



High-impact European heatwaves in a changing climate

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Analysis of recent summer heatwaves demonstrates that the most severe health impacts arise from multi-days heatwaves that may be amplified by warm night-time temperatures and high relative humidity. Here we explore changes in heatwave-related health indicators in a new set of high-resolution transient regional climate simulations performed in the ENSEMBLES project.

We find a geographically consistent signal among climate models: Most pronounced changes are projected in southernmost Europe for heatwave frequency and duration, and further north in south-central Europe for heatwave amplitude.

In terms of health impacts, projections are most concerning for low-altitude southern European river basins and coastal regions along the Mediterranean, where frequency of dangerous heat conditions increases stronger and faster than in any other region. This geographical pattern is a remarkably robust feature across different models and health indicators (combined hot days and warm nights and heat index). The changes are consistent with physical considerations and relate to mean summer warming, enhanced temperature variability, and increases in absolute humidity.