2023 PACE Applications Workshop

September 6-7, 2023

Session 1: Welcome and Setting the Stage

Host/Speaker/Moderator: Natasha Sadoff, *PACE Mission Applications Deputy Coordinator*, *NASA Goddard Space Flight Center/Science Systems and Applications Inc.*

Ms. Natasha Sadoff is the Applications Deputy Coordinator for the NASA PACE mission. Natasha is a geographer who works at the nexus of environmental management, governance, and earth science. She has nearly fifteen years of experience connecting data users and stakeholders to resources to improve decision-making, communication, and environmental management in areas such as climate change adaptation and resilience; energy management; air quality; water quality; and other areas. Toward that end, she uses principles of Design Thinking and co-production to design and implement stakeholder needs assessments, user engagement activities, training and outreach, and capacity building/development, particularly in the usage of Earth observations for societal benefit. She recently received a certificate from IDEO U on Foundations in Design Thinking. Before coming to NASA, she was a senior scientist at Battelle, where she managed domestic and international environmental governance and capacity building programs for Federal government partners like EPA and NASA.

Host/Speaker/Moderator: Erin Urquhart, PhD, *PACE Mission Applications Coordinator***,** *NASA Goddard Space Flight Center/Science Systems and Applications Inc.*

Dr. Erin Urquhart, Applications Coordinator for the NASA Plankton, Aerosol, Cloud, and ocean Ecosystem (PACE) mission, works at the transdisciplinary boundary of earth science, social science, and public health. Erin engages end-user/stakeholder communities to identify their needs and science objectives while exploring innovative and practical uses of PACE data products. She has a proven track record in coastal and inland water quality research and satellite remote sensing with a MHS in Environmental Public Health and a MA/PhD in Earth & Planetary Sciences from Johns Hopkins University. Before coming to NASA, she worked on model development and detection of inland cyanobacteria harmful algal blooms at the US Environmental Protection Agency (EPA).

Speaker: Dalia Kirschbaum, PhD, *Director of the Earth Sciences Division, NASA Goddard Space Flight Center*

Dr. Dalia B. Kirschbaum is the Director of the Earth Sciences Division at NASA Goddard Space Flight Center, Greenbelt, MD. As Director she manages a staff of 200 civil servants and 1200 people serving as contractors, technicians, support staff and those on cooperative agreements, all dedicated to studying the Earth as an integrated system that includes the atmosphere, oceans, biosphere, cryosphere, and geosphere. Prior to this role, she was Chief of the Hydrological Sciences Laboratory, a group of scientists focused on conducting large-scale hydrological science research using data from NASA's satellites, land surface models, and fieldwork. Dr. Kirschbaum's research has focused on rainfall-triggered landslide modeling, monitoring, and mapping using remotely sensed information to conduct landslide hazard and risk studies at multiple spatial and temporal scales. Previously, she also served as the Global Precipitation Measurement (GPM) Mission Deputy Project Scientist for Applications, and on the Atmosphere Observing System (AOS) Science and Applications Leadership Team. She has also supported the agency as a Disaster Response Coordinator, working with other NASA centers as well as domestic and international partners to bring satellite data and products to bear during natural hazard events to improve situational awareness and inform decision making. Dr. Kirschbaum received her M.S. and Ph.D. in Earth and Environmental Sciences from Columbia University with a focus in Natural Hazards and Remote Sensing. She received her A.B. in Geosciences from Princeton University.

Speaker: Bo Peng, *Portfolio Director, IDEO*

Bo is a Director at IDEO focused on the intersection of data science and human-centered design. She's passionate about using data as a resource to improve the way people work, play, and think. Currently based in the US, she recently returned from a rotation at IDEO's Shanghai studio, leading the growth of IDEO's data science capabilities in Asia and pushing the boundaries of intelligent systems and human-centered data science across varying markets, mindsets, and values. Prior to IDEO, Bo was a partner and data scientist at Datascope, a cutting-edge data science consultancy based in Chicago. Bo led a series of diverse engagements with deep technical expertise, including partnering with P&G to systematically surface subject matter experts and collaboration opportunities; with Steelcase to prototype the next wave of smart workplace and employee engagement tools; and with test-prep giant Kaplan to launch an immersive bootcamp for people transitioning into data science careers. She also helped grow the business of Datascope, shaping a range of responsibilities from business development to recruitment. Bo holds an MS in Statistics and a BS in Mathematics, both from the University of Chicago, and was named one of Crain's 2019 Tech 50.

Session 2: PACE Mission & Science. Ready for launch!

Speaker: Jeremy Werdell, PhD, *PACE Project Scientist***,** *NASA Goddard Space Flight Center*

Dr. Jeremy Werdell is an oceanographer in the Ocean Ecology Laboratory at NASA Goddard Space Flight Center (GSFC), where he also serves as the Project Scientist for the upcoming Plankton, Aerosol, Cloud, ocean Ecosystem (PACE) mission. Jeremy joined GSFC in 1999, where he's made a career ruminating on the on-orbit calibration of ocean color instruments, the development of remote-sensing algorithms, and the validation and application of satellite-derived data products. When not traveling with his family and obsessing about his yard, Jeremy also moonlights as a teacher and student mentor. But, if he had to do it all again, he would pursue his real dream of becoming a professional chef.

Speaker: Mark Voyton, *PACE Project Manager, NASA Goddard Space Flight Center*

Mark Voyton is currently the PACE Project Manager (PM). Mark is responsible for the completion of the PACE Mission scheduled for launch from the Cape in early 2024. Voyton's career with NASA began in 1992. He has worked on several missions including the Submillimeter Wave Astronomy Satellite (SWAS), the Transition Region and Coronal Explorer (TRACE), the Wide Field Infrared Explorer (WIRE), and the Swift Gamma Ray Burst Explorer (Swift). Mark recently led all work required to successfully process and launch the James Webb Space Telescope (JWST) as the Launch Site Manager. His prior positions include the Optical Telescope and ISIM (OTIS) Manager, and the JWST Observatory I&T Manager at NASA's Goddard Space Flight Center in Greenbelt, Maryland. Voyton has a B.S. in Engineering Science from Loyola University in Maryland (1985) and an M.S. in Technical Management from Johns Hopkins University in Maryland (1996). Voyton enjoys spending time outdoors, including running, biking, and hiking with his family.

Speaker: Alicia Scott, *Deputy DAAC Manager, OB.DAAC, Ocean Ecology Lab, NASA GSFC/SAIC*

Alicia began her career as Command Controller and Mission Planner for the Terra spacecraft at GSFC. She moved on to become a data processing analyst for the Packet Processor Automation (Pacor-A) System, ensuring proper retrieval, quality and archival of Hubble and TRMM data. With her mission operations experience, she eventually landed at the Ocean Ecology Lab (OEL) at GSFC providing science operations support for the Aquarius/SAC-D mission and participating in Phases C-F of the NASA Project Life Cycle. At the OEL, Alicia has performed additional functions including social media content contributor, website content management, and user support for the Ocean Biology (OB) Distributed Active Archive

Center (DAAC). Today, she continues to provide science operations support for missions and serves as the Deputy DAAC Manager for the OB.DAAC.

Panelist: Ivona Cetinić, PhD, *PACE Project Science Lead for Ocean Biogeochemistry, NASA Goddard Space Flight Center/GESTAR II – Morgan State University*

Dr. Ivona Cetinić is an oceanographer in the Ocean Ecology Laboratory at NASA Goddard Space Flight Center/Morgan State University. Her research focuses on developing new ways of resolving ocean biogeochemistry and phytoplankton diversity from satellite and other remote observations. At the University of Southern California, she conceived of and participated in field campaigns focused on developing innovative ocean observing technology, several for which she served as chief scientist. These campaigns include the groundbreaking Tara Oceans circumnavigation of the globe, as well as others that utilized unique fusions of cutting-edge technology such as hyperspectral radiometry, light polarimeters, and airborne lidar, allowing for more detailed information about concentration and composition of particles in the ocean (as well as the atmosphere - SABOR). Dr. Cetinić has served as the project scientist for EXPORTS (EXport Processes in the Ocean from RemoTe Sensing), a large-scale NASA-led field campaign, and as the PACE (Plankton, Aerosol, Cloud, ocean Ecosystem) Project Science Lead for Ocean Biogeochemistry, a NASA mission scheduled for launch in 2024. In the last 10 years, she has been a member of multiple international science teams and committees and has served as the co-chair of the Ocean Optics Conference. Currently, she is serving at National Academies of Sciences, Engineering, and Medicine Committee on Earth Sciences and Applications from Space. She earned her PhD in biological oceanography at University of Southern California in 2009.

Panelist: Brian Cairns, PhD, *PACE Deputy Project Scientist for Atmospheres, NASA Goddard Institute for Space Studies (GISS)/Columbia University.*

Dr. Brian Cairns was educated in the United Kingdom at Chesterfield School and received an engineering degree from the University of Cambridge before completing a Ph. D. in physics at the Institute of Optics of the University of Rochester. Brian has worked at NASA Goddard Institute for Space Studies (GISS) since 1992. His initial work was focused on developing parameterizations of three-dimensional radiation transport through clouds for use in general circulation models (GCMs) and that parameterization continues to be used in the GISS GCM. Since 1996 he has worked on the use of polarimetric remote sensing of the Earth to determine aerosol and cloud properties, and developed an airborne remote sensing instrument, the Research Scanning Polarimeter (RSP) which was completed in 1999. Since 2000 Dr. Cairns has led the integration of the RSP instrument onto seven different platforms and supervised more than twenty different deployments from the tropics to the Arctic circle and as far south as Namibia. Dr. Cairns was instrument scientist for the Aerosol Polarimetry Sensor on the NASA Glory mission and is currently Deputy Project Scientist for atmospheres for the PACE mission.

Panelist: Kirk Knobelspiesse, PhD, *PACE Project Science Lead for Polarimetry, NASA Goddard Space Flight Center*

Dr. Kirk Knobelspiesse develops optical remote sensing methods, from space, of parameters important to the Earth's climate. This includes expertise in radiative transfer computations, information content assessment, algorithm development, and validation with ground and airborne observations. Specific interests include polarimetric remote sensing of aerosols and clouds, atmospheric correction required for ocean color observations, and the statistical and AI tools useful for both. Dr. Knobelspiesse received an undergraduate degree in Photography from the Rochester Institute of Technology in 1998, then a master's degree in Imaging Science from the same university in 2000. For the next four years, he worked as a contractor at NASA GSFC on the SeaWiFS and SIMBIOS projects, then returned to graduate school at Columbia University in 2004. His PhD, in Applied Mathematics, dealt with remote sensing retrievals of atmospheric aerosols from multi-angle polarimeters. During his studies, he spent his time at NASA GISS, and remained at that institution for a Postdoctoral fellowship following graduation. He took a position at NASA Ames in 2012 and returned to NASA GSFC in 2016.

Panelist: Amir Ibrahim, PhD, *PACE Project Science Lead for Atmospheric Correction, NASA Goddard Space Flight Center*

Dr. Amir Ibrahim is currently a research scientist at the Ocean Ecology Lab (616) in support of the Plankton, Aerosol, Clouds, ocean Ecosystem (PACE) mission's Science Team activities to develop and evaluate atmospheric correction methods for derivation of ocean color from a hyperspectral radiometer and combined multi-angle polarimeter. Dr. Ibrahim obtained his PhD. degree in February 2015 from the Electrical Engineering Dept. at the City College of the City University of New York (CCNY). His dissertation focused on ocean color remote sensing using polarimetric observation of light. He developed an inversion algorithm (c/a algorithm) based on Vector Radiative Transfer (VRT) models to retrieve macro- and micro-physical properties of oceanic hydrosols that helps in improving our understandings of the ocean geochemical properties and carbon cycle, in addition to improving the estimates of global chlorophyll and suspended minerals concentrations.

Panelist: Cecile Rousseaux, PhD, *Research Scientist, NASA Goddard Space Flight Center*

Cécile S. Rousseaux is a research scientist in the Ocean Ecology Laboratory. She completed a PhD in Environmental Engineering at the University of Western Australia. In 2011, she started working at the NASA Goddard Space Flight Center as a Research Scientist. Her research focuses on the role of oceans in the carbon cycle, the effects of climate variability and trends in the ocean biogeochemical cycle, and the support of upcoming field and satellite missions. She was a Principal Investigator on the first and second PACE Science Team. She is also involved in the Ocean Biology and Biogeochemistry program and the Carbon Monitoring System Program as a Principal Investigator.

Panelist: Fred Huemmrich, PhD, *Research Associate Professor, University of Maryland Baltimore County*

After receiving his BS in physics from Carnegie Mellon University, Fred worked at Goddard Space Flight Center on spacecraft attitude control and determination, remote sensing of sea ice, and providing science, management, and information system support for major NASA interdisciplinary field studies in the grasslands of Kansas and boreal forests of Canada. He has a PhD in geography from the University of Maryland College Park. His research has focused on studying the use of remotely sensed optical data to describe terrestrial vegetation biophysical characteristics using both computer models and field measurements. He has done fieldwork in a variety of habitats including Southwestern deserts, Oregon rainforests, croplands, Eastern deciduous forests, Canadian taiga, and arctic tundra. He is presently a research associate professor in Goddard Earth Sciences Technology and Research (GSTAR) II at the University of Maryland Baltimore County (UMBC) and is also affiliated with the Geography and Environmental Systems Department where he teaches a class on arctic geography.
Fred worked his way through college in a brewery.

Session 3: User Readiness: Are YOU Ready for Launch?

Plenary Speaker: Sabrina Delgado-Arias, *ICESat-2 Mission Applications Lead, NASA Goddard Space Flight Center*

Sabrina Delgado Arias is a research scientist specializing in Earth science applications for decision-making. She has been at NASA Goddard since 2013 and an employee of Science Systems and Applications, Inc. since 2014. Within NASA, she has created, developed, and maintained relationships nationally and internationally to identify how NASA data can support decision-making processes and varied applications of benefit to society. Sabrina is currently mission applications lead for the ICESat-2 mission, and associate program manager for the NASA Ecological Conservation Program and Equity and Environmental Justice Program. She earned a Master's degree in Science and Technology Policy

from the Consortium for Science, Policy & Outcomes at Arizona State University. Sabrina is an avid bird watcher, loves hiking and is building a repertoire of adventures in skiing!

Speaker: Melanie Follette-Cook, PhD, *Project Scientist, NASA Goddard Space Flight Center*

Dr. Melanie Follette-Cook is a research scientist in the Mesoscale Atmospheric Processes Laboratory at NASA Goddard Space Flight Center. She is Project Scientist of the NASA Applied Remote Sensing Training (ARSET) Program as well as a Health and Air Quality trainer. ARSET is part of the Earth Science Applied Science Capacity Building Program and provides cost-free training on NASA observations and tools. Dr. Follette-Cook also serves as co-lead for aerosol applications for Atmosphere Observing System (AOS) mission. Her research focuses on using global and regional chemical models in combination with satellite, sub-orbital, and ground-based measurements, to explore the coupling between the biosphere and chemistry/climate with respect to fire activity and emissions, examine the evolution and variability of trace gases and aerosols across a variety of temporal and spatial scales, and inform future NASA satellite mission requirements.

Speaker: Kim Hyde, PhD, *Biological Oceanographer**, NOAA Northeast Fisheries Science Center*

Dr. Kimberly Hyde is a biological oceanographer at the NOAA Northeast Fisheries Science Center in Narragansett, RI. She is a member of the Ecosystem Dynamics & Assessment Branch where they integrate information on biological, climatic, oceanographic, and human-related activities to evaluate the effects on ecosystem structure and function and to enhance ecosystem-based fisheries management. Her primary areas of research include ocean color remote sensing and phytoplankton ecology. She received her B.S. and M.S. from Creighton University, and a Ph.D. in Oceanography from the Graduate School of Oceanography at the University of Rhode Island where she developed regional ocean color algorithms to study the phytoplankton ecology of Massachusetts Bay. More recently, she led a project to optimize remotely sensed phytoplankton size class models for the Northeast U.S. shelf and is currently studying how changes in oceanographic conditions affect living marine resources, including squid and the distribution, production, and composition of phytoplankton.

Speaker: Ashutosh Limaye, PhD, *SERVIR Chief Scientist, NASA Marshall Space Flight Center*

Dr. Ashutosh Limaye works at NASA's Marshall Space Flight Center as SERVIR Chief Scientist. SERVIR is a joint NASA-USAID program that applies Earth observations and predictive models to support environmental decision-making in countries Asia, Africa, and Latin America. He leads NASA-supported SERVIR Applied Sciences Team, his focus is ensuring the applied research meets the needs of SERVIR regions. Previously, Ashutosh was involved in validation experiments for remotely sensed soil moisture from ground, airborne, and space-based microwave instruments. His research interests include

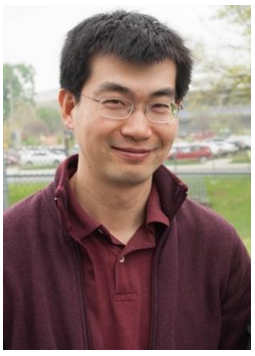
hydrologic modeling, mathematical optimization, and agricultural yield estimation under changing agricultural and climatic conditions.

Session 4: The "hows and whys" of PACE Data Integration

Speaker: Emerson Sirk, *Programmer, NASA Goddard Space Flight Center/Science Systems and Applications Inc*

Emerson is a scientific programmer working in the NASA Ocean Ecology Lab at NASA Goddard Space Flight Center. He is a member of the PACE Science Data Segment team. Emerson develops and tests data processing code to assist in multiple aspects of the mission, including the simulation of PACE Ocean Color Instrument (OCI) data (PyTOAST) and system vicarious calibration. He has a background in biological oceanography, using satellite ocean color data to study phytoplankton bloom dynamics in the North Atlantic over time. In his free time, he enjoys playing golf and basketball.

Speaker: Dr. Meng Gao, PhD, Polarimetry Software Lead, *NASA Goddard Space Flight Center/Science Systems and Applications Inc*



Dr. Meng Gao is a Data Scientist and the Polarimetry Software Lead for the PACE Science Data Segment. He supports the development and implementation of PACE polarimetry software and algorithms with a focus on aerosol and ocean color products. His research interests and expertise include light scattering, radiative transfer, and machine learning. He is the lead developer of FastMAPOL, a system that leverages deep learning to expediate aerosol and ocean color retrievals with PACE multi-angle polarimeter data.

Speaker: Nima Pahlevan, PhD, Remote Sensing Scientist, *NASA Goddard Space Flight Center/Science Systems and Applications Inc*

Dr. Nima Pahlevan is a remote sensing scientist with Science, Systems and Applications Inc. (SSAI) at NASA Goddard Space Flight Center (GSFC). Dr. Pahlevan earned a Ph.D. in Imaging Science from Rochester Institute of Technology (RIT), where he received extensive training in optical/thermal imaging from scene acquisition to image processing/reconstruction. Pahlevan's main areas of research lie within aquatic remote sensing, algorithm developments, machine-learning, calibration/validation, and applied sciences pertaining to water quality and Harmful Algal Bloom (HAB) monitoring in lakes and nearshore coastal waters. Pahlevan is a member of Landsat and PACE science and application teams.

Speaker: Chuanmin Hu, PhD, *Professor*, University of South Florida College of Marine Science

Chuanmin Hu received a BS degree in physics from the University of Science and Technology of China in 1989 and a PhD degree in physics from the University of Miami (Florida, USA) in 1997. He is currently a professor of optical oceanography at the University of South Florida College of Marine Science, who also directs the Optical Oceanography Lab. He uses laboratory, field, and remote sensing techniques to study marine algal blooms (e.g., red tides, blue-green algae, *Sargassum*, *Ulva*, etc), oil spills, marine debris, coastal and inland water quality, and global changes. He has been a member of NASA MODIS, VIIRS, PACE, and GLIMR science teams, and a member of NOAA VIIRS science team. He is an elected fellow of the American Association for the Advancement of Science (AAAS).

Speaker: Marcela Loria Salazar, PhD, *Assistant Professor, University of Oklahoma*

Dr. Loria Salazar is an assistant professor at the School of Meteorology at the University of Oklahoma. She has worked on a broad range of topics relevant to health effects studies, atmospheric composition, and aerosol physics, including the impact of meteorology on aerosol physical properties and aerosol transport, evaluation of novel aerosol satellite retrievals in the U.S., air quality modeling using aerosol satellite retrievals and data assimilation techniques, and studying the atmospheric processes affecting the complex relationship between surface PM2.5 concentrations and AOD. She has considerable expertise in processing and analyzing large data sets; these datasets include different satellite platforms, aerosol data from NASA's AERONET and NOAA networks (related to optical properties of the atmosphere), air quality and weather stations, balloon soundings, ultrasonic anemometers, LIDAR, and weather forecast models.

Session 5: Onward and Upward: Transition and Implementation

Plenary Speaker: Amber Jean McCullum, PhD, *Applied Research Scientist, Bay Area Environmental Research Institute/NASA Ames Research Center*

Dr. Amber Jean McCullum is a researcher and capacity building specialist in the Earth Science Division at NASA Ames Research Center. Her work in the Applied Sciences focuses on project management, community engagement, and creating remote sensing trainings for land and water applications. She is the Impact and Transition Lead for NASA's Western Water Applications Office (WWAO). She is also the lead trainer in land management for NASA's Applied Remote Sensing and Training (ARSET) Program, the team lead for the Navajo Nation Drought and Agriculture project, and the team lead for NASA's Indigenous Peoples Capacity Building Initiative. She received her B.S. in Geology and Environmental Geosciences from the College of Charleston, her M.S. in Geology from San Francisco State University, and her PhD in Environmental Studies from the University of California Santa Cruz.

Moderator: Kelly Luis, *Postdoctoral Researcher, NASA Jet Propulsion Laboratory*

Kelly Luis was born and raised on Maui, Hawaii. She received her B.A in Environmental Science from Columbia University and her M.S. and Ph.D. in Marine Science and Technology from the University of Massachusetts Boston. Kelly joined the Water and Ecosystems Group as a NASA Postdoctoral Program Fellow in September 2021. Her research focuses on the development of aquatic remote sensing algorithms for environmental monitoring, forecasting, and decision-making. She believes that inclusive educational and research environments that draw from all walks and disciplines are central to being responsible stewards of our planet.

Panelist: Yaitza Luna-Cruz, PhD, *Program Executive, NASA Headquarters*

Dr. Yaítza Luna-Cruz is an atmospheric physicist with over 10 years of experience in research, development, operations, and technical/programmatic management. She has spent most of her career working in operations for the DoD Defense Threat Reduction Agency (DTRA) Technical Reachback. She also served as a product and project manager for Jupiter Intelligence, a climate change analytics company. Dr. Luna-Cruz is currently a Program Executive at NASA's Earth Science Division in NASA Headquarters in Washington, DC. In her dual role she leads the Chief Science Data Office (CSDO) Diversity and Community Engagement, and she serve as the Program Manager for the Earth Science Division Early Career Research portfolio (CCRI, SARP, FINESST, and ECIP). Dr. Luna-Cruz earned her Ph.D. in atmospheric sciences studying aerosols-cloud-microphysical interactions in tropical cyclones from the NOAA Center for Atmospheric Sciences (NCAS) at Howard University in Washington, D.C., and her B.Sc. & M.Sc. in Physics from the University of Puerto Rico at Mayagüez (UPRM). As a Latina in STEM, Dr. Luna-Cruz is a passionate advocate for diversity, equity, inclusion, and accessibility (DEIA) and considered a leader in the field. Dr. Luna-Cruz was recognized as the founder and first president of the first AMS Student Chapter of the Caribbean (at UPRM). She continues to be a STEM ambassador through many outreach and mentorship activities with her mission of “Science with Purpose”.

Panelist: Blake Schaeffer, PhD, *Research Scientist, EPA Office of Research and Development*

Blake Schaeffer earned his PhD in Marine, Earth and Atmospheric Science from North Carolina State University studying harmful algal bloom ecology. Blake is currently with the U.S. Environmental Protection Agency in Research Triangle Park, North Carolina. His research focus is on the applied use of satellite and sensor remote sensing technology to monitor water quality in coasts, estuaries, lakes, and reservoirs.

Panelist: Raha Hakimdavar, PhD, *Founder and CEO, Zyon Space*

Dr. Raha Hakimdavar has worked globally on water, climate, and space technology development and applications for over a decade. She is currently the Founder and CEO of Zyon Space, a climate-tech startup that develops climate adaptation solutions using the vantage point of space. She is also an Adjunct Professor at Georgetown University's School of Foreign Service – teaching classes on water, climate, and space – and non-resident fellow with the Middle East Institute's Climate and Water Program. Dr. Hakimdavar was previously the Director of Space Sciences at Ball Aerospace, where she led business strategy and engagements with NASA and broader space sciences community. Dr. Hakimdavar has served as a technical consultant for UN Environment and the World Bank on disaster risk reduction, water, climate, forestry, and agriculture projects since 2012. She is on the advisory boards of the Netherland-America Foundation and Blue Forest Conservation, and executive mentor for the Brooke Owens Fellowship, Zed Factor Fellowship, and the UN's Space Generation Advisory Council. She was awarded a Fulbright Fellowship in Water Management to the Netherlands in 2013 and received the KLM Airlines Sustainability and Innovation Award in 2018. She served in civil servant appointments with the USDA and NASA prior to this. Dr. Hakimdavar holds a B.S. in civil engineering from California State Polytechnic University, and a M.S. in civil engineering and Ph.D. in hydrology from Columbia University.

Panelist: Kari St.Laurent, PhD, *Physical Scientist/Product Portfolio Manager, NOAA NESDIS*

Kari St. Laurent is a Product Portfolio Manager with the National Environmental Satellite, Data, and Information Service (NESDIS) at the National Oceanic and Atmospheric Administration (NOAA). Prior to NOAA, she was the senior scientist for the Delaware Coastal Management Program and the research coordinator for the Delaware National Estuarine Research Reserve. She received a Ph.D. in oceanography at the University of Rhode Island's Graduate School of Oceanography focused on black carbon fluxes in the Subtropical Atlantic Ocean and conducted a post-doctoral study at the University of Maryland Center for Environmental Science investigating ecosystem impacts to climate extremes and variability. Her favorite marine ecosystem is rocky intertidal habitats followed closely by saltmarshes.