

WISER Industry Advisory Board (IAB)

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JUNE 6 - 7, 2024

159 Discovery Dr, Storrs, CT 06269

UCONN Innovation Partnership Building - Room 317





WISER



WISER

The Center for Weather Innovation, Smart Energy, and Resilience (WISER) is a partnership between The University at Albany and the University of Connecticut. WISER aims to provide state-of-the-art weather and climate information combined with leading edge industry-inspired research and development to empower and safeguard the energy industry of the future. With support from the National Science Foundation (NSF), we envision WISER becoming a leading energy industry-academia partnership, advancing research and cutting-edge technologies to continually improve power grid efficiency and reliability in the face of a changing climate and transition to clean energy. The research directions of WISER are driven by looking closely at the energy sector today. Governments around the world have passed legislation in order to incorporate sustainable energy sources and technologies to enable the efficient use of energy systems. Broadly, the energy industry trends WISER will be researching fall into four Research Thrust Areas:

1. *Renewable Energy: includes Solar, Hydro, and Wind. The penetration level of renewable distributed energy resources (DERs) in many states is expected to reach 40%-50% by 2030.*
2. *Outage Management: is the processes and systems used by electrical grid operators to assist in the restoration of power.*
3. *Grid resilience: is the ability to avoid or withstand grid stress events (brought on by extreme weather) without suffering operational compromise.*
4. *Climate change: is a change in usual weather patterns which impacts power producers and distributors.*





Dr. Pamir Alpay: UConn's Vice President for Research, Innovation, & Entrepreneurship

Dr. Pamir Alpay is UConn's vice president for research, innovation, and entrepreneurship. He oversees the UConn's \$375 million research enterprise at the main campus in Storrs, the UConn Health campus in Farmington, the School of Law in Hartford, and the regional campuses at Avery Point, Hartford, Stamford, and Waterbury. A professor of materials science, engineering and physics, Alpay was also the associate dean for research and industrial partnerships for the UConn School of Engineering.

Dr. Alpay is a Board of Trustees Distinguished Professor and an elected member of the Connecticut Academy of Science & Engineering (CASE). He is a Fellow of the American Physical Society, ASM International, and the American Ceramic Society. He has over 200 peer-reviewed journal publications and conference proceedings, five invited book chapters, and a book on the physics of functionally graded smart materials. Alpay is an influential educator and gifted researcher. He has mentored multitudes of undergraduate students in materials science and served as the honors program advisor for MSE. He has raised more than \$30 million for research and development from federal and state agencies and industry. He is the PI of an \$18M interdisciplinary Air Force Research Lab (AFRL) contract dedicated to optimization of high value-added manufacturing technologies for aerospace components.

As executive director of the UConn Tech Park, Alpay established partnerships with industry, state government, and federal agencies and built several interdisciplinary research teams that successfully competed for large-scale funding. Since 2017, industry partners have invested more than \$125 million for applied research at the Tech Park, corresponding to over \$30 million per year in research and development funding. Alpay also established partnerships with small to medium-size regional businesses as part of core outreach efforts, critical to UConn's mission of supporting economic growth in the state. Alpay earned his B.S. and M.S. from Middle East Technical University in Ankara, Turkey, and his Ph.D. from the University of Maryland.



Dr. Kesh Kesavadas: UAlbany's Vice President for Research & Economic Development

Vice President Dr. Kesavadas was the founding director of the University of Illinois Urbana-Champaign's Health Care Engineering Systems Center (HCESC), the largest endowed center in the University of Illinois system. In the center he managed research, IP and commercialization, data warehouse management (HIPAA), regulatory affairs, IRB and human subject protocols, student exchange, graduate programs, external partnerships, government relations, etc. HCESC has 186 members and affiliates.

The Center collaborated and funded research in engineering, social and behavioral sciences, education, applied health sciences, medicine, and veterinary medicine. Twenty research laboratories, institutes, and affiliated hospitals, including Mayo clinic, are supported through the program. A professor of Industrial and Enterprise Systems Engineering, Computer Science, Electrical and Computer Engineering, and a member of the inaugural faculty of the Carle-Illinois College of Medicine, Dr. Kesavadas was named a distinguished University Presidential Executive Leadership Fellow in 2019.

Dr. Kesavadas previously served as a faculty member at the University at Buffalo, where he advanced his research interests in medical robotics, virtual reality/augmented reality in healthcare, manufacturing automation and design of systems. Dr. Kesavadas received his B. Tech degree in Mechanical Engineering from the University of Calicut, India in 1985, his M. Tech degree in Aircraft Production Engineering from the Indian Institute of Technology, Madras in 1987, and his Ph.D. in Industrial Engineering from The Pennsylvania State University in 1995.



Dr. Chris Thorncroft: Site Director, UAlbany

Dr. Christopher Thorncroft is Director of the Atmospheric Sciences Research Center and a Professor in the Department of Atmospheric and Environmental Sciences, both at the University at Albany, State University of New York. He is also the Director of the Center of Excellence in Weather and Climate Analytics and of the New York State Mesonet. The NYS Mesonet, a network of 126 automatic weather stations throughout NYS, supports applied research for the economic benefit of NY State through key weather observations in support of protection of life and property.

Dr. Thorncroft is Co-principal Investigator of the National Science Foundation funded Artificial Intelligence Institute, The Institute for Research on Trustworthy AI in Weather, Climate, and Coastal Oceanography (AI2ES).

Dr. Thorncroft's research is mainly focused on improving our understanding of the nature and variability of atmospheric weather systems with a special emphasis on tropical weather systems over West Africa and how they impact Atlantic tropical cyclones. His work emphasizes improving knowledge and understanding of the dynamics of high-impact weather systems through analysis of observations and modeling. Current research also includes an emphasis on the nature and causes of extreme weather variability in North-East US that includes a contribution from land-falling hurricanes.

Dr. Thorncroft is a Fellow of the American Meteorological Society and was recently awarded the 2023 American Meteorological Society Joanne Simpson Tropical Meteorology Research Award. He received his PhD in Meteorology from the University of Reading, UK.



Dr. Emmanouil N. Anagnostou: Site Director, UCONN

Dr. Anagnostou is Board of Trustees Distinguished Professor in the Department of Civil and Environmental Engineering and the Eversource Energy Endowed Chair in Environmental Engineering. He is Interim Director of UConn Tech Park and Executive Director of the Eversource Energy Center (eversource.uconn.edu) and one of the Applied Research Directors of the Connecticut Institute for Resilience and Climate Adaptation (circa.uconn.edu). Dr. Anagnostou's research efforts focus on remote sensing of water cycle and integrating earth observations with models for improving water cycle predictability at global scale.



Jan Woodcock: Industry Liason

Jan Timothy Woodcock is the Director of Operations for the NYS Weather and Climate Analytics Center of Excellence. Mr. Woodcock has deep experience driving innovation and transformation in High Tech Industries. He was a senior partner at Deloitte Consulting, Global Partner at Wipro Technologies, and Transformation Leader at Cognizant. His industry experience encompasses the Fortune 100, the small business sector, and Venture Funded start-ups. He specializes in the areas of strategy and operations, with experience spanning data analytics, financial management, customer and product strategy, and digital transformation. His Reverse Innovation research drove a CEO panel at the Davos World Economic Forum.

Day 1 Agenda

June 6, 2024

7:30-9:00AM	REGISTRATION
8:00-8:45 AM	<u>BREAKFAST AND NETWORKING</u>
9:00-9:10 AM	VP RESEARCH UCONN
9:15 AM-10:00 AM	BARBARA RANSOM & NSF INTRODUCTION
10:00-10:30 AM	WISER CENTER UPDATE
10:30-10:45AM	<u>BREAK</u>
10:45 AM-12:45PM	YEAR ONE PROJECT UPDATES
12:45-1:45 PM	<u>LUNCH</u>
2:00-4:00 PM	IDENTIFY IAB 2025 RESEARCH REQUIREMENTS
4:00-4:30 PM	WISER BENEFITS DISCUSSION
4:45-5:30 PM	TOUR OF INNOVATION PARTNERSHIP BUILDING (IPB)
5:30-7:30 PM	<u>COCKTAIL HOUR / DINNER & STUDENT POSTER SESSION</u>



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Day 2 Agenda

June 7, 2024

8:00-8:45 AM

BREAKFAST AND NETWORKING

9:00-12:00 PM

IAB CLOSED DOOR SESSIONS

- Review project status
- Identify new research opportunities
- Confirm Center Operating Procedures

12:00-12:30 PM

IAB DEBRIEF: CLOSED SESSION RESULTS



WISER



Projects

Year One Project Updates

An Offshore Wind Energy Prediction System from Regional to Wind-Farm Scale: Assessment of Extreme Wind Scenarios

Lead PI: Dr. Jeff Freedman

Co-PI: Dr. Marina Astitha

Energy Demand Forecast System for Cities

Lead PI: Dr. Jorge González-Cruz

Co-PI: Dr. Jeff Freedman, Dr. Richard Perez

Northeastern U.S. Outage Dataset and Web Application

Lead PI: Dr. Nick Bassill

Co-PI: William May

Modeling Fire Weather in New England

Lead PI: Dr. Robert Fovell

Co-PI: Dr. Diego Cerrai, Dr. Scott Capps

Prediction Uncertainty in Power Outages Connected to Weather Forecast Lead-Time

Lead PI: Dr. Xinxuan Zhang

Co-PI: Dr. Marina Astitha

Deep Learning-Based Nowcasting of Damaging Winds

Lead PI: Dr. Sukanta Basu

Weather and Impact Modeling for Outage Prediction, Management and Restoration

Lead PI: Dr. Diego Cerrai

Co-PI: Dr. Marina Astitha, Dr. Emmanouil Anagnostou, Dr. Nick Bassill



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THANK YOU

FOR ATTENDING THE 2024 WISER CONFERENCE



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