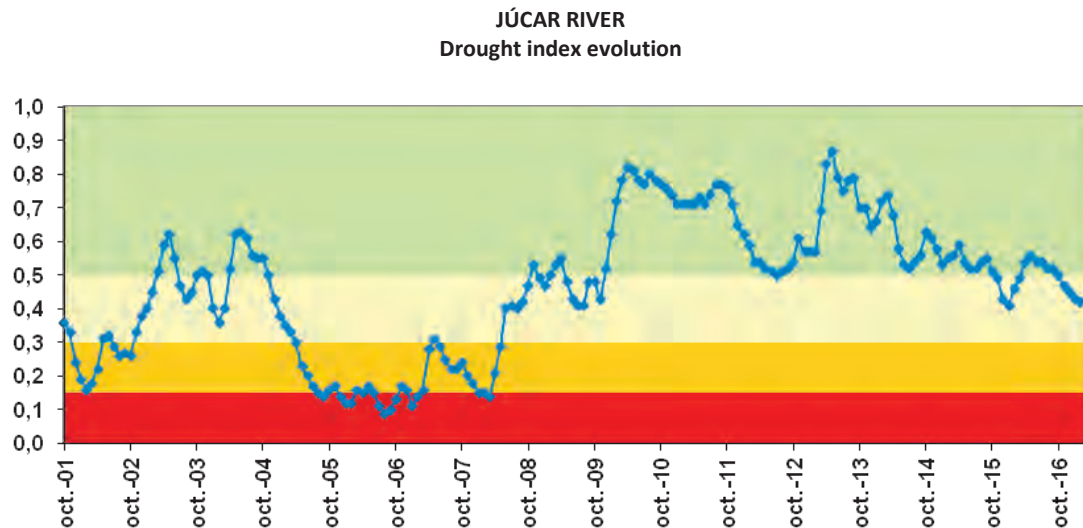


14. SUBSIDIARY PLANS: DROUGHTS

Indicator system of the Special Drought Plan

The Júcar River Basin Authority developed the Special Action Plan against alert and potential Drought situations, known as the Special Drought Plan (SDP), approved in 2007 by the Order MAM/698/2007, dated March 21, in accordance with article 27 of the Law 10/2001, dated July 5, of the Spanish National Hydrological Plan.

The SDP establishes an indicators system that allows to predict drought situations and assess the severity these situations present, as well as to serve as a general reference of the formal declaration of drought situations and for the hydrological status assessment of the water resources systems. This prediction and alert system allows to activate in time the management measures that must contribute to minimise the effects of the drought. The indicators may take normal, pre-alert, alert or emergency values. The following figure shows, by way of illustration, the time evolution of the hydrological status indicator of the Júcar water resources system, where the red colour indicates values below the emergency threshold.



Evolution in the Júcar system status indicator

The Follow-Up Reports of Drought Indicators in the territorial scope of the Júcar River Basin Authority, which may be found in the drought section of the Water Information System of JRB (SIA_Júcar), are published monthly and can be accessed through the URL <http://aps.chj.es/ideJúcar/>.

Drought impact prevention and mitigation measures

Mitigation measures defined in the SDP that are activated have a different nature and impact depending on the status of the water resources system and the severity of the drought period. At a pre-alert situation, monitoring and information measures. At an alert situation, resource conservation measures. At an emergency situation, restriction measures. Once the most severe phase of the drought has been overcome, the necessary measures will be taken, as soon as possible, to return water bodies to their previous status before the drought situation. The following table shows the most relevant measures planned in the SDP.

Pre-alert measures	Alert measures
To promote voluntary water-saving campaigns in the supply. To promote voluntary water-saving campaigns among the irrigators. To speed up the development of new drought infrastructures already planned.	Increase of groundwater abstractions. Non-conventional resources: Sustainable reuse. Non-conventional resources: Maximum summertime desalination. Reduction of the volume of surface water supplied for irrigation. Savings in the volume of surface water supplied. Environmental measures: Monitoring plan.
Emergency measures	
Groundwater abstractions: To increase abstractions. Non-conventional resources: Maximum reuse. Non-conventional resources: Maximum potential desalination. Alternative supplies being provided. Restriction of the volume of surface water supplied for irrigation. Restriction of the volume of surface water supplied. Activation of the rights Exchange Centre to ensure the supply and to preserve the water environment. Environmental measures: Police plan and monitoring of the public hydraulic domain.	

Measures of prevention and reduction of drought impact per scenario

Review of the Special Drought Plan

The review of the Special Drought Plan has been scheduled for 2018 as established in the first final provision of the Royal Decree 1/2016, of January 8, approving the review of Hydrological Plans.



Image: Marina Baja desalination plant in Mutxamel

The Special Drought Plan foresees an increase in non-conventional resources (by means of reuse or desalination) in alert or emergency drought situations.

The Marina Baja desalination plant, located in Mutxamel, started to operate in the summer of 2015 with the objective of solving the supply problems caused by the drought in Marina Baja.

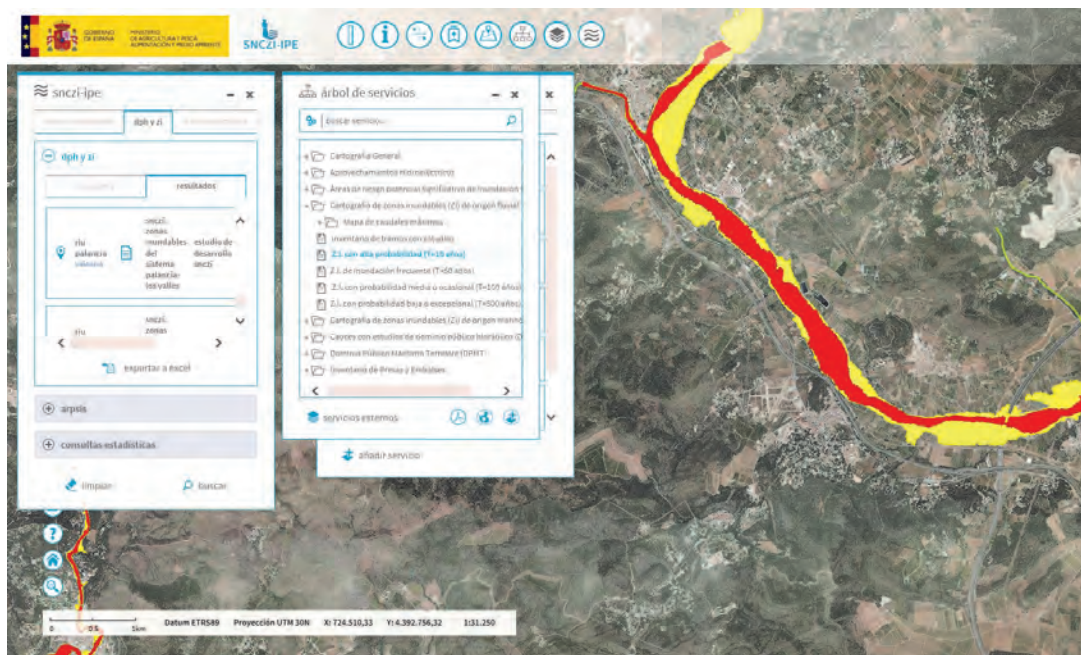
14. SUBSIDIARY PLANS: FLOODS

Introduction

Article 62 of the Hydrological Planning Regulations establishes that hydrological plans will take into consideration the plans conducted under the territorial scope of the District related to the protection against floods, and a summary of these plans will be attached, including the risk assessment and the measures taken. This summary has been included in the report of the plan. The planning and management of floods is conducted through the Royal Decree 903/2010, of July 9, which transposed into the Spanish law the Directive 2007/60/CE and establishes that flood risk management plans should be conducted in three phases.

Hazard and risk mapping

After a preliminary flood risk assessment phase, where an identification of the significant potential risk areas is conducted, flood hazard and risk maps of river origin are prepared, which may be accessed in the Water Information Systems of the JRB (SIA-Júcar) and are part of the National Flood-Prone Areas Mapping System (NFPAMS), which may be viewed in the website of the Ministry of Agriculture, Fisheries, Food and Environment, in the section: <http://sig.magrama.es/snczi/>



Example of flood-prone areas map. Palancia River. Image from the SNCZI viewer

Flood risk management plans

The third and last phase consists in the preparation of the Flood Risk Management Plan (FRMP). The FRMP of the Júcar River Basin District was approved by the Royal Decree 18/2016.

The core content of the FRMP is the programme of measures and it adheres to the provisions of Royal Decree 903/2010, i.e., it covers all flood risk management issues, focusing on prevention, protection and preparation including flood forecasting and the early warning systems, and taking into account the characteristics of the river basin or sub basin being considered. The table below shows the different types of measure considered as per the classification established by the European Commission.

Risk management aspects	Type of measure
No action	No action
Prevention	Territorial planning
	Transfer and relocation of incompatible land uses
	Adaptation of land uses to the flood risk
Protection	Other actions
	Measures to decrease flows, improve infiltration, recover river space, etc.
	Construction, optimisation and/or removal of works regulating flows, to be studied in each case
Preparation	Construction, optimisation and/or removal of longitudinal works in the course and/or flood plain, to be studied in each case
	Improvement of the reduction of flooded surfaces, e.g., through the Sustainable Urban Drainage Systems
	Other actions
Recovery and assessment	Prediction and alert systems
	Emergency action plans
	Population awareness and preparation
Recovery and assessment	Other actions
	Recovery of human and material damage, victim support system, insurance policies, etc.
	Recovery of environmental damages, decontamination, etc.
Recovery and assessment	Assessment of lessons learned

Types of flood measures according to the European Commission



Image: Palancia River in Sagunt

Torrential rain episodes, as those occurred in March 2015, are frequent in the Júcar River Basin District.

The measures included in the Flood Risk Management Plan should serve, primarily, to increase flood risk perception, improve administrative coordination and predictive capacity against flood events, contribute to improve the territorial planning, achieve risk reduction, improve resilience and decrease the vulnerability of the elements located in flood-prone areas, and to contribute to improve or maintain a good water body status by improving its hydromorphology.