GOBIERNO DE ESPAÑA
MINISTERIO DE AGRICULTURA, ALIMENTACIÓN Y MEDIO AMBIENTE

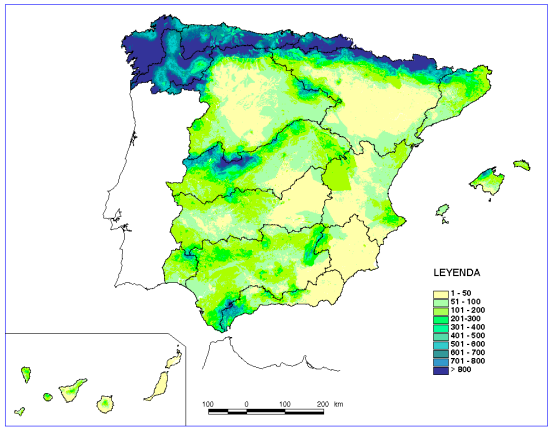
Spanish Experience in Basin Management

Madrid 28-29 April 2014

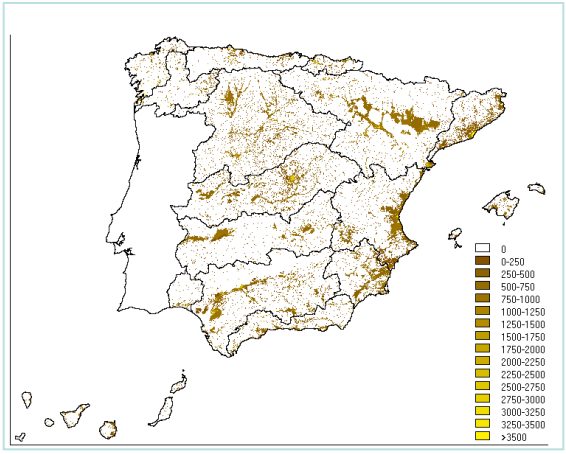
OECD Water Governance Initiative

WG3 Basin Governance

Introduction



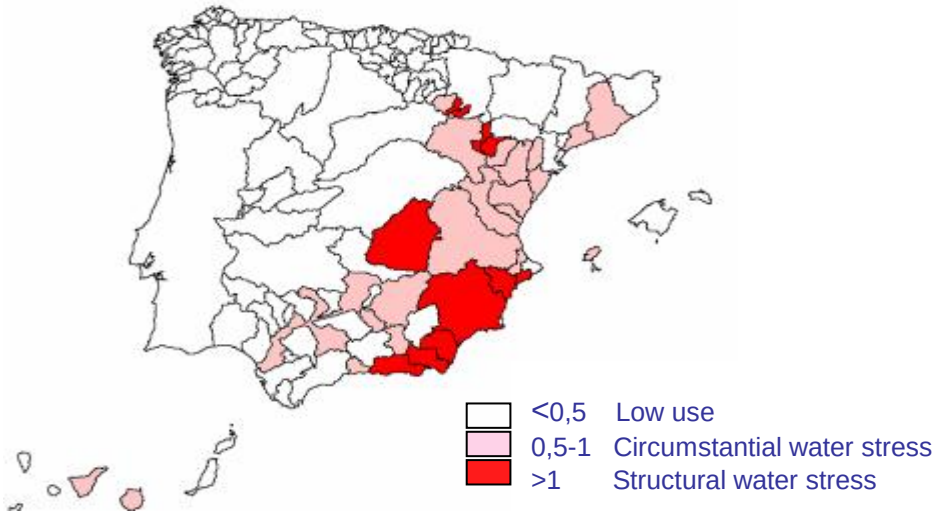
Mean annual runoff (mm)



Mean annual water demand (mm)

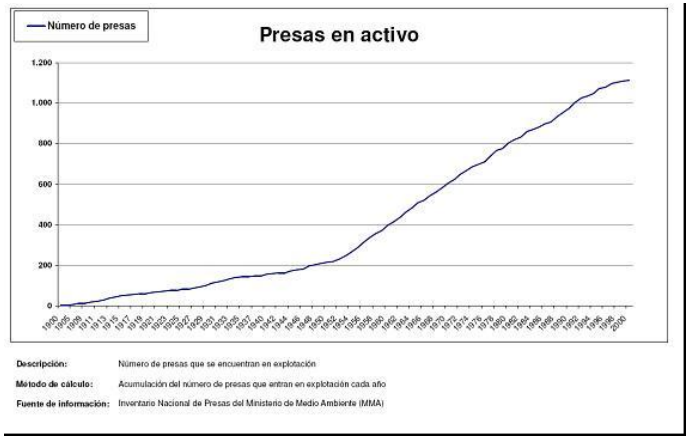
Water is a scarce resource in Spain

- High irregularity in time and space
- Limited water resource: conflicts among water demands

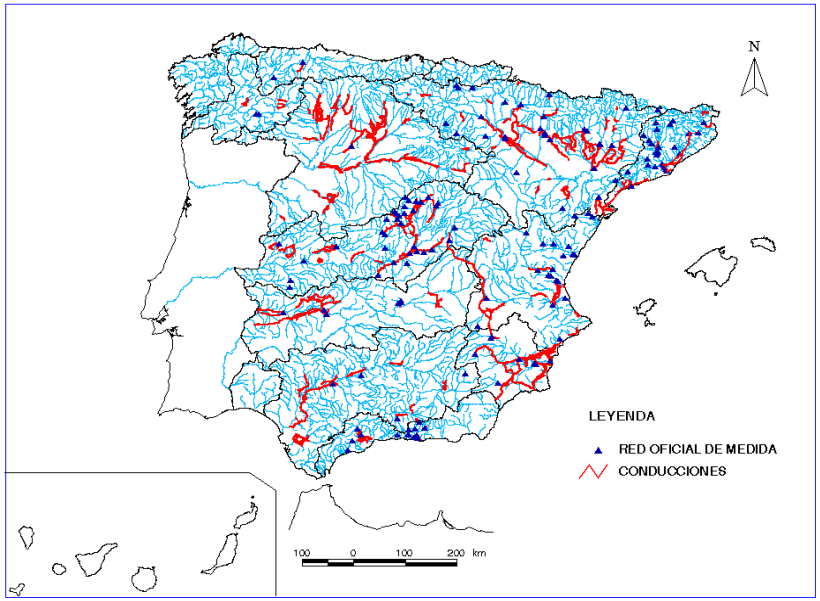


Water exploitation index: water consumption / available water resource

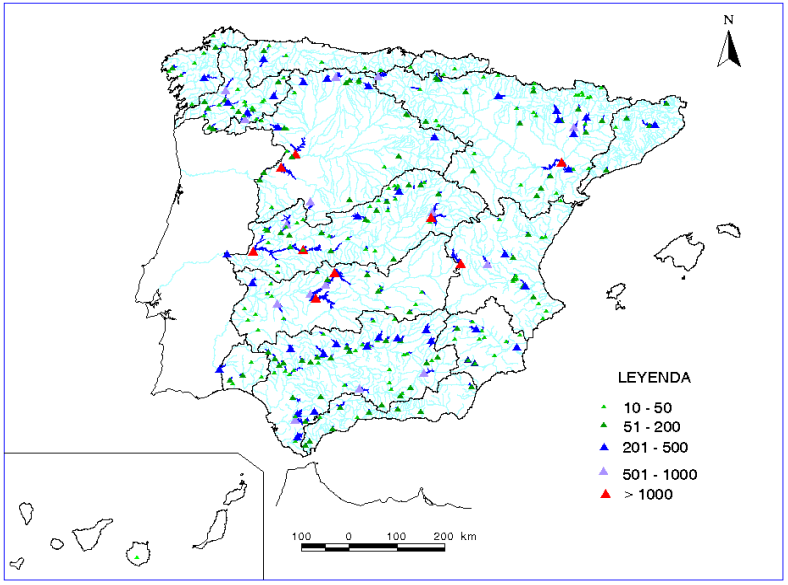
Introduction



Evolution since 1900 of the number of constructed dams



Map of the main supply and irrigation conductions



Map of reservoirs with a capacity over 10 hm^3

Integrated water resources management: conventional and non conventional (desalinization and water reuse) resources

Legislative framework

EU Water Framework Directive, EU Flood Directive,…

Water Act 1985, its updates and regulatory decrees

- Water public domain decree
- Water public administration decree.
- Water planning decree.
- River basin management plans decrees
- Decrees of river basin districts, water reuse…

National Water Plan Act (2001 and 2005)

Regional legislation: environment, land planning, protected areas, …

Basin management

Long tradition in basin management

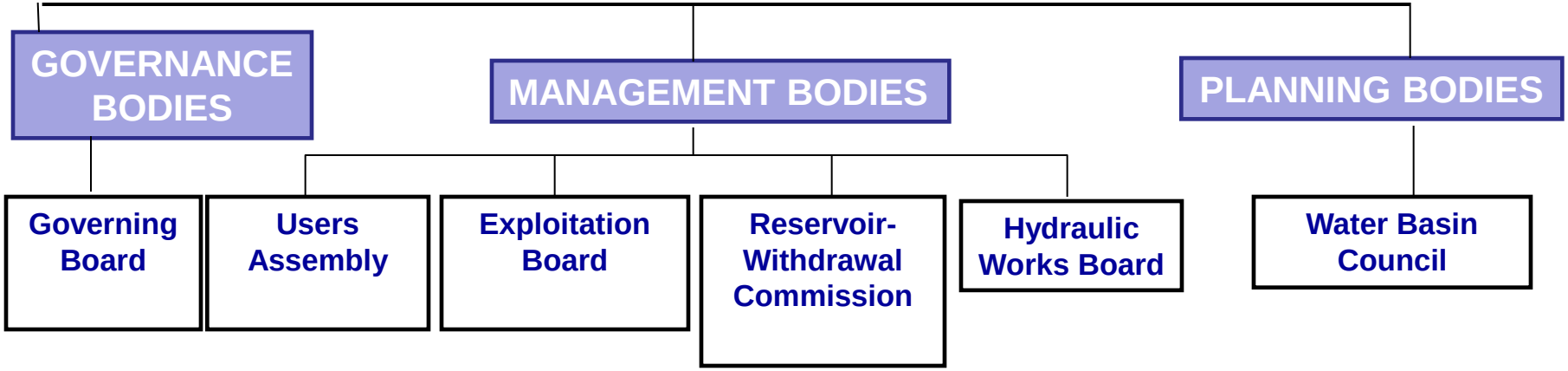
- creation of the “Hydrological Union Confederation of the Ebro river “ in 1926.

- original associative formula between Administration and users to foster hydraulic works and water uses bearing in mind the river basin interests.

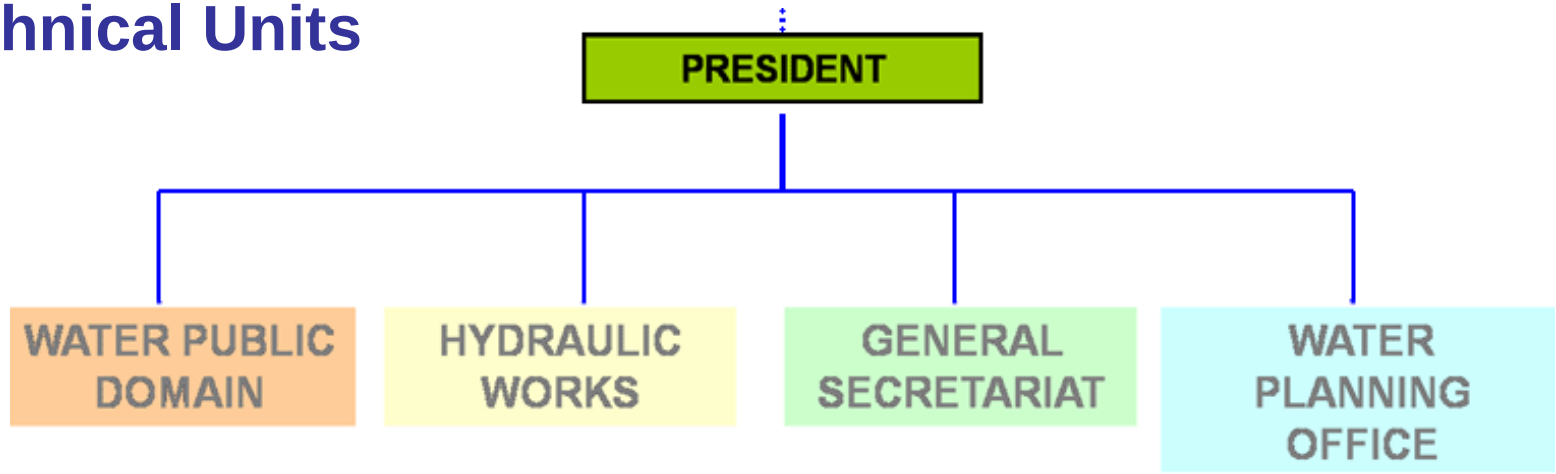
Spanish river basin districts

Organization of River Basin Organisations

Main bodies of River Basin Organisations.



Technical Units



Spanish-Portuguese river basins districts

- Transboundary basins: 46% of the surface of the Iberian Peninsula.
- The Albufeira Agreement was signed in 1998 to improve cooperation between Portugal and Spain promoting the sustainable use of shared water bodies and their ecological status' improvement.

Financing to water management

- User pays: recovery of investments and exploitation costs according to Water Act
  - "Regulation canon" for dams,..
  - " Water use tariff" for main channels,...
- Flood works costs are charged to citizens by means of taxes.
- Polluter pays for point source discharges
  - Authorizations for discharges
  - "Discharge control canon" depending on type of discharge, characteristics of receiving waters, ...

Water planning

Objectives

- Good status and suitable protection of hydraulic public domain and water
  - to reach environmental objectives.

- Water demand satisfaction
  - water allocations
  - priorities in water uses

Principles of Water Planning

- Water planning is carried out through River Basin Management Plans and the National Water Plan.
- Plans are mandatory (approved by Law-National- and Decrees-Basins-). They represent basic rules for the protection of water and for providing water use rights.
- Water plans are developed in coordination with different sector plans.
- Participation is a basic requirement:
  - other administrative entities, users, interested participants, citizens, NGOs, ….

Water allocations and licensing system

- The licensing system in Spain is very old (XIX century)
- The licensing system of the 1985 Water Act provides legal guarantee for all water uses but is not a flexible system.
- Water Act is reformed in 1999 looking for greater flexibility: new water markets tools.
  - Interesting experiences during drought 2005-2008

Water scarcity and drought management

- Impacts produced by droughts can be exacerbated in regions with water scarcity.

- Traditionally, droughts in Spain have been managed as a crisis situation.

- The National Water Plan Act 10/2001 established the bases for a drought planned management.
  - The Ministry of Environment has established a **global hydrologic indicator system in River Basins.**
  - River Basin Organizations have developed **Drought Management Plans (DMPs)**. They were approved in 2007.

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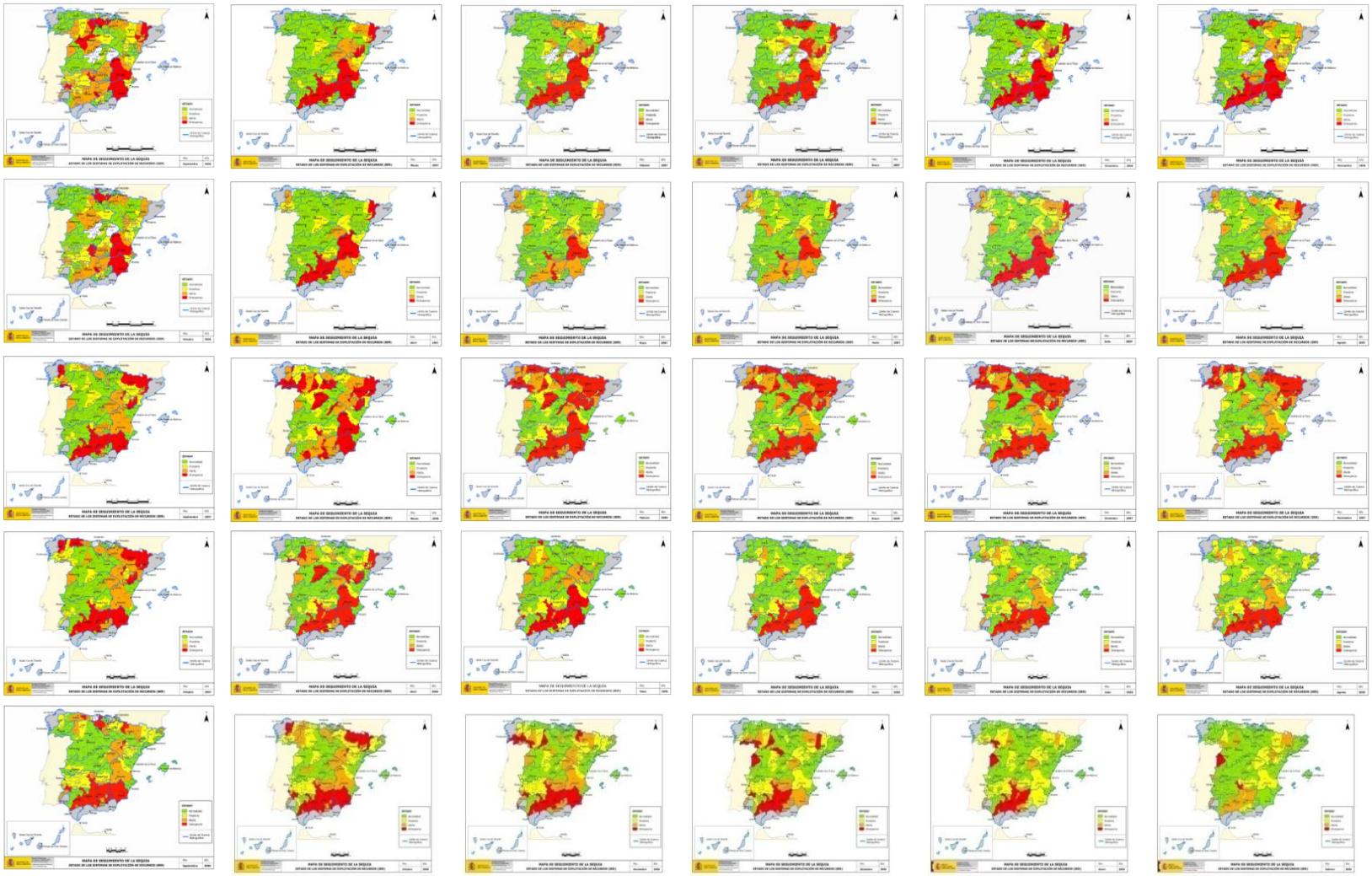
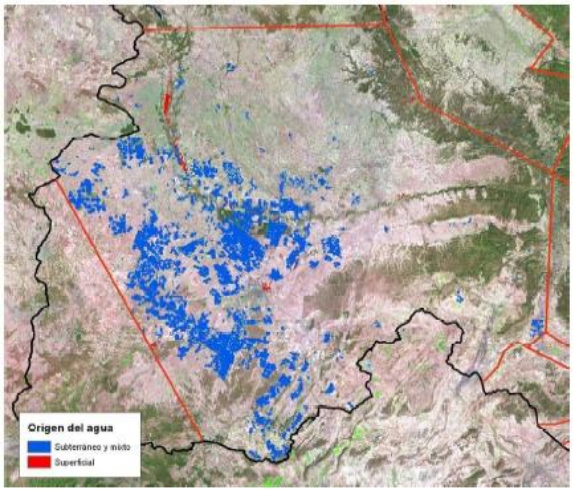
Global Drought Indicator System



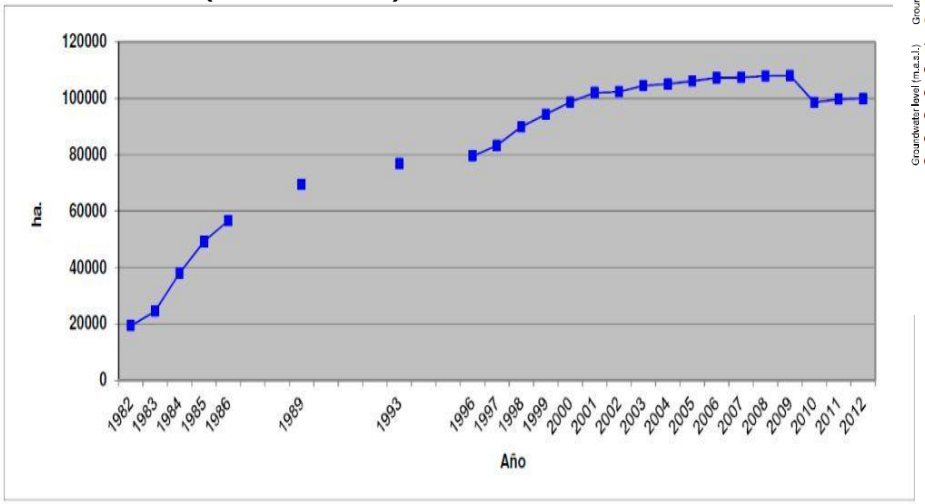
Maps are published on a monthly base since December 2005
(web page of Ministry of Agriculture, Food and Environment)

A case study of governance: Mancha Oriental aquifer

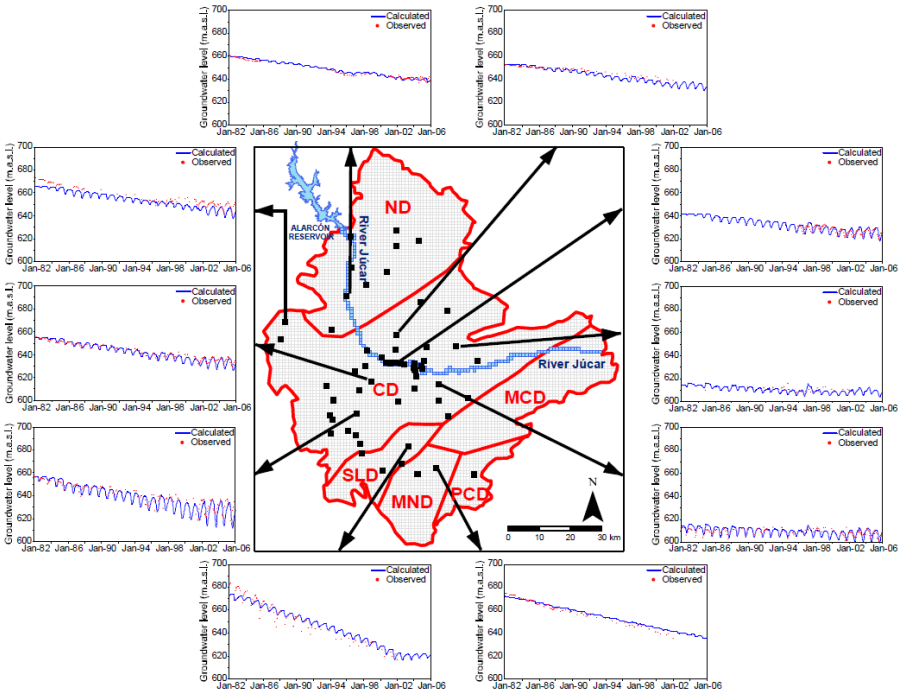
Mancha Oriental aquifer



Irrigation in Mancha Oriental aquifer (7000 km^2) in Júcar Basin



Evolution of irrigation in Mancha Oriental aquifer



Aquifer water levels in Mancha Oriental aquifer

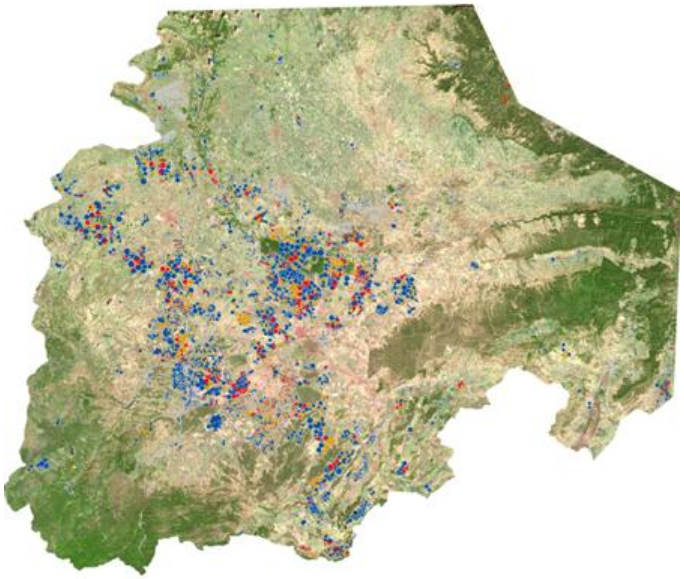
Measures adopted in 1998 plan

- River Basin Plan approved in 1998 established that maximum groundwater abstraction should not be superior to 320 Hm^3/year.

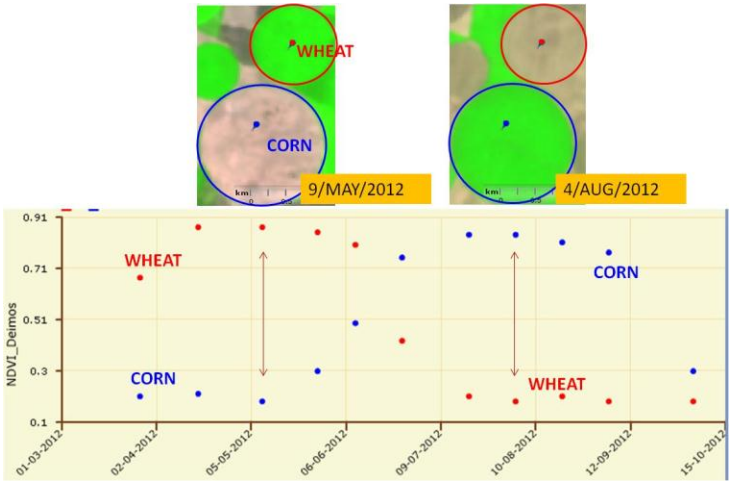
- Other requirements of the 1998 plan:
  - Control of water abstractions.
  - Creation of a groundwater user community.
  - Elaboration of annual exploitation plans.
  - Regularization of water rights.
  - Substitution of a part of groundwater abstractions by surface resource.

Water use control: remote sensing

- Remote sensing for determining the crop evolution.
- Strong collaboration between Administrations and users



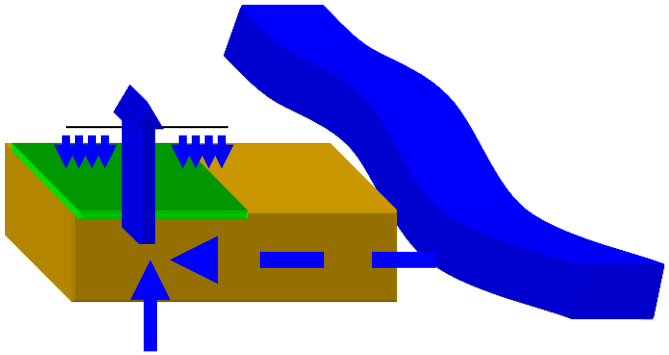
Irrigation crops identification by remote sensing in Mancha Oriental aquifer



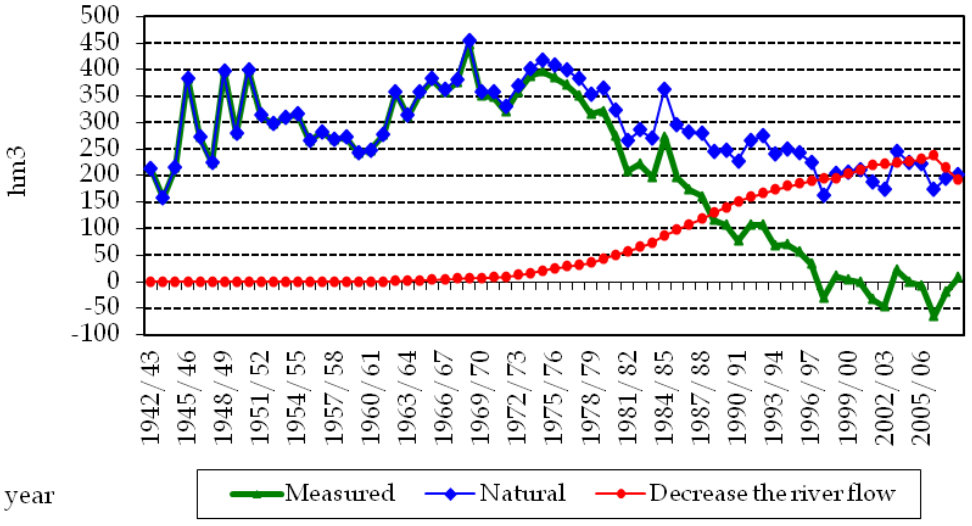
NDVI images in an area of the Mancha Oriental aquifer and temporal evolution of the NDVI

Measures in drought situations

- Groundwater abstractions affected to Júcar river flow discharges.



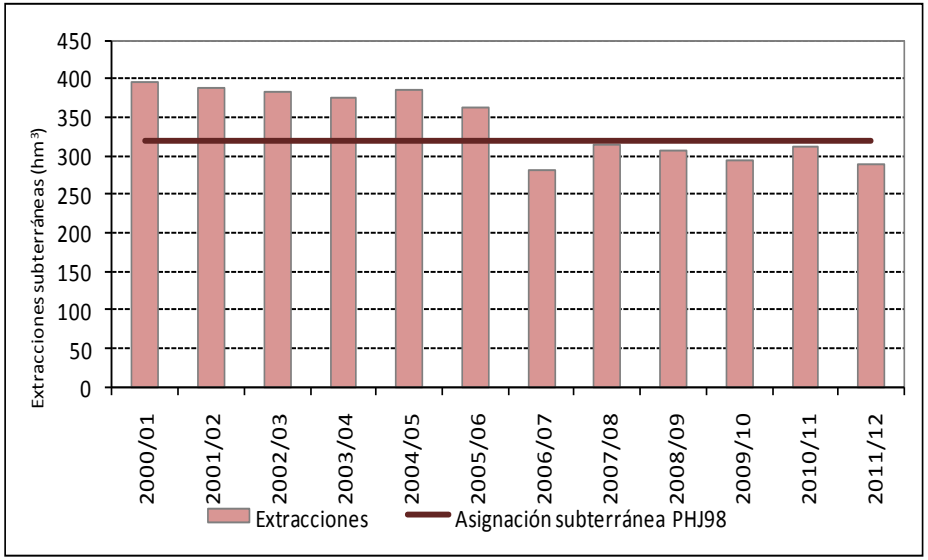
- Agreement for temporal water rights acquisition (wells near the river) between Administration and users for environmental reasons.



Allocation for groundwater resources

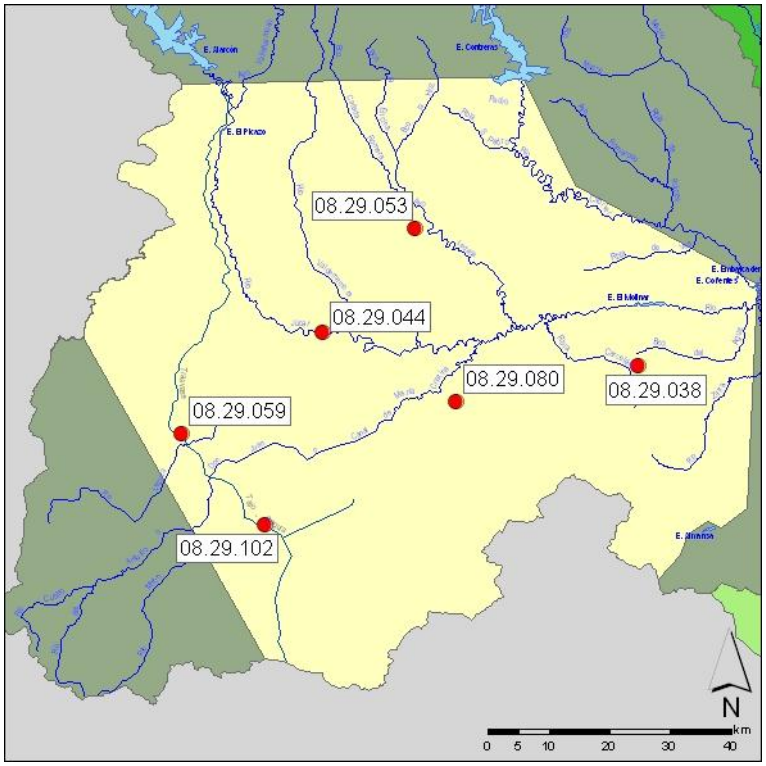
- Since the approval of the plan in 1998, groundwater abstractions have been decreasing (significant reductions in last years).

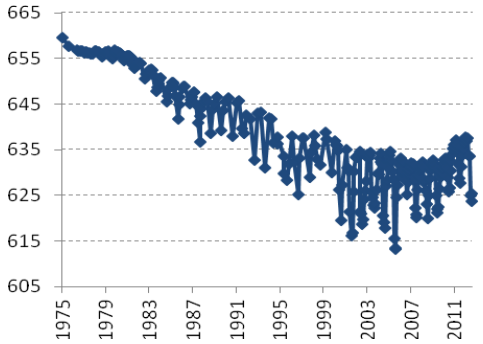
- New plan in 2014 has reduced groundwater allocation to 260 Hm^3/year (available resource) to be reached in 2027.



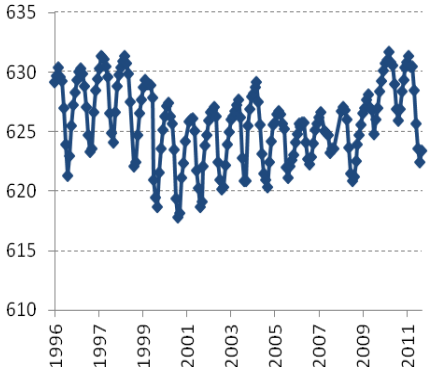
Evolution of groundwater abstractions in Mancha Oriental aquifer

Evolution of groundwater levels





Piezómetro 08.29.059.



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Piezómetro 08.29.102.