



## MURCIAN INSTITUTE OF AGRICULTURAL AND FOOD RESEARCH AND DEVELOPMENT (IMIDA)



# AN OVERVIEW OF DROUGHT-RELATED WORK AT THE IMIDA

Visualisation of land in relation to water availability, crop type, stress etc.

Selection of native **species** for bio-energy production  
under semi-arid conditions

**Physiological and other properties of plants** which confer  
drought tolerance

# Sistema de Información Agrario de Murcia (SIAM)



Agricultural Information System Murcia



# Agro-meteorological stations

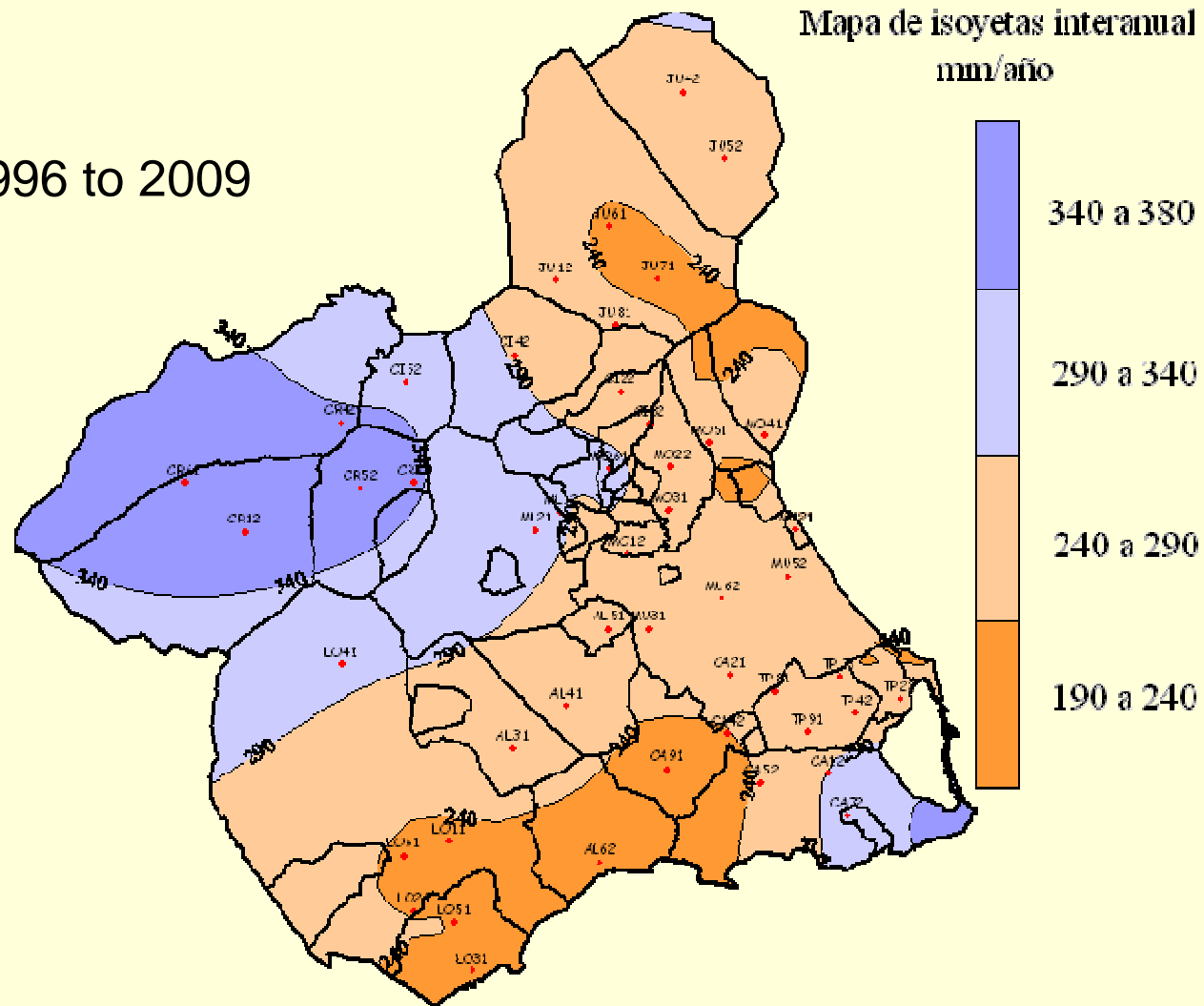


This group working (SIAM) in the agro-meteorological stations and irrigation needs of crops, is in the "Instituto Murciano Research and development of agriculture and food" (IMIDA).

The 48 stations are installed in the irrigated areas of the region.

# Isohyet or isohyetal line map

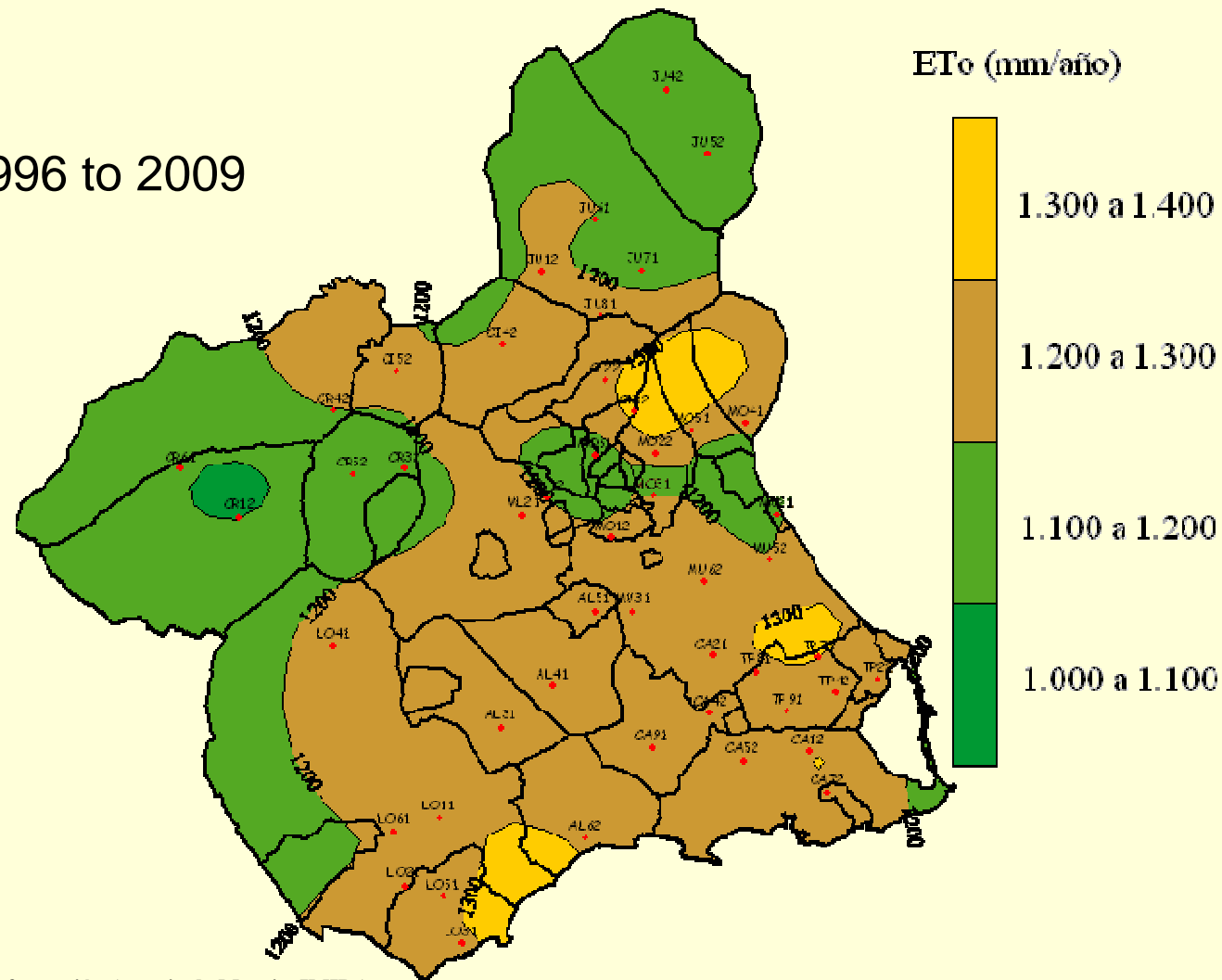
## Years 1996 to 2009



**Fuente Sistema de Información Agrario de Murcia. IMIDA**

# Iso-evapotranspiration line map mm/year

Years 1996 to 2009



Fuente Sistema de Información Agrario de Murcia. IMIDA

# TELERIEG: Project objectives

Project objectives - Mozilla Firefox

Archivo Editar Ver Historial Marcadores Herramientas Ayuda

http://www.telerieg.net/index.php?option=com\_content&view=article&id=44&Itemid=57&lang=en

Más visitados Comenzar a usar Fire... Últimas noticias

Project objectives Fast Dial

**telerieg**

SUDOE Interreg IV B UE/EU - FEDER/ERDF

Map Server Imágenes NOAA Intranet Extranet SUDOE Search...

Home Objectives

**Telerieg Project**

- Home
- Objectives
- Involved territories
- Partners and Collaborators
- Network of plots

**Actions**

- Actions

**Results**

- High resolution
- Medium resolution
- Low resolution
- Imágenes N
- Irrigable area
- Servicios
- I+D+i+T del

**Resources**

- Press
- TV
- Radio
- Press releases
- Documentation
- Publications
- Links

**Project objectives**

The final target of the project is getting better environmental protection through more efficient and rational management of the water resource in agricultural and more effective prevention and response capacity against natural risks.

The project will generate a vigilance and recommendations system in vast areas. Specifically, collection, information analyze and decision-making services will be developed, and they will allow more efficient management of the resource and the optimization the response capacity in advance of the natural risk, as the drought. These services are based on Geographical Information System (GIS) and the Remote Sensing, adapted to the management of drought and the reduction of climate change impacts. It will allow all the users and managers of the water to have information and decision-making utilities disposal. Besides, it supposes a opportunity for a regional development based on the new services creation for the watering community and companies, optimizing the productions and the resource uses, besides contributing to develop the information society. Finally, the availability of information about all the SUDOE area creates an important opportunity for the results transmission and its application in all the SUDOE area. The project will work with the standards set up by the Spatial Data Infrastructure European Directive (INSPIRE), which haven't been put into practice by any initiative in the SUDOE space yet. It supposes an important innovation and an element of the land cohesion, because it will allow SUDOE area to work with the same data sketch, which will

**May 2010**

Mon	Tue	Wed	Thu	Fri	Sat	Sun
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

**Planning**

- Calendar
- Events
- Technical meetings
- Local Committees
- ences
- Manager

**Events**

- 05.06.2010
- International
- l'Agri-Durable
- 11.06.2010
- space show

2010

17.06.2010 - 18.06.2010

Congreso nacional de riegos 2010 ( León )

Terminado

Develop services based on Geographical Information System (GIS) and Remote Sensing, adapted to the management of drought, crops and the reduction of climate change impacts.

**www.telerieg.net**



# Partners and collaborators

Partners and Collaborators - Mozilla Firefox

Archivo Editar Ver Historial Marcadores Herramientas Ayuda

http://www.telerieg.net/index.php?option=com\_content&view=article&id=46&Itemid=59&lang=en

Más visitados Comenzar a usar Fire... Últimas noticias

Partners and Collaborators Fast Dial

**telerieg**

SUDOE Interreg IV B UE/EU - FEDER/ERDF

Map Server Imágenes NOAA Intranet Extranet SUDOE Search...

Home Partners and Collaborators

**Telerieg Project**

- Home
- Objectives
- Involved territories
- Partners and Collaborators
- Network of plots

**Actions**

- Actions

**Results**

- High resolution
- Medium resolution
- Low resolution
- Imágenes NOAA
- Irrigable areas
- Servicios
- I+D+i+T del Agua

**Resources**

- Press
- TV
- Radio
- Press releases
- Documentation
- Publications
- Links

**Partners and Collaborators**

Telerieg Partners Telerieg Collaborators Partners and Collaborators Map

Map Satellite Hybrid Terrain Earth

Current Location: Spain

Map showing the Iberian Peninsula with red and blue markers indicating project locations. Red circles highlight specific areas in France and Spain.

**May 2010**

Mon	Tue	Wed	Thu	Fri	Sat	Sun
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

**Planning**

- Calendar
- Events
- Technical meetings
- Technical Committees
- Conferences
- Project Manager

**Upcoming Events**

03.06.2010 - 05.06.2010  
SIAD Salon International du bio et de l'Agri-Durable

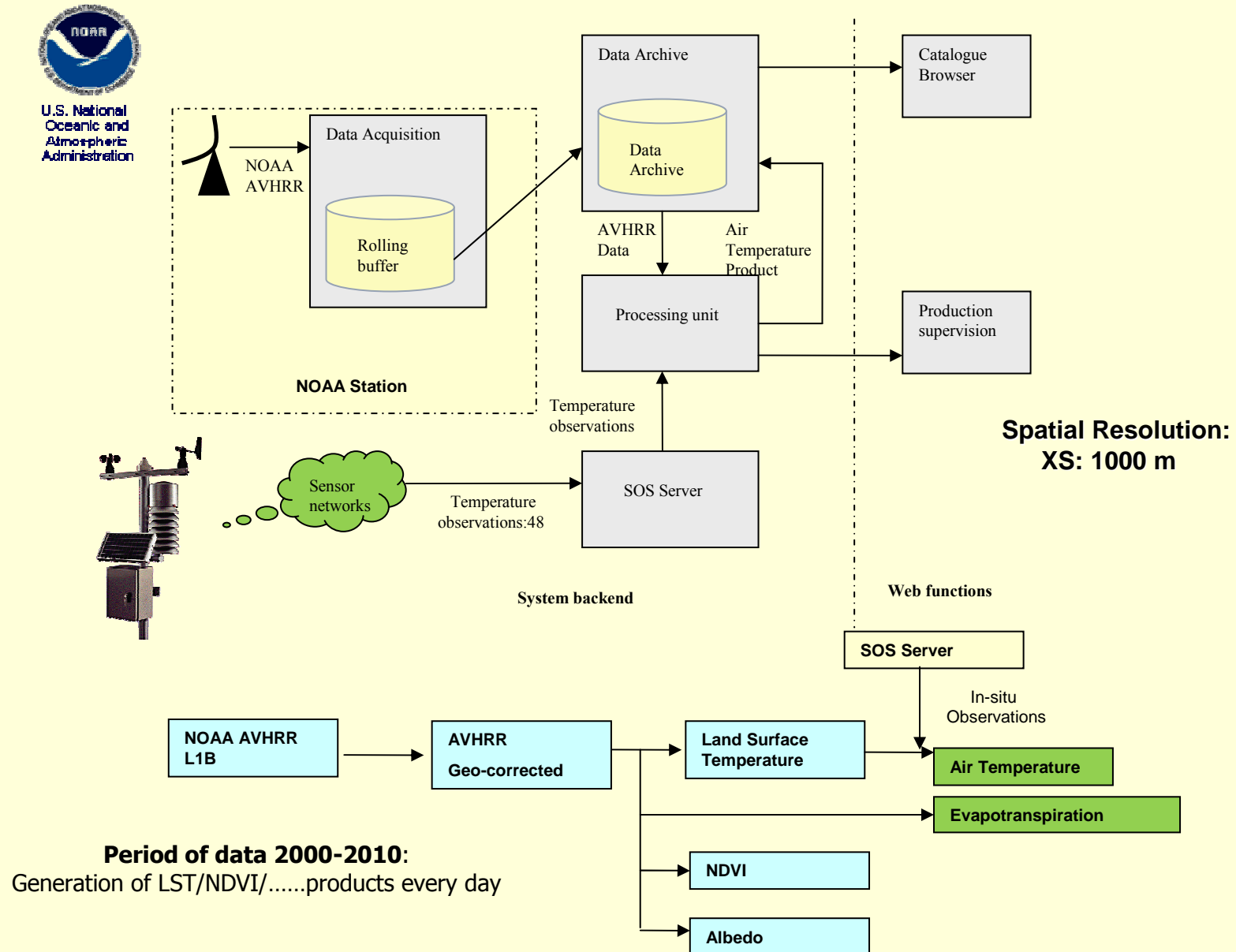
08.06.2010 - 11.06.2010  
Toulouse Space show 2010

17.06.2010 - 18.06.2010  
Congreso nacional de riegos 2010 ( León )

Terminado



# Automatic Processing System of AVHRR NOAA data



# Automatic Processing System of AVHRR NOAA data

Web Application Starter Project - Mozilla Firefox

Archivo Editar Ver Historial Marcadores Herramientas Ayuda

http://idei.imida.es:8080/GestorDatosTelerieg/

Más visitados Comenzar a usar Fire... Últimas noticias

SUDOE - EXTRANET Fast Dial GOSYD [filetype:ppt | filetype:pptx - G... Telerieg Web Application Starter Project

**Generación Automática de Parámetros Biofísicos.**  
Gestor de Datos.

**telerieg**  
**indra**

**SUDOE**  
Interreg IV B

**UE/EU - FEDER/ERDF**

**Selección de Productos IMIDA**

Fecha de adquisición: May 21 2010

Tipo de dato: LST

Área: Murcia

**Buscar Productos**

Fecha Adquisición	Nombre del producto
2010-05-21 09:00:00.000	LST_10052109_NOAA17
2010-05-21 13:00:00.000	LST_10052113_NOAA19

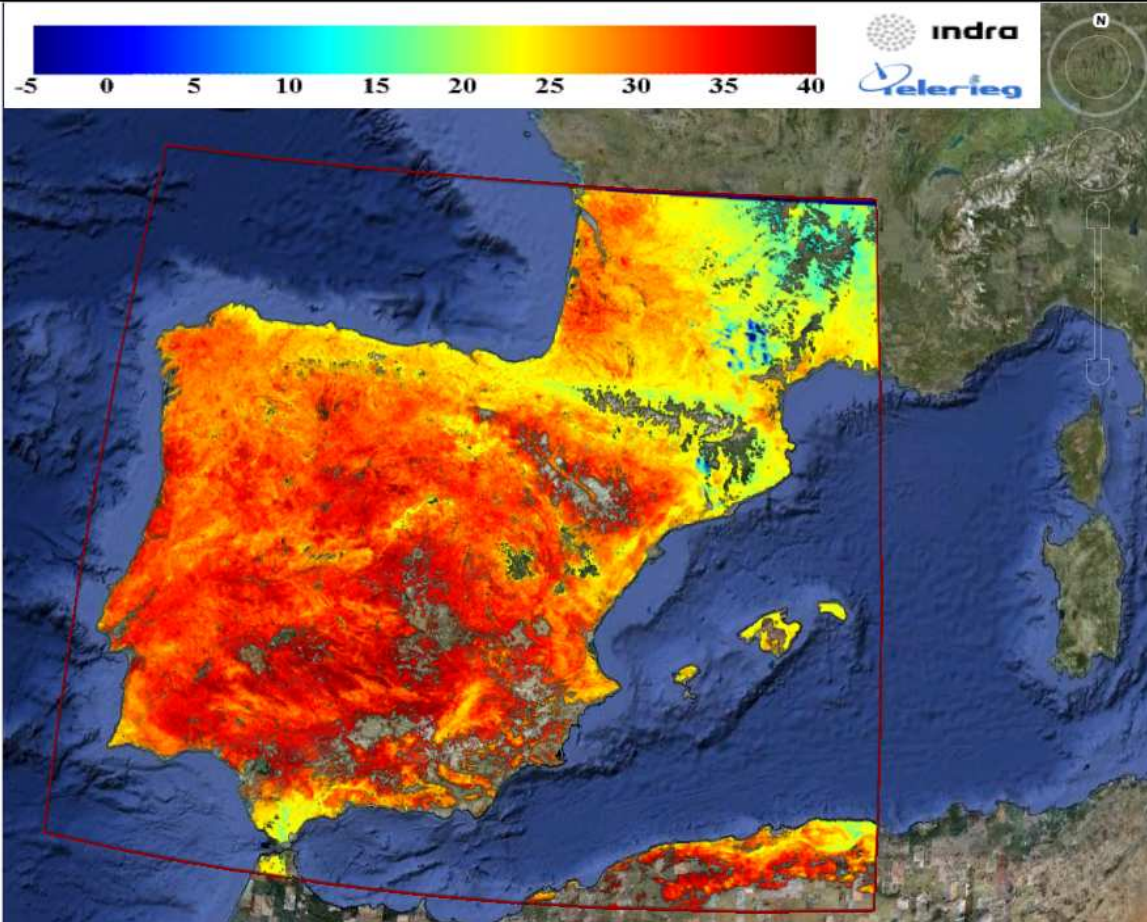
**Mostrar Producto**

Metadato	Metadato valor
Pixelsize_Lat	0.009091
File_Name	LST_10052113_NOAA19
UL_Longitude	-10.0045455
LR_Latitude	35.4953495
UL_Latitude	46.0045455
Location	
Pixelsize_Lon	0.009091
Km1	LegendTemperature scale
Acquisition_Stop_Time	2010-05-21 13:00:00.0
Satellite	NOAA19
LR_Longitude	5.004695499999999
Acquisition_Start_Time	2010-05-21 13:00:00.0
Product Download Folder	<a href="http://idei.imida.es:8080/im">http://idei.imida.es:8080/im</a>

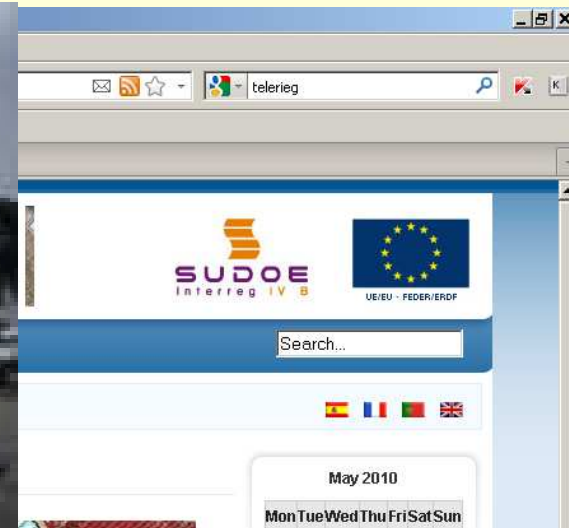
**Terminado**

Color scale: -5 0 5 10 15 20 25 30 35 40

**indra**  
**telerieg**



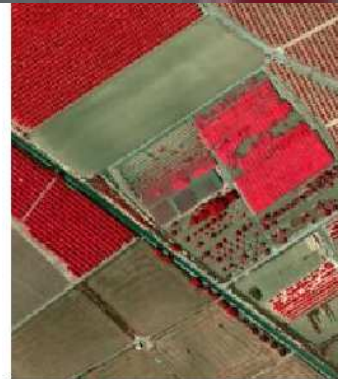
## System Description: HIGH RESOLUTION, 1 pixel < 1 m<sup>2</sup>



- ❖ High resolution
- ❖ Medium resolution
- ❖ Low resolution
- ❖ Imágenes NOAA
- ❖ Irrigable areas
- ❖ Servicios
- ❖ I+D+i+T del Agua

### Resources

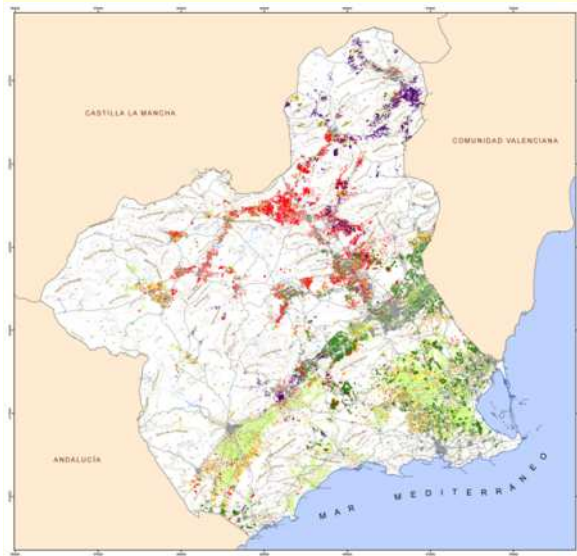
- ❖ Press
- ❖ TV
- ❖ Radio
- ❖ Press releases
- ❖ Documentation
- ❖ Publications
- ❖ Links



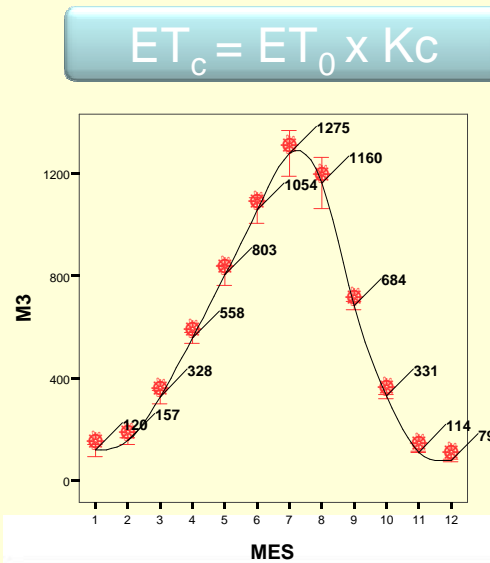
Terminado



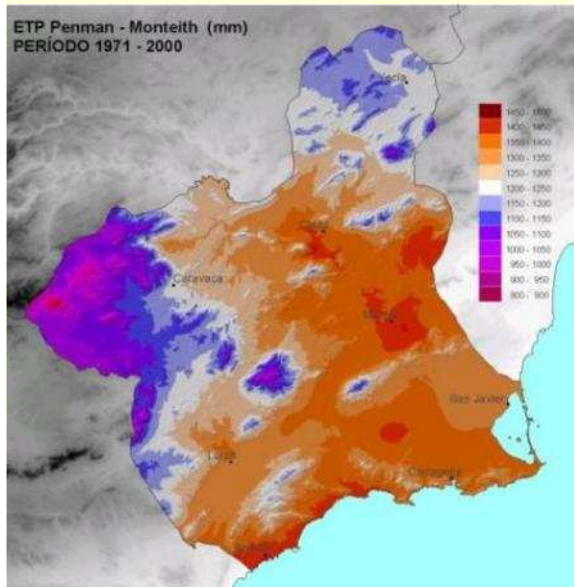
# System Description: Irrigable areas: CROP Evapotranspiration (ETc)



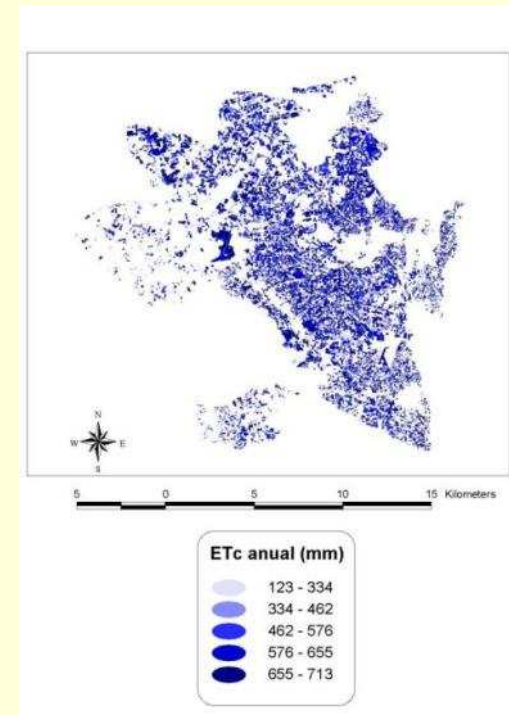
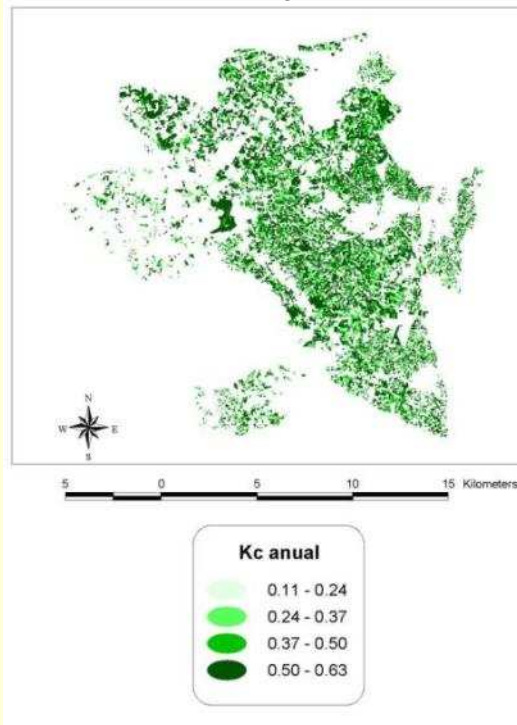
Crop Maps 1:5000



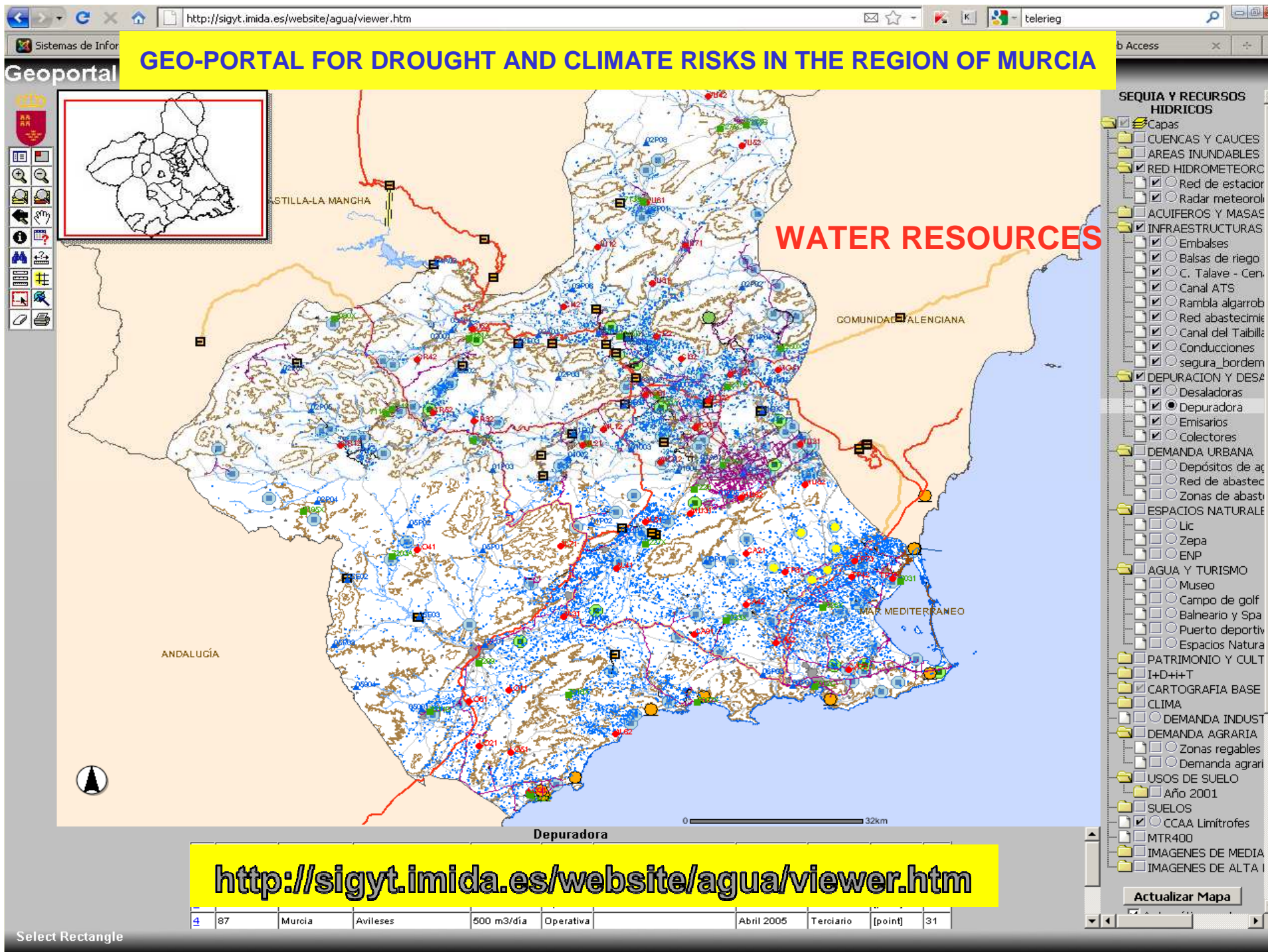
Data for 2000-2010



ET<sub>0</sub> Penman-Monteith







## Land Cover/Use Information System of Spain (SIOSE)

The standards used by metadata are: GeoNetwork

- ❑ 1. Metadata Publication: ISO 19115 / 19139 ; FGDC ; Dublin Core
- ❑ 2. Data: Specification of maps service on the WMS-Web
- ❑ 3. Research : Web Catalogs Service: CSW y Z39.50

It is able to interact with other mechanisms of GeoNetwork like:

WMS  
CSW 2.02

Reference implementation for CSW 2.0.1 y 2.0.2. “GeoServer” is the reference implementation for WMS and WFS.

Also, it is compatible with WCS and KML standards.

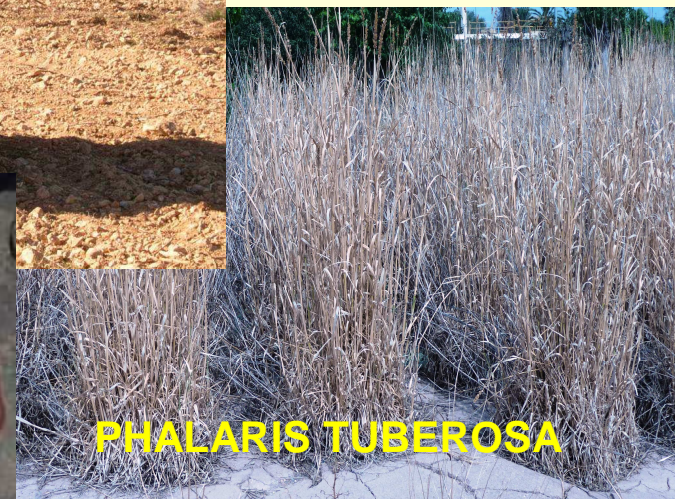
- **Alternative Crops Group** (Dept. of Natural Resources and Rural Development)
- **Participants:** Enrique Correal, María Sánchez, Pascual Romero



- Cultivation on **marginal lands**
- 1st generation energy crops (sugar beet, maize etc.) and other high-biomass species (*Jatropha*, *Miscanthus*, *Salix*) are **unsuitable** for semi-arid conditions
- Use of **native** species selected according to biomass production, chemical composition, calorific values etc.: thistles, perennial grasses, woody C<sub>4</sub> species
- **Guarantee supply** to users (public buildings)



*Selection of native **species** for bio-energy production semi-arid conditions*





*Selection of native **species** for bio-energy production under semi-arid conditions*

# JATROPHA CURCAS



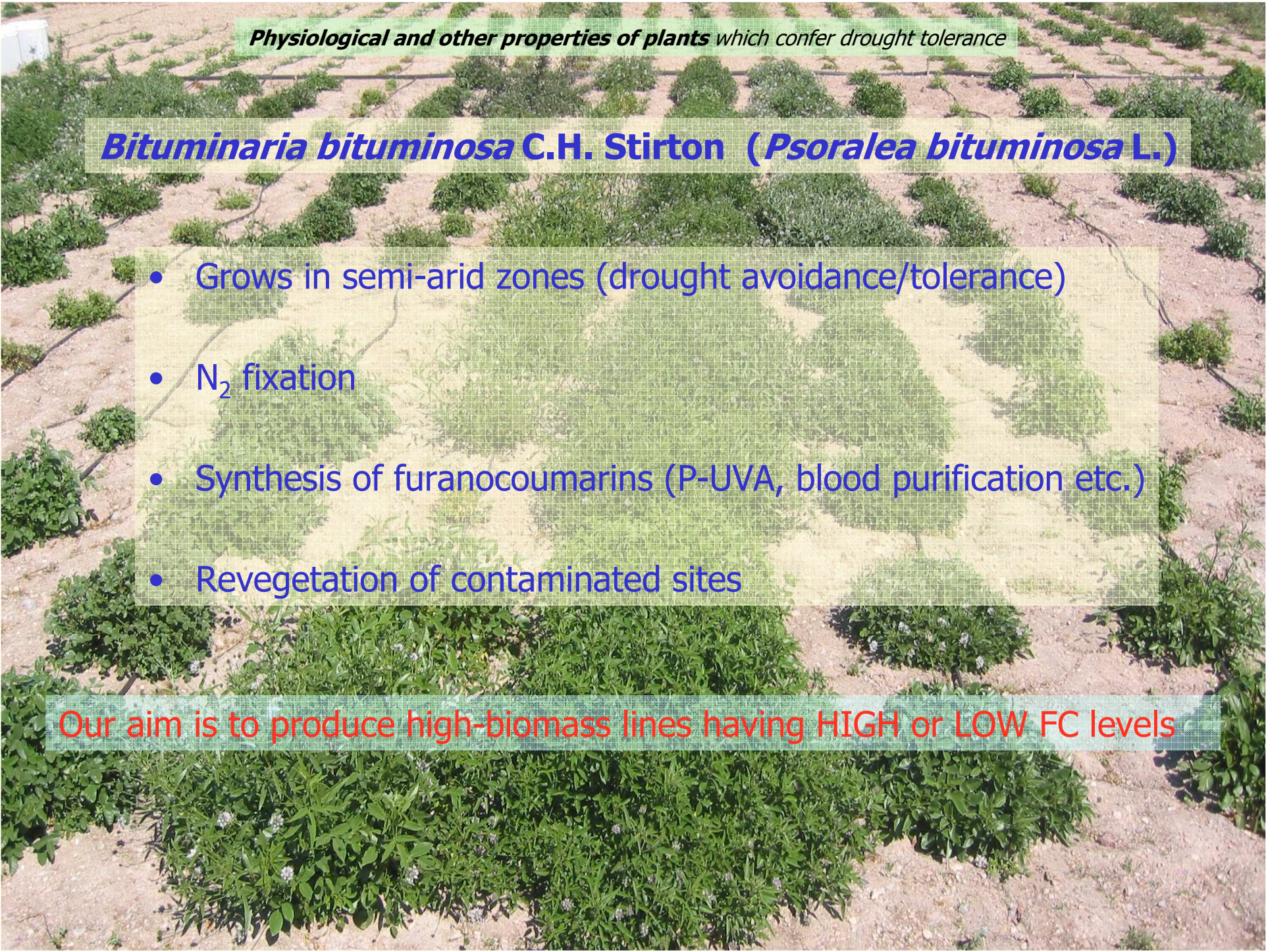
**ITS DROUGHT AND COLD  
SENSITIVITIES LIMIT ITS USE**

- **Alternative Crops Group** (Dept. of Natural Resources and Rural Development)
- **Participants:** David Walker, Enrique Correal, Domingo Martínez, Roberto Pérez



European Social Funds





*Physiological and other properties of plants which confer drought tolerance*

***Bituminaria bituminosa* C.H. Stirton (*Psoralea bituminosa* L.)**

- Grows in semi-arid zones (drought avoidance/tolerance)
- N<sub>2</sub> fixation
- Synthesis of furanocoumarins (P-UVA, blood purification etc.)
- Revegetation of contaminated sites

Our aim is to produce high-biomass lines having HIGH or LOW FC levels



**Physiological and other properties of plants** which confer drought tolerance

Results of pot, field and hydroponic (PEG) assays show that drought tolerance and biomass of *B. bituminosa* are related to:

- Water movement through the plant (root depth and  $L_0$ )
- Leaf thickness
- Osmotic adjustment
- Proline accumulation ?

**THANK YOU FOR YOUR ATTENTION**

