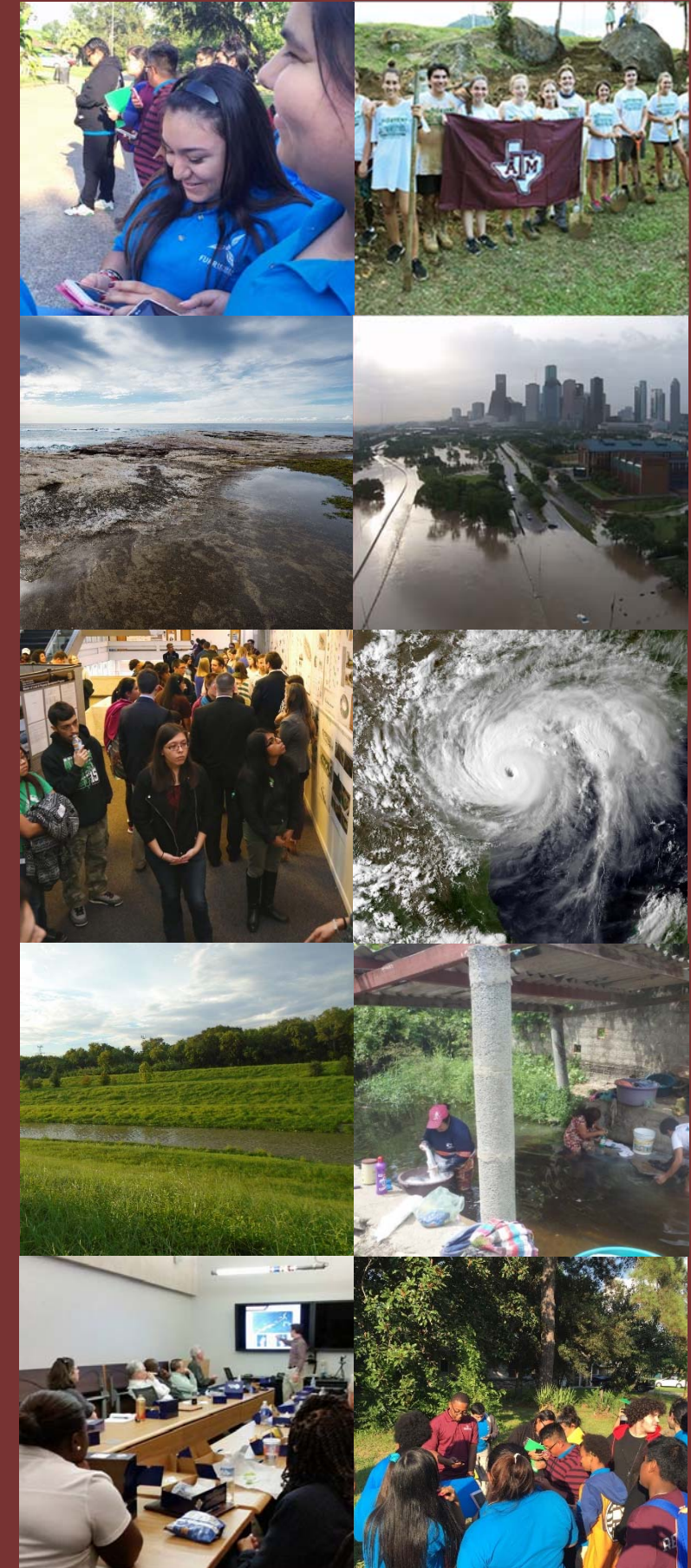


# 2017-18

Annual Report

*Conducting transformative  
research, engaging  
communities, and providing  
high impact service learning to  
create resilient people,  
communities, and ecosystems.*



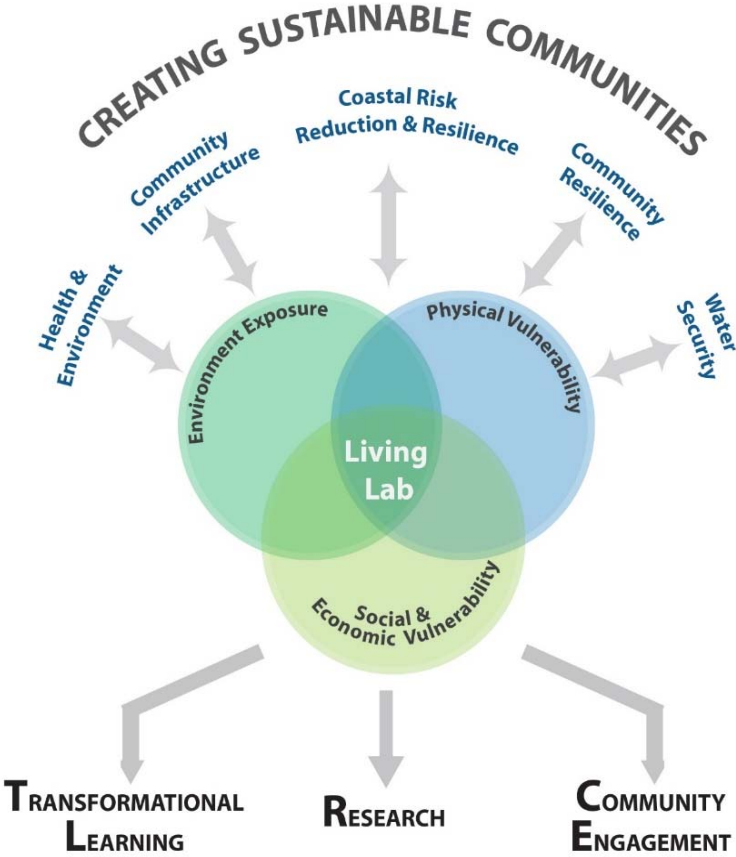


# About the Institute

The Texas A&M Institute for Sustainable Communities is the university's focal point of interdisciplinary sustainable community research, engagement and high impact service learning. The Institute is the go-to place for A&M faculty, staff, and students to collaborate on work that crosses sectors and disciplines, advancing solutions that link knowledge to action, and solves critical societal challenges of today and tomorrow.

Working on campus and around the world, we strive to support development of sustainable communities and cities that seek *balance between human and environmental* needs of people today and of generations to come; provide *fair and equitable* access to resources to improve the development of human capabilities and wellbeing; engage in *civil engagement and participatory, democratic decision-making*; and include *adaptive capacity* to survive, respond and grow in the face of expanding physical, social and economic threats. Our work focuses on three broad themes:

1. **Transformative Research**
- Nurture and expand collaborative networks of interdisciplinary faculty and students from different colleges and departments.
  - Create and sustain research-practitioner teams from around the world to identify and explore core questions of sustainable communities.
2. **Community Engagement**
- Foster and test new and emerging citizen science and participatory methods.
  - Cultivate partnerships to build trust and community capacity to translate knowledge to action.
3. **High Impact Service Learning**
- Provide place based urban design studios, capstone courses, and domestic and international field site programs.
  - Stimulate development of new interdisciplinary



## Table of Contents

Welcome from the Director	1
Academic Partnerships	2
Discovery Leads:	
Costal Risk Reduction & Resilience	3
Community Infrastructure	4
Water Security	5
Community Resilience	6
Health & Environment	7
Engagement	8
Student Involvement	10
Speaker Series	12
Faculty Impact	13
Financials	14
Media Presence	15
Sustainability Fellowship Program	16

## Core Staff



**Philip Berke, PhD**  
Director  
Institute for Sustainable Communities  
  
Professor  
Landscape Architecture & Urban Planning



**Garrett Sansom, DrPH**  
Associate Director  
Institute for Sustainable Communities  
  
Research Assistant Professor  
Environmental & Occupational Health



**Susan Billings, BS**  
Administrative Coordinator



**Cassie Oswood**  
Public Relations Manager

## Engagement Team



**John Thomas Cooper Jr., PhD**  
Director  
Texas Target Communities  
  
Assistant Vice President  
External Relations Office of the Provost



**Jaimie Hicks Masterson, MUP, BLA**  
Associate Director  
Texas Target Communities



**Jeewasmi Thapa, MUP**  
Program Coordinator  
Texas Target Communities

## Discovery Leads



**Ashley Ross, PhD**  
Discovery Lead  
Coastal Risk Reduction & Resilience  
  
Assistant Professor  
Marine Science



**Galen Newman, PhD**  
Discovery Lead  
Community Resilience  
  
Associate Professor  
Landscape Architecture



**Wendy Jepson, PhD**  
Discovery Lead  
Water Security  
  
Professor  
Geography



**Jennifer Horney, PhD**  
Discovery Lead  
Health & Environment  
  
Associate Professor & Dept Head  
Epidemiology & Biostatistics



**Nasir Gharaibeh, PhD**  
Discovery Lead  
Community Infrastructure  
  
Associate Professor  
Civil Engineering

The Institute for Sustainable Communities has brought together faculty, staff, and students from across many disciplines and areas of expertise to create a genuinely interdisciplinary team dedicated to the betterment of communities across Texas, the United States, and the World. We also embrace the University’s commitment to *diversity* and strive to build an *inclusive* environment that reflects the values of the University as a whole.



# Sustainability Fellowship Program

The fellows program of the Institute for Sustainable Communities recognizes individuals of distinction who have made notable and valuable contributions to scientific research, community resilience and engagement efforts. This invitation is extended to those who address critical environmental challenges, from disasters and climate change, to poverty and threats to human health.

Fellows interact on a regular basis through twice monthly seminars and speaker series. These events provide a venue for collaborative projects, showcasing research, and coordinating outreach and engagement efforts. Some projects that are enriched by fellow members include: climate adaptation, infrastructure hardening, creating resilience index scores, desalination programs, community outreach, coastal flood mitigation, and human health and environmental exposures.

### Key Impacts

- Brings together talent from across the TAMU system representing 11 schools and departments and 2 community organizations.
- Provides diverse expertise to enrich TAMU student service learning projects.
- Allows for meaning collaboration and unrepresented access into communities we work with.

### Academic Fellows

**Sam Brody, PhD**  
Director | Center for Texas Beaches and Shores  
Professor | Marine Science

**Wesley Highfield, PhD**  
Associate Professor | Marine Sciences

**Leonard Waterworth, MA**  
Executive Professor | Maritime Administration

**Yoonjeong Lee, PhD**  
Postdoctoral Research Associate | CTBS

**Josh Gunn, PhD**  
Senior Research Associate | CTBS

**Shannon Van Zandt, PhD**  
Professor | Landscape Architecture & Urban Planning

**Walter Peacock, PhD**  
Professor | Urban Planning

**Ann Bowman, PhD**  
Professor | Government & Public Service

**Ben Wu, PhD**  
Professor | Ecosystem Science & Management

**Mike Arnold, PhD**  
Professor | Landscape Horticulture

**Nathanael Rosenheim, PhD**  
Associate Research Scientist | HRRC

**Weihsueh Chiu, PhD**  
Professor | Veterinary Sciences

**Ali Mostafavi, PhD**  
Assistant Professor | Civil Engineering

**Francisco Olivera, PhD**  
Associate Professor | Civil Engineering

**Kent Portney, PhD**  
Professor | Government and Public Policy

**Robert Brown, PhD**  
Professor | LAUP

**Michelle Meyer, PhD**  
Assistant Professor | LAUP

**Thomas McDonald, PhD**  
Professor | Environmental and Occupational Health

**Sierra Woodruff, PhD**  
Assistant Professor | LAUP

**Andrea Roberts, PhD**  
Assistant Professor | LAUP

### Community Fellows

**Charles X White**  
President | Charity Productions

**Juan Parras**  
Executive Director | Texas Environmental Justice  
Advocacy Services

# Message from the Director

The primary goal of the Institute for Sustainable Communities (IFSC) is to catalyze interdisciplinary scholarship aimed toward ensuring more resilient communities. By 2050, 75 percent of the global population is expected to shift to metropolitan regions. The shift leaves urbanizing communities overwhelmed with the impacts of growth while rural communities are depleted, and left with few resources. Worldwide, communities face stresses ranging from massive urbanization, poverty, pollution, and deteriorating infrastructure. Weakened communities are increasingly subjected to public health epidemics, disaster losses, climate and economic or social disruptions. While communities can't always predict which disruptions will come next, they can plan for and recover from them, and generate additional benefits, such as improving opportunities for, better housing, healthier living environments, and reducing social inequities.

The Institute has just completed its second year. We expanded our community research, engagement and experiential learning initiatives at the domestic and global scales. The Institute is directly engaging and partnering with communities that are recovering from Hurricane Harvey, that are experiencing chronic flooding and climate change impacts along the coasts of the U.S. and the Netherlands, and communities suffering from ecologically distressed watersheds in Brazil. During 2017, over 200 undergraduate and 60 graduate students have been involved in experiential research and educational projects in low-capacity communities.

The Institute has garnered over \$10 million in active research projects that involve interdisciplinary collaboration, community capacity building, and experiential learning. A newly funded interdisciplinary project examines how social networks of stakeholders, networks of urban plans, and networks of infrastructure systems influence urban resilience to hazards and climate change. Other examples of new interdisciplinary projects led by Institute scholars include establishing a global data base of household water insecurity indicators, and evaluating landscape architectural design interventions on public health risk from toxic waste releases



after floods. These projects partner with the Institute's Urban Living Lab to translate research to build community capacity.

We have completed our second year of a successful seminars. These seminars, which occur twice a month, bring together faculty, students, and community engagement staff from different backgrounds and disciplines. The goal is to create a shared language and commitment to explore innovations in science, technologies; to develop tools to build community capacity; to develop university-community-private sector partnerships; and to educate students to synthesize diverse sources of scientific information and then translate knowledge to action.

Through our appointment of outstanding scholars, successful funding for innovative research, hosting ambitious community engagement programs, and generating myriad interdisciplinary conversations, the institute is a key voice on resilience issues at Texas A&M and beyond. Our successes would not be possible without the generous support by the Office of the Provost, College of Architecture, College of Engineering, College of Geosciences, School of Public Health, and Texas A&M University -Galveston. We firmly believe that the IfSC is at an exciting and expansive stage of development.

Sincerely,  
*Philip Berke*

Philip Berke Ph.D.  
Director, Institute for Sustainable Communities



## Collaborating Across Campus



The Institute for Sustainable Communities has experienced *unprecedented* success in connecting expertise across campus. Collaborations on funded projects have included:

**Colleges** | School of Public Health, College of Engineering, College of Architecture, College of Geosciences, TAMU Galveston, College of Science, Bush School of Government and Public Service, AgriLife Extension, College of Law and College of Liberal Arts

**Departments** | Geography, Civil Engineer, Marine Science, Epidemiology & Environmental Health, Environmental and Occupational Health, Landscape Architecture and Urban Planning, Civil Engineering, Ecosystem Science and Management, Oceanography, Anthropology, Maritime Administration, Chemistry, Electrical Engineering, Public Service and Administration, Chemical Engineering, and Anthropology

**Institutes and Centers** | Hazard Reduction & Recovery Center, Institute for Science Technology and Public Policy, Texas Target Communities, Geochemical and Environmental Research Group, Texas A&M Transportation Institute, Center for Texas Beaches and Shores, WEF Nexus Research Group, and Texas A&M Engineering Experiment Station.

Funded projects included members from:

17 Academic Departments

10 Colleges & Schools

8 Institutes & Centers

## Media Presence

The Institute for Sustainable Communities received substantial attention in 2017-18 for our *innovative research*, *impactful response* to Hurricane Harvey, and student *service learning* opportunities. The following selection illustrates this attention.



August 31, 2017. "Why is Houston so vulnerable to devastating floods?" *BBC News*. **Dr. Philip Berke** explains that the flooding following hurricane Harvey was so devastating in Houston due to the poorly-planned growth and land use of the city, loss of habitat and wetlands, and the failing of flood-control infrastructure to keep up with changes in technology



June 17, 2017. "Houston fears climate change will cause catastrophic flooding: 'It's not if, it's when'" *The Guardian*. **Dr. Samuel Brody's** research on creating a resilience web tool is highlighted.

August 30, 2017 "Sewage, debris, mosquitoes: flood waters increase health risk for Harvey victims" *The Guardian*. **Dr. Garrett Sansom's** research on environmental exposure is discussed following hurricane Harvey.



September 14, 2017. "Air Pollution From Industry Plagues Houston In Harvey's Wake" *NPR News* and *NPR Morning Edition*. **Dr. Jennifer Horney's** environmental sampling and student activities are highlighted following tremendous flooding in Houston neighborhoods after Hurricane Harvey.



September 12, 2017. "How To Build Hurricane-Proof Cities." *The Atlantic*. **Dr. Philip Berke** is interviewed on how in the age of climate change, the only way to protect the American coastal metropolis is to rethink it entirely. moving away from engineering the problem.

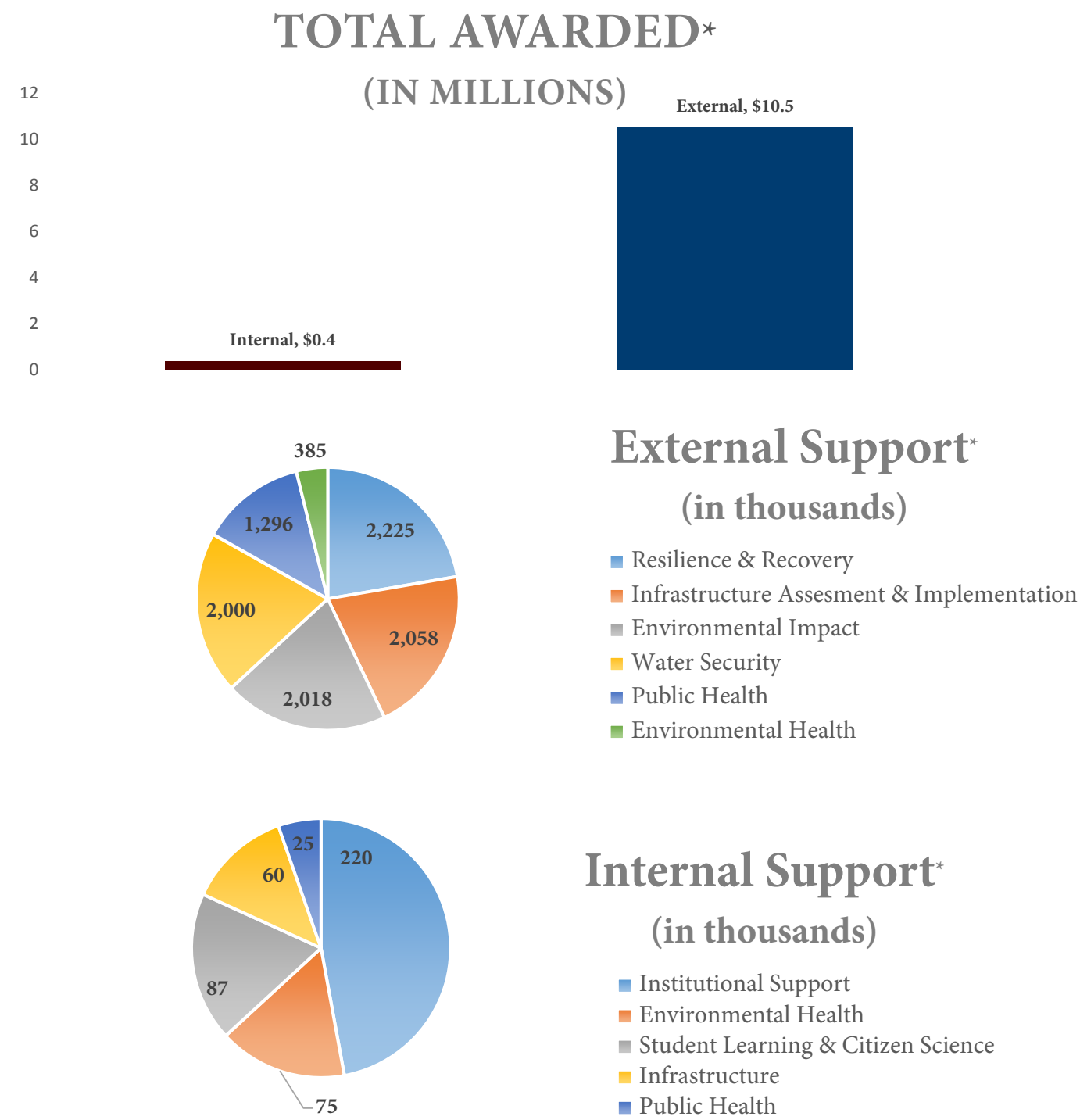


September 20, 2017. "College of Architecture Faculty, Students Respond to Hurricanes" *TAMU Arch One e-news*. Article focuses many efforts undergone by the institute and highlights worked done by **Jaimie Masterson, Walt Peacock, Shannon Van Zandt, Galen Newman, and Philip Berke**



June 28, 2017. "TAMU Research to Focus on Reducing Floods" *KTRH Houston News*. **Dr. Ashley Ross'** research on exploring the influence of public and private relationships in tackling natural disasters is highlighted.

# Financials



External awards include funds awarded to faculty and staff that actively participate in IfSC activities. Participants include IfSC staff (director, associate director), discovery leads, engagement staff, and faculty fellows that serve as PI or co-PIs on grants include research, community engagement, and teaching and education. The portion of the budget for each award that is allocated to IfSC investigators is included.

# Discovery Lead: Coastal Risk Reduction & Resilience



The Coastal Risk Reduction and Resilience project provides solutions to today’s most pressing coastal issues through holistic research that explores the interconnections of the natural, built, and socio-political environments and engages communities to enhance local resilience. This initiative builds upon the work of our academic partner the Texas Center for Beaches and Shores, driven by an interdisciplinary team of faculty, professional staff, and students with backgrounds in urban planning, geography, economics, ocean engineering, coastal ecology, marine biology, marine sciences, environmental science, coastal planning, and political science. **Dr. Ashley Ross** brings years of experience in leading the Coastal Risk and Reduction Initiative.

## Research and Engagement Highlights

**Following Hurricane Harvey** Dr. Ross launched a project to examine the resilience of rural communities. She led an interdisciplinary group of researchers in conducting household and local decision-maker interviews. This project highlighted how communal ties play an important role in disaster response. Findings and experiences were presented with organizational leaders, Pastor Joel and Leticia Garcia, at the Foodways Texas Symposium on April 14, 2018.

**Improving Resilience to Flooding.** A National Science Foundation Partnerships for International Research and Education (PIRE) funded project is an international collaboration to establish a research and education program on coastal Flood Risk Reduction between the U.S. and the Netherlands. This project, led by Dr. Samuel Brody, seeks to discover: 1) the underlying characteristics of physical flood risks; 2) why human communities and the built environment are so vulnerable to flooding, and 3) which mitigation techniques are most effective in reducing the adverse impacts of floods.

**Investigating Perceptions and Indirect Economic Effects of Storm Surge Mitigation.** This project is an interdisciplinary collaboration led by Dr. Wesley Highfield and supported by the Texas General Land Office. Through this research, we seek to better understand the effects on regional, state, and national economies resulting from multiple storm surge scenarios, and couple this with changes in the pricing of flood insurance surrounding the establishment of flood mitigation techniques. We also assess broader risk perceptions around flood and storm surge in the greater Houston-Galveston region and disseminate results through spatial web-based dashboards.





## Discovery Lead: Community Infrastructure



The community infrastructure area within the Institute for Sustainable Communities is led by **Dr. Nasir Gharaibeh**. This initiative focuses on creating innovative ways for addressing infrastructure problems in local communities. Housed within the College of Engineering, our work is interdisciplinary in nature and spans across multiple infrastructure systems (e.g., water, stormwater, transportation, buildings). These systems are essential for the wellbeing of local communities. Projects within this initiative produce actionable results in order to maximize community betterment. This initiative is co-led by institute fellows **Drs. Francisco Olivera** and **Ali Mostafavi**.

### Research and Engagement Highlights

**Creating Citizen Scientist with Infrastructure Monitoring.** In the pursuit of safe and reliable infrastructure systems, monitoring data are collected to assess the condition, usage, and in-service performance of these systems. For large-scale infrastructure, monitoring data are often collected using a variety of sensor technologies and periodic field inspections. For neighborhood scale infrastructure, however, these data remain limited in both quantity and quality. Through support from the National Science Foundation, fundamental research is being pursued in this project to design and test protocols and tools for collecting infrastructure monitoring data at the neighborhood level by volunteer citizen scientists, with focus on stormwater infrastructure.

**Modeling Decisions and Inter-Organizational Network for Resilient Communities.** The objective of this study is to collect time-sensitive data related to the decision-making processes and inter-organizational networks that influenced the resilience and interdependencies among infrastructure systems and processes. In particular, this study aims to collect perishable empirical data from Houston after Hurricane Harvey to characterize and model inter-organizational networks, land use and infrastructure plan networks that govern the management and operation of interdependent infrastructure systems under urban flooding impacts. This project is supported by the National Science Foundation's grants for Rapid Response Research and includes investigators from Civil Engineering, Urban Planning, and Governance.

## Faculty Impact



**Galen Newman.** Awarded the highly regarded national advisor TX-ASLA honor award for four projects.



**Md Yousuf Reja, Sam Brody, West Highfield & Galen Newman** - ICNHRR Best Paper Award



**Galen Newman** - Outstanding Mentor Award Department of Landscape Architecture

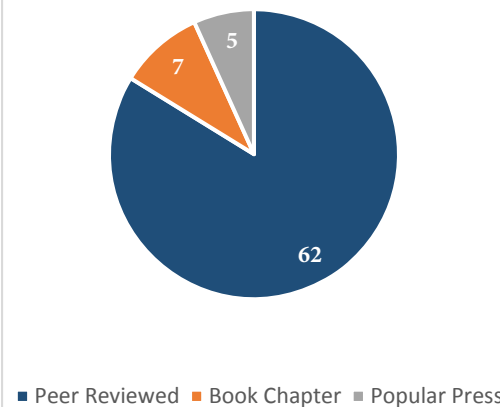
**Samuel Brody** - TAMU Presidential Impact Fellow

**Kent Portney** - TAMU Presidential Impact Fellow; appointed to the Bob Bullock Chair in Government, awarded faculty excellence award

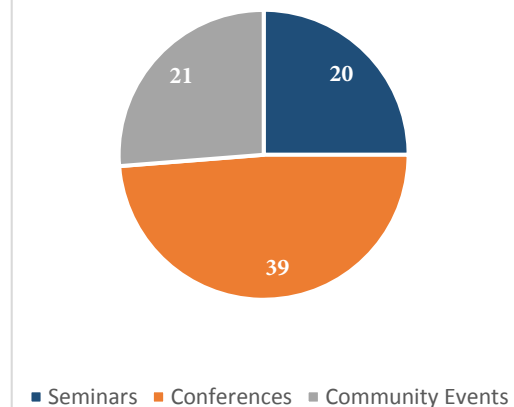


TAMU was awarded a coveted designation as a superfund research center. The Texas A&M Superfund center comprehensively evaluates the complexities of hazardous chemical exposures, the potential adverse health impacts, and potential hazards of exposures to complex mixtures through a series of multi-disciplinary projects that derive from a case study utilizing Galveston Bay. Drs. **Jennifer Horney** (PI) and **Galen Newman** (CO-I) lead the engagement core.

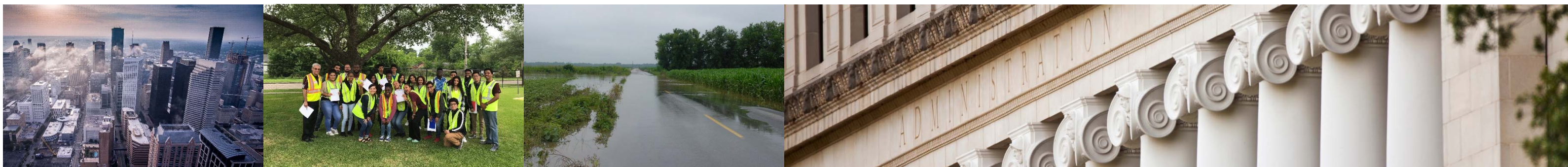
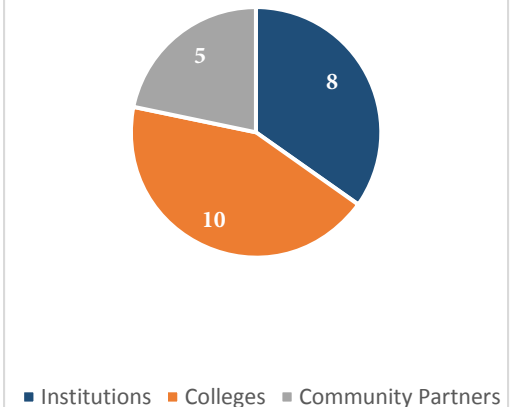
Publishing



Communicating



Engaging





# Distinguished Speaker Series

The IfSC hosts twice monthly meetings that highlight local, national, and international experts on sustainability from a diverse pool of individuals. These events are also an opportunity for students to present on thesis and dissertation research to a broad group of individuals. Meetings include undergraduate and graduate students, faculty from across campus and from other centers of higher learning, as well as research and support staff. This year saw a marked increase in attendance with each meeting bringing upwards of 60 individuals in attendance and more viewing remotely. Presentations included:

<b>Philip Berke, PhD</b> Director, IfSC	“Responding to Hurricane Harvey: an Action Plan” September 5, 2017
<b>Daniel Goldberg, PhD</b> Assistant Professor, Geography	“The Texas A&M University’s GISCorps for Emergency Preparedness and Response: What could and should we do to be ready?” September 19, 2017
<b>Jennifer Horney, PhD</b> Associate Professor, Epidemiology	“Engaged Research for Healthy Design: creating healthy communities through transdisciplinary research.” October 3, 2017
<b>Galen Newman, PhD</b> Associate Professor, LAUP	
<b>Ramalingam Saravanan, PhD</b> Professor, Atmospheric Sciences	“Using global climate models for local decision-making: challenges and opportunities.” October 17, 2017
<b>Matthew Malecha, MUP</b> PhD (r), Urban Regional Sciences	“Spatially Evaluating Networks of Plans and Flood Vulnerability Using a Plan Integration for Resilience Scorecard.” November 14, 2017
<b>Mark Nieuwenhuijsen, PhD</b> Director, Urban Planning, Environment and Health Initiative at ISGlobal Barcelona	"Integrating Human Health into Urban and Transport Planning: A Framework" November 28, 2017
<b>Nasir Gharaibeh, PhD</b> Associate Professor, Civil Engineering	"Digital Living Laboratories: Simulation Platforms for Smart Renewal of Urban Communities" January 30, 2018
<b>Wendy Jepson, PhD</b> Professor, Geography	"Household Water Insecurity Experiences – Research Coordinating Network" February 13, 2018
<b>Isaac Oti</b> PhD (r), Civil Engineering	“Viability of Citizen Science for Enhancing the Quality of Infrastructure Data.” February 27, 2018
<b>Juan Parras</b> Director, Texas Environmental Justice Advocacy Services	“Creating Meaningful Partnerships with communities and Universities.” March 27, 2018
<b>Ashley Ross, PhD</b> Assistant Professor, Marine Science	“Creating a Lasting Collaboration between the IfSC and the Center for Texas Beaches and Shores.” April 10, 2018

# Discovery Lead: Water Security



The Water Security Initiative, led by **Dr. Wendy Jepson**, seeks to provide data-driven, analytically sound assessments of water security based on consideration of the coupled natural-human systems. By developing and using effective metrics, models, and analytics of the coupled systems to improve society’s long-term water challenges. By targeting key threats to water security, including poverty, climate change, governance and social marginalization, and we aim to understand the complex dynamics of social and environmental systems impacted by challenges. Critical to the goals of the initiative is to create a research and teaching community to support individual water security interests and foster teams that can address human and natural processes.

## Research and Engagement Highlights

**Improving Household Water & Sanitation.** This project addresses the causes and solutions to the domestic water and sanitation crises. Context in which to develop systematized cross-sectional and longitudinal studies with standardized assessments to benchmark and track water and sanitation security conditions at the household scale. We currently work in India, Brazil, and the US border region.

**Pathways to Sustainable Urban Water Security: Desalination and Water Reuse in the 21st Century.** Desalination of seawater and brackish groundwater and wastewater reuse are seen as major technological interventions that can address the increased pressure on water resources. This three-year project examines the global desalination and water reuse corporate and finance sector, analyzes the legal, and examines the complex water governance regimes that promote and challenge the transformation of this sector in water-stressed urban regions.

**Other research areas include:**

- Urban Water Insecurity and Public Health Outcomes in Torreon, Mexico
- Urban Water Provisioning Systems and Household Water Security in Northeast Brazil
- Household Water Insecurity on the US-Mexico Border





## Discovery Lead: Community Resilience



The Community Resilience Program of the Institute for Sustainable Communities seeks to generate and apply research on the impact of natural hazards to socially and physically vulnerable populations and neighborhoods and utilize said research to develop strategies to mitigate and adapt to disasters, with an emphasis on community engagement and participatory processes. The program seeks to explore new and transformative directions to create and disseminate research findings to communities and practitioners to better mitigate, prepare for, respond to and recover from disasters. **Dr. Galen Newman**, the Discovery Lead for this initiative, is an urban designer who has worked with numerous communities and multi-disciplinary.

### Research and Engagement Highlights

**Living green infrastructure laboratory.** Faculty and students from the Colleges of Landscape Architecture and Urban Planning, Horticulture, and Agriculture and Engineering designed, grew plants for, installed, and are monitoring a low-impact rain garden as a living green infrastructure laboratory on the TAMU campus. The lab, funded by the TAMU Tier One Grant (300,000.00) as well as the Aggie Green Fund (\$61,500.00), examines impacts of GI on stormwater quality and quantity over time.

**Aggie B.L.U.E. Print Laboratories.** This facility is being constructed for creating innovative approaches in treating stormwater at the source, using uniformly distributed facilities such as stormwater collection devices, filtering systems, and water reuse mechanisms. This project seeks to educate and train students in LID alternatives to traditional stormwater management through hands-on outdoor classroom activities.

**Engaged Research for Healthy Design.** This collaborative effort seeks to estimate public health outcomes based upon proposed changes in landscape and urban design in environmental justice communities. Individuals living within environmental justice communities shoulder an undue burden from exposure to environmental contaminants, poor infrastructure, and inadequate planning. This project will highlight drivers in conditions that lead to inequitable health conditions.



## Student Project Highlights



**Matthew Malecha** is a PhD student in Urban & Regional Sciences in the Department of Landscape Architecture & Urban Planning. His research focuses on the ways plans and policies affect community resilience to natural hazards. Along with fellow students and faculty he works on the development, application, and extension of the *Plan Integration for Resilience Scorecard* (PIRS), a method for spatially evaluating networks of plans with respect to their coordination and effects on flood vulnerability.

His dissertation explores several new directions related to the PIRS concept: (1) testing the generalizability of the method by applying it in a new context a densely-populated district in Rotterdam, Netherlands; (2) connecting PIRS findings to spatial evaluations of zoning and land use regulations; and (3) extending the concept to disaster recovery, focusing on communities affected by Hurricane Harvey. His work has been supported by the *US Department of Homeland Security Science and Technology Directorate* and the *National Science Foundation*.



**Isaac Oti** is a PhD student in Civil Engineering in the College of Engineering. He wanted to include in his dissertation his experiences with community engagement and citizen science. In infrastructure management, citizen science offers a nonconventional yet potentially effective method for collecting condition data of infrastructure assets. However, it has also been reported that citizen science data are more likely to have greater variability than data collected by professionals. In response, the *National Science Foundation* funded this study to assess infrastructure data management practices and provide

solutions to enhance the availability and quality of these data. His research focuses on developing and testing citizen science protocol for drainage infrastructure monitoring in local communities and validating collected data. The results showed that the overall reliability of citizen scientists' data is approximately 74 percent that of the trained inspectors. Based on these results, recommendations for collecting drainage infrastructure monitoring data using volunteer citizen scientists can serve as a reference to designing protocols.



**Gaston Casillas** is a PhD student in toxicology at the Health Science Center. He has performed a series of environmental sample collection in the aftermath of Hurricane Harvey. This *National Institute of Environmental Health Sciences* funded project included collecting samples at 6 parks along the Buffalo Bayou that were flooded. The parks were chosen by the Houston Health Department, and are significant for exposure to the public due to the flooding of the Bayou during Harvey. Flooding in Houston is typically controlled by a 500-acre watershed that includes Buffalo Bayou, a 53-mile "river" flowing east from Katy, Texas, to the Houston Ship Channel, over time, the watershed has become

much more highly urbanized. He analyzed the samples for Polychlorinated biphenyls, dioxins, and heavy metals in the recreational areas of Buffalo Bayou after Hurricane Harvey and has begun to communicate potential health risks to residents using our community partners and engagement efforts to help mitigate possible negative health outcomes.



“Through my community engagement work, I have become a more successful and confident facilitator, mediator, listener, and problem solver. Participating in the IfSC has proved to me the importance of collaborative and interdisciplinary research”

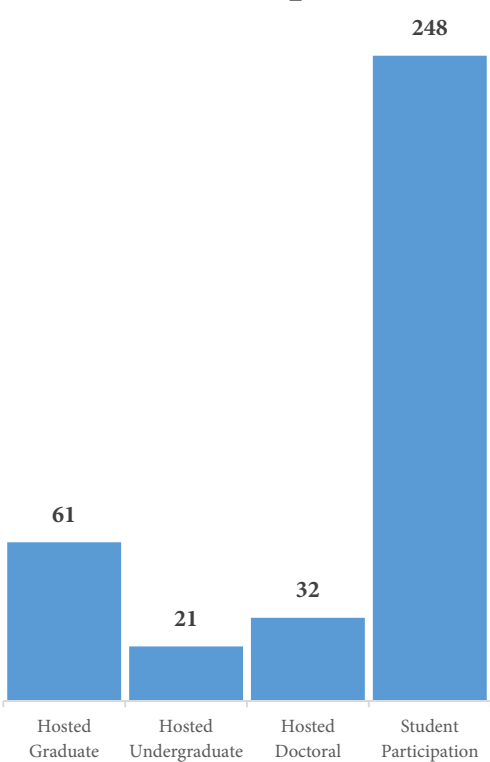
-Emily Sullivan



# Service and Project-Based Learning

The Institute for Sustainable Communities is dedicated to placing Texas A&M University students into experiential educational research projects as well as providing expertise and training opportunities to communities across Texas. We offer undergraduate and graduate students opportunities for active learning pursuits from courses as well as extracurricular research activities within each Discovery Lead

Student Participation\*



**Toxic Tours.** Throughout the year, IfSC students can attend a toxic tour led by our community partners the Texas Environmental Justice Services Agency (t.e.j.a.s). These trips highlight environmental justice issues in Manchester, TX.

**EpiAssist Program.** EppiAssist is led by Dr. Jennifer Horney, Health and Environment Discovery lead, which is a student volunteer group at Texas A&M University that provides students with the opportunity to gain applied public health experience. 2017 involved **100s of hours** of activities.

## Select Student Awards

**2017 National Honor Award.** Analysis and Planning. American Society of Landscape Architects, “Climate Change Armor.” Student: Zixu Qiao

**2017 Project Award.** American Planning Association “Reclaiming Vacancies: Community Revitalization.” Student: Saima Musharrat

**2017 TAMU Undergraduate Research Award.** 2nd Place. “Saving Grace” Student Team: Laura Ruiz, Vanessa Ngo, Francisca Yanez, Leticia Meza

**2017 Award of Excellence.** American Society of Landscape Architects “Nature as Catalyst.” Student Team: Zhu, J. Gonzales, C. Molina, D. Duron, V.

**2017 Award of Excellence.** American Society of Landscape Architects “Green and Gray Space Ratios.” Graduate Student Team: Xueqi Song, Rui Zhu & Zehao Wang

\*includes attending bi-monthly meetings, community events, or field research.

# Discovery Lead: Health and Environment



The Health and Environment Program of the Institute for Sustainable Communities seeks to link applied public health research and community engagement to the improved measurement of environmental variables to better understand interactions between individual level health outcomes and the built environment, health systems, and community level factors. **Dr. Jennifer Horney**, the lead faculty member for the Health and Environment program, is an epidemiologist with more than a dozen years of experience in working with multi-disciplinary teams of climate scientists, geographers, urban planners, and engineers to improve resiliency.

## Research and Engagement Highlights

**Disasters and Environmental Vulnerability Project.** This project is a continuation of multiple efforts undertaken by IfSC within the marginalized community of Manchester in Houston, TX to have a holistic view of the environmental risks to resident members. Complex environmental toxicants can have negative impacts on human health. Settled dust and particulate matter within homes can be an important exposure route for individuals in general and children in particular. This pilot study collected settled dust and assessed for polycyclic aromatic hydrocarbons (PAHs) within Manchester homes.

**Texas A&M Superfund Research Center.** Dr. Horney leads the engagement core for the Superfund Center that comprehensively evaluates the complexities of hazardous chemical exposures, potential adverse health impacts, and potential hazards of exposures to complex mixtures through a series of multi-disciplinary projects that derive from a case study utilizing Galveston Bay.

**A Whole Community Approach to Disaster Recovery.** This project focuses on combining interdisciplinary collaborations and community-engaged research projects to help neighborhoods achieve resilience. As part of a multidisciplinary award from the *National Science Foundation’s Early Concept Grant for Exploratory Research* Program, Horney and others engage with residents to collect citizen science monitoring data at the neighborhood scale.





# Engaging Communities

Community engagement is the cornerstone of the Institute. We believe in the importance of creating long-term change through co-learning with communities around strategic needs while supporting communities in actualizing their own resilience. We work collaboratively to increase a community's adaptive capacity, through community action and 'citizen science.' The results guide future conversations about what is necessary for addressing complex issues linked to community resiliency. Some of this year's activities include:



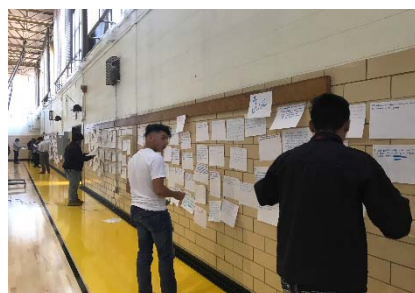
**Helping in Hurricane Harvey.** Following Hurricane Harvey IfSC staff reached out to community partners and asked what we could do in support of the community. Under the advice of The Texas Environmental Justice Advocacy Services we cooked and handed out food, clothing, and supplies in the Manchester neighborhood with the TAMU College of Architecture. Many residents expressed their gratitude and spoke of their many hardships since the hurricane.



**Coming Together at Community Breakfasts.** The IfSC staff attended 5 community breakfasts hosted by Charity Productions this year. The largest of its kind in Texas, with attendance averaging 400 community members, the quarterly breakfast began in October 2002 and are considered the: "Super Community Partnership Breakfast--The Place where Good Friends and Good Biscuits Meet."



**Jones Futures Academy.** In the Summer IfSC staff facilitated a workshop with teachers at Jones Futures Academy. The school asked to build on the success of past IfSC projects. Teachers quickly focused on student projects that would improve community conditions. Unbeknownst to all attending, Hurricane Harvey would make landfall the following Friday. The Houston Independent School District was closed for weeks. When teachers arrived back to school it became clear that the project idea was timely and relevant for their students.



**Teaching Oral History.** IfSC fellow **Dr. Andrea Roberts** trained 300 students at **Jones Futures Academy** in Houston on how to conduct an oral history. The project sought 1) to understand the impacts of Hurricane Harvey on students, teachers, and community elders and 2) to train young people as a means to document the untold histories in communities. Students wrote their experiences and impressions during the hurricane of media coverage in diverse communities along the gym walls, and interviewed community elders.



**Environmental Justice Course.** Building upon established community partnerships, a six-week environmental health literacy program tailored to the needs and extracurricular interests of Furr High School students was. Under the direction of IfSC faculty and doctoral student **Katie Kirsch**, lesson plans empowered minority youth to explore key concepts, pressing issues, and college and career pathways in environmental health and provided opportunities for Texas A&M University graduate students to acquire hands-on experience.

**Honoring Partners as Community Fellows.** After years of productive collaborations the institute created the first two community fellows in 2017. This honor went to Juan Parras, director of with Texas Environmental Justice Advocacy Service, and Charles X White, Founder of Charity Productions.



Charles X White (left) receiving fellowship certification

**Charles X White** is the CEO of Charity Productions. He has been working on public safety and health issues for over 20 years in various capacities as a consultant or service provider, and has been an invaluable partner to the Institute. Through his expertise of governance structure in Houston, hazard and healthcare issues, Charles has been an advocate for the people who live and work in marginalized neighborhoods across Houston and an invaluable partner to the institute. Charles hosts a quarterly "community breakfast" attended by hundreds of members and elected officials as well as a public access radio show, and the HMSTV show "Community Views and Solutions"



Juan Parras (left) receiving fellowship certification

**Juan Parras** is the Executive Director and Founder of the Texas Environmental Justice Advocacy Service. Juan is an internationally recognized authority on environmental justice issues. In 2015 he recieved the Robert Bullard Environmental Justice Champion Award from the Sierra Club. Juan Parras and his resolve for equity, justice and community resilience is the driving force behind the tejas. with over 40 years of organizing and work from social services, to labor, to environmental justice Juan Parras can attest to the empowering force behind marrying issues of intersectionality in environmental work for marginalized communities.



**Community Resilience Collaborative.** After Hurricane Harvey, TX Sea Grant and IfSC staff began brainstorming ways to support recovering communities and the Community Resilience Collaborative (CRC) was born. With support from the IfSC, Department of Landscape Architecture and Urban Planning, the Texas Target Communities Program, and the Hazard Reduction & Recovery Center, the CRC hired city and regional planners located in the field along the coast, to better support community needs. There are two planners in the Houston region, Steven Washington and Walter Peacock, one planner in Corpus Christi, Ashley Bennis, and one planner in Brownsville, Kate de Gennaro. The partnership aims to strengthen the mission of all collaborating partners in support of low-capacity communities exposed to hazards.