GOBIERNO DE ESPAÑA
MINISTERIO DE AGRICULTURA, ALIMENTACIÓN Y MEDIO AMBIENTE
CONFEDERACION HIDROGRAFICA DEL GUADIANA

THE UPPER GUADIANA CASE

José Ángel Rodríguez Cabellos
Head of the Planning Office
GUADIANA RIVER AUTHORITY (CONFEDERACIÓN HIDROGRÁFICA DEL GUADIANA) Spain
oph@chguadiana.es

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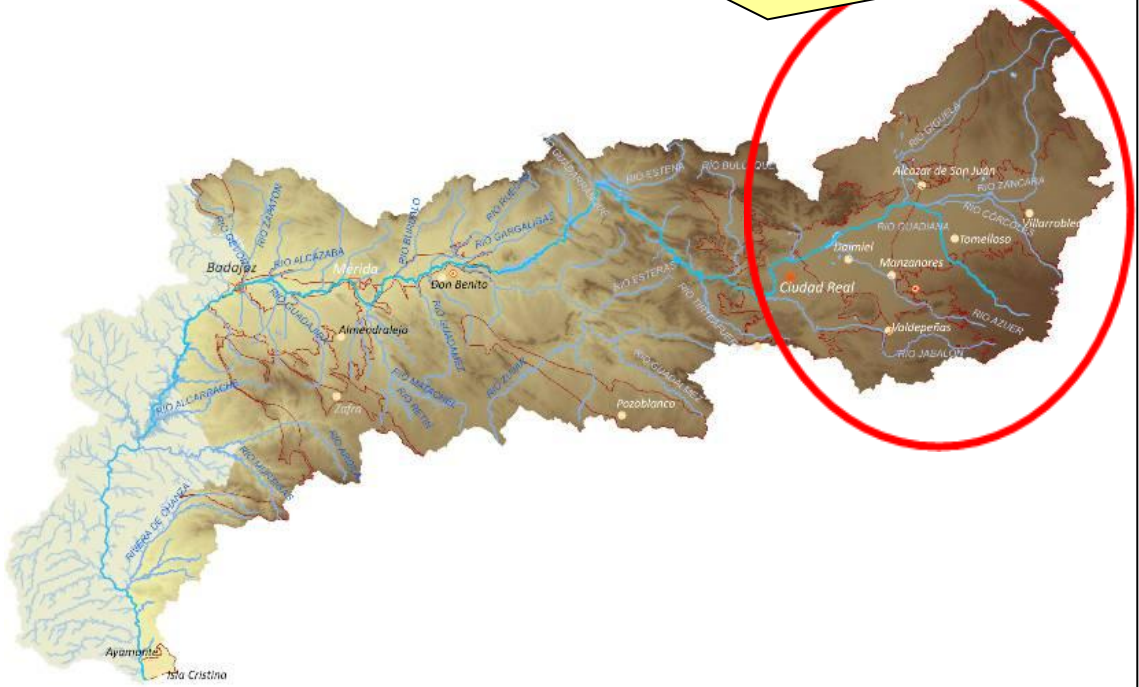
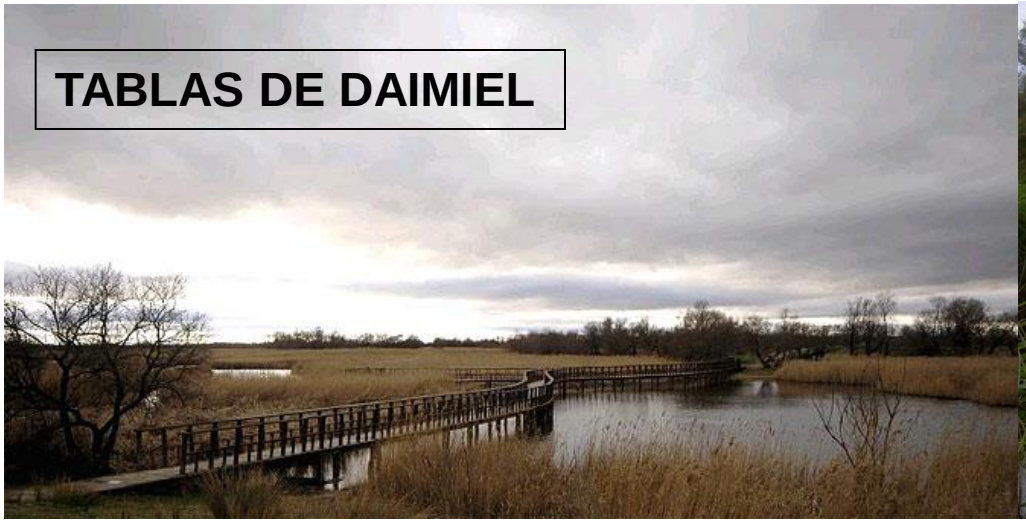
Introduction



Introduction



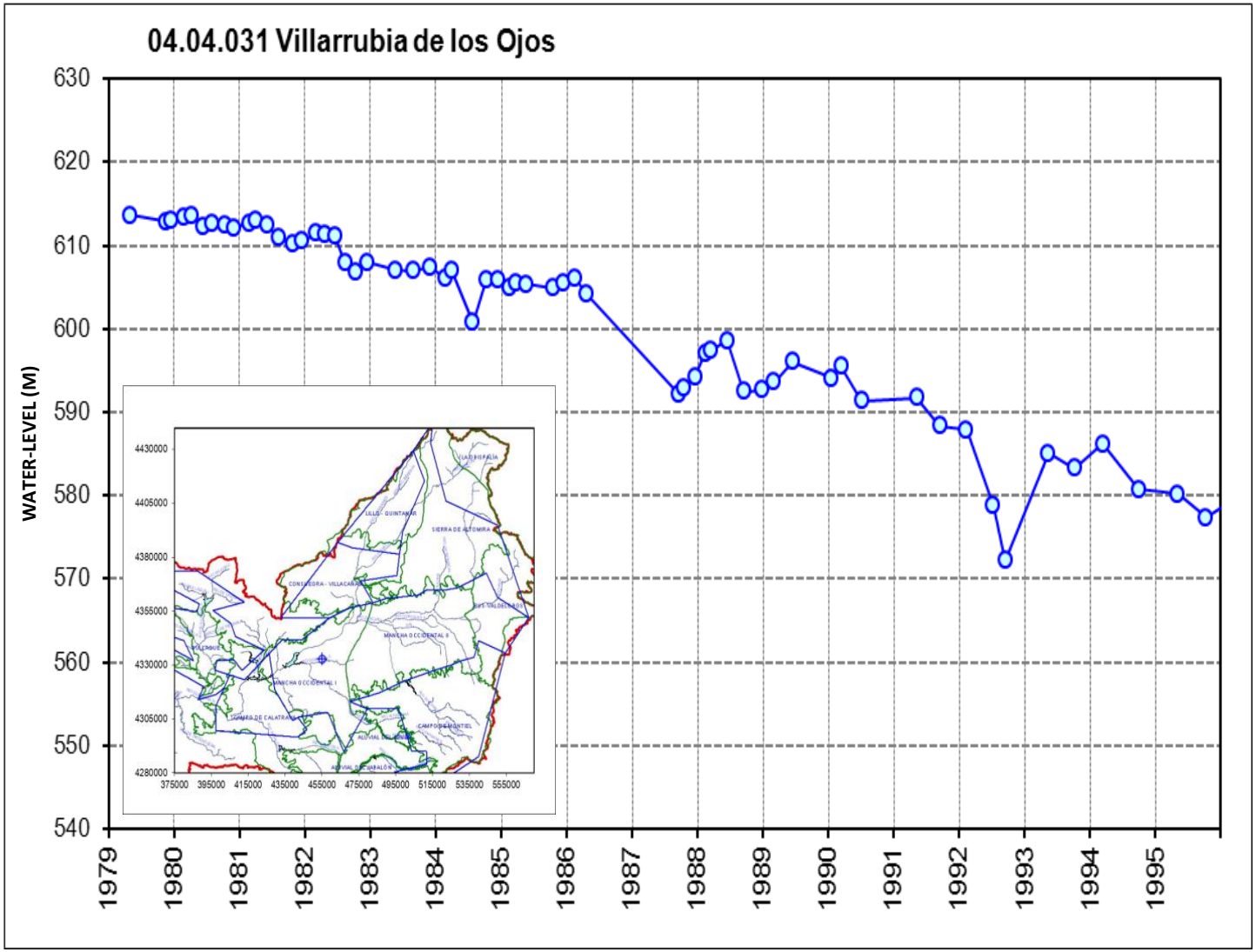
The previous legal Framework to 1985

- Ancient 1879 Water Law, groundwater as a private property.
- New 1985 Water law: groundwater public domain
- Allowed existing groundwater abstraction to continue, required register.
- Tens of thousands Registration applications (abstraction would far exceed available renewable resources).

Evolution until end of 80's

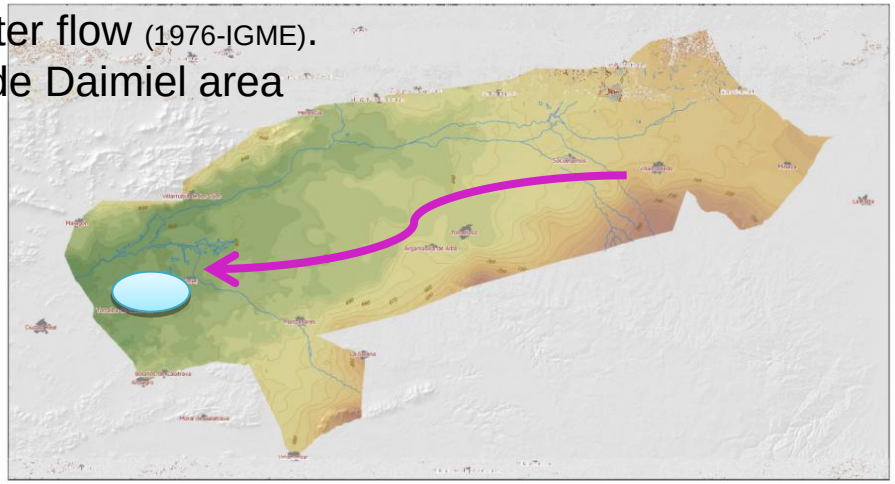
- In the 70's, legal framework and modern pumping system led to intensive growth of irrigated areas from La Mancha Aquifers .
- Significant groundwater table depletion.
- In the mid 90's the storage deficit of La Mancha Occidental aquifer 4.000 hm^3.
- Ecosystems damaged.
- Social conflicts and violent episodes.

Evolution until end of 80's

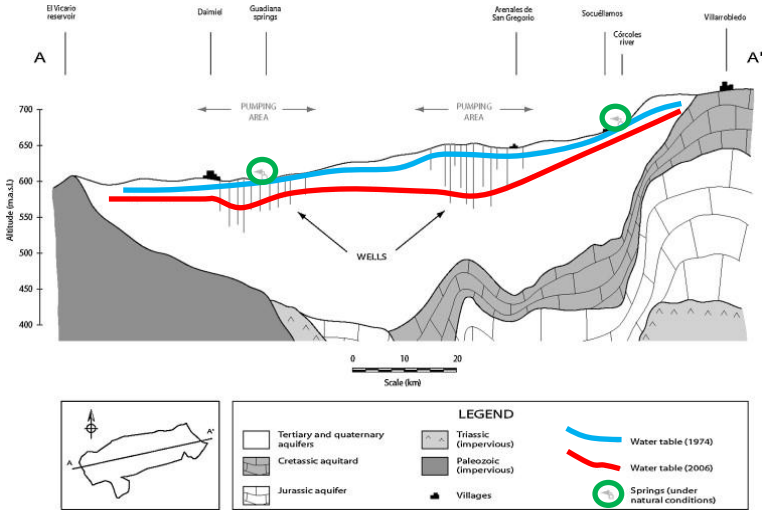


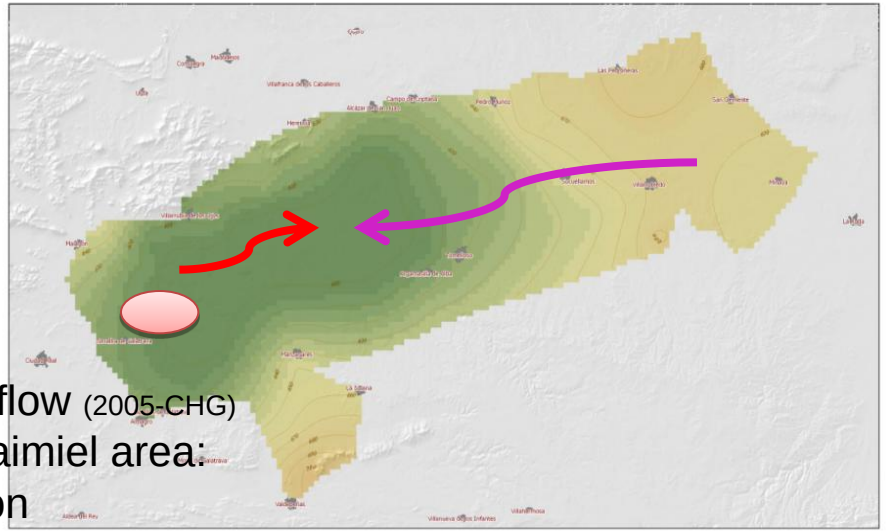
Evolution until end of 80's

Natural pattern groundwater flow (1976-IGME).
Free Discharge Tablas de Daimiel area



Hydrogeological section of Mancha Plain (
P. Martínez-Santos y P.E. Martínez-Alfaro, 2010)





Modify pattern groundwater flow (2005-CHG)
No Discharge Tablas de Daimiel area:
Central depression

Declarations of "Aquifer Overexploitation"

- 1985 Water Law: depleted aquifers to be declared overexploited.
- Mancha Occidental and Campos de Montiel aquifer declared.
- Aquifers declared, managed through Abstraction Plans:
  - Annual maximum abstractions (4.278m3/ha to 2.000 m3/ha).
  - Banned Drilling new wells.
  - Irrigation Farmer Associations & Extraction Committees were created.
- Social opposition against restrictions. Farmer Associations demanded compensation.
- Difficulties to control abstraction restrictions and prohibitions about new drilling of wells were not observed (illegal situations) (previous situation no limit to abstraction or drilling).

Income Compensation Plan 1992

- One of the first agro-environmental programs of the EU Common Agricultural Policy.
- Objective: reduce abstraction and recovery of wetlands
- Use less water, abandon water-intensive crops, reduce fertilizer and pesticide use.
- Compensation to farmers for income losses
- Water intensive crops such as maize and beet almost disappeared.

Plan for restructuring vineyard 2000

- In 2.000, Castilla-La Mancha Autonomous Government (responsible for Agriculture) set off a Plan for restructuring the vineyard (CAP).
- Main objective: adaptation of wine production to new national and international market.
- The effect: Consolidation of the effect of the previous Income Compensation Plan with an extraordinary change from high water-intensive crops (herbaceous crops 8.000 m3/ha) to vineyards (less than 1.500 m3/ha),

Abstraction evolution

- Groundwater abstraction monitoring trough Satellite Remote Sensing, since mid 80's, first time in Europe.
- Installation of flow-metres
- Good understanding of the situation (huge area 5.000 km2), control, punishment and penalty system based on Satellite Remote Sensing.

Abstraction evolution

- Next graphics:
  - Change from herbaceous crops to vineyard.

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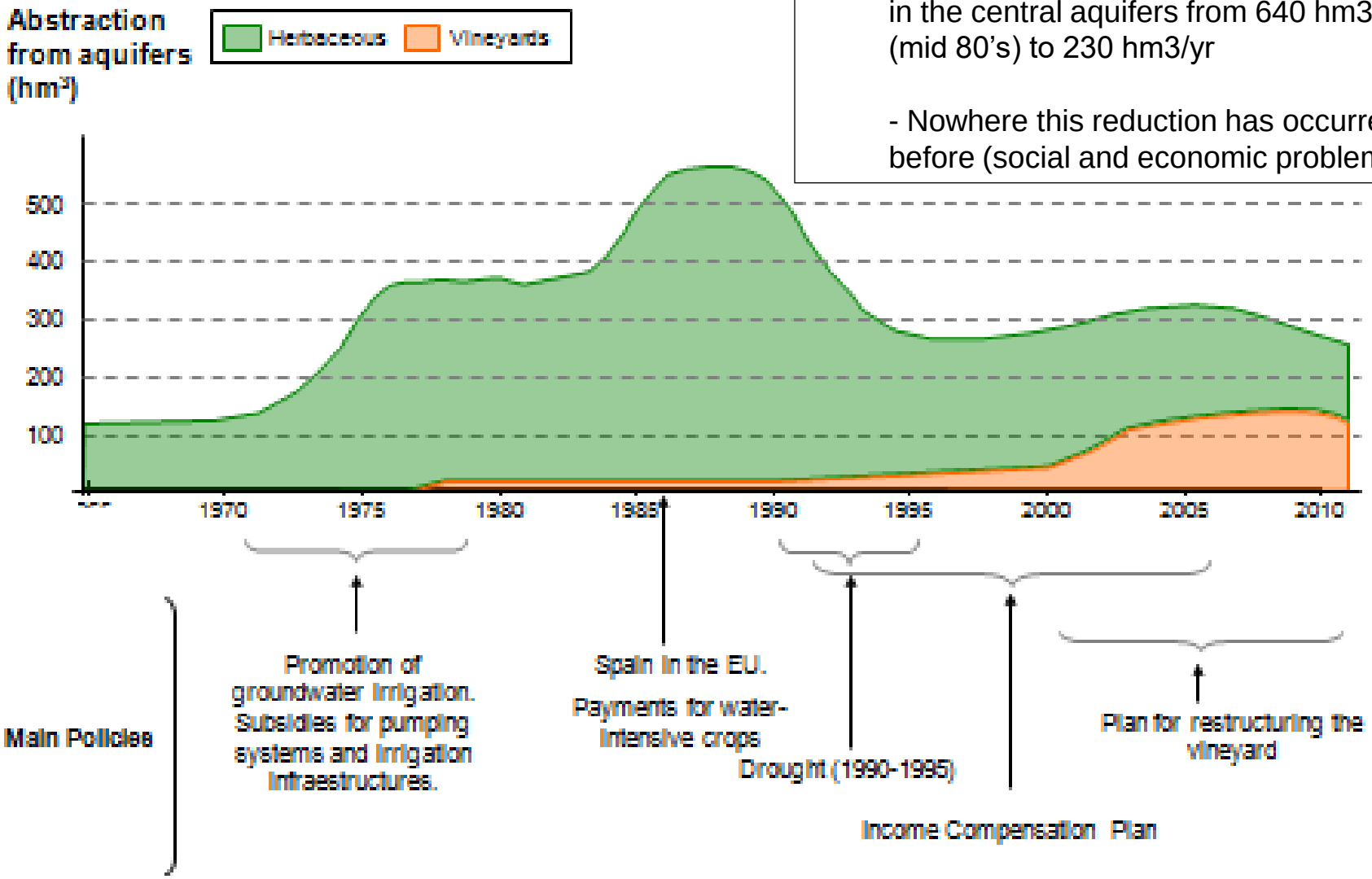
Abstraction evolution

- Reduction of groundwater abstraction in the central aquifers from 640 hm3/yr (mid 80's) to 230 hm3/yr

- Nowhere this reduction has occurred before (social and economic problems)



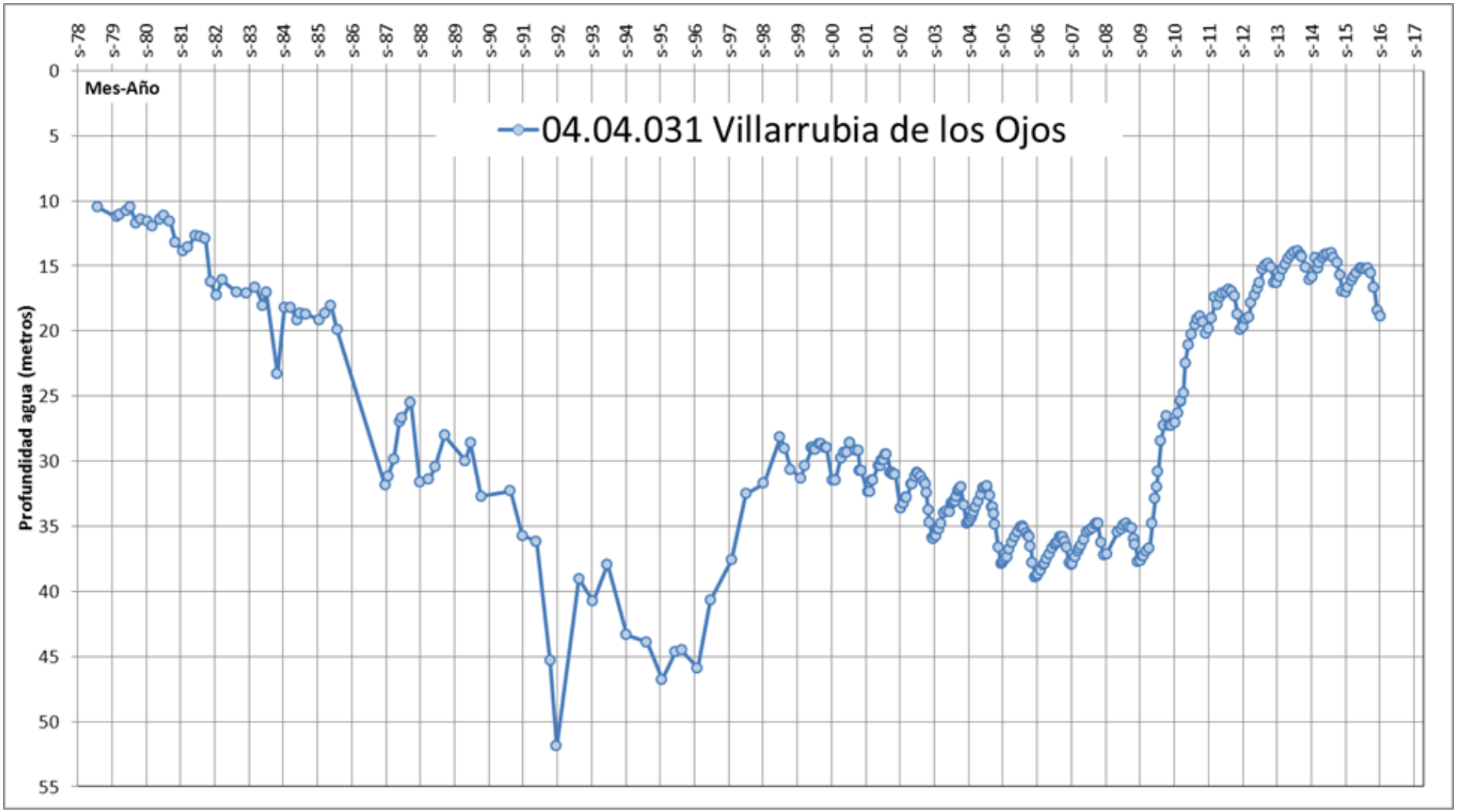
Upper Guadiana Special Plan 2008

- Its main objectives were:
  - To achieve a good status of water bodies.
  - To overcome existing structural water deficit (achieve sustainable development).
- The measures of UGSP were:
  - Purchase of water rights via WPB-CER (through public offering) (70% devoted to reduce licenses and recovery of water bodies, 30% to allocate water rights to farmers for social reasons).
  - Program of management and control measures (GMES & flow-metres).
  - Other programs: environmental restoration, economic growth, etc.
  - Expensive.
- The implementation of UGSP was very limited (budget constrains) and People asked for reforms.

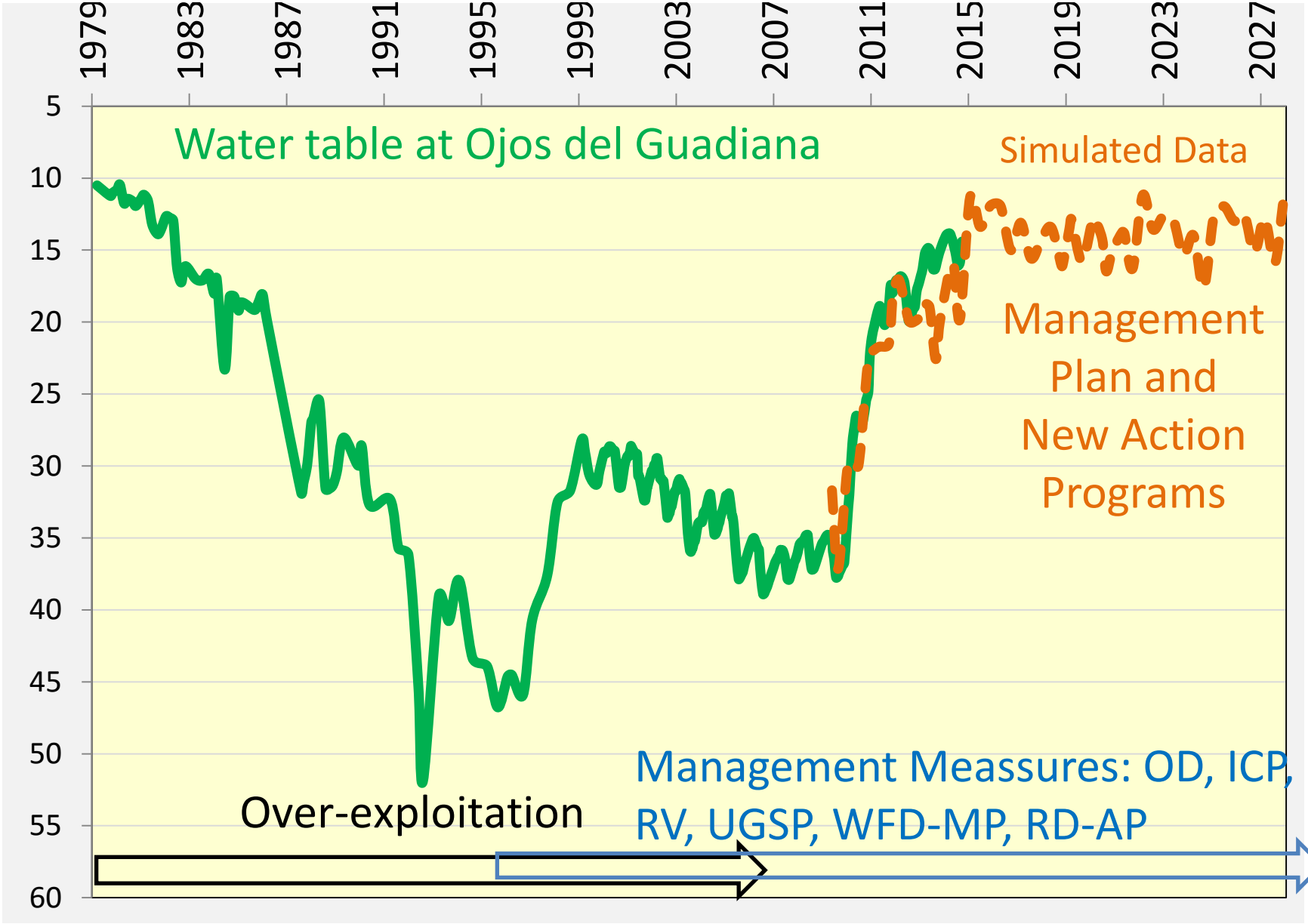
Guadiana District Management Plan 2009-2015

- Guadiana District Management Plan proposes a review of the UGSP
- The new District Plan includes a set of hydrological management measures with very little cost:
  - Transformation of private water rights into public licenses.
  - Water right-exchange system (private contracts) (Blueprint).
  - New risk situation declaration of not achieving objectives of good status to all groundwater bodies (Upper Guadiana).
  - Centre for the Exchange of Water Rights (Water public Bank).
  - Satellite Remote Sensing and flow-metres monitoring
  - Hydro-geological model (limits of abstraction, decision making aid) (water accounts Blueprint)

Quantitative status evolution since the declaration of overexploitation



Future quantitative status evolution



Conclusions

- Successive regulations and plans (hydrological and agriculture action plans), led to:
  - Reduction of water consumption
  - Shift from water intensive crops to water effective crops
- Groundwater quantitative status has impressively improved.
- New management scheme let be optimistic.

THAN YOU VERY MUCH FOR YOUR ATTENTION