

USING WATER ISOTOPES TO DETERMINE THE WATER STATUS OF LAS TABLAS DE DAIMIEL NATIONAL PARK (CENTRAL SPAIN)

Silvino Castaño¹ – Almudena de la Losa¹ – María Fe Díaz-Teijeiro² – Javier Rodríguez-Arévalo² – Héctor Aguilera³ – Pedro Martínez-Santos³

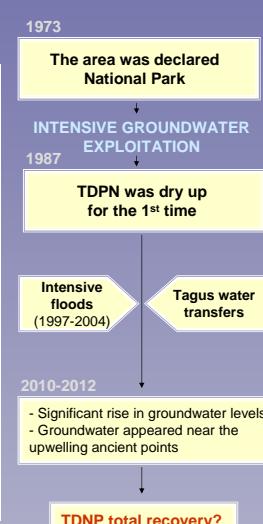
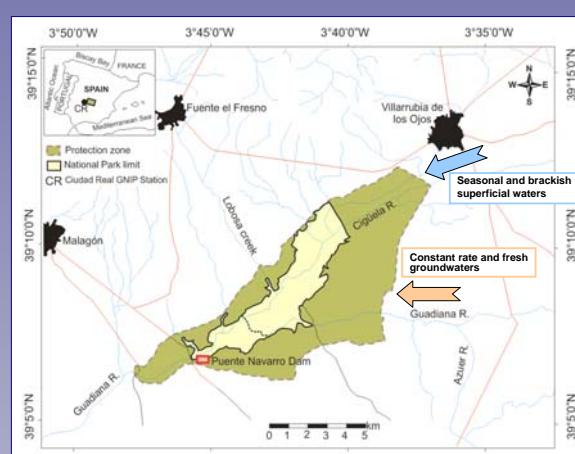
¹ Geological Survey of Spain (IGME), Ríos Rosas 23, 28003-Madrid, Spain, e-mail: s.castano@igme.es

² Centro de Estudios y Experimentación de Obras Públicas (CEDEX), Madrid, Spain

³ Universidad Complutense de Madrid (UCM), Madrid, Spain

INTRODUCTION

"Las Tablas de Daimiel" National Park (TDNP) is an emblematic wetland located in the Centre of the Iberian Peninsula, with a continental and semiarid climate. The peculiar mix of water qualities and sources and its geographical location gave TDNP a special relevance among European wetland areas as a refuge for waterfowl and plant species. It is one of the last representatives of Mediterranean wetlands linked to groundwater dynamics.



ANALYSIS OF WATER ISOTOPES (DEUTERIUM, OXYGEN-18 AND TRITIUM)

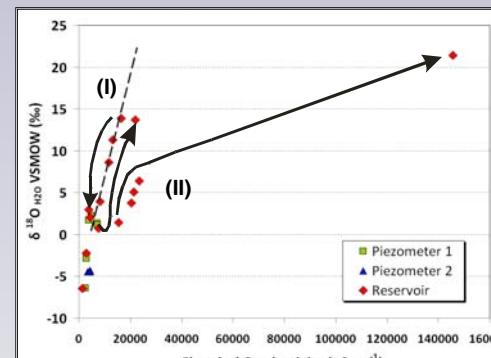
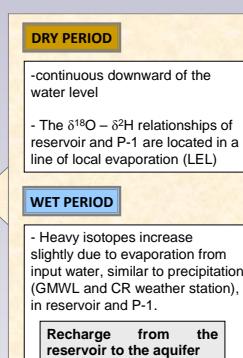
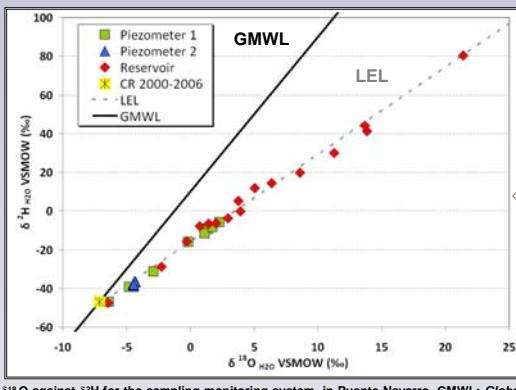
PIEZOMETRY
HYDROCHEMISTRY

RESULTS AND DISCUSSION

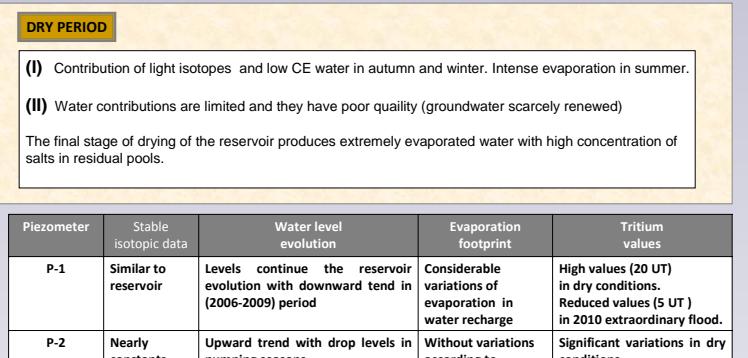
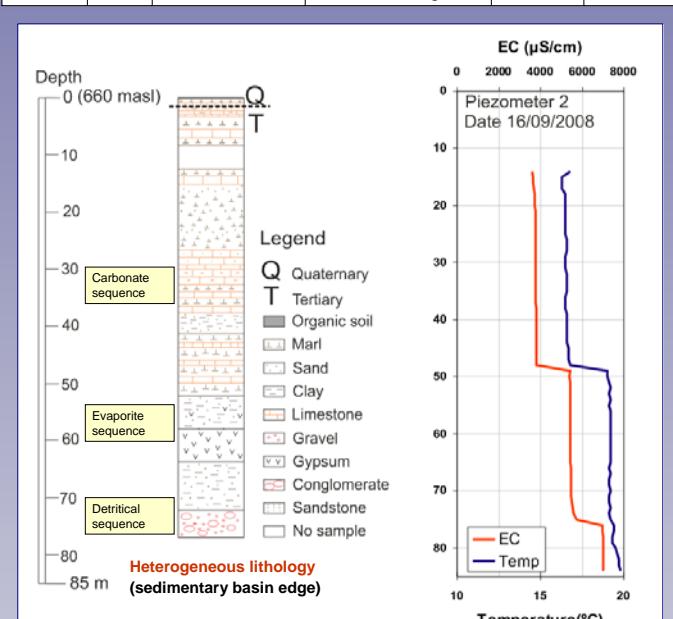
ISOTOPIC DATA 2006-2012

DRY PERIOD Until 2009 (the scarce water inputs do not reach the end of the wetland). **DIFFERENT BEHAVIOR (I) and (II)**

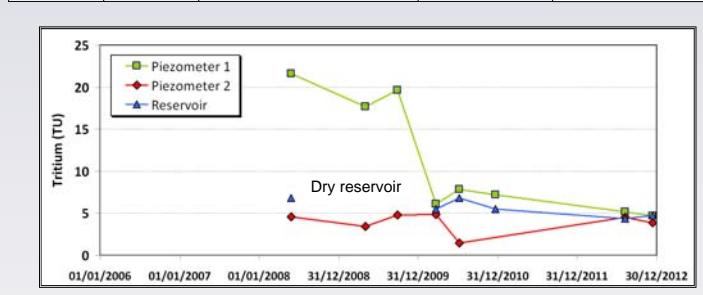
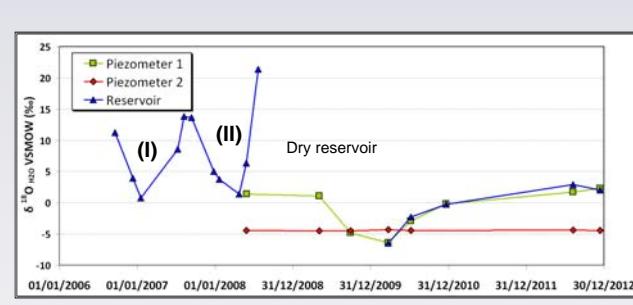
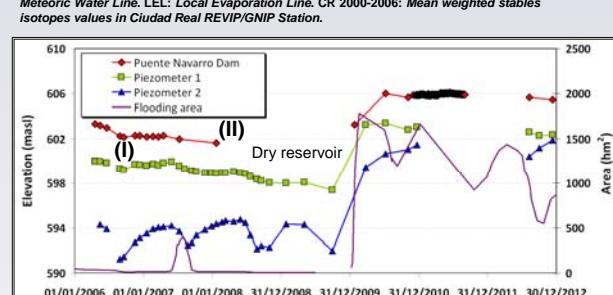
WET PERIOD In January 2010 there is an extraordinary flood that fills the whole TDNP, which remained in 2011 and 2012 in the Puente Navarro reservoir.



Piezometer	Depth (m)	Representative aquifer	Chemical parameters	EC-Temp profiles	Reservoir relationship
P-1	11 m	Waters linked to aquitards	C.E: 2240-7800 $\mu\text{s}/\text{cm}$ SO_4^{2-} : 960-3100 mg/L TOC: 7-40 mg/L	-----	Yes (similar evolution)
P-2	85 m	Regional aquifer (with local variability)	C.E: 3864-4723 $\mu\text{s}/\text{cm}$ SO_4^{2-} : 1020-1460 mg/L TOC: 0.3-9.5 mg/L	similar	No



Piezometer	Stable isotopic data	Water level evolution	Evaporation footprint	Tritium values
P-1	Similar to reservoir	Levels continue the reservoir evolution with downward trend in (2006-2009) period	Considerable variations of evaporation in water recharge	High values (20 UT) in dry conditions. Reduced values (5 UT) in 2010 extraordinary flood.
P-2	Nearly constant values	Upward trend with drop levels in pumping seasons	Without variations according to groundwater	Significant variations in dry conditions. Similar to P-1 and reservoir values in wet period.



CONCLUSIONS

- The analysis of water stable isotopes in the output zone of TDNP, from surface and groundwater samples, shows a mutual influence between the upper permeable levels and the reservoir water, while the deeper piezometer (P-2) shows a much reduced interaction with them.
- Data from 2012 show that the water of reservoir has an evaporation process which is reflected in the waters of the shallow piezometer (P-1). It seems that surface water is recharging the aquifer in the end sector of the wetland, at least until December 2012.
- Tritium values, however, do not show a clear interpretation. According to the available values, could have influence of surface water in all aquifers and even vertical flow through the piezometers. Therefore, it seems necessary to continue controlling these three sampling points, especially, to make isotopic profiles in the piezometers.

Acknowledgements

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