PLANET TEXAS 2050

Fiscal Year 2024 Annual Report

The University of Texas at Austin
Research Development
Vice President for Research, Scholarship and Creative Endeavors

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Making Texas resilient is our grand challenge.

The compounding challenges of climate change and rapid population growth pose serious threats to communities, ecosystems and economic stability across the Lone Star State and beyond. As extreme weather events like floods, droughts and heat waves are occurring with greater frequency and intensity, innovative and equitable strategies are needed to adapt to these new realities and mitigate their negative impacts.

Planet Texas 2050's interdisciplinary research teams include architects, archaeologists, city planners, public health experts, geologists, engineers, biologists, computer scientists, and artists working collaboratively with municipal partners, non-governmental organizations and residents to advance community-informed solution-based research. This holistic approach leverages the full breadth of expertise needed to tackle the complex, intersecting issues exacerbated by climate change and population growth and to create adaptive strategies for resilience.

Planet Texas 2050 Highlights in Numbers

EXPANDING NETWORKS

129 active researchers

27 UT departments & disciplines

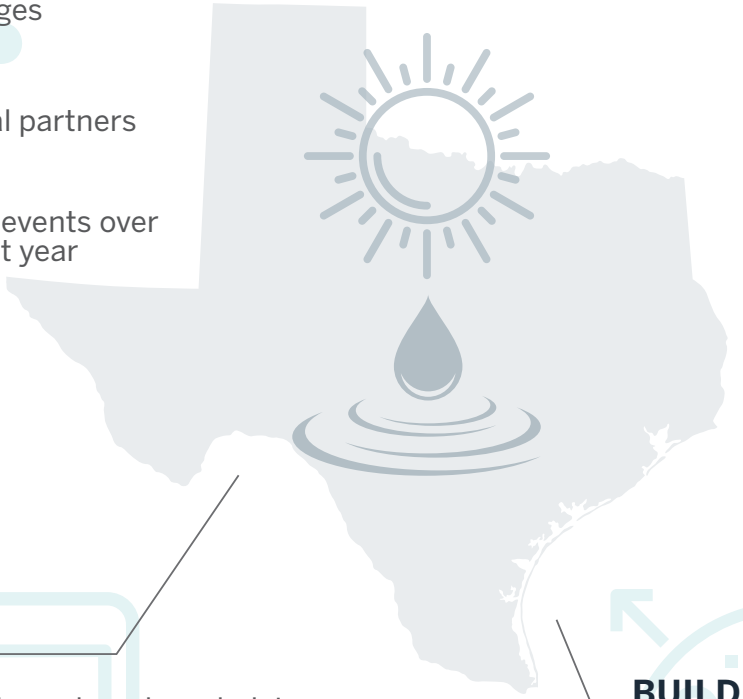
14 schools & colleges

27 external partners

15 hosted events over the past year

ENGAGING STUDENTS

48 undergraduate & graduate student researchers



SCHOLARLY OUTPUT & PUBLICITY

10 scholarly works acknowledging PT2050 support published over the past year

21 news articles over the past year

BUILDING CAPACITY

$33.7M awarded in external funding to date

Program Achievements

In Fiscal Year 2024, Planet Texas 2050 continued to advance its mission, expand its reach and deepen its impact. Bolstered by further external funding, the initiative's core projects continued to thrive:

- **AI-enabled Model Integration for Complex Decision Making**
- **Equitable and Regenerative Cities in a Post-Carbon Future**
- **Frontline Community Partnerships for Climate Justice**
- **Networks for Hazard Preparedness and Response**
- **Resilient Species and Ecosystems**
- **Stories of Ancient Resilience**
- **UT City Climate CoLab**
- **Arts-Integrated Climate Justice with Youth**

The year also marked notable growth in Planet Texas 2050's collaborative efforts. The initiative broadened its artist fellowship program, fostering more interdisciplinary dialogues between science and the arts, and forged new partnerships with diverse organizations, expanding the initiative's sphere of influence and bringing fresh perspectives to its work. Simultaneously, Planet Texas 2050 strengthened its existing relationships across Texas, enhancing the depth and efficacy of ongoing projects.

A highlight of the year was the **annual symposium** held in February. The event brought together an impressive array of stakeholders, including UT Austin researchers, community members and representatives from various institutions and organizations in Austin and beyond. The symposium served as a vibrant platform for knowledge exchange, creating and nurturing collaborations that will shape the initiative's future directions and impact.

Municipal Partnerships for Resilience

Climate change is driving Texas towards an era of unprecedented heat, posing challenges to urban life and ecosystems alike. Planet Texas 2050 is embracing a multifaceted response, **uniting UT Austin researchers with city officials** in groundbreaking collaborations. From advanced climate modeling to innovative biodiversity monitoring and community-driven resilience projects, these initiatives aim to equip Texas with the knowledge and tools needed to navigate and mitigate the impacts of a rapidly warming future.

Watch **this video** to learn more.

Tackling the Challenge of Extreme Heat

It is already well-documented that the Earth is warming at an unprecedented pace. The Lone Star State is no stranger to heat, but projections produced by UT Austin scientists suggest that months of triple-digit temperatures and prolonged drought periods will be our "new normal." As Austin City Mayor Kirk Watson stated in a press conference in June: "This is Texas, and yes, Texas has always been hot — but climate change is causing more extreme heat."

With record-breaking summers comes an assortment of resultant issues, from an increase in **heat-related illnesses**, to the emergence in Texas of **animal-borne infectious diseases previously limited to the tropics**. "We deeply underestimate how much climate change will impact the city, as well as the opportunity available to alter the way we can evolve the city," said **Dev Niyogi** (Earth and Planetary Sciences, Jackson School of Geosciences), a Planet Texas Executive Committee member.

To confront this escalating challenge, a diverse coalition of multidisciplinary teams at Planet Texas 2050 has **launched several innovative research efforts**.

"We deeply underestimate how much climate change will impact the city, as well as the opportunity available to alter the way we can evolve the city."

—Dev Niyogi, Jackson School of Geosciences

Dev Niyogi from the Jackson School of Geosciences and one of the chief architects of the UT-City Climate CoLab, speaking at a workshop held with City of Austin partners in May 2024.

UT-City Climate CoLab

One such effort, the **UT-City Climate CoLab** is a first-of-its-kind collaboration between researchers and city officials to provide tailored climate data for municipal decision-making. By combining academic expertise in climate science with real-world data and lived experience, the CoLab aims to develop practical tools, solutions and policy recommendations.

U.S. Representative Lloyd Doggett announces the initial approval, in a House appropriations bill, of a federally funded research project with the City of Austin to better understand the impact of extreme climate shifts on Texas communities and their infrastructure, at the LBJ School of Public Affairs on Sept. 6, 2023.

In June, CoLab leaders including Niyogi, **Manmeet Singh** and **Zong-Liang Yang** (all from Jackson School of Geosciences and the Texas Extreme Weather and Urban Sustainability (TE(x)US) Lab), and Marc Coudert from the city's Office of Sustainability and Resilience, published and presented to the city its first technical report, ***Austin Future Climate: Climate Projections for the City of Austin***. Using the largest available dynamically downscaled, bias-corrected data from updated global projections, the authors extracted the Austin data and chose seven climate models capable of simulating the seasonal cycle over the city. Their conclusions were unsurprising but ominous. According to the report: "In the future, temperatures are expected to breach 110°F more frequently. The number of heatwave events are expected to double from near future to the end of century. The number of hot spell days are also expected to increase by 2 to 3 times under high emission scenarios by the end of the century."

Niyogi, Singh and Yang, along with **Patrick Bixler** (LBJ School of Public Affairs) and **Paola Passalacqua** (Maseeh Department of Civil, Architectural and Environmental Engineering, Cockrell School of Engineering), will be spearheading a **federally funded research project** with the City of Austin to better understand the impact of extreme climate shifts on Texas communities and their infrastructure.

The collaboration builds on UT Austin's commitment to producing cutting-edge research that affects neighborhoods and communities throughout the city and strengthens the state's and UT Austin's generations-long leadership on environmental matters. U.S. Representative Lloyd Doggett announced last September his sponsorship of dedicated funding for the project in a House appropriations bill, which was finalized earlier this year.

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Understanding the Role of Biodiversity and Ecosystems for Resilience

Planet Texas 2050's Resilient Species and Ecosystems (RISE) research team is focused on developing new autonomous systems to monitor biodiversity that can inform strategic decision-making for land management and conservation while improving understanding of biodiversity and ecosystem services for resilience more broadly. For example, a **recent study** led by RISE postdoctoral fellow Deidre Zoll (Integrative Biology, College of Natural Sciences) published in Environmental Science & Policy offers a methodology conservation organizations and policymakers can use to "identify high-impact conservation areas with the potential to simultaneously meet biodiversity, social vulnerability and climate adaptation objectives while being responsive to population growth pressures."

Over the past year, RISE team members also expanded collaborations with the **Lady Bird Johnson Wildflower Center** and UT Austin's **Texas Field Station Network** and established additional partnerships with the City of Austin and Austin Watershed Protection to establish test sites for ecosystem and biodiversity monitoring at parks and preserves across Austin.

Building Community Resilience

Beginning in summer 2023, **Katherine Lieberknecht** (Community and Regional Planning, School of Architecture) partnered with the City of Austin's Office of Resilience to extend collaborations established through the community-based City Fellows and Planet Texas 2050 Artist Fellowship programs. Mia Greer and Dr. Charles Moody of the Community Coalition for Health, Kenneth Thompson of the East Austin Youth Foundation, and Randolph Knighten of St. John's United Methodist Church, initially recruited for the resilience hub co-design project in 2022, were contracted for further community engagement at two proposed hub

sites. These hubs serve as resource centers during normal times and activate during crises to provide essential services. Collaborative work has been crucial in guiding the city's development of these facilities.

FY23 Artist Fellow Miriam Conner complemented these physical resilience efforts with RAIN (Responsive Action and Information Network), a digital platform she designed for crisis management. This project extends earlier Planet Texas 2050 initiatives, including the NSF-funded Climate Navigators program in Dove Springs, which involved Lieberknecht, **Keri Stephens** (Communication Studies, Moody College of Communication) and **Fernanda Leite** (Maseeh Department of Civil, Architectural and Environmental Engineering, Cockrell School of Engineering). The resulting **digital portal**, adopted by Community Resilience Trust, an Austin-based nonprofit, now incorporates Conner's platform and launched in June 2024, creating a comprehensive approach to urban resilience that combines physical infrastructure with digital solutions.

Community Impact & Expanding Partnership

Planet Texas 2050 is comprised of a suite of research projects that include community engagement and education to address Texas's environmental challenges. The Southeast Texas Urban Integrated Field Lab tackles flooding and air pollution risks, while climate justice initiatives in the Rio Grande Valley amplify youth voices on environmental issues. In Austin, the Drama for Schools program creatively integrates climate education with the arts. These diverse efforts showcase the program's commitment to employing interdisciplinary collaboration and community engaged research, to develop localized solutions with far-reaching impacts for climate resilience across the state.

Southeast Texas Urban Integrated Field Lab

The **Southeast Texas Urban Integrated Field Lab (SETx-UIFL)**, established through a U.S. Department of Energy grant awarded in 2022, brings together four Texas universities to study flooding and air pollution risks in Southeast Texas. Led by UT's team under Planet Texas 2050 chair **Paola Passalacqua** (Maseeh Department of Civil, Architectural and Environmental Engineering, Cockrell School of Engineering), this five-year project examines these issues in tandem, collecting data and developing simulation models to understand their impacts under various climate scenarios. The research builds on an existing network of over 100 community, industry and government participants, aiming

to extend research efforts and build capacity in the region. "Preparedness is so important," said Jefferson County constable Christopher Bates, a SETx-UIFL Community Task Force member. "Having people to understand where (we're living) and what may come our way, and the things that they can have in place to mitigate those issues, is going to be so important for us to continue to have better quality of life."

Key to the SETx-UIFL approach is its **interdisciplinary and community-informed methodology**. The project team, comprising experts from multiple universities and national laboratories, collaborates closely with local community members to design data collection and analysis methods. This holistic approach considers factors such as geography, risk level, socioeconomic determinants and population density, alongside stakeholder input and social vulnerability information. "Good design is really central to this project," Passalacqua said. "It has both a top-down approach, which is the classic way to do science — we run our models, we create our projections — but also there's a very important bottom-up approach that allows us to start from the communities and really ask them what matters to them."

Beaumont and Port Arthur are experiencing increasing extreme flooding events. UT Austin researchers along with several other stakeholders are working to develop greater resilience strategies for local communities.

Thanks to its broad scope and community-informed approach, the project has the potential to influence research throughout the country. "It's important to know that the challenges that are experienced here are very similar to other parts of the Gulf region, as well as other parts of the United States," Passalacqua said, "so the solutions that we will develop here will be helpful to communities elsewhere as well."

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Paola Passalacqua from the Cockrell School of Engineering is current chair of Planet Texas 2050 and SETx-UIFL lead PI.

"The challenges that are experienced here are very similar to other parts of the Gulf region, as well as other parts of the United States, so the solutions that we will develop here will be helpful to communities elsewhere as well."

— Paola Passalacqua, Cockrell School of Engineering

Collaborations with Students, Schools and Youth

Community-Based Participatory Research (CBPR) continues to be an important toolkit for Planet Texas 2050 researchers. The methodology requires academic researchers and community members working in tandem to address bespoke research questions. The goal isn't just about identifying problems; it's about finding workable community responses.

Climate Justice in the Rio Grande Valley

Led by **Miriam Solis** (School of Architecture), **Carmen Valdez** and Tasha Banks (both from Population Health, Dell Medical School), Planet Texas 2050's Frontline Community Partnership for Climate Justice team works in both Austin and the Rio Grande Valley to identify youth experiences with and responses to environmental shocks and stressors. The team uses research methods including surveys, photovoice and storytelling to center *the* lived experiences and aspirations of communities most directly impacted by the consequences of climate change. "One of the challenges we face as researchers is that scientific methods, in general, are largely based on Western theories that were not conceptualized with diverse populations in mind," Valdez said. "Incorporating knowledge derived from diverse perspectives actually strengthens the research and promises to increase uptake of findings, which is key in translation of research to practice."

Students from Austin ISD and the Rio Grande Valley showcased projects in a variety of mediums at Planet Texas 2050's 2024 Symposium at the Texas Advanced Computing Center (TACC) Visualization Lab at UT Austin.

Last fall, the work went on display at the Pharr (TX) Memorial Library in the form of a student exhibition, "**Looking to the Future: Youth Perspectives on the Environment,**" presented by the Coalition for Youth, Health and the Environment, in collaboration with **Texas Children in Nature** and Planet Texas 2050. "Looking to the Future" shed light on environmental challenges and injustices faced by communities in the Rio Grande Valley, as seen through the lens of local high school students. The heart of the exhibition lay in its innovative photovoice approach, a method of expression in which participants capture images of everyday spaces, places and situations that are paired with their photos. The exhibition showcased the unique perspectives of youth on the frontline of climate change impacts, offering a glimpse into how young people understand and process environmental issues through a combination of striking photos and poignant storytelling. The exhibition made an encore appearance at the Planet Texas 2050 annual symposium.

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Drama for Schools

The second annual Drama for Schools and Creative Learning Initiative Summer Institute took place on UT's campus in June 2024. This year, high school students and middle school teachers from Ann Richards School for Young Women Leaders in Austin ISD worked in tandem with UT Austin researchers and professors to collaboratively design a 7th-grade curriculum on climate justice, using theater and dance as educational tools. **Stephanie Cawthon** (Educational Psychology, College of Education) along with **Katie Dawson** and **Lara Dossett** (both from Theatre and Dance, College of Fine Arts), led the initiative. "Our focus is on innovative educational practices, youth empowerment through research and the integration of arts with community engagement in educational settings," Dawson said.

Both Drama for Schools and the aforementioned climate justice project in the Rio Grande Valley demonstrate an interdisciplinary **commitment to the value of community-based participatory research** among Planet Texas 2050 researchers. By involving community members, particularly youth, in the research and design process, these projects aim to enhance the relevance and effectiveness of their outcomes. This approach not only strengthens the scientific rigor of the research but also promises to increase the adoption of findings and improve the translation of research into practice, ultimately building long-term community resilience to environmental challenges. "Traditional curriculum planning

"Incorporating knowledge derived from diverse perspectives strengthens the research and promises to increase uptake of findings, which is key in translation of research to practice."

— Carmen Valdez, Dell Medical School

excludes students from the process," said Baylie Head, high school theater teacher at Ann Richards School for Young Women Leaders. "Including them in the design process inevitably leads to greater engagement with the topic from the class and provides insight into what will work for them and for their teachers."

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Creative Collaborations

Science and data alone are insufficient to address the existential challenges we now face. It will be impossible to solve the climate crisis, across Texas and beyond, without diverse and powerful storytelling to help ground us in our shared humanity, create meaning from complexity, and maintain collective capacity for hope for a better future. Artists play an indispensable role in the movement to combat the climate crisis and fortify community resilience in the face of climate-related challenges. With that in mind, Planet Texas 2050 **further integrated artists and arts-based practices into its work** over the past year.

Planet Texas 2050 + Humanities Institute Faculty Learning Community Awards

Last fall, in partnership with the **Humanities Institute**, Planet Texas 2050 awarded 16 researchers the inaugural **Faculty Learning Community awards**. This collaboration aims to integrate arts, design and humanities perspectives into climate resilience and adaptation research. The initiative seeks to foster interdisciplinary collaboration and broaden the approach to addressing complex issues related to climate change and population growth in Texas. "The Humanities Institute is thrilled to work with Planet Texas 2050 to recognize and support the amazing research of all of the awardees, and is excited about the future of collaborative research models that center on humanities and arts methodologies," said the Humanities Institute's director **Samantha Pinto** (English, College of Liberal Arts) and assistant director **Jeff Meserve** (Humanities Institute, College of Liberal Arts) in a joint statement.

Despite planning to select only five awardees for the inaugural cohort, the organizers received dozens of impressive applications, compelling program leaders to select six recipients for the full award as well as funding 10 additional microgrants. Most of the Faculty Learning Community awardees are assistant and associate professors in the early stages of their academic careers or are new to UT

"Our focus is on innovative educational practices, youth empowerment through research and the integration of arts with community engagement in educational settings."

— Katie Dawson, College of Fine Arts

Austin in disciplines ranging from performance and music to architecture and geography. Their research spans topics like ecological dance, sustainable design, climate change technology, environmental justice and multi-sensory music experiences.

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"From COASTLINE to INLINE"

As part of the April 8, 2024 solar eclipse "Total Eclipse of the Horns" celebration, Planet Texas 2050 partnered with the **Oden Institute for Computational Engineering and Sciences** (with funding from The Wellcome Trust) to produce a **unique visual installation** called "From COASTLINE to INLINE." The 3D display integrated arts and technology to highlight the intersection of climate change, flood modeling and disease spread within the path of the solar eclipse. The installation, featured in the **Texas Advanced Computing Center's** Visualization Lab, used advanced computational models and data visualization to illustrate how climate-related events affect the distribution of disease-carrying organisms in Texas. "These insects and pathogens bring a greater risk to humans who come in contact with them after a weather event, bringing the potential for more disease. By emphasizing each of these insects and their location along the path of the solar eclipse we hope to bring attention to

Promotional graphic created for "From COASTLINE to INLINE" project. Credit: Juliet Whitsett

our research using visualization as an accessible tool for communicating," said **Katy Brown** (Oden Institute), a Planet Texas 2050 project leader.

Juliet Whitsett, a Planet Texas 2050 artist fellow whose images and color palettes have been used in community-based arts initiatives to inspire thoughtful reflection and action, helped design the exhibit.

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Planet Texas Artist Fellows

The Planet Texas 2050 Artist Fellowship is a cohort-based fellowship for multi-disciplinary artists both in and outside of UT Austin, organized to catalyze and support meaningful collaboration between artists, climate and resilience researchers and other stakeholders. The fellowship gives selected artists time and resources to explore ideas and concepts central to Planet Texas 2050 research over the course of an academic year.

Neches River Narratives, Captured and Preserved

In fall 2023, Planet Texas 2050 Artist Fellow Katy McCarthy visited Southeast Texas, participated in SETx-UIFL events and developed a relationship with Beaumont's Tyrrell Historical Library. The following May, McCarthy co-hosted the Neches River Oral History event at the library. The event began with a tour and presentation on river-related holdings, followed by McCarthy leading a guided writing and interview process to develop participants' stories about exploration, industry, recreation and life along the riverbanks. Attendees then recorded their stories. These recordings will be archived in the Tyrrell Library collections and edited into an audio installation for future community sharing.

Art Meets Ecology on Austin's Trails

In January, Planet Texas 2050 Artist Fellow Juliet Whitsett's "Really Small Museum - Eco" project was selected as part of the **TEMPO on the Trail initiative**, a collaboration between The Trail Conservancy and Austin's Art in Public Places program. This temporary art exhibition, located on the Holly Shores Lakefront Trail, builds on Whitsett's original "Really Small Museum" concept, which has featured over 60 artists since 2021. The new eco-focused iteration showcased 12 artists throughout the year, including **Whitsett's own work advocating for threatened and endangered species**. As one of eight selected artists, Whitsett created a sculpture installation during her fellowship, contributing to TEMPO's goal of fostering community engagement with art and nature along Austin's Ann and Roy Butler Hike-and-Bike Trail.

Planet Texas 2050 Headlines

External News Features and Mentions

9/7/2023	**UT Commissions Program to Study Extreme Central Texas Heat** KVUE
9/15/2023	**Dove Springs Residents Stranded on Heat Island** Decibel, Austin PBS
10/26/2023	**U.S. Department of Energy Announces $36 Million to Advance Marine Carbon Dioxide Removal Techniques and Slash Harmful Greenhouse Gas Pollution** ARPA-E, U.S. Department of Energy
Dec 2023	**Resilient Horizons: Co-Designing Climate Solutions in Southeast Texas - SETx-UIFL** WebsEdge Science
2/13/2024	**Doom and Climate Equity Focus of Planet Texas 2050 Symposium at UT** KXAN
6/4/2024	**Precautions Advised as Austin Faces a "Hotter Than Normal Summer"** CBS Austin
6/5/2024	**Heat-Related Illnesses Rising in Austin Amid Climate Change, Officials Say** Austin American-Statesman

UT Austin News Coverage

9/7/2023	**Project to Tackle Effects of Extreme Climate Unveiled by Doggett, UT and City of Austin** UT News
10/4/2023	**Imagining a Changed World** Arts Next, College of Fine Arts
2/2/2024	**College of Fine Arts Faculty Members Featured in 2024 Planet Texas 2050 Symposium to Explore Climate Resilience** College of Fine Arts
3/14/2024	**Navigating Extreme Heat in Texas: Insights From Planet Texas 2050** Oden
4/4/2024	**Visualization of Flood, Disease and Climate Modeling Through the Eclipse Path of Texas and Beyond** Oden

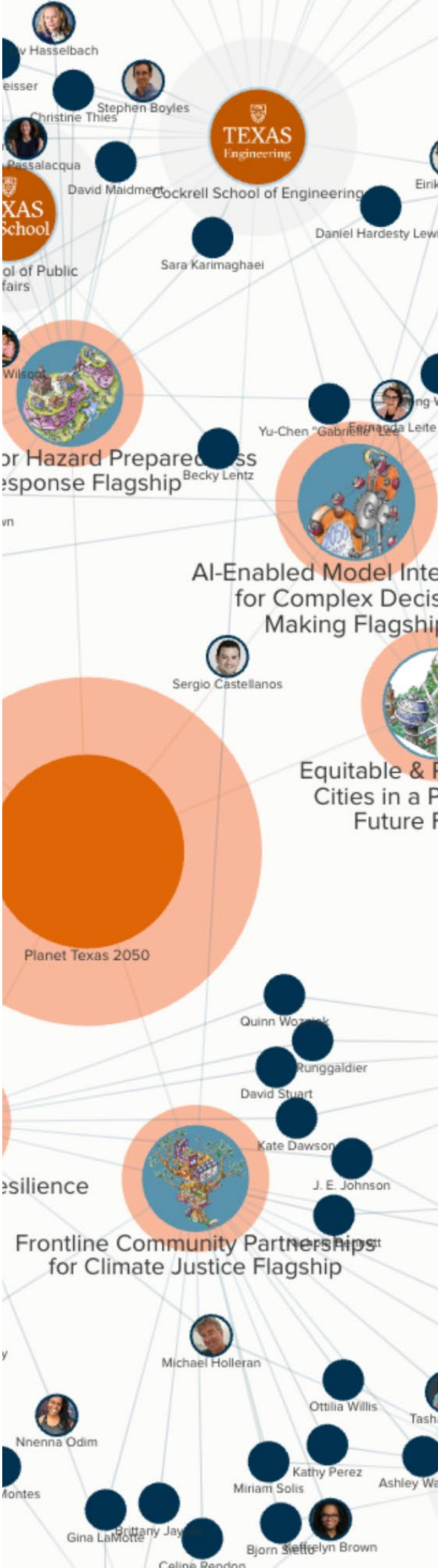
UT OVPR Communications

9/11/2023	**Austin's Power Couple**
10/24/2023	**Humanizing Our Planet**
11/9/2023	**Youth Perspectives on the Environment' Photovoice Exhibit Launching at Pharr Memorial Library November 15th**
2/2/2024	**Cause for Optimism: Youth Climate Action Leader Pooja Tilvawala Speaking at PT2050 Symposium**
4/28/2024	**Five Key Takeaways From the Symposium**
5/10/2024	**Scorched: Climate Change Turns Up the Heat on Austin**
7/5/2024	**Cultivating Interdisciplinary Collaboration**
7/27/2024	**City of Austin Office of Resilience Manager Marc Coudert on Collaboration**
8/1/2024	**The Power of Participatory Research**

Creating Connections

Planet Texas 2050's growing network of researchers come from nearly every college and school on campus, from the Jackson School of Geosciences and Cockrell School of Engineering to the colleges of Liberal Arts, Fine Arts and Natural Sciences. This intellectual diversity is crucial to fostering interdisciplinary research, a key component of the program's success. In FY24, Planet Texas 2050 partnered with UT Austin's Humanities Institute to sponsor an open call fellowship for humanities and arts scholars working on issues related to climate change, environmental justice and ecosystem dynamics. This new fellowship brought 16 new scholars and artists into the project.

Explore the **interactive network map** to see how different researchers, schools and organizations are connected to Planet Texas 2050. Search by name, College/School/Unit or project, or click any node on the map and pause to see its connections appear. You can magnify or expand the view, and you can click on any individual to see the projects and people they are affiliated with.



Funded Grants

Through FY24, Planet Texas 2050 researchers have received $33.7 million in external grants, gifts and awards that directly enable the grand challenge's work. External awards from the past fiscal year are listed below. Many of these grant proposals were developed with the support of OVPR's Research Development team.

National Institute for Standards and Technology
University of Texas–City of Austin Climate CoLab
$1,500,000
Dev Niyogi, Jackson School of Geosciences

Department of Energy (ARPA-E)
Acoustic Methods for mCDR Based on Blue Carbon Burial in Seagrass Meadows
$2,034,903
Preston Wilson, Cockrell School of Engineering

National Science Foundation
Collaborative Research: Investigating Extreme Summer Urban Rainfall Modification Under Urban Expansion in a Changing Climate
$399,134
Dev Niyogi, Jackson School of Geosciences

City of Austin
University of Texas–City of Austin Climate CoLab
$350,000
Dev Niyogi, Jackson School of Geosciences

National Science Foundation
Planning: Chirrp: Knowledge to Action at the Science-Policy-Practice Interface for Earth System Hazards and Risk Mitigation
$192,970
JR DeShazo, LBJ School of Public Affairs

City of Austin
Community Engagement Assessment for the Resilience Hubs Network
$180,500
Katherine Lieberknecht, School of Architecture

National Science Foundation
Urban Digital Twin Workshop
$50,000
Dev Niyogi, Jackson School of Geosciences

Winn Family Foundation
Inventorying and Visualizing Land Use, Water Use, Ecological and Community Benefits at UT Austin Lady Bird Johnson Wildflower Center
$49,138
Katherine Lieberknecht, School of Architecture

Department of Energy
Collaborative Evaluation of the Urban Integrated Field Laboratories (UIFLs) Transdisciplinary Team Science
$15,000
Katherine Lieberknecht, School of Architecture

Planet Texas 2050 Partners

AISD
ARISE Adelante
AT&T
Austin Common
Austin Public Health
Austin Watershed Protection
City of Austin Office of Resilience
City of Pharr
Community Coalition for Health
Community Resilience Trust
Creative Policy
EcoRise
Forklift Danceworks
GAVA (Go Austin/Vamos Austin)
Giddyup Studios
Indigenous Cultures Institute
Keep Pharr Beautiful
La Unión del Pueblo Entero (LUPE)
Lady Bird Johnson Wildflower Center
Microsoft
Museum of South Texas History
Pharr-San Juan-Alamo ISD
Texas Children in Nature
Texas Target Communities
Texas Nature Conservancy
Texas Water Development Board
Travis County

Publications

Planet Texas 2050 researchers continued to make advancements through successful multi-disciplinary collaborations resulting in numerous discoveries recorded in peer-reviewed articles in academic journals. These discoveries have potential to impact communities in Austin, Texas and beyond. Publications from the previous fiscal year are listed below; nearly all are available online.

*Aliaga, D., & Niyogi, D. (2024). Digitizing cities for urban weather: representing realistic cities for weather and climate simulations using computer graphics and artificial intelligence. *Computational Urban Science, 4*(1), 8.

Belaire, J. A., Bass, H., Venhaus, H., Barfield, K., Pannkuk, T., Lieberknecht, K., & Jha, S. (2023). High-performance landscapes: re-thinking design and management choices to enhance ecological benefits in urban environments. *Land, 12*(9), 1689.

Bennett, N., Alcantar, V., Ravindran, T., Chen, V., Terrell, R., & Dawson, K. (2024). A green moment to share: a theatrical laboratory to explore climate crisis possibilities within single moments. *Arts 13*(4), 120.

*Dai, Ting-Yu and Niyogi, Dev and Nagy, Zoltan, CityTFT: Temporal Fusion Transformer for Urban Building Energy Modeling. Available at SSRN: https://ssrn.com/abstract=4969951 or http://dx.doi.org/10.2139/ssrn.4969951

*Hwang, H., Bixler, R. P., Brown, W. A., & Vedlitz, A. (2024). How to activate nonprofit beneficiaries for community resilience? Examining the role of risk perception and evaluation of nonprofit services on prosocial behavior in the context of natural hazards. *Sociological Spectrum, 44*(1), 16-37.

Khan, A., Carlosena, L., Khorat, S., Khatun, R., Das, D., Doan, Q.V., Hamdi, R., Aziz, S.M., Akbari, H., Santamouris, M. and Niyogi, D. (2023). Urban cooling potential and cost comparison of heat mitigation techniques for their impact on the lower atmosphere. *Computational Urban Science, 3*(1).

*Lanza, K., Jones, J., Acuña, F., Coudert, M., Bixler, R. P., Kamath, H., & Niyogi, D. (2023). Heat vulnerability of Latino and Black residents in a low-income community and their recommended adaptation strategies: A qualitative study. *Urban Climate, 51, 101656*.

Lee, Y-C.; Leite, F. (2023). Mixed reality promoting circular economy in urban water systems. *Proceedings of the 2023 ASCE Computing in Civil Engineering Conference*. Corvallis, OR.

*Lewis, M., Moftakhari, H., & Passalacqua, P. Challenges for compound coastal flood risk management in a warming climate: case study of the gulf coast of the united states. *Frontiers in Water, 6*, 1405603.

Lieberknecht, K., Carlson, N., Stephens, K., Leite, F., Acuña, F., & Lowell, J. (2024). Closing the climate gap: insights from local knowledge for climate adaptation planning. *Journal of the American Planning Association,* 1-16.

*Ma, J. W., Leite, F., Lieberknecht, K., Stephens, K. K., & Bixler, R. P. (2024). Using Q-methodology to discover disaster resilience perspectives from local residents. *International Journal of Disaster Risk Reduction,* 104, 104353.

Preisser, M., P. Passalacqua, R.P. Bixler, S. Boyles, 2023. A network-based analysis of critical resource accessibility during floods. *Frontiers in Water*, 5, doi: 10.3389/frwa.2023.1278205

*Singh, M., & Niyogi, D. (2024). Leveraging ML approaches for scaling climate data in an atmospheric urban digital twin framework. In S. Prasad, J Chanussot, & JiLi (Eds.) *Advances in Machine Learning and Image Analysis for GeoAI* (pp. 315-346). Elsevier.

*Solis, M., Matsuoka, M., & Raphael, C. (2024). Community economic development. In Matsuoka, M., & Raphael, C. (Eds.) *GROUND TRUTHS: Community Engaged Research for Environmental Justice* (pp.155-169). University of California Press. 10.1525/luminos.174

*Solis, M., Oden, M., Lieberknecht, K., & Liu, H. (2024). Labor lacuna: Disjunctures between local climate action and workforce development in advancing just transitions. *Journal of Urban Affairs*, 1-23.

Wang, M., Passalacqua, P., Cai, S., & Dawson, C. (2024). c-HAND: near real-time coastal flood mapping. *Frontiers in Water, 6*, 1329109.

Wright, S. L., Rayfield, K. M., Singleton, R. R., Hughes, K., Soficaru, A., Cretu, C., Huang, L., Wu, S. Reinberger, K.L., Rabinowitz, A., & Hofman, C. A. (2024). Ancient DNA and paleoproteomic analysis on Roman Imperial-era individuals from Histria, Romania. *Journal of Archaeological Science: Reports, 56,* 104510.

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** Does not acknowledge Planet Texas 2050 but is either verified flagship research or was developed as a direct result of Planet Texas 2050 networks and research.*

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Planet Texas 2050 researchers are committed to developing programs, tools and policy recommendations that will improve Texas' adaptability and build its resilience. To do that, it has created a set of innovative and interdisciplinary projects that leverage the talents and expertise of its research network to tackle critical issues when it comes to helping Texas respond to rapid growth and climate change.

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