PLANET
TEXAS 2050

A UT Austin Grand Challenge

planettexas2050.utexas.edu

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Recent Texas transplants
by way of Boston and
Colombia …

PT2050 Vision: A Resilient Texas

PLANET TEXAS 2050
A UT Grand Challenge

A Climate Crisis, Booming Growth, & Resource Strain +
Deeply Interwoven Equity and Justice Issues

What happens when Texas roads can't handle the crush of traffic, systems for cooling and heating buildings break under strain, water systems fall apart, and land dries out? In the face of hurricanes, how will people safely evacuate? How will they trust and understand models? How do communities prepare for the next big storm and lay claim to the resources they need?

Planet Texas 2050 is a Research Grand Challenge of UT Austin working to make Texas more resilient in the face of these challenges.

What is a Grand Challenge?

A wicked problem that requires new kinds of collaboration across disciplines and between diverse communities of thinkers, doers, and dreamers to solve.

A grand challenge initiative addresses problems that, when solved, have a significant positive impact on people and society.
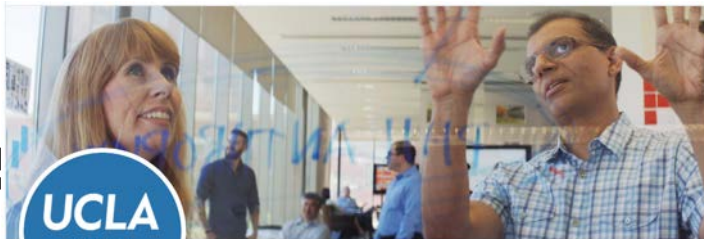
Large in scale, ambitious in scope, and multi-disciplinary, university-based grand challenges come in many shapes and sizes.

Welcome to Cambridge Global Challenges

Cambridge Global Challenges is the Strategic Research Initiative (SRI) of the University of Cambridge that aims to enhance the contribution of its research towards addressing the Sustainable Development Goals (SDGs) by 2030, with a particular focus on the poorest half of the world's population.

Cornell Chronicle ✔ @CornellNews · Sep 26, 2019

'**Migrations**' - of people, animals, ideas, etc. - is theme of @**Cornell**'s first Global **Grand Challenge**. @CornellLaw @CornellCAS @CornellCALS

Follow

UCLA Grand Challenges
@UCLAThinkGrand

@UCLA & partners pursue large-scale solutions to some of society's most daunting problems: #SustainableLA (follow @UCLASustainLA) & #DepressionGrandChallenge

📍 Los Angeles, California 🔗 grandchallenges.ucla.edu
📅 Joined September 2012

Sustainable Water Resources

Researching resilient and innovative water usage in New Mexico.

WHY DOES BRIDGING BARRIERS EXIST?

- There are complex societal problems and important scholarly research questions that can be addressed only if broadly disparate academic disciplines converge to focus on them

- We need sustained (>5yrs), interdisciplinary research at a campus-wide scale to be able to address these complex problems

- UT didn't have a Grand Challenge initiative
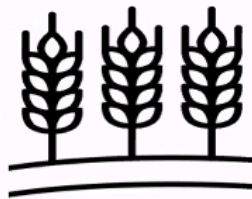
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Solicit ideas from research community

Sort into themes and working groups

MANY meetings to synthesize ideas

Teams submitted research plans to be launched

Three UT Grand Challenges launched and supported

Who are we? Faculty Leadership + Staff

Jay Banner
Professor
Geological Sciences

My research explores Earth surface processes, including climate and hydrologic processes. Much of that focuses on the study of cave deposits, carbonate rocks, and modern aquifers and watersheds.

Dev Niyogi
Professor
Department of Geo Sciences Department of Civil, Architectural, and Environmental Engineering

My research focuses on the complex relation between human decisions, weather and regional climate, and I aim to come up with a framework that can be used as a template for improving lives.

Tim Keitt
Professor
Integrative Biology

My research blends computational approaches with ecology and evolutionary biology to address the causes and consequences of local and global environmental change.

Fernanda Leite
Associate Professor
Civil, Architectural and Environmental Engineering

My work includes building and civil information modeling and collaboration and coordination technologies, project management and economics, and construction safety.

David Kramer
Program Director
Office of the Vice President for Research

I'm trained as a facilitator, educator, and program strategist. I help ensure efforts contribute to progress on critical issues such as climate change, sustainable growth, and equity.

+

Katherine Lieberknecht
Assistant Professor
School of Architecture

I study how ecosystems support cities and the residents living within them. My work focuses on urban water planning, metropolitan-scaled green infrastructure planning, and metropolitan food systems.

Suzanne Pierce
Research Scientist
Texas Advanced Computing Center

I'm a trained groundwater scientist, and I lead an NSF-funded effort to apply artificial intelligence and knowledge-centered computing to solve complex Earth resource problems.

Adam Rabinowitz
Associate Professor
Classics

I study the interplay between individuals' daily lives and the unfolding of larger, historical processes — and on the interdisciplinary research methods necessary to connect the two.

Miriam Solis
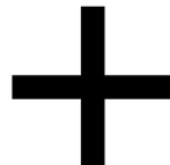Assistant Professor
School of Architecture

My work looks at how race and racism affect environmental planning, particularly regarding wastewater infrastructure in older American cities.
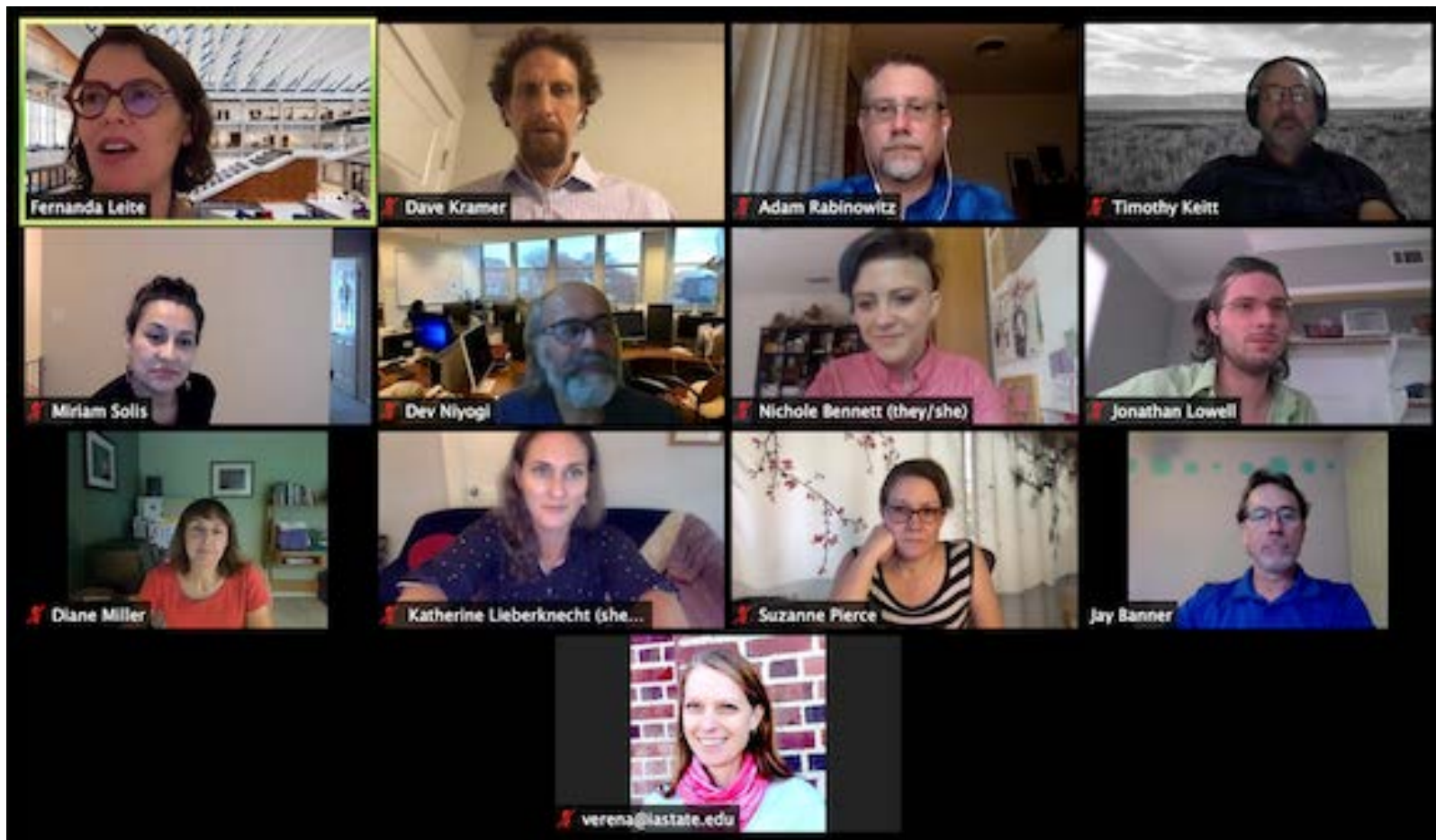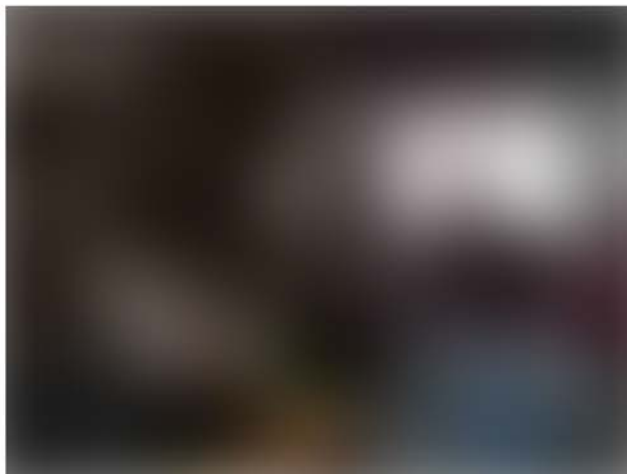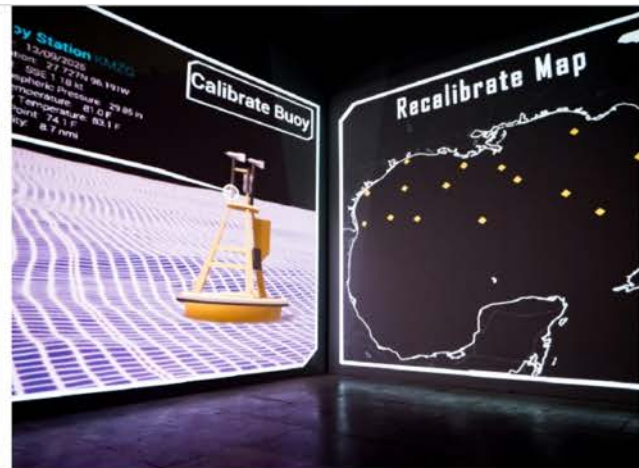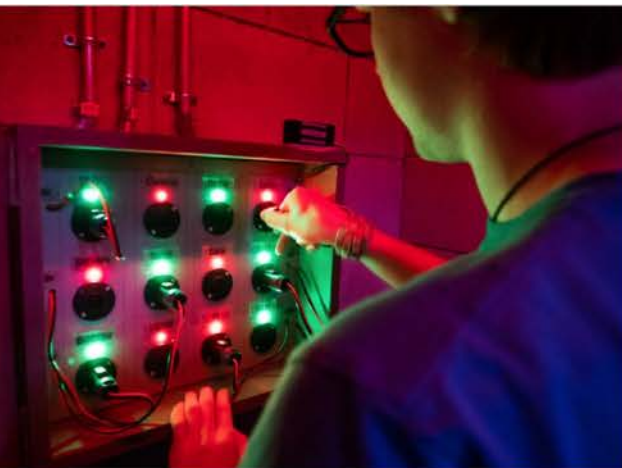
Jonathan Lowell
Community Liaison

I am trained in social science research methods, facilitation, and community engagement. My role is to help ensure research is done with community and that its outputs have social impacts..

Highlights from first phase of PT2050

- Truly transdisciplinary, including the arts
- Wide range of innovative & creative research
- Deep student engagement
- Vibrant & collaborative community of practice of over 127 researchers from more than 20 distinct parts of UT (Colleges, Schools, and Units)
- Extreme challenges & disruptions + adaptation
- Publications and leveraged funding

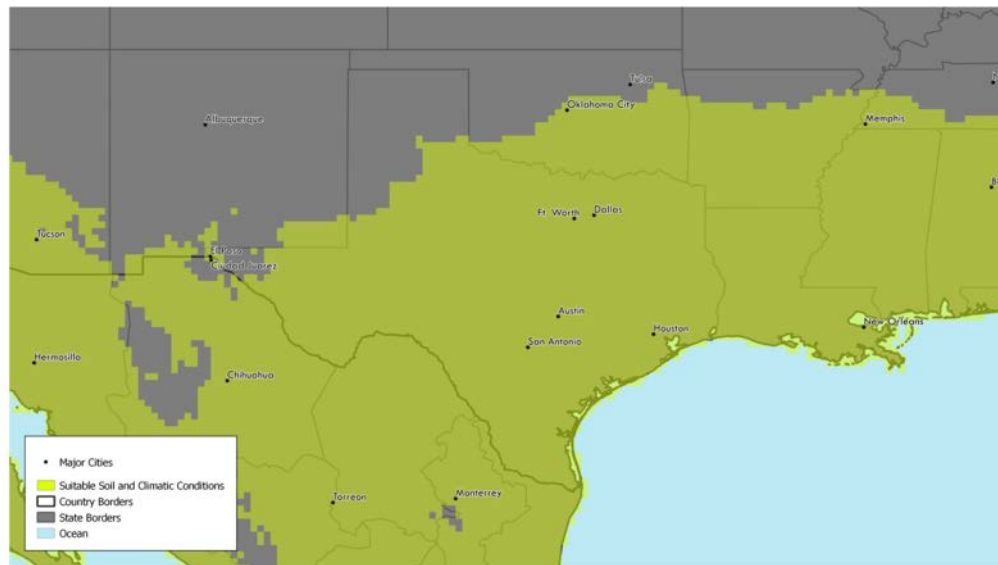Tracing Water: Studying Baldcypress Trees

TRACING THE HISTORY OF AUSTIN WATER

Predicted Environmental Suitability for *B. pseudomallei* in Texas

- Major Cities
- Suitable Soil and Climatic Conditions
- Country Borders
- State Borders
- Ocean

Children garden at Pleasant Hill Elementary in South Austin while their parents organize with Go! Austin/Vamos! Austin. Credit: GAVA

The project, a collaboration among neighborhood residents, UT, the City of Austin, the community organization Go! Austin/Vamos! Austin, and St. Edward's University, will creatively examine long-standing problems in neighborhoods like Dove Springs, which tend to have worse outcomes in response to climate-related issues because of inadequate infrastructure and investment. The work is generously supported by a National Science Foundation (NSF) grant.

Making data work for residents

To gather the lived experience of residents, researchers will train what they are calling "climate navigators" in Dove Springs — between 20 and 40 people who live in the neighborhood who will work on the project.

They will be paid with portions of the NSF grant money and will go on to train their neighbors how to anticipate, prepare for, and respond to climate stressors — particularly flooding.

Their primary role will be to help researchers build a giant data portal by using iPads to upload their personal narratives, photos, videos, and sound recordings of things like flooding, traffic hazards, and other problems in the neighborhood. Katherine Lieberknecht, an assistant professor in UT's School of Architecture who is leading the project, says the portal will be like a giant, visual and interactive 311 repository where residents can place their concerns.

EXPERIENTIAL CLIMATE SCIENCE

Scientific output can be challenging to comprehend by the average citizen. Through cross-disciplinary projects, Planet Texas 2050, a Grand Challenge initiative at the University of Texas at Austin, has explored how to transform scientific findings into experience via an escape room and a virtual reality experience. This panel will share our journey of transforming scientific findings into educational storytelling making climate science more accessible, engaging, entertaining, and meaningful, and encourage informed discussion and decision making by all.

ESCAPING DOOM: TRANSFORMING DATA INTO EXPERIENCE

We know that climate change is real. Data is the language of science; however, data alone is often incomprehensible to the average person. This panel and our real-life experiential escape room make scientific findings accessible and encourage informed discussion and decision making by all. At UT Austin, leveraging existing data and expertise, we're developing an escape room to explore how scientific research can be integrated into an engaging, entertaining and educational storytelling experience.

SXSW 2021

Priorities moving forward

- Apply lessons learned: How do we apply what we have learned from years 1 and 2?

- Commit to justice (social, racial, environmental) through engaged solidarity

- Make big bets that leave a legacy

- Publish groundbreaking, innovative, transdisciplinary work as a model for grand challenges and academic leadership

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Frontlines and Flagships

We also have built partnerships with policymakers and community groups to ensure that new findings, new data, and new insights from this grand challenge are shared with as many people as possible. These groups are essential to our own learning, as they allow us to work with frontline communities who too often bear the brunt of climate impacts.

This year, Planet Texas 2050 will be launching a set of multi-year flagship projects. Together, they will bring our work to more Texans and will target, in an interconnected way, some of the most critical climate change-related issues our region is facing.

Flagships

Six Flagship Projects

Sustainable Texas Communities: Partnering with diverse populations to research and discover locally led solutions to the climate crisis while identifying new green career pathways out of poverty.

Biodiversity and Changing Landscapes: Pioneering new methods to explain and predict changes in ecosystems by monitoring wildlife, weather, soil, disease-carrying pathogens, and more to better understand the effects of climate change and human activity on nature and human health.

Resilient Cities in a Post-Carbon Future: Reimagining more equitable and resource-efficient metropolitan areas while safeguarding the food, fiber, fuel, and water that people and the planet depend on.

Networks for Hazard Preparedness and Response: Preparing for floods and heat waves by designing new maps and tools that can be used by first responders, neighborhood associations, city governments, and planners.

Integrated Models for Complex Decision Making: Developing new models that enable scientists, policy makers, city managers, and communities to harness vast amounts of data from a variety of sources to make effective and timely climate-related decisions.

Stories of Ancient Resilience: Reexamining the past to inspire a new vision of human resilience and effective response to the climate crisis.

Community-driven research

Community informed

Community as adviser

Community involved

Community as collaborator

Community directed

Community as leader
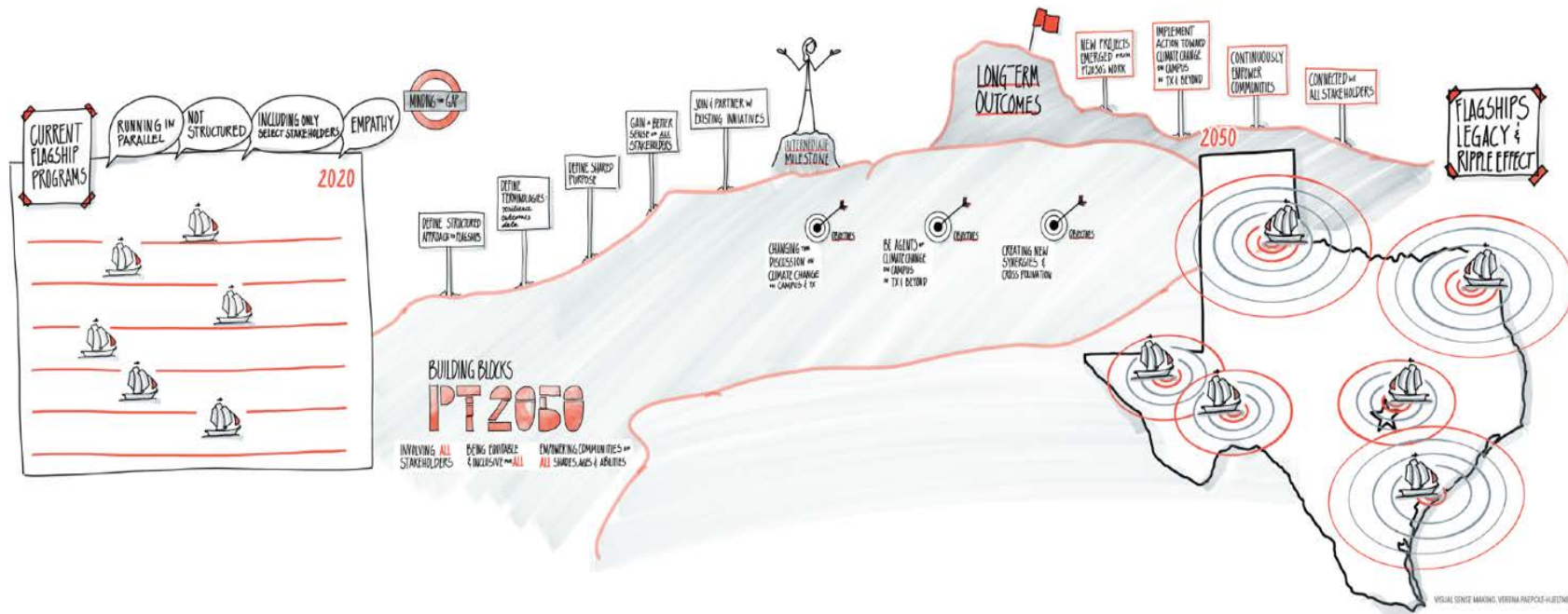
Greater Community Engagement

Changing The Way We Respond to Disasters

Planet Texas 2050 researchers design new and better flood maps

Planet Texas 2050

Oct 30 · 5 min read

PT 2050 RETREAT 2020 // MARKING THE TRAIL
10.26/28.2020

Aspirational brainstorming

- In a world where complexity reigns, communities come together to harness the power of many and the knowledge of all, leveraging the power of machines to achieve a new and better future for all of humanity, and nature and animals too!

- In a world where relationships between researchers and communities and humanity and the more-than-human-world are strained, a group of researchers learn to re-fashion those relationships within themselves and create a model for how to harness knowledge and relationships to build a better world.

- In a world of division between researchers and communities, between people and nature, between wealth for the few and health for all, a small group of researchers spread across the state of Texas, starting in Austin and enveloping the reset of our universities institutes across the state and with communities toward a better future.

Thank you!

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"Hope requires uncertainty. Only if the future isn't written can we possibly wish for hope." - Susanne Moser

Stay in touch:

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