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Abstract

A Review of Recent Climate Evolution, Projected Climate Change and Its Impacts on Future Fire Regime and Behavior in the Italy-France Maritime Cooperation Area (Sardinia, Corsica, Tuscany, Liguria and Provence-Alpes-Côte d'Azur) †

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The Mediterranean region is considered one of the "hot spots" of climate change, recording a warming 20% greater than the global average, with a substantial reduction in precipitations. Furthermore, in the first decades of the 21st century, this region has seen some of the most catastrophic fire seasons in terms of impacts on society. Extreme weather patterns (e.g., extended drought, heatwaves, and windstorms) facilitate the onset and the extreme behaviour of forest fires over large fire-prone areas. Furthermore, future climate scenarios suggest an exacerbation of the current situation.

In the context of the Italy-France Maritime MED-Star Project, we provided the cooperation area (Sardinia, Corsica, Tuscany, Liguria, and Provence-Alpes-Côte d'Azur) with a common background regarding recent climate evolution and future climate scenarios. Furthermore, we presented how these changes might potentially influence fire danger and behaviour. To this aim, we collected information from different data sources and datasets, reviewing 16 reports and projection studies examining the impacts of climate changes on future fire danger or behaviour.

The main findings are here summarized. In the Project territories, a marked increase in mean temperature anomalies is expected by both 2050 and 2100, under a high emissions scenario. Precipitation trends show a complex signal between emission scenarios. Overall, it is expected a decrease in summer total precipitation by the end of the century. Increases in the fire hazard are expected under the RCP8.5 scenario by the end of the century, as well as an increase in the number of days per season of very high hazard fires, especially for Sardinia (+28 days compared to the historical), Provence-Alpes-Côte d'Azur region (+20) and Tuscany (+18). These increases could translate into an increase in the burned area, up to 100% compared to the historical period and considering a 3 °C warming scenario.

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