global change including climate is an environmental management challenge case

@cjlortie

environmental management challenge case

Geophysical Research Letters
AN AGU JOURNAL

Climate | Free Access

Climate change in cities due to global warming and urban effects

Mark P. McCarthy, Martin J. Best, Richard A. Betts

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emc2

novelty

one planet only

models and simulations to understand change

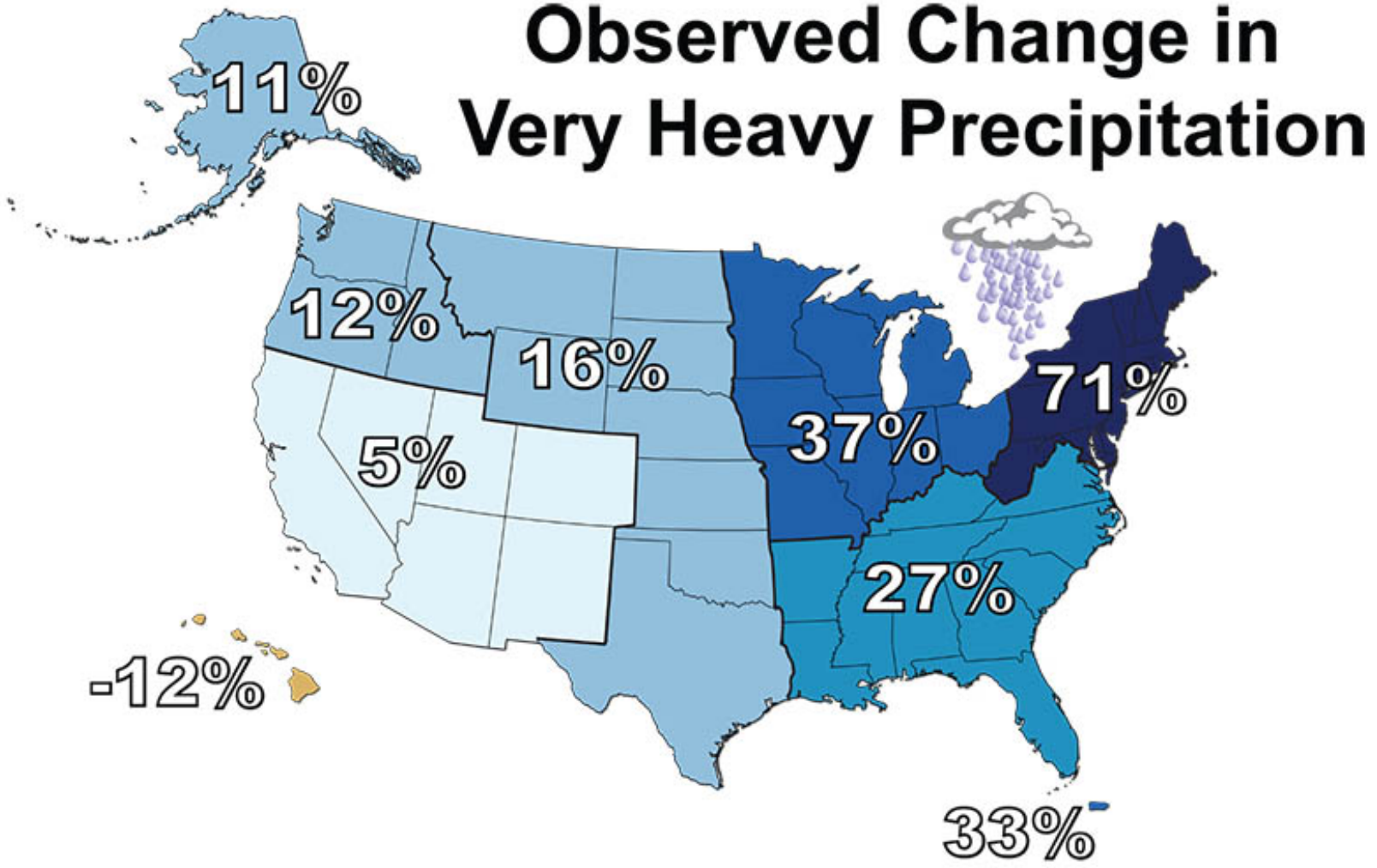
cannot ignore cities

must always have many scenarios

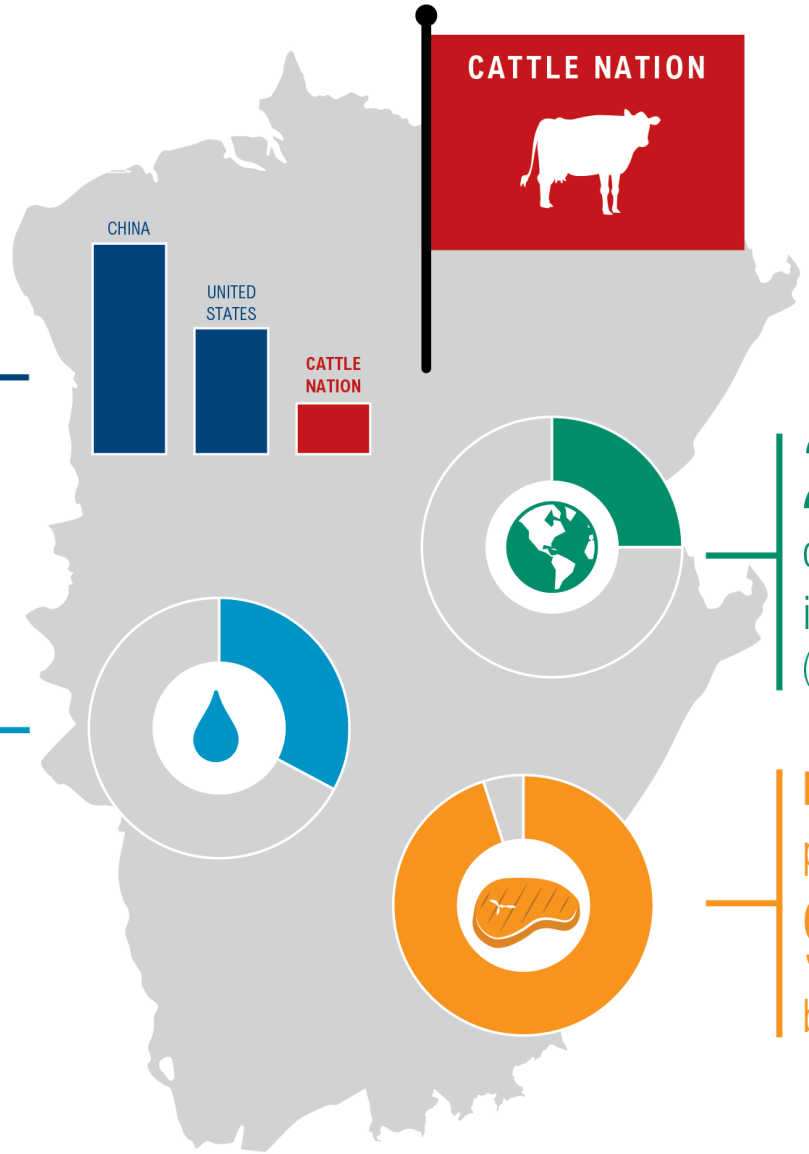
challenge

climate change and global change not the same

global change is many drivers but must ALSO
better **include people**
and thus cities and transportation


Observed Change in
Very Heavy Precipitation
11%
12%
16%
5%
37%
71%
27%
-12%
33%

Beef Creates a Huge Environmental Footprint



If cattle were their own nation, they would be the world's **3rd-largest GHG emitter**

Beef uses
33%
of all water for farm animal production

25%
of **Earth's land area** is pastureland
(excluding Antarctica)

Beef demand projected **to grow by**
95%
by 2050.

wri.org/shiftingdiets

WORLD RESOURCES INSTITUTE

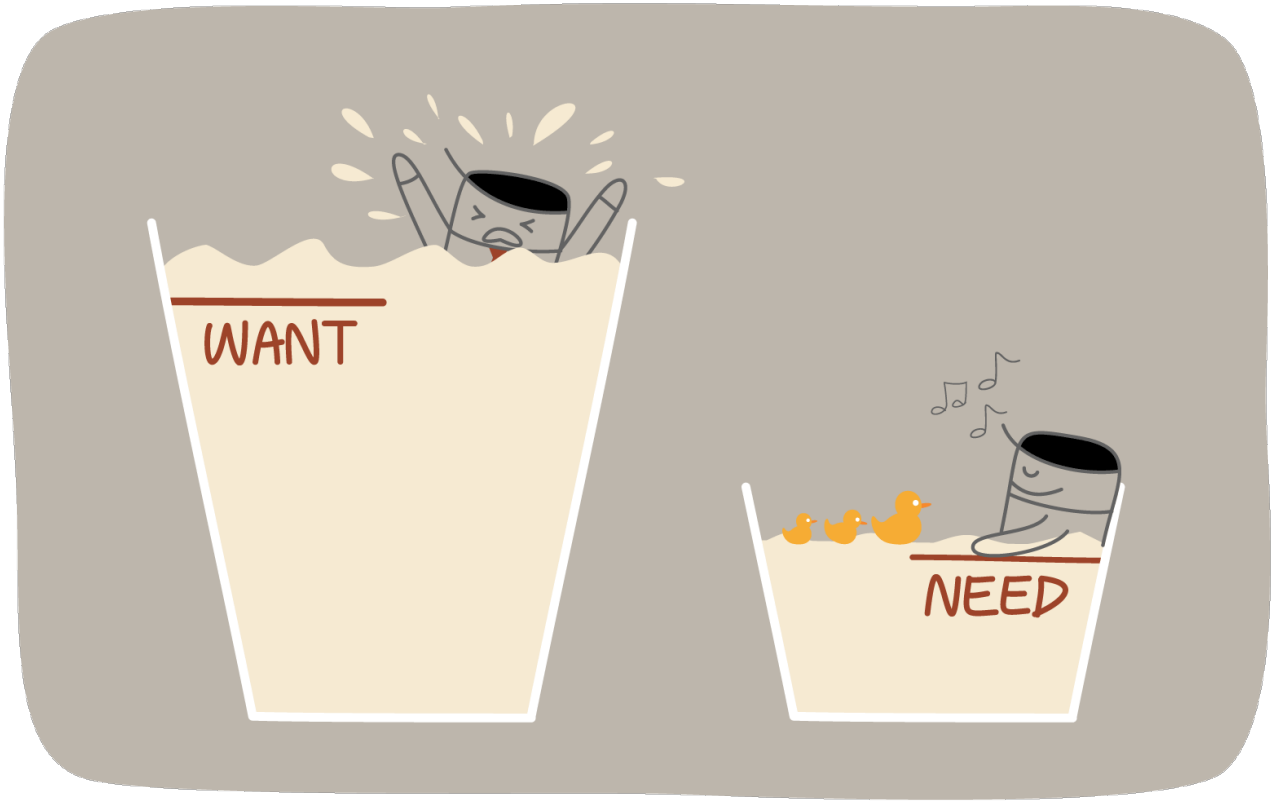
how much you can contribute to stopping climate change
minimum savings per person we'd need to keep warming below 2 degrees Celsius
*having one fewer child saves so much CO_2 over the generations that it didn't even fit on this chart
3*
2
1
tons of CO_2 equivalent saved per year
change light bulbs
hang clothes dry
recycle
use cold water on clothes
drive hybrid car
eat plant based diet
get rid of electric car
drive more efficient car
buy green energy
one less trans-atlantic flight
go car free

methods

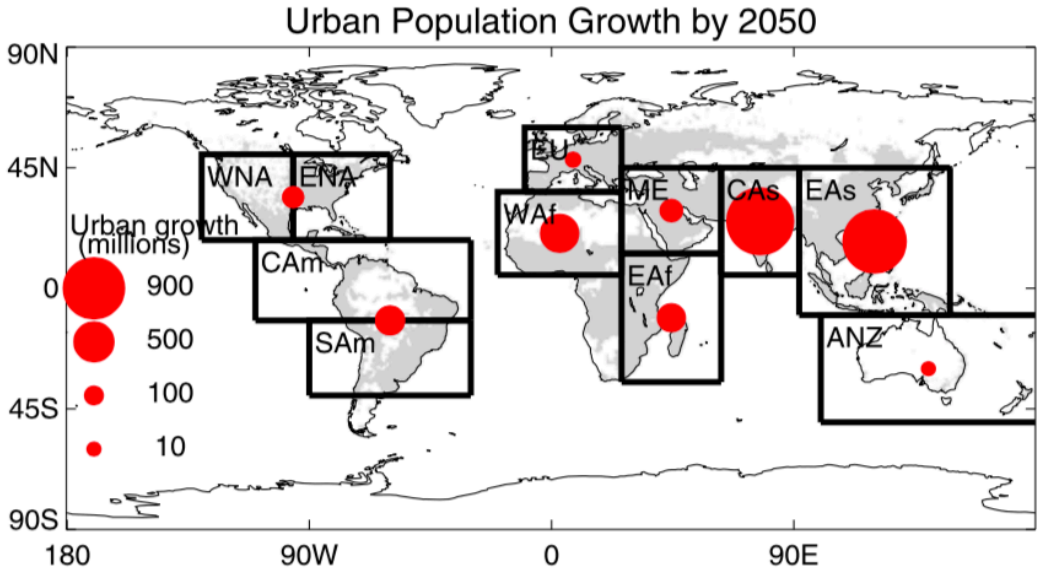
used code and data to build simulation models
under different scenarios

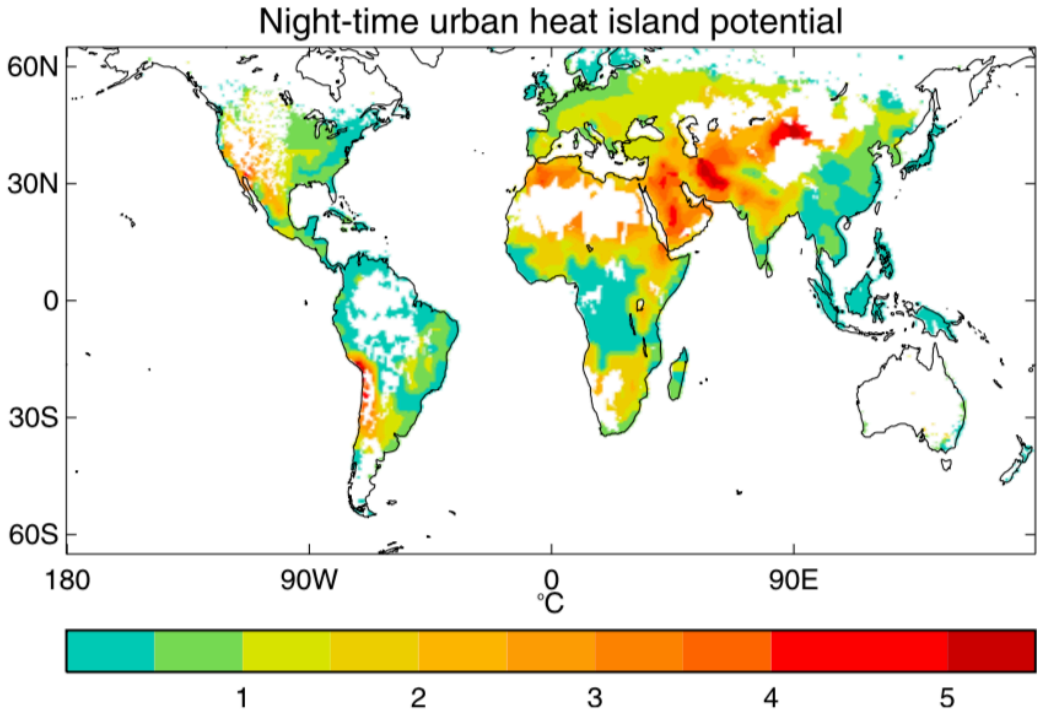
needs

data
programming
thresholds and benchmarks

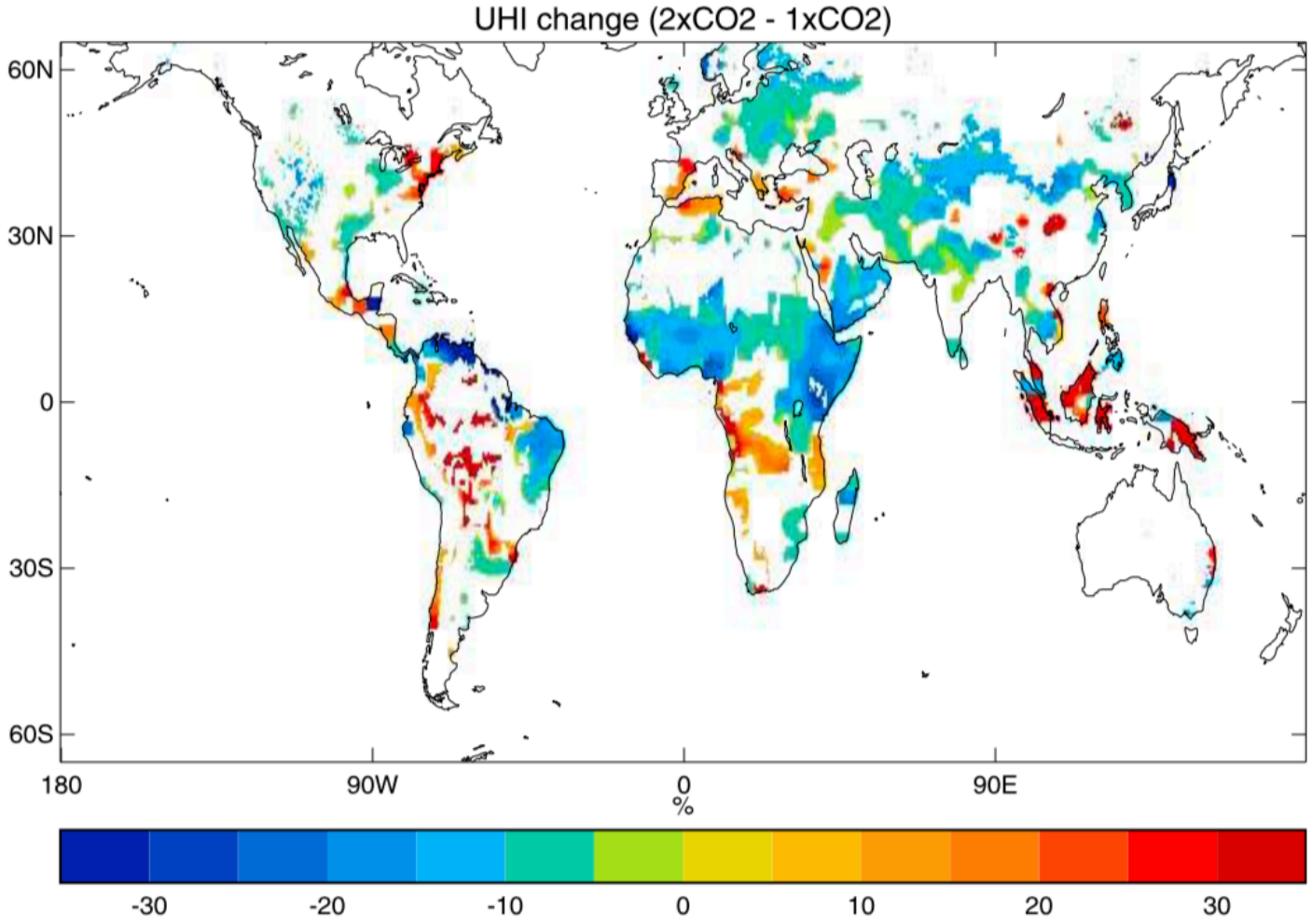

WANT
NEED

evidence



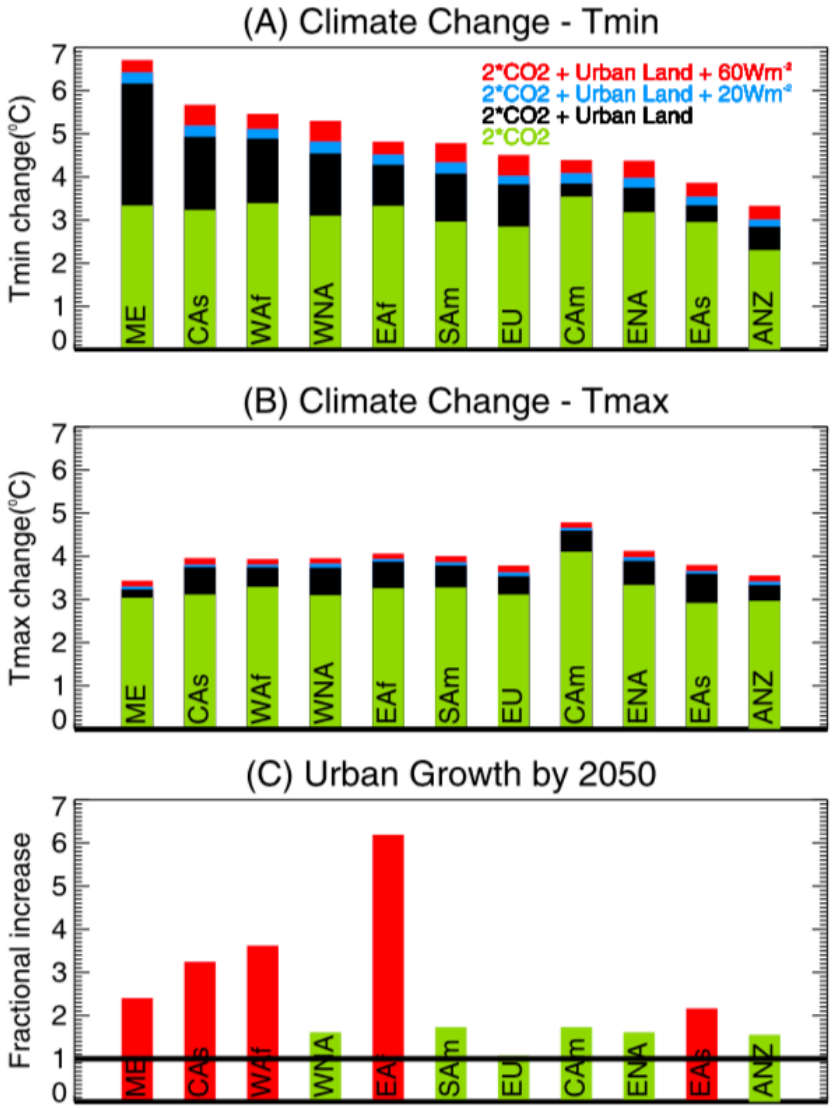


needs and wants both increasing

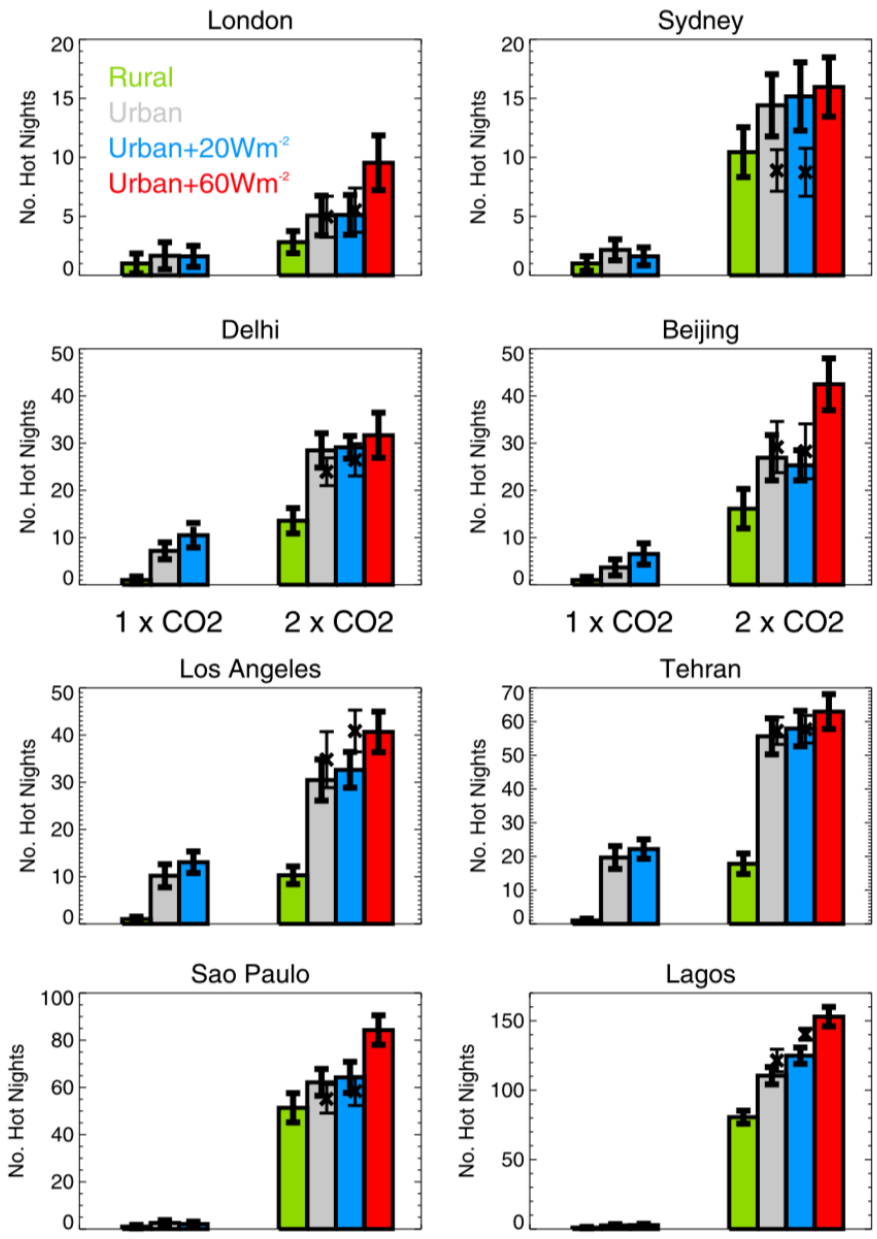


cities (i) getting warmer and (ii) increasing net warming

thermal stress, vulnerability, resilience are profound challeanges



climate and global change not the same everywhere



much less cooling for free

magnitude of urban heat island
NOT static under climate change

urban heat island is significant challenge

bio4enviro connection

change & basic data > programming > models > outcomes

tools

programming

good thinking

big picture

open data

implications

resilience planning critical