

# Sustainable Urban Systems: Challenges to and Opportunities for Developing Resilience in Rapidly Growing Urban Corridors in Semi-Arid Regions

August 22-24, 2019

The University of Texas at Austin

Rapid and often unprecedented changes in population, climate, infrastructures and communities necessitate better understanding of processes that govern interdependent natural, engineered, and social system in urban regions. This is apparent in fast-growing semi-arid regions, where environmental and socioeconomic changes can cause complex variability in regional water resources and weather extremes, urban social-ecological resilience, as well as the nexus of water with food, energy, ecosystems and infrastructures. Sustainable Urban Systems Science, however, remains a grand challenge and an emerging field. The hypothesis that unified and collaborative development of focused computational, engineering, and social science research approaches can address this gap must be examined with existing and new types of data as well as through integrated models that can capture city-scale processes and dependencies. This conference seeks to enhance our understanding of how to most effectively combine expertise from multiple disciplines to synthesize data and modeling approaches that deliver useful and actionable knowledge with a view to guiding societal and policy decisions aimed toward the sustainability of cities in the 21<sup>st</sup> century.

## Color Legend:

**Workshops**

**Panel Discussions**

**Presentations**

Thursday August 22, 2019

- 8:30 am **Breakfast and Welcoming Remarks**
- 9:00 am **Group Activity: Solution based design-thinking. Facilitators: Steven Gray and Kasey Faust**
- 10:00 am **Plenary Topic: Integrating Earth-process models and downscaling for relevance to regional planning. Dev Niyogi, Purdue University**
- 10:40 am **Coffee and networking break**
- 11:00 am **Assessing the needs of regional stakeholders. Panel Moderator: Sarah Rountree Schlessinger, Executive Director – Texas Water Foundation**
- **Marilu Hastings**, Cynthia and George Mitchell Foundation
  - **Marisa Flores Gonzalez**, Austin Water Utility, Water Forward Program
  - **Robert Puente**, San Antonio Water System
  - **Katherine Romans**, Hill Country Alliance
- 12:00 pm **Lunch**
- 1:00 pm **Plenary Topic: Big data and urban informatics, spatial planning, and participatory policy exploration. Moira Zellner, University of Illinois at Chicago**
- 1:40 pm **Plenary Topic: The structure of civic technologies and their impacts on quality of life and social equity. Bev Wilson, University of Illinois at Urbana-Champaign**
- 2:20 pm **Coffee and networking break**

2:40 pm Workshop #1: Case study-based approach to solving controversial problems using Big Data, Integrated Models, and Co-Designed Research Initiatives. Facilitators: Steven Gray, Kasey Faust, Suzanne Pierce

5:00 pm **Adjourn**

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Friday August 23, 2019

8:45 am **Breakfast and Recap of Day 1**

9:00 am Plenary Topic: Fuzzy cognitive mapping, stakeholder engagement, and participatory modeling. Antonie Jetter, Portland State University

9:40 am Plenary Topic: Processes and feedbacks in the natural/urban environment, and unintended positive consequences of urbanization. Michael Webber, University of Texas at Austin

10:20 am **Coffee and Networking Break**

10:40 am Workshop #2: Understanding Convergence and Divergence in Disciplinary Perspectives of Sustainable Urban Systems over time through Mental Model Change. Facilitators: Steven Gray, Kasey Faust, Suzanne Pierce

12:00 pm **Lunch**

1:00 pm Lessons learned from successful stakeholder-driven partnerships: How do we upscale effective programs into larger ecosystems? Panel Moderator: Auroop Ganguly, Northeastern University

- **Marta Gonzalez**, University of California Berkeley
- **Sarah Rountree Schlessinger**, Texas Water Foundation
- **Laura Schmitt-Olabisi**, Michigan State University
- **Chris Herrington**, City of Austin

2:20 pm **Coffee and networking break**

2:40 pm Workshop #3: Identifying leverage points to deal with pressing problems and domain general processes. Facilitators: Steven Gray, Kasey Faust, Suzanne Pierce

5:00 pm **Adjourn**

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Saturday August 24, 2019

8:45 am **Breakfast and Recap of Day 2**

9:00 am Identifying emerging challenges in Big Data, Integrated Modeling, and Stakeholder-driven research; What would success mean to us as a newly-formed

research collective? Panel Moderator: Ashlynn Stillwell, University of Illinois at Urbana-Champaign

- **Kent Portney**, Texas A&M University
- **Suzanne Pierce**, University of Texas at Austin, Texas Advanced Computing Center
- **Rebecca Jordan**, Michigan State University

10:00 am **Coffee Break**

10:20 am Outlining the NSF Prospectus for Future Research Initiatives in Sustainable Urban Systems. Facilitators: Jay Banner and Dev Niyogi

12:00 pm **Lunch/Adjourn**