ACADEMIC CENTER FOR RELIABILITY & RESILIENCE OF OFFSHORE WIND

Winter 2025/2026

ARROW Quarterly Newsletter - January 27, 2026

I want to open this newsletter by thanking our sponsors at the Massachusetts Clean Energy Center and Maryland Energy Administration for the continued commitment that is allowing ARROW to continue its operations.

- Sanjay Arwade
Director of ARROW

As a new year opens, we have been taking time to reflect on the progress ARROW has made. Our students and faculty have been working harder than ever to strengthen offshore wind system reliability, improving affordability and safety, and ensuring thoughtful integration with both human and natural ecosystems. We have shared the results of this work at conferences, outreach events, and at meetings with state policy makers,which you can read more about below. This September, ARROW launched FLEx, a program to strengthen offshore wind education and expand access to specialized expertise across its partner institutions. At a time of significant change for the offshore wind industry, ARROW has leaned into its role as a source of innovation and connection. As we look ahead, we remain committed to supporting the people and ideas that will shape a stronger, more resilient offshore wind future.

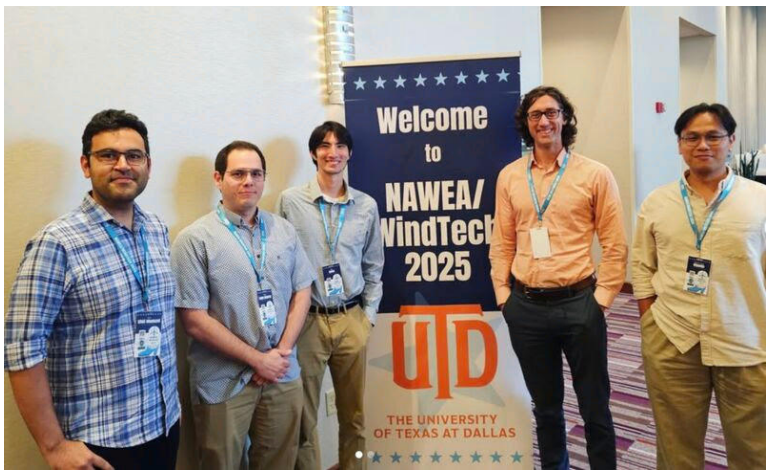
-Zoe Getman-Pickering, ARROW Program Director

NAWEA/Wind Tech 2025

ARROW faculty and students gathered in Dallas, TX for the 2025 NAWEA/WindTech Conference.

This annual event brings together researchers, educators, and industry leaders to drive innovation and education in the field of wind energy.

ARROW Director Sanjay Arwade gave an invited talk highlighting ARROW's educaton initiatives, and ARROW students and faculty presented work relating to rotor aerodynamics and aeroelasticity, atmospheric science, wind plant modeling, extreme weather, wake modeling, ocean sciences, hybrids, and blade design and manufacturing.



We're proud to see ARROW represented across so many areas of wind energy research and pushing the boundaries of knowledge and collaboration in this critical field.

Four ARROW-affiliated teams selected for 2026 Collegiate Wind Competition

ARROW is proud to announce that all 4 of the ARROW-affiliated teams that submitted applications were selected to participate in the 2026 Collegiate Wind Competition!

ARROW teams from The Johns Hopkins University (Hopkins Student Wind Energy Team pictured. Team includes members from Morgan State University, another ARROW institution), Northeastern University, University of Massachusetts Amherst (team includes members from Mount Holyoke College), and University of Massachusetts Lowell were among the 30 schools selected for CWC26.

Congratulations and good luck to all of the ARROW teams!

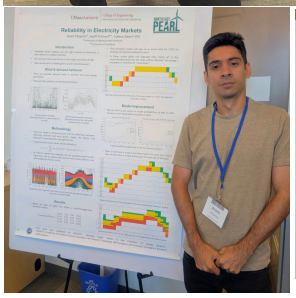
ARROW students bring wind energy education to the community

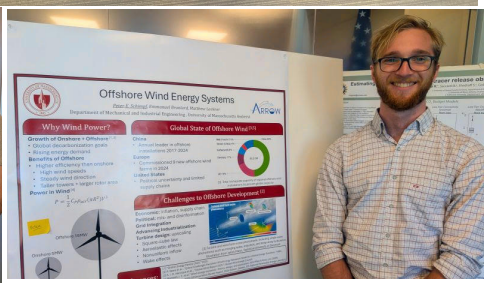
ARROW presented at the UMass Amherst Engineering and Computing Career Day, an event that brings Massachusetts high school students to campus so they can learn more about degrees and careers in engineering and computing. ARROW students Jonah Hanak and Peter Schimpf presented Investigating the Aerodynamics of Wind Farms , where high school students were able to “investigate the effects of wind speed and wind direction on single turbine power output as well as consider the “wake effect” of upstream turbines on the power output of downstream turbines.” This gave visitng students the chance to participate in a hands-on engineering activity and learn more about how engineers tackle wind energy challenges.

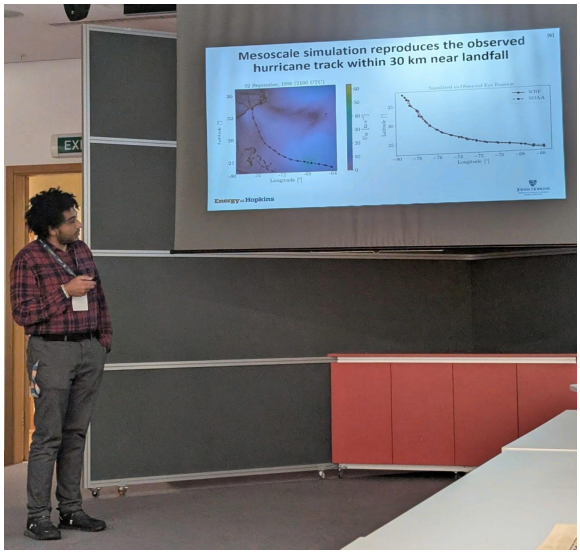
From Campus to the Spotlight: ARROW Students Share Cutting-Edge Wind Research

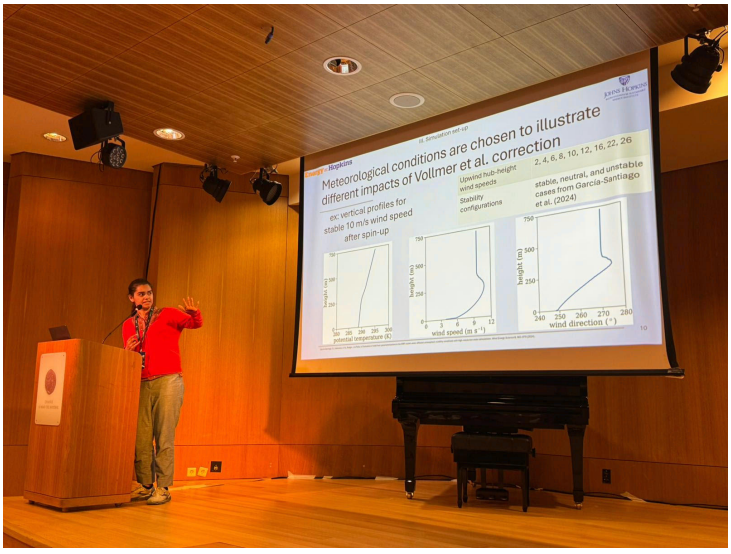
ARROW students presented their research in several different forums over the Fall semester.

In October, ARROW students were invited by Crystal Johnson, Assistant Secretary of Energy to present their research at the Massachusetts Executive Office of Energy and Environmental Affairs. Opportunities like this allow students to get their research into the hands of policy makers to help inform energy policy in MA. This is one of the ways that ARROW is building connections to support research-informed policy decisions, and helping our students maximize their impact and build high level networks.



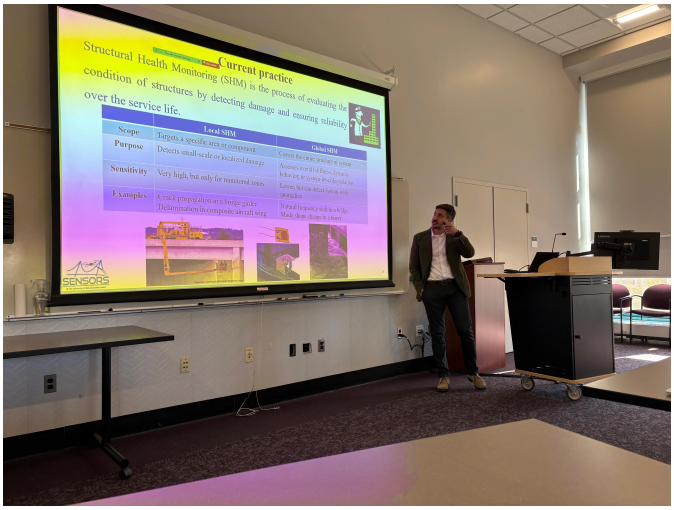






ARROW students Martin Beshara, a Johns Hopkins University PhD student in Mechanical Engineering and Amelia Adcroft, a Johns Hopkins PhD student in Atmospheric Sciences presented at the October *European Academy of Wind Energy PhD Seminar* in Athens, Greece. This annual gathering supports and connects PhD students in the field of wind energy and is an opportunity for doctoral researchers to present and discuss their work with the EAWE community. Read more about their presentations

ARROW-FLEx Seminars



On October 10th, Dr. Alessandro Sabato, Associate Professor of Mechanical & Industrial Engineering at UMass Lowell presented at UMass Amherst on "Enhancing structural health monitoring of wind turbine blades with UAV-based computer vision." In this seminar, Dr. Sabato presented new findings in stereo camera calibration and stereo-matching algorithms that enable the use of three-dimensional (3D) computer vision for structural dynamics measurements of wind turbine blades.

Dr. Sabato also introduced Stack-Average, a novel image-processing technique that enhances damage localization in wind turbine blades from long-range images (i.e., 50+ m). By exploring these emerging monitoring strategies, the session highlighted future directions in blade health assessment and their implications for improving the reliability and sustainability of wind energy systems.

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On October 6th, Weichiang Pang, Professor of Civil Engineering at Clemson University spoke at Northeastern University. His presentation – Can Offshore Wind Thrive Amid Changing Storm Patterns? Risks, Opportunities, and the Role of AI/ML – presented a simulation framework for evaluating how offshore wind energy systems may be affected by evolving storm patterns, particularly tropical cyclones, under future climate scenarios.

The visit was hosted by ARROW faculty Andrew Myers, PhD, PE who also welcomed ARROW Director Sanjay Arwade and ARROW Program Director Zoe Getman-Pickering to campus.

The ARROW-FLEx initiative is designed to provide ARROW students with the opportunity to learn and explore material not offered at their home institutions. This initatve strengthens the ability of all ARROW partners to offer comprehensive OSW educaton.
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ARROW-Spotlight

Morteza Shafiei

UMass Amherst PhD Candidate in the Department of Civil and Environmental Engineering

Glauconite sand is prevalent along the Atlantic Continental Shelf of the U.S. in areas of offshore wind development. Glauconite sand is susceptible to crushing under load and can transition from sand-like to clay-like behavior, posing risks to foundation installation and long-term performance.

Morteza is studying the mechanical behavior of offshore and onshore glauconite sand under both cyclic and static design loading conditions as well as developing a method to mimic foundation installation in glauconite depositions to determine how crushing affects soil parameters and properties, how glauconite degrades, and how much it degrades using laboratory and in-situ testing.

The results of his research are critical for predicting initial soil characteristics and reducing the need for extensive and costly testing and the possibility of pile-driving refusal, particularly in an offshore environment, where the costs of remediation can be orders of magnitude greater than for onshore projects.

Dr. Zheng Li

Assistant Professor, Mechatronics Engineering Morgan State University

Dr. Zheng Li conducts research at Multiphysics modeling, artificial intelligence, and quantum computing. His work aims to advance computational methods for a wide range of engineering applications.

There have been various computational models with different fidelities for wind energy related research. For different research goals, it is essential to select the best fit model with a balance between computational accuracy and efficiency. In the ARROW project,

Dr. Li's team is developing next-generation modeling tools to support wind-energy innovation. Their recent accomplishments include:

1. Creating a computationally efficient technique to estimate aerodynamic loads on turbine blades, enabling the identification of stress-concentration zones and prediction of blade tip deflection.
2. Using high-fidelity simulations to evaluate the fatigue life of turbine blades under realistic and variable wind conditions.
3. Exploring the integration of AI and quantum computing to accelerate existing wind-energy computational models and open new pathways for future technology development.

Dr. Li's work contributes to improving the performance, reliability, and sustainability of wind-energy systems.

Visiting South Fork offshore wind farm

ARROW faculty, staff, and students visited the South Fork offshore wind farm recently, courtesy of the National Wildlife Federation. Completed in March 2024, South Fork Wind is New York's first offshore wind farm and the first commercial-scale offshore wind farm in the U.S.

About our newsletter

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

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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