

“GREEN WITH PHENOLOGY – A WARMER & BRIGHTER CITY TRICK TREES INTO THINKING SPRING ARRIVES EARLIER”

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ABSTRACT

The timing of seasonal biological events—such as when trees leaf out, flowers open, and leaves turn yellow—is called phenology. Plant phenology is sensitive to climate change and variability; however, how complex urban environments affect plant phenology remains largely unexplored. I investigated how phenology responded to urban warming and artificial light in large U.S. cities using satellite data and phenology models. My work shows that the urban heat island effect and light pollutions trick trees into thinking spring has arrived earlier. As a result, cities have an earlier and longer growing season, which consequently affects pollen allergy season, water cycling, and plant-pollinator matchup. The findings contribute to a better understanding of urban ecosystem changes to inform more ecologically sensitive urban planning, design, and management.

BIOGRAPHY

Dr. Lin Meng is an Assistant Professor in the Department of Earth and Environmental Sciences at Vanderbilt University. She received her Ph.D. in Environmental Science & Geology at Iowa State University in 2020, and worked as a postdoc scholar in Climate and Ecosystem Sciences Division at Lawrence Berkeley National Laboratory before joining Vanderbilt in 2022. She was awarded the Grand Prize winner of the 2021 Science & SciLife Lab Prize for Young Scientists by Science Magazine and AAAS, and the Green Talents award by German Federal Ministry of Education and Research in 2022. Dr. Meng’s research focuses on understanding the human impact on urban ecosystems, and developing strategies for sustainable cities.