Science Societies

How removing turf affects residential land surface temperature in Southern California

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An artificial turf field (white rectangle, center). Image courtesy of Marco Schiavon.

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California has faced prolonged droughts in the past decades. Due to the limited water availability, policymakers have explored several water-saving strategies, including turf removal rebates for homeowners. However, the impact of turf removal on land surface temperature (LST) has not been fully explored.

A recent study published in *Agronomy Journal* examined daytime temperature differences among artificial turf, natural turf, and xeriscape (landscaping designed to conserve water) in the summers of 2018 and 2019 across four counties in Southern California using airborne thermal imagery. Researchers found that the observed LST difference between artificial and natural turf increased as the location moved from coastal areas (with natural turf being 2.17 to 7.71°C cooler) to inland regions (with natural turf being 4.47 and 18.41°C cooler). Within the City of Riverside, natural turf lawns were consistently cooler than artificial turf by ~30°C and xeriscape by ~20°C, reflecting air temperature patterns. Very-high-resolution thermal imagery showed that

artificial turf fields at the University of California were irrigated during summer for athletic use. The study also revealed no correlation between socioeconomic factors and LST of different landscape types.

The researchers conclude that while turfgrass removal may help with water conservation, it could have unintended environmental consequences, increasing LST around homes and buildings.

Dig deeper

Schiavon, M., Shiflett, S., Baird, J. H., Geis, L. A., & Scudiero, E. (2024). Southern California land surface temperature differences under different landscape composition. *Agronomy Journal*, 116, 2678–2689. https://doi.org/10.1002/agj2.21687
