



**Sustainable Water
Integrated Management (SWIM) -
Support Mechanism**



Project funded by
the European Union

Water is too precious to waste

Two days training on the operation and management of WWTPs

9-10 September, Murcia

River Basin Management in Southern Spain, The Segura River

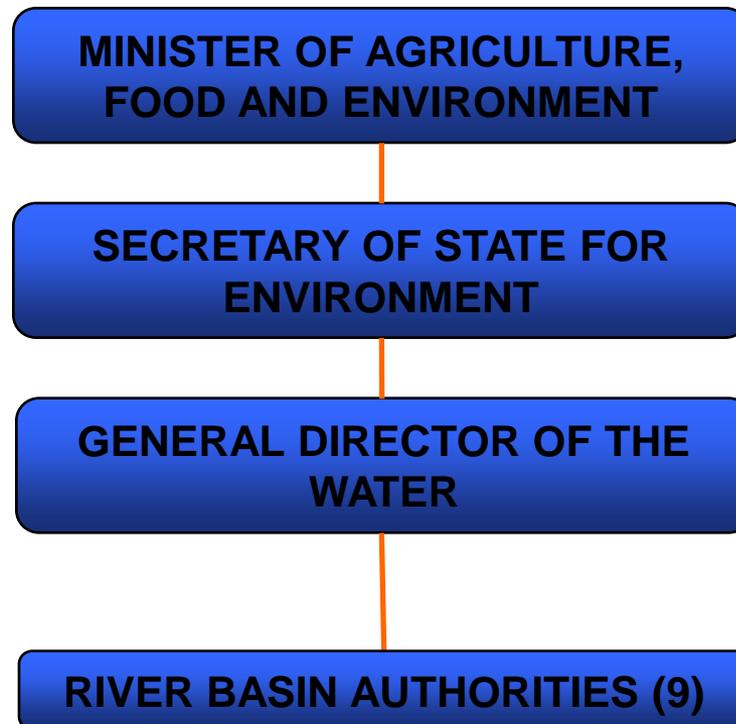
Presented by: Ana Romero Barahona

RIVER BASIN DISTRICTS IN SPAIN



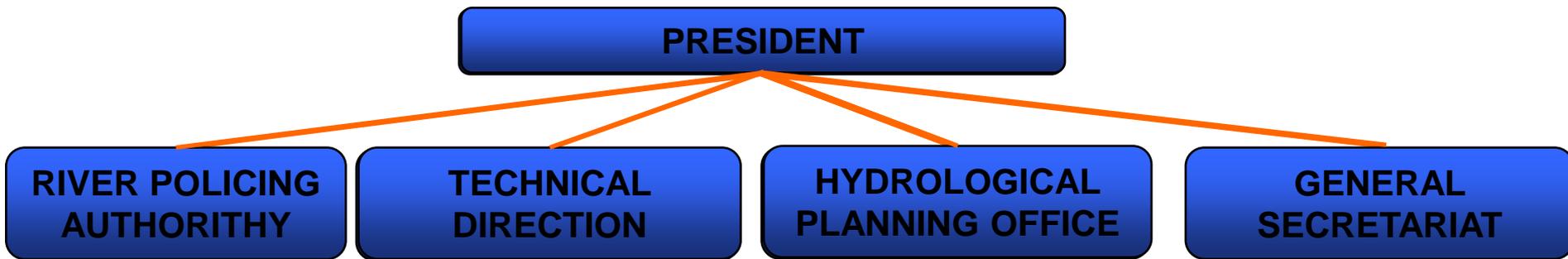
STRUCTURE AND FUNCTIONS

The Segura River Basin District is an autonomous organism of the State General Administration, assigned, for administrative effects, to the Ministry of Agriculture, Food and Environment



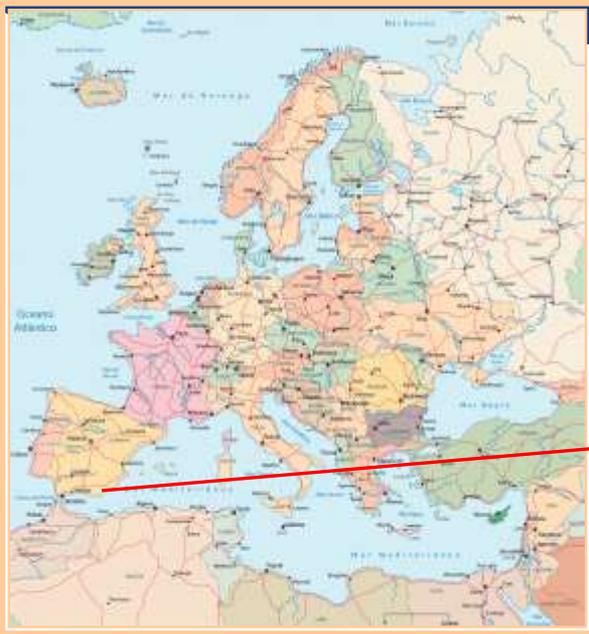
STRUCTURE AND FUNCTIONS

Under the direction of the President, there are four Units in charge of the different tasks assigned to the Organism.



The main tasks carried out are: the management of hydrological resources; administration of the hydraulic public domain; protection and monitoring of water bodies; river basin planning; and the construction and maintenance of hydraulic infrastructures

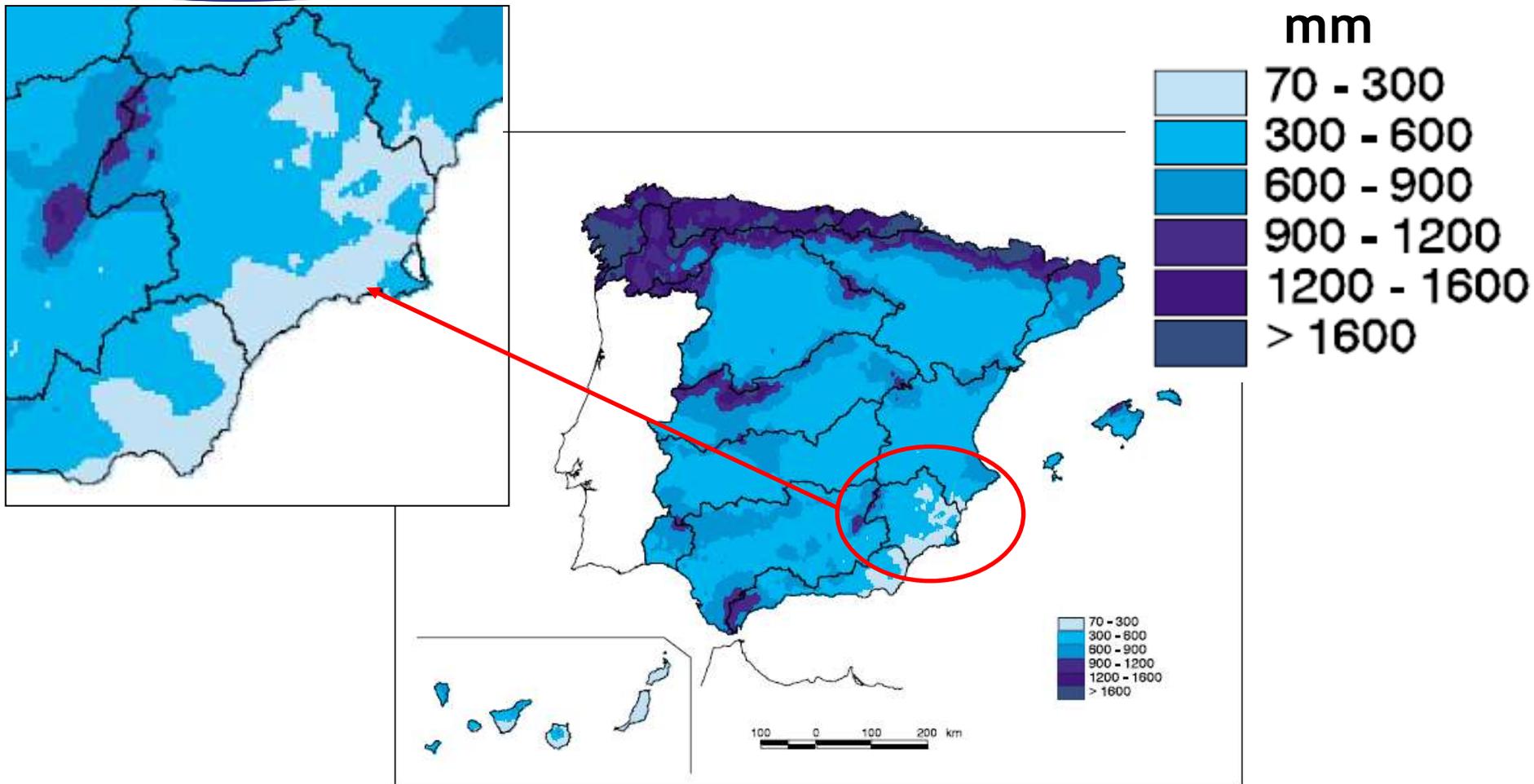
RIVER BASIN CHARACTERIZATION



SURFACE (Km²)	18.815
POPULATION THAT DEMANDS RESOURCES FROM SEGURA RIVER BASIN (inhabitants). Year 2009	1.969.370
SUMMER POPULATION (inhabitants). Year 2009	> 2.500.000
TOTAL LENGHT OF CHANNEL NETWORK (Km)	1.470
IRRIGATION SURFACE (ha)	269.029
SOURCES OF WATER RESOURCES (Hm³)	Surface waters : 640, Groundwater: 220 Reuse: 110, TAJO-SEGURA WATER TRANSFER: 540

RIVER BASIN CHARACTERIZATION

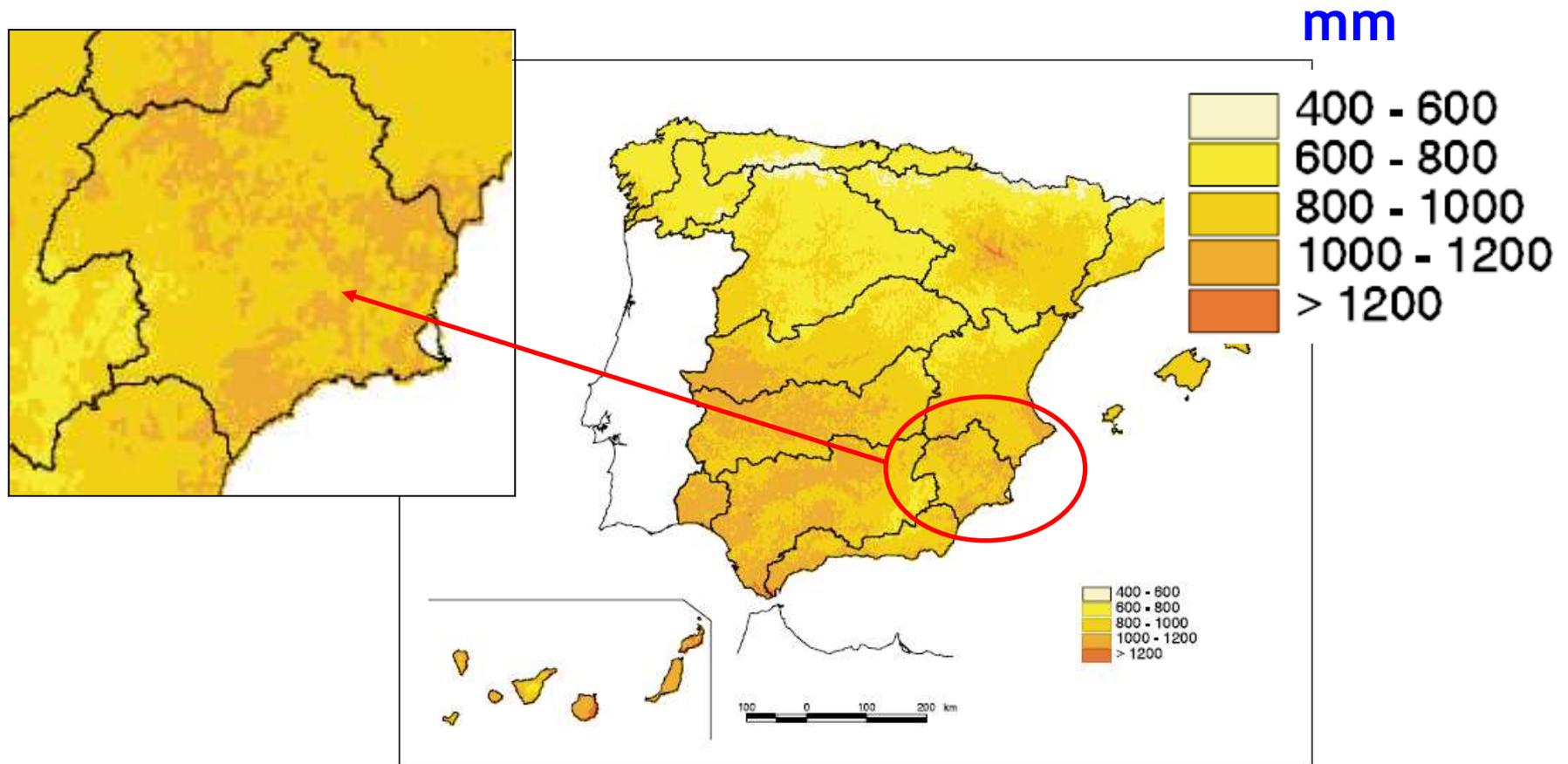
The South East of Spain receives less **RAINFALL** than the rest of Iberian Peninsula, due to Foëhn effect.



Average annual rainfall: 365 mm in the Segura River Basin

RIVER BASIN CHARACTERIZATION

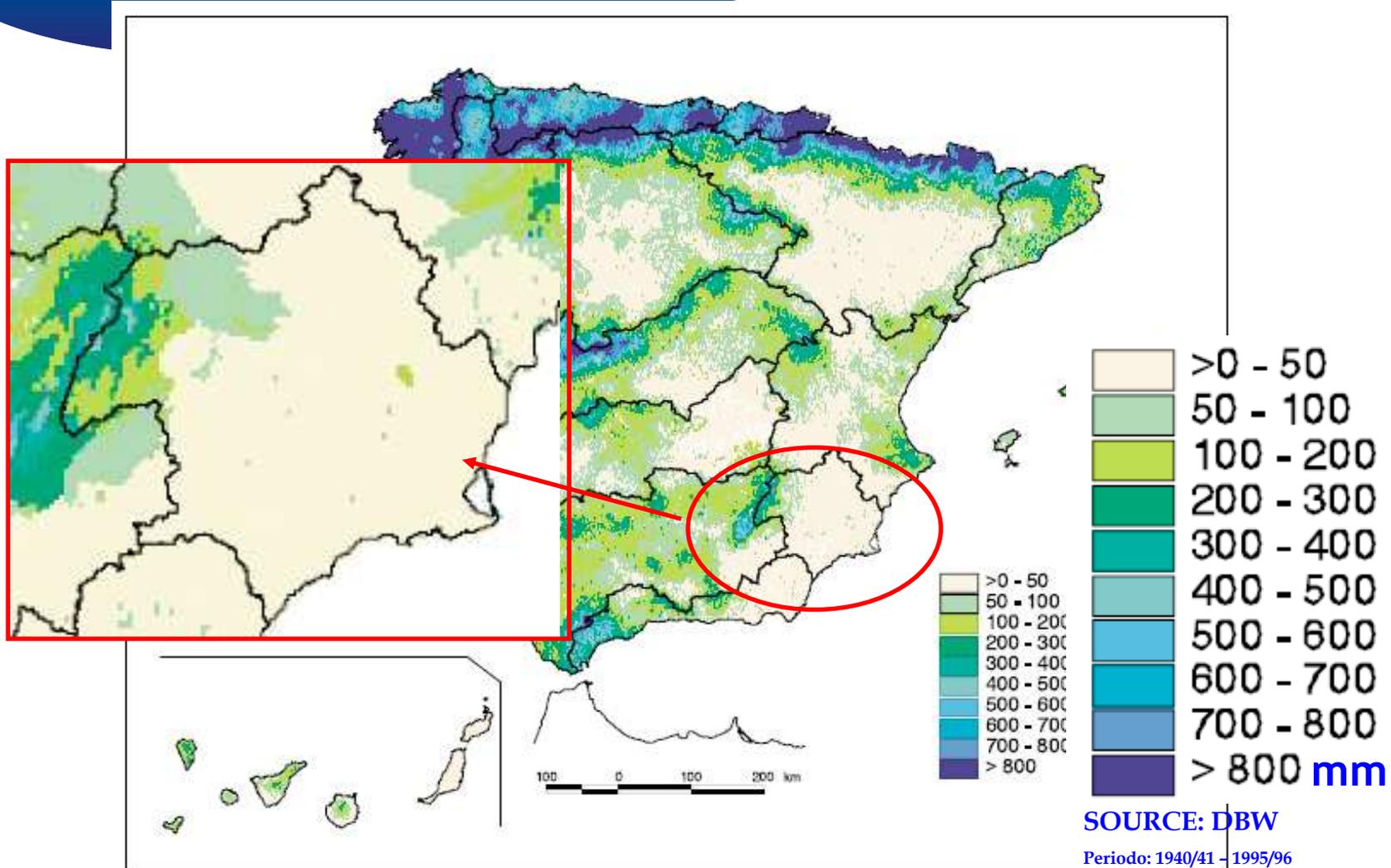
The high isolation generates a **POTENTIAL EVAPOTRANSPIRATION (PET)** similar to the Spanish average.



Average Annual PET: 827 mm in the Segura River Basin

RIVER BASIN CHARACTERIZATION

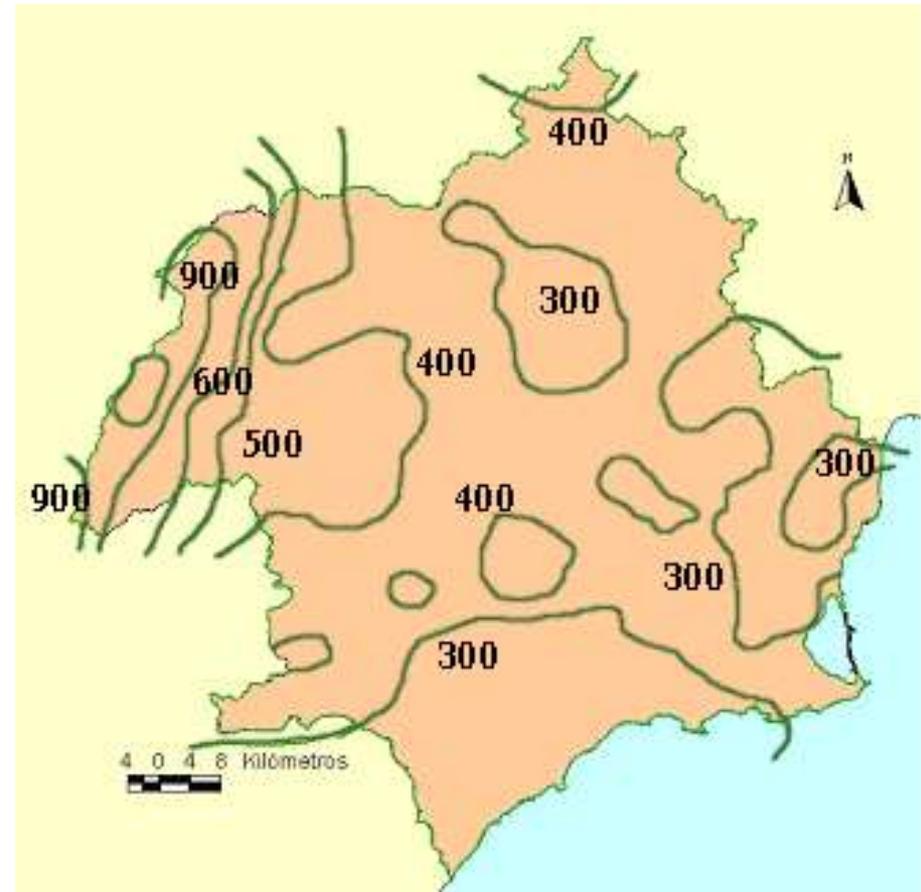
Only in the headwaters of the basin, the **RUNOFF** is significant



Average total runoff < 100 mm in Segura River Basin

RIVER BASIN CHARACTERIZATION

Great climatic contrasts, frequent droughts, torrential rains, recurrent floods, high temperatures and heavy frosts.



Average annual precipitation (mm/year)

CLIMATIC CONDITIONS: DROUGHTS



Fuensanta reservoir (2005)

Taking into account those characteristics, a Special Plan for Situations of Alert and Temporary Drought in the Segura River Basin (P.E.S) has been approved (21st of march 2007). The Special Plan is included in the Programme of Measures, according to the WFD.

Uncertainty is a characteristic of water resource availability in the Segura river basin, and the average water flows are insufficient. Whether it is due to natural causes or as a result of climatic changes caused by human activity, these particularly dry events seem to have become more frequent and more persistent over recent years.

CLIMATIC CONDITIONS: FLOODS

Seasonal cold fronts cause flash floods [known in Spanish as gotas frías, literally “cold drops”]. They usually happen during the months of October and November, due to the combined action of high temperature of the Mediterranean Sea, and the presence of cold air at a high altitude.



The last flooding in the Segura River Basin: 28th september 2012

MAIN HYDRAULIC RESOURCES

1. Surface water (Segura river and tributaries)



2. Groundwater



3. Tagus-Segura aqueduct

MAIN HYDRAULIC RESOURCES

4. Wastewater reuse



5. Seawater desalination

WASTEWATER REUSE



Advantages: Supply guarantee. Renewable resource.

Mainly used in irrigation.

Disadvantages: Not a significant increase in quantity, but making global management more efficient. Some associated costs for users.

مع خالص شكري
وامتناني

Thank you
for your attention

Merci pour
votre attention



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