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Different evolution of north and south Mediterranean extremes in response to global warming

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For the Mediterranean region, model projections suggest critical changes in the climate extremes in response to global warming, but with different characteristics between the northern and the southern areas. This contribution analyzes 28 CMIP5 global climate projections and links the changes of regional climate extremes to the global annual surface temperature change, considering separately the northern and southern Mediterranean region.
The intensity of precipitation events is more extreme already presently in the north than in the south Mediterranean and global warming will further increase this difference. In fact, as global mean annual temperature increases, in the North Mediterranean the Simple Daily precipitation Intensity Index (SDII) and the total precipitation during very wet days (R95P) increase at a rate of approximately 0.1mm/K and 5mm/K, respectively. The same indices show no significant change in the southern Mediterranean.
The maximum number of consecutive dry days (CDD) is already larger in the Southern than in the Northern Mediterranean and it is increasing faster in the former than in the latter as global warming increases (rates are about 8days/K and 5days/K) respectively. The maximum number of consecutive wet days (CWD) is larger in the northern than in the southern Mediterranean and decreasing at a similar rate (about 0.5 days/K) in both (actually the rate of decrease is slightly smaller in the south).
At difference with the response of the regional hydrological cycle extremes to global warming, changes of warm nights (TN90p) and cold days (TX10p) are similar in the North and South Mediterranean. In both areas, the increase of warm nights is dramatic, to the extent that with a 4K global warming almost all nights would classified as warm nights and there will be no cold days (note that extremes are based on the 1961-1990 reference period for computing reference thresholds).