Proposing an implementation of a climate change adaptation strategy at river basin district scale. Application to the Jucar River Basin District

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Aim

Impacts on water resources produced by climate change can be exacerbated when occurring in regions already presenting low water resources levels and frequent droughts.

The aim of this work is the evaluation and implementation of a climate change adaptation river basin plan with the purpose of reducing risks and improve resilience in water sector.

Climate Change River Basin Adaptation Plan: Stages

Climatic and hydrological characterization: *Current and future climate*

Impact identification

2020

Risk assessment: *crossing between vulnerability of a territory and hazards of climate change*

Measures to reduce vulnerability: *facing the lack of water availability, the greater risk of eutrophication, loss of biodiversity…*

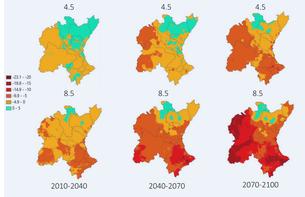
Action program for adaptation to climate change: *adaptation measures collection*

2021

Case of study: Jucar River Basin District

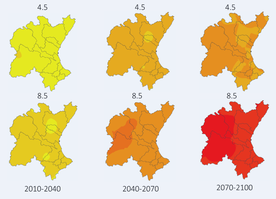
- Mediterranean basin of 44.892 km^2 (Eastern Spain).
- High share of crop land (about 42%) and natural vegetation (50%).
- Vulnerable equilibrium between the available resources and the total demand.
- Two different climate areas: continental and Mediterranean.

Precipitation anomaly:



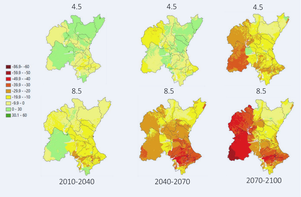
Precipitation	Short Term	Medium Term	Long Term
RCP 4.5	-1%	-3%	-5%
RCP 8.5	-4%	-7%	-10%

Temperature anomaly:



Temperature	Short Term	Medium Term	Long Term
RCP 4.5	0.9ºC	1.7ºC	2.1ºC
RCP 8.5	1.1ºC	2.3ºC	4ºC

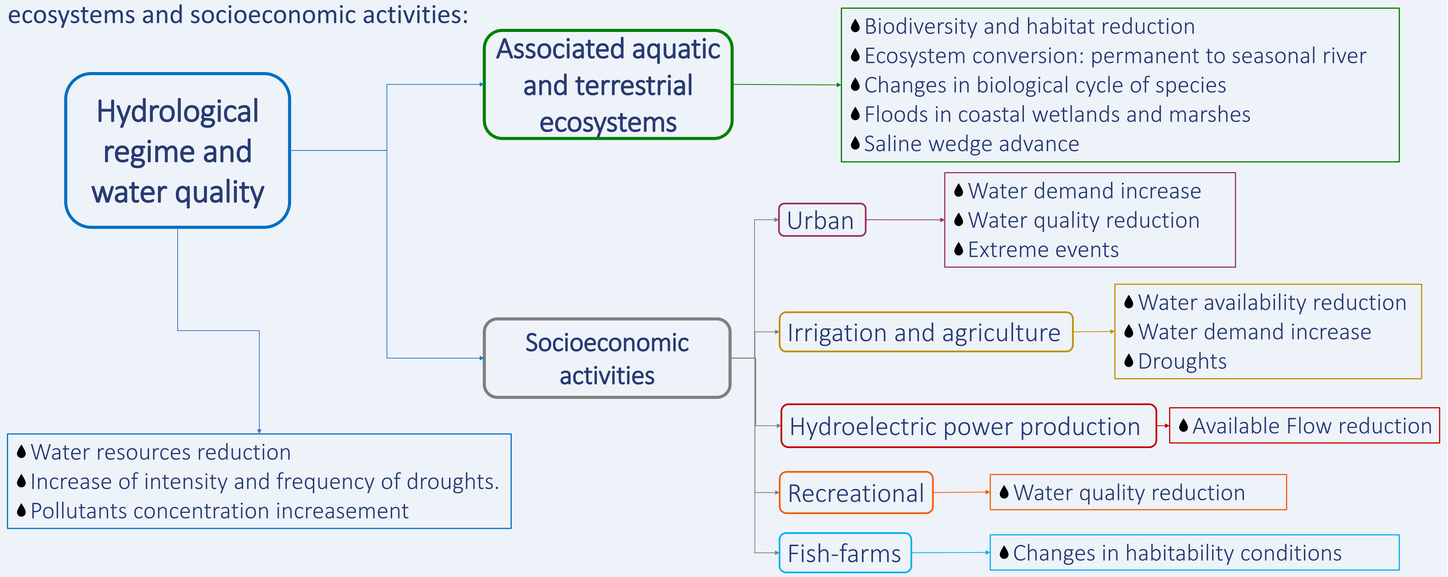
Runoff anomaly:



Runoff	Short Term	Medium Term	Long Term
RCP 4.5	-4%	-10%	-20%
RCP 8.5	-10%	-25%	-35%

Material and Methods

Climate Change impacts affect hydrological regime and water quality and consequently it has effects in aquatic and terrestrial ecosystems and socioeconomic activities:



In order to analyze the climate change impacts at river basin scale some indices must be designed and assessed. Combined use of uncertainty and vulnerability indices allows the decision makers to obtain information concerned to the climate change risk at river basin scale, when designing a portfolio of measures.

Results and conclusions

A Climate Change River Basin Adaptation Plan is an action plan composed of a compound of specific measures for each water resource system.

Specific measures have been established to reduce the vulnerability associated to the diminishment of water resources, the increment of the drought's frequency and magnitude, the reduction of biodiversity and the affection in the socioeconomic activities.

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