



# SOUTH CENTRAL CLIMATE **RESILIENCE** FORUM 2024

**Building a More Resilient  
Region Together**

#SCCRF2024  
[www.sccrf.org](http://www.sccrf.org)

*Dallas, Texas*  
**April 2-4, 2024**

# SCHEDULE AT-A-GLANCE

Time	Tuesday, Apr. 2	Wednesday, Apr. 3	Thursday, Apr. 4
8:00 am		Registration & Check-in Networking Coffee	Registration & Check-in Networking Coffee
8:30 am			
9:00 am	Registration & Check-in	<b>Concurrent Session Block 2</b>	<b>Concurrent Session Block 5</b>
9:30 am			
10:00 am		Break	
10:30 am			Break
11:00 am		<b>Welcome Plenary</b>	<b>Concurrent Session Block 3</b>
11:30 am			
12:00 pm	Networking Lunch	Networking Lunch	Independent Lunch
12:30 pm			
1:00 pm	<b>Concurrent Session Block 1</b>	<b>Concurrent Workshop</b>	<b>North TX Climate Symposium</b>  <b>or</b> <b>Optional Field Trips, Side Meetings</b>
1:30 pm			
2:00 pm			
2:30 pm	Break	Break	
3:00 pm	<b>Keynote Speaker: Dr. Katharine Hayhoe</b>	<b>Concurrent Session Block 4</b>	
3:30 pm			
4:00 pm	Break		
4:30 pm	<b>From Science to Action Panel</b>	<b>Exhibitor Reception</b>	
5:00 pm			
5:30 pm			
6:00 pm	<b>Reception</b>		
6:30 pm			
7:00 pm			

# WELCOME TO THE INAUGURAL SOUTH CENTRAL CLIMATE RESILIENCE FORUM!

We are so glad you have joined us for the first ever South Central Climate Resilience Forum. We know our region is diverse - ranging from the waving prairies of Oklahoma and Kansas to the coastal beaches and bayous of Texas and Louisiana. From large urban centers like Dallas to small rural communities, from agriculture and ranching to tourism and hospitality, our region has it all. We also have hurricanes, heat domes, and snowpocalypse-style winter storms and climate change is making many of these extreme events worse. This is tough country, and its people are tougher. Our friends work hard, play hard, and care deeply, including those who disagree with us. Most of us who live here love it here.

As the Southern Great Plains chapter of the 2023 National Climate Assessment says: “Climate change is beginning to alter how we live ... putting us at risk from climate hazards that degrade our lands and waters, quality of life, health and well-being, and cultural interconnectedness... To address the growing risk, effective climate-resilient actions include implementing nature-based solutions; valuing Indigenous, traditional, and local knowledges; and infusing climate change solutions into community planning.”

We are here to do just that: to value scientific and local knowledge, lived experiences, and traditional knowledges; to use our shared expertise to guide our planning and investments; and to build the partnerships and connections required to do this work effectively. The better we can communicate with our neighbors about the challenges and opportunities in front of us, the more likely we are to succeed at building stronger, healthier, and more resilient communities.

These three days are going to be busy. We encourage you to lean into the work, lean into conversations, and lean into learning. Be brave and introduce yourself, raise your hands with challenging questions, push us to think deeper and be creative. Let's listen, laugh, and learn together because this Forum isn't the end of the resilience journey, it is just a step along the way and a journey that is better taken together.

## **On behalf of the Planning Committee:**

*Darrian Bertrand*, Southern Climate Impacts Planning Program, University of Oklahoma

*Sascha Petersen*, Adaptation International

*Sarah Terry-Cobo*, City of Oklahoma City | Office of Sustainability

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# SOUTH CENTRAL CLIMATE RESILIENCE FORUM INAUGURAL PLANNING COMMITTEE

The development of the 2024 South Central Climate Resilience Forum is led by a collaborative group of academic institutions, municipalities, federal agencies, and organizations.

**\*Darrian Bertrand, \*Caylah Cruickshank, \*Rachel Riley** - NOAA CAP/RISA Southern Climate Impacts Planning Program

**\*Sascha Petersen, Celine Rendon** - Adaptation International

**\*Codie Winn** - South Central Climate Adaptation Science Center

**\*Susan Alvarez** - North Central Texas Council of Governments

**\*Maritza Figy** - City of Dallas

**\*Marc Coudert, Laura Patiño** - City of Austin

**\*Andrès Cibils, Susan Eisenhour** - USDA Southern Plains Climate Hub

**\*John Nielsen-Gammon** - NOAA Southern Regional Climate Center, Texas A&M University

**Debalina Sengupta, April Taylor** - Texas Sea Grant, Texas A&M University

**Patrick Bixler** - University of Texas at Austin

**Jordan Fazio, Anna Sitzman** - Louisiana State University - Department of Geography and Anthropology; SCIPP

**Tina Cole** - Northwest Arkansas Economic Development District

**Leif Olson** - City of Fayetteville, AR

**T.O. Bowman, Sarah Terry-Cobo** - City of Oklahoma City

**Danielle O'Neal** - City of Yukon, OK

**Kathy Jack** - The Nature Conservancy, Texas Chapter

\*Founding member of the  
planning committee



# SPOTLIGHT PROGRAMS

## Keynote Speaker: Dr. Katharine Hayhoe

Tuesday April 2, at 3:00 pm  
Ballroom A1-A2



**Dr. Katharine Hayhoe** is the chief scientist for The Nature Conservancy, a distinguished professor at Texas Tech University, and the author of *Saving Us: A Climate Scientist's Case for Hope and Healing in a Divided World*.

## From Science to Action Panel Hayhoe, Nance, Bowman, & Johnson

Wednesday April 2, at 4:15 pm  
Ballroom A1-A2

Panelists include Dr. Katharine Hayhoe; Dr. Earthea Nance, EPA's Region 6 Administrator; T.O. Bowman, Program Planner, City of Oklahoma City Office of Sustainability; and Arthur Johnson, Chief Executive Director, Lower 9th Ward Center for Sustainable Engagement and Development. Alejandra Martinez, Texas Tribune Environmental Reporter, will moderate. Martinez will lead the group to explore resilience examples in the region and what keeps them hopeful to continue work in this space.

## North Texas Climate Symposium

Thursday April 4, at 1:00 pm  
Ballroom A1-A2

The 7th Annual North Texas Climate Symposium will be held in the ballroom to educate and bring awareness to the impacts of climate change in North Texas and discuss how North Texans can address and mitigate those impacts.

## Field Trips & Side Meetings

Thursday April 4, at 1:00 pm

- Reserve a room for side meetings with your group or new networking partners for free. [Here!](#)
- Attendees can choose one of the following field trips to:
  - Restoration Farms (via transit)
  - Dallas County Renovation & Nearby Green Infrastructure (walking tour)

# CONCURRENT EVENTS - ROOM LOCATIONS

**Session/Workshop A:** .....**Ballroom A1-A2**

**Session/Workshop B:** .....**A114-116**

**Session/Workshop C:** .....**A118-119**

**Session/Workshop D:** .....**A133-134**

**Session/Workshop E:** .....**A135-136**

# DAY 1: TUESDAY, APRIL 2

## DAILY SCHEDULE

Time	Event	Location
9:00 am - 5:00 pm	Registration and Check-in	Lobby
11:00 am - 11:45 am	<b>Welcome Plenary</b>	Ballroom A1-A2
11:45 am - 1:00 pm	Catered Networking Lunch	Ballroom A1-A2
1:00 pm - 2:30 pm	<b>Concurrent Session Block 1</b>	
2:30 pm - 3:00 pm	Networking Break	
3:00 pm - 4:00 pm	<b>Keynote Speaker: Dr. Katharine Hayhoe</b>	Ballroom A1-A2
4:00 pm - 4:15 pm	Short Break	
4:15 pm - 5:00 pm	<b>From Science to Action Panel</b>	Ballroom A1-A2
5:30 pm - 7:00 pm	<b>Reception</b>	Ballroom A1-A2

## WELCOME PLENARY

11:00 am - 11:45 am in Ballroom A1-A2

The SCCRF Planning Committee thanks the City of Dallas in their partnership in making this event a success. Our host city welcomes you to learn about some of their resilience initiatives during the welcome plenary.

### Speakers:

- Omar Narvaez, City of Dallas Council Member
- Carlos Evans, Director of Office of Environmental Quality and Sustainability
- Genesis Gavino, Chief of Staff to the City Manager, Resilience Officer

# CONCURRENT SESSION BLOCK 1

1:00 pm - 2:30 pm

## Session Block Table of Contents

### Session Block 1A: Greening Texas Cities for Community Resilience: Real World Interventions and Lessons Learned

Pg. 7 Ballroom A1-A2

### Session Block 1B: Climate Science Informing Decisions

Pg. 7-9 A114-116

### Session Block 1C: Global Dilemma | Local Solution: Transdisciplinary Approach to Addressing Urban Heat Islands (UHI)

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### Session Block 1D: Forecast-Informed Reservoir Operations as a Viable Water Management Strategy in Texas: What is Being Done and Needs to Be Done to Move the Needle Forward?

Pg. 10 A133-134

### Session Block 1E: Disaster Resilience: Frontline Wisdom, Social Capital, and Innovation in the Face of Climate Chaos

Pg. 10-12 A135-136

### Session Block 1A: Greening Texas Cities for Community Resilience: Real World Interventions and Lessons Learned

#### (Ballroom A1-A2)

This symposium was designed to introduce community greening strategies and methods to get this work on the ground. The panelists will highlight the importance of using a community-first lens to address resiliency, particularly in climate-vulnerable, disinvested communities. We will explore and share real-life experiences in community greening in Greater Houston and Dallas-Fort Worth Metro Regions (for green stormwater, urban heat mitigation, and park space), sharing our successes and lessons learned. We will also look more deeply at how these projects happen, focusing on community

engagement, project selection, partnerships, and designing for greener cities and more resilient communities.

- **Community Greening Strategies and Implementation, Systems Approach, and Successes in Houston**
  - *Jaime Gonzalez*, The Nature Conservancy in Texas
- **TPL in Dallas, Engaging the Community, Case Study Intro: Five Mile Creek Plan, Parks, and Trails**
  - *Molly Plummer*, The Trust for Public Land
- **Partnerships to enhance community resilience, through nature-based solutions - from site to scale**
  - *Kathy Jack*, The Nature Conservancy, Texas
  - *Fouad Jaber*, Texas A&M AgriLife
- **Design and modeling for best green infrastructure solutions, from site to region**
  - *Fouad Jaber*, Texas A&M AgriLife

### Session Block 1B: Climate Science informing Decisions

#### (A114-116)

**Session Description:** Making climate-informed decisions requires access to relevant, credible, and legitimate climate information. This session will showcase weather and climate research across the region that can be used to inform decisions relating to the many hazards we face in the south-central U.S.

### The Future of Climate in the South Central United States

#### Presenters:

- *Adrienne Wootten*, South Central Climate Adaptation Science Center

Assessing the impacts of climate change for multiple sectors in the South Central United States requires the use of local climate projections. The South Central CASC has produced a suite of climate projections for use by stakeholders and partners in the region. This talk will discuss the climate projections available from the South Central CASC. Specifically, this talk will focus on three aspects. First, this talk will discuss the



projected changes suggested by the climate projections in the region. Second, this talk will discuss ways to use these projections in decision making. Finally, this talk will discuss updates to the South Central CASC climate projections datasets that are currently in production.

## Water, Heat, and Fire: Climate Extremes in the Southern Great Plains

### Presenters:

- *Elinor Martin*, University of Oklahoma
- *Ben Davis*, OU School of Meteorology
- *Bryony Puxley*, OU School of Meteorology
- *Melanie Schroers*, OU School of Meteorology

The Southern Great Plains is exposed to multiple weather and climate hazards including excesses of precipitation, lack of precipitation, and extreme heat, all of which can have large impacts across a multitude of sectors. This work describes a climatological overview of precipitation and heat hazards in the region as well as an assessment of historical trends. We focus on three topics: 1. Rapid changes between wet and dry conditions (“whiplashes”) and their connection with wildfire, 2. extreme precipitation over long (2-week) periods, and 3. the occurrences of heat waves that occur in wet bulb globe temperature – which accounts for temperature, humidity, solar radiation, and wind speed, and is strongly related to heat stress in humans. Each of these hazards is examined in isolation in the current work, but must compound, which must be examined moving forward to increase resilience to such events.

## New Estimates of Extreme Rainfall Design Values for Texas

### Presenters:

- *John Nielsen-Gammon*, Texas A&M University
- *James Doss-Gollin*, Texas A&M University
- *Yuchen Lu*, Texas A&M University
- *William Baule*, Texas A&M University

With funding from the Texas Water Development Board, we have carried out an update to the official analyses of extreme rainfall, known as NOAA Atlas 14, that includes more recent data and incorporates the ongoing effects of climate change using advanced statistical techniques. This talk will summarize the effort, differences with past and possible future NOAA approaches, and

recommended uses of the results for assessing flood risk and building safety.

## Tropicalization of the Temperature Zone: Changes in Winter Temperatures

### Presenters:

- *Derek Thompson*, Louisiana State University
- *Vincent Brown*, Louisiana State University

As the climate continues to warm, tropical-temperate transition zones and cold-sensitive tropical organisms are expected to migrate poleward, potentially at the expense of temperate organisms due to a reduction in the intensity and frequency of extreme cold air events. Many studies use monthly or seasonal datasets to investigate temperature distribution changes; however, these temporally aggregated datasets often smooth out individual events that may be short-lived (e.g., cold frontal passage). Here, we use nClimGrid-D, a daily, nominally 5-km, observationally-based gridded dataset to assess county-level trends in cool season temperature metrics from 1951 to 2021. Results showed that cool season daily maximum temperatures significantly increased in 1,288 counties, while daily minimum temperatures increased in 2,409 counties. The single coldest temperature recorded per cool season also significantly increased (warming) in 2135 counties, representing over 68% of the land area of conterminous U.S. Finally, results showed that the rate of warming in county-level daily minimum temperatures outpaced warming in daily maximum temperatures in 82% of counties, particularly in the northern great plains.

## Lengthening Hurricane Seasons with Earlier Storm Formation Dates: Lessons from 2020

### Presenters:

- *Barry Keim*, Louisiana State University
- *L.C. Hamilton*, Louisiana State University
- *V.M. Brown*, Louisiana State University
- *P.J. Klotzbach*, Louisiana State University
- *A.B. Lewis*, Louisiana State University
- *D.T. Thompson*, Louisiana State University

With a particular focus on the historic 2020 season. We analyze whether the intraseasonal length of the Atlantic hurricane season has changed temporally. The record-breaking 2020 season, which for named tropical cyclones (TCs) began on

17 May and ended on 18 November. The 2020 season generated 30 named TCs, surpassing the previous record of 28 set in 2005. The 2020 season also set records for the earliest 3rd TC formation (Cristobal) and from the 6th TC onward (Fay). A combination of above-average sea surface temperatures, anomalously high ocean heat content in the North Atlantic, a strong West African monsoon, and weak vertical wind shear associated with a moderate La Niña may help explain the record-breaking 2020 season.

## A Geospatial Analysis of the Inland Paths of Gulf of Mexico Hurricanes

### Presenters:

- *Jordan Fazio*, Louisiana State University

This study provides a comprehensive assessment of historical inland penetrating Gulf of Mexico hurricanes using an empirical approach. HURDAT2 6-hour data and supplementary hourly-interpolated data is used to analyze the post-landfall spatiotemporal and de-intensification patterns of these hurricanes. A specific focus is placed on examining the influence of internal variables on post-landfall track distance, e.g., hurricane intensity at landfall, post-landfall de-intensification, and translation speed of the storm. The methods include linear regression modeling to explore potential temporal shifts, underlying patterns, and predictive modeling of hurricane activity. This study hopes to address these gaps in our understanding, particularly regarding how recent decades compare with historical inland hurricane activity.

## Session Block 1C: Global Dilemma | Local Solution: Transdisciplinary Approach to Addressing Urban Heat Islands (UHI)

### (A118-119)

One of the “hidden” challenges associated with UHI is that it is an “everything” problem. Like other aspects of climate change, UHI is not just an environmental concern but a public health crisis and an urban design problem. Addressing UHI requires research that is holistic in scope, interdisciplinary in focus, and innovative in approach. This session will include presentations about actions that cities and a medical district are taking to address urban heat islands and increase resilience, followed by a panel discussion.

## Texas Trees Southwestern Medical District (SWMD) Transformation Project

### Presenters:

- *Lannie McClelen*, Texas Trees Foundation
- *Sanjna Bhatia*, University of Texas Southwestern Medical School

This presentation will focus on a transformative streetscape and park project underway in the Southwestern Medical District (SWMD) in Dallas, Texas. The district is a bustling community of contrast, home to three world-renowned hospitals, yet its infrastructure is antiquated, broken and unhealthy. Despite accommodating 39,000 employees and hosting 3 million medical visits yearly, it resides in the city's largest UHI with a mere 7% tree canopy coverage. Challenged to break norms, the Harry Hines Transformation Project is tackling the complex issues that urban heat poses for human health and municipal ecosystems by merging mixed methods research with design. State-of-the-art thermal heat research is ongoing along the congested arterial which includes the deployment of an array of sensors, in-silico models, and the reiterative optimization of design for improved pedestrian health.

## Pediatrics Heat-Related Illness Project

### Presenters:

- *Dr. Taylor Merritt*, University of Texas Southwestern, Children's Medical Center

This session will center on an ongoing research project led by pediatric physicians at Children's Medical Center in Dallas, investigating the correlation between tree canopy coverage, extreme heat, and the prevalence of heat-related pediatric illnesses across different areas of Dallas-Fort Worth. The physicians will provide insights into their research progress and share preliminary findings. Additionally, they will discuss the implications of heat on their daily medical practices.

## Understanding Urban Heat and Air Quality Through Community Engagement

### Presenters:

- *Sarah Terry-Cobo*, City of Oklahoma City

Sarah Terry-Cobo, Associate Planner with the City of Oklahoma City's Office of Sustainability, will provide an overview of the planning, engagement, coordination, and partnerships that made OKC's 2023 Urban Heat Island mapping campaign a success. Sarah will also share the results of the campaign that includes open-source data, heat maps, heat perception survey results and comparisons, and details of the intervention guidebook/heat mitigation action plan stemming from the campaign.

## Urban Heat Island and Dallas' Climate Action Plan

### Presenters:

- *Maritza Figy*, City of Dallas
- *Freddie Ortiz*, City of Dallas

Climate Coordinators with City of Dallas' Office of Environmental Quality and Sustainability will describe the actions taken leading up to the 2023 Urban Heat Island mapping campaign and what the city plans to do next. Campaign results will be demonstrated, and presenters will share how this study fits in with Dallas' CECAP (Comprehensive Environmental and Climate Action Plan), and how the city hopes to implement environmental changes to benefit residents based on the results.

## Session Block 1D: Forecast-Informed Reservoir Operations as a Viable Water Management Strategy in Texas: What is Being Done and Needs to Be Done to Move the Needle Forward?

(A133-134)

### Panel Moderator:

- *Nelun Fernando*, Texas Water Development Board

### Symposium panelists:

- *Ron Ellis*, Texas Water Development Board
- *Denis Qualls*, City of Dallas
- *Jerry Cotter*, U.S. Army Corps of Engineers
- *Prof. Yu Zhang*, University of Texas at Arlington
- *Kris Lander*, National Weather Service

- *Howard Slobodin*, Trinity River Authority
- *Dr. Carla Guthrie*, Texas Water Development Board

Forecast-Informed Reservoir Operations (FIRO) is a water management tool — that with more research and consideration — can be added to the portfolio of options for enhancing the reliability of water supply for people and the environment in Texas. For the past five years, the Texas Water Development Board, the U.S. Army Corps of Engineers – Fort Worth District, the University of Texas at Arlington, and the National Weather Service–West Gulf River Forecast Center have been working to lay the technical foundation for implementing FIRO in Texas. Much scientific work has been accomplished through the first Texas FIRO pilot project in the Little River Watershed of the Brazos River Basin. FIRO, as a cost-effective water management concept, continues to gain interest among water resource managers in the state. Discussions are underway to establish a statewide FIRO Steering Committee to guide and provide a forum for all interested parties, and to encourage coordination for the successful implementation of FIRO in Texas.

## Session Block 1E: Disaster Resilience: Frontline Wisdom, Social Capital, and Innovation in the Face of Climate Chaos

(A135-136)

Conversations on disaster risk reduction are essential in addressing social vulnerability, promoting equitability, and navigating the increasing recurrence of destructive climate and disaster events. This session explores disaster recovery efforts, the role of frontline vulnerable populations in inclusive disaster planning, and equitable hazard mitigation. By openly discussing these factors, we create a foundation for inclusive strategies considering diverse community needs and recognizing the unique challenges that populations who have been marginalized face. Engaging in these conversations fosters a shared understanding of the complexities surrounding disaster resilience, laying the groundwork for collaborative, informed, and equitable solutions in the face of evolving climate challenges.



## Inspiration To Action: A Journey of Community Preparedness

### Presenters:

- *Arthur Johnson*, Center for Sustainable Engagement and Development

In an effort to address the continual problems of how to prepare for environmental disasters such as hurricanes, tornados, and flooding in overburdened coastal communities along the Gulf Coast, the Center for Sustainable Engagement and Development (CSED) created and coordinated a project entitled: "Consortium for Equitable Disaster Resilience". The goal of the consortium was to increase community resilience and awareness of recycling opportunities through the distribution of sandbags, tarps, demonstration of their uses, and informational materials. Coordination of the community consortium included distribution of supplies in conjunction with disaster material suppliers, communicating with residents and recipients about this program, engaging community members on topics such as costal restoration and recycling through special events, and a designated workshop held by CSED and other neighborhood organizations. This effort ensured an equitable and safe distribution of sandbags throughout the neighborhood.

## Assessing Non-Profit Response and Adaptation to Hurricane Harvey

### Presenters:

- *Xochitl Hidalgo*, Southern Climate Impacts Planning Program, University of Oklahoma
- *Mark Shafer*, Southern Climate Impacts Planning Program, University of Oklahoma

In mid-August of 2017, Hurricane Harvey made landfall in southern Texas. It brought several feet of rain to the Houston-Galveston area over a short period of time, resulting in major flooding. Due to the rapid intensification of the tropical system, impacted areas had little time to prepare or evacuate. As a result, impacts from Hurricane Harvey were widespread, with need exceeding the resources possessed by governmental agencies. Non-profit organizations acted to supplement what these agencies were unable to provide. They addressed the needs of vulnerable populations and helped tremendously in the recovery effort. Understanding how non-profit organizations respond and adapt to disasters will allow for increased knowledge as to how disasters affect

local communities, both in the short- and long-term. For this presentation, the response and subsequent adaptation of selected Houston-based non-profit organizations will be analyzed and discussed. Through a series of phone interviews, the non-profit organizations reveal how their organization has changed in the wake of the disaster and how prepared they feel for another event of similar magnitude. The presentation would summarize the findings and implications of the responses received through the phone interviews. water management concept, continues to gain interest among water resource managers in the state. Discussions are underway to establish a statewide FIRO Steering Committee to guide and provide a forum for all interested parties, and to encourage coordination for the successful implementation of FIRO in Texas.

## Seeking Higher Ground: Pedestrian Evacuation Planning for Vulnerable Populations

### Presenters:

- *Melissa Beaudry*, Half Associates
- *Ashley Bennis*, Half Associates

In the Lower Rio Grande Valley (LRGV), people who do not have access to their vehicles or reside in areas where roadways are frequently flooded, walk to their designated shelter during natural disasters. However, there are no designated pedestrian evacuation routes, and very few permanent shelters within this vast, sprawling region. This session will highlight preliminary findings on how communities can improve safety for high-risk and vulnerable residents during high-hazard events. Discussions will cover themes such as social vulnerability, mobility issues, limited local governance, and fair access to emergency services as significant barriers to safety. The session will conclude with a discussion on how vulnerable individuals and areas are being identified, and new partnerships are being formed to promote a parallel evacuation network for pedestrians, bicyclists, and those using mobility assistive devices through local trails, roadways, and other identified alternatives. The participants will also cover how drainage and flood-related infrastructure can be integrated into evacuation and pedestrian routes.



## Leveraging Participatory Geographic Information System (PGIS) in social vulnerability mapping for equitable hazard mitigation: A case study on Beaumont-Port Arthur, Southeast Texas.

### Presenters:

- *Farzana Ahmed*, Hazard Reduction & Recovery Center, Texas A&M University
- *Michelle Annette Meyer*, Hazard Reduction & Recovery Center, Texas A&M University
- *Nathanael Rosenheim*, Hazard Reduction & Recovery Center, Texas A&M University

This presentation explores the social vulnerability to disasters, particularly in the Gulf Coast region of the United States, and the challenges faced by communities with limited resources and support systems. It highlights the importance of equitable climate adaptation planning, drawing on real-life examples. The presentation emphasizes the need for community inclusion in decision-making and planning, leveraging the expertise and experiences of those most affected. The talk introduces the concept of Participatory Geographic Information Systems (PGIS) as a potential game-changer to enhance equity and reduce social vulnerability in marginalized communities. It focuses on addressing climate-related disasters, specifically flooding and air pollution in Southeast Texas. The presentation aims to provide insights into how PGIS can uniquely mitigate disparities and social vulnerabilities in underserved populations exposed to multiple hazards. The ultimate goal is to inform the development of effective disaster mitigation strategies in underserved communities, fostering inclusive and equitable decision-making processes. The findings of this presentation are expected to contribute significantly to the evolving literature on PGIS and its applications, particularly in promoting equity in reducing social vulnerability.

## Revisiting risk perception: Social capital and heat risk perception in urban Texas

### Presenters:

- *Sandeep Paul*, University of Texas at Austin
- *Kayee Zhou*, University of Texas at Austin
- *Patrick Bixler*, University of Texas at Austin

In the last few decades, climate resilience has emerged as a ubiquitous policy issue in U.S. cities. The adaptive capacity of households to climate-related challenges is not solely dependent on their individual characteristics, but also on the social contexts within which they are embedded. It is in this context that the concept of social capital assumes prominence in climate and disaster policy. While there has been considerable research on how social connections and networks aid in recovery and resilience in a post-disaster scenario, inquiries into how they influence risk perception are limited. For efficient policy, we need more empirical evidence on how community relationships are influencing the perceptions and attitudes of people to risks like extreme heat. Such explorations are extremely important in Texas which is undergoing considerable demographic changes and growing disaster risks like extreme heat. Drawing from a recent survey data of about 3,500 urban Texas households from across the state, this presentation will demonstrate how social capital affects disaster risk perception of the urban households to the threat of extreme heat. The study contributes to the growing literature on urban heat risk through a more comprehensive quantitative assessment of heat risk perception and provides evidence for the relevance of social capital to risk perception and in turn mitigatory actions.

**KEYNOTE SPEAKER:****3:00 pm - 4:00 pm in Ballroom A1-A2****DR. KATHARINE HAYHOE**

Dr. Katharine Hayhoe is a world-renowned atmospheric scientist leading the charge to understand and address climate change. As Chief Scientist for The Nature Conservancy, Paul Whitfield Horn Distinguished Professor, and Political Science Endowed Chair in Public Policy and Public Law at Texas Tech University, Dr. Hayhoe is at the forefront of climate research. Her work assesses the regional to local-scale impacts of climate change on human and natural environmental systems. Dr. Hayhoe's research includes analyzing observations, comparing future scenarios, evaluating global and regional climate models, building and assessing statistical downscaling models, and developing better ways of translating climate projections into information relevant to agriculture, ecosystems, energy, infrastructure, public health, and water resources.

Her work has led to over 125 peer-reviewed papers, abstracts, and other publications. In addition to her academic work, she's also a best-selling author of *Saving Us: A Climate Scientist's Case for Hope and Healing in a Divided World*. Dr. Hayhoe is also a sought-after public speaker on climate science, impacts, communication, and faith, and her TEDtalk, viewed over 4 million times, is just one example of her ability to communicate complex scientific concepts in an accessible way to everyone.

**FROM SCIENCE TO ACTION****4:15 pm - 5:00 pm in Ballroom A1-A2****HAYHOE, NANCE, BOWMAN, & JOHNSON**

After Dr. Hayhoe's keynote address, we will broaden the discussion and bring on panelists who can speak to the challenges and opportunities they face in educating, encouraging, and implementing climate action efforts. Panelists include Dr. Katharine Hayhoe; Dr. Earthea Nance, EPA's Region 6 Administrator; T.O. Bowman, Program Planner, City of Oklahoma City Office of Sustainability; and Arthur Johnson, Chief Executive Director, Lower 9th Ward Center for Sustainable

Engagement and Development. The panel will be moderated by Alejandra Martinez, Texas Tribune Environmental Reporter who has covered industrial pollution affecting disadvantaged communities, the effects of extreme heat on residents, indigenous communities restoring bison to the land and other environmental justice issues. Martinez will lead the group to explore resilience examples in the region and what keeps them hopeful to continue work in this space. Questions from the audience will be allowed as time permits.

**DR. KATHARINE HAYHOE****DR. EARTHEA NANCE****T.O. BOWMAN****ARTHUR JOHNSON****ALEJANDRA MARTINEZ**

# RECEPTION

5:30 pm - 7:00 pm in Ballroom A1-A2

**COME AND JOIN US AT THE RECEPTION TO CONNECT WITH OTHER ATTENDEES AND PROFESSIONALS WHO ARE WORKING TOWARDS BUILDING RESILIENCE IN THE REGION.**

- ✦ Enjoy hors d'oeuvres and beverages (1 drink ticket included with registration).
- ✦ Don't miss out on this exciting opportunity to network and learn from your fellow peers.
- ✦ Even if you consider yourself an introvert, come out for a bit and experience the benefits of connecting with fellow attendees.



# DAY 2: WEDNESDAY, APRIL 3

## DAILY SCHEDULE

Time	Event	Location
8:00 am - 5:00 pm	Registration and Check-in	Lobby
8:00 am - 9:00 am	Networking Coffee	A Lobby
9:00 am - 10:00 am	<b>Session Block 2</b>	
10:00 am - 10:30 am	Networking Break	A Lobby
10:30 am - 12:00 pm	<b>Session Block 3</b>	
12:00 pm - 1:00 pm	Catered Networking Lunch	Ballroom A1-A2
1:00 pm - 2:30 pm	<b>Workshop Block</b>	
2:30 pm - 3:00 pm	Networking Break	A Lobby
3:00 pm - 4:30 pm	<b>Session Block 4</b>	
4:30 pm - 6:00 pm	<b>Exhibitor Reception</b>	Ballroom A1-A2

# CONCURRENT SESSION BLOCK 2

9:00 - 10:00 am

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**Session Block 2B: Adaptation in Action: Nature Based Solutions**  
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**Session Block 2C: Innovative Investments in Resilience**  
Pg. 18-20 A118 -119

**Session Block 2D: Floodplain Protection and Restoration for Climate Resilience**  
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**Session Block 2E: Green Stormwater Infrastructure for Flood Resilience and Hazard Mitigation**  
Pg. 21 A135-136

## Session Block 2A: Advancing Climate Resilience through Community Engagement in Rural Communities

### (Ballroom A1-A2)

Recognizing rural communities' unique challenges in confronting climate change, this session emphasizes the significance of local involvement and collaboration. The symposium aims to explore innovative strategies, share best practices, and cultivate actionable insights to address the evolving climate challenges. The presentations will highlight the importance of equitable inclusion methods, recognizing overlooked populations in rural communities, capacity building, and adaptive strategies to strengthen rural communities against climate-related hazards and disasters.

## Centering the Needs of Incarcerated Women in Evacuation Processes

### Presenters:

- *Carlee Purdum*, Texas A&M University
- *Benika Dixon*, Texas A&M University
- *Jennifer Toon*, Lioness Justice Impacted Women's Alliance
- *Marci Marie*, Lioness Justice Impacted Women's Alliance

This presentation will discuss our ongoing partnership with Lioness: The Justice Impacted Women's Alliance to study the experiences of incarcerated women in disaster evacuation processes in rural communities and implications for policy.

## Inclusive Evacuation Using Transit and Paratransit: Considerations for Rural Communities

### Presenters:

- *Tara Goddard*, Texas A&M University

This presentation will include lessons learned and avenues for future planning based on a case study of the 2021 Caldor Fire in Lake Tahoe, California.

## Resilience in Recovery? Understanding the Extent, Structure, and Operations of Nonprofits Meant to Address Disaster Survivors' Unmet Needs

### Presenters:

- *Mason Alexander Hawk*, Texas A&M University
- *Michelle A. Meyer*, Texas A&M University

Presenters will discuss a unique phenomenon in the nonprofit sector during disaster recovery: Long-term Recovery Groups (LTRG). We assess the existence and location of groups, their missions and tasks, and their legal structure with an emphasis on rural LTRGs.

## Small Town and Rural Resilience: Building Networks and Strengthening Local Communities

### Presenters:

- *Erika Koeniger*, Texas A&M University

Presenters will focus on the reasons behind the need for our Small Town and Rural Resilience

Community Workbook and how it can be used with the Instructor Manual to strengthen the local community.

## Session Block 2B: Adaptation in Action: Nature Based Solutions

(A114-116)

Nature-based solutions are increasingly recognized as a key component of climate adaptation, allowing practitioners to work with nature, rather than against it. Despite this fact, acceptance and implementation of nature-based adaptation solutions still lag behind traditional “gray” infrastructure implementation, in part due to systemic and institutional barriers, as well as a lack of awareness. This session will highlight approaches that may aid in the implementation of nature-based solutions and discussions of the co-benefits of these features.

### The Nature Based Solutions Explorer, a Tool for Planning and Assessing NBS Projects in Louisiana

#### Presenters:

- *Michele Cutrofello-Eddy*, RTI International
- *Bryan Piazza*, The Nature Conservancy

Nature-Based Solutions (NBS) are being increasingly supported, funded, and documented across the southern US, nationally, and beyond. However, programs tasked and funded to plan and implement NBS of different types and at different scales can struggle to target, justify, assess, and compare NBS projects, especially with respect to flood mitigation and other social and ecological benefits. The Louisiana Watershed Initiative (LWI), is one statewide effort in the southern US that is focused on addressing flood resilience through watershed management, including the use of NBS to reduce the risk of flooding but also to bring hydrologic, ecologic, and economic co-benefits to the local and downstream watersheds. This talk will highlight an NBS Explorer tool, built by The Nature Conservancy and RTI International to provide critical information for communities to plan and seek funding for NBS in Louisiana. The NBS Explorer uses opportunity mapping, hydrological modeling, and co-benefits analyses to 1) target of locations both feasible and beneficial to implement NBS and 2) estimate the flood risk and socio-ecological benefits of NBS projects from local to statewide scales in Louisiana. Included in

this presentation will be discussion of the technical tool design, the extensive stakeholder outreach and community involvement to design landscapes that incorporate nature to reduce flood risk, and a preview of the online modeling tool – the NBS Explorer. to assess both watershed and local project implementation to outreach support and training of stakeholders.

### Nature-based Infrastructure for Ecosystem Services Enhancements to Improve Health in Vulnerable Urban/Industrial Locations

#### Presenters:

- *Deborah January-Bevers*, Houston Wilderness
- *Dr. Loren Hopkins*, Houston Health Department

Through a multi-partner, large-scale targeted native tree planting framework, implemented in Houston, Texas, thousands of the high-ranking tree species are being planted in locations that experience substantial flooding during large rain events, have high rates of health effects exacerbated by air pollution and experience multiple days of elevated heat and air pollution. This multidisciplinary framework addresses a critical need to provide interventions accessible to the community, educate on the connection between climate change adaptation and mitigation, air pollution mitigation and health, and foster multisectoral leadership to accelerate local resilience actions. Two case studies based on this framework are discussed: (1) a regional large-scale targeted tree planting program called Houston Ship Channel Trees and Riparian Enhancement of Ecosystem Services (HSC TREES) - a multi-partner effort to enhance ecosystem services through targeted large-scale tree plantings along the 25 miles of the Houston Ship Channel, and (2) a pioneering program called Riverine Targeted Use of Buyouts (Riverine TUBs) that assists in addressing the challenge of prioritizing FEMA-qualified contiguous buyout properties adjacent to riparian corridors leading to Galveston Bay (Texas) and the Gulf of Mexico in order to enhance ecosystem services on the recovered green spaces to the health, welfare and resilience benefit the surrounding communities. The Riparian TUBs Program implements targeted large-scale tree planting and bioswale installations on these contiguous public lands to increase coastal and riverine resilience, address harmful health impacts from frequent rainwater and storm events that can



be emulated by other stakeholders/decision-makers in the region and around the coastal U.S.

## Resilient Oyster Reef Restoration Design

### Presenters:

- *Kathy Sweezey*, The Nature Conservancy

The Nature Conservancy has implemented an innovative oyster reef restoration design with intentional considerations to increase reef resilience to extreme weather events. Beezley Reef is the first of its kind in Galveston Bay, Texas, incorporating both harvestable and sanctuary areas within its design. At 40 acres in size, approximately 25 acres were restored with the goal of opening to commercial oyster harvest, and 15 acres were restored with the goal of serving as a broodstock sanctuary reef. This hybrid approach to oyster reef restoration supports the ecology and economy of our bay by creating additional habitats for numerous marine species, filtering millions of gallons of water each day, and supporting local fisheries.

## Use of Nature-Based Solutions in the City of Fayetteville's Climate Action Plan

### Presenters:

- *Leif Olsen*, City of Fayetteville
- *Valerie Miller* - Olsson, City of Fayetteville
- *Eric Fuselier* - Olsson, City of Fayetteville

The City of Fayetteville has been working with Olsson to develop a Climate Action Plan to build resilience against the impacts of climate change. This plan includes an updated version of their previously adopted Energy Action Plan, adding a new Nature-Based Solutions component. The nature-based solutions approach to climate change adaptation and mitigation emphasizes the role of ecosystem services and resilient ecosystems in the city's efforts to adapt to the anticipated changes to the region's climate, as well as carbon sequestration and storage measures to mitigate future carbon emissions which may result from land use and development. The City worked with Olsson to develop an inventory of assets within the city that have high ecological value for providing climate resilience for the city's residents, such as by providing flood control, urban heat mitigation, carbon sequestration, and human and biological greenway linkages between major open space anchors. Parcels containing significant forests, wetlands, riparian corridors, parks, trails,

and lands with exceptional biodiversity and habitat were scored based on various indicators of climate resilience. Olsson also worked with the city's GIS department to develop a public-facing Climate Resilience interactive GIS map containing the results of the inventory. This map layer will be included on the city's GIS webpage to help guide their planners and city leaders when assessing existing public lands and associated ecosystems to determine appropriate land preservation policies and best management practices as the city grows and develops.

## Session Block 2C: Innovative Investments in Resilience

### (A118 -119)

This mix of sessions highlights how collaboration and innovative approaches can be used to build resilience in our region. Talks highlight creative approaches to fund and finance insurance and disaster preparedness including microinsurance and carbon credits. They also highlight proactive collaboration with under-resourced Tribal communities and diverse investments in coastal resilience.

## Advancing financial protection for low-income households from disasters through cross-sector collaboration

### Presenters:

- *Helen Wiley*, SBP

Building household level financial resilience to disaster events is critical as vulnerable communities face increasing climate risks. If households cannot access financial resources, their recovery will be much slower and they will sustain further hardships. Despite being the best form of financial protection, traditional disaster insurance coverage is often inaccessible for the most vulnerable households. Cross-sector collaboration is critical for enabling new financial instruments to better meet household and community level needs as they deal with increasing disaster risks, insurance affordability challenges, and low literacy around the importance of insurance. This presentation covers how actors across state and local governments, nonprofits, and the private sector are starting to creatively collaborate to launch new insurance models and solutions to better meet the needs of low-income

populations. Hear lessons learned from recent insurance pilots and programs being tried out in communities across the US, including microinsurance and community-based insurance models. This presentation aims to further expand the community of practice exploring new disaster insurance solutions by educating other practitioners about recent collaborations and continuing to emerge pathways for increasing vulnerable households access to financial resources to recover from disaster events and better prepare for future ones.

## Investing in Texas Coastal Wetlands for Climate Mitigation and Community Resilience

### Presenters:

- *Charlotte Nash*, The Nature Conservancy

The Nature Conservancy (TNC) in Texas is evaluating how carbon and resilience credits can act as innovative funding mechanisms for coastal restoration and protection. We completed a Texas blue carbon feasibility study which assessed the market, technical, financial, and legal aspects of developing blue carbon credit projects. The study compares four project strategies: land protection, hydrologic restoration, beneficial use of dredged material for marsh creation, and erosion control using breakwaters and living shorelines. Results indicate that protecting or restoring existing marshes rather than creating new ones secures more carbon and is usually more cost-efficient. Based on these findings, we are focusing efforts on land protection and hydrologic restoration. Another key finding is that relative sea level rise is a major challenge for blue carbon projects in Texas, since many carbon registries require that projects can assure carbon storage for 100 years. One potential solution is thin layer placement of dredged material on existing marshes, which may help them keep up with sea level rise.

## Upper Barataria Terracing: A Component of the Multiple Lines of Defense Strategy for Louisiana's Barataria Landbridge

### Presenters:

- *Ryan Fikes*, Freese and Nichols, Inc.
- *Matthew Salmon*, Freese and Nichols, Inc.

This project consists of the construction of earthen terraces in Barataria Basin south of the town of Lafitte near the Barataria Waterway and Bayou

Dupont, which is located immediately south of the Barataria Landbridge. This area has been identified as having experienced a high rate of marsh fragmentation and shoreline erosion, and much of the emergent marsh has been converted to open water. The project location was selected for its proximity to other small- and large-scale marsh restoration projects recommended in the 2017 and 2023 Louisiana Coastal Master Plans that have been completed or are entering detailed design. Nearby planned and completed projects include the Mid-Barataria Diversion, Barataria Large Scale Marsh Restoration, and Barataria Land Bridge Restoration. Marsh terracing is a technology that works in harmony with these other restoration solutions to reduce energy and assist with sediment capture. Construction of a terrace field in this location will provide a buffer to reduce wave and storm surge attenuation generated by winds and storms from the Southeast direction, the primary direction of most tropical storms. Primary threats to the area include land loss, tropical storm flooding, loss of ecological habitat, and impact on the local job market. The project is anticipated to help capture sediment from the Mid-Barataria Diversion. This presentation will discuss the how this project fits into Louisiana's multiple lines of defense storm risk reduction strategy, best practices for selecting location and designing a terracing project, and the iterative process to identify and successfully apply for various funding opportunities.

## Working with Tribes and Indigenous Peoples on Climate Adaptation in the South-Central U.S

### Presenters:

- *Amelia Cook*, South Central Climate Adaptation Science Center and Chickasaw Nation
- *Jake Palazzi*, South Central Climate Adaptation Science Center and Chickasaw Nation
- *Yvette Wiley*, South Central Climate Adaptation Science Center and Chickasaw Nation

The South Central Climate Adaptation Science Center (CASC) has conducted trainings, education, and research activities with Tribes and Indigenous Peoples across the south-central U.S. since 2012. Our work has included developing and delivering climate-related trainings requested by Tribes, including topics focused on drought, culturally sensitive species, and vulnerability assessments. .



We work directly with Tribes on their funded projects related to climate change, provide climate projections or other datasets requested, and connect Tribal environmental professionals with researchers who can help them answer specific questions. We value both Indigenous knowledges and Western science. The demand for our services across the region keeps growing as these sovereign nations work to become more resilient in the face of climate change. In this presentation, we will outline the type of work we have done in the past and plans for new programs in the future

## Session Block 2D: Floodplain Protection and Restoration for Climate Resilience

(A133-134)

Floodplains are among the most biodiverse, productive, and threatened ecosystems. They provide critical habitat, water quality, and flood mitigation benefits, yet floodplains across the country have been modified and converted to agricultural, urban, and industrial uses at an unprecedented rate. This session will include three presentations highlighting innovative approaches and partnerships between scientists, practitioners, landowners, and policymakers to help solve the dual challenges of climate change and biodiversity loss through floodplain protection and restoration.

### Floodplain protection and restoration in the Lower Mississippi River, Integrating Science, Conservation, and Partnerships to Solve the Dual Challenges of Climate Change and Biodiversity Loss

#### Presenters:

- *Bryan Piazza*, The Nature Conservancy

This presentation documents three largescale floodplain protection and restoration projects in Louisiana and Mississippi – Mollicy Farms, Loch Leven, and the Atchafalaya River Basin, ranging from 5,000 – 16,000 acres (2,023 – 6,475 ha) – that demonstrate how floodplain conservation can improve water quality, both locally and regionally, reduce flood risk, and improve fish and wildlife habitat. We will report on restoration actions, summarize scientific monitoring, and research results, and the partnership and stakeholder efforts necessary to succeed in and scale-up this floodplain restoration. Finally, we link these projects to larger efforts, like reducing nutrient

loading to the Gulf of Mexico and solving the dual challenges of climate change and biodiversity loss

### Market-based Approach for Floodplain Reforestation in the Lower Mississippi Alluvial Valley of Arkansas and Mississippi, and Louisiana

#### Presenters:

- *Jason Milks*, The Nature Conservancy

A project that aims to help agricultural landowners access carbon market funding to restore economically challenging agricultural land into dependable revenue generators. This pilot uses decades of reforestation experience with partners in the Mississippi Alluvial Valley to test new financing opportunities through the Voluntary Carbon Market. Learnings from this project will hopefully benefit floodplain restoration and protection in other frequently flooded systems in the Southern U.S. A description of important context, key assumptions and research, and project development will be presented.

### The Trinity Floodplain Prioritization Tool and Stakeholder Planning

#### Presenters:

- *Kathy Jack*, The Nature Conservancy
- *Justin Kozak*, The Nature Conservancy
- *Lynde Dodd*, (USACE-ERDC)

The USACE Silver Jackets partner, Fort Worth District, and The Nature Conservancy will share their work to prioritize floodplain protection and restoration to improve flood resilience, water quality, habitat, carbon storage, and community benefits in the Trinity Basin. As a part of this effort, we have adapted TNC's Floodplain Prioritization Tool, originally developed for the Mississippi Basin, to the Trinity Basin to help stakeholders identify priority floodplain conservation opportunities. Through this effort we are working to help Basin stakeholders develop a portfolio of priority nature-based solutions projects, including floodplain protection and restoration, to move through the project pipeline.

## Session Block 2E: Green Stormwater Infrastructure for Flood Resilience and Hazard Mitigation

**(A135-136)**

Communities in North Texas are increasingly challenged by urban flooding in the urban and rapidly urbanizing landscape. Population growth is outpacing stormwater infrastructure and driving conversion of natural "buffers" to impervious surfaces. Increased precipitation from climate change is exacerbating the problem. This session will feature several initiatives to support green stormwater infrastructure and other nature-based solutions to mitigate flooding in urban and urbanizing areas of the region, including through integrated and hazard planning asset management.

### Green Stormwater Infrastructure for Flood Resilience and Hazard Mitigation

#### Presenters:

- *Fouad Jaber*, Texas A&M AgriLife Extension
- *David Reazin*, U.S. EPA Region 6

This presentation includes:

- (1) The Green Stormwater Infrastructure for Urban Flood Resilience: An Opportunity in Dallas, Texas: a study by the Nature Conservancy and Texas A&M AgriLife, with the City of Dallas and the Trust for Public Land, to assess the opportunity for green stormwater infrastructure to improve urban flood management in Dallas, considering current and future climate scenarios; and
- (2) Green Infrastructure for Hazard mitigation in Denton County: an innovative collaboration among the U.S. Environmental Protection Agency, the Texas A&M AgriLife Extension, and the City of Denton to integrate green stormwater infrastructure (GSI) and low-impact development into Denton County's Hazard Mitigation Plan.

### Green Asset Management

#### Presenters:

- *Fouad Jaber*, Texas A&M AgriLife Extension

Cities have used the Asset Management (AM) Approach to manage their traditional gray infrastructure assets. This presentation will share a collaborative project in the City of Denton that was initiated to develop a Green Asset Management (GAM) approach to integrate both green and gray assets into the management framework.

## Transportation Stormwater Integration (TSI) Initiative

#### Presenters:

- *Jeffrey C. Neal*, North Central Texas Council of Governments
- *Kate Zielke*, North Central Texas Council of Governments
- *Jai-W. Hayes-Jackson*, North Central Texas Council of Governments
- *Matthew Lepinski*, U.S. Army Corps of Engineers

A preemptive and integrated transportation, stormwater, urban development, and environmental planning process to reduce negative consequences on downstream communities from robust urbanization of the upstream portions of the Trinity watershed.

# CONCURRENT SESSION BLOCK 3

10:30 - 12:00 pm

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### Session Block 3B: Mitigating Water Resource Challenges

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### Session Block 3C: Can Resilience Hubs Save Us from Climate Disasters?

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### Session Block 3D: Community Land Trusts and Communal Ownership: Strategies for Climate Adaptation without Displacement

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### Session Block 3E: Using Technology, Science, and Multisectoral Collaborations to Address Climate Resilience and Adaptation

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## Session Block 3A: The Fifth National Climate Assessment (2023)

### (Ballroom A1-A2)

#### Presenters:

- *Reid Sherman*, US Global Change Research Program
- *Renee McPherson*, South Central Climate Adaptation Science Center, University of Oklahoma
- *Darrian Bertrand*, Southern Climate Impacts Planning Program, University of Oklahoma
- *Janey Camp*, Vanderbilt University

This symposium overviews the recently released Fifth National Climate Assessment (NCA5) and details themes of interest to the south-central U.S. Authors from multiple chapters of NCA5 first will present an overview of their chapter and then serve on a panel to answer questions from the audience. The session will be moderated by Dr. Reid Sherman, Climate Adaptation Lead for the U.S. Global Change Research Program (USGCRP). Presentations will focus on the following chapters:

Overview, Climate Trends, Southern Great Plains, Southeast, and Human Health.

## Session Block 3B: Mitigating Water Resource Challenges

### (A114-116)

Too much or too little water from weather and climate extremes and municipal demands negatively impacts communities in the south-central U.S. Join presenters in this session to learn about mitigation actions and tools that can increase resilience to water resource challenges relating to drought, flooding, and wildfires in the region.

### Jumping the Shark? The path ahead for South Central U.S. water resources.

#### Presenters:

- *Matthew Berg*, Simfero

It's been said that if climate change is a shark, water is its teeth. This presentation will swim right at that reality with a lighthearted tone while taking a frank look at the challenges ahead. Jump in and scope out surface water trends from example locations across the South Central region. Next, dive into what these changes mean for selected urban centers and rural communities alike. Last, find safe harbor among the place-specific options for nature-based solutions to take some of the edge off the coming bite out of water resources. There's safety in numbers, but we're all going to have to kick together.

### Evaluating the Impacts of Potential Wastewater Reuse on Streams in the Red River Basin in Oklahoma

#### Presenters:

- *Jason Vogel*, University of Oklahoma
- *Shadi Fathollahifard*, University of Oklahoma
- *Shang Gao*, University of Oklahoma
- *Thomas Neeson*, University of Oklahoma
- *Hannah Mattes*, University of Oklahoma
- *Grant Graves*, University of Oklahoma
- *Richard Zamor*, University of Oklahoma

Wastewater reuse is potentially a viable option for mitigating the impacts of climate change and

increased water demands on available water supplies. However, water reuse must be implemented in such a way as to minimize the negative impacts on streams, ecosystems, and downstream water users that previously received this wastewater effluent. This project builds on recent USGS SCCASC research by developing a comprehensive assessment of the potential environmental impacts and societal benefits of wastewater reuse in the Red River basin in Oklahoma. We are evaluating the influence of wastewater discharge on streamflow, water quality, and fish populations in the context of past and projected streamflow, precipitation and other hydrologic-related variables under future climate scenarios. This presentation will discuss preliminary results of the hydrologic, water quality, and habitat impacts of reusing wastewater instead of discharging the treated effluent into the receiving streams.

### Rainwater Harvesting Partners Project

#### Presenters:

- *Jacob Shaffer*, U.S. Department of Agriculture
- *Gesse Bullock*, Alabama-Coushatta Tribe of Texas Fire Management Specialist
- *Sheena Schemm*, Bureau of Indian Affairs Tribal Climate Resilience Regional Coordinator

Recent droughts have increased the probability of wildfires across the Southern Plains and particularly the state of Texas. The Alabama-Coushatta Tribe of Texas has identified these dry conditions as a high priority to ensure proper water storage is in place in case of an emergency. The Alabama-Coushatta Tribe of Texas Pow Wow Pavilion with an approximate roof area of 9,375 square feet will be used to capture rainfall to be stored in a 65,000-gallon Fire Approved Pioneer Storage Tank. The water collected will allow for a quick and easy access point to a water source during a time of crisis deriving from extreme weather events. The project will also conserve area lake and groundwater use by utilizing the collection of rainwater for fire safety, irrigation, and livestock use. Another important aspect of the project will be the strengthening of partnerships among the Bureau of Indian Affairs (BIA), Tribal Climate Resilience (TCR), Alabama-Coushatta Tribe of Texas, and United States Department of Agriculture, while also promoting water conservation throughout the Southern Plains Region.

### Representing Decision Dynamics of Incentives-Based Water Conservation in the Red River Basin through Participatory Cognitive Mapping

#### Presenters:

- *Madeline Wade*, University of Oklahoma

The Red River basin, forming the border between Texas and Oklahoma, represents a highly complex landscape in which water scarcity is influenced by social, biological, and hydrological spatial dynamics. Voluntary incentives (i.e., payments or subsidies offered to water users to reduce water consumption) may be an effective strategy to promote freshwater sustainability, but many social and ecological factors influence their adoption and long-term success. In particular, the success of incentive-based water conservation programs depends on the perceptions, values, and behaviors of conservation actors and water users. This project aims to represent perceptions, values, knowledge, and behaviors surrounding incentives-based water conservation (IBWC) among conservation actors and water users in the Red River basin. Through semi-structured interviews and participatory Fuzzy Cognitive Mapping (FCM) with conservation actors and water users, we represent the social and ecological dynamics of decision-making about implementing or participating in IBWC programs. Our FCM analysis also reveals how these dynamics might be shaped by climate projections and actors' access to and understanding of these climate data products. We compare aggregated FCMs to understand how perceptions, values, and knowledge are shared among water users and conservation actors, and how they differ. Our preliminary results from interviews with conservation actors suggest that decisions about IBWC occur across spatial and temporal scales and are influenced by many social and ecological factors. This work will provide policy and technical recommendations for how incentives-based water conservation programs might be made more acceptable to water managers and users. Our findings can be incorporated with biophysical models to make recommendations for spatially and temporally optimized conservation programs.



## Drought Resilience Improvements in Altus, OK

### Presenters:

- *John Barron*, City of Altus, OK

The City of Altus has invested more than 12 million dollars in several projects that have increased the City's drought resilience. An epic drought from 2010-2015 motivated community partners to develop a formal Water Supply Action Plan and the City has completed several key projects to rehab wells, add new wells, rehab the City reservoir, and treatment plant improvements. Now we are three years into a current drought and we are much better off thanks to these efforts.

## H&H Harmonization: Keys to Effective Watershed Modeling and Calibration

### Presenters:

- *Jim Keith*, Freese and Nichols, Inc.
- *Bethany Fleitman*, Freese and Nichols, Inc.
- *Billy Williamson*, LA DOTD

In 2018, Louisiana launched the Louisiana Watershed Initiative (LWI), introducing a new, proactive, watershed-based approach to reducing flood risk throughout the state by creating new and updated models of Louisiana's watersheds. This presentation delves into the challenges of managing and executing a project of this magnitude with limited existing historical data. Additionally, the approaches and processes that were implemented to meet the modeling and calibration objectives and how these models will be used for future projects to enhance resiliency throughout the state will be discussed. The Louisiana Department of Transportation and Development (DOTD) is developing calibrated models for use in consequence and risk assessment, ultimately informing the implementation of flood risk reduction projects via watershed coalitions in coordination with parish, state and federal entities. Freese and Nichols, Inc. (FNI) has completed the initial evaluation of Region 2, which is made up of 9 Hydrologic Unit Code-8 (HUC-8) watersheds covering approximately 9,500 square miles in the north central part of the state. The Region 2 H&H models were calibrated and validated against 8 historic storms. Calibration efforts included evaluating radar rainfall data in the HEC-HMS hydrologic models and applying the hydrographs in the 1D/2D HEC-RAS hydraulic

models. Challenges when calibrating the models included limited gage and rainfall data availability and HUC-to-HUC coordination. This presentation highlights the challenges of calibrating large-scale watershed models and the pivotal role of the LWI program in reducing flood risks in Louisiana and enhancing the overall climate resilience of the entire region.

## Session Block 3C: Can Resilience Hubs Save Us from Climate Disasters?

### (A118-119)

### Presenters:

- *Lisa Lin*, Harris County Office of County Administration
- *Kate Jaceldo*, San Antonio
- *Marc Coudert*, City of Austin
- *Carlos Evans*, City of Dallas

Resilience Hubs are an emerging and a collaborative way for local governments to support physical and social resilience in low-income and historically marginalized communities that disproportionately face worse impacts from extreme weather events, power outages and grid failure. Resilience Hubs are well-trusted, community-serving facilities augmented to support residents, coordinate communication, distribute resources, and provide access to safe and reliable clean power. As local governments face increasingly severe weather due to climate change and rising economic and public health challenges, community resilience hubs are an innovative approach to support adaptation and resilience before, during, and after disasters. Representatives from the City of Austin, City of Dallas, City of San Antonio, and Harris County will share the different stages of resilience hub development happening in their localities and how community groups guide and shape their work. From showcasing clean energy demonstrations to providing holistic support services, resilience hubs are focused on delivering community benefits. Through a presentation of lessons learned and interactive conversations, participants will be able to work through how to engage and cocreate these approaches with the communities they serve.

## Session Block 3D: Community Land Trusts and Communal Ownership: Strategies for Climate Adaptation without Displacement

(A133-134)

### Presenters:

- *Alessandra Jerolleman, Loyola University New Orleans College of Law*
- *Sarah Barger, Kīpuka Kuleana*
- *Noah Patton, National Low Income Housing Coalition*
- *Kristina Peterson, Lowlander Center*
- *Carrie Tully, Dishgamu Humboldt Land Trust*

Climate adaptation strategies often protect geographic locations far more than they protect the specific persons or communities who inhabit them. As a result, efforts at improving building codes, expanding green infrastructure, and improving environmental health, often result in unintended gentrification. Place-based and community-led adaptation must take into account strategies for preventing forced displacement and actively engage with the question of resilience for whom. However, even locally led efforts struggle with the implications of policies and funding mechanisms that rely heavily on individual market transactions. Communal ownership is one strategy for preventing displacement, protecting life-ways, and restoring self-determination. This symposium brings together a law and policy perspective on communal land ownership models with locally driven examples from across the Southeast and beyond. Speakers will share recent and historic examples of the use of Community Land Trusts, and other communal ownership models, as a tool to prevent displacement and promote resilience. Speakers will also discuss some of the legal and regulatory challenges, common impediments and pitfalls. This particular collection of presenters is actively engaged in networks of mutual aid and support, sharing strategies, models, resources and tools.

## Session Block 3E: Using Technology, Science, and Multisectoral Collaborations to Address Climate Resilience and Adaptation

(A135-136)

This year the World Health Organization called upon leaders, institutions, and communities to embrace and promote “One Health,” a systemic, integrative, and collaborative approach to climate change that recognizes the critical connection between people, animals, plants, and ecosystems. One Health is a proven approach to policy-making and cross-sector collaboration that has been shown to be successful in breaking down silos and borders for sustainable change. Embracing the One Health concept, this symposium approaches climate resilience and adaptation from a physical environmental perspective, focusing on the natural elements most impacted by climate change in the South Central region – air quality, extreme heat, water management, and soil depletion. Symposium participants will showcase state-of-the-art tools and innovative methods, including multiple scale sensing, bird acoustics, air quality monitoring, and urban farm practices to highlight data-driven solutions and actionable insights for mitigating the effects of climate change in urban settings.

### Multi-Scale Multi-Use Smart Sensing in Service of Society

#### Presenters:

- *David Lary, University of Texas at Dallas*

As our environmental context rapidly evolves, the need for timely and actionable environmental insights at the neighborhood scale has never been greater. The vision of MINTS-AI is to serve society using advanced smart sensing technologies. Our initiative transcends traditional boundaries, providing a comprehensive physical (meteorology & air quality) and social observatory. Our objective is clear and far-reaching: to measure changes as they happen and provide open data feeds, ensuring communities are informed and can be ready to respond. This is achieved through a suite of diverse sensing technologies, from satellites to street-level monitoring, robot teams, and personal wearables, all enhanced with machine learning and our innovative 'smart software-defined sensors.' Our ongoing project in Dallas-Fort Worth serves as

a living lab example of our approach, offering a glimpse into a future where informed decision-making leads to safer, more responsive communities.

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## **Integrating Urban Regenerative Farming and Data Science for Climate Resilience in South Dallas**

### **Presenters:**

- *Shalini Prasad*, University of Texas at Dallas
- *Brad Boa*, Restorative Farms

As the impact of climate change intensifies, urban agriculture emerges as a pivotal arena for fostering climate resilience and adaptation. This presentation explores the application of regenerative agricultural techniques in urban farms and gardens in cities and its resulting effects on soil health. As the impact of climate change intensifies, focusing on soil health becomes crucial due to its direct influence on various environmental elements: air quality, extreme heat, water management, and soil depletion—regenerative practices contribute to the physical resilience of these areas. A key indicator of soil health is the percentage organic matter in the soil. Termed as soil organic carbon (SOC), this is a key metric for evaluating the progress of regenerative agricultural practices. Doing so presents notable challenges as the dynamic nature of soil, influenced by various factors, makes it difficult to pinpoint the specific impact of regenerative practices on the state of the soil such as organic content, etc. Information on climate resilience can be acquired through the utilization of innovative electrochemical sensor technology that enables real-time soil organic matter tracking through the integration of bio-chemical, analytical and computational methods. At UT Dallas we have demonstrated the ability to track and provide just in time reporting of soil organic matter towards enabling the creation of reporting framework that can provide farmers actionable and meaningful data for forecasting future land use.

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## **The Power of Partnerships Towards Multi-Sector Collaboration**

### **Presenters:**

- *Susan Alvarez*, North Central Texas Council of Governments

Climate change and the related solutions all form a multi-sector challenge, and a multi-sector solution is required for effective resolution. This talk will discuss how developing multi-sector partnerships has been helpful towards initiating both local and regional climate planning, and more critically: implementation. Discussion includes engaging academia, business sector, and community leaders in implementing efforts towards more local resilience and adaptation.

# CONCURRENT WORKSHOP BLOCK

**1:00 pm - 2:30 pm**

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**Workshop 1: Securing Federal Grants for Equitable, Resilient Places: Learn, Strategize, and Collaborate**

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**Workshop 2: Youth Engagement and Climate Justice Workshop**

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**Workshop 3: Open Discussion with the Authors of the Southern Great Plains Chapter of NCA5**

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**Workshop 4: InFRM: Strengthening Resilience through Widely Available High Resolution Flood Risk Information**

Pg. 29 A133-134

**Workshop 5: Bridging Perspectives: Communicating Among Diverse Stakeholders in Climate Action**

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**Workshop 1: Securing Federal Grants for Equitable, Resilient Places: Learn, Strategize, and Collaborate**

**(Ballroom A1-A2)**

### Presenters:

- Rohan Lilauwala, City of Austin
- Revathi Veriah, AECOM
- Grace Rink, AECOM

Upcoming federal grants through the Infrastructure Investment and Jobs Act (IIJA) and Inflation Reduction Act (IRA) offer historic grant funding opportunities in areas that support building climate resilience in areas including environment justice, energy resilience, green infrastructure, flood-proofing etc. Hosted by the City of Austin's Office of Sustainability in collaboration with AECOM's Climate Advisory Services practice, this workshop will highlight pathways to leveraging federal funding opportunities for climate resilience. Engage with us

to gain insights into upcoming federal grant opportunities, strategies for prioritizing grants and building partnerships, and key elements of a funding-ready proposal. Delve into the nuances of equity considerations and Justice 40 requirements for a grant proposal. Our workshop goes beyond theory, offering a hands-on exercise where participants can actively identify funding-ready proposals within their communities. This exercise aims to bridge the gap between opportunities and community needs, fostering actionable and impactful projects. This workshop is designed for representatives from government entities, non-profit organizations, community groups, and private sector participants alike. This workshop will provide valuable insights and tools to enhance your understanding of upcoming opportunities and capabilities in securing grants for climate resilience initiatives.

## Workshop 2: Youth Engagement and Climate Justice Workshop

**(A114-116)**

### Presenters:

- Cassandra Jean, Adaptation International
- Celine Rendon, Adaptation International
- Alexia Leclercq, Start: Empowerment
- Jasmine Butler, Start: Empowerment

Climate change and its cascading impacts are among the biggest threats to the health and environment of millions worldwide in the 21st century. Engaging young people, especially those in marginalized spaces, in public health, climate change, and environmental justice issues is crucial for our communities and society. This interactive workshop will consist of two youth-focused, hands-on activities presented by four experts in the field. With this session, participants will

1. learn about different youth engagement tools and facilitation strategies,
2. engage in activities that promote youth education, resiliency, leadership, and self-determination, and
3. contribute to dialogue for transformative and intersectional practices that equip youth in creating a sustainable and equitable future.



### Workshop 3: Open Discussion with the Authors of the Southern Great Plains Chapter of NCA5

(A118-119)

**Presenters:**

- *Renee McPherson*, University of Oklahoma
- *Reid Sherman*, USGCRP
- *April Taylor*, Texas Sea Grant
- *Susan Alvarez*, North Central Texas Council of Governments
- *Sascha Petersen*, Adaptation International
- *Ali Fares*, Prairie View A&M University
- *Bee Moorhead*, Texas Impact Foundation
- *Nick Smith*, Texas Tech University
- *Darrian Bertrand*, University of Oklahoma

The Southern Great Plains comprises Kansas, Oklahoma, and Texas – a culturally and ecologically diverse region with a large west-to-east precipitation gradient. Lands and waters are important to all who live in the region, but past management strategies are challenged by more erratic climate extremes. Economic prosperity is linked closely with energy, agriculture, and other climate-dependent industries, but transformations are occurring that affect both workers and companies. Sports and recreation are elements of healthy lifestyles and enjoyment for many people across the region, but health impacts have become more challenging with climate change. Communities, non-profit organizations, and others have been trying to relieve additional risks and burdens carried by families and neighborhoods that historically have been marginalized by government entities, but this work has become more critical as climate hazards become more frequent or extreme. Finally, governments and other organizations provide services (e.g., transportation, water, education) that keep communities functioning, but more erratic climate patterns pose risks to workers, budgets, and planning processes. The authors of the Southern Great Plains chapter of the 5th National Climate Assessment will work with workshop participants to take messages from NCA5 back to their communities and to integrate ideas from NCA5 into their own local planning processes.

### Workshop 4: InFRM: Strengthening Resilience through Widely Available High Resolution Flood Risk Information

(A133-134)

**Presenters:**

- *Kathryn Powlen*, U.S. Geological Survey, Oklahoma-Texas Water Science Center
- *Sam Wallace*, USGS - Texas Water Science Center
- *Erik Smith*, USGS - Texas Water Science Center

The Interagency Flood Risk Management (InFRM) team brings together Federal Partners (FEMA, USACE, NWS, and USGS) to determine the needs of communities, define solutions, and implement measures to reduce long term flood risk throughout Arkansas, Louisiana, New Mexico, Oklahoma, and Texas. A wealth of flood information is provided by this collaborative partnership, including emergency response, planning, and forecasting through the Flood Decision Support Toolbox (FDST) and high-resolution, regional flood risk modeling in the estimated Base Flood Elevation (estBFE) Viewer. There is also potential for novel integration of socioeconomic data or models into the existing toolsets to consider not only the spatial distribution of flood occurrence, but also societal and economic impacts of flooding. This can help answer questions related to environmental justice, such as who bears disproportionate climate burdens. To increase the usability and impact of the information provided by these tools, a strong understanding of information needs and related data must be gained. The InFRM workshop will introduce the interagency collaboration, provide an overview of the FDST and estBFE toolsets, and solicit input for the flood risk and socioeconomic model coupling using an open discussion format. The overall goal of the workshop will be to examine the current role that InFRM tools are serving in reducing climate risk and understanding how the tools can continue to be used to promote equitable access to flood risk data and inform policy to increase food resilience in the south-central region.

## Workshop 5: Bridging Perspectives: Communicating Among Diverse Stakeholders in Climate Action

(A135-136)

### Presenters:

- *Nancy Salisbury*, St. Edward's University
- *Sylvie Guillon*, ADelta Impact

Explore outreach, engagement and listening strategies tailored to engage diverse stakeholders in climate action. Recognizing the power of inclusive dialogue, this workshop focuses on fostering effective communication across varied viewpoints, empowering participants to navigate complexities and drive collaborative climate initiatives. Objectives:

1. **Foster Inclusive Dialogue:** Cultivate a safe and inclusive space for stakeholders from various backgrounds—government, businesses, communities, academia, NGOs—to share perspectives, experiences, and concerns related to climate action.
2. **Encourage Mutual Understanding:** Utilize interactive exercises and storytelling activities to facilitate a deeper understanding of diverse stakeholder viewpoints and challenges.
3. **Co-Create Climate Initiatives:** Facilitate collaborative sessions encouraging stakeholders to ideate, brainstorm, and co-create actionable climate initiatives that integrate diverse perspectives and interests.
4. **Build Consensus:** Facilitate discussions on conflict resolution and consensus-building strategies, empowering participants to find common ground and align diverse perspectives towards actionable climate solutions.

**Key Takeaways:** Participants will leave the workshop with enhanced communication skills, an understanding of diverse stakeholder needs, and actionable strategies for effective engagement. The focus is on empowering individuals to bridge communication gaps and foster collaborative efforts for impactful climate action.

# CONCURRENT SESSION BLOCK 4

3:00 pm - 4:30 pm

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### Session Block 4B: The Power and Potential of NBS for Flood Mitigation – Stories of Success

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### Session Block 4C: Texas Cities are Too Damn Hot. What Can We Do About It?

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### Session Block 4D: Environmental Justice, Effective Storytelling, and Innovative Solutions

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### Session Block 4E: Enhancing Community Resilience by Strengthening "Town/Gown" Relationships: The UT-City of Austin Climate Co-Laboratory

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A135-136

## Session Block 4A: Resilient Infrastructure

### (Ballroom A1-A2)

Developing climate resilient infrastructure is a critical issue facing municipalities today. Local governments experiencing impacts from extreme heat, precipitation variability, sea level rise, and other natural disasters are working to implement innovative solutions that span from small-scale building retrofits to large-scale levees and sea walls. Although often faced with common challenges such as political will and funding, local governments are actively prioritizing efforts that enhance community resilience. Participants in this session will share their successes and challenges related to the planning, design, and implementation of resilient infrastructure projects.

## Climate Uncertainty And Charting A Path To Resilient Infrastructure

### Presenters:

- *Paul Robinson, Jacobs*

Current water management and planning principles often do not address risk that changes over time, leaving society exposed to more risk than anticipated. Both of the recent National Climate Assessments have discussed the evolution of risks over time and how threats interweave and compound each other. Infrastructure asset management planning is intended to manage system risks, but often does not really consider how the external threats may change over time, or if we truly can bracket them within a range of possible scenarios to understand their impact. By combining methods, tools and datasets that are often frequently available already, it is possible to identify how compounding threats may affect infrastructure and also the consequences of those threats changing over time. The presentation will touch on how organizations often already have many of the resources needed to prudently plan a route to more robust and resilient systems. Additionally, how different organizations globally are including this thinking in development of adaptation pathways to plan “no-regrets” solutions. This can also contribute to addressing the issues raised by increased public and regulatory concern and developing the basis of business cases for funding.

## The Southern Plains Transportation Center: Improving Transportation Infrastructure to Face Climate Change

### Presenters:

- *Royce Floyd, University of Oklahoma*
- *Musharraf Zaman, University of Oklahoma*

According to the U.S. Department of Transportation’s (USDOT) Strategic Plan FY 2022-2026 “climate change presents a significant and growing risk to the safety, effectiveness, equity, and sustainability of the transportation infrastructure and the communities it serves.” This is especially applicable to Region 6 states where a rapid upsurge in the frequency and severity of extreme weather events is impacting the durability

and service life of the aging transportation infrastructure at an unprecedented rate, with disproportionate effects in tribal, rural, low-income, and underserved communities. Flooding, winter weather, and temperature extremes accelerate deterioration of surface transportation infrastructure. Weather and climate extremes affecting gulf coast ports threaten economic growth and trigger social and supply-chain disruptions. Extreme weather disrupts vehicle-to-everything (V2E) communications and threatens safety. The Southern Plains Transportation Center (SPTC) is a USDOT funded regional university transportation center working to assess and mitigate vulnerability of transportation infrastructure to climate change, extreme weather, and sea-level rise through innovative research, effective implementation, and workforce development. By drawing on the combined expertise of the consortium members, SPTC will produce solutions, materials, and tools to change the way extreme weather and climate change are considered in infrastructure design, efficiently assess infrastructure condition, economically rehabilitate existing infrastructure, enhance the resilience of new and existing infrastructure, effectively manage assets, and mitigate system vulnerability that can be scaled to the national level. This presentation will introduce effects of climate and weather extremes on transportation infrastructure, summarize ongoing SPTC research, and set the stage for engaging discussions on research needs.

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### **Empowering Coastal Resilience: Integrating Solar Energy Systems in the Face of Climate Challenges**

#### **Presenters:**

- *Aly Mousaad Aly*, Louisiana State University

As coastal communities grapple with the escalating impacts of climate change and the intensification of extreme weather events, the imperative to fortify their resilience grows ever more critical. This study delves into the pivotal role of photovoltaic (PV) panels in mitigating climate-induced stresses on residential homes, providing a beacon of hope in the battle against climate adversity. By conducting a series of experiments within a state-of-the-art open-jet wind facility, we examine a range of configurations, comparing roofs with and without PV panels. The results are striking: a

notable reduction (45-63%) in wind-induced forces on the primary structure, contingent on wind direction and panel arrangement. This empirical evidence underscores the transformative potential of PV panels in fortifying coastal infrastructure against the tempests of our changing climate. In addition to empirical investigations, we harness the power of Computational Fluid Dynamics (CFD) techniques, complemented by machine learning (ML), to revolutionize the design process for resilient solar panels. Validating CFD simulations against experimental data and benchmarking them against industry standards, we advocate for a -15° stowage angle for ground-mounted solar panels during high winds, offering a strategic defense against potential damage. The integration of ML and CFD accelerates the design process and sets the stage for a more resilient, sustainable, and circular economy-oriented coastal infrastructure. This research presents a transformative opportunity for stakeholders invested in the well-being and longevity of coastal communities. By integrating solar energy systems, we not only bolster the structural integrity of coastal buildings but also make significant strides in reducing carbon footprints, advancing sustainability goals, and creating more resilient and adaptive communities in the face of an uncertain climate future. This work is a beacon of hope, offering innovative solutions and tangible pathways toward a more secure and sustainable tomorrow.

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### **Evaluating Future Stormwater Risk in New Orleans**

#### **Presenters:**

- *Jordan Fischbach*, The Water Institute
- *Nastaran Tebyanian*, The Water Institute
- *Patrick Kane*, The Water Institute
- *Colleen McHugh*, The Water Institute
- *Allison DeJong*, The Water Institute
- *Abby Littman*, The Water Institute
- *Daniel Gilles*, Iowa Flood Center
- *Nans Voron*, SCAPE

New Orleans, like many cities in the U.S., faces significant challenges in managing flooding from heavy rainfall under present and future conditions. Present-day challenges include an inadequately sized drainage and pumping system and aging infrastructure with substantial deferred maintenance. Future climate change is likely to exacerbate these challenges in the decades to



come. While several major efforts are planned or underway in New Orleans to improve water management, to date, there has been no systematic investigation of rainfall flood risk in New Orleans: specifically, how uncertainty related to future climate change might lead to changes in the frequency or extent of rainfall flood risk for city residents. To address this need, we use a detailed model of the present-day New Orleans drainage system in a Robust Decision Making analysis. This analysis examines the potential for flooding across a range of storm types and frequencies and under hundreds of scenarios representing uncertainty in future rainfall, sea level rise, drainage obstruction, and potential pump failures. We use scenario discovery to identify conditions that lead to significant increases in the frequency and duration of flooding and spatial analysis methods to highlight areas of the city that are or could become more vulnerable to flooding. We use analysis results to develop communication products designed to help decision makers and residents understand these research findings to better plan for stormwater flood risk under a range of uncertain future conditions.

## A Review of Utilities' Perspectives on Resilience and Long-Term Planning

### Presenters:

- *Sarah Reynolds*, The University of Texas at Austin
- *Yael R. Glazer*, The University of Texas at Austin
- *Konstantinos Oikonomou*, Pacific Northwest National Laboratory
- *Juliet Homer*, Pacific Northwest National Laboratory
- *Michael E. Webber*, The University of Texas at Austin

There is recognition among power and water utilities that the frequency and magnitude of high consequence and low probability events could increase as result of climate change. The interconnected nature of energy-water systems raises the possibility of cascading failures, increasing complexity and risks. Resilience and long-term planning are important ways of weathering the effects of climate change. First, to understand more about resilience, we reviewed existing literature on resilience definitions, metrics, and modelling. Second, to understand how resilience and planning are being applied in practice, we interviewed thirteen utilities across

ten states and synthesized the interview data to arrive at several key findings. We found that there is not a consistent definition for resilience, yet it is something that utilities regularly plan for but with different names and by use of varying methods/measures. However, there is a tangible shift in the industry towards defining and determining measurable resilience metrics. While the exact metrics are a work in progress, utilities are taking steps forward by (1) putting people and culture at the center of resilience; (2) recognizing their own interdependencies; and (3) pursuing better cross-sector collaboration. Despite each utility facing unique threats posed by climate change, there is much to be learned through such collaboration. Utilities that are first movers can illuminate a path forward for others and help pave the way for standardization across the industry. This presentation will highlight the key findings from these first movers regarding resilience and ways to plan for the weather of the future.

## Session Block 4B: The Power and Potential of NBS for Flood Mitigation – Stories of Success

(A114-116)

### Presenters:

- *Kelley Rich*, Texas Water Development Board
- *Krista Bethune Melnar*, Freese and Nichols, Inc.
- Panelists – Representatives from Harris County Flood Control District, North Central Texas Council of Governments, San Antonio River Authority and Texas Water Development Board

Nature-based Solutions (NBS) use or imitate natural features and processes to increase resilience while providing benefits to people and the environment. By working with nature, NBS can build a community's climate resiliency, enhance water quality, improve aquatic habitat, and better the overall quality of life in a watershed. However, there's often a hurdle between conceptualizing and implementing NBS into a practical approach that accomplishes multiple objectives. This symposium will highlight efforts underway, in Texas, to overcome these hurdles and pave a clearer path for those wishing to realize the power and potential of NBS to achieve their community's resilience, sustainability and adaptation goals. The symposium will convene a diverse set of stakeholders working to overcome common barriers to NBS implementation. Stakeholders will

share their success stories followed by a panel discussion on how their experiences and efforts can be broadly applied and supported by the NBS Guidance Manual for Flood Mitigation currently in development by the Texas Water Development Board. Example topics include working across political boundaries, developing effective partnerships, creating training and resources, and advancing NBS policy. The goal of the TWDB's new guidance manual is to synthesize guidance on the use of nature-based flood mitigation solutions into a single, statewide manual for Texas communities. A significant body of research and guidance on this subject exists; however, more focused guidance that considers the efficacy of nature-based solutions within the various geographic regions of Texas is needed to support regional and statewide flood planning efforts and help guide Texas communities to better understand and utilize these approaches.

### Session Block 4C: Texas Cities are Too Damn Hot. What Can We Do About It?

(A118-119)

#### Presenters:

- *Marc Coudert*, City Austin, Office of Resilience
- *Doug Melnick*, San Antonio
- *Lisa Lin*, Harris County

Heat waves kill more people in the U.S. than all other natural disasters combined. Heat waves are increasing in frequency, duration, and magnitude with the changing climate. Those most impacted include households with few resources, infants, older adults, people experiencing homelessness, low-income communities, and people with chronic or mental illness. Climate change is a "risk amplifier", intensifying the many social and environmental factors that shape the health of our communities; thus, climate resiliency action presents an opportunity to improve health and increase equity. Yet, municipalities struggle to identify, implement, and measure adaptation projects that mitigate ambient heat while ensuring they are just, equitable, and inclusive. Come learn from San Antonio, Austin, El Paso and Harris County about how Texas cities and counties are adapting and innovating new strategies to mitigate heat in communities of color.

### Session Block 4D: Environmental Justice, Effective Storytelling, and Innovative Solutions

(A133-134)

Recognizing the intersection of environmental justice, disaster recovery, and climate adaptation is essential for equitable, resilient solutions to address the complex challenges of our changing environment. This thought-provoking session dives into critical issues at the intersections, promoting questions on topics like collaborative and equitable disaster recovery strategies, funding equitable resilience, and redefining how we understand inclusivity in climate adaptation practices. Additionally, this session will highlight effective storytelling methods, environmental injustices of hazardous waste treatment, and multidisciplinary collaborations for renewable energy. By integrating these dimensions, this session makes critical steps toward making recovery efforts and adaptation strategies equitable, sustainable, and resilient.

### Expanding the Definition of Climate Adaptation for More Equitable Outcomes

#### Presenters:

- *Renee Collini*, The Water Institute
- *Laura Talbert*, Gulf Center for Equitable Climate Resilience

Calls for more inclusive and equitable policies and actions are increasing as the challenges from climate change exacerbate existing intersectional inequities. However, current federal and state systems are designed around a top-down funding and research structure, which includes scope and needs frequently being determined with no or minimal input from those who need the research findings or the funding. This leads to a myriad of gaps, such as missing critical aspects of what information and capacity is needed to be resilient or funding passing through systems that are not equipped to reach under-resourced communities. It is necessary to pursue a broader definition of climate resilience and to find novel ways of leveraging the depth and extent of information available regarding these gaps and needs. This presentation will introduce the newly established Gulf Center for Equitable Climate Resilience, which was founded to push outside of traditional

mechanisms and definitions for climate adaptation and mitigation. Acknowledging that climate resilience is about more than physical safety and that strategies must be as diverse and unique as the communities they will serve, the Center will collaborate with a network of individuals and organizations that will bring together research, lived experiences, and other resources to advance equitable climate resilience in the Gulf of Mexico. In this presentation, we will review the stakeholder-defined focus areas of the Center, the strategies for pursuing intentional engagement to advance approaches that can be systematically applied, and our approaches for fostering bottom-up participation in climate adaptation and mitigation.

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### Mayah's Lot: Comic Books, Youth Empowerment, and Environmental Justice

#### Presenters:

- *Rebecca Bratspies*, Center for Urban Environmental Reform
- *Charlie LaGreca Velasco*, Center for Urban Environmental Reform

*"Environmental Justice, I bet you don't even know what that means...I had no idea that it actually affects every one of us. That is until it came to my home"* So begins *Mayah's Lot*, the EPA award-winning environmental justice comic book. Set in the fictional town of Forestville, *Mayah's Lot* tells the story of a young girl who organizes her urban neighbors to self-advocate for environmental justice. Students learn alongside *Mayah* as she practices community science, prepares public testimony, and builds a coalition for change. *Mayah's Lot* has been used in classrooms around the world—with lesson plans ranging from those appropriate for elementary school students to those aimed at graduate students. This presentation will describe how the book project began, emphasizing its collaborative roots. It chronicles how *Mayah's Lot* has been used to teach basic civics, to build social advocacy networks, and to cultivate a new generation of urban environmental leaders not only attuned to environmental justice but also equipped with skills to navigate legal and regulatory systems. The presentation will highlight how non-traditional tools can bring environmental justice to a generation steeped in a more visual and

interactive way of learning. And how to open conversations about what kind of a society we want to have—asking what justice means for overburdened communities, and offering models for social change.

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### Mitigating the Disproportionate impacts of Disasters

#### Presenters:

- *Shontae Davis*, FEMA

This presentation will provide an overview of the mutual benefits to socially vulnerable communities and their local governments by 1. Utilizing Hazard Mitigation Assistance funding and ensuring an equitable distribution of funding, 2. Providing opportunities available under FEMA's Justice 40 programs to better serve socially vulnerable communities that face the disproportionate impact of climate change, and 3. Sharing partnership strategies to work with Private Non-Profits (PNP) and Community Based Organizations (CBO) that can be utilized under FEMA Mitigation programs.

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### TNC's North America Renewable Energy Strategy: A "3C" Approach for Climate, Conservation & Community

#### Presenters:

- *Ben Postlethwait*, The Nature Conservancy

To decarbonize the U.S. by 2050, renewable energy capacity needs to expand by nearly 400% and high-voltage transmission needs to increase by roughly 60%. While there are many environmental and social benefits to clean energy deployment, there are also tradeoffs for people and nature. This presentation will share The Nature Conservancy's collaborative work-- bringing science, industry, landowners, communities, and policymakers to the table to plan, site, and develop renewable energy projects to meet climate, biodiversity, and community goals. Several collaborative 3C initiatives and case studies will be shared, including our Site Renewables Right map, Power of Place decarbonization analysis, and Purpose-Driven Procurement industry framework.

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## Exploring the Presence of Environmentally Persistent Free Radical related to Open-Burn Waste Treatment

### Presenters:

- *Myron Lard*, Louisiana State University
- *Robert Cook*, Louisiana State University
- *Chuji Guo*, North Carolina State University
- *Jennifer Richmond-Bryant*, North Carolina State University

Environmentally persistent free radicals (EPFRs) are a class of long-lived radicals that are typically generated in particulate form through combustion reactions. EPFRs may also form when organic compounds interact with metals in air and soil. EPFRs are of interest due to their ability to promote oxidative stress related diseases like asthma and cardiovascular disease. This study focuses around the community of Colfax, Louisiana, (71% Black, 26% White, median income: \$16,687): home to the nation's only commercially operated open-burn/open-detonation (OBOD) waste treatment facility, responsible for the disposal of contaminated soils, spent propellants, and munitions waste. Our team is investigating the impacts of these practices throughout the surrounding community. We conducted air and soil sampling to determine the prevalence of EPFRs throughout the community. Particulate matter <2.5 mm (PM2.5) was collected weekly from two high volume samplers located 1.2 and 9 mi from the facility, and fine and total PM was collected quarterly at ten passive sampling sites 0.72 to 9.0 miles from the facility. Soil samples were obtained at depths of 0-10 cm from five of the sampling locations. Using electron paramagnetic resonance (EPR) radical concentrations were detected in samples collected throughout the community, in both air and soil. Radical signals in the PM2.5 and fine and total passive samples consistently appeared as single-peak carbon-centered radicals. Radical signals detected in soils suggest the presence of complex radical systems, with multiple radical centers. Correlation studies between facility burn records, soil heavy metal content data, and suspected radical centers are ongoing. We continually share these data with community members, who have incorporated our results into their testimonies, and with the Louisiana Department of Environmental Quality (LDEQ) for consideration when evaluating the facility's permit renewal request. This June, the LDEQ issued a

revised permit that prohibits the facility from conducting OBOD beginning December, 2023.

## Session Block 4E: Enhancing Community Resilience by Strengthening "Town/Gown" Relationships: The UT-City of Austin Climate Co-Laboratory

(A135-136)

### Presenters:

- *Patrick Bixler*, University of Texas at Austin
- *Dev Niyogi*, University of Texas at Austin
- *Alyssa Dallman*, University of Texas at Austin
- *Trevor Brooks*, University of Texas at Austin
- *Marc Coudert*, City of Austin

The UT-City of Austin Climate Co-Lab is the very first city-specific climate collaborative in the world. Established through a partnership between UT and the City of Austin, the Co-Lab's mission is to produce climate information, data, and tools tailored for Austin - enhancing policy, governance, funding, and education. This symposium will focus on various dimensions of the Co-Lab, including a new climate assessment for the City of Austin identifying trends, patterns, changes and event summaries plus future projections; Decision Calendars that document what climate information is needed, who needs it, and when and how the information will be used; Policy Briefs that connect climate data to local policy; and Synthesis Studies such as cool pavement projects and climate hot spots. The panel will address historical challenges between the Town/Gown relationships and how new models of "co-production" are the basis for a new kind of town/gown relationship.



## EXHIBITOR RECEPTION

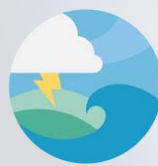
4:30 pm - 6:00 pm in Ballroom A1-A2

## JOIN US IN THE BALLROOM TO EXPLORE EXHIBITOR BOOTHS AND ENGAGE WITH THEIR REPRESENTATIVES.

- ✦ Meet the SCCRF sponsors/exhibitors
- ✦ Browse the exhibitor booths to learn more about their organization and resilience work
- ✦ Network with attendees



**City of Dallas**



**SCIPP**  
A NOAA CAP TEAM



**adaptation**  
international



**FREESE  
AND  
NICHOLS**



**Gresham Smith**

The Nature  
Conservancy



**halff**



**ADelta Impact**

**30** cooksey  
**YEARS**

strategic communications where expertise is essential



**SOUTH CENTRAL**  
CLIMATE ADAPTATION SCIENCE CENTER



**Southern Plains Climate Hub**  
U.S. DEPARTMENT OF AGRICULTURE

# DAY 3: THURSDAY, APRIL 4

## DAILY SCHEDULE

Time	Event	Location
8:00 am - 12:00 pm	Registration and Check-in	
8:00 am - 9:00 am	Networking Coffee	A Lobby
9:00 am - 10:30 am	<b>Session Block 5</b>	
10:30 am - 11:00 am	Networking Break	A Lobby
11:00 am - 12:00 pm	<b>Closing Session</b>	Ballroom A1-A2
12:00 pm - 1:00 pm	Independent Lunch	
1:00 pm - 5:00 pm	<b>Optional Field Trips, Side Meetings</b>	
1:00 pm - 5:00 pm	<b>North Texas Climate Symposium</b>	Ballroom A1-A2

# CONCURRENT SESSION BLOCK 5

9:00 am - 10:30 am

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**Session Block 5C: Using Climate Model Projections in Future Planning: A Real-World Management Activity (Workshop)**  
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**Session Block 5D: Empowering Frontline Clinics: Climate Resilience Toolkit and Clinic Integration into Community Heat Plans (Workshop)**  
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**Session Block 5E: U.S. Climate Vulnerability Index Tool 101 - Centering Equity in Climate Action (Workshop)**  
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## Session Block 5A: Climate-Informed Planning: Examples and Lessons Learned

### (Ballroom A1-A2)

Communities and businesses in the south-central U.S. are creating climate resilience, adaptation, and sustainability plans to reduce their weather- and climate-related risks and impacts. However, it can be a challenging process. In this session, presenters will share examples of these plans and the lessons they learned along the way. Barriers to incorporating climate information into planning processes, as well as solutions and tools to mitigate these barriers will also be presented.

## Developing Solutions to Climate Planning Challenges Across the Region

### Presenters:

- *Rachel Riley*, Southern Climate Impacts Planning Program, University of Oklahoma
- *Darrian Bertrand*, Southern Climate Impacts Planning Program, University of Oklahoma

Cities, towns, and counties that are working to address their climate-related challenges often run into barriers to progress. Resolving complex problems frequently requires collaborative, technical, and interdisciplinary solutions. The work is inherently difficult. This presentation will highlight the resources and solutions that the Southern Climate Impacts Planning Program has developed through working with practitioners over many years. These resources help meet the needs of practitioners who are helping their communities become more resilient to climate hazards. In this presentation, barriers to climate-informed planning will be presented, including those that particularly affect small and rural communities. Then, several example resources and initiatives will be described that help mitigate some of the barriers.

## Lessons Learned from TxDOT's First Statewide Resiliency Plan

### Presenters:

- *Diana Edwards*, AECOM
- *Shirley Li*, Texas Department of Transportation

Every year, Texas's transportation system is at risk to extreme weather events, such as flooding, hurricanes, extreme heat, extreme cold, Intelligent Transportation System security threats, and other human-made hazards such as dam and levee failures. These hazards can damage transportation infrastructure and disrupt operations, with cascading impacts for public safety and health, freight and supply chains, and the Texas economy. In recognition of these potential impacts, TxDOT is taking the lead to develop the Statewide Resiliency Plan (SRP) and proactively manage and anticipate future disruptions to the transportation system. The SRP evaluates the vulnerability of the Texas transportation system to a wide range of hazards, identify critical infrastructure, assess their



vulnerabilities, and develop solutions and strategies to increase their resilience. In addition, the SRP also evaluates the economic costs – such as infrastructure damage, emergency response costs, economic losses, and recovery costs – that would result if no actions were taken to address system vulnerabilities. This presentation will provide an over Overview of the technical approach, stakeholder outreach efforts, lessons learned, and next steps for TxDOT's first Statewide Resiliency Plan.

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## Developing a Climate Resilient Sustainability Plan that Provides Business Direction

### Presenters:

- *Kate Howe*, Weaver Consultants Group

Sustainability is growing in importance and gaining traction, and the need for companies, organizations, and public entities to publish a sustainability plan is expanding. There are a variety of hurdles, including navigating reporting frameworks, calculating carbon emissions, establishing a baseline, and what methodologies to follow. This presentation will share the route taken to develop a sustainability plan for a local Texas water district, and how climate resilience was incorporated into the heart of the plan. We will discuss how to achieve a sustainability plan that is of practical use to the company, employees, and leadership. A sustainability plan that shows beneficial progress, with strategic targets can enable the plan to be a useful interface for climate planning and development opportunities. This presentation will discuss what steps to take in achievable bite-size chunks to avoid stress and further costs in the future. We will discuss how a company can appropriately prepare and integrate sustainability even if stakeholders are not yet requiring you to report to a published ESG framework. Plus, we will highlight the importance of correctly defining a GHG baseline, and discuss the tasks involved in calculating carbon emissions. The overall aim is to present a cost and time effective strategy to prepare your company for forthcoming sustainability requirements, in a manner that is not financially burdensome and rushed. By doing so, a solid foundation can be achieved to help promote a competitive edge in sustainability and incorporate climate preparedness and resilience into the plan.

## Climate Risks Assessments for Commercial Real Estate

### Presenters:

- *David Rubin*, AEI Consultants

Investors and lenders today are increasingly attuned to climate risk due to mounting investor demands, evolving risk management standards, and regulatory pressures. Concurrently, the commercial real estate sector has long prioritized safeguarding asset value and those who live and work in the built environment. Decision-makers, including grant providers for building enhancements, now integrate climate risk and resilience into their risk management protocols, often requiring climate resilience plans. This presentation aims to educate through case studies of commercial projects that have successfully integrated resilience measures, safeguarding asset value during climate-related hazards. It will offer insights into tools like ASTM International's ongoing initiative (WK 62996) to develop a property resilience assessment, specifically targeting individual building risks. The journey to establish an ASTM guide for assessing physical risk and resilience at the property level commenced approximately 2.5 years ago. Despite the existence of numerous vendors offering climate risk assessments, uniformity was lacking. Moreover, sustainability frameworks mandate the evaluation of physical climate risk and resilience. Notably, the financial regulatory sector now demands a more comprehensive assessment of these factors as part of underwriting and risk management processes. This presentation serves as a crucial exploration of the evolving landscape, emphasizing the critical need for consistent evaluation and management of physical climate risk and resilience across commercial real estate, aligning with the growing demands of investors, regulators, and sustainability frameworks.

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## The Simple Planning Tool for Climate Hazards

### Presenters:

- *Darrian Bertrand*, Southern Climate Impacts Planning Program, University of Oklahoma

The Simple Planning Tool for Climate Hazards (SPT) was developed by the Southern Climate Impacts Planning Program to assist emergency managers, planners, and other decision makers in Arkansas,



Louisiana, Oklahoma, and Texas who are assessing long-term climate risks, both historically and in the future. The tool is a compilation of easy-to-use online interactive tools, maps, and graphs relevant to several hazards and is tailored to each state. Users can access and obtain locally relevant data and projections from the provided links and instructions. The tool also contains a state-of-the-science summary on projected future trends for each hazard. Finally, other resources include hazard definitions and descriptions, historical FEMA/presidential disaster declaration information, climate change science and projection resources, and incentive and action programs for hazard risk reduction. The SPT has been an effective tool across the region to incorporate weather and climate information into plans and it has informed over a dozen types of plans since 2018. This presentation will introduce the SPT and demonstrate the new online version of the tool.

### **Sustainability and Climate Action Plan for Institutions of Higher Education (IHE)**

#### **Presenters:**

- *Meghna Tare*, University of Texas at Arlington

This presentation underscores the importance of implementing a dedicated Sustainability And Climate Action Plan within university settings, recognizing these institutions as influential catalysts for positive environmental change. In the face of escalating climate challenges, universities must assume responsibility for their carbon footprint and actively contribute to global efforts to mitigate climate change. A Climate Action Plan for universities serves as a strategic roadmap, systematically addressing carbon emissions, energy consumption, and sustainable practices across campus. This proactive approach not only aligns with social and environmental responsibilities but also establishes universities as exemplars of sustainable living and environmental stewardship. The plan's significance extends beyond the immediate reduction of greenhouse gas emissions. It fosters a culture of sustainability within academic communities, influencing students, faculty, and staff to adopt eco-friendly behaviors and instilling a sense of environmental consciousness. Moreover, such plans enhance the resilience of universities by promoting the adoption of renewable energy sources, sustainable infrastructure, and climate-resilient practices. By integrating climate action into curricula,

universities empower students with the knowledge and skills necessary to address complex environmental challenges. The resulting interdisciplinary research and innovation contribute valuable insights and solutions to the broader field of climate science and sustainable development. In essence, a comprehensive Climate Action Plan is imperative for universities to fulfill their role as responsible global citizens, actively contributing to a sustainable and resilient future for all.

### **Session Block 5B: Saving Cities, Saving Societies: A Guide to Thrive**

**(A114-116)**

#### **Presenters:**

- *Samantha Johnson*, NANO Architecture Interiors
- *Terri Hogan Dreyer*, NANO Architecture Interiors
- *Ian Dreyer*, NANO Architecture Interiors

Guide to Thrive will consist of a presentation followed by a guided breakout session where participants will have the opportunity to explore the application of the concepts from the presentation to the local urban fabric. Designing to sustain what we have will not be enough for societies to survive, let alone thrive, in the current climate crisis. Communities within the urban environment must have the resources to be more self-reliant during crisis and stability to ensure the preservation of culture and environment. To enable these communities, action needs to be taken in specific ways at different levels of planning, policies and decision making. As Architects, our creative and analytical nature does not have to be limited by a project program. We have a responsibility to position ourselves, however precariously, on the precipice of design's future by challenging societal norms, and geographical and economic limitations to usher in solutions of a renewed age of design based upon intention and performance.

## Session Block 5C: Using Climate Model Projections in Future Planning: A Real-World Management Activity (Workshop)

(A118-119)

### Presenters:

- *Derek Rosendahl*, South Central Climate Adaptation Science Center (CASC)
- *Adrienne Wooten*, South Central CASC
- *Renee McPherson*, South Central CASC
- *Dolly Na-Yemeh*, South Central CASC

Effective climate adaptation and resilience planning often requires the use of model-based future climate projections to make well-founded management decisions. However, practitioners often struggle with interpreting the myriad of climate projections available. This training will walk participants through the process of working with the climate projections needed to make a climate-informed decision. Our team will provide a brief overview of climate model projections and then facilitate a hands-on activity in small breakout groups using a real-world situation. Climate scientists will answer questions participants may have about the climate projections as they work through the activity. Also, attendees will be encouraged to share insights from their experiences and ask questions related to any challenges they currently face. Attendees will leave the training feeling more confident in their ability to interpret climate projections and will learn about resources available to help them in future planning efforts.

## Session Block 5D: Empowering Frontline Clinics: Climate Resilience Toolkit and Clinic Integration into Community Heat Plans

(A133-134)

### Presenters:

- *Nathaniel Matthews-Trigg*, AmeriCares

This workshop will delve into the practical and innovative methods of adapting to climate change in community health centers and free and charitable clinic settings. We will review the AmeriCares and Harvard C-CHANGE Climate Resilience for Frontline Clinics toolkit, a suite of operational, patient-centered resources that educate and empower patients, providers, and administrators. We will then explore the co-development process and early implementation of a groundbreaking clinic-focused climate and health action planning project, currently being tested by a cohort of clinics in FL, AZ, and LA. Lastly, we will discuss how these projects fit into a broader holistic vision of health system resilience to climate change, rather than the current facility-by-facility, and system-by-system approach.

## Session Block 5E: U.S. Climate Vulnerability Index Tool 101 - Centering Equity in Climate Action (Workshop)

(A135-136)

### Presenters:

- *Molly Ellsworth*, The Environmental Defense Fund

U.S. Climate Vulnerability Index Tool 101 will introduce and train audience members on a new screening and mapping tool that helps communities and policy makers center climate equity in their advocacy and decision making. Pulling in 184 sets of data to rank more than 70,000 U.S. Census tracts, the U.S. Climate Vulnerability Index (CVI) helps users see which communities face the greatest challenges from the impacts of a changing climate. This session will first walk through the story of the tool's creation, including purposeful partnership with environmental justice leaders across the U.S. to integrate their greatest data and advocacy needs. Following opening remarks, case studies will be presented highlighting use of the CVI to educate

residents, assess resource deployment in underserved areas, planning and successful use of the CVI by local leaders to emphasize equity in their regional policymaking. After the case study presentation, a short training on navigating the CVI website will be presented. The session will conclude with an interactive session where the audience will be asked to explore the CVI data in their own communities. The session will conclude with an interactive session where the audience will be asked to explore the CVI data in their own communities. Audience member will be guided in navigating the tool and identifying for themselves existing threats and vulnerabilities in their community. The session will conclude by asking audience members to describe any new insights that the tool provided for their work.

## CLOSING SESSION

11:00 am - 12:00 pm in Ballroom A1-A2

# DESIGNING MEANINGFUL CLIMATE ENGAGEMENT FOR DIVERSE AUDIENCES & CLOSING REMARKS

Join us for this closing session as representatives from City of San Antonio, City of Austin, and Harris County, TX, discuss how to communicate climate change and resilience with communities to inspire change and implement action. Stick around for the end of the session, where we will close the Forum and highlight takeaways from attendees.

### Speakers:

- *Kate Jaceldo*, City of San Antonio - Office of Sustainability
- *Marc Coudert*, City of Austin
- *Lisa Lin*, Harris County





# NORTH TEXAS CLIMATE

1:00 pm - 5:00 pm in Ballroom A1-A2

## SYMPOSIUM:

Started in 2018, the North Texas Climate Symposium brings together regional stakeholders from government, academia, and industry for discussion and presentations. The purpose of the symposium is to educate and bring awareness to the impacts of climate change in North Texas and discuss how we, as North Texans, can address and mitigate those impacts. The City of Dallas is hosting its 7th annual North Texas Climate Symposium, organizing panels catered toward the business community, in support of our partnership with the [City Business Climate Alliance](#).

1:00 - 1:10 pm	<b>Welcome / Introduction</b>	
1:10 - 2:15 pm	<b>Making Dallas a Great Place to Live, Work, Play</b>	Join The Dallas 2030 District for an inspiring and transformative journey into the heart of Dallas' future, Building a Sustainable and Thriving Dallas: Join the 2030 Vision. This special panel discussion is designed to ignite passion, foster collaboration, and unveil the roadmap towards a greener, more resilient Dallas by 2030. Through the collective wisdom of leading voices in sustainability, finance, real estate, and environmental consulting, we dive deep into the "why" behind our shared pursuit of a sustainable Dallas, exploring how each of us plays a crucial part in this visionary quest.
2:15 - 2:25 pm	<b>Break</b>	
2:25 - 3:30 pm	<b>Climate Initiatives &amp; Opportunities</b>	Delve into Dallas's commitment to sustainability through initiatives such as the Comprehensive Environmental & Climate Action Plan (CECAP) and related energy efficiency and renewable energy goals and programs. Explore the NCTCOG's development of an Air Quality Improvement Plan and discover grant opportunities to support businesses in making an impact toward a more sustainable future. This panel aims to spread awareness of these initiatives, share best practices, and foster partnerships in advancing environmental sustainability.
2:25 - 3:30 pm	<b>Break</b>	
3:40 - 4:45 pm	<b>Electric Vehicle Infrastructure Initiatives</b>	Hear from key stakeholders in the electric vehicle industry who will share insights, lessons learned, and best practices related to fleet electrification and electric vehicle charging infrastructure implementation. Explore the dynamic landscape of EV development, sustainability initiatives, and collaborative strategies that drive innovation, as industry leaders provide a comprehensive overview of their experiences, fostering a collaborative environment for the future of electric mobility.
4:45 - 5:00 pm	<b>Closing Remarks</b>	

# FIELD TRIPS

1:00 pm - 5:00 pm

## FIELD TRIP #1: RESTORATIVE FARMS (VIA TRANSIT)

Visit a unique venture in developing a sustainable vibrant and viable community-based urban farm system, in sunny South Dallas, Texas, a community that most needs fresh food access and employment opportunities.

Located adjacent to the DART Hatcher Station, this agribusiness grows a better Dallas by growing and selling fresh local vegetables, building and selling GroBoxes, seedlings and soil, and providing

meaningful jobs as well as farming and entrepreneurial training. This is a unique model that could be implemented in other communities with similar challenges.



We will be riding the DART Green Line from the West End Station to the site. The DART Go Pass App can be used for tickets and route information.

Restorative Farms  
4527 Scyene Road  
Dallas, Texas 75210



## FIELD TRIP #2: DALLAS COUNTY RENOVATION & NEARBY GREEN INFRASTRUCTURE (WALKING TOUR)



Visit a unique case study in implementing sustainable design principles (LEED) and considering historic preservation in downtown Dallas. The six-year, \$281 million dollar project seamlessly merged the 1915 Old Criminal Courts Building, the 1928 Records Building and the 1955 Records Building Annex into each other, forming a new 286,000 square foot space. The exterior facade was cleaned and repaired under oversight by the

Dallas' Landmark Commission. Public and private examples of green infrastructure will be toured on the way to this site.

**SIGN UP FOR FIELD TRIPS AT  
[WWW.SCCRF.ORG](http://WWW.SCCRF.ORG) (PROGRAM TAB)**

DALLAS COUNTY  
Texas  Est. 1846

Administrative Building:  
411 Elm Street, 7th Floor, Suite 7600  
Dallas, TX 75202  
Office: 214-653-7327  
<https://www.Dallascounty.gov>





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Support  
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because locally sourced food is  
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jobs for Dallasites.





# SCIPP

A NOAA CAP TEAM

## SOUTHERN CLIMATE IMPACTS PLANNING PROGRAM

A National Oceanic and Atmospheric Administration (NOAA) Climate Adaptation Partnerships (CAP) Team

*The Southern Climate Impacts Planning Program (SCIPP) assists organizations with decision making that builds resilience by collaboratively producing research, tools, and knowledge that reduce weather and climate risks and impacts across the South-Central United States.*

### Current Research Themes



#### Climate Informed Planning

Learning how to incorporate climate information effectively into long-term municipal, county, and state plans.



#### Developing Governance & Collaborative Capacity

Investigating the financial and policy levers that municipalities and counties can use to build resilience to climate impacts.



#### Extreme Events in a Changing Climate

Understanding trends in the frequency and intensity of extreme events, with a significant focus on precipitation.



#### Climate Justice

Learning how the voices of all community members can be represented in policies and activities taken to lessen the impacts of climate events.

### Stakeholders

- Emergency Managers
- Planners
- Community Leaders
- Non-Profits
- Private Sector
- State, City, and Local Officials

### SCIPP Region



### More Information



Website: [southernclimate.org](http://southernclimate.org)



X (Twitter): @SCIPP\_CAP



Facebook/LinkedIn: Southern Climate Impacts Planning Program



From the coast to the mountains,  
cities to rural communities,  
we build resilience together.



**adaptation**  
international

*we believe...*

We believe that now is the time to take action to build climate resilience.

We believe that working collaboratively gets the most meaningful results.

We believe that empowering community ownership of the process is critical to developing effective and equitable adaptation solutions.

**OUR SERVICES**

Adaptation and Resilience Planning

Community Engagement



Climate Communications

Aerial Imagery, Mapping, & Analysis



Workshop Development

Vulnerability Assessments



**Adaptation International believes in empowering communities to proactively address the challenges posed by a changing climate.**

For more information, contact Sascha Petersen  
sascha@adaptationinternational.com



# AUSTIN

## CAPITOL OF TEXAS

A black and white historical photograph of two men in suits and hats. One man is wearing a bowler hat and the other a fedora. They appear to be in a professional setting, possibly a construction site or office, with one man pointing towards something off-camera.

CELEBRATING

# 130

SINCE 1894

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**AND** **NICHOLS**

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Location: Atascocita, Texas | Atascocita Park

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# Planet Texas 2050 is a research grand challenge at the University of Texas at Austin.

Our mission is to advance interdisciplinary research on climate resilience and to co-design adaptive strategies with frontline communities and other partners across Texas

Learn more about our researchers and projects at our website: [planetexas2050.utexas.edu](http://planetexas2050.utexas.edu)

## PLANET TEXAS 2050

Resilience Research at UT Austin



strategic communications where expertise is essential



Southern Plains Climate Hub  
U.S. DEPARTMENT OF AGRICULTURE



## Communication Solutions To Advance Climate Action



[ADeltaImpact.com](http://ADeltaImpact.com)



Working collaboratively to develop science that addresses climate impacts on natural and human communities.



- » Education & Training
- » Tribal Engagement
- » Technical Assistance
- » Funding Actionable Science
- » Climate Projections & Downscaling

[linktr.ee/SouthCentral\\_CASC](https://linktr.ee/SouthCentral_CASC)



# SPONSORSHIP DIRECTORY

## SIGNATURE

### City of Dallas

Contact: Carlos Evans. carlos.evans@dallas.gov

The City of Dallas is committed to a resilient and equitable future. Initiatives like Resilient Dallas in 2018 aim to build community resilience against social, economic, and environmental pressures. Additionally, the 2020 Comprehensive Environmental and Climate Action Plan targets reduced emissions, climate preparedness, and environmental justice. In 2022, the City enacted the Racial Equity Plan to address disparities in climate resilience and environmental justice.

### Southern Climate Impacts Planning Program

Contact: Caylah Cruickshank, caylahc@ou.edu

The Southern Climate Impacts Planning Program (SCIPP) is one of several NOAA Climate Adaptation Partnerships (formerly RISA) teams across the U.S. Founded in 2008, SCIPP works closely with practitioners and researchers across the region to investigate changing climatic conditions, understand needs in planning and implementation processes, facilitate information exchange, and produce knowledge that can help address these challenges. Our interdisciplinary team has a diverse range of expertise and collaborates with several organizations and agencies.

## PLATINUM

### Adaptation International

Contact: Sascha Petersen, sascha@adaptationinternational.com

Since 2010, Adaptation International has partnered with communities, Tribes, and governments to build climate resilience. Our innovative, localized approach prioritizes community engagement, involving key stakeholders from the start. This collaborative method produces detailed assessments of assets, resources, and climate risks, leading to tailored resilience strategies. Recognizing unique community needs, we leverage our trusted network of collaborators to design effective and equitable solutions that help communities adapt and thrive.

## GOLD

### City of Austin

Contact: Marc Coudert, marc.coudert@austintexas.gov

Austin, Texas, nestled in the American Southwest, serves as the Lone Star State's vibrant capital and the renowned Live Music Capital of the World. Since its founding in 1840, Austin has burgeoned into a dynamic city of one million residents, featuring top-tier companies, scenic outdoor locales, prestigious universities, and globally acclaimed cuisine. Discover more about Austin's allure at [AustinTexas.gov](http://AustinTexas.gov).

### Freese and Nichols

Contact: Amanda Griffin, ang@freese.com

Freese and Nichols is dedicated to crafting livable communities through practical and innovative infrastructure solutions. With 130 years of expertise, we offer stability as a trusted advisor, addressing contemporary challenges like climate adaptation. Our commitment to environmental sustainability guides our work, supporting clients in their stewardship goals.

### Gresham and Smith

Contact: Lauren Seydewitz, lauren.seydewitz@greshamsmith.com

Gresham Smith provides creative solutions through a well-rounded service offering that considers the entire landscape of any project. Composed of diligent designers, insightful planners and seasoned collaborators, we specialize in solutions for life's most essential infrastructure and institutions.

## SILVER

### ADelta Impact

Contact: Nancy Salisbury, PhDa, nancyrs@stedwards.edu

ADelta Impact builds your sustainability communication strategy by clearly targeting all your key stakeholders. Whether you want to communicate with your customers, employees, investors, or suppliers, we help you enhance your brand reputation. Our process adapts your communication to your sustainability journey - from emerging climate action plans to high-level ideas, strategy definition, and innovation.

**The Nature Conservancy**

Contact: Kathy Jack, [kathy.jack@tnc.org](mailto:kathy.jack@tnc.org)

Founded in the U.S. through grassroots action in 1951, TNC has grown to become one of the most effective and wide-reaching environmental organizations in the world. Thanks to more than a million members and the dedicated efforts of our diverse staff and over 400 scientists, we impact conservation in 79 countries and territories.

**Cooksey Communications**

Contact: Anna Clark, [anna.clark@cookseypr.com](mailto:anna.clark@cookseypr.com)

Cooksey Communications is an award-winning Texas-based, strategic communications firm serving clients in (1) Professional Services, (2) the Public Sector, including governmental entities, educational institutions, planning and advocacy groups dealing with critical infrastructure issues such as transportation, water supply, flooding and energy; (3) Real Estate & Development; and (4) Sustainability initiatives to enhance competitiveness and resilience.

**Halff Associates**

Contact: Sam Hinojosa, [shinojosa@halff.com](mailto:shinojosa@halff.com)

Halff is the engineering firm designed, engineered, planned, constructed — and purposed — for people. Since 1950, we've been creating smart solutions that improve lives and communities by turning ideas into reality. Our industry-leading professionals collaborate to meet tough challenges in creative ways while keeping projects on schedule and on budget— all for one purpose: our clients' success. Visit us at [halff.com](http://halff.com) to learn more about our people and services.

**Planet Texas 2050**

Contact: Heidi Schmalbach,  
[Heidi.schmalbach@austin.utexas.edu](mailto:Heidi.schmalbach@austin.utexas.edu)

Planet Texas 2050 is a research grand challenge at the University of Texas at Austin focused on climate and community resilience. PT2050's research teams—which include architects, archaeologists, city planners, public health experts, geologists, engineers, biologists, computer scientists, artists and many communitybased partners—are working together to co-design solutions that will make our communities stronger, more resilient, and better prepared for current and future -

**BRONZE****USDA Southern Plains Climate Hub**

Contact: Susan Eisenhour,  
[csusan.eisenhour@usda.gov](mailto:csusan.eisenhour@usda.gov)

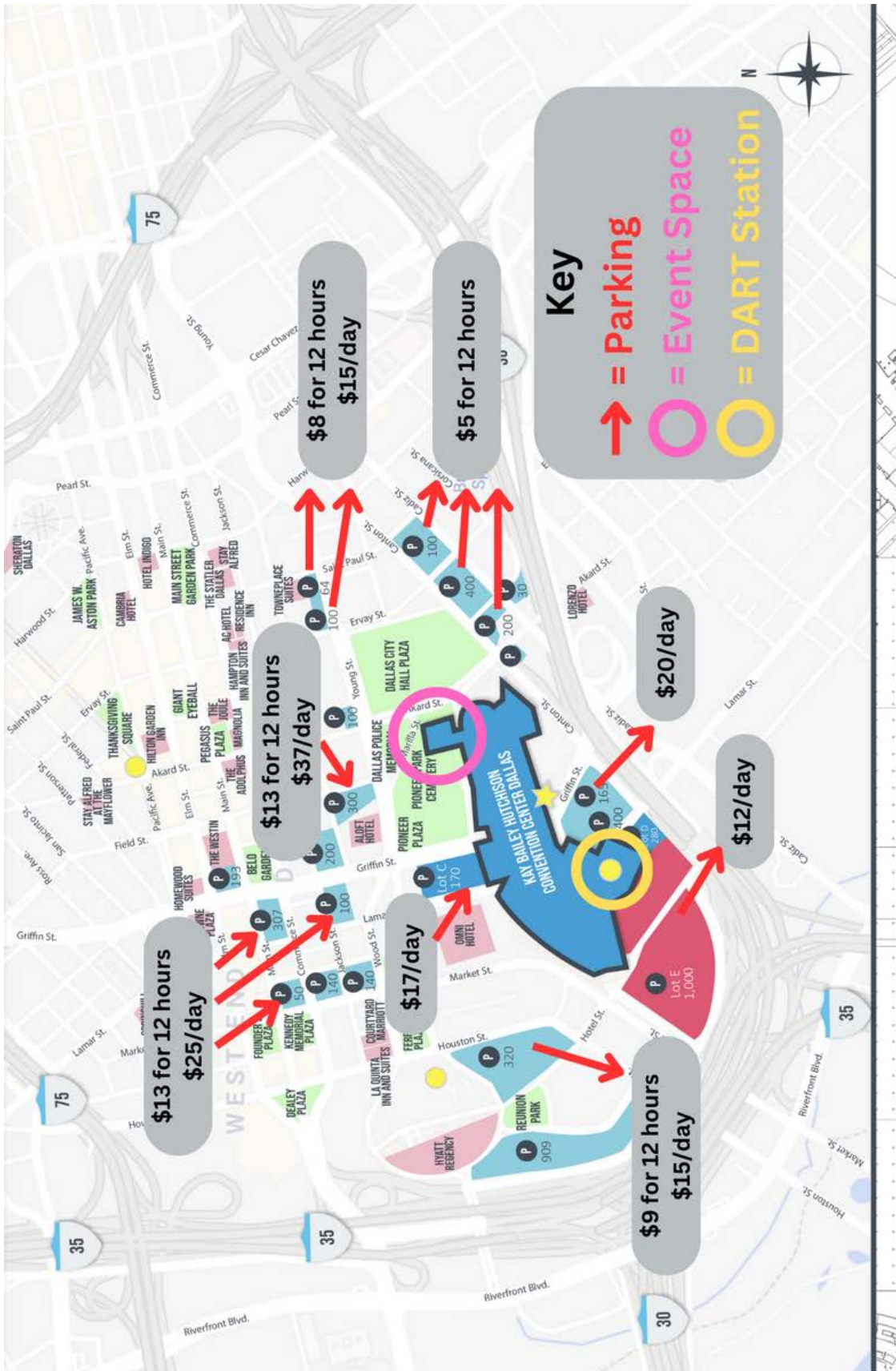
Our team works closely with partners and stakeholders in Kansas, Oklahoma, and Texas to provide science-based weather and climate information needed to reduce agricultural risk and build resilience. We synthesize, translate, and communicate new scientific advances to agricultural and natural resource audiences in our region. We engage ag. managers and landowners through outreach events and share new climate-based educational resources for both students and professionals.

**South Central Climate Adaptation Science Center**

Contact: Jenifer Henslee Peck,  
[info@southcentralclimate.org](mailto:info@southcentralclimate.org)

The South Central Climate Science Adaptation Center (SC CASC) works in partnership with scientists, natural and cultural resource managers, and local communities to provide decision-makers with scientific information, tools and solutions to address the impacts of climate variability and change. Our mission is to help fish, wildlife, water, land, and people adapt to a changing climate in the south-central United States. We aim to transform the way climate science is conducted and applied to ensure a sustainable future for all.

# FORUM RESOURCES & FLOOR PLAN



## KBHCCD PARKING MAP

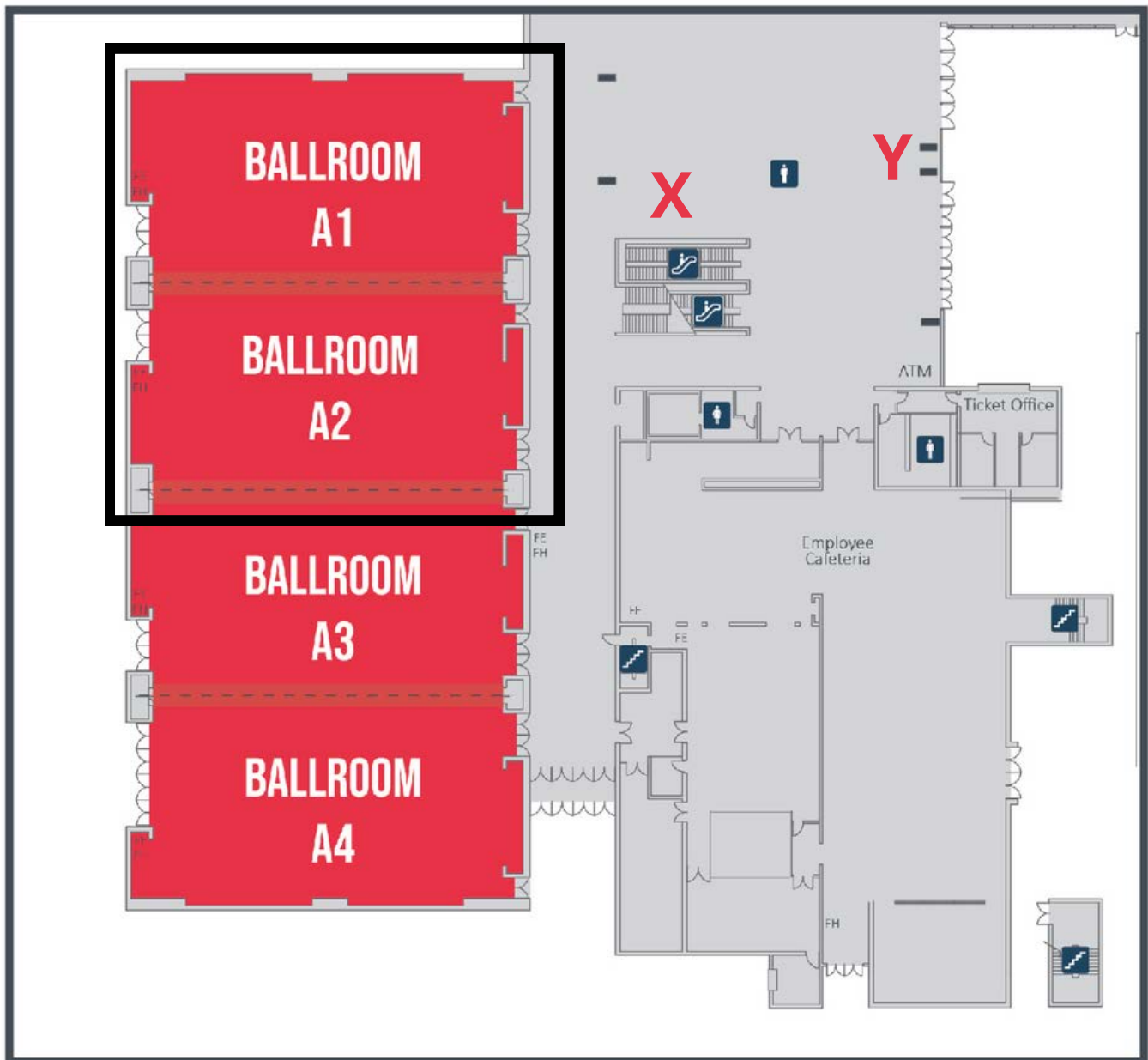


- KEY:**
- Parking Garage Entrance
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  - Hotels
  - Ground Level Parking
  - Public Parking
  - DART Rail Stations
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All Real-time Parking Information: <https://www.bestparking.com/dallas-parking>



## A BALLROOM FLOOR PLAN



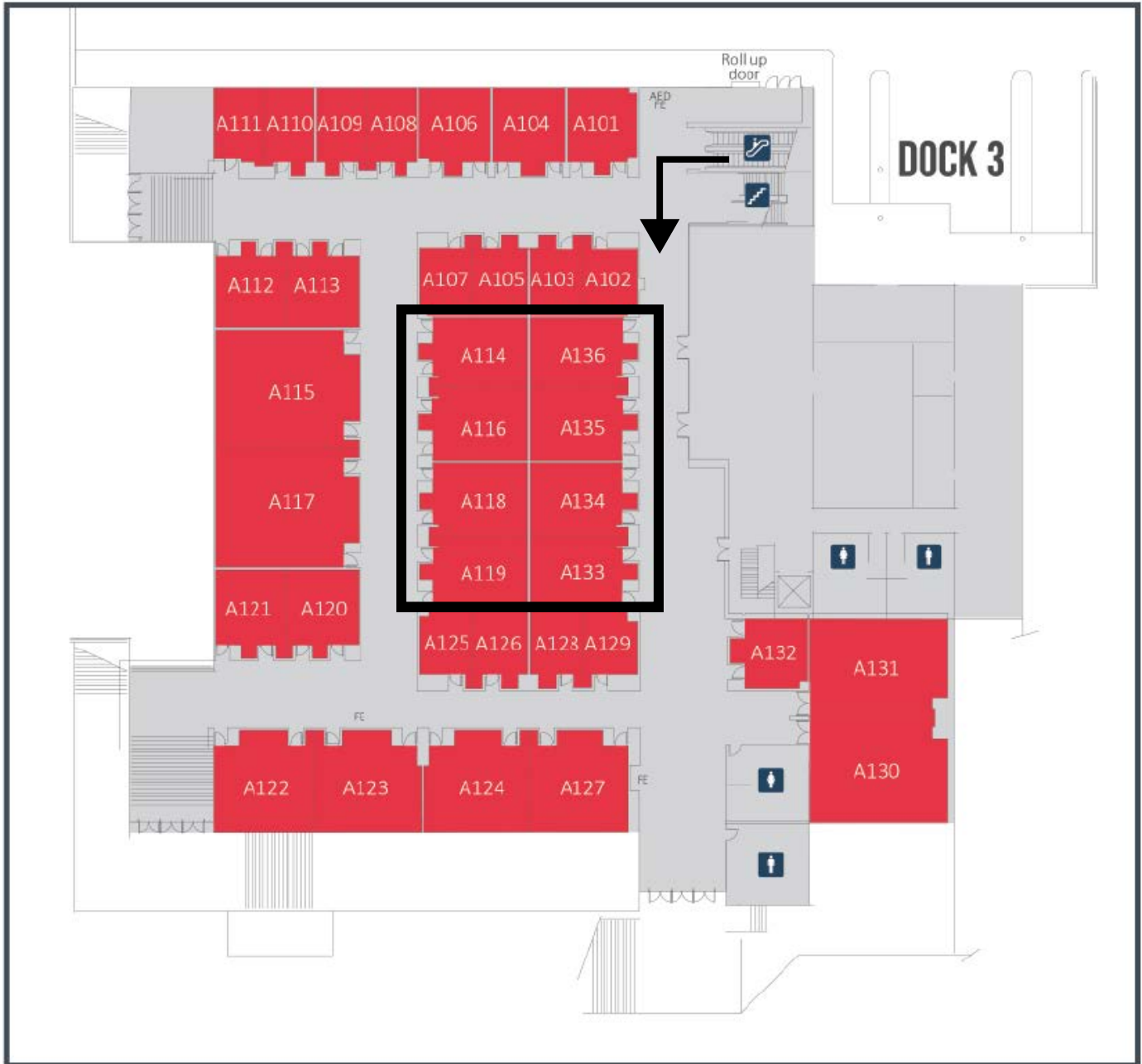
**X:** If you walk in the main entrance on the ground level, you will turn left and then go up the escalators. They will bring you here.

**Y:** If you enter from the entrance off of Akard St. (up the stairs outside), you will come in here.

**DART/Parking Garage:** If you use public transit via DART or park in the convention center parking garage, follow signs to bring you to the ballroom.



# A100 MEETING ROOMS FLOOR PLAN



# SESSION BLOCK TRACKER & NOTES

Date	Time	Block	A	B	C	D	E
4/2	1:00 pm - 2:30 pm	1					
4/3	9:00 am - 10:00 am	2					
4/3	10:30 am - 12:00 pm	3					
4/3	1:00 pm - 2:30 pm	W					
4/3	3:00 pm - 4:30 pm	4					
4/4	9:00 am - 10:30 am	5					

**Notes:**

**Session Block 1** **Tuesday, April 2 1:00 pm - 2:30 pm****1A:** Greening Texas Cities for Community Resilience: Real World Interventions and Lessons Learned**1B:** Climate Science Informing Decisions**1C:** Global Dilemma | Local Solution: Transdisciplinary Approach to Addressing Urban Heat Islands (UHI)**1D:** Texas water management strategy in Texas: Forecast-Informed Reservoir Operations**1E:** Disaster Resilience: Frontline Wisdom, Social Capital, and Innovation in the Face of Climate Chaos**Session Block 2** **Wednesday, April 3 9:00 am - 10:30 am****2A:** Advancing Climate Resilience through Community Engagement in Rural Communities**2B:** Adaptation in Action: Nature Based Solutions**2C:** Innovative Investments in Resilience**2D:** Floodplain Protection and Restoration for Climate Resilience**2E:** Green Stormwater Infrastructure for Flood Resilience and Hazard Mitigation**Session Block 3** **Wednesday, April 3 10:30 am - 12:00 pm****3A:** The Fifth National Climate Assessment (2023)**3C:** Mitigating Water Resource Challenges**3B:** Can Resilience Hubs Save Us from Climate Disasters?**3D:** Community Land Trusts and Communal Ownership: Strategies for Climate Adaptation without Displacement**3E:** Using Technology, Science, and Multisectoral Collaborations to Address Climate Resilience and Adaptation**Workshop Session** **Wednesday, April 3 1:00 pm - 2:30 pm****Workshop 1:** Securing Federal Grants for Equitable, Resilient Places: Learn, Strategize, and Collaborate**Workshop 2:** Youth Engagement and Climate Justice Workshop**Workshop 3:** Open Discussion with the Authors of the Southern Great Plains Chapter of NCA5**Workshop 4:** InFRM: Strengthening Resilience Through Widely Available High Resolution Flood Risk Information**Workshop 5:** Bridging Perspectives: Communicating Among Diverse Stakeholders in Climate Action**Session Block 4** **Wednesday, April 3 3:00 pm - 4:30 pm****4A:** Resilient Infrastructure**4B:** The Power and Potential of NBS for Flood Mitigation – Stories of Success**4C:** Texas Cities Are Too Damn Hot. What Can We Do About It?**4D:** Environmental Justice, Effective Storytelling, and Innovative Solutions**4E:** Enhancing Community Resilience by Strengthening "Town/Gown" Relationships: The UT-City of Austin Climate Co-Laboratory**Session Block 5** **Thursday, April 4 9:00 am - 10:30 am****5A:** Climate-Informed Planning: Examples and Lessons Learned**5B:** Saving Cities, Saving Societies: A Guide to Thrive**5C:** Using Climate Model Projections in Future Planning: A Real-World Management Activity (Workshop)**5D:** Empowering Frontline Clinics: Climate Resilience Toolkit and Clinic Integration into Community Heat Plans (Workshop)**5E:** U.S. Climate Vulnerability Index Tool 101 - Centering Equity in Climate Action (Workshop)