

Vegetation's Effect on Temperature in Salt Lake City

Carolina Gomez-Navarro | Biology, Diane Pataki | University of Utah

Goal

- Contribute to the knowledge of local water-climate connections
- Urban forest transpiration has great potential to mitigate the heat island effect in Salt Lake City¹.
- As a semi-arid city, increasing green infrastructure might entail significant irrigation costs unless species efficient in water use are chosen.

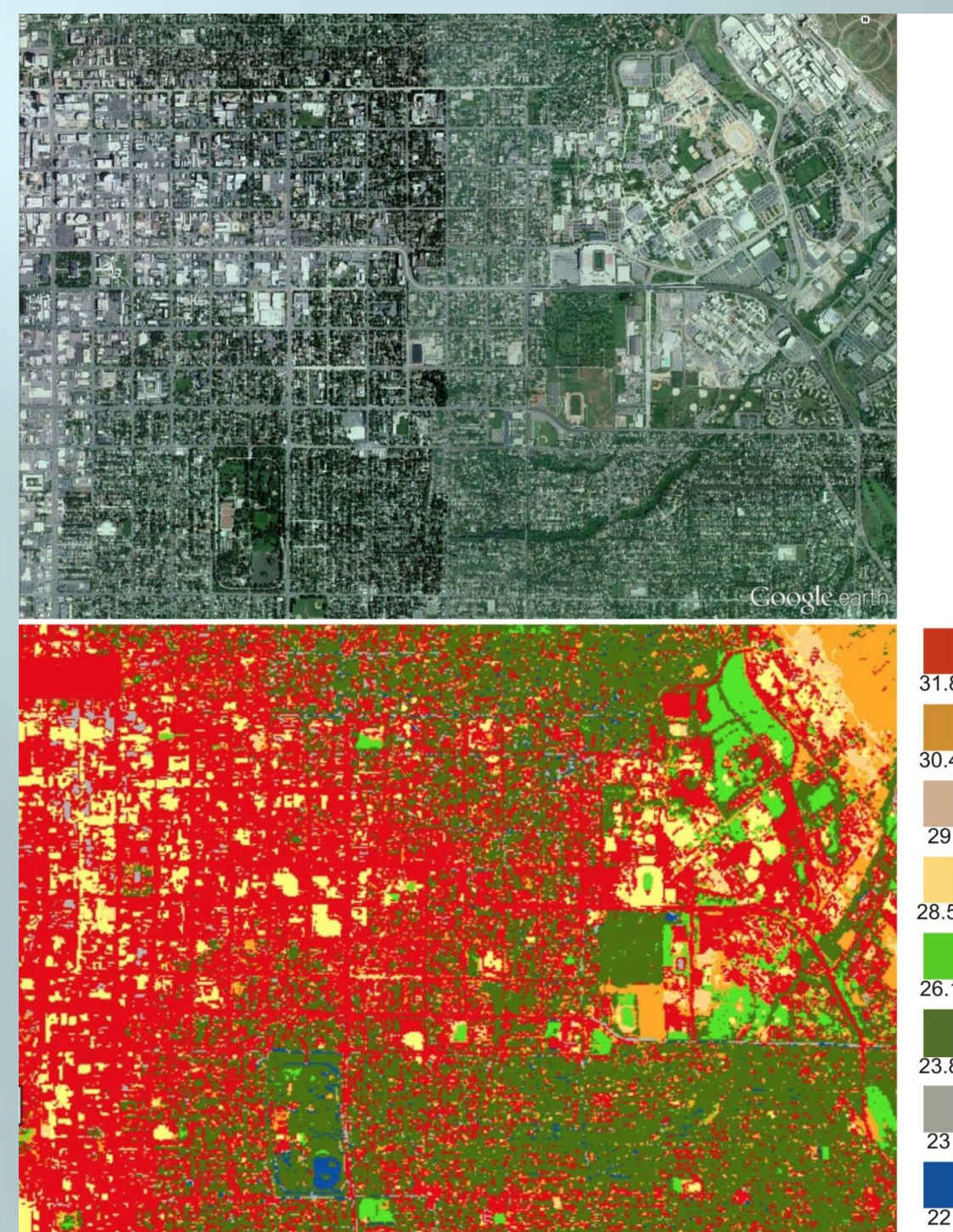


Figure 1. Mean temperatures (in Celsius) for each type land cover in downtown Salt Lake City. *Gluch et al. 2006; Remote Sens Environ 104.*

Research Methodology

- Measure tree transpiration of common tree species in Salt Lake City to link plant processes with local climate
- Design and model alternative scenarios of tree species compositions in collaboration with the Environmental Fluid Dynamics group
- Predict whole tree water use of city tree species employing aspects of plant form or function associated with transpiration. Measuring it for every species would be unpractical due to great variability between species².

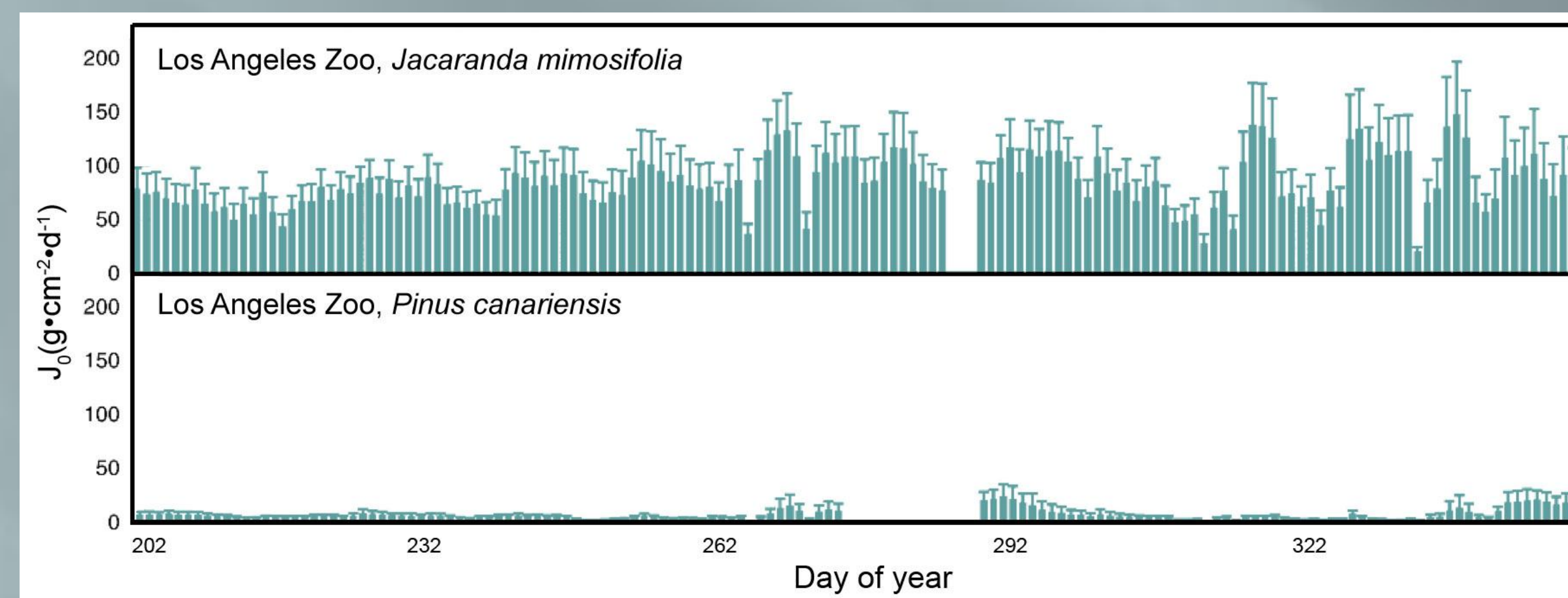


Figure 2. Sap flux (indicator of plant transpiration) in the outer 2 cm of sapwood (J_0) at Los Angeles Zoo. There are missing values due to equipment failure. Error bars show the standard error. *Pataki et al. 2011; Ecol Appl 21(3).*

Impact

- Providing information to city planners about the potential ecosystem services versus maintenance costs³ of expanding the urban forest
- Contributing to the understanding of the main biological controls of the water cycle for Salt Lake City and other semi-arid cities

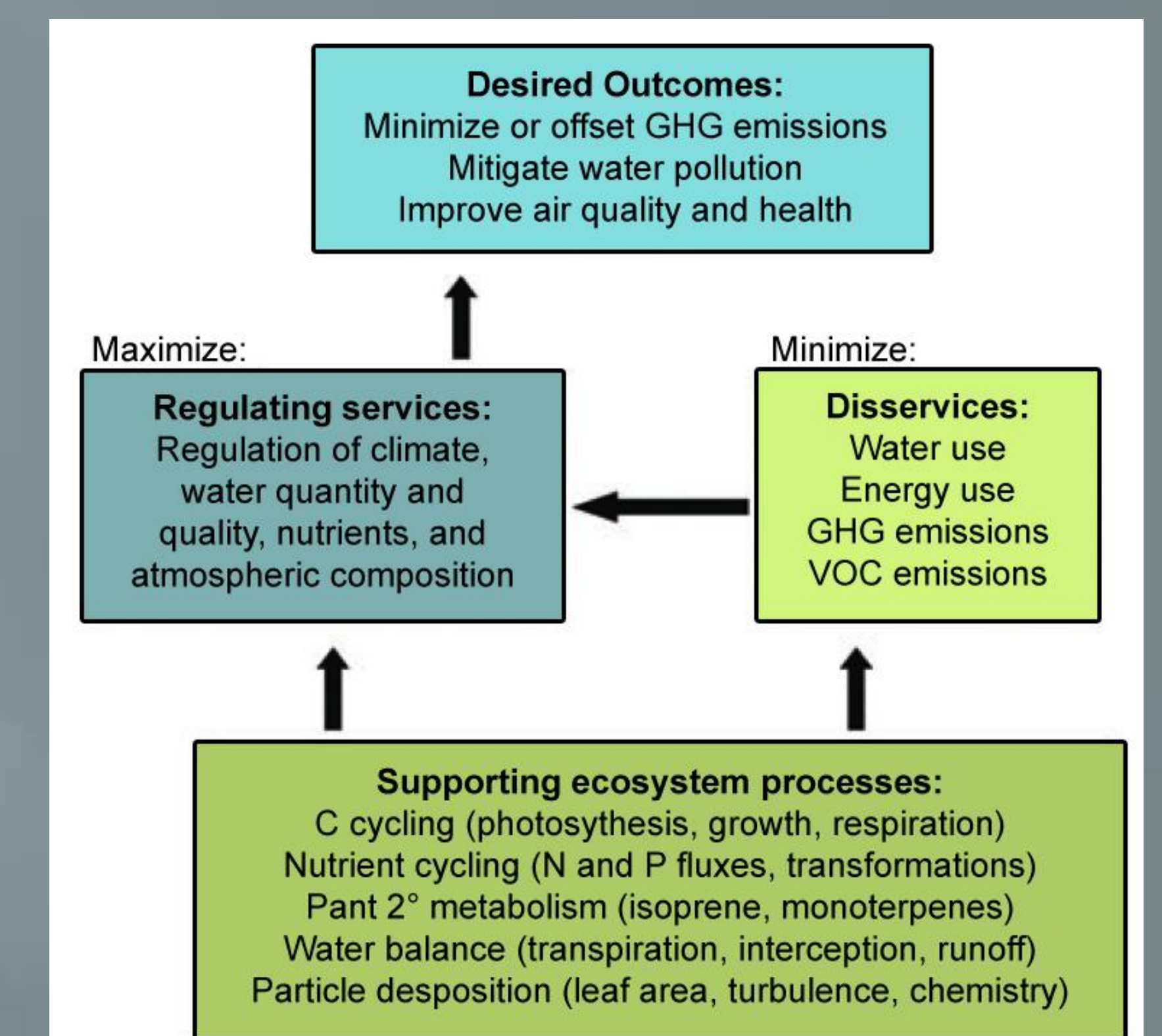


Figure 3. Benefits (ecosystem services) and costs (disservices) of green space in cities. *Pataki et al. 2011. Front Ecol Environ 2011; 9(1).*



c.gomez@utah.edu

GRADUATE RESEARCH FELLOWSHIP PROGRAM



<http://iutahepscor.org>

