



ACADEMIC CENTER FOR RELIABILITY
& RESILIENCE OF OFFSHORE WIND

Spring 2026



ARROW Quarterly Newsletter - April 15, 2026



Welcome to this quarter's ARROW newsletter. As Associate Director, I am grateful to be part of the leadership of such an outstanding community of staff, students, and faculty, and I am pleased to share a snapshot of the many activities underway across the center. In these pages, you will see highlights of recent research, upcoming events, and visits and partnerships that continue to strengthen ARROW's reach and impact. I am especially proud to help direct ARROW's research mission, where our teams are advancing work to better understand uncertainty across offshore wind systems and develop solutions that improve reliability and resilience. I am also proud to help lead Maryland's contributions to the broader ARROW center as we build toward a future in which U.S.-based offshore wind delivers abundant, reliable, and resilient power for Americans.

ARROW-SEA

May 26-29, 2026

Planning for the 2026 ARROW Summer Education Accelerator (SEA) is in full swing! The event will take place on May 26-29, 2026 in New Bedford, MA and is hosted by UMass Dartmouth SMAST.

ARROW SEA brings together OSW researchers from different fields for an intensive educational program focused on offshore wind science, engineering, and policy. Through hands-on workshops, site visits, and direct engagement with practitioners, participants gain practical insight into the technical, environmental, and societal dimensions of offshore renewable energy. We are particularly excited about the field trip to the local wind farms! Participants have the opportunity to build their networks, deepen their expertise, and contribute to the future of offshore wind.

For more information about ARROW-SEA, please visit our website:

<https://arrowosw.org/empower/summer-education-accelerator-sea/>



ARROW tours MassCEC's Wind Technology Testing Center



ARROW students, staff, and faculty were excited to recently have the opportunity to tour the [Massachusetts Clean Energy Center's Wind Technology Testing Center \(WTTC\)](#). The WTTC is the premier blade testing facility in the USA, and is capable of testing blades up to 90–120 meters in length for offshore and land-based wind turbines. Their work is critical for developing and maintaining reliable and efficient domestic wind energy.

ARROW Innovate

A roundup of recent research & presentation activity

ARROW faculty Dr. Julie Lundquist, Bloomberg Distinguished Professor of Atmospheric Science and Wind Energy at Johns Hopkins University, presented “New Insights Into Atmosphere-Energy Interactions via Virtual Lidar and Multiscale Modeling” at Brookhaven National Labs

[Read more](#)



ARROW faculty Sanjay Arwade (UMass Amherst), Andy Myers (Northeastern University), and Weichiang Pang (Clemson University), along with Doug Slocum (Kelson Marine) presented at the [2026 Oceanic Network International Partnering Forum \(IPF\)](#) as part of the panel “Storm-Resistant Infrastructure: Building Offshore Energy to Withstand Extreme Weather”

As offshore renewable energy development accelerates, so does the urgency to understand and mitigate the risks posed by tropical cyclones and other extreme weather events. Providing insights from their research, ARROW members engaged with colleagues from academia and industry to discuss how to strengthen offshore energy infrastructure resilience.

ARROW faculty Jim Manwell (UMass Amherst), Julie Lundquist (Johns Hopkins University), and Charles Meneveau (Johns Hopkins University), along with lead author and ARROW External Advisory Board member Paul Veers (National Laboratory of the Rockies) recently celebrated the 1000th citation of their paper “[Grand Challenges in the Science of Wind Energy](#)” published in *Science*

[Read more](#)

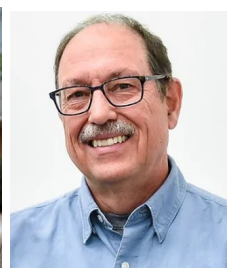
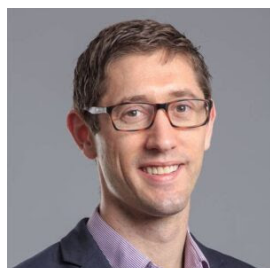


ARROW student and UMass Amherst PhD candidate Syed Saddam UI Hassan's article "Power performance optimization of twin vertical axis wind turbine for farm applications" was published in *Wind Energy & Engineering Research*. The work presents a comprehensive Taguchi-based power optimization approach for twin vertical axis wind turbines.



<https://www.sciencedirect.com/science/article/pii/S2950360424000056>

What are the gaps we need to address to design resilient wind energy systems in Tropical Cyclone-prone regions? Several ARROW members were collaborators on [Grand Challenges in Designing Resilient Wind Energy Systems in Areas Prone to Tropical Cyclones](#), and a preprint is available on *Wind Energy Science (WES)*.



ARROW at Morgan State University

ARROW Director Sanjay Arwade and Associate Director Ben Schafer visited Prof. Zheng Li and Dean Stephen Egariwe at Morgan State University to further educational and research collaboraton among Morgan and the rest of the ARROW team.



Morgan State postdoc Rubayat Bin Shahadat stands outside of an ARROW office at Morgan State



Dean Oscar Barton Jr. and Prof. Zheng Li from Morgan State University with ARROW Director Sanjay Arwade and Associate Director Ben Schafer



Prof. Li's students meet with ARROW faculty.

ARROW-Spotlight

Highlighting ARROW students and faculty



Susmita Bhowmik

PhD Candidate

*Glenn Department of Civil Engineering
Clemson University*

The U.S. faces increasing risks from hurricanes under a changing climate, making resilient infrastructure and reliable energy systems more important than ever. Offshore wind, a cornerstone of the clean energy transition, must be designed to withstand these evolving environmental challenges.

Susmita Bhowmik, a Ph.D. candidate in the Glenn Department of Civil Engineering at Clemson University, is working on stochastic hurricane modeling, future climate projections, and offshore infrastructure reliability. Her research focuses on developing a simulation-based framework to understand how climate change influences hurricane genesis and intensity, and how these changes impact offshore wind infrastructure.

By integrating statistical modeling with climate projections from CMIP6 global climate models, Susmita's work quantifies both the risks to offshore wind systems and the potential opportunities for increased power generation under future climate conditions.

Her research is conducted in collaboration with the National Offshore Wind Research & Development Consortium (NOWRDC), contributing to improved climate adaptation strategies, long-term energy planning, and more resilient turbine design.



Dr. Sheilla Torres-Nieves

*Professor of Mechanical Engineering and Director for the
Center for Aerospace and Unmanned Systems Engineering
University of Puerto Rico at Mayagüez (UPRM)*

Characterizing the marine atmospheric boundary layer (MABL) is essential for understanding the dynamic environment experienced by offshore wind turbines during design and operation. Precise representation of these conditions enhances modeling of air-sea interactions, which directly impact wind energy performance. Central to this process is sea surface roughness, a key parameter shaping the MABL.

As part of ARROW, Dr. Sheilla Torres-Nieves is furthering the understanding of the effect that sea surfaces features by modeling these as surface roughness on the MABL. For this purpose, integrated analysis of ocean-wave-atmosphere interactions using observational datasets is used.

Dr. Torres-Nieves is a Professor of Mechanical Engineering and Director for the Center for Aerospace and Unmanned Systems Engineering at the University of Puerto Rico at Mayagüez (UPRM). Her research focuses on experimental and theoretical studies in fluid dynamics and turbulence, specifically turbulent boundary layers with multiple external conditions (e.g., roughness, pressure gradient, and freestream turbulence) and the applications to the aerospace and energy sectors.

Along with graduate student Maxiste Pacheco, they examine historical records of wind speed, significant wave height, and dominant wave period to capture prevailing and seasonal metocean variability across selected coastal regions in the United States and Puerto Rico. These results inform advanced atmospheric simulations, supporting high-resolution modeling of turbulent flows and ultimately driving more accurate predictions and optimized offshore wind energy development.



About our newsletter

If you have questions, comments or ideas to share, contact Terri Downing, ARROW Grant Administrator at terridowning@umass.edu.

To stay up to date on ARROW activities, be sure to also check out our webpage and connect with us on LinkedIn:

[ARROW website](#)



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