



Tech Fix: How can technology help us investigate, communicate and solve climate problems and foster resilience? iCAR Phase VI

November 12-13, 2020

Virtual Workshop (Main iCAR website):

<https://www.stpetersburg.usf.edu/resources/icar/events/index.aspx>



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iCAR 2020 Workshop Organizer

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Introduction:

This 2-day workshop, hosted by the Initiative on Coastal Adaptation and Resilience (iCAR), University of South Florida (USF), Gamma Theta Upsilon (GTU), University Climate Change Coalition (UC3) and the Tampa Bay Regional Planning (TBRPC), will engage invited speakers to discuss societal responses to climate change and the role of policy-makers, scholars and citizens in translating science and policy into action. We will explore regional, national and international efforts to use a variety of technologies to promote resiliency. Examples of technologies include Geographic Information Systems, Web applications integrated with a smart-phone, social media, twitter, smart transit, smart city applications including data collecting sensors and crowd-sourced data platforms, etc. We will also explore the interchange between technological fixes and socioeconomic marginalization, such as the way marginalization distances some communities from the benefits of technological tools and solutions being developed to increase resiliency.

Through a series of presentations (recorded and live), followed by Q&A sessions when possible, with experts from the national level, state level and Tampa Bay regions, participants will explore regional approaches (on-going and future) for addressing the resilience and adaptations of coastal cities to climate change and evaluate regional efforts in the context of national efforts. Participants will contribute to a survey-based SWOT analysis to evaluate current practices in regard to resilience.

Overall scope:

The overall of this workshop includes exploration of the role and effects of technology on marginalization and/or equity and how marginalized communities are benefiting from technological tools and solutions being developed to increase resiliency. **Specific questions to be addressed include: How can/do we use tech to examine and understand climate problems and resiliency issues, how can/do we use tech to identify these problems, and how can we use tech to deal with/solve these problems?**

For example, during extreme weather events, a smartphone app for bus services to assist evacuation process or near real-time information on shelter capacity and opening can be helpful for marginalized communities who don't have vehicles or resources to leave town, but the app will not be useful if people don't have smartphones.

Technologies to be discussed at the workshop include GIS, remote sensing, GPS, spatially integrated models, geotagged social networks (e.g. data mined from twitter), standalone Web applications as well as integrated with a smartphone (such as SeeClickFix) and smart transit.

Workshop Objectives:

This workshop will emphasize scholarly work on key topics and explore the following questions:

- ✓ The role of technology in adaptation planning of infrastructure in the context of climate-related hazards

- How does development and use of technologies promote understanding of climate problems and resiliency issues,
- How can/do we use tech to identify these problems, and how can we use tech to deal with / solve these problems?
- What are the communication challenges for the adoption and use of technologies to foster resiliency?
- ✓ The role of technology in modeling and predicting climate change-related hazards such as sea-level rise, coastal flooding, extreme weather events
- ✓ The role of technology in fostering equity and reducing marginalization
- ✓ Strategies for overcoming lack of access to technologies for resilience in marginalized communities
- ✓ Effective strategies for communication that foster the adoption of new smart technologies for equitable resilience

Workshop Topics:

1. The role of technology in short-term and long-term disaster planning and mitigation and community resiliency
2. Opportunities for and barriers to the use of technologies before, during and after a climate-related disaster in fostering resilience
3. Opportunities, barriers and the practical challenges associated with the broader adoption of technologies even in cities that have smart city infrastructures to foster equitable resiliency
4. Role of Social Media in resiliency and disaster
5. Digital Inclusion/Inequity: Reliance on technology and ensuring access
6. Technology-enhanced community engagement and data viewing tools strategies
7. Role of systematic crowd sourced data in increased public participation

Who Should Attend:

- ✓ Citizens, and Representatives from Homeowners Associations, Neighborhood Civic organizations
- ✓ Businesses including but not limited to: Insurance industry, real estate, consulting firms, Energy providers
- ✓ NGOs (including those interested in environmental and social justice) and social service providers (religious organizations, affinity organizations)
- ✓ Students, faculty & researchers
- ✓ Elected officials & government administrators
- ✓ Professionals involved in coastal resilience: Transportation and urban planners, floodplain managers, emergency managers, public works, health professionals, natural resource managers, engineers & scientists.

Benefits:

- ✓ Learn from speakers (in real-time or from recorded sessions) chosen based on their academic and professional credentials and proven expertise in their fields
- ✓ Learn about cutting edge information (opportunities and barriers) regarding the role of technologies in promoting resiliency and reducing marginalization
- ✓ Exposure to new tools and technologies that are available for coastal resilience planning throughout Florida and beyond
- ✓ Shape research agendas and future climate adaptation efforts in the Tampa Bay region and beyond and for iCAR's community-driven research agenda.

To learn more about iCAR and past workshops please Visit our website at <https://www.stpetersburg.usf.edu/resources/icar/index.aspx>

iCAR PHASE VI

TECH FIX: HOW CAN TECHNOLOGY HELP US INVESTIGATE, COMMUNICATE AND SOLVE CLIMATE PROBLEMS AND FOSTER RESILIENCE?

November 12 & 13
USF St. Petersburg

THANK YOU TO OUR SPONSORS:

DAY 1: November 12	Zoom Access	Tentative Agenda
9:00 am	Click here to access the sessions 9:00 – 11:00 am	WELCOME by Thomas Frazer, Dean, College of Marine Science, USF Overview of iCAR: Barnali Dixon, iCAR Executive Director Overview of the Workshop: Rebecca Johns, iCAR Director of Education and Outreach
9:15 am	Webinar id:95678781304 (Day 1, Session 1)	Keynote Address: Vision of Resilience and Adaptation <ul style="list-style-type: none"> Rob Moore (Natural Resources Defense Council)
10:00 am		Panel Discussion: Technology Applications for Climate Change Modeling and Resilience <ul style="list-style-type: none"> Thomas Wall (Engineering & Applied Resilience Argonne Lab) Climate Modeling Shannon Carroll (AT&T) Overview of AT&T's Initiatives on Climate Change and Resilience Andrea Brands (AT&T) AT&T Foundation's Efforts to Build Partnership to Promote Resilience
11:00 am		Break
11:15 am	Click here to access the session 11:15 am – 12:00 noon Webinar ID: 94956723439 (Day 1, Session 2)	Keynote Address: NASA Disasters Program: Risk Reduction and Resilience Applications <ul style="list-style-type: none"> David Borges (NASA Applied Sciences Disasters Program) Mark Rains (USF) moderator
12:00 pm		Break
1:00 pm	Click here to access the sessions 1:00 – 2:00 pm Webinar ID: 94053934810 (Day 1, Session 3)	Panel Discussion: Role of Social Media in Resiliency and Disaster Response <ul style="list-style-type: none"> Neil Dufty (Molino Stewart Pty Ltd, Australia) Using Social Media to Build Community Disaster Resilience Can Aydin (Dokuz Eylul Universi, Turkey) Improving Disaster Resilience Using Mobile Based Disaster Management System Amir Forati & Rina Ghose (UWM) Examining Environmental Inequalities Through Social Media Analysis: Case Study Hurricane IRMA Amber Boulding (City of St. Pete, EMS) moderator
2:00 pm		Panel Discussion: Technology-enhanced Community Engagement and Data Viewing Tools & Strategies <ul style="list-style-type: none"> Barnali Dixon, & Rebecca Johns. (USF- iCAR) Community Resiliency Information System (CRIS) Monica Schoch-Spana (Johns Hopkins University) Self-Assessment Toolkit Margaret Palmsten (USGS) Total Water Level and Coastal Change Forecast Viewer
3:00 pm		Break
3:30 pm	Click here to access the session 3:30 – 4:30 pm Webinar ID: 96976008975 (Day 1, Session 4)	Panel Discussion: Technology Applications: Tracking Sea Level Rise, Extreme Wet Weather, and Sanitary Sewer Overflows <ul style="list-style-type: none"> Steven Meyers (USF) Hindcasting/Forecasting Future SSOs Marcus Beck (TBEP) Open Science Tools to Inform Utilities Operators Kira Barerra (St. Pete) Flow Metering, Dogs, & Lateral Rebates Sara Isaac (Marketing for Change) Private Lateral Maintenance Behavior Change Campaign Maya Burke (TBEP) moderator
4:30 pm		Adjournment



9:00 am	Click here to access the sessions	Welcome to Day 2 Overview of the Workshop: Rebecca Johns , iCAR Director of Education and Outreach
9:05 am	9:00 am – 11:00 am Webinar ID: 99396902996 (Day 2, Session 1)	Keynote Address: Review of Smart Technologies and Geospatially Integrated Technologies to Assist Communities Plan, Prepare and Adapt and be Resilient <ul style="list-style-type: none"> • Bandana Kar (Oak Ridge National Laboratory)
10:00 am		Panel Discussion: Smart Technologies and Communities: <ul style="list-style-type: none"> • Phillip Bane (Smart Cities Council), Overview of Smart Cities and Smart Technologies • Cassandra Borchers (PSTA) Smart Transit and Evacuation Plan
10:45 am		Break
11:00 am	Click here to access the sessions 11:00 am – 12:00pm Webinar ID: 96624306177 (Day 2, Session 2)	Panel Discussion: Ensuring Access: Opportunities and Limitations through Technology <ul style="list-style-type: none"> • Alison Barlow (St. Pete Innovation District) Digital Inclusion and Inequity • Sharon Wright (City of St. Pete) Desktop Environmental Justice • Brother John Muhammad (Childs Park) Community-based Initiative for Environmental Justice
12:00 Noon		Break
1:00 pm	Click here to access the sessions 1:00 pm – 2:00 pm	Panel Discussion: Regional Resilience Action Plan Report from TBRPC <ul style="list-style-type: none"> • Cara Serra (TBRPC) Regional Resilience Action Plan and Metroquest • Simone Chapman (TBRPC) Integrating Equity Goals into the RRAP and the REACH Polling by Cara Serra
1:30 pm	Webinar ID: 93784366901 (Day 2, Session 3)	Integrative Coastal Vulnerability Assessment and Modeling <ul style="list-style-type: none"> • Steven Fernandez (USF) King Tide Modeling
2:00 pm		Break
2:30 pm	Click here to access the sessions 2:30 pm– 4:30 pm Webinar ID: 93637408557 (Day 2, Session 4)	Panel Discussion: Technology for Coastal Assessment, Climate Solutions & Fostering Resilience <ul style="list-style-type: none"> • Alvan Karlin & Raymond Miller Jr. (Dewberry) New Technologies for Coastal Topobathymetric Lidar Data Collection • Jeff Gangai (Dewberry) New Technologies for Coastal Storm Surge Modeling • Siddharth Pandey & Raymond Miller Jr. (Dewberry) Using Advanced GIS Technologies for Post-disaster Recovery • Sue Kriebel (City of Virginia Beach) Sea Level Wise in Virginia Beach
3:45 pm		Breakout Session and SWOT Analysis: Status of information flow and connection between technology use and resilience at the community level <ul style="list-style-type: none"> • Evacuation planning • Infrastructural Issues (Including Power Restoration, Cooling Rooms, Heat Island) • Environmental and health hazards Bandana Kar (Oak Ridge National Laboratory) Moderator
4:30 pm		Closing Remarks by Barnali Dixon Executive Director of iCAR

Thank You Partners and Sponsors

**USF Conference Grant as well as Dewberry for their generous donations.
Collaborators include GTU and Tampa Bay Regional Planning Council (TBRPC)
Gamma Theta Upsilon (GTU) is an international honor society in geography**

Speakers/Moderators and Workshop Organizing Committee Members



Can Aydin (can.aydin@deu.edu.tr) earned his M. Sc and PhD from Dokuz Eylül University and he still working as Associate Professor in Department of Management Information System at Dokuz Eylül University. His expertise on Geographical Information System (GIS) and Disaster Management. He combined business analytics and business intelligence techniques and GIS for better management of disaster. He attached information Technologies for disaster management process. He worked with data visualization techniques on spatial data and non spatial data for better management. He has been a frequent contributor to disaster management domain with several applications and scientific papers.



Phillip Bane (philip.bane@smartcitiescouncil.com) is the Managing Director of Smart Cities Council, Inc. and has an extensive background in technology development and sales. For the last ten years, he has actively pursued developing data solutions for sustainability and resilience. As the Managing Director of the Smart Cities Council is the world's largest network of smart city practitioners. Its goal is to accelerate the move to smart, sustainable cities. The Council provides: An online platform for planning city projects called [Smart Cities Activator](#). Collaborative engagement for planning of projects

between and among cities assisted by experts. In 2021 – the *Smart Cities Academy* providing smart city certification to practitioners and cities and projects. Since 2016, the Council delivered its Readiness Program to over 100 cities in Europe, North America, India and Australia. These cities increased their capacity to deploy smart technologies and intelligent design to make their cities livable, workable and sustainable <http://smartcitiescouncil.com>. Philip has keynoted events for the Asian Development Bank, ASEAN Smart Cities Network, GITEX, Smart Cities Week and others. He also moderates over 15 panels a year on smart city topics.



Kira Barrera (kira.barrera@stpete.org) is an Operations Analyst for the City of St. Petersburg Water Resources Department. She has overseen several water quality improvement projects including source tracking and inflow and infiltration studies. She received her BS and MSc from the University of South Florida in Environmental Science and Policy. Kira has conducted research on ocean acidification and hydrochemistry of Florida Springs and has previous experience at the USGS as a Physical Scientist and Outreach and Education Coordinator, and at the Habitat Conservation Division at NOAA. She is currently the Vice-Chair of the Suncoast Sierra Club Conservation Committee. Kira likes to spend her free time exploring and enjoying nature with her dog Iris.



Alison Barlow (abarlow@stpeteinnovationdistrict.com) the Executive Director of the St. Petersburg Innovation District located in St. Petersburg, Florida. Her role is to harness regional expertise in healthcare, marine science, education, and art to foster innovative scientific research and technology. These efforts increase the economic vibrancy of St. Petersburg through the growth of entrepreneurs and existing organizations and workforce, as well as the recruitment of new companies. Ms. Barlow also leads St. Petersburg's smart city efforts. She is currently overseeing the smart lighting, marine science/STEM education, and digital inclusion projects as part of the US Ignite Smart Gigabit Communities consortium. These projects, like many in the Innovation District, seek to address community-based challenges with solutions that can be applied globally. Ms. Barlow received a Bachelor's in Hospitality Administration from Florida State University, and a Master of Business Administration from American University in Washington D.C. Prior to joining the Innovation District, she was a business and technology consultant based in Washington DC. Ms. Barlow advised leaders, often in the Department of Defense, on strategic planning, process improvement and technology project management. Upon her return to Florida, Alison was the operations manager of Collaborative Labs at St. Petersburg College, a strategic planning and facilitation team that served nonprofit, for profit and government organizations.



Marcus Beck, PhD (mbeck@tbep.org) Marcus is the Program Scientist for the Tampa Bay Estuary Program and is developing data analysis and visualization methods for Bay health indicators. He received his BS in Zoology from the University of Florida in 2007 and his MSc and PhD in Conservation Biology from the University of Minnesota in 2009 and 2013. Marcus has experience researching environmental indicators and developing open science products to support environmental decision-making. Marcus is also an avid software developer and creator of online dashboards that facilitate science communication. Outside of work, Marcus enjoys spending time with his wife Susie and their dog (Jones) and cat (Gus).



Charles J. (C.J.) Bodnar, P.E. (CBodnar@vbgov.com): Mr. Bodnar is a registered Virginia Professional Engineer and is the Stormwater Technical Services Program Manager for the City of Virginia Beach, Department of Public Works, Stormwater Engineering Center. He graduated in 1990 from the Virginia Military Institute with a Bachelor of Science in Civil Engineering. C.J. worked as a land development consultant for over 20 years prior to joining the City of Virginia Beach in 2015.



Amber Boulding (Amber.Boulding@stpete.org) is the Emergency Manager for the City of St. Petersburg. She is a certified Florida Professional Emergency Manager (FPEM) through the Florida Emergency Preparedness Association (FEPA) and holds a Master of Public Health (MPH) degree from the University of South Florida and a Bachelor's degree in Health Education and Behavior from the University of Florida. She collaborated with USF and iCAR to develop CRIS (Community Resiliency Information Systems).



David Borges (david.borges@nasa.gov) is a Physical Scientist with the NASA Earth Applied Sciences Disasters Program at NASA Langley Research Center. He provides international project management and geospatial analytics solutions to disaster related issues on a global scale through application development and geospatial enablement of Earth observation information. David currently serves as a Group on Earth Observation (GEO) Disaster Risk Reduction Working Group (DRR WG) Co-Chair and the Committee on Earth Observation Satellites (CEOS) Working Group Disasters (WGDisasters) Secretariat. He is also an active member of the UNDRR Global Risk Assessment Framework (GRAF) WG and UN-GGIM WG-Disasters. Before joining NASA, David spent ten years in the private sector supporting a variety of clients, including the U.S. Federal Emergency Management Agency (FEMA) and Department of Homeland Security (DHS). He is a GISCI Certified GIS Professional (GISP), PMI Certified Project Management Professional (PMP) and received his Bachelor's degree in Geographic Information Science from Old Dominion University.



Andrea Brands (ab861@att.com) is the Director, Corporate Social Responsibility (CSR) at AT&T. Since she began her career more than 20 years ago, Andrea Brands has held a variety of positions in government, political and corporate communications and public affairs – largely in the Chicago area. As Director of College CSR Awareness and Interaction, Ms. Brands is responsible for creating CSR-related programs and messaging to colleges and universities. It was in this role she oversaw the implementation of AT&T's Climate Resilience Community Challenge, an effort to marry expertise of universities with resources to help local communities better prepare for the impact of climate change. She was AT&T's first Director of Consumer Safety & Education, empowering consumers with resources to help them use technology safely and efficiently. Ms. Brands played a key role in AT&T's *It Can Wait*® campaign, which gained national prominence for its efforts to end smartphone distracted driving. She also helped create AT&T's *Digital You*® program, which provided online safety tools and resources to people online.



Cassandra Borchers, AICP (cborchers@psta.net) is the Chief Development Officer of the Pinellas Suncoast Transit Authority (PSTA) in St. Petersburg, Florida. In her role at PSTA, she engages in strategic and long range planning, innovation programs, sustainability planning, grant development, financial planning and funding partnerships, route development and scheduling, data collection and analysis as well as agency messaging strategy and public engagement. Prior to joining PSTA, Cassandra led a broad spectrum of planning initiatives across the state of Florida as a consultant for multimodal transportation strategic plans, corridor studies and transit capital project development. Cassandra has a BA in Geography and a Master of Urban

Planning from the University of Illinois, Urbana-Champaign. She is a member of the American Institute of Certified Planners (AICP) and a past president of the Women’s Transportation Seminar (WTS) Tampa Bay chapter.



Maya Burke (mburke@tbep.org) Maya is the Assistant Director of the Tampa Bay Estuary Program. She is responsible for strategic planning and implementation reporting to drive actionable science for the benefit of a healthy bay; distills Tampa Bay-specific research for a broader audience; and facilitates working groups, including the Tampa Bay Nitrogen Management Consortium and the Tampa Bay Climate Science Advisory Panel. Maya has spent 15 years working in water resource management, regulatory compliance, and environmental land use planning. Prior to working at the Tampa Bay Estuary Program, Maya worked

for the Southwest Florida Water Management District and the Tampa Bay Regional Planning Council. She is a graduate of New College of Florida and a native Floridian.



Shannon Thomas Carroll (sc7649@att.com) is the Director of Global Environmental Sustainability at AT&T and is responsible for implementing sustainable business strategies throughout the company. He has been with AT&T for over 20 years and has worked as a sustainability professional for the last 10 years. In that time, he has covered a broad range of social and environmental issues, including [climate change mitigation](#) and [resiliency, renewable energy](#), conflict minerals, human rights, greenhouse gas accounting, waste and water. Shannon has a bachelor’s degree in Business and has completed graduate work in sustainability and environmental management.



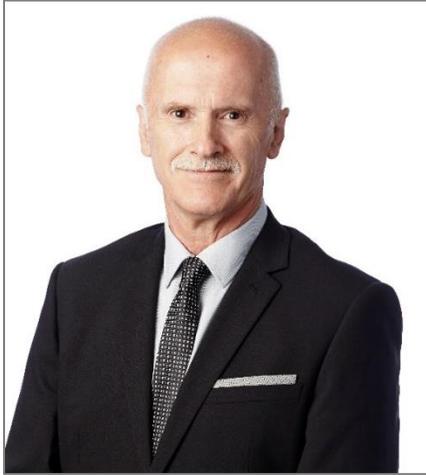
Simone Chapman (simone@tbrpc.org) serves as the National Academies of Sciences, Engineering, and Medicine (NASEM) Gulf Research Program Science Policy Fellow for the TBRPC. Simone supports work on the new Resilience and Energy Assessment for Community and Housing (REACH) initiative and also provides support to the Regional Resilience Action Plan (RRAP) development process. In these projects, she will incorporate equity considerations, provide research support and prepare reports and maps and help coordinate RRAP efforts to develop goals, objectives and strategies that will be supported by the region. Simone holds a BA in Environmental Studies from Temple University and a Master of Science in Natural Resources: Environmental Conservation and a Graduate Certificate in

Geospatial Science from the University of New Hampshire. Her graduate research focuses on socioeconomic patterns surrounding wetland policy implementation in New Hampshire and aims to bring awareness to environmental justice considerations for environmental policy implementation. She has a strong interest in geospatial mapping, analysis and modeling along with environmental justice.



Barnali Dixon Ph.D (bdixon@usf.edu) a professor of GIS and Remote Sensing at the Univ. of South Florida Saint Petersburg. She is also the Director of the Geospatial Analytics lab. She is the Executive Director of iCAR and PI of the Conference Grant and research project related to iCAR <https://works.bepress.com/barnali-dixon/#>. She has extensive experience in the application of Geographic Information Systems (GIS), remote sensing and approximation tools such as fuzzy logic for environmental modeling. Specific research interests and projects include: risk assessment and environmental modeling for soil, water and landuse interactions, as well as surface and ground

water quality and quantity. She earned her PhD in Environmental Dynamics from the University of Arkansas in 2001. Dr. Dixon's study areas include Florida, USA; and internationally, Argentina, China, Greece, India, Iran, Kuwait, Malaysia, Nigeria, Thailand and Turkey. She has over 50 refereed publications and 5 monographs. She recently gave a TEDEx Youth talk in China about Climate change related adaptation and resilience. She authored the book, "GIS and Geo Computation for Water Resources Science and Engineering" (Wiley), which was recognized on the 2019 list of 100 Best GIS Books by Book Authority (<https://bookauthority.org/books/best-gis-books>). She is the recipient of the Fulbright Specialist award and worked with Thailand's space agency GISTDA to explore role of space technologies to benefit society, resiliency and sustainability. Her faculty website page is located at <http://hennarot.forest.usf.edu/main/depts/geosci/faculty/bdixon/>.



Neil Dufty (ndufty@molinostewart.com.au) has qualifications in earth science and education. He is a Principal at Molino Stewart Pty Ltd, an environment and natural hazards consultancy based in Sydney, Australia. He is also the former Regional Director of the International Emergency Management Society or TIEMS (Australia). Neil has expertise across all aspects of disaster risk management and particularly in disaster education and engagement, early warning systems and emergency management evaluation. He is a member of several international emergency management boards and has written reports for the World Bank, the Geneva Association and other international organizations. Over the past 15 years, he has carried out extensive research into the role of social

media in building community disaster resilience. Neil has advised emergency managers across Australia and internationally about how to use social media based on this research. Samples of Neil's research publications can be found at https://works.bepress.com/neil_dufty/. Neil has written a new book on 'Disaster Education, Communication and Engagement' published by Wiley <https://www.wiley.com/en-us/Disaster+Education%2C+Communication+and+Engagement-p-9781119569794>



Stephen Fernandez (sfernandez@usf.edu) is a Research Assistant Professor in the Master of Urban and Regional Planning Program at USF. His expertise is in geospatial technologies, including GIS, UAS, Lidar mapping and analysis. Steven has 20 years of experience in the private sector working on site suitability and location analysis for commercial real estate. Those projects were completed for over 250 municipalities in 20 states, 50 of which required fieldwork data collection. In 2010, he joined a research center at USF where he was a GIS project manager for terrestrial and aerial lidar projects. The Lidar projects were conducted throughout the Eastern United States, US Virgin Islands, Hawaii,

Italy, France, Spain, Armenia, Mexico, and Guatemala. In 2018, he joined the MURP program where he developed 3 graduate courses that focus on Urban Planning and Lidar applications of GIS. His current research projects have focused on utilizing Lidar to analyze King Tide flooding in South Florida and the Tampa Bay region.



Amir Forati (afortati@uwm.edu) is a Ph.D. student specializing in GIS in the Department of Geography at University of Wisconsin-Milwaukee (UWM). He received his MS degree at the University of Tehran, where his research focused on Volunteered Geographic Information (VGI) quality assessment and PPGIS. His Ph. D. research, under the supervision of Prof. Ghose, uses geodata and social media data to examine health disparities and environmental inequalities among African American and Hispanic communities in USA. His research has been published in different journals and conference proceedings, including The International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences, and GI forum.



Tom K. Frazer PhD. (tfrazer@usf.edu) is a Professor and Dean of the College of Marine Science at the University of South Florida. Prior to his arrival at USF, Dr. Frazer was Director of the School of Natural Resources and Environment at the University of Florida and served also as Chief Science Officer for the State of Florida. Dr. Frazer holds a Bachelor's Degree in Fisheries Biology from Humboldt State University and a Master's Degree in Fisheries and Aquatic Sciences from the University of Florida. He earned his Ph.D. in Biological Sciences from the University of California, Santa Barbara. His research addresses contemporary and emerging environmental issues, and is, by nature, interdisciplinary. His work involves collaborators from disparate disciplines, and it includes sampling and experiments conducted across a wide range of spatial and temporal scales. Dr. Frazer has received more than \$14 million in research funding to address topics pertaining to water quantity and quality, nutrient dynamics, biogeochemical processes, fish population dynamics, food web interactions, and ecological restoration of degraded ecosystems. He has conducted field research in both freshwater and marine systems around the globe, and he is intimately familiar with a broad suite of environmental and natural resource issues (e.g., eutrophication of fresh, estuarine, and coastal waters; invasive species; and the ecological impacts of contemporary environmental change, including coral bleaching, ocean acidification, and sea level rise). Dr. Frazer has authored and/or co-authored more than 175 peer-reviewed publications, technical reports, and book chapters. Dr. Frazer currently serves as Chair of the Gulf of Mexico Fisheries Management Council. He is also a member of APLU's Board on Oceans, Atmosphere and Climate, and he previously served as member of the US EPA's Oil Spill Research Strategy Review Panel.



Jeff Gangai, CFM (JGangai@Dewberry.com): Mr. Jeff Gangai has been practicing coastal engineering for over 25 years. He holds a Bachelor of Science in Maritime Systems Engineering from Texas A&M University at Galveston and a certificate in Coastal Engineering from Old Dominion University. His area of specialty is coastal hazards including coastal processes and marine structures. Before joining Dewberry he worked for five years with the U.S. Army Corps of Engineers at the Galveston, TX District. For over 20 years he has worked at Dewberry on the National Flood Insurance Program for the coastal regions of U.S., evaluating and

reviewing coastal flood hazards. He serves as a senior coastal technical specialist and coastal project manager supporting coastal hazard studies.



Rina Ghose (rghose@uwm.edu) is a Professor of Geography and Urban Studies at the University of Wisconsin-Milwaukee. She specializes in GIS, urban policy/planning and environmental geography. She conducts community engaged research that examines environmental and social injustices among historically marginalized communities. She has around fifty publications in journals and books, and her research has been funded by the National Science Foundation. She serves on the editorial board of six research journals and has received the prestigious ‘Excellence in Research’ award at her institute.



Sara Isaac (sara.isaac@forchange.agency) works at the intersection of strategy, research and creative, specializing in translating audience insights into breakthrough behavior change campaigns that work in the real world. The director of strategy and a principal at Marketing for Change, Sara has spearheaded campaigns including Be Floridian, a 5-year fertilizer reduction campaign for the Tampa Bay Estuary Program; Our Future is Clear, a campaign to promote a septic system upgrade rebate program for the Florida Department of Environmental Protection; and the development of the first national communications framework on the health impacts of climate change for the

Centers For Disease Control and Protection’s Climate and Health Program. Sara frequently conducts trainings and lectures on behavior change marketing to academic, government and community groups, including the University of Florida, the Association of National Estuary Programs and the Gulf of Mexico Coastal Training Program. Sara holds a master of science degree in behavioral science from the London School of Economics and Political Science.



Rebecca Johns, Ph.D (rjohns@mail.usf.edu) is the former Frank E. Duckwall Professor of Florida Studies and an associate professor of geography. She received her Ph.D. from Rutgers University and her M.S. from the University of Wisconsin-Madison, both in geography. She holds a B.A. in Anthropology from Stanford University. She is currently the secretary of the Florida Society of Geographers. Dr. Johns' recent publications focus on the construction of narratives of environmental citizenship in educational exhibits at nature parks. She has also published on local scale problems related to Florida's social and environmental landscapes, including issues of native plants, residential yardscapes, and food deserts. She is currently working issues related to the

representation of animals in educational exhibits; environmental education programs in India; the historical construction of the environmental citizen through the activities of the Sierra Club; and issues of inclusion and exclusion of vulnerable communities in climate resilience efforts. She serves as the Director of Education and Outreach for iCAR. She directs the annual community outreach and education series for iCAR. More information can be found at <http://www.usfsp.edu/icar/community-outreach-and-education/>. Dr. Johns' website is www.rebeccajohns.net



Bandana Kar Ph.D. (karb@ornl.gov) is a R&D Staff member in the National Security Sciences Directorate at Oak Ridge National Laboratory. She is also the Acing Group Lead of the Built Environment Characterization Group and was an Associate Professor in the Department of Geography and Geology at the University of Southern Mississippi. With degrees in Architecture, City Planning and Geography/Geographic Information Science, Dr. Kar deploys an interdisciplinary approach to resilience science that integrates fundamentals of GIScience, planning and disaster science. Her research focuses on the

intersection of science, technology and policy and leverages static and dynamic large-scale datasets and computational methods to develop data and impact-driven solutions for resilient infrastructures, smart and resilient cities, and risk communication. She was the recipient of the 2019 *Emerging Scholar Award* from the American Association of Geographers' Regional Development and Planning Specialty Group, and was a fellow of the 2009 National Science Foundation's *Enabling the Next Generation of Hazards and Disasters Researchers Fellowship Program*. She is a co-editor of the book *Risk Communication and Community Resilience*. She has been funded by the NSF, Department of Homeland Security, Department of Energy, and NASA.



Alvan “Al” Karlin, Ph.D., CMS-I, GISP (AKarlin@Dewberry.com): Dr. Karlin is an ASPRS Certified Mapping Scientist – Lidar and a GISCI GIS Professional with over 35 years of experience in the geospatial industry, government, and education sectors. Al received his Ph.D. in Computational Biology and Theoretical Population Genetics from Miami University (Ohio) and was a tenured professor in the departments of Zoology, Computer and Information Science, and Engineering Technology before leaving the University of Arkansas. As a Senior Geospatial Scientist since 2000, Dr. Karlin has participated in and directed numerous projects involving LiDAR mapping for Watershed Management, GIS Database Development (ArcHydro/ArcHydro-Groundwater), land use and vegetation mapping, mapping by

Global Positioning System (GPS), Spatial modeling and Esri-ArcHydro application programming and development, and remotely sensed image analysis and interpretation for the Southwest Florida Water Management District.. These projects range in scale from single parcel projects to landscape-level projects involving entire states. Habitat and vegetative mapping studies have been conducted from ground surveys, GPS surveys, aerial delineations and via the use of remotely sensed satellite imagery. Now, in semi-retirement, he serves as a Geospatial Scientist for Dewberry and has authored numerous articles and technical reports for *Lidar Magazine*, *XYHt*, and *Point of Beginning*.



Sue Kriebel, P.E. (Skriebel@vbgov.com): Ms. Kriebel is a Stormwater Engineer for the City of Virginia Beach in Stormwater Technical Services Division. She has a background in both public and private sector work and is a registered Professional Engineer in the Commonwealth of Virginia. She currently manages a five-million-dollar capital improvement project to assess the City’s vulnerability to sea level and develop actionable hard and soft solutions to recurrent flooding. Ms. Kriebel also provides review of complex drainage solutions for both capital improvement projects and private

development. She earned a Bachelor of Science in Civil Engineering degree from Old Dominion University.



Ray Miller, CP, CMS, GISP

(RMiller@Dewberry.com): Mr. Miller is an ASPRS Certified Photogrammetrist and Certified Mapping Scientist-Remote Sensing with over 18 years of experience in the geospatial industry. Having spent his entire career in Florida, he has served many of our water management districts, state and local government agencies, as well as research organizations. He is a graduate of the University of South Florida where he received Bachelor's and Master's degrees in Geography with a concentration in GIS and spatial analysis. His graduate education concentrated on hurricane evacuation modeling and social vulnerability analysis using geospatial applications, including

HAZUS-MH, Hurrevac, and SLOSH software. As a Project Manager in Dewberry's Geospatial & Technology Services team, Ray manages many of our large scale projects for FEMA, NOAA, and USGS, that include topographic and bathymetric lidar services, remote sensing based analytics, and disaster response and recovery. He is also a certified HAZUS Professional, and certified Project Management Professional. Ray also recently co-authored a technical report published in *Point of Beginning* magazine on producing highly accurate lidar data in Leon County, FL.



Steven Meyers, Ph.D. (smeyers@usf.edu) is the Chief Scientist at the Center for Maritime and Port Studies, University of South Florida College of Marine Science. His current research focuses on the impacts of climate change on coastal infrastructure and on maritime navigation. He has extensive experience working with oceanographic and meteorological data, numerical ocean circulation models, data analytics, and most recently, machine learning. Steve has published several dozen peer reviewed manuscripts on topics ranging from the Great Red Spot of Jupiter to changes in coastal circulation and mixing due to hurricanes, large-scale human construction, and sea level rise. Steve joined

the USF College of Marine Science in 1998 as research faculty, after serving as the Associate Director for Oceanography at the Center for Ocean-Atmospheric Studies at Florida State University from 1991-1997. He received a doctorate in Physics from the University of Texas at Austin with a specialization in geophysical fluids.



Robert Moore (rmoore@nrdc.org) is the Director of the Water & Climate Team at the Natural Resources Defense Council (NRDC). His work revolves around government policy and decision-making related to climate resilience and adaptation, sea level rise, flood risk, and disaster preparedness and response. He has focused on needed reforms to the National Flood Insurance Program, how to make buyouts of flood prone home for efficient and accessible, and mechanisms to ensure that future development is consistent with projections of future climate impacts. Moore and his team at NRDC are recognized

national experts on issues related to ways the nation may cope with the problems of rising sea levels and other aspects of flooding related to climate change. Twitter: @RobMooreNRDC . Blogs: <https://www.nrdc.org/experts/rob-moore>



Brother John Muhammed

(yourbrotherjohn1@gmail.com) is the Co-Founder / Executive Director, Community Development & Training Center, Inc (CDAT) and the President, Childs Park Neighborhood Association. He is also the Lead Organizer / Convener, New Deal for St. Pete. Bro John has been involved in grassroots organizing and community outreach since joining the Nation of Islam in 1997 at age 21. As President of the Childs Park Neighborhood Association he increased membership and led the group to be recognized as

“Neighborhood of the Year for Civic Engagement” while bringing a renewed focus and commitment to the Childs Park Strategic Planning Initiative led by his predecessors. He co-founded the St. Pete Stop The Violence Coalition which was recognized by President Barack Obama and received National Volunteer Service Awards from his office in 2013 and 2014. His work with a Local Labor Union led to the passage of a local wage theft ordinance, a “hard to hire” and apprenticeship policy and a \$15 per hour minimum wage for City Employees by the year 2020. He also successfully advocated for increased wages for Part Time and Temporary workers and those who are employed by City Contractors. Bro John is currently serving as Outreach Liaison on a project to assess the potential environmental health issues in Childs Park where industries are operating within residential neighborhoods. In addition to graduating from the School of “Hard Knocks” he has received certificates from St. Pete College in Instructional Design & Technology, Evaluation and Assessment and Learning Theories. He has also received certificates in Non Profit establishment and Grassroots Leadership Development from the University of South Florida.



Siddharth “Sid” Pandey, CSM

(SPandey@Dewberry.com): Sid is an Associate and Senior Geospatial Analyst providing geospatial, technology, emergency management, and asset management services to a wide variety of projects and clients. Sid is a graduate of Penn State University with a B.S. in Geography (GIS Focus). He also obtained a Graduate Certificate in Business Intelligence Analysis from the University of California, San Diego and recently completed a Masters of Professional Studies in Geographic Information Systems at the University of Maryland, College Park. He has several years of experience working on projects ranging from geospatial damage

assessments to mobile data collection and python tool development. He works closely with the GIS, engineering, programming and field management staff in support of data development, web/mobile data collection and visualization, data migration, quality control, and spatial analytics. In 2018, Sid was named a 40 Under 40 Geospatial Leader by xyHt Magazine and in October of 2020 was selected by URISA as a member of the Vanguard Cabinet of Young Geospatial Professionals for their 2021-2023 cohort.



Meg Palmsten PhD. (mpalmsten@usgs.gov) is the U.S. Geological Survey’s St. Petersburg Coastal and Marine Science Center as a Research Oceanographer in 2020. Her work is focused on studying the physical processes driving coastal change, with special emphasis on making observations in coastal environments using state-of-the-art technology and developing data-driven models for real-time forecasting of coastal change hazards. She is especially interested in understanding model uncertainty and communicating forecasts with stakeholders and end users. Prior to her present position, Dr. Palmsten spent nearly a decade as an Oceanographer in the Seafloor Sciences Branch of the U.S. Naval Research Laboratory. Dr. Palmsten received her PhD from Oregon State University, her

Master’s degree from the University of South Florida, and her Bachelor’s degree from Eckerd College.



Mark Rains, PhD. (mrains@usf.edu) is an ecohydrologist with a B.A. in Ecology, Behavior, and Evolution, an M.S. in Forestry, and a Ph.D. in Hydrologic Sciences. He currently is a Professor of Geology and the Director of the School of Geosciences at the University of South Florida. His research is focused on hydrological connectivity from ridges to reefs, especially between hillslopes, wetlands, and headwater streams; the roles that hydrological processes play in governing ecosystem structure and function; and the roles that science plays in informing water-related law, policy, and decision-making. He has extensive experience in consensus building at the intersection of science and policy in wetland regulatory programs, including past and ongoing work providing the scientific justification underlying the federal

definition of “waters of the US” subject to regulation under the Clean Water Act. He was a member of the U.S. Environmental Protection Agency’s Science Advisory Board charged with reviewing the state-of-the-science underlying the Clean Water Rule proposed by the Obama Administration, and continues to be an active voice in the ongoing scientific debate surrounding the Water of the United States Rule proposed by the Trump Administration. He routinely contributes to the scientific debate in the legal arena, including two cases heard by the U.S. Supreme Court (i.e., *Borden Ranch Partnership and Angelo K. Tsakopoulos, Petitioners v. United States Army Corps of Engineers and Environmental Protection Agency*, 537 U.S. 99 [2002]; *County of Maui, Petitioner, v. Hawai’i Wildlife Fund; Sierra Club-Maui Group; Surfrider Foundation; West Maui Preservation Association, Respondents* [2019]).



Monica Schoch-Spana, PhD. (mschoch1@jhu.edu) is a Senior Scholar at the Johns Hopkins Center for Health Security, is a medical anthropologist who specializes in public health emergency management (readiness/response/recovery). Since 1998, she has focused, in particular, on generating and applying evidence to advise policymakers and practitioners on how to collaborate with private individuals, businesses, and faith- and community-based groups in efforts to manage catastrophic health events. Her areas of expertise include community resilience to disaster, public engagement in policymaking, cross sector emergency planning, and crisis and risk

communication. During the COVID-19 pandemic response, she has led the development of evidence-informed recommendations to improve public uptake of future COVID-19 vaccinations and collaborated in generating an ethical framework for the allocation of future COVID-19 vaccines. Dr. Schoch-Spana has served in many national advisory roles including currently on the Homeland Security Subcommittee of the Board of Scientific Counselors for the US Environmental Protection Agency and on the Resilient America Roundtable of the National Academies of Sciences, Engineering, and Medicine, which she formerly co-chaired.



Cara Woods Serra, AICP, CFM (cara@tbrpc.org)

Cara Woods Serra, AICP, CFM is a Comprehensive Resiliency Planner with the Tampa Bay Regional Planning Council. Her current role at the TBRPC involves disaster preparedness, hazard mitigation planning, and resiliency policy. She has a land use planning background and previously worked on special area plans, long range plans, development review and floodplain management at the local government level. Cara supports the work of hazard mitigation professionals throughout the Tampa Bay region in an effort to facilitate knowledge sharing and regional

consistency. Cara has a bachelor's degree in Interdisciplinary Social Sciences from the University of South Florida and a Master of City and Regional Planning from the Georgia Institute of Technology.



Joseph M. Smoak Ph.D (smoak@usf.edu) is a professor of biogeochemistry at the University of South Florida in St. Petersburg. He has over 80 publications in peer-reviewed journals and book chapters, and has received research funding from numerous regional, state and federal agencies including the National Science Foundation. Dr. Smoak has conducted research at sites ranging from Florida to locations around the world including Antarctica, Australia, Brazil, China, Iran, Mexico and Venezuela. He has examined lakes, freshwater wetlands, coastal ecosystems, continental margins and deep-sea sediments. Dr. Smoak's current research focuses is on how coastal wetlands respond to climate change and sea-level rise. Specifically, his work examines carbon burial (i.e., sequestration) in coastal wetlands, and how that burial might change and

influence the global climate <https://works.bepress.com/joseph-smoak/>. He serves as the Director of Research, Climate Science for iCAR. His faculty website is located at <http://hennarot.forest.usf.edu/main/depts/geosci/faculty/ssmoak//>.



Thomas Wall Ph.D (twall@anl.gov) is the Program Lead for Engineering & Applied Resilience in Argonne National Laboratory's Decision and Infrastructure Sciences Division. He has extensive experience in the area of critical infrastructure analysis and protection, and has supported infrastructure analysis projects for the Department of Homeland Security, the Federal Emergency Management Agency, and state and local governments. He also co-leads the Argonne Climate Risk and Resilience Studies (ACR2S) program, which leverages Argonne's deep capabilities in climate science and modeling, advanced computing, infrastructure risk analysis, and decision science to provide actionable

climate impact information to industry, the engineering and planning communities, and to state and local governments. Tom received an Honors B.S. in Civil Engineering from Oregon State University, and an M.S. and Ph.D. in Civil Engineering from the Georgia Institute of Technology.



Sharon Wright, AICP, LEED AP BD+C, ENV SP (Sharon.Wright@stpete.org). Sharon is Director, Office of Sustainability and Resiliency, for the City of St. Petersburg. She is responsible for delivering the city's sustainability and resilience priorities by working across city departments and with citizens, businesses, and community partners to establish a community-wide sustainability program. Sharon has a B.S. Soil and Water Science - Forestry, Wetlands, Agriculture from the University of Florida and an M.S. City and Regional Planning from Georgia Institute of Technology. Before

coming to the city in 2014, Sharon worked as a Community & Environmental Planner at an engineering and architecture firm for almost 14 years. Sharon's current work includes collaborating on a multitude of sustainability programs as well as participating as an internal city team advisor for sustainability, resiliency and green certifications, including Envision, on an array of building and infrastructure projects. She currently working on a neighborhood resiliency pilot project with support from the Foundation for a Healthy St. Petersburg, and many other partners.