

# Trees found to reduce land surface area temperatures in cities up to 12°C

November 26 2021, by Bob Yirka

---



Credit: Unsplash/CC0 Public Domain

A team of researchers with the Institute for Atmospheric and Climate Science, ETH Zurich, has found evidence that indicates that stands of trees can reduce land surface area temperatures in cities up to 12°C. In

their paper published in the journal *Nature Communications*, the group describes how they analyzed satellite imagery for hundreds of cities across Europe and what they learned.

Prior research has suggested that adding [green spaces](#) to cities can help reduce high air temperatures during the warm months—cities are typically hotter than surrounding areas due to the huge expanses of asphalt and cement that absorb heat. In this new effort, the researchers looked at possible [temperature](#) impacts on land surface areas instead of air temperatures. Such temperatures are not felt as keenly as air temperatures by people in the vicinity because it is below their feet rather than surrounding them.

The work by the team involved analyzing data from satellites equipped with land surface temperature sensors. In all, the researchers poured over data from 293 cities across Europe, comparing land surface temperatures in parts of cities that were covered with trees with similar nearby urban areas that were not covered with trees. For comparison purposes, they did the same for rural settings covered in pastures and farmland.

They found urban areas with trees typically had land surface temperatures that were two to four times cooler than similar areas nearby that had no tree cover. Such differences translated to approximately 0 to 4 K lower than surrounding areas in parts of Southern Europe—in other regions, such as Central Europe, the differences were as high as 8 to 12 K. Interestingly, the researchers found no such differences in rural areas. And they found no differences for other types of vegetation in the cities.

The researchers note that trees are able keep the ground cooler due to the shade they provide, which suggests they help reduce building surface temperatures in similar ways. Their work highlights the impact that adding tree cover to [urban areas](#) can have.

**More information:** Jonas Schwaab et al, The role of urban trees in reducing land surface temperatures in European cities, *Nature Communications* (2021). [DOI: 10.1038/s41467-021-26768-w](https://doi.org/10.1038/s41467-021-26768-w)

© 2021 Science X Network

Citation: Trees found to reduce land surface area temperatures in cities up to 12°C (2021, November 26) retrieved 24 April 2024 from <https://phys.org/news/2021-11-trees-surface-area-temperatures-cities.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.