

Groundwater protection and conservation Actions in the Júcar River Basin Authority



Maria Serneguet

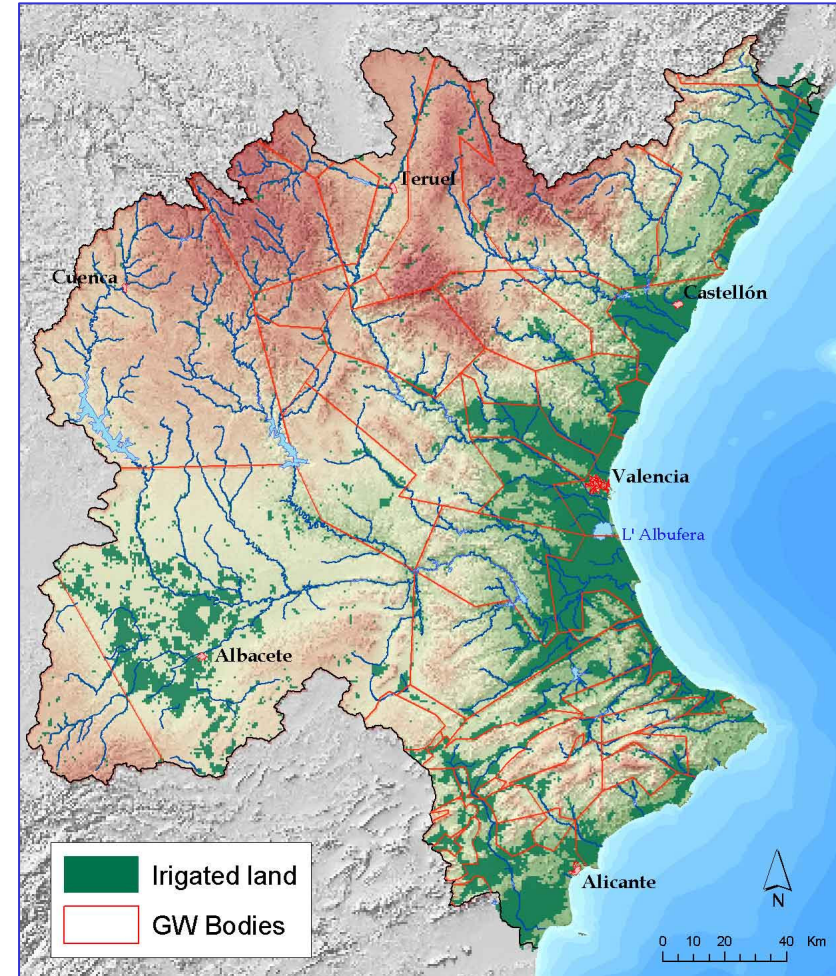
Mediterranean Network of Basin Organisations

Lisbon 20th October 2007

JRBA Geographical Area



Area (km²)	43 000
Population (inhabitants)	4 360 000
Equivalent population due to tourism (inhabitants)	1 400 000
Irrigated land (ha)	370 000
Water demand (hm³/year)	3 600
Water resources (hm³/year)	3 300
Origin of water resources	Surface water(25%) Groundwater(75%)



Mancha Oriental Aquifer

Additional Characterisation: the example of La Mancha Oriental Aquifer



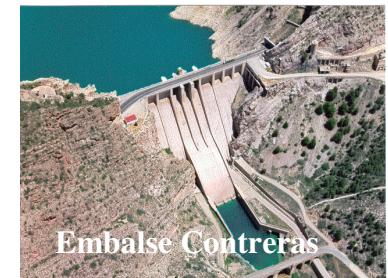
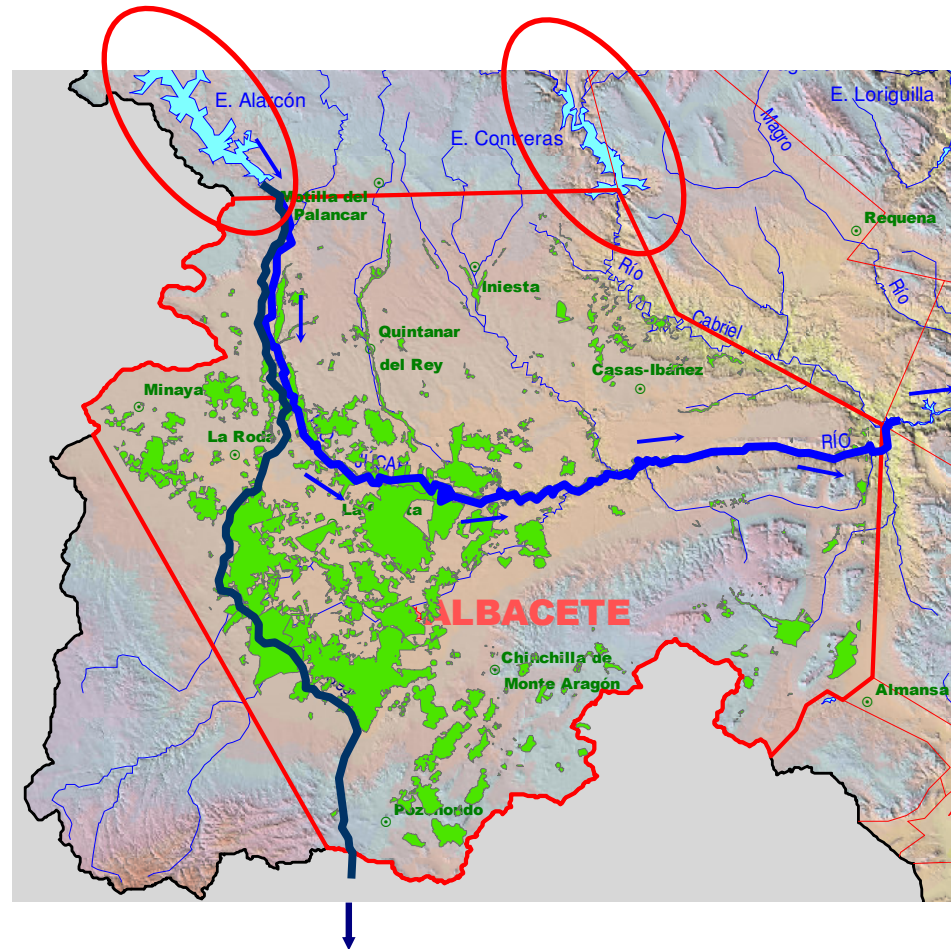
Embalse Alarcón



Regadío (Albacete)



Acueducto Tajo-Segura



Embalse Contreras



Río Júcar

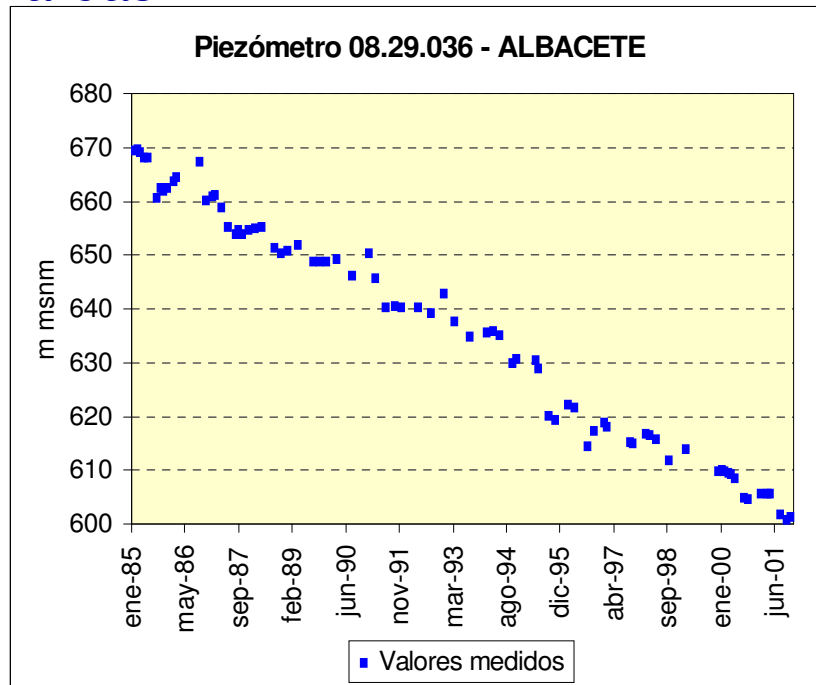


Huertas (Barrax)

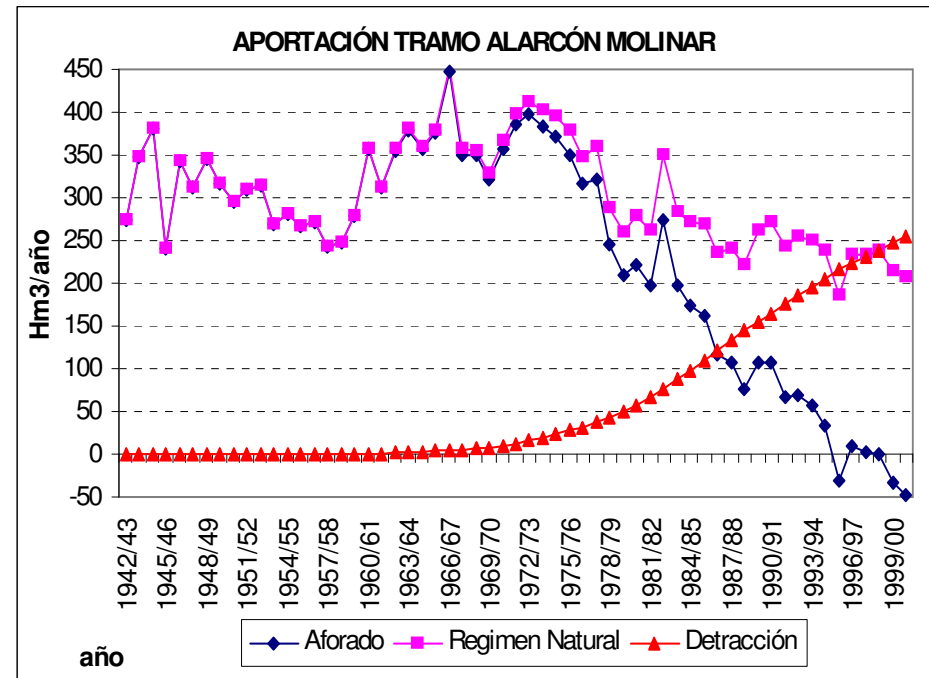
Description of the study: Problematic

✓ Extractions are concentrated in certain areas, and their remarkable magnitude fundamentally affects the system in these two aspects:

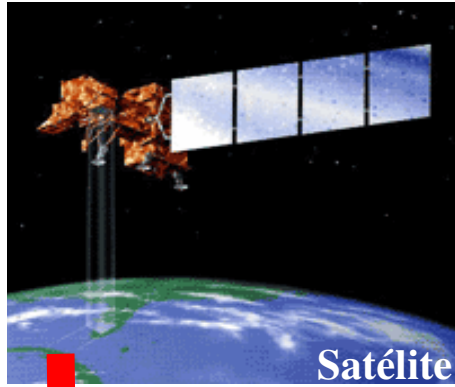
↘ Decreases in piezometric level, very significant in some areas



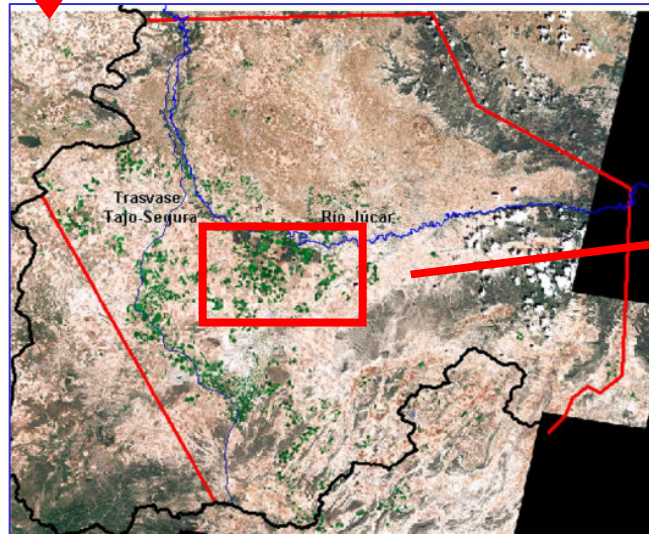
↘ Reduction of total discharge to the river Júcar



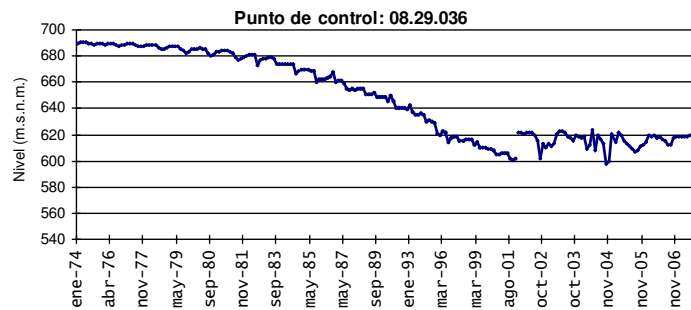
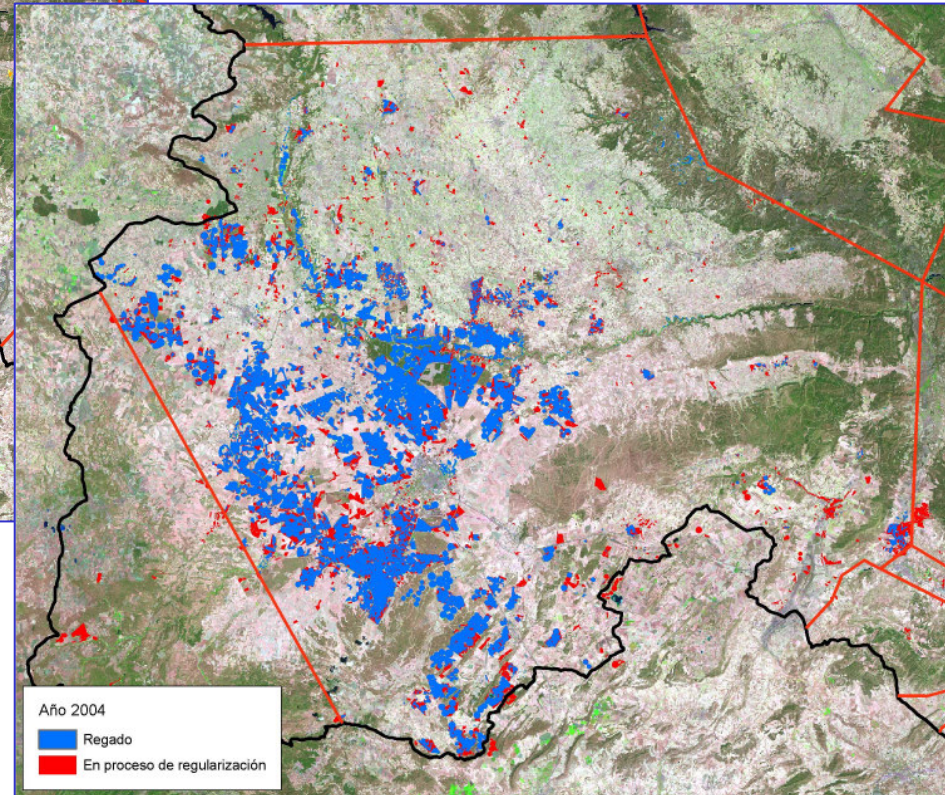
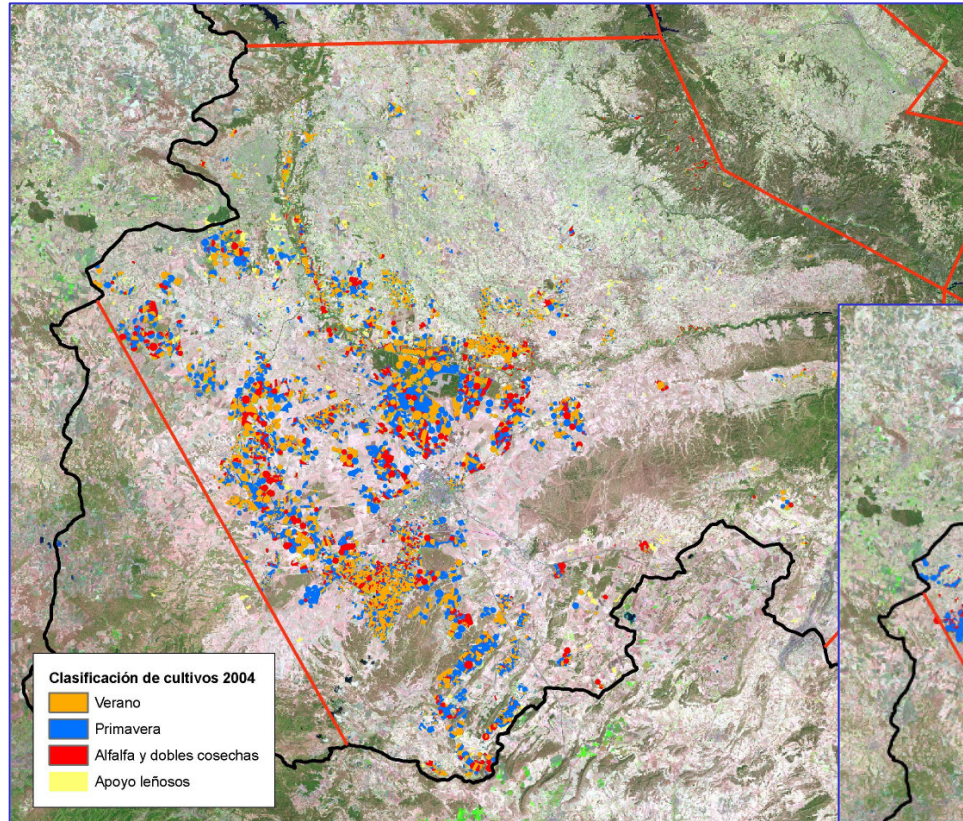
Extraction Follow-up



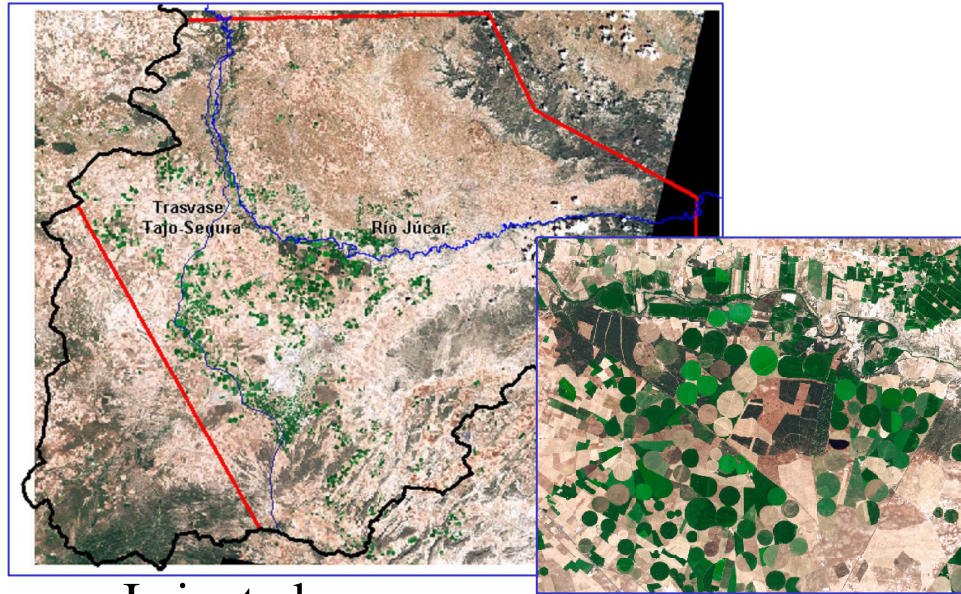
Use of teledetection (satellite images since 1982) and digital land registry for the follow-up of the irrigated surface.



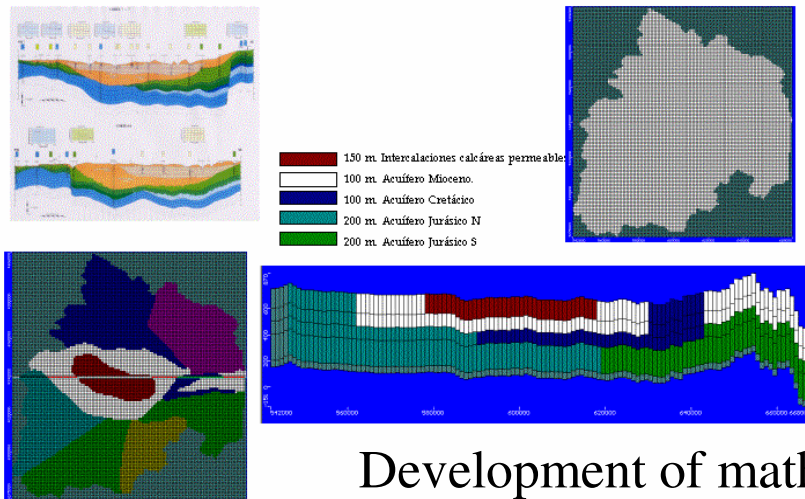
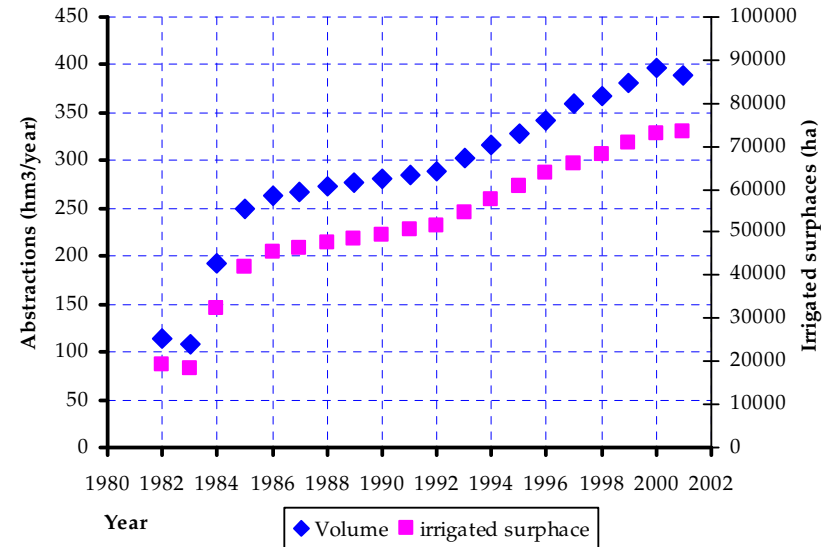
Crop classification (year 2004)



Further characterisation: Case study of Mancha Oriental Aquifer



Irrigated area



Development of mathematical models

Use of mathematical model

MODFLOW MODEL

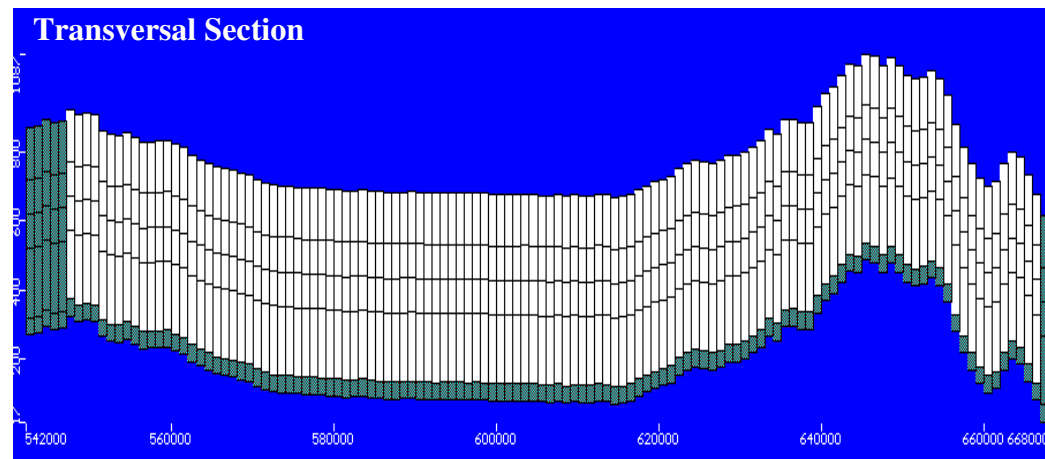
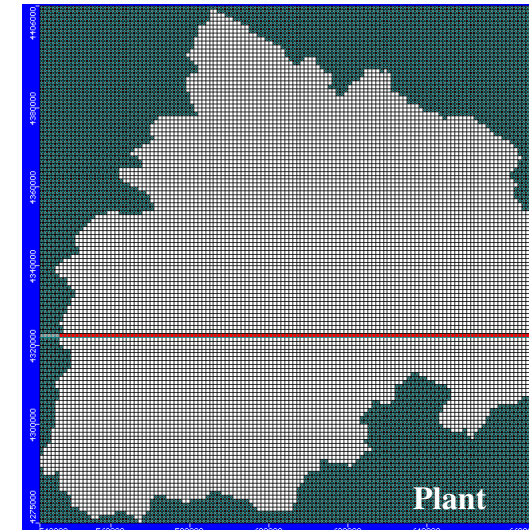
McDonald, M.G., and Harbaugh, A.W., 1988

Character

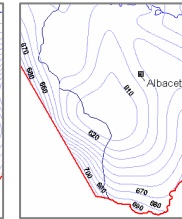
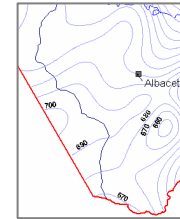
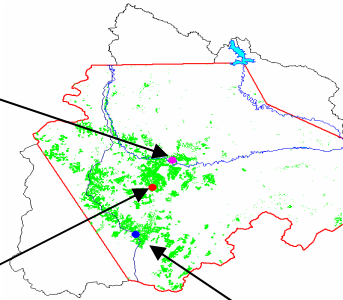
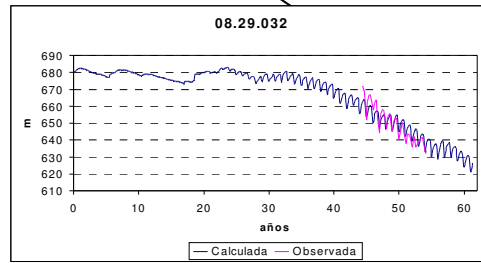
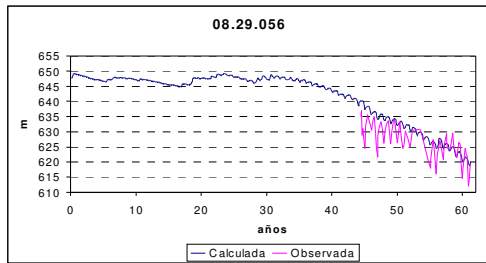
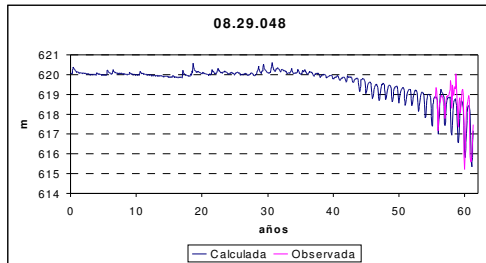
- 131 rows x 126 columns
- Cells 1x1 km²
- Multi-layer model (4)
- Calibration in Stationary and Transitory regime

Objectives

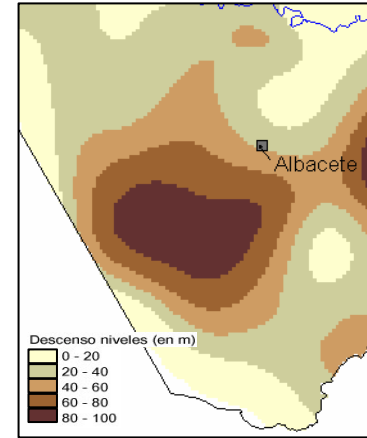
- Simulation non-altered status
- Simulation evolution of piezometric surface
- Future scenarios analysis



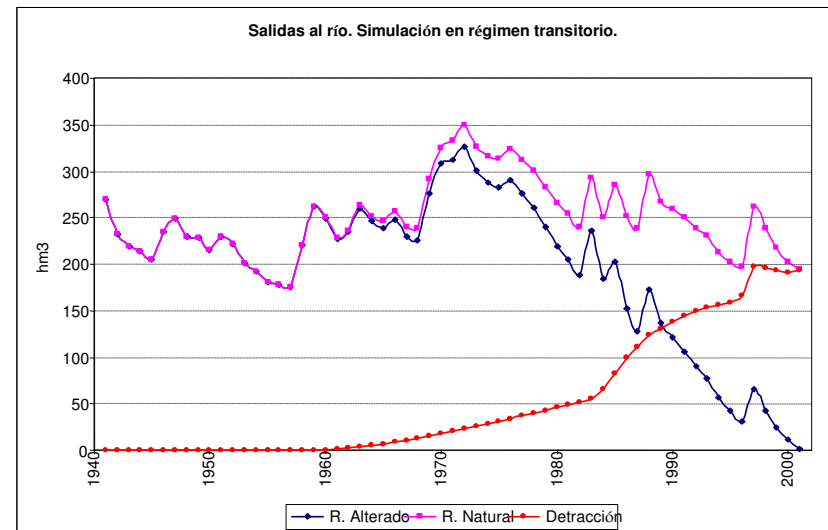
Modelling Mancha Oriental aquifer



1974
2001

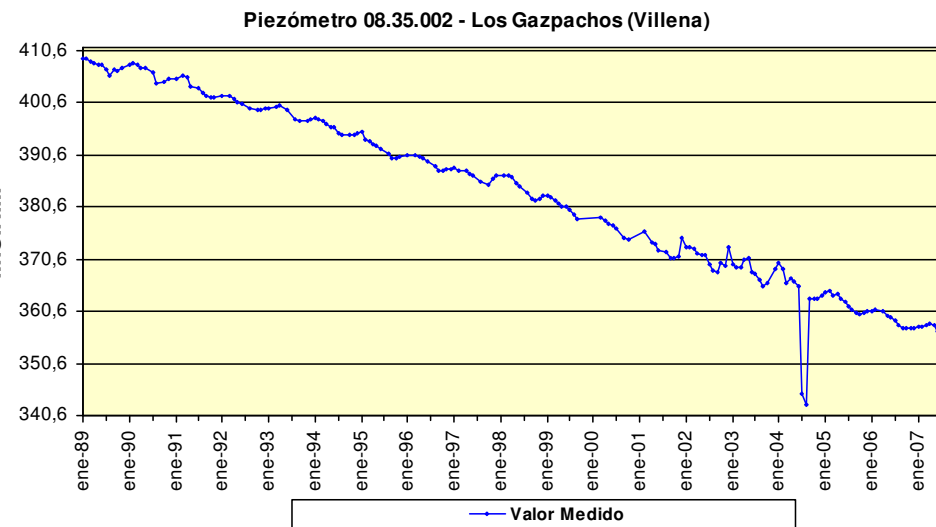
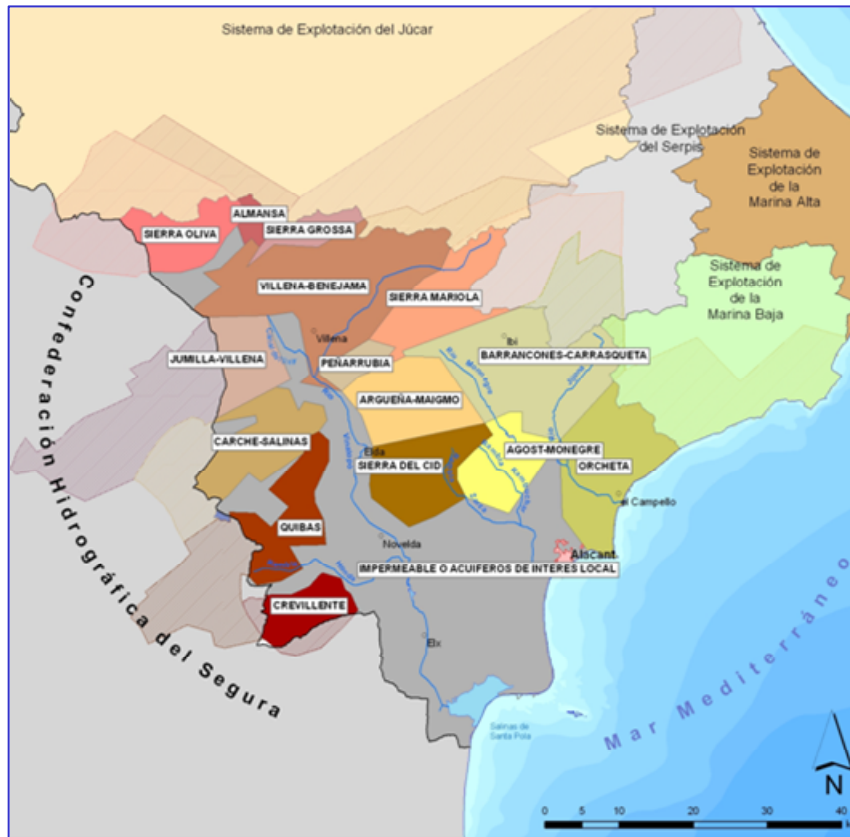


Júcar river near "Los Frailes"



Vinalopó Aquifers

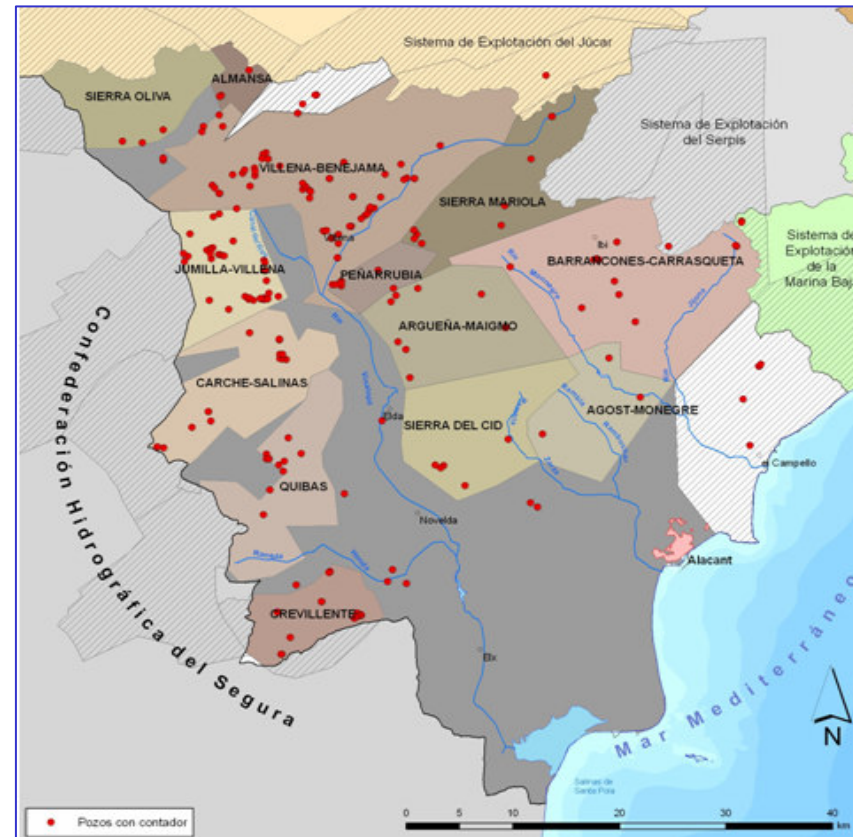
HGU's of the exploitation system Vinalopó-Alacantí



Hydrogeological Units

Actions in the exploitation system Vinalopó-Alacantí

75% of the pumping is currently controlled



Location of meters



CONTACT



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Thank you very much for
your kind attention!!