Air pollution levels could impact on heatwaves

May 6 2019

Credit: CC0 Public Domain

Measures to reduce air pollution could affect the severity of heatwaves in coming decades, a study suggests.

Future heatwaves, which are expected to be more severe, may be influenced by levels of man-made particles in the atmosphere – such as those produced by car exhausts and power plants – researchers say.

Understanding how these tiny particles behave could help scientists improve heatwave predictions, and measures to limit their impacts, over the next century.

Atmospheric particles

Previous research suggests that rising greenhouse gas emissions will increase the frequency, intensity and duration of heatwaves around the world.

Until now, little was known about how these extreme weather events could be affected by levels of air pollution particles.

Scientists from the University of Edinburgh used a powerful computerised model to predict how the presence of man-made atmospheric particles – which are linked to the deaths of millions of people worldwide each year – could affect the severity of future heatwaves.

They found that cutting air pollution could inadvertently make heatwaves worse in some parts of the world, by disrupting the formation of clouds that reflect heat from the sun back into space.

This would cause peak day-time temperatures to increase, the team says.

Pollution measures

Heatwaves in the northern hemisphere are more likely to be affected

because of widespread efforts to improve poor air quality in countries there, they add.

More research on how man-made particles affect clouds is needed to better understand how air pollution can be reduced while simultaneously limiting the damaging impacts of heatwaves, the team says.

The study, led by Ph.D. researcher Alcide Zhao, is published in the journal *Geophysical Research Letters*.

It was funded by a studentship from the China Scholarships Council.

"We desperately need to improve air quality. However, our results suggest that in doing so, we may inadvertently worsen heatwaves. Air pollution and climate change are inextricably linked, and we need to develop smart pollution control policies that take these links into account," says Professor David Stevenson, School of GeoSciences.

More information: Alcide Zhao et al. Strong influence of aerosol reductions on future heatwaves, *Geophysical Research Letters* (2019). DOI: 10.1029/2019GL082269

Provided by University of Edinburgh