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SEED GRANTS PROGRAM (SGP) 2018-2019 APPLICATION FORM

PROPOSAL GUIDELINES

ELIGIBILITY. Any faculty or group of faculty from founding member institutions may submit proposals. Proposals may include external participants but external participants may not receive funding from HuRRI. *The call is intended for collaborative projects across more than one of the 6 HuRRI Founding Institutions: each proposal must include at least 1 faculty member from 2 different institutions.*

FUNDING AMOUNT. Grants are limited to \$75,000 total per proposal. Each institution will fund the proportion of the effort provided by researchers from its own institution. This applies to Colleges and Schools for universities where funding is not centralized.

DURATION. All projects are one-year projects.

EVALUATION. A review panel that includes representatives from member institutions will evaluate proposals using the review criteria below. The Vice Presidents for Research or Deans from the Engineering Schools (or their representatives) from the member institutions will select the list of proposals that will be funded based on the evaluations from the panel review. Funding is contingent on availability of funds. Decisions will be announced prior to August 1, 2018.

- Relevance to HuRRI mission and vision,
- Significance and impact of research,
- Quality of proposed research concept approach,
- Experience and track record of investigators, and
- Potential for developing proposed project into externally funded research.

PROPOSAL FORMAT

Applicants must submit **one PDF file** of the complete application to hurri@uh.edu by 5 pm on May 11, 2018 and to the corresponding representative for the universities of the project faculty PIs and co-PIs, as listed in the Institutional Profiles at the end of this document. Late applications will not be considered. Only proposals that meet the criteria for awards, as stated in the guidelines, will be considered and/or reviewed for funding.

I. COVER PAGE (use attached form)

II. PROPOSAL NARRATIVE

Limit to four (4) double-spaced, single-sided pages and 12-point font. The following outline should be used for the narrative portion of the proposal and is part of the 4-page limit.

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- **Abstract.** Provide a brief, clear statement of the purpose and significance of the project (200 words or less, single spaced).
- **Introduction.** Emphasize the importance of the project and summarize previous research in the field. Place the major focus of the proposal in the context of HuRRI. Specify how the proposal will advance knowledge and research capacity in HuRRI.
- **Objectives.** Describe the targeted goals and expected outcomes of the project, keeping in mind the overarching goals of HuRRI.
- **Approach.** Provide details of how the research will be conducted.
- **Time Frame.** Outline the project schedule. Funds will be available for expenditure for 12 months, beginning September 1, 2018.
- **Equipment and Facilities.** Describe the equipment and facilities available for the project. Justify any equipment requested in your budget.
- **Internal and External Funding.** Summarize any prior internal and/or external funding that you have received for this area of research. Include project title, amount, sponsor, and project start and end dates.
- **Future Proposal Submissions.** Discuss your plans for future proposal submissions to external funding agencies, list potential sponsors and the timeframe for proposal submission.

Explain how the project could be of benefit for the submission of an NSF ERC proposal.

III. CURRICULUM VITAE

- Include vitae for all professional personnel who will work on the project using NSF format. Do not exceed two pages for each individual. The curriculum vitae should list the five most significant publications that relate to the proposed research.
- Include a list of all current and pending support for each investigator, both external and internal (no page limit).

IV. REFERENCES

1 page limit; references may be single-spaced.

V. BUDGET

Provide an overall budget and justification for expenditure of the HuRRI funds by general category using the attached template. Additionally, provide a budget by institution using your own institution's budget template. For universities where funding is not centralized, the budget needs to be broken down by school or college.

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VI. APPENDIX (Optional)

Include attachments or other information that is important for proposal evaluation (1 page limit).

All questions regarding this Seed Grant Program may be directed to hurri@uh.edu. Additional information about HuRRI and member universities can be found in the attachments at the end of the document.

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V. OVERALL BUDGET


	Funds Requested	Other Funds	Total
SALARIES & WAGES (Identify function)			
Faculty Salaries			
Research Assistants			
Student Wages			
Non-Student Wages			
FRINGE BENEFITS			
MAINTENANCE & OPERATIONS (Example: chemicals, supplies, services, copying, postage)			
TRAVEL (May be subject to State guidelines)			
Equipment (Specify items over \$1,000 each)			
TOTAL PROJECT COST			

BUDGET JUSTIFICATION: (Justify all costs)

Hurricane Resilience Research Institute (HuRRI)

Executive Summary

Six (6) universities have formed the **Hurricane Resilience Research Institute (HuRRI)**. The University of Houston (UH), the University of Texas Tyler (UT Tyler), Texas Tech University (TTU), Louisiana State University (LSU), the University of Miami (Miami) and the University of Florida (UF) have joined forces to **catalyze innovation** in **Mitigation, Assessment, Prediction, Protection, Education and Recovery (MAPPER)** from hurricanes and severe storms (Figure 1) that define the Institute's six (6) dimensions of resilience. The recent hurricane disasters experienced in the U.S. with Harvey, Irma and Maria only confirm the dire need for this integrated and rigorous approach to hurricane resilience; especially given the prevalence of hurricanes and severe storms as the most numerous, costliest and deadliest natural disasters in recent years as shown in Figure 2. **The main goal of HuRRI is to change the paradigm from wait-and-pay to system-wide anticipate-and-accommodate** to save lives and reduce damage and costs associated with natural disasters.




The collaboration among the six institutions in this initiative is not incidental; each founding university brings unique research capacities and **significant institutional support commitments** intended to grow HuRRI within a few years into a national leader that influences hurricane policies, funding and management, and makes significant strides toward resilience of the communities affected by them, *especially those along the Gulf Coast*. Among the strengths in hurricane and severe storm engineering, science, education, policy, and technology of the founding members is the intellectual capacity in UH's collaborative research on hurricanes and severe storms; the Environment, Energy and Natural Resources Center and the Hobby Center for Public Policy at UH; the National Wind Institute at TTU; the Center for Coastal Resiliency at LSU; the Industrial Assessment Center at Miami; the TxAIRE Institute at UT Tyler; the Florida Institute for Built Environment Resilience (FIBER) and the Multihazard Research Labs at UF.

Vision

To be a national center of excellence advancing our nation's ability to mitigate, assess, predict, protect, educate, and recover from hurricanes and severe storms for the purpose of creating and sustaining resilient communities.

Mission

To serve as the premier resource for envisioning, promoting, and



institutionalizing hurricane resilience culture, knowledge, solutions and tools.

Lessons Learned from Hurricanes Katrina, Rita, Wilma, Ike, and Sandy

Hurricane Katrina was instrumental in raising national awareness about disaster response and preparedness. It prompted testimony in the U. S. House of Representatives [1] and resulted in federal response actions towards a national preparedness goal, a national emergency communications strategy, and integration of federal search and rescue operations [2]. Unfortunately, the deleterious human condition during Katrina in New Orleans prompted uncoordinated mass evacuation during Hurricane Rita, which led to gridlock and the loss of human lives. The lessons learned from Rita highlighted the importance of coordinated emergency operations centers, the need for regional coordination of evacuations, and communication between state and local officials and systems. Winds from hurricanes Wilma and Ike tore down trees and power lines leaving millions without power for weeks. Hurricane Sandy, while not a Gulf Coast hurricane, demonstrated the strengths derived via coordinated response from the federal government but highlighted the need for coordination with local and state officials and with community members [3].

While much progress has been made in emergency response and evacuations since the 2005 hurricane season, less progress has been accomplished in lessening impacts and enhancing recoveries. In their testimony before the U. S. Senate regarding the 2017 hurricane season, FEMA [4] emphasized the need for ***“simplifying recovery and reducing disaster costs, and buying down risks through preparedness and mitigation.”*** This is exactly what motivates HuRRI, its framework and its proposed six dimensions for resilience referred to as MAPPER.

Mitigation

Mitigation in the HuRRI resilience framework will examine the full range of possibilities including structural and non-structural measures, green infrastructure, low impact development, densification, and intelligent sprawl. Mitigation will also aim to *harden* public and private infrastructure with particular emphasis on critical infrastructure, transportation, power, water and sewer grids and networks. Importantly, mitigation will aim to *soften* environmental consequences of hurricanes and severe storms (spills, leaks, debris management, ecosystem impacts and impacts to bays and estuaries). A critical part of the *anticipate and accommodate* strategy is to envision the planning and design of the built and natural environment such that it is more resilient to future hurricanes and other adverse weather events. This requires looking more broadly at urban and regional planning solutions, landscape design, and building design to obviate the adverse impact of hurricanes. Strategies will need to be developed for retrofitting existing buildings and civil infrastructure in much the same way as is done in seismic regions.

Assessment

Assessing *“true”* hurricane impacts in HuRRI will answer the question: *could this have been prevented?* Real-time monitoring networks, sensor systems, geo-based big data, and visualization tools will be developed to assess primary impacts (flooding, wind, and storm surge damage) and differentiate them from associated (environmental) and co-incidental impacts (economic losses). The goal of assessment in HuRRI is to learn from the past and to continually plan for a more resilient future.

Prediction

Predicting hurricanes in the HuRRI resilience context involves developing hindsight, foresight, and real-time models and simulators. The predictive tools will encompass people, systems, and infrastructure in addition to simulating storm surge, wind fields, and rainfall. Scenarios of hurricane realizations will answer *“what if?”* questions and will lead to better risk identification, risk reduction, preparedness, and mitigation.

HuRRI Executive Summary

Protection

Protection from hurricanes and severe storms in HuRRI encompasses much more than protecting the built landscape from rainfall, wind, storm surge, and tornadoes. Flood alert and flood warning, evacuation and sheltering planning, and understanding human behavior when confronted with a crisis are integral assets that, once developed and maintained, will form a critical foundation for resilient protection. Revisiting building codes and building standards and developing house-level floodproofing materials and technologies are other resilient protection examples.

Education

The chasm between knowledge about hurricane and severe storm hazards and risks and perception of safety was never more evident than in Houston during Harvey and in New Orleans during Katrina. In Houston, for example, residents on the west side of town with homes that flooded had a false sense of security and a perception of “zero risk” of flooding born out of their home’s proximity to the flood protection reservoirs. Whether uninformed, misinformed, or lacking understanding of the complexity of flooding and flood risk, homeowners and their families were at a crippling disadvantage in terms of preparedness and recovery. Education in HuRRI must bridge this divide and must build well-informed communities empowered with knowledge, tools, and resources. Education for hurricane resilience in HuRRI will encompass all levels (K-20, workforce, emergency responders) and must engage educators, trainers, and instructors from both public and private sectors including NGOs.

Recovery

A true measure of resilience is the ability to recover from adverse events. Understanding of recovery after hurricanes is largely heuristic at present; quantitative measures of recovery are limited, if they exist at all. HuRRI will aim to develop systematic approaches, concepts, and measures for quantifying and modeling recovery. HuRRI will also strive to connect the development of tools to policy and re-entry plans in an adaptive and evergreen mode.

HuRRI Structure, Budget, and Timeline

The University of Houston will lead HuRRI (Dr. Hanadi Rifai, John and Rebecca Moores Professor of Civil and Environmental Engineering, is the founding Director of the Institute). HuRRI, in addition to its founding members, will invite participation from others as **Affiliates** (e.g. other Centers or Universities), **Supporters** (e.g. research sponsors), or **Collaborators** (e.g. state and local government). A Steering Committee and two Advisory Boards (Academic and Industrial) will govern HuRRI. In addition to working groups (WG) involved in the six dimensions of resilience, HuRRI will include crosscutting teams (CCT) addressing outreach, innovation and entrepreneurship, and theory-to-practice, among others. HuRRI will hold a hallmark annual workshop/conference open to the public. The Institute will launch its first call for proposals to faculty from its founding institutions in the first quarter of 2018 and annually thereafter. The six founding institutions have committed significant resources to HuRRI that will be supplemented with funding from external grants and contracts and co-operative agreements to undertake projects in hurricane resilience.

References

- [1] United States Government Accountability Office (USGAO), Preparing for and Responding to Disasters, Testimony before the Subcommittee on Homeland Security, Committee on Appropriations, House of Representatives, GAO-07-395T, 2007.
- [2] Homeland Security, Report to the President, The Federal Response to Hurricane Katrina, Lessons Learned, 2006.
- [3] Federal Emergency Management Agency (FEMA), Hurricane Sandy, FEMA After-Action Report, 2013.
- [4] Long, W. B., 2017 Hurricane Season: Oversight of the Federal Response, FEMA Testimony before Senate, October 2017.

Hurricane Resilience Research Institute (HuRRI)

Institutional Profiles

U of Houston

Institutional Leadership

Amr Elnashai, Ph. D., FREng
Vice President for Research and Technology Transfer

Institute Director

Hanadi Rifai, Ph.D., P. E., Fellow ASCE
John and Rebecca Moores Professor
Civil and Environmental Engineering

Areas of Expertise

Flood Mitigation, water quality, sustainability and resilience, materials science and engineering, nanotechnologies, data science and high performance computing, LIDAR and sensor technologies

Participating Units

Cullen College of Engineering—wind and flood engineering, vulnerability analysis, retrofitting, water contamination, supply chains, operations research

Natural Science and Mathematics—atmospheric sciences, statistics, mathematics

College of Liberal Arts and Social Sciences—social impact, history

Bauer College of Business—business interruption, market share recovery analysis, project management

Center for Advanced Computing and Data Science—simulation, data integration and mining

College of Education—education and outreach programs, agile community education, remote delivery, community engagement

Law School—land regulation, zoning, legal recovery and insurance issues

Data Science Institute—analysis and visualization of large datasets

DHS Center for Borders and Trade—security

UH Energy—all manner of energy grids

UH Health—community and population health

Illustrative Current Projects

NSF Rapid Awards Fall 2017

Hanadi Rifai, RAPID: Chemical and Microbiological Quality of Floodwaters in Houston Following Hurricane Harvey

Steven Pennings, RAPID Collaborative Research: Do mangroves provide better coastal protection than salt marshes? A Hurricane Harvey case study from Port Aransas, Texas, USA

Robert Stewart and Julia Wellner, Effects of Hurricane Harvey's extraordinary rain event on sedimentation at the tidal inlets of Galveston Bay, Texas

Jim Granato, RAPID: The Houston Region Foreclosure Study: A Panel Survey

Texas Tech University

Institutional Leadership

Joseph Heppert, Ph. D.,
Vice President for Research

Executive Director(s)

Danny Reible, Ph. D., P. E.
Donovan Maddox Distinguished Engineering Chair
Professor of Chemical Engineering
Professor of Civil, Environmental, and Construction Engineering

Participating Units

TTU National Wind Institute

Mitigation—Debris impact facility, Tornadic wind load modeling

Assessment—Debris impact facility, Tornadic wind load modeling, Thunderstorm analysis and modeling, Rapid 3-D storm path and debris assessment, Wind analysis and modeling, Lightning analysis and modeling

Prediction-- Wind analysis and modeling, Lightning analysis and modeling

Protection—Debris impact facility

Education—Debris impact facility: Construction standards education

Recovery—Rapid 3-D storm path and debris assessment group

TTU Water Research

Mitigation— Designing for resilience in drinking and waste water treatment and distribution systems and chemical and hazardous material handling, Robust water treatment technology development, Identification and development of alternative water supply options, Sustainable

Assessment— Assessing resilience of water and wastewater treatment and distribution infrastructure and chemical and hazardous material production, processing, storage and disposal facilities, Assessing hurricane-related impacts on water supply, Assessment of exposure and risks of contaminated water, soils and sediments management of water resources

Prediction-- Modeling environmental processes, Contaminant fate and behavior in the environment,

Protection— Strengthening of water treatment and distribution infrastructure and potential contamination sources and risks

Education— Training on understanding, assessing and responding to environmental risks to water supplies, Building resilience in critical water and wastewater infrastructure and hazardous material storage and disposal facilities, Sustainable management of water resources

Recovery— Corrective action technologies to respond to contamination of the natural and water-related built environment resulting from hurricane related stressors

TTU Climate/Weather Research

Mitigation—Sociological and economic impacts of severe weather, Ecological sustainment

Assessment—Climate modeling group, Mapping and remote sensing, Ecological assessment of severe weather

Prediction—Climate modeling, Mapping and remote sensing

Protection—Ecological sustainment

Education—Sociological and economic impacts of severe weather, Policy and communication

Recovery—Ecological sustainment, Sociological and economic impacts of severe weather

TTU Grid Resilience Group

Mitigation—Grid control and structure

Assessment—Novel grid sensing and analysis

Prediction—Grid failure modeling

Protection— Grid control and structure

Education—NA

Recovery—Emergency micro-grid deployment

TTU Social and Economic Impact Group

Mitigation—Bio-preparedness

Assessment—Modeling and measuring economic impact

Prediction—Modeling economic impact

Protection— NA

Education—Bio-preparedness, cybersecurity law, water and energy law, liability law

Recovery— Bio-preparedness, cybersecurity law, water and energy law, liability law

UT-Tyler

Institutional Leadership

Amir Mirmiran, Ph. D.

Provost and Vice-president for Academic Affairs and Chief Academic Officer

Executive Director(s)

Srini Kambhampati, Ph.D.

Acting Director, Office of Research and Scholarship

Professor, Department of Biology

Participating Units

Engineering

Amir Mirmiran: Ultra high performance concrete, composites for infrastructure, testing of prestressed and reinforced concrete, bridge engineering.

Javier Kypuros: Dean, College of Engineering. Autonomous controls; engineering dynamics

Torey Nalbene: hydrology, environmental engineering, air pollution

Michael McGinnis: structural engineering, structural fire engineering; applied mechanics

Gokhan Saygili: offshore foundation engineering; geohazard management; geotechnical engineering; submarine slope stability evaluation

Mena Souliman: fatigue endurance limit analysis; pavement management systems

Sathy Muthukrishnan: Vulnerability analysis, non-linear analysis of beams

Frederika Brown: energy sustainability

Melvin Robinson: Image and signal processing, pattern recognition, AI

Biology

Lance Williams: Aquatic systems and ecology

Riqing Yu: Environmental microbiology

Nursing

Danita Alfred: Assessment of emergency and disaster preparedness and nursing knowledge

Jimi Francis: Community wellness

Economics

Marco Castaneda: Health economics and economics of NGOs

Luis Guatier: applied microeconomics, environmental and development economics

Meryem Saygili: Environmental economics

Louisiana State University

Institutional Leadership

Kalliat T. Valsaraj, Ph.D., BCEEM
Vice President
Office of Research and Economic Development

Executive Director(s)

John Pardue, Ph. D.,
Elizabeth Howell Stewart Endowed Professor
Civil and Environmental Engineering

Scott Hagen, Ph.D
Professor, Civil and Environmental Engineering
Louisiana Sea Grant Laborde Chair
Director, Center for Coastal Resiliency

Areas of Expertise

Sustainability, coastal impacts, and resilience, disaster response, weather and climate, flood mitigation, wetland science, global oceanography, hypoxia, water quality, materials science and engineering (civil, coastal, environmental), data science and high performance computing, weather modeling, CERA (Coastal Emergency Risk Assessment), environmental law and policy, atmospheric science/chemistry

Participating Units (selected listing)

LA Sea Grant College Program
Center for Coastal Resiliency
Center for Computation and Technology
LSU Center for River Studies
Coastal Sustainability Studio
The Gulf Coast Research Center for Evacuation and Transportation Resiliency
Stephenson Disaster Management Institute (SDMI)

Core Faculty (from more than 100 faculty at LSU working on areas of interest)

Robert Twilley
John Pardue
Scott Hagen
J. (Ram) Ramanujam
Clint Willson
Jeff Carney
Brian Wolshon
Brant Mitchell

Illustrative Current Projects

Title	PI	Sponsor
Inland from the Coast: A multi-scalar approach to regional climate change responses	Jeff Carney	The Gulf Research Program of the National Academies of Sciences, Engineering, and Medicine and the Robert Wood Johnson Foundation 7/1/17-6/30/18 (2 more years anticipated)
Coupling Hydrologic, Tide and Surge Processes to Enhance Flood Risk Assessments for the Louisiana Coastal Master Plan	Scott Hagen	The Water Institute of the Gulf; recent award
EESLR 2016 Dynamic sea level rise assessments of the ability of natural and nature-based features to mitigate surge and nuisance flooding	Scott Hagen	National Oceanic and Atmospheric Administration (NOAA) 9/1/16-8/31/18
Coastal SEES Collaborative Research: Changes in actual and perceived coastal flood risks due to river management strategies	Scott Hagen	NSF 1/8/15-8/31/18
Development of an optimized tide and hurricane storm surge model for the northern Gulf of Mexico (MS, AL, FL) for use with the ADCIRC Surge Guidance System	Scott Hagen	University of North Carolina. Dept. of Homeland Security 1/1/16-6/30/18

RAPID Flood Extent/Depth Data Identification, Acquisition, Cataloguing, and Processing	Scott Hagen	NSF 12/01/2016-11/30/2018
Operation of CPRA River Model	Clint Willson	Coastal Protection and Restoration Authority (CPRA) 8/1/14-7/31/2024
Assessing hurricane risk at oil infrastructure across the Gulf of Mexico Coast	Jill Trepanier	National Academy of Sciences (NAS) 9/1/16-8/31/18
Estimating the Combined Risk of Hurricane Wind and Storm Surge along the U.S. Gulf Coast	Jill Trepanier	LA Board of Regents 6/1/15-6/30/18
TETRA-II : An Experiment to Study Terrestrial Gamma Flashes and the Role of Energetic Particle Acceleration in Lightning and Severe Weather Events	Mike Cherry and Jill Trepanier	La Board of Regents ESPCOR 8/1/15-7/31/18
Integrated Approaches to Creating Community Resilience Designs in a Changing Climate	Robert Twilley	University of North Carolina. Dept. of Homeland Security 1/1/16-6/30/18
LA Sea Grant Omnibus 2014-2018	Robert Twilley	2/1/14-1/31/19; 2018-2022 pending award
Coastal SEES Collaborative Research: Changes in actual and perceived coastal flood risks due	Robert Twilley	NSF 09/01/2014-08/31/2018

to river management strategies		
Vulnerability of fuel distribution systems to hazards in coastal communities	John Pardue	University of Arkansas 5/1/15-12/31/16
RAPID: Fast Reconstruction of Flood Hydrographs in the Houston Metropolitan Area during Hurricane Harvey Based on Image Processing and In-situ Measurements	Navid H Jafari	NSF 10/17/17-9/30/18
Rapid: Collaborative Research: Tracking Hurricane Harvey's Storm Surge and Flood Sedimentation	Kam-Bui Liu	NSF 2/1/2017-11/30/2018

U of Florida

Institutional Leadership

Chimay Anumba, Ph.D., D.Sc., FEng, P.E.
Dean and Professor
College of Design, Construction and Planning

Executive Director(s)

Forrest J. Masters, Ph.D., P. E.
Associate Dean for Research and Facilities
Herbert Wertheim College of Engineering

Areas of Expertise

Water Resources Research Center (<https://wrrc.essie.ufl.edu>)
Center for Wetlands (<https://cfw.essie.ufl.edu>)
Hinkley Center for Solid and Hazardous Management (<http://www.hinkleycenter.org>)
Transportation Institute (<https://www.transportation.institute.ufl.edu>)
Center for Supply Chain Management (<http://warrington.ufl.edu/centers/cscm/>)
Center for Remote Sensing (<http://abe.ufl.edu/research/CRS/index.shtml>)
Center for Environmental Policy (<https://cep.ees.ufl.edu>)
Environmental Management Systems Institute (<http://www.treeo.ufl.edu>)
Water Institute (<http://waterinstitute.ufl.edu>)
Land Use and Environmental Change Institute (<http://lucci.clas.ufl.edu>)
Florida Climate Institute (<http://floridaclimateinstitute.org/about>)
Florida Institute for Built Environment Resilience (FIBER) (<http://frci.dcp.ufl.edu>)
Multihazard Research Labs (<https://multihazard.eng.ufl.edu>)

U of Miami

Institutional Leadership: Jean-Pierre Bardet, Dean and Professor, College of Engineering

Executive Director(s): Derin N. Ural, Associate Dean for Student Affairs and Professor in Practice

Areas of Expertise for Engineering: Optimization, simulation and data mining, materials and structures, water quality, UAVs, program assessment and evaluation. Additional expertise is available through other units at the University of Miami in oceanography and atmospheric sciences, urban design, health, and psychosocial impacts

Participating Units: College of Engineering, Miller School of Medicine, School of Nursing, School of Communication, School of Architecture, College of Arts and Sciences, Rosenstiel School of Marine and Atmospheric Science

Core Faculty

Derin Ural, Professor in Practice, Civil, Arch. & Environmental Engineering, and Associate Dean
Helena Solo-Gabriele, Professor, Civil, Arch. & Environmental Engineering, and Associate Dean
Antonio Nanni, Professor and Chair, Civil, Architectural and Environmental Engineering

- Optimization
 - Dr. Hammam Alsafrjalani - evacuation
 - Dr. Murat Erkoc – gasoline distribution, shelters, electric power restoration
 - Dr. Ramin Moghaddass - evacuation
 - Dr. Singiresu Rao – resource allocation for pre-hurricane planning
- Simulation and Data Mining
 - Dr. Esber Andiroglu – smart sensors
 - Dr. Victoria Coverstone – traffic during evaluation
 - Dr. Mei-Ling Shyu – multimodal data mining
 - Dr. Nazrul Shaikh – second hit
 - Dr. Michael Swain – electric vehicle evacuation
 - Dr. Ge-Chang Zha – hurricane wind aerodynamics and buildings
- Materials and Structures
 - Dr. Ali Ghahremaninezhad – corrosion resistant concrete
 - Dr. Randolph Rhode-Barbarigos – human centered computational network, small scale testing, reefs building, sonar assessments
 - Dr. Wimal Suaris – structural retrofit
 - Dr. Prannoy Suraneni – sustainable concrete
- Water Quality
 - Dr. David Chin, Dr. Andiroglu, Dr. Joo – contaminants from hurricanes and their impacts
- Unmanned Aerial Vehicles (UAVs)
 - Dr. B. Dano – use of UAVs for roof inspections, identify wind hazards, powerline inspections, and landmass erosion
- Program Assessment and Evaluation
 - Dr. Vincent Omachonu – Program Evaluator

Illustrative Current Projects

Title	Award Department	Contact PI	Sponsor	Prime Sponsor
Erfri-Seed: Design for Independent Net-Zero Water Buildings.	Civil, Architectural & Env Engineering	Englehardt, James	National Science Foundation	
Sustainable Concrete Using Seawater, Salt-Contaminated Aggregates, And Corrosive Reinforce	Civil, Architectural & Env Engineering	Nanni, Antonio	Infravation	
Center for Integration of Composites Into Infrastructure (Cici)	Civil, Architectural & Env Engineering	Nanni, Antonio	National Science Foundation	
Inspection And Monitoring of Fabrication And Construction for The West Halls River Road Br	Civil, Architectural & Env Engineering	Nanni, Antonio	Florida State University	Department of Transportation
Collaborative Research: A Human-Centered Computational Framework for Urban And Community	Civil, Architectural & Env Engineering	Rhode-Barbarigos, Landolf	National Science Foundation	
Impact of CCA-Treated Wood In The Florida Disposal Sector	Civil, Architectural & Env Engineering	Solo-Gabriele, Helena	Hinkley Center Solid/Hazardous Waste Mgt University of Florida	Florida State Department of Environmental Protection
Public Hurricane Loss Model	Electrical & Computer Engineering	Shyu, Mei-Ling	Florida International University	Florida Department of Financial Services
Fphlm Storm Surge Enhancement	Electrical & Computer Engineering	Shyu, Mei-Ling	Florida International University	Florida Department of Financial Services
University of Miami Industrial Assessment Center (MIAC)	Industrial Engineering	Asfour, Shihab	Department of Energy	
Assessment And Evaluation of Contamination In Single Stream recycling Systems Due To Broke	Industrial Engineering	Celik, Nurcin	Hinkley Center Solid/Hazardous Waste Mgt University of Florida	Florida State Department of Environmental Protection
Autonomous Unmanned Aerial Vehicle for Two-Part Extended Search And Rescue Mission	Mechanical And Aerospace Engineering	Basalo, Ines	University of Central Florida	National Aeronautics & Space Administration
Estol Performance for Heavy Lift Transports Using Ultra-High Lift High Efficiency Co-Flow	Mechanical And Aerospace Engineering	Zha, Gecheng	Defense Advanced Research Projects Agency	
Smart Energy for the Smart Cities: the City of Coral Gables	Industrial Engineering	Celik, Nurcin	City of Coral Gables	Bloomberg Philanthropies
A Resilient South Florida	School of Architecture	Chao, Sonia		
Laboratory Measurement of Wind and Wave Forces in Extreme Winds	RSMAS	Haus, Brian		
Impact of Hurricane Irma on Biscayne Bay: Changes in Benthic Diversity in Areas Adjacent to Coastal Wetland Restoration Projects	College of Arts and Sciences, Biology	Sealey, Kathleen	College of Arts and Sciences	University of Miami
Impact of Evacuation and Other Hurricane Related Experiences on Children and Families	College of Arts and Sciences, Psychology	La Greca, Annette	College of Arts and Sciences; FIU Psychology	University of Miami
College Life After a Natural Disaster	College of Arts and Sciences, Psychology	La Greca, Annette	Collaboration with, U. of TX, TX State U., U. Puerto Rico, Santa Clara U., and UC-Santa Barbara	University of California, Santa Barbara
The Impact of Hurricane Irma on Mental and Physical Health: Consideration of Evacuation Behaviors and Geo-Demographic Factors	College of Arts and Sciences, Psychology	Timpano, Kiara	College of Arts and Sciences	University of Miami