



Climate change and forest fires in a Mediterranean environment

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The Mediterranean region is a "hot-spot" of climate change and wildfires, where about 50000 fires burn 500000 hectares every year. However, in spite of the growing concerns of the climate change impacts on Mediterranean wildfires, there are aspects of this topic that remain largely to be investigated.

The main scientific objective of this study is to investigate the climate-driven changes on fires in a typical Mediterranean environment (Catalonia, NE of Spain). To achieve this goal, the following specific aims have been identified:

- (1) Analysis of the recent evolution of fires;
- (2) Evaluation of the climate-fire relationship;
- (3) Estimation of the impacts of observed and future climate change.

First, we examine a homogeneous series of forest fires in the period 1970–2010. Our analysis shows that both the burned area and number of fire series display a decreasing trend. After the large fires of 1986 and 1994, the increased effort in fire prevention and suppression could explain part of this decreasing trend. Although it is often stated that fires have increased in Mediterranean regions, the higher efficiency in fire detection could have led to spurious trends and misleading conclusions [1].

Secondly, we show that the interannual variability of summer fires is significantly related to antecedent and concurrent climate conditions, highlighting the importance of climate not only in regulating fuel flammability, but also fuel load. On the basis of these results, we develop a simple regression model that produces reliable out-of-sample predictions of the impact of climate variability on summer forest fires [2].

Finally we apply this model to estimate the impacts of observed climate trends on summer fires and the possible fire response to different regional climate change scenarios. We show that a transition toward warmer conditions has already started to occur and it is possible that they continue by mid-century (under the A1B scenario), and that these changes promote more fires, with similar or lower extension [3].

*References

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