# Monitoring global change in Sierra Nevada LTER platform (Spain): Preliminary results

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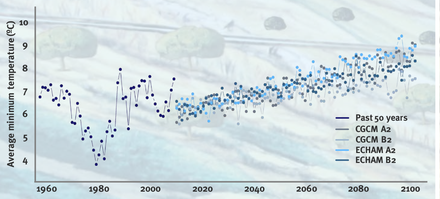
This poster shows the most relevant results that we have obtained in the Sierra Nevada LTER site during its first 5 years of life. All these results are very preliminar, because we do not have yet long temporal series. Each box shows results regarding a specific thematic area. All of them have been located over a picture that represents the landscape diversity of the Sierra Nevada's socioecological system.

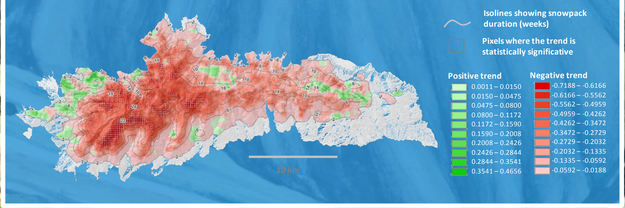
## Climate change [1]

Future climate scenarios show that there will be an increase of minimum average temperature of 4.8ºC at the end of the XXIth Century in Sierra Nevada. The rainfall will suffer a slight decrease.



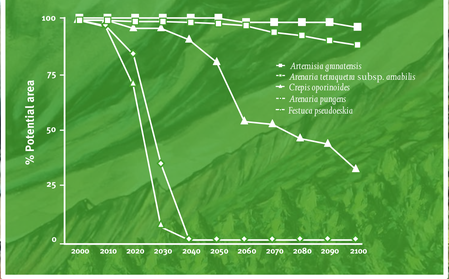

## Changes in snow cover [2 - 4]

We have run a time series analysis with MODIS snow products over Sierra Nevada. Results show that there is a negative trend in snow duration. This trend is more important at higher altitudes.



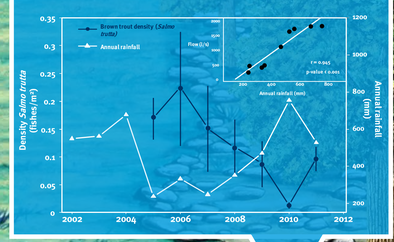

## Biodiversity in the summits [5-9]

The results shown by GLORIA project in Sierra Nevada reveals a 8% decrease in the number of flora species in four summits. In addition, the species distribution models that we have created show a progressive reduction in the potential distribution area of most plant species.




## Freshwater ecosystems [14]

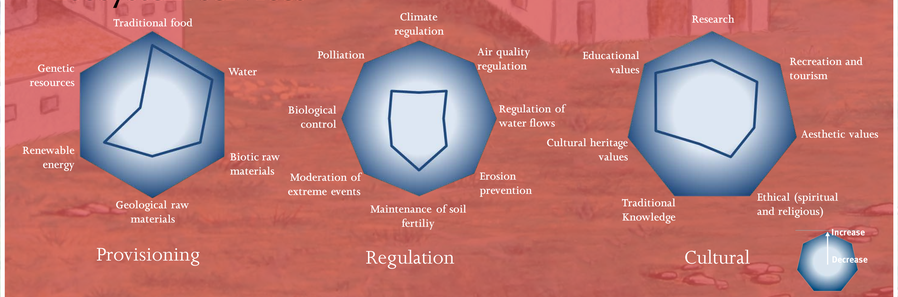
We have detected an asynchronous pattern between water flow and brown trout density. Heavy and torrential rainfall decreases brown trout populations due to a physical effects on their habitat.




## Forest pests [10-13]

There are more than 40.000 has covered by pine plantations in Sierra Nevada. They have been successful avoiding soil loss, but they also promote the abundance of pests that feed over their leaves. Processionary moth (*Thaumetopoea pityocampa*) is the most important forest pest. Our results show that climate change is promoting its altitudinal shift, where could affect endemic pine species (*Pinus sylvestris nevadensis*) .

## Ecosystem services [15-16]




According to Millenium Ecosystem Assessment in Spain, 27% of ecosystem services in Sierra Nevada are not being used sustainably. Some regulation services such as climate and hydrological are suffering important impacts. On the other hand, support services and some cultural ones are increasing (ecoturism, environmental education).

## Land use change [17-18]

Land use changes are a very important driver of global change in Mediterranean mountains. In the 1950s, overgrazing and charcoal extraction resulted in degradation of soil and vegetation cover. After abandonment of these rural activities, oak forests began a resprouting process up to the current situation. Actually, this driver is still affecting ecological dynamics and the structure of natural forests in Sierra Nevada.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