RECENT CHANGE IN WATER RESOURCES AND FUTURE SCENARIOS

Connection with climate change processes in three hydrological basins of Catalonia (NE Spain) affected by different water management

Zabalza, J., Vicente-Serrano, S.M., Borrás G., Pla E., Pascual, D., Funes, I., Savé, R., Biel, C.

Adaptant la Mediterrània al Canvi Climàtic

LIFE12 ENV/ES/000536
Demonstration and validation of innovative methodology for regional climate change adaptation in the Mediterranean area

Edinburgh. May 28th, 2015

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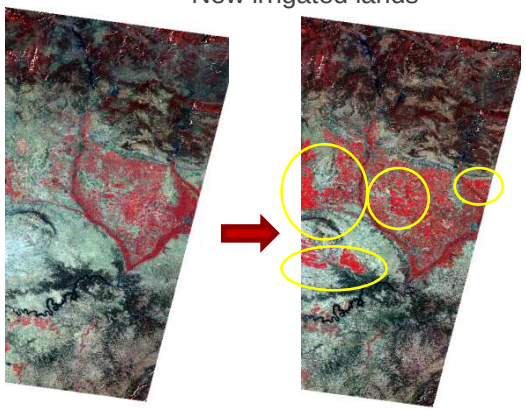
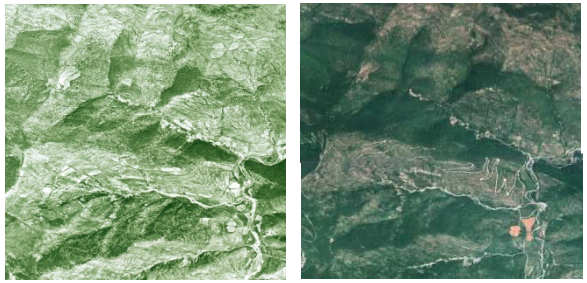
- New irrigated lands



1984 2008

- Revegetation of abandoned crop land



1957 2008

- Tourism areas: high and stational population pressure

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What has happened with water resources?

What will happen in the future?

Are the actual strategies and demands sustainable?

What adaptative measures can be taken?

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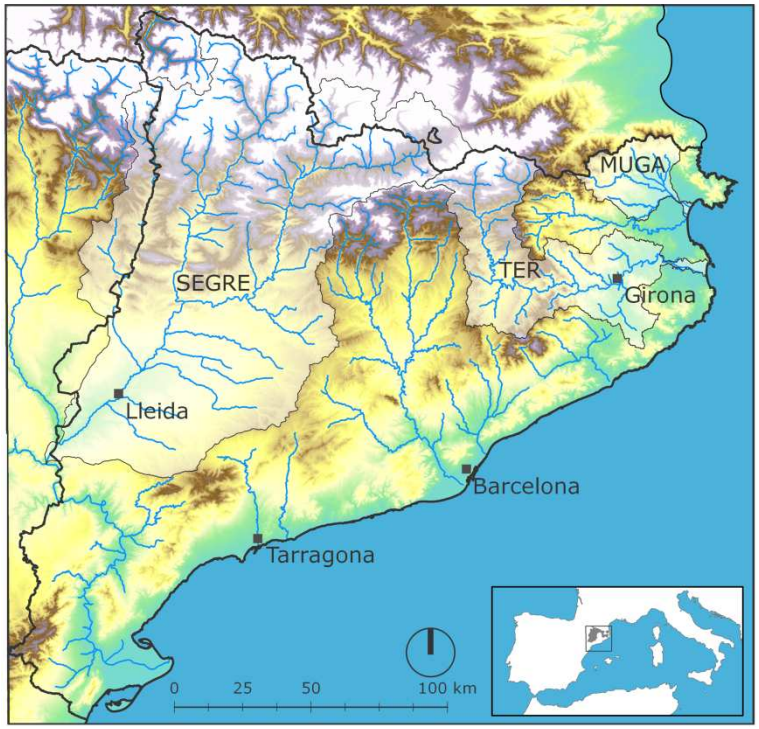
Project

MEDACC is a 5-year **LIFE+** project where some innovative solutions **will be tried** to **adapt** the **agroforest** and **urban** systems to the climate change impacts through demostrative actions in three basins of Catalonia.



Oficina Catalana del Canvi Climàtic

CREAF

IRTA RECERCA I TECNOLOGIA AGROALIMENTÀRIES

IPE INSTITUTO PIRENAICO DE ECOLOGÍA CSIC

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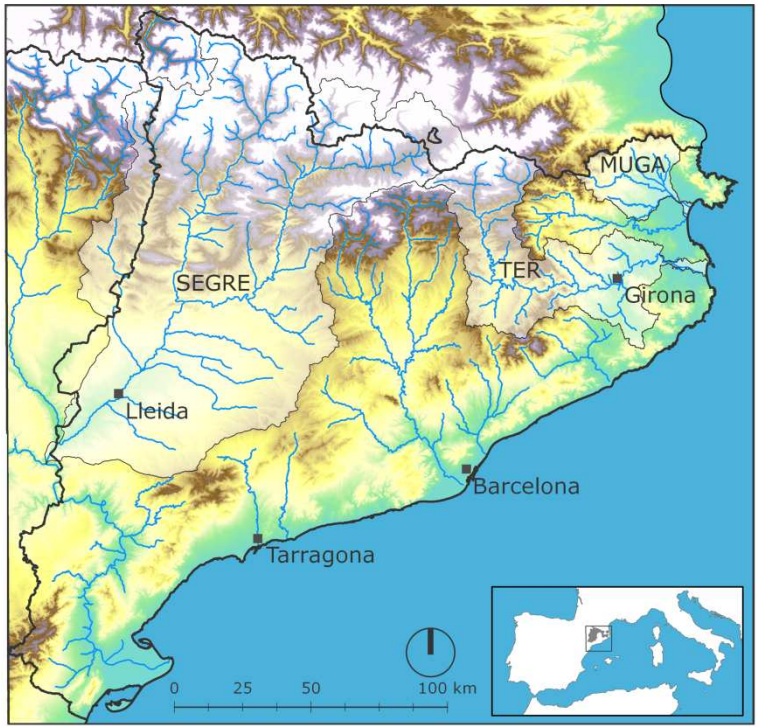
Project

- To check the **impacts** and **vulnerability** within the three basins facing up the climate and landuse changes.

- To diagnose and evaluate the **adaptative measures** applied in the past.

- To propose a climate change adaptation strategy based on an action plan development.

- To involve the **actors** linked to the basins from the establishment of a **Management and Monitoring Committee** and the development of participative activities.



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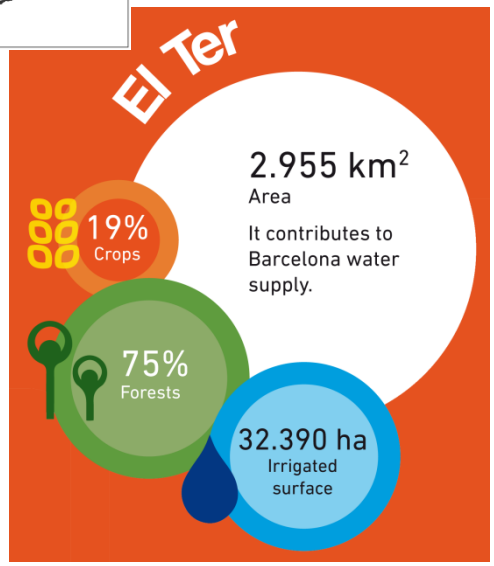
- Agricole use ... 75% w.d.
- Urban use ..... 20% w.d.
- High stational pressure
- Water abstractions
- Hidrologic drougth periods



- >50% water to Barcelona
- Urban use ..... 76% w.d.
- Ecological flow

- Agricole use ... 95% w.d.
- Ground water quality
- Ecological flow

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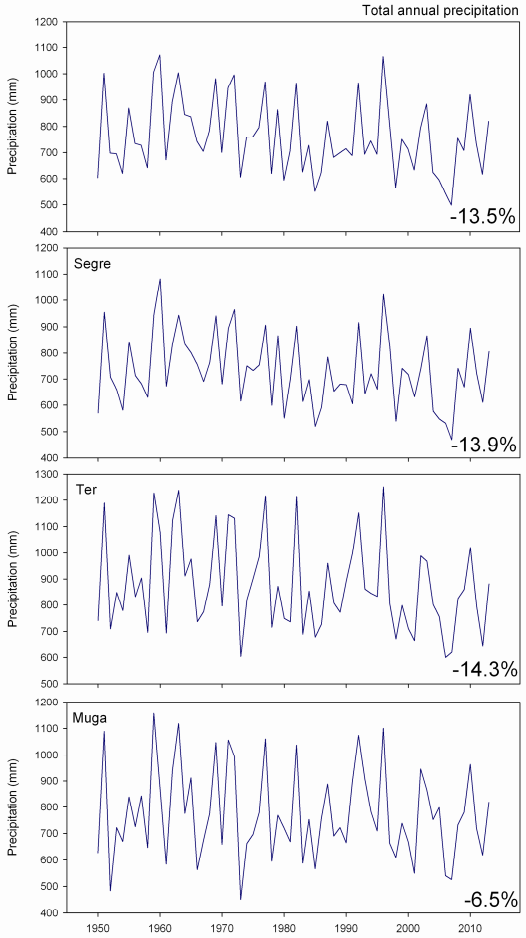
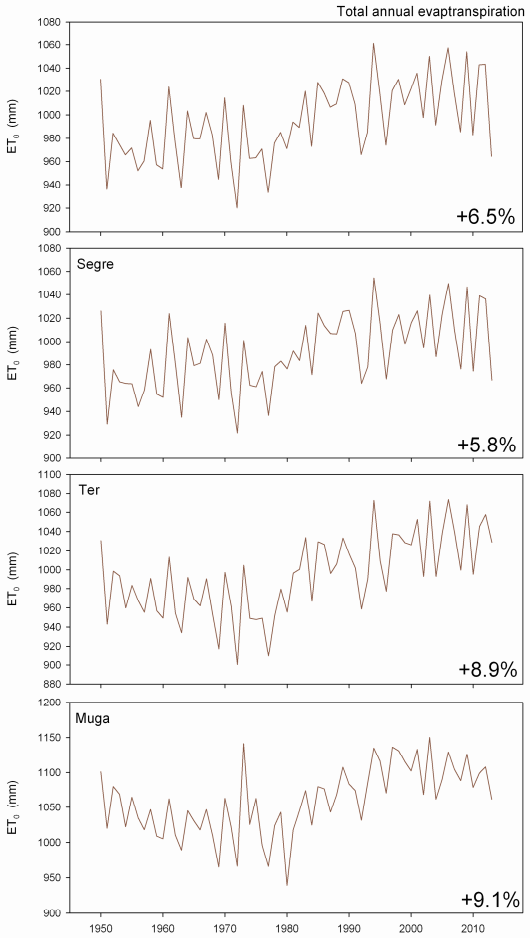
Climatic evolution





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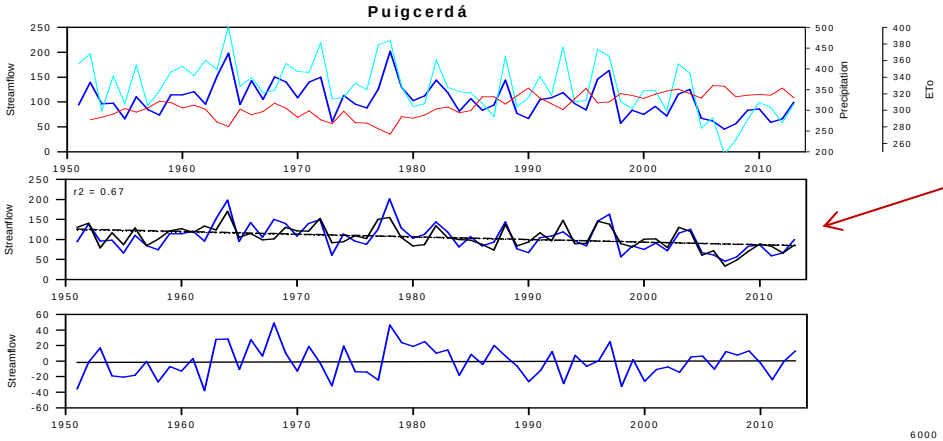
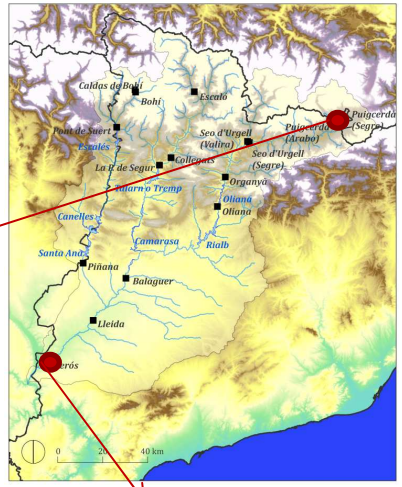
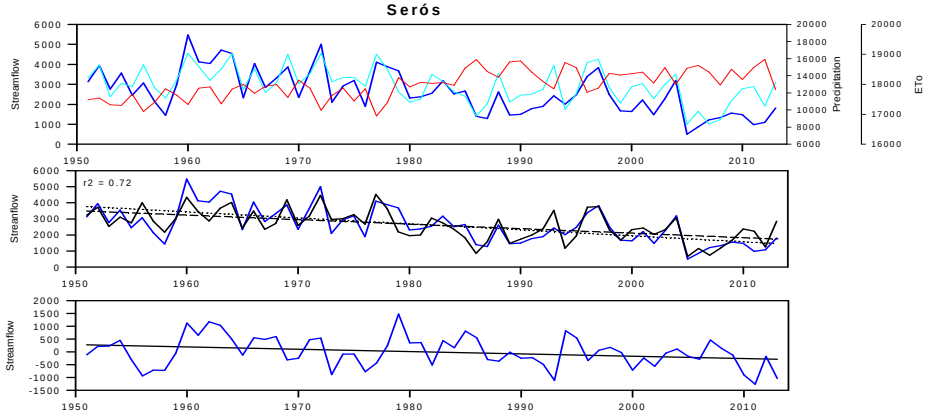




Climate trends



Climate trends + demand

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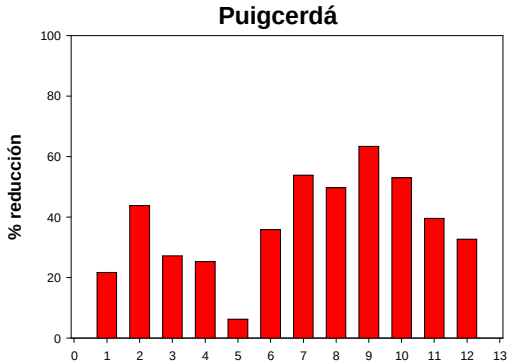
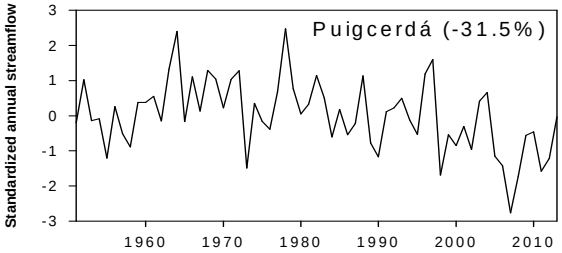
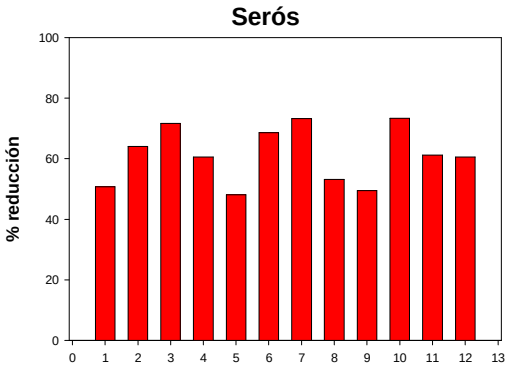
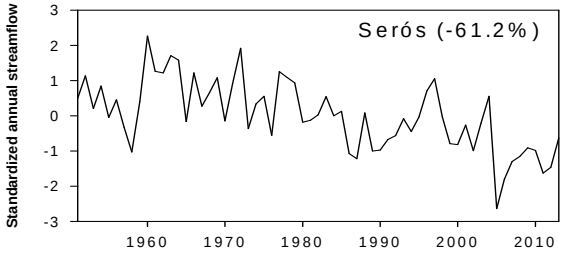
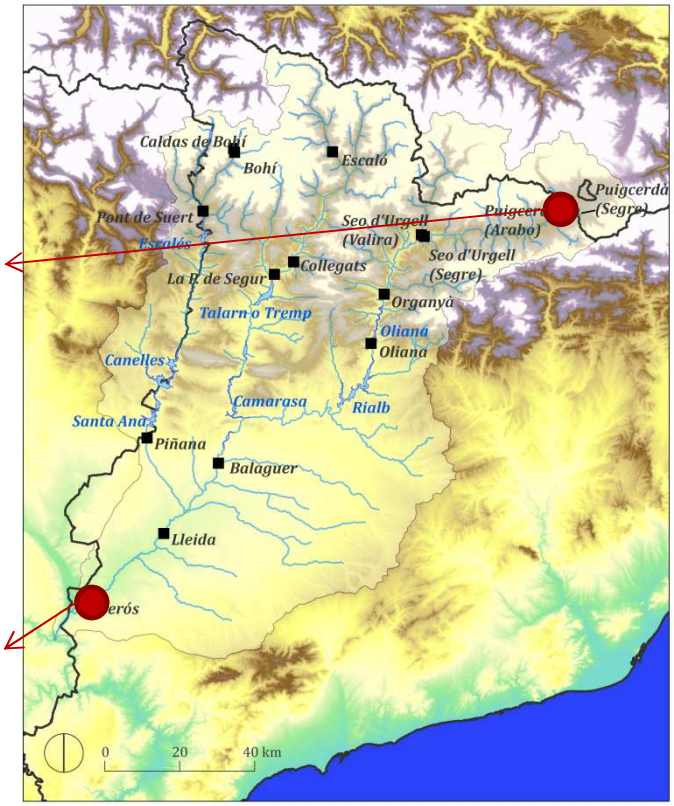
Generalized decreasing trend in the river flows











Climate projections

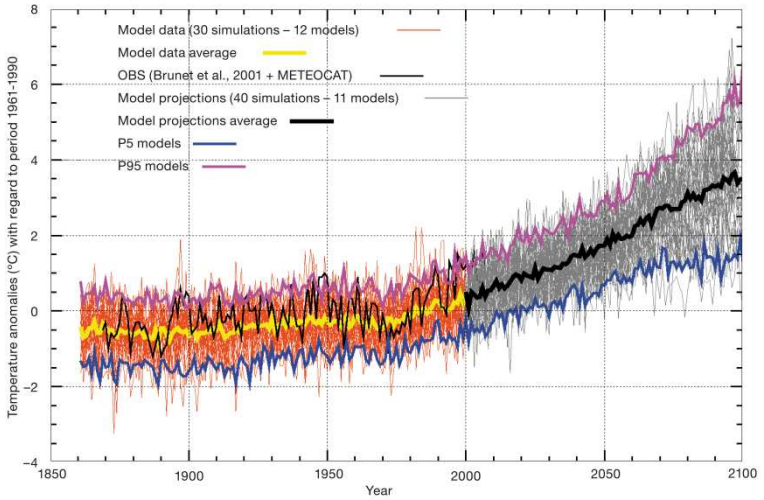


Figure 6. Evolution of annual mean temperature anomalies for the whole of Catalonia for the period 1860-2100 obtained from simulations of different global climate models developed within the fourth IPCC report. The anomalies are calculated with respect to the reference period 1961-1990. (OBS: observed; MAT: mean annual temperature).

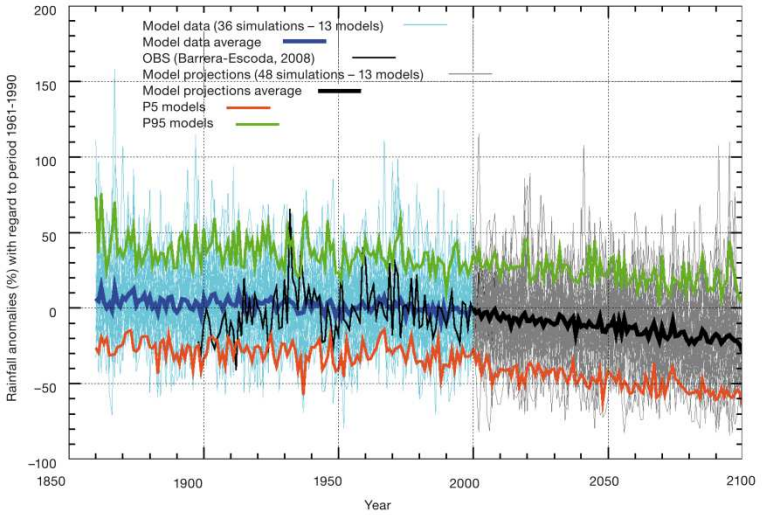
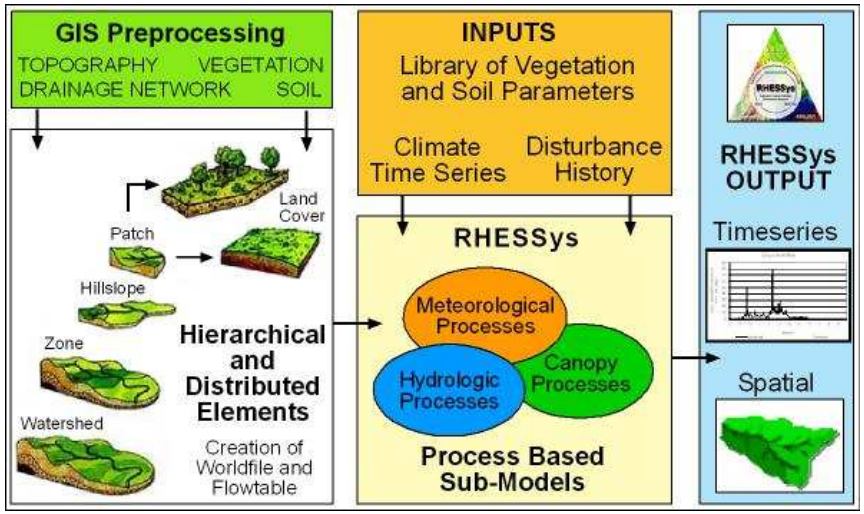
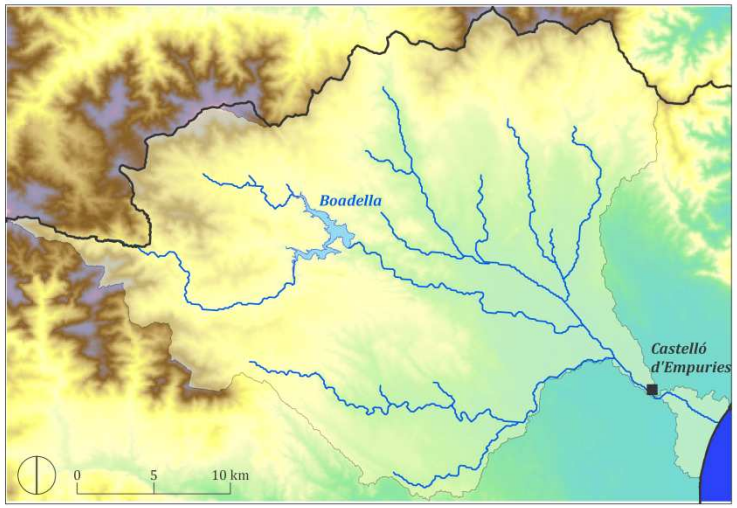


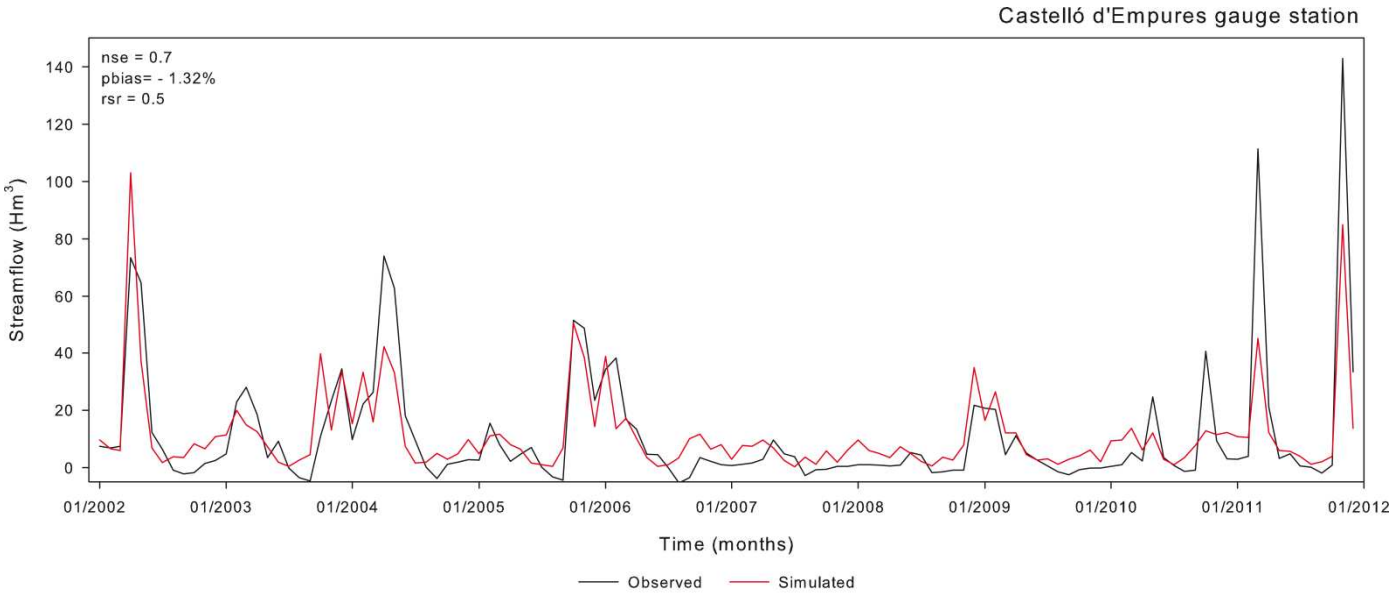
Figure 7. Evolution of annual mean temperature anomalies (a) and precipitation (b) for the whole of Catalonia for the period 1860-2100 obtained from simulations of different global climate models developed within the fourth IPCC report. The anomalies are calculated with respect to the reference period 1961-1990. OBS, observations; MAR, mean annual rainfall).

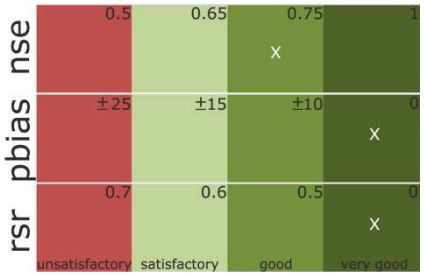
Ecohydrologic simulation



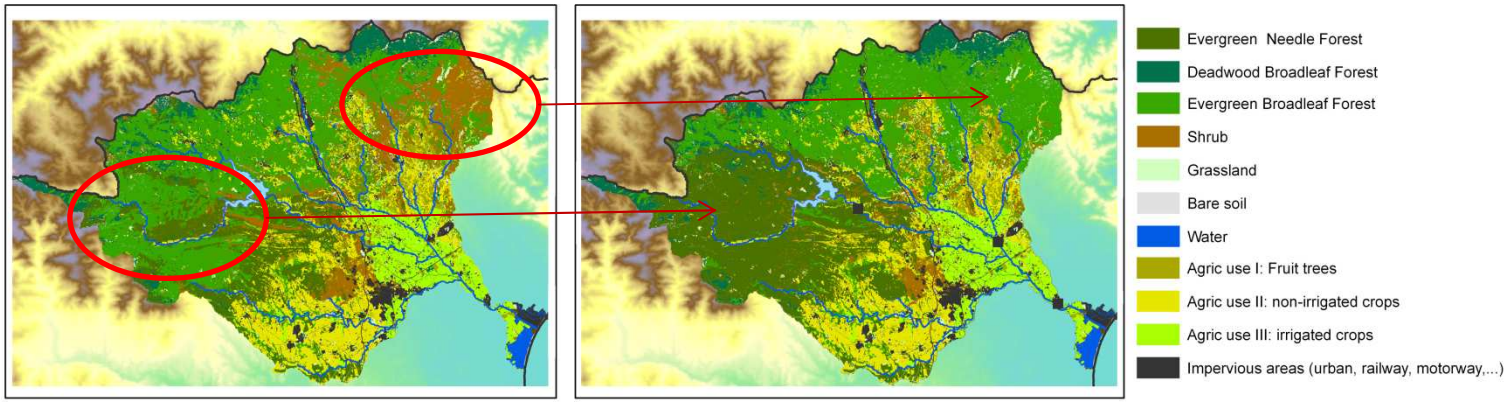


Calibration





Landuse and climate change



Actual scenario

Revegetation scenario

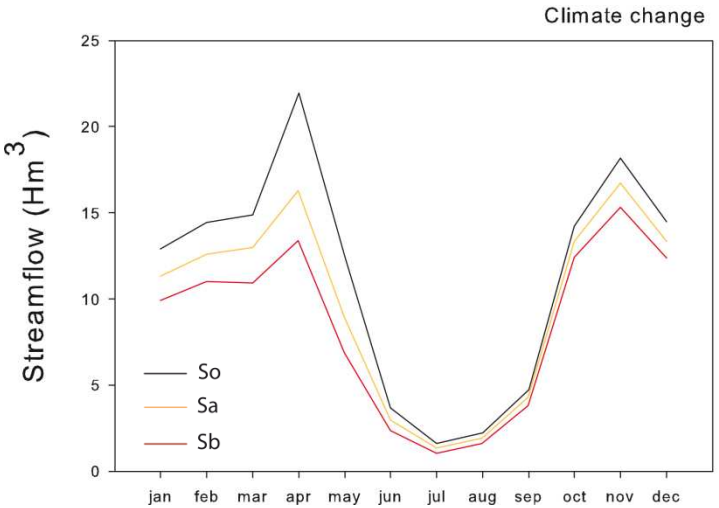
Shrub ➔ EBF

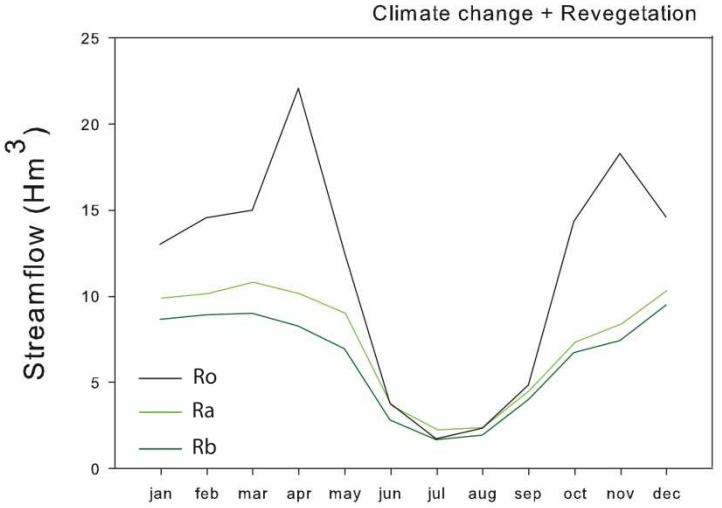
EBF ➔ ENF

Temperature changes: +1 +2 +3 (ºC)

Precipitation changes: -20 -10 +10 +20 (%)

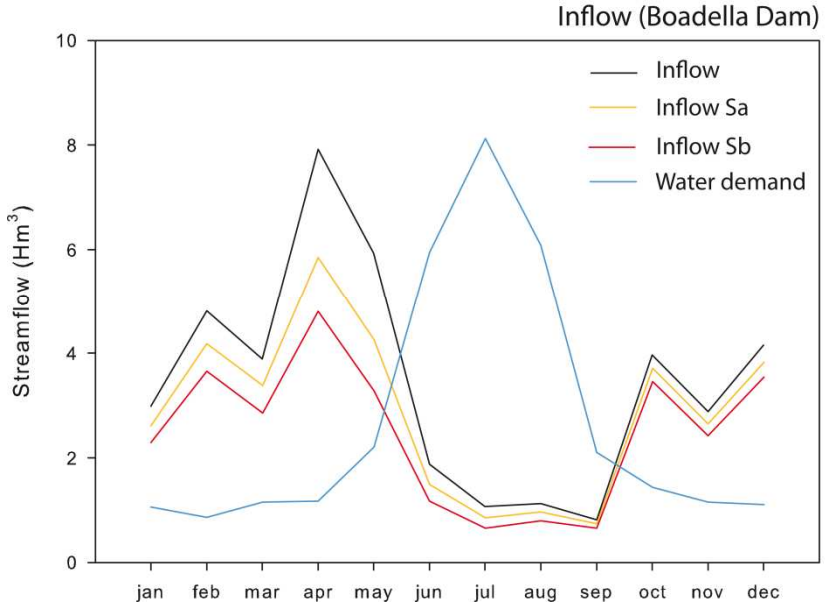
Landuse and climate change

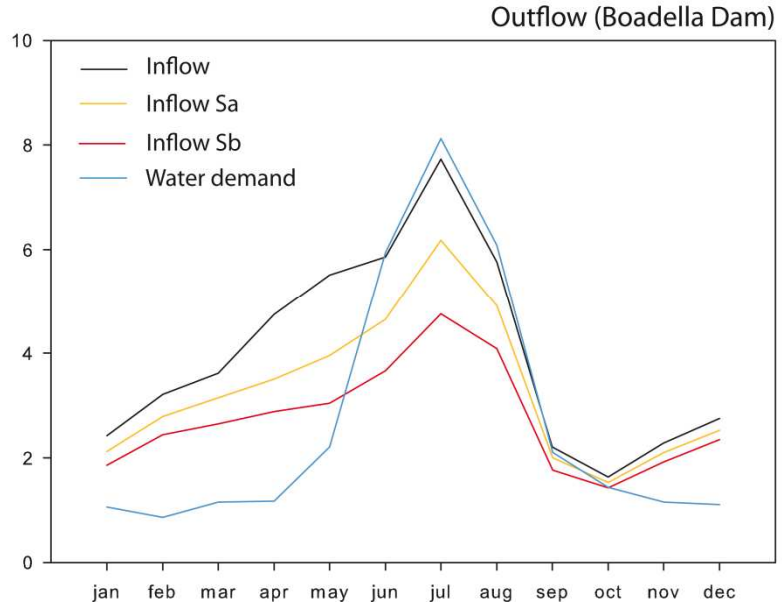




	Mean monthly decrease (%)		Total annual decrease (%)	
	Actual	*Revegetation*	*Actual*	*Revegetation*
Sa	-15	-20.4	-14.7	-34.2
Sb	-27.2	-33.7	-25.8	-43.8

Water management





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Thanks for your attention!!

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