Opportunities, Limitations, and Considerations of Trees as a Nature-Based Solution for Urban Heat

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Collaborators

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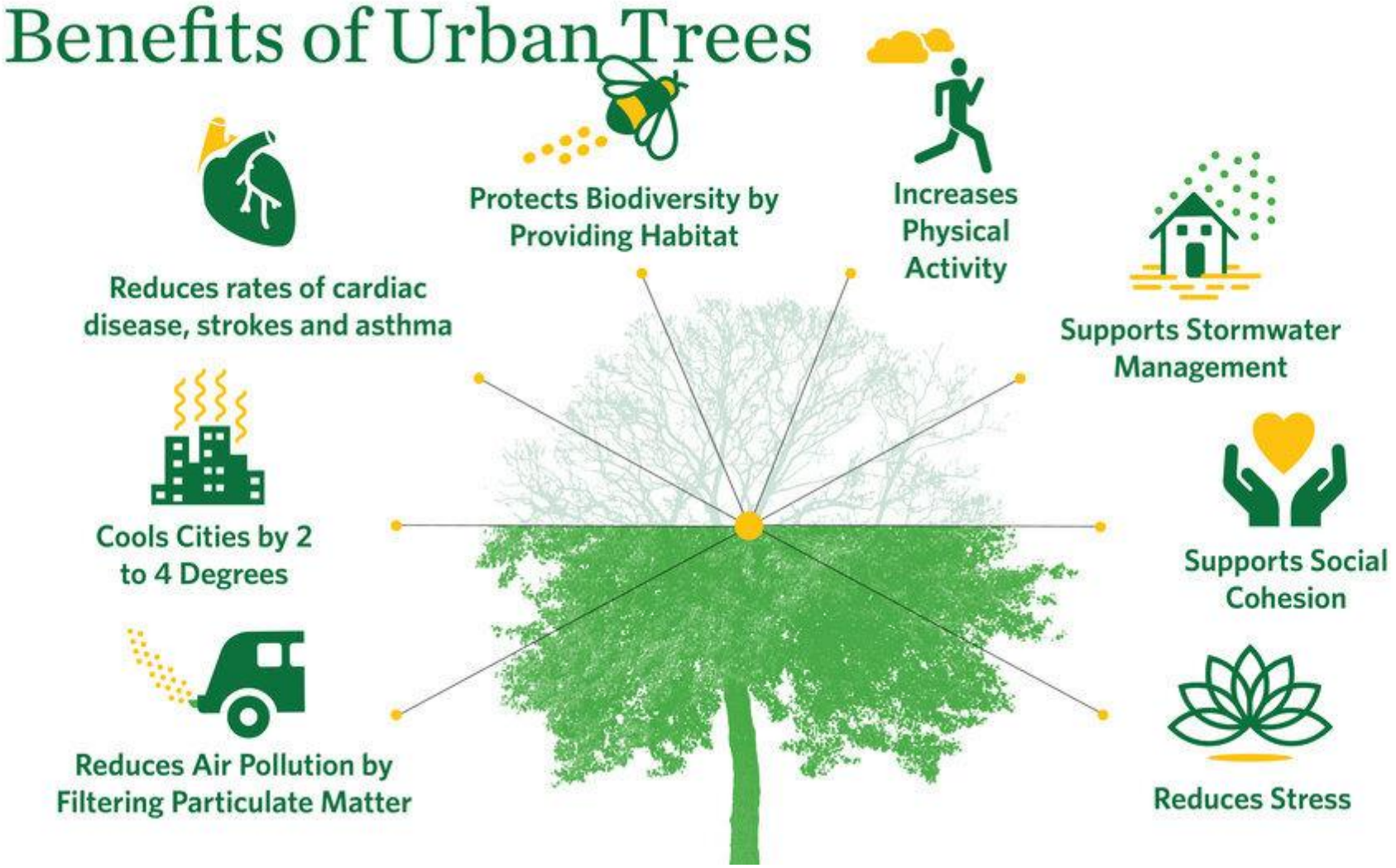
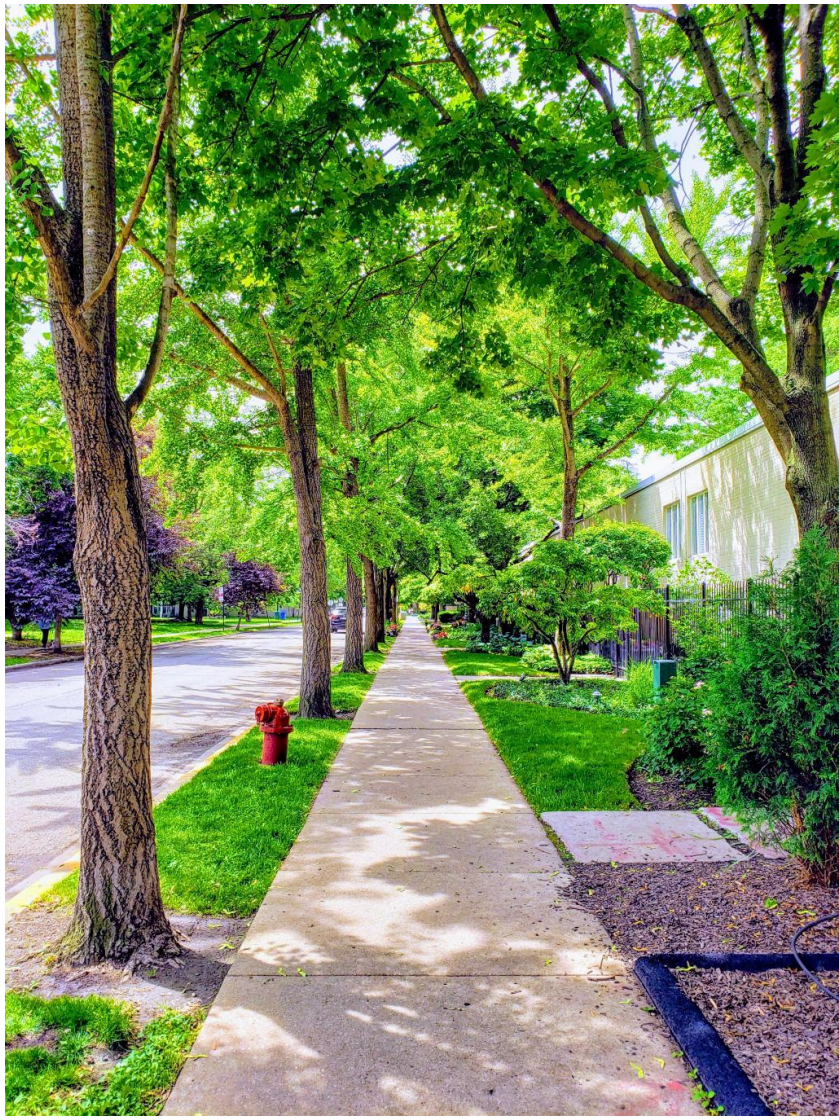
Ayo Deas

Trees provide many benefits.





The Nature Conservancy

Cooling benefits are well-studied and clear.

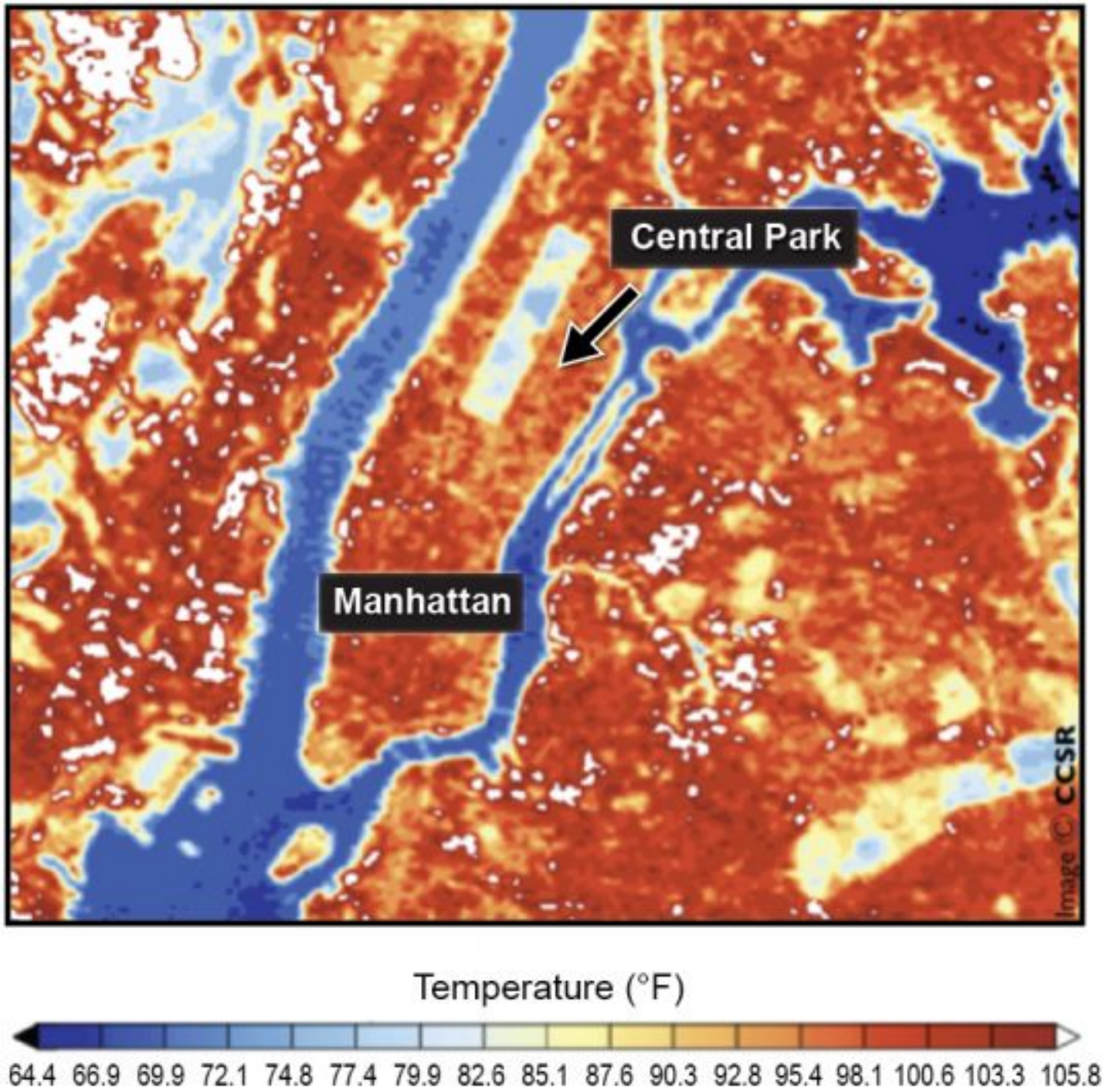
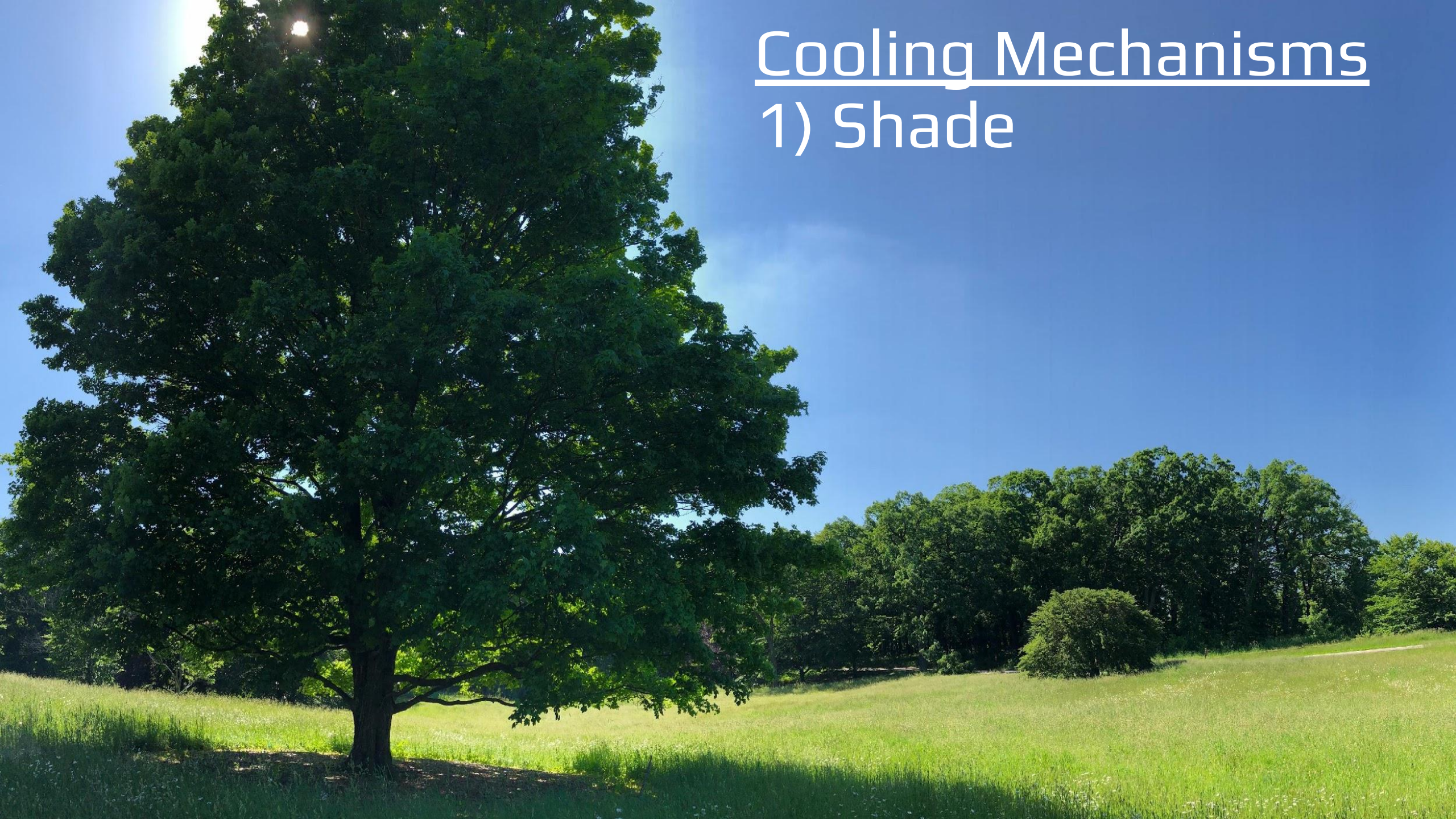


Figure: Center for Climate Systems Research, Columbia University (via globalchange.gov)

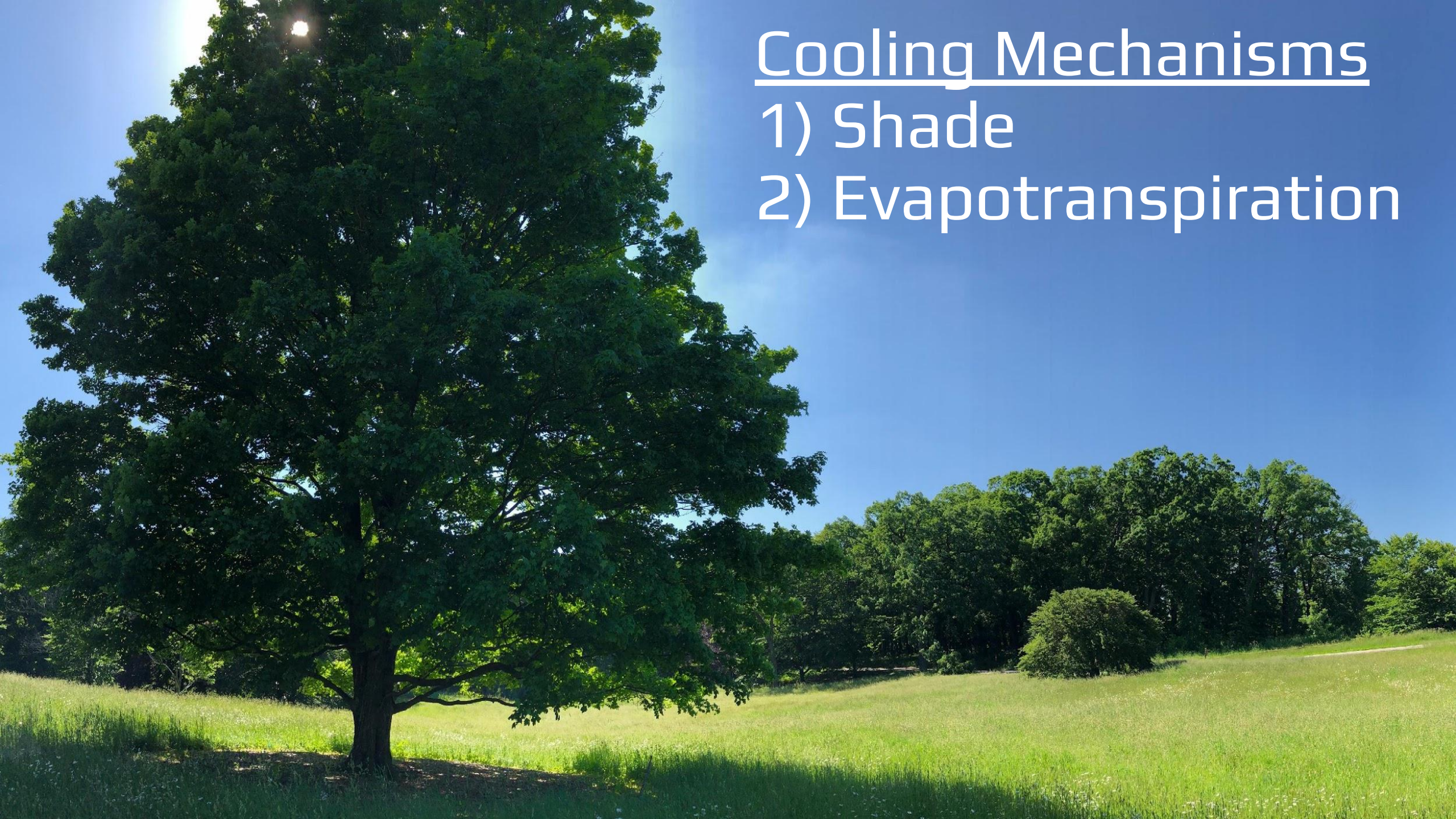

Trees cool more
than other
vegetation types
because they’re BIG.

Cooling Mechanisms



Cooling Mechanisms

1) Shade



Cooling Mechanisms

1) Shade
2) Evapotranspiration

Cooling effects vary by species, climate, and location…

Tucson, AZ

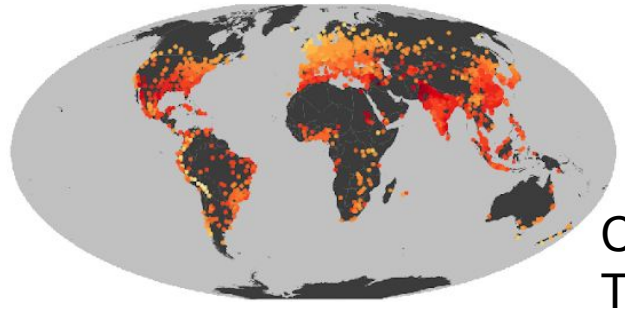
Chicago, IL

Cooling effects vary by species, climate, and location... but so must goals and benchmarks.

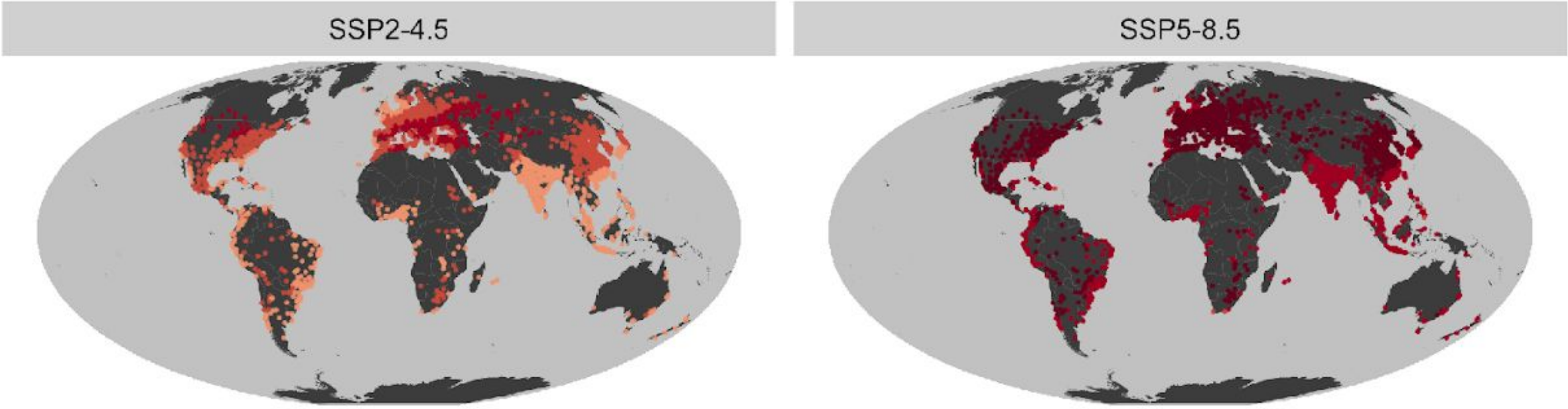
Tucson,

Chicago,

Projected change in temperature by 2100: Warming varies by region

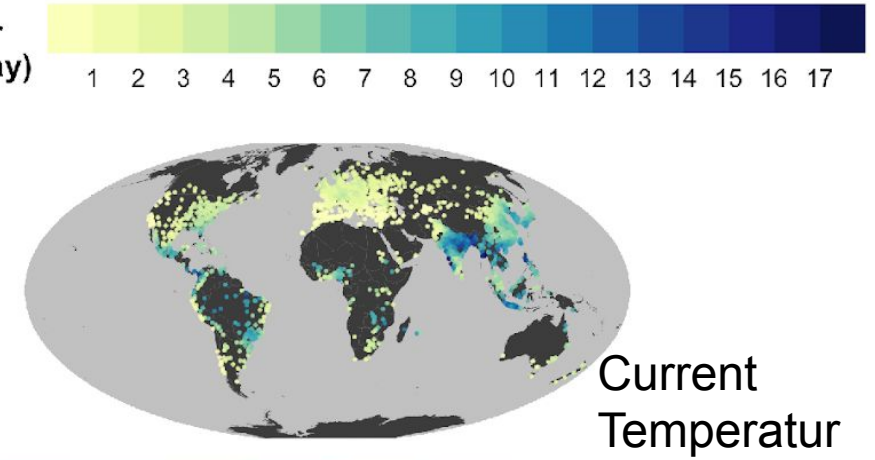


Current Temperatur e

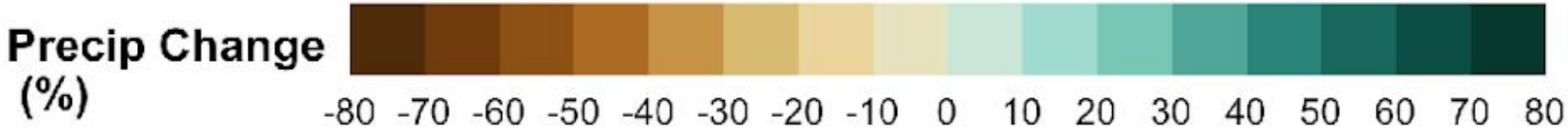


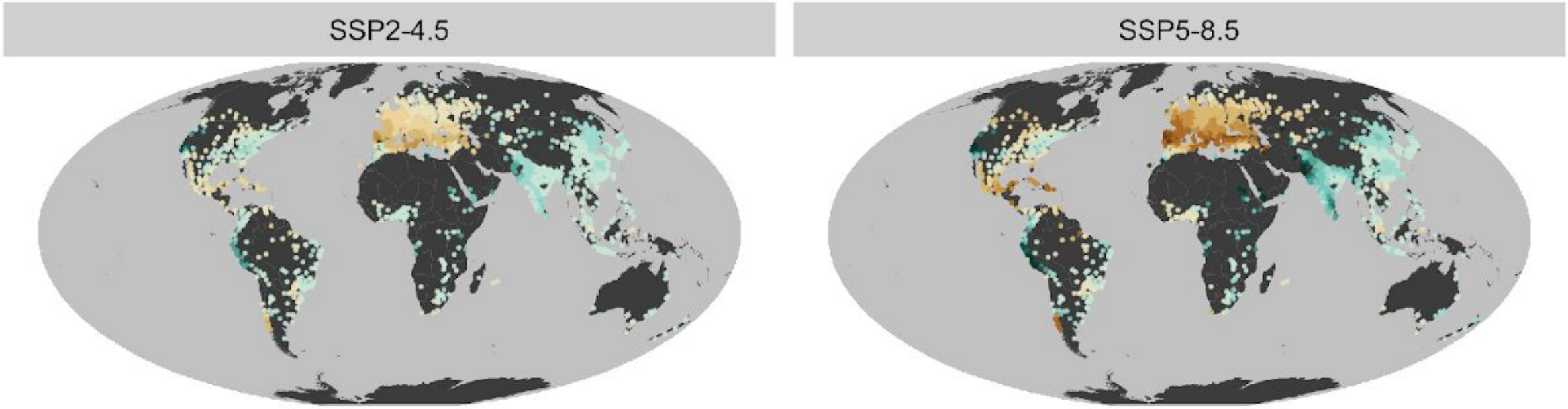
Data: NASA NEX-GDDP CMIP6

Projected change in preciptiation by 2100: ***HIGHLY*** variable

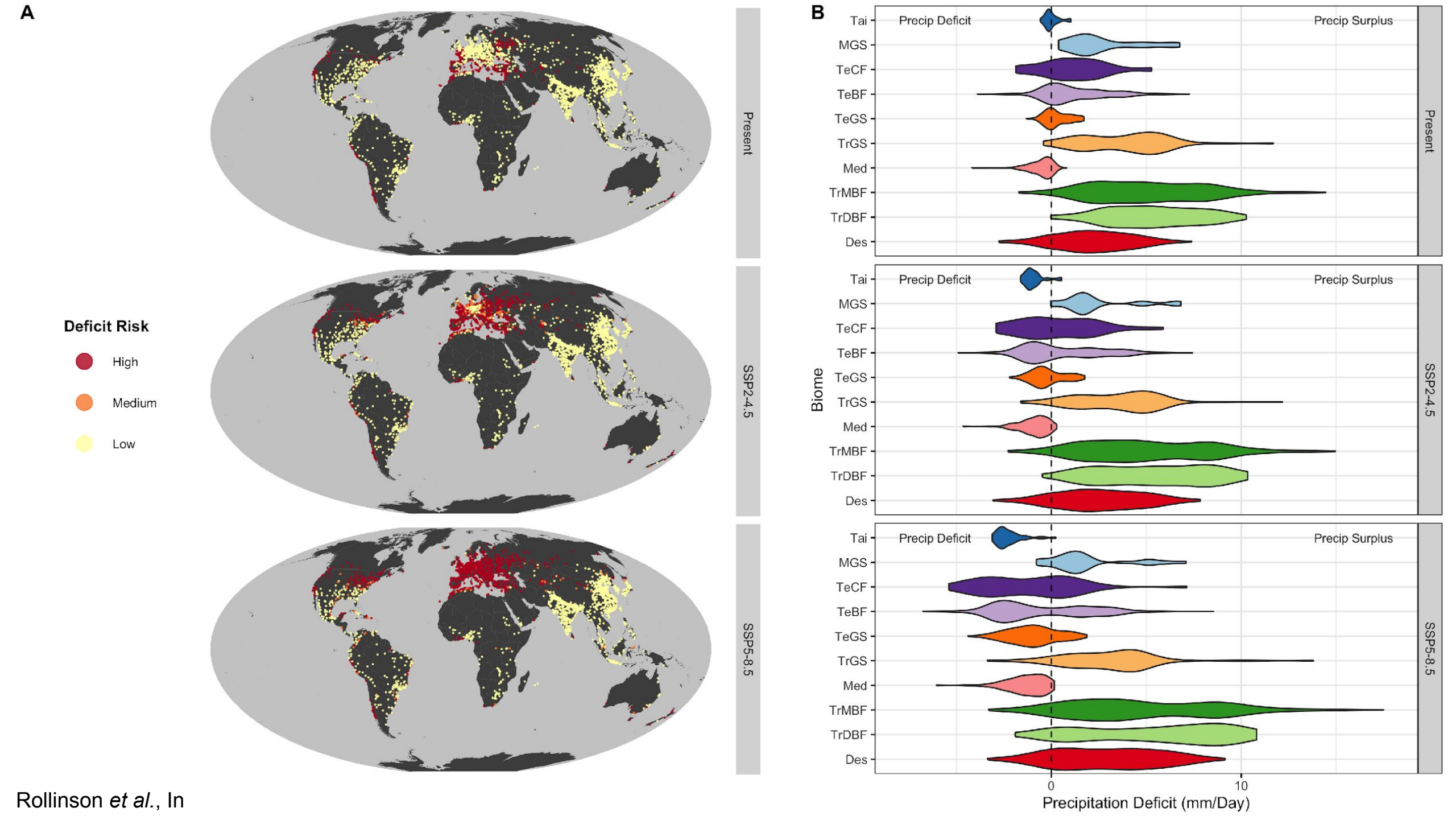


Current Temperatur e





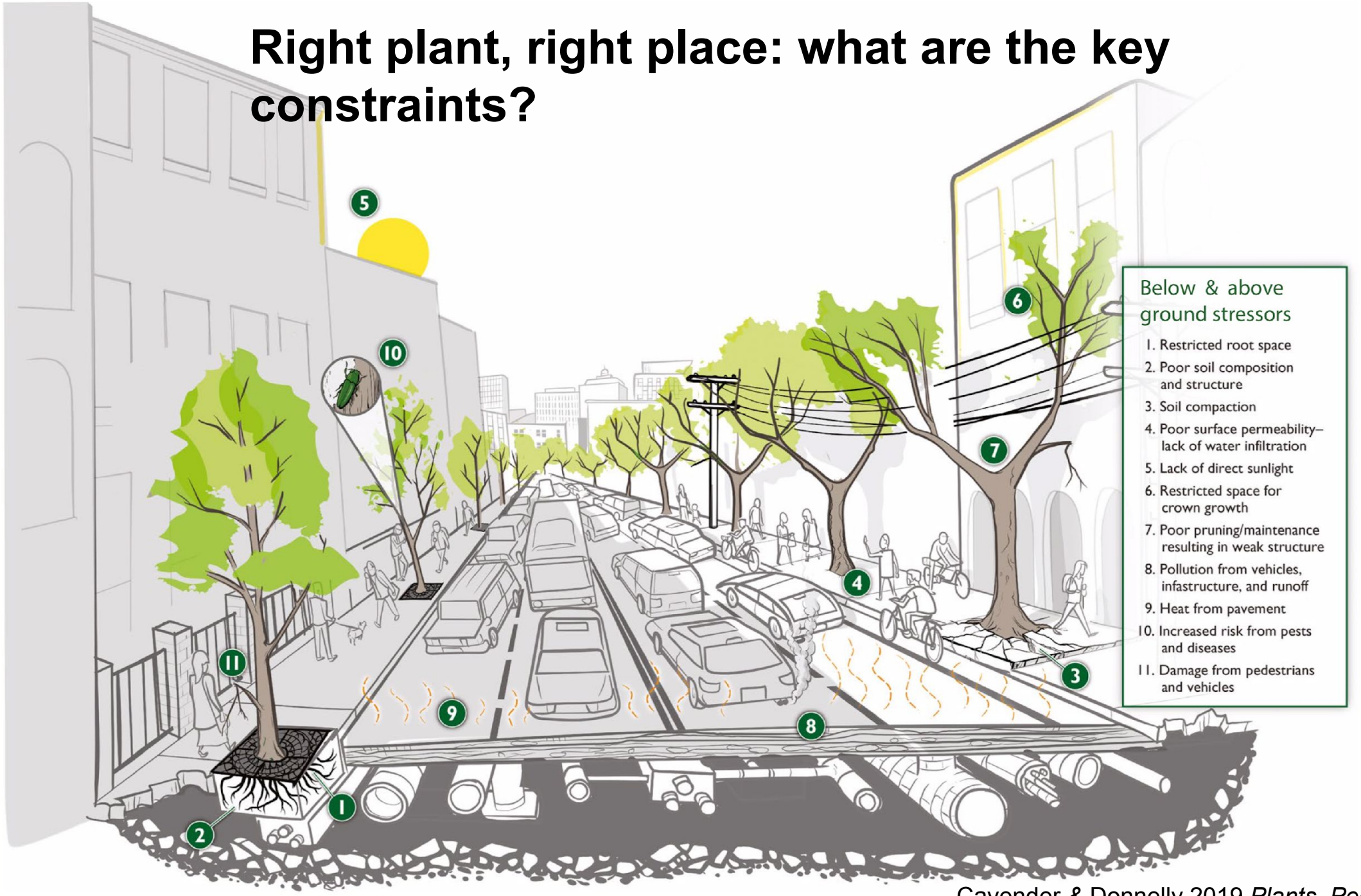
Data: NASA NEX-GDDP CMIP6



Rollinson *et al.*, In



Right plant, right place: what are the key constraints?



Cavender & Donnelly 2019 *Plants, People, Planet*

Species selection is critical… but a lot of work remains to make robust recommendations

Photo: A. Salisbury

Adaptive management is ***essential*** for coping with uncertainty.

Effective solutions require action now with a plan for responding to tomorrow's unknowns.

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