UREx SRN

Urban Resilience to Extremes: A Proposed Sustainability Research Network

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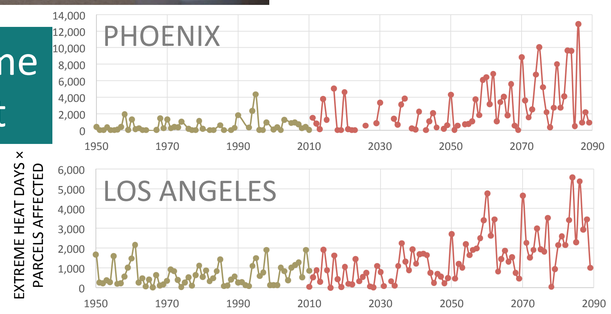
The Challenge

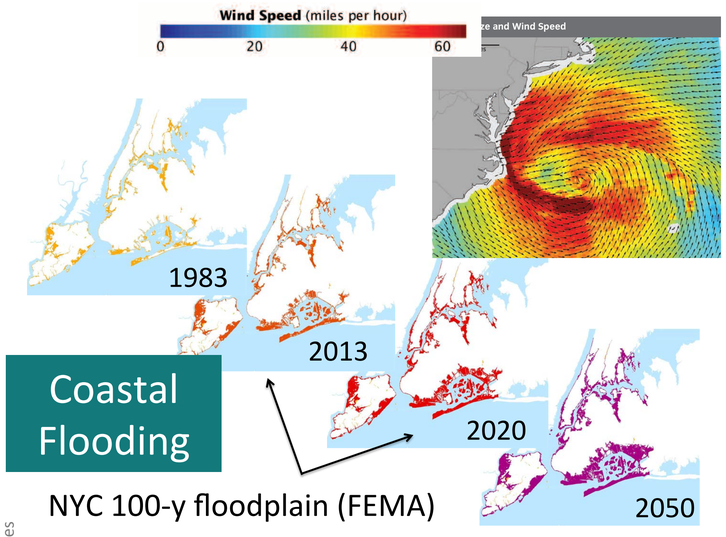
Urbanization and climate change are on a collision course and infrastructure is their battlefield!

Urban Flooding

Phoenix, AZ, 8 Sept 2014
(10-15 cm in <24 h)

Extreme Heat





Coastal Flooding

NYC 100-y floodplain (FEMA)

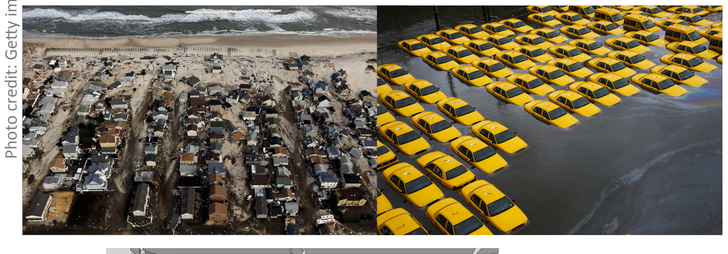
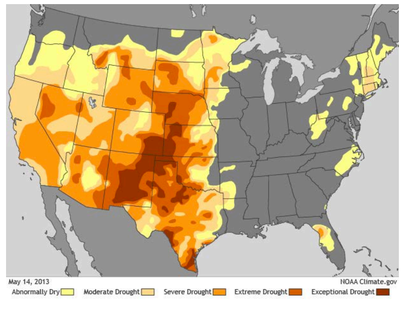


Photo credit: Getty images



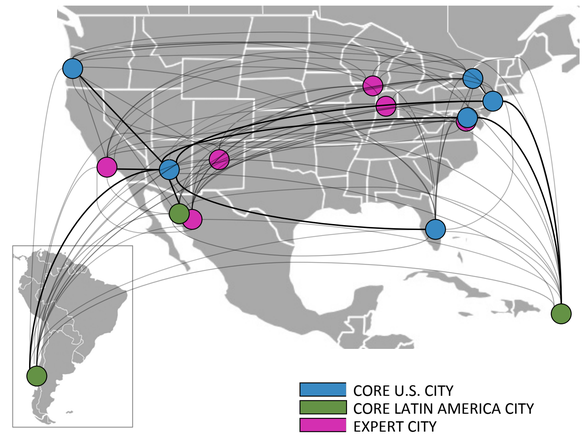
Drought

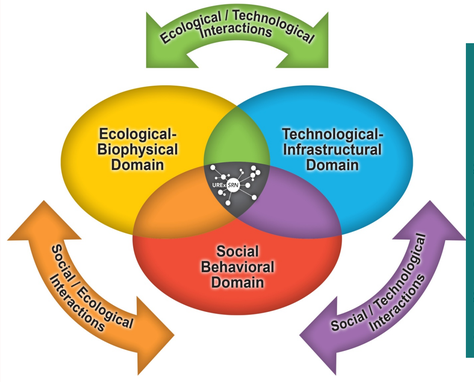
NYC—Syracuse—Baltimore—Miami—SanJuan—Portland—Phoenix—Hermosillo—Valdivia

Our Response: UREx Network

- A network of diverse cities
- A network of experts in Working Groups
- A holistic conceptual framework
- Inclusive, participatory approaches
- A workflow, education program, and evaluation plan that produce results and continually learn

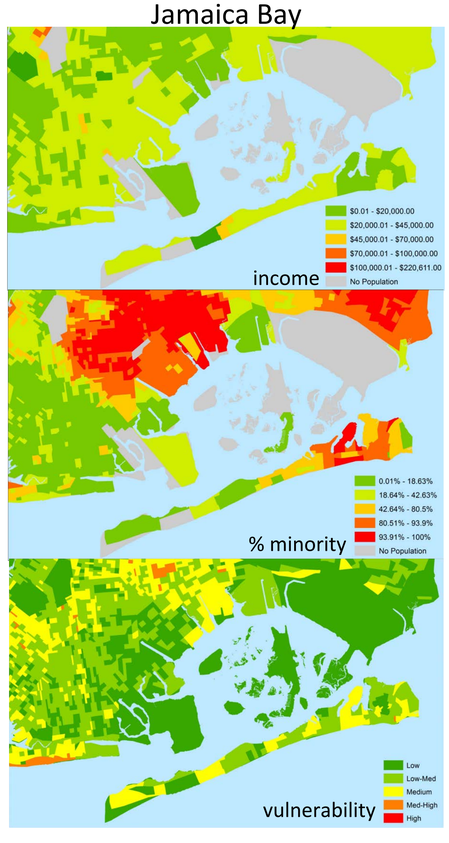
The UREx network in 2019



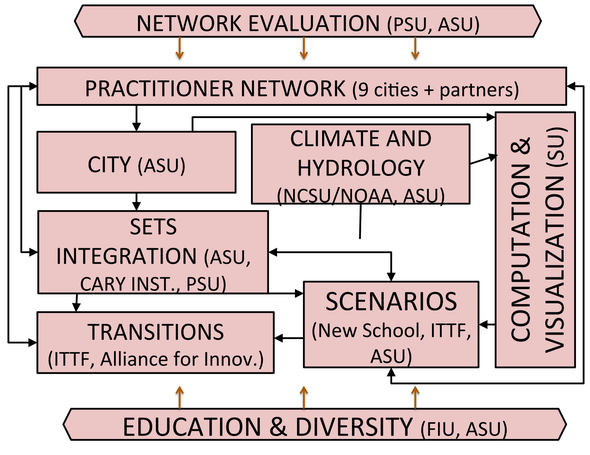


Central Question:
How do SETS domains interact to generate vulnerability or resilience to climate-related extreme events, and how can urban SETS dynamics be guided along more resilient, equitable, and sustainable trajectories?

Example: Vulnerability mapping in Jamaica Bay



UREx SRN Work Flow



- Nine cities, 15 institutions, 65 participants
- 10 partner institutions and numerous stakeholder partners
- Ecologists, social scientists, engineers, planners, designers, climatologists, physical scientists
- Downscaled climate extremes projections
- Geodatabase, computation, visualization used for comparison, sustainable future scenarios
- Transitions work to implement strategies
- Embedded IGERT-like graduate program

Solutions

Traditional Solution

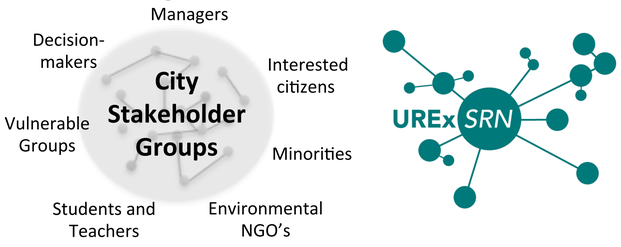
"Fail safe" – low likelihood,
High consequence of failure
highly modified Infrastructure

UREx Solution

"Safe to fail" – failure, but with minimal consequence

- Flexible
- Multifunctional

Working with diverse stakeholders



Training the next generation of leaders

(Researcher Years)

- 60 GRADUATE FELLOWS
- 30 POST-DOCTORAL FELLOWS
- 20 UNDERGRADUATES

Our vision

A comprehensive network that will build the scientific basis to support existing and emerging city initiatives and incorporate fundamental and practical strategies to promote urban resilience from a SETS and sustainability approach.

- Assembling technical knowledge about infra-structure, climate, hydrology, demography, institutions
- Quantifying interactions and feedbacks in SETS models from diverse sources of information
- Understanding organizations that build and manage infrastructure and their contexts
- Considering social norms that shape acceptability of infrastructure
- Capturing values and visions of various stakeholders for a more desirable future