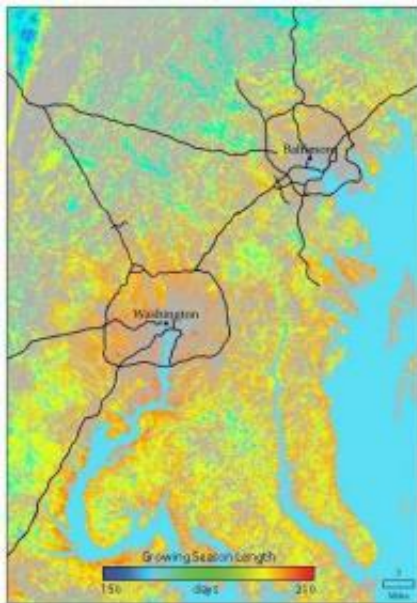


Mid-Atlantic suburbs can expect an early spring thanks to the heat of the big city

March 9 2012



In this image, the longer growing season near cities and close to the water is indicated in red. Credit: Dr. Andrew Elmore/University of Maryland Center for Environmental Science

If you've been thinking our world is more green than frozen these days, you're right. A recent study has found that spring is indeed arriving earlier – and autumn later – in the suburbs of Baltimore and Washington, D.C. The reason? The urban landscape traps heat in the summer and holds it throughout the winter, triggering leaves to turn green earlier in the spring and to stay green later into autumn. The result is a new,

extended growing season.

Scientists used high-resolution satellite data collected over the past 25 years to look at the number days that trees have green leaves in the forests of the Mid-Atlantic. The study found that urban heat islands affected the [growing season](#) in areas within 20 miles of the city. As a result, gardeners may have more time to grow their vegetables and plant new varieties.

The longer growing season also has a profound impact on forests. Forests are, in effect, the world's air filters. Green leaves on trees turn [carbon dioxide](#) – a greenhouse gas that traps heat in our atmosphere – into oxygen. Carbon dioxide also helps trees grow since they use energy from the sun to convert the gas into plant matter. A longer growing season could change quickly forests grow and increase the amount of carbon dioxide taken out of the atmosphere.

"Everything changes when the leaves turn green," said the study's lead author Dr. Andrew Elmore of the University of Maryland Center for Environmental Science. "Trees start pumping water into the atmosphere. They take carbon dioxide out of the atmosphere. They make sugars and build plant tissue. It's as if the entire landscape goes from exhaling to inhaling."

The study also pinpointed other factors that influence the timing of spring and autumn in areas outside the influence of urban heat islands, including the elevation of the landscape, proximity to tidal water, and cold air drainage in small valleys.

Not all forests are the same, however, and predicting which forests will grow faster during a longer growing season requires detailed satellite measurements. This study is the first to apply high-resolution satellite data to the problem. "We are trying to understand how forests function

so we can understand how they might respond to global warming," said Dr. Elmore. "With more detailed data, we can do better job of predicting what might happen to a [forest](#) impacted by urbanization, for instance."

More information: The study, "Landscape controls on the timing of spring, autumn, and growing season length in mid-Atlantic forests," was published in the February issue of *Global Change Biology*.

Provided by University of Maryland

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