

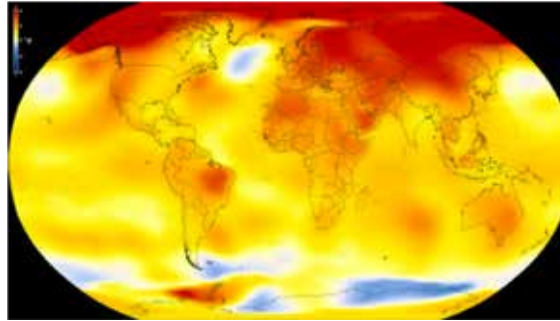
UREx SRN Project Overview

Nancy B Grimm & Charles L Redman, co-directors

Executive Team: Mikhail Chester, Erin Friedman (Senior Grad Fellow), Peter Groffman, David Iwaniec, Timon McPhearson, Thad Miller, Tischa Muñoz-Erickson
Program Manager: Angela Grobstein; **EDWG Coordinator:** Emily Key



Extreme events are increasing in frequency, magnitude, and impact



Cities are especially vulnerable to extreme events



How can cities become more resilient?



The Challenge

- Urbanization and climate change are on a collision course and infrastructure is their battlefield!
- *Infrastructure*=Physical components of interrelated systems that provide commodities and services essential to enable, sustain, or enhance societal living conditions



Photo credit: Reuters



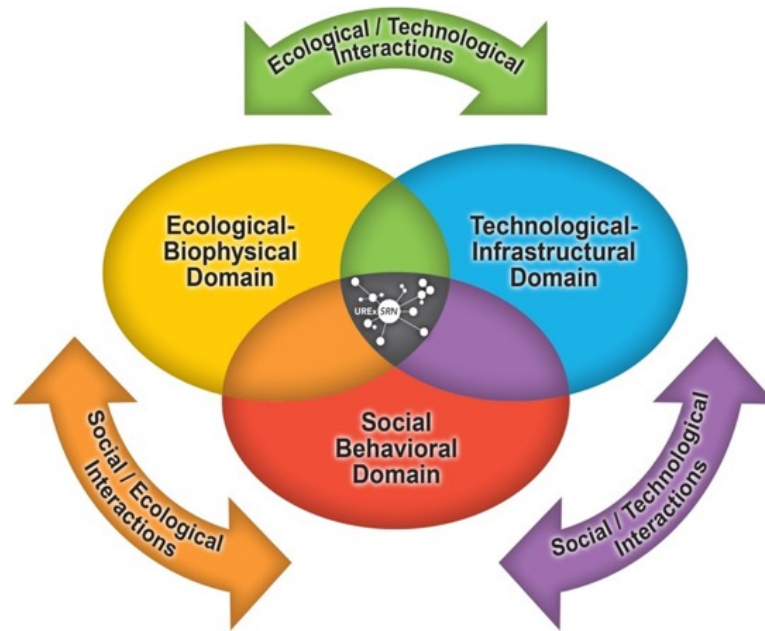
Photo credit: Ricardo Arduengo, AFP/Getty Images



Cities are resilient when they can persist, adapt, and transform in the face of stress and shocks, while maintaining their function and identity



Social-Ecological-Technological Systems



We assert: the most resilient solutions will be the ones that integrate all three domains.





Coastal
Flooding

Extreme
Heat

Drought

Urban
flooding

The UREx SRN

- Phoenix, AZ (ASU)
- Portland, OR (PSU)
- Syracuse, NY (Syracuse U)
- New York, NY (New School, NYU, CUNY)
- Baltimore, MD (Cary Inst, CUNY, UMBC)
- Atlanta, GA (GA State)
- Miami, FL (FIU, Clark U)
- San Juan, PR (UPR)
- Valdivia, Chile (UACH)
- Mexico City, Mexico (UNAM)
- Hermosillo, Mexico (ITSON)

*>20 institutions, >170 participants, >130 practitioners
16 postdocs, 65 grad fellows & associates, \$12M funding*



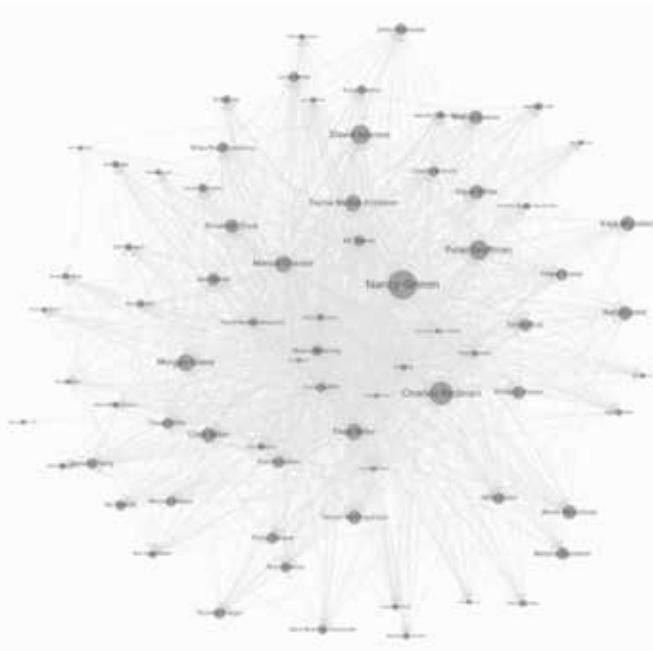
Guiding principles

1. **SETS:** Benefits of SETS approach to understanding and intervention
2. **Co-production:** Value of co-production of knowledge and action at all stages of the process
3. **Equity:** Integrating concern for equity in design, evaluation, and implementation of all projects
4. **Resilient infrastructure:** Effective use of green (and hybrid) infrastructure, ecosystem services, and safe-to-fail concepts in risk management and resilience strategies
5. **Network:** Interaction across network to improve learning, innovation, and action plans
6. **Latinx cities:** Learn from a “Latin perspective” on resilience, prioritization, and action

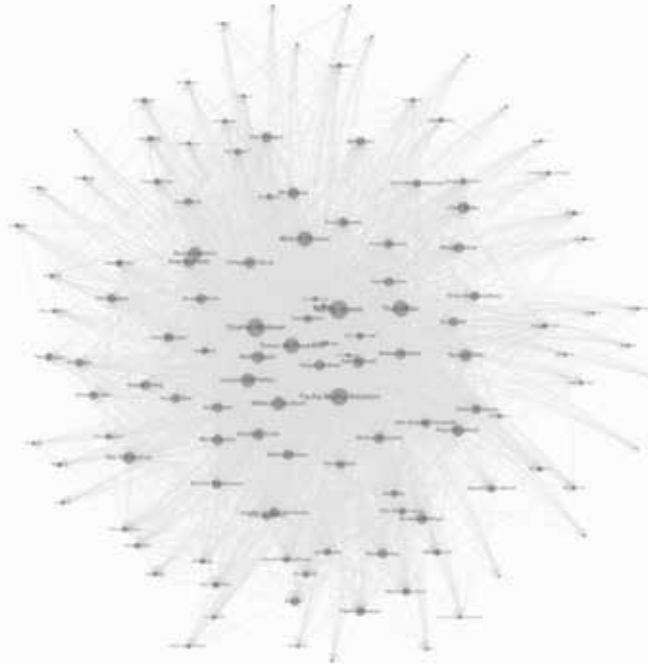


Network growth

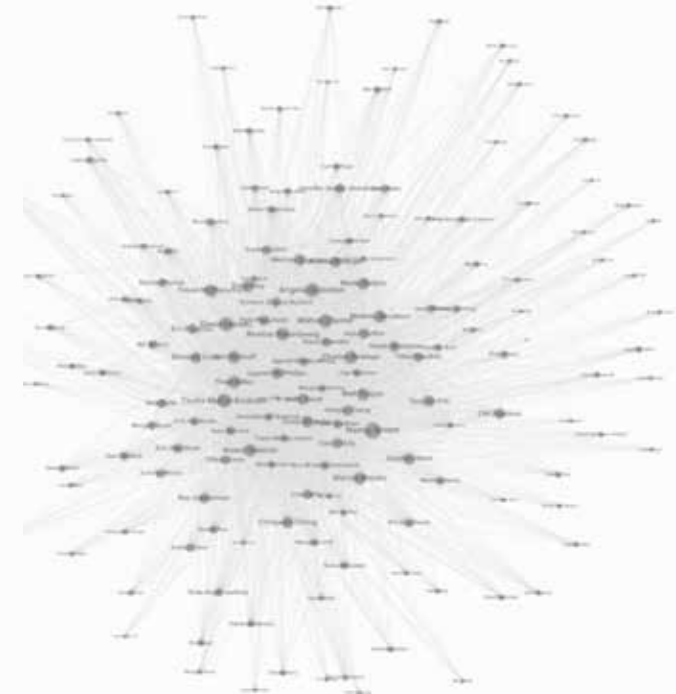
2016



2017



2018



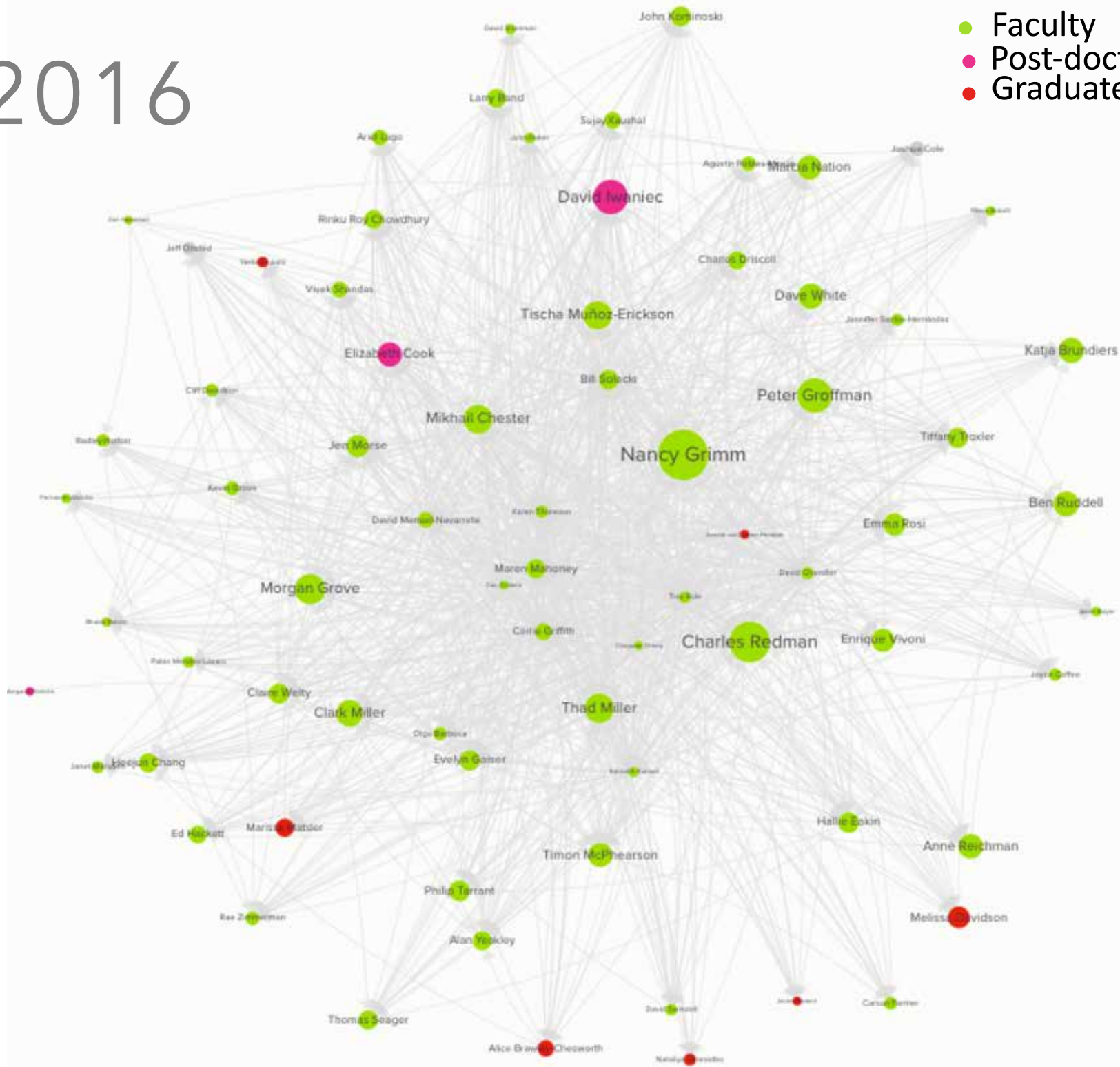
lowest frequency of interactions

- Not only in terms of numbers, but connectivity



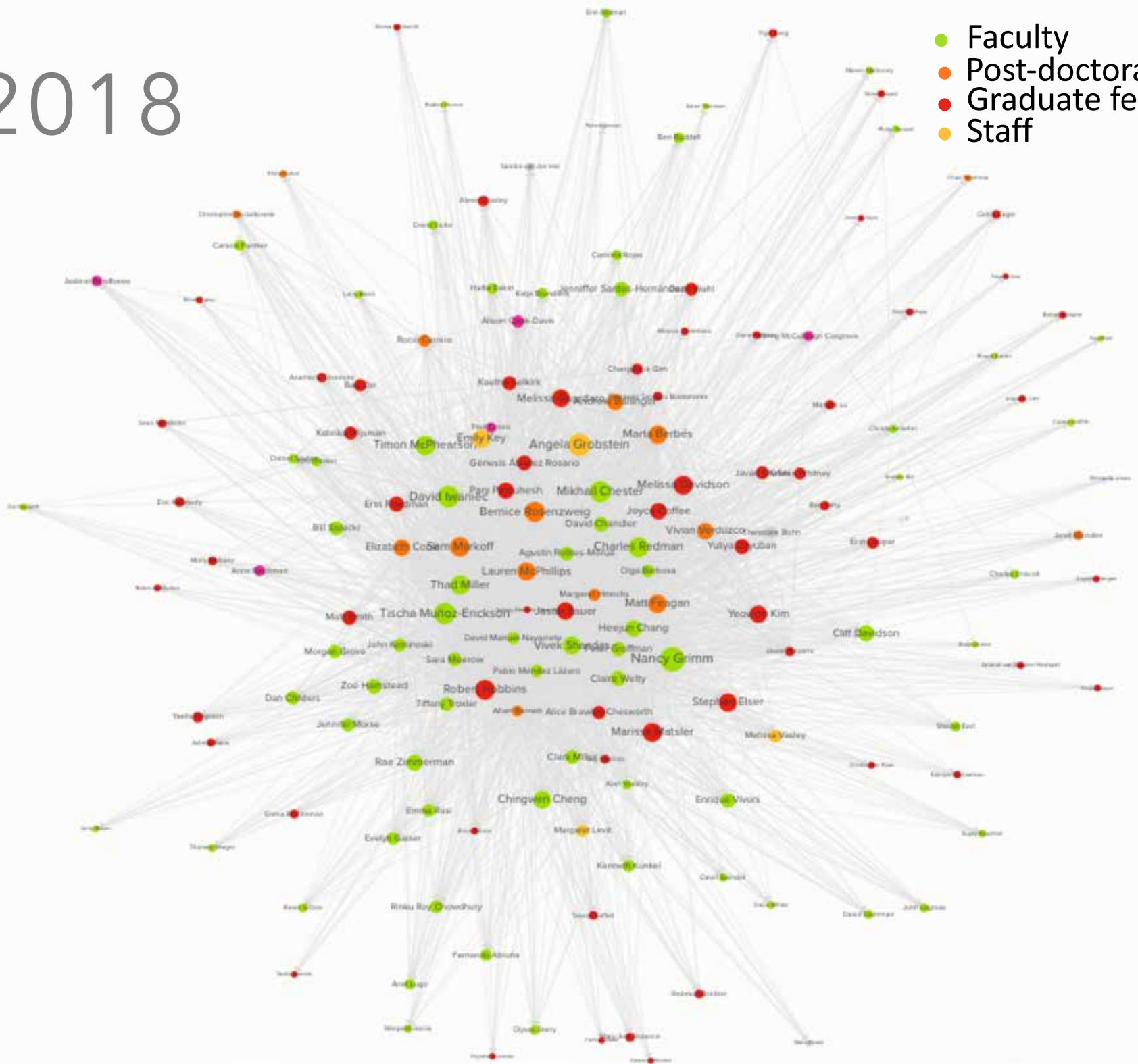
2016

- Faculty
- Post-doctoral fellow
- Graduate fellow



2018

- Faculty
- Post-doctoral fellow
- Graduate fellow
- Staff



Four priorities for research

1. City-based scenario workshops and transition/implementation activities
2. Task forces on fundamental issues and integration of domains
3. Research within each city
 - Does it contribute to basic science and application?
 - Can it be framed as a cross-city comparison?
 - Have we involved members of the practitioner network?
4. Comparative urban research
 - Existing conditions & future scenarios
 - Resilience to specific extreme events
 - Incorporation of resilience into decision-making



Scenarios Year 2

Scenarios workshop 1

San Juan, PR

- February 2017



Harlem, NYC

- March 2017



Valdivia, Chile

- May 2017



Scenarios Year 3

Scenarios workshop 1

Hermosillo

- November 6, 2018



South Phoenix

- May 11, 2018



Baltimore

- June 12, 2018



Scenarios Year 4

Scenarios workshop 1

Miami

- April 12, 2019



Syracuse

- May 31, 2019



Portland

- September, 2019



WORKING GROUPS & TASK FORCES



NETWORK EVALUATION

Leads: T Miller, Redman (ASU)
 Grad Leads: David Morrison, Jan Cordero Casillas (ASU)

PRACTITIONER NETWORK

CITY COMPARISONS

Leads: Grimm, Redman (ASU)
 Postdoc Lead: Yeowon Kim (ASU)
 Grad Lead: Marisa Manheim (ASU)

- **GI Research Coordination** – McPhillips (Penn State)
- **Heat** – Redman, Hamstead (UB), Shandas (PSU)
- **Urban Flooding** – Rosenzweig (CUNY-ASRC)
- **Empirical VA** – Sauer, Berbés, Guardaro (ASU) ◆
- **LAC Cities Comparisons** – Muñoz-Erickson (USFS)
- **Comparative Urban Futures** – Iwaniec (GSU), Grimm (ASU) ◆

CLIMATE & HYDROLOGIC EXTREMES

Leads: Kunkel (NCSU/NOAA), Vivoni (ASU)
 Postdoc Lead: Andrew Ballinger (NCSU)
 Grad Leads: Kristen Whitney (ASU), Geneva Gray (GSU)

SCENARIOS

Leads: Iwaniec (GSU), McPhearson (TNS),
 Muñoz-Erickson (USFS), Cook (TNS)
 Postdoc Lead: Lelani Mannetti (GSU)
 Grad Lead: Robert Lloyd (GSU)

- **Scenarios Modeling** – Ortiz (TNS) ◆
- **Empirical VA** – Sauer, Berbés, Guardaro (ASU) ◆
- **Governance Analysis** – Muñoz-Erickson (USFS), Iwaniec (GSU) ◆
- **Comparative Urban Futures** – Iwaniec (GSU), Grimm (ASU) ◆

Other cross-cutting TFs:

- **Design Storms** – Chester
- **SETS Approach to ES** – Grimm, McPhearson
- **Conceptual VA** – Roy Chowdhury (Clark U), Shandas (PSU), Eisenman (UCLA)
- **Podcast** – Elser (ASU)

Social-Ecological-Technological Systems (SETS)

Leads: Chester (ASU), Groffman (Cary Inst.), T Miller (ASU)
 Postdoc Lead: Sam Markolf (ASU)
 Grad Lead: Alysha Helmrich (ASU)

- **SETS Framework** – Groffman, Chester, T Miller
- **SETS and Resilience Engineering** – Markolf (ASU)

TRANSITIONS & IMPLEMENTATION

Leads: C Miller (ASU), Muñoz-Erickson (USFS)
 Postdoc Lead: Mathieu Feagan (ASU)

- **KSI** – Feagan (ASU)
- **Innovation Plazas** – Feagan (ASU)
- **F&C Strategies** – Coffee (CRC), Swindell (ASU)
- **Governance Analysis** – Muñoz-Erickson (USFS), Iwaniec (GSU) ◆

EDUCATION & DIVERSITY

Leads: Gaiser (FIU), Grimm (ASU)
 Education Program Coordinator: Emily Key (ASU)

COMPUTATION & VISUALIZATION

Leads: Chester (ASU), McPhearson (TNS)
 Postdoc Lead: Nasir Ahmad (ASU)

- **Data Management** – Chester (ASU)
- **Data Visualizations** – McPhearson (TNS)
- **Scenarios Modeling** – Ortiz (TNS) ◆

Task Force (TF) Acronyms:
ES – Ecosystem Services
F&C – Financial & Corporate
GI – Green Infrastructure
KSI – Knowledge Systems
 Innovation
LAC – Latin America and
 Caribbean
VA – Vulnerability Analysis

◆ cross-cutting with another working group