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## Evolution of extreme hot temperatures over Euro-Mediterranean main airports

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As a result of global warming, the magnitude and the frequency of extreme hot temperature events have increased remarkably in the recent decades. In the absence of policies, global warming is expected to continue during the next years, and certain regions which are already characterized by warm and hot temperatures, such as the Euro-Mediterranean region, may be notably impacted in numerous and diverse fields. The aeronautical sector is among these vulnerable fields, as aircraft takeoff performances also depend on air temperature. For instance, an increase in ground temperature results in a decrease in air density, and consequently in the available thrust for takeoff. This may lead to flight delays, weight restrictions or even flight cancellations. Concerning the aircraft engines, an increase in temperature may negatively impact the performance and may also lead to an increase of pollutant emissions into the atmosphere. All of these effects would have a social, economic and health impact.

In this study we analyze the evolution of extreme hot temperatures on aircraft performance over the main airports in the Southern Euro-Mediterranean region, using simulations performed by regional climate models (RCMs) from the Euro-CORDEX international exercise. To this end, we first evaluate RCMs in terms of their representation of extreme hot temperatures and their trends in the present period by comparing to different observational datasets and also to the driving GCMs. The results of this comparison show that RCMs don't represent better the amplitude nor the temporal trends of hot temperature events in summer, despite their higher spatial resolution. We assess the changes in the hot temperature extremes from the Euro-CORDEX future projections and we evaluate the risk of weight restriction in the next decades.