



# **Research Highlight**

'Temperature extremes and human health in Cyprus: Investigating the Impact of Heat and Coldwaves'

## Summary

Extreme temperatures are an emerging public health concern in the Mediterranean, yet their full impact remains underexplored. Our study investigates the public health impacts of both heat and cold extremes in Cyprus, a Mediterranean country increasingly affected by climate variability. While heatwaves during summer months are becoming more frequent and better studied, cold spells-though less common-continue to pose significant and often overlooked health risks. Using high-resolution climate data alongside national mortality and hospitalization records from 2004 to 2019, we applied advanced statistical models—including Distributed Lag Non-Linear Models (DLNMs) and Generalized Additive Models (GAMs)-to quantify health risks across seasons. Heatwave and coldwave events were identified through a detailed climatological analysis of long-term temperature data. The health impact analysis captures both the immediate and delayed effects of temperature extremes and evaluates how prolonged heatwaves and coldwaves influence health outcomes. We assessed impacts across major health causes, including cardiovascular, respiratory, diabetes and cancer-related conditions. This is the first study in Cyprus to jointly assess mortality and hospitalizations across a wide range of causes and seasons, offering a comprehensive view of how temperature variability affects population health in a climate-sensitive region.

### Impact

This study highlights the significant implications of temperatures and extreme events on public health in Cyprus. Cold-related mortality was found to exceed heat-related mortality in absolute numbers, highlighting the often-underestimated burden of cold in Mediterranean regions. However, during heatwave days, the risk of attributable deaths increased fivefold compared to typical summer days—underscoring the acute public health threat posed by extreme heat. Hospitalization risks were notably higher

#### Authors' bios



Fragkeskos Kekkou is currently enrolled as PhD student in the Energy, Environment and Atmospheric Sciences PhD program and a Graduate Research Fellow at the Climate and Atmosphere Research Center (CARE-C) of the Cyprus Institute. He holds a Bachelor's degree in Physics (2021) and a Master's degree in Meteorology, Climatology and Atmospheric Environment (2024) from the Aristotle University of Thessaloniki, Greece.

during cold periods, particularly for respiratory and cardiovascular conditions. These results, combined with the observed rise in extreme heat days and decline in cold extremes over recent decades, offer critical evidence for public health planning. The study supports the development of targeted seasonal warning systems and adaptation strategies, particularly in climatevulnerable regions such as the Eastern Mediterranean, where highresolution health and climate data are often limited.

## Reference

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