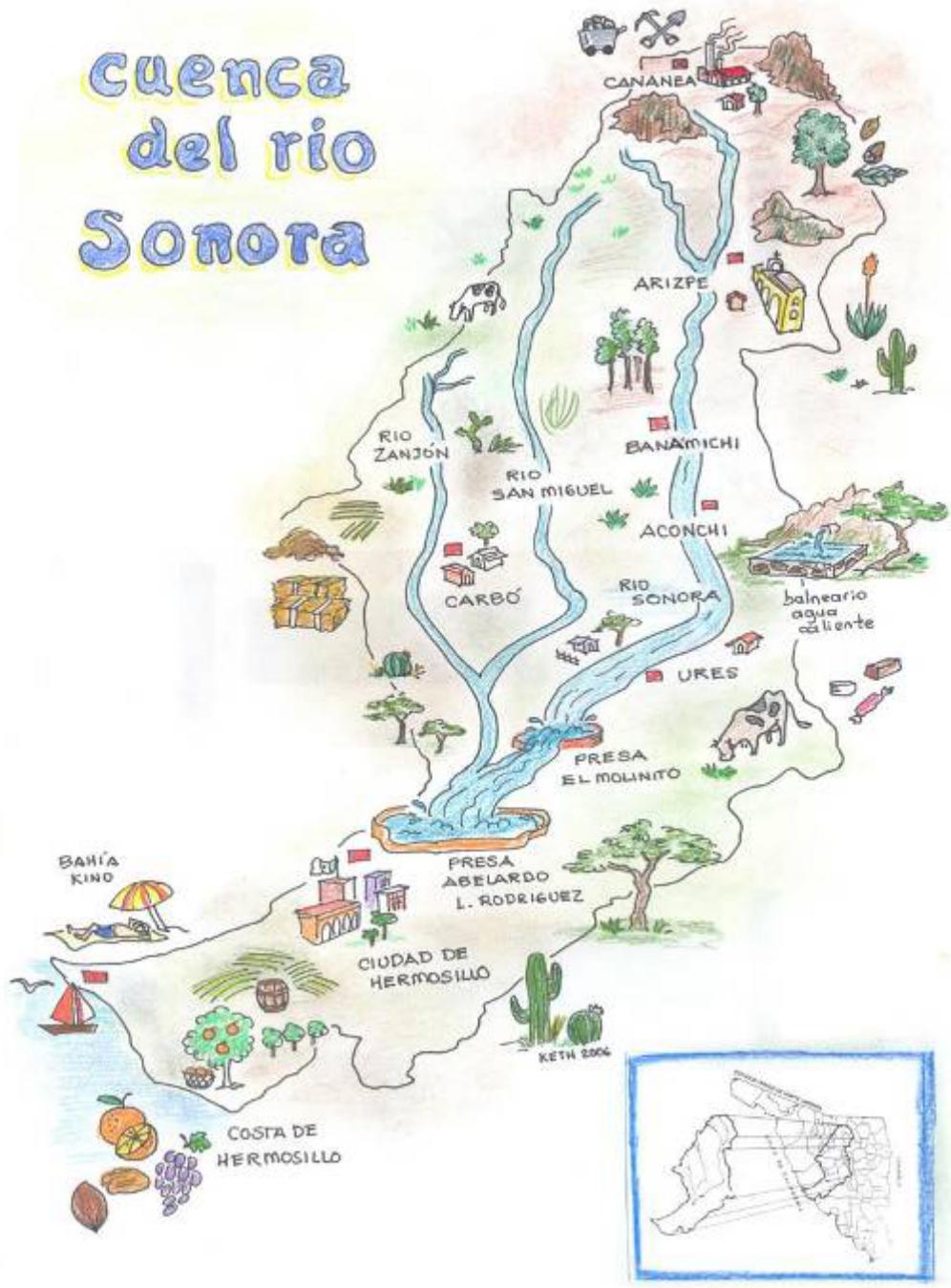


CREMAS
Centre de Recherche sur l'Eau en
Milieux Arides et Semi arides
(Equipe Associée à l'IRD)

Pilot river-basin of Tensift (Morocco)

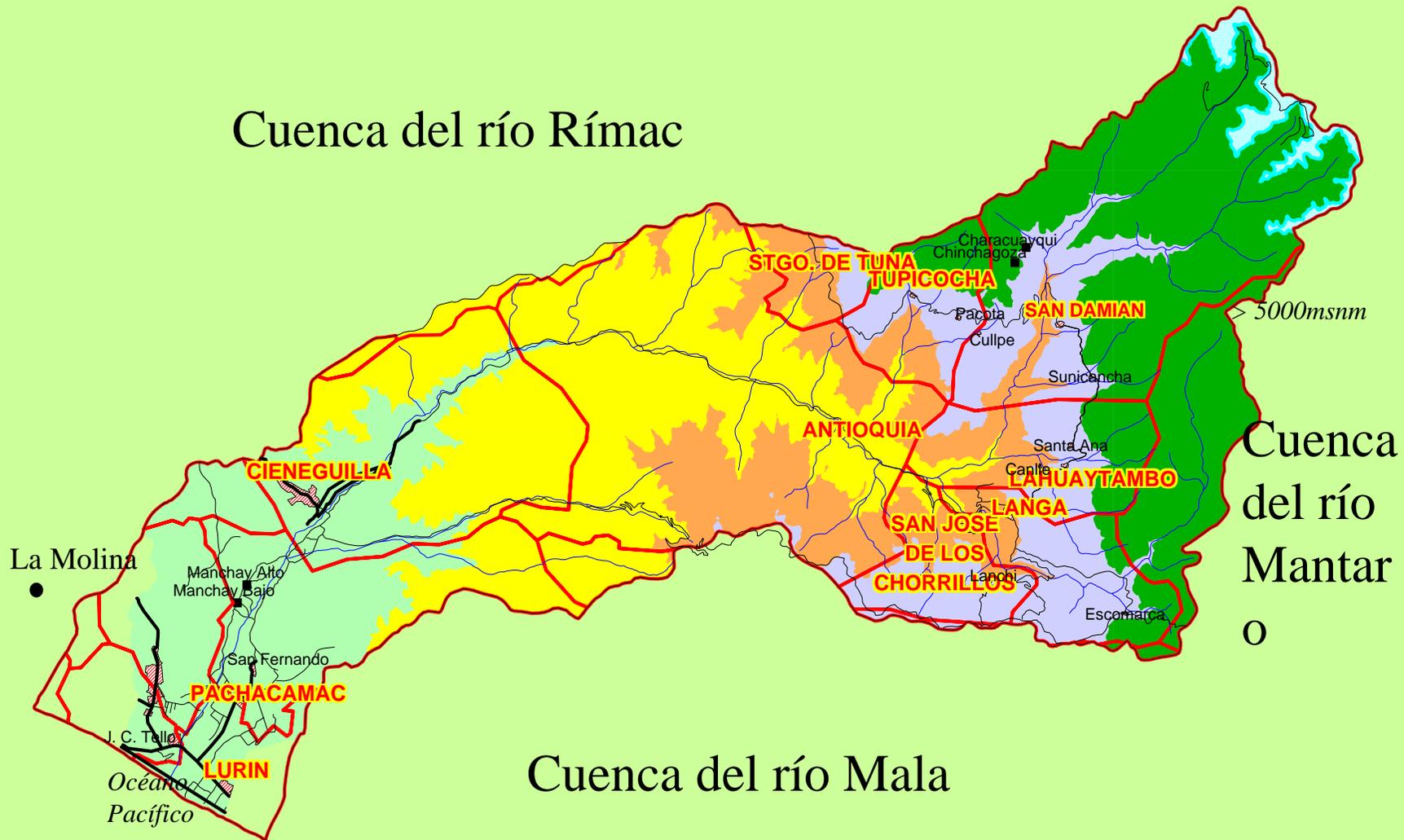


Cuenca del rio Sonora



CUENCA DEL RÍO LURÍN, LIMA, PERÚ

Cuenca del río Rímac



Cuenca del río Mantaro

Cuenca del río Mala



There are frequent droughts, particularly below the 800mm isoyeth, in the Middle, Lower-Middle and Lower regions of the river

Transposition studies to other basins in the Northeast region

Below the Grande, the tributaries are intermittent, sometimes dry and other times producing large-scale floods

Studies for the transposition of the Tocantins River to the São Francisco River

Areas with conflicts of interestes between energy generation and irrigation

Conflict of interests between consumers, water shortages at critical periods, flooding and urban growth occuring mainly on the Verde Grande and Mosquito Rivers

To rationalize the use of water for irrigation and make the multiple usage in the Middle and Upper São Francisco regions compatible

Unsuitable water quality, mainly in the Upper SF region, in the Paraopeba, Gameleiras, Itapecerica, São João das Velhas, and Pacuí Rivers

The Upper SF presents greater areas which are susceptible to erosion (13% of the total area)

Belo Horizonte Metropolitan Region:
 . High demographic density
 . High levels of pollutants
 . Area affected by frequent flooding

Area with mining potential

- ★ Main hydroelectric power plants
- ▲ Main embankments
- ◆ Development areas (Juazeiro, Petrolina, West Bahia, North Minas)
- Areas where irrigation projects are concentrated
- State border
- Hydrographic sub-region border
- Navigable section (2,130 km)
- Watercourse

