

EDUCATION

University of Minnesota Ph.D., Civil Engineering – Dissertation: “Large-eddy simulation of stably stratified atmospheric boundary layer turbulence: a scale-dependent dynamic modeling approach”	Minneapolis, MN, USA 2000–2004
University of Windsor Master of Applied Science, Environmental Engineering	Windsor, ON, Canada 1999–2000
Indian Institute of Technology (IIT) Bachelor of Technology (Honors), Civil Engineering	Kharagpur, WB, India 1994–1998

PROFESSIONAL EXPERIENCE

University at Albany Professor of Empire Innovation Atmospheric Sciences Research Center	Albany, NY, USA April, 2023 –
University at Albany Full Professor (tenured) Department of Environmental and Sustainable Engineering	Albany, NY, USA April, 2023 –
Delft University of Technology Associate Professor (permanent position) Faculty of Civil Engineering and Geosciences	Delft, The Netherlands September, 2016–March, 2023
North Carolina State University Associate Professor (tenured in 2014) Department of Marine, Earth, and Atmospheric Sciences	Raleigh, NC, USA August, 2010–July, 2016
Texas Tech University Assistant Professor Atmospheric Science Group, Department of Geosciences Also at Wind Science and Engineering Research Center	Lubbock, TX, USA September, 2005–August, 2010
University of Minnesota Post-doctoral Research Associate St. Anthony Falls Laboratory	Minneapolis, MN, USA January–June, 2005

ADJUNCT/VISITING POSITIONS

Università degli Studi di Cagliari

Visiting Professor

Dipartimento di Ingegneria Civile, Ambientale e Architettura

Cagliari, Italy

June 1–15, 2019

North Carolina State University

Adjunct Associate Professor

Department of Marine, Earth, and Atmospheric Sciences

Raleigh, NC, USA

August, 2016–September, 2018

Wageningen University

Visiting Scientist

Meteorology and Air Quality Group

Wageningen, The Netherlands

May–June, 2008

RESEARCH INTERESTS

Artificial intelligence and machine learning; atmospheric boundary layer processes; atmospheric optics; numerical weather prediction; renewable energy; and turbulence modeling.

SELECTED ACCOMPLISHMENTS

- Third place winner of the NASA Airathon: 2022
<https://www.drivendata.org/competitions/91/competition-air-quality-no2/>
- First place winner of the Shell.ai Hackathon: 2021
for sustainable and affordable energy; <https://www.shell.com/energy-and-innovation/digitalisation/digital-and-ai-competitions/shell-ai-hackathon-for-sustainable-and-affordable-energy.html>
- Best teacher awards @ TU-Delft: 2019
Geoscience and Remote Sensing track (rank #1)
Environmental Engineering track (rank #1)
- Best teacher awards @ TU-Delft: 2018
Geoscience and Remote Sensing track (rank #1)
Environmental Engineering track (rank #2)
- Departmental nominee for the Chancellor's Distinguished Research Award 2008
Texas Tech University
- CAREER Award, National Science Foundation (USA) 2008
- Best Ph.D. dissertation in Civil Engineering 2005
awarded by the Department of Civil Engineering, University of Minnesota
- NOAA Climate and Global Change postdoctoral fellowship 2005
(declined in order to accept a faculty position at Texas Tech University)
- Doctoral dissertation fellowship 2003
awarded by the Graduate School, University of Minnesota
- Sommerfeld fellowship 2000
awarded by the Department of Civil Engineering, University of Minnesota
- Ontario graduate scholarship awarded by the selection board of 2000
Ministry of Training, Colleges and Universities, Ontario, Canada
(declined in order to accept the Sommerfeld fellowship at the University of Minnesota)
- Best final year project in Civil Engineering 1998
awarded by Indian Institute of Technology, Kharagpur, India

Selected Participation in Competitions

- *Shell.ai Hackathon for sustainable and affordable energy: Fuel blend properties prediction challenge*
Selected for level 2 (one of 25 participants out of ~7000 total),
<https://www.hackerearth.com/challenges/new/competitive/shellai-hackathon-2025/> 2025
- *Solafune: aerosol optical depth (AOD) estimation*
Ranked 25th out of 307, bronze star
<https://solafune.com/competitions/ca6ee401-eba9-4f7d-95e6-d1b378a17200?menu=about&tab=/> 2024
- *IEEE: hybrid energy forecasting and trading competition*
Ranked 6th overall,
<https://ieee-dataport.org/competitions/hybrid-energy-forecasting-and-trading-competition> 2024
- *Kaggle: LEAP – atmospheric physics using AI (ClimSim)*
<https://www.kaggle.com/competitions/leap-atmospheric-physics-ai-climsim> 2024
- *Zindi: AI/ML for 5G energy consumption modeling*
<https://zindi.africa/competitions/aiml-for-5g-energy-consumption-modelling> 2023
- *HEROx: American-made challenges – net load forecasting prize*
Ranked 9th overall, ranked 1st for Amity, OR. <https://www.herox.com/net-load-forecasting> 2023
- *CVPR: atmospheric turbulence mitigation*
<https://cvpr2023.ug2challenge.org/track2.html> 2023
- *NASA Airathon: predict air quality (trace gas track)*
Ranked 3rd, <https://www.drivendata.org/competitions/91/competition-air-quality-no2/> 2022
- *NASA Airathon: predict air quality (particular track)*
Ranked 6th, <https://www.drivendata.org/competitions/88/competition-air-quality-pm//> 2022
- *Shell.ai Hackathon for sustainable and affordable energy: short-term forecasting of solar radiation*
Ranked 1st, <https://www.shell.com/energy-and-innovation/digitalisation/digital-and-ai-competitions/shell-ai-hackathon-for-sustainable-and-affordable-energy.html> 2021
- *Day-ahead electricity demand forecasting: post-covid paradigm.*
<https://dx.doi.org/10.21227/67vy-bs34> 2021
- *Drivendata competition on tropical storm intensity prediction*
Ranked 32nd out of 733.
<https://www.drivendata.org/competitions/72/predict-wind-speeds/leaderboard/> 2020
- *European Electricity Market (EEM) forecasting competition*
Team leader, Ranked 3rd. 2020

Online Courses

- *Coursera: Sequence models*
<https://www.coursera.org/account/accomplishments/certificate/MD6RLSH6YNX3> 2022
- *Coursera: Convolutional neural networks*
<https://www.coursera.org/account/accomplishments/certificate/TKRW88JJDPU2> 2022
- *Coursera: Structuring machine learning projects*
<https://www.coursera.org/account/accomplishments/certificate/9VZQC7U2DVZE> 2021
- *Coursera: Improving deep neural networks*
<https://www.coursera.org/account/accomplishments/certificate/H6JWL762U88B> 2021

- Coursera: Neural networks and deep learning
<https://www.coursera.org/account/accomplishments/certificate/HWQTB23HRWNH> 2021

PROFESSIONAL ACTIVITIES

Associate Editor

- *Journal of Geophysical Research – Atmosphere* 2023–Present
- *Wind Energy Science* 2022–2026

Editorial Board Memberships

- *Boundary-Layer Meteorology* 2023–Present
- *Wind Energy* 2019–Present
- *Environmental Fluid Mechanics* 2017–Present
- *Frontiers in Built Environment* 2016–Present
- *Atmosphere* 2020–2021
- *Energies* 2015–2021
- *The Open Atmospheric Science Journal* 2007–2017

Guest Editing

- Special issue on “Recent Advances in Wind Power Meteorology”, *Energies* 2020–2021
- Special issue on “Large-Eddy Simulations (LES) of Atmospheric Boundary Layer Flows”, *Atmosphere* 2018

Committees & Review Panels

- Member, NATO SET-ET-140 group 2025–Present
(Atmospheric effects on electro-optical systems)
- Member, IEA Task-51 (<https://iea-wind.org/task51/>) 2023–Present
(Forecasting for the weather-driven energy system)
- Member, NATO SET-304 group 2021–2024
(Modelling, measuring, and mitigating optical turbulence)
- Founding member and coordinator of a new M.Sc. track 2020–2022
Atmospheric Environment Engineering at TU-Delft
- Chair, Atmospheric Sciences Review Panel, 2021
Academy of Finland, Helsinki
- Coordinator, met-ocean program line, GROW 2018–2020
(<https://www.grow-offshorewind.nl/>)
- Member, NATO SET-ET-118 group 2019–2020
(Modelling, measuring, and mitigating optical turbulence)
- Member, Atmospheric Sciences Review Panel, 2019, 2020
Academy of Finland, Helsinki
- Contributing author of “The Netherlands’ Long-Term Offshore Wind R&D Agenda” 2019
(<https://www.topsectorenergie.nl/nieuws/netherlands-long-term-offshore-wind-rd-agenda>)

- Member, Site Visit Panel for Strategic Partnership Grants, NSERC, Canada 2019
- Member, CAREER Panel, Energy for Sustainability Program, NSF, USA 2011
- Member, Wind/Wave Energy Panel, Energy for Sustainability Program, NSF, USA 2011
- Member, CAREER Panel on Biofuels and Wind Energy, Energy for Sustainability Program, NSF, USA 2010
- Member, Boundary Layers and Turbulence Committee, American Meteorological Society, USA 2009–2012
- Member, Site Visit Panel Member, Wind Program Evaluation, Arizona Science Foundation, USA 2008
- Member, Committee Member, Lone Star Emmy Educational Foundation Harold Taft Scholarship, USA 2008

Conference & Workshop Organization

- Member of the Organizing Committee, NCAR Summer Colloquium on the Atmospheric Boundary Layer, Boulder, CO, USA 2023
(<https://edec.ucar.edu/advanced-study-program/asp-colloquia>)
- Theme Lead, Wind and Wind Farms, Torque 2022, Delft, the Netherlands 2022
(<https://www.torque2022.eu/>)
- Program Chair, Propagation Through and Characterization of Atmospheric and Oceanic Phenomena, OSA 2019–2021
- Conference Committee Member, Laser Communication and Propagation through the Atmosphere and Oceans, SPIE 2015–2022
- Conference Committee Member, Environmental Effects on Light Propagation and Adaptive Systems, SPIE Remote Sensing 2019–2022
- Theme Lead, Wind and Wind Farms, Torque 2020, Delft, the Netherlands 2020
(<http://torque2020.org/>)
- Scientific Organization Committee, workshop on ‘Non-Kolmogorov Turbulence and Associated Phenomena’, Fraunhofer IOSB, Ettlingen, Germany 2019
- Conference Committee Member, Propagation Through and Characterization of Atmospheric and Oceanic Phenomena, OSA, Orlando, FL, USA 2018
- Organizing Committee Member, Workshop on the Atmospheric Stable Boundary Layer, Delft, the Netherlands 2017
- Symposium Planning Committee Member, ‘Evapotranspiration: Challenges in Measurement and Modeling from Leaf to the Landscape Scale and Beyond’, Raleigh, NC, USA 2014
- Scientific Committee Member, 13th International Conference on Wind Engineering Amsterdam, The Netherlands 2011
- Co-convener of ‘Understanding of Land-Atmosphere Interactions with Models and Observations’, AGU Fall Meeting, San Francisco, CA, USA 2009
- Co-convener of ‘Wind Power Meteorology’, AGU Fall Meeting, San Francisco, CA, USA 2008–2010

- Co-convener of ‘Atmospheric Turbulence Scaling Mechanisms and their Meteorological Effects’, AGU Joint Assembly, Acapulco, Mexico 2008–2010

Conference Session Chairs, Panel Members

- Panel Member, VAIBHAV Summit (<https://innovate.mygov.in/vaibhav-summit/>), Government of India 2020
- Session Chair, Propagation Through and Characterization of Atmospheric and Oceanic Phenomena, OSA 2020
- Session Chair, Propagation Through and Characterization of Atmospheric and Oceanic Phenomena, OSA, Munich, Germany 2019
- Session Chair, Propagation Through and Characterization of Atmospheric and Oceanic Phenomena, OSA, Orlando, FL, USA 2018
- Session Chair, American Meteorological Society (AMS) 21st Symposium on Boundary Layers and Turbulence, Salt Lake City, UT, USA 2016
- Session Chair, American Meteorological Society (AMS) 20th Symposium on Boundary Layers and Turbulence, Boston, MA, USA 2012
- Chair, Student Award Committee, American Meteorological Society (AMS) 19th Symposium on Boundary Layers and Turbulence, Keystone, CO, USA 2010
- Session Chair, “ABL and Turbulence Models for CWE II”, the Fifth International Symposium on Computational Wind Engineering, Chapel Hill, NC, USA 2010
- Discussion Panel Member, “Development, Validation, and Application of Atmospheric Boundary Layer Models and Turbulence Models for CWE”, the Fifth International Symposium on Computational Wind Engineering, Chapel Hill, NC, USA 2010

Miscellaneous Activities

- Winner of the Offshore Wind Accelerator (OWA) wake modelling challenge 2019
- Chair of the 3rd GEWEX Atmospheric Boundary Layer Study (GABLS) Large-Eddy Simulation Intercomparison 2008–2010

REVIEWING ACTIVITIES

Please visit <https://publons.com/researcher/2777086/sukanta-basu/> for further information.

Papers reviewed for: Advances in Meteorology; ASME wind energy symposium; Applied Optics; Atmosphere; Boundary-Layer Meteorology; Energies; Environmental Fluid Mechanics; Environmental Research Letters; Euro Physics Letters; Geophysical Research Letters; Irrigation Science; Journal of Applied Meteorology and Climatology; Journal of Applied Physics; Journal of Applied Remote Sensing; Journal of Climate; Journal of Fluid Mechanics; Journal of Geophysical Research; Journal of the Atmospheric Sciences; Journal of Hydrometeorology; Journal of Renewable and Sustainable Energy; Journal of the Optical Society of America B; Journal of the Meteorological Society of Japan; Journal of Turbulence; Journal of Wind Engineering and Industrial Aerodynamics; Meteorology and Atmospheric Physics; Monthly Weather Review; Nonlinear Processes in Geophysics; Optics Express; Optics Letters; Physica D; Physics Letters A; Physics of Fluids; Quarterly Journal of Royal Meteorological Society; Tellus B; The European Physical Journal B; The Open Atmospheric Science Journal; Transactions of the ASABE; Water Resources Research; Weather and Forecasting; Wind Energy; Wind Energy Science.

Book chapters reviewed for: AMS monograph series (100 years of progress in Boundary-layer Meteorology).

Proposals reviewed for: National Science Foundation, USA; Academy of Finland; ETH Zurich, Switzerland; Natural Environment Research Council, UK; The Natural Sciences and Engineering Research Council of Canada; Arizona Science Foundation; Innovation and Technology Commission, The Government of Hong Kong; the Netherlands Organisation for Scientific Research (NWO); Technology Foundation STW, the Netherlands; Foundation for Fundamental Research on Matter (FOM), the Netherlands.

External PhD dissertation examiner: ForWind - Center for Wind Energy Research, Carl von Ossietzky Universität, Oldenburg, Germany; Urban and Coastal Atmosphere Dynamics Group, Ecole Centrale Nantes, France; Physics and Material Sciences, ONERA, Aix Marseille University, France; Department of Geography, KU Leuven, Belgium; Civil Engineering, The University of Sydney, Australia; Department of Civil, Architectural, and Environmental Engineering, The University of Texas-Austin; School of Mechanical & Aerospace Engineering, Nanyang Technological University, Singapore; Thermal and Fluid Engineering, Indian Institute of Technology–BHU.

External MSc thesis examiner: Technical University of Denmark (European Wind Energy masters program).

External course evaluator: Atmospheric Modelling course (MAQ 31806), Meteorology and Air Quality Group, Wageningen University, The Netherlands.

SPONSORED RESEARCH

- Funding Agency: NSF-IUCRC (WISER) 2026–2027
Project Title: North American outage prediction model
Co-PI: Sukanta Basu (one of several)
Funds: \$37,500 (Basu's group); total: \$225,000
- Funding Agency: Department of Financial Services, New York State 2025–2028
Project Title: Assessing climate exposure and financial impacts at the census tract level in New York state
PI: Sukanta Basu
Co-PIs: Fangqun Yu, Jan Woodcock
Funds: \$1,611,585
- Funding Agency: NSF-IUCRC (WISER) 2025–2026
Project Title: Deep learning-based nowcasting of damaging winds (Phase II)
PI: Sukanta Basu
Funds: \$50,000
- Funding Agency: Optonica, LLC 2024–2025
(Prime: The Defense Advanced Research Projects Agency (DARPA), Joint Directed Energy Transition Office)
Project Title: Atmospheric propagation basic research
PI: Sukanta Basu
Funds: \$89,418
- Funding Agency: NSF-IUCRC (WISER) 2024–2025
Project Title: Deep learning-based nowcasting of damaging winds (Phase I)
PI: Sukanta Basu
Funds: \$50,000

- Funding Agency: University of Dayton Research Institute
(Prime: US Air Force Research Laboratory, Joint Directed Energy Transition Office) 2023–2024
Project Title: University at Albany on SOARING OTTER
PI: Sukanta Basu
Funds: \$93,495
- Funding Agency: Horizon 2020, European Green Deal 2021–2025
Project Title: EUropean - Scalable and Complementary Offshore Renewable Energy Sources
Lead organization: Dutch Marine Energy Centre (DMEC);
co-PIs from TU-Delft: George Lavidas and Sukanta Basu
Funds: €448,000 (Basu's group); total: €34M
- Funding Agency: Dutch Research Council (NWO) 2021–2026
Project Title: Optical wireless super highways
Lead organization: TU-Delft;
PI: Eberhard Gill; co-PI: Sukanta Basu (one of several)
Funds: €250,000 (Basu's group); total: €5.1M
- Funding Agency: TU Delft Institute for Computational Science and Engineering 2021–2023
Project Title: Reliable estimation of extreme wind gusts over the North Sea:
A convolutional neural network-based framework
PI: Sukanta Basu; co-PI: Simon Watson
Funds: €80,000
- Funding Agency: TKI, Wind op Zee, The Netherlands 2020–2022
Project Title: WINS50: Winds of the North Sea in 2050
Lead organization: Whiffle, BV; co-PI: Sukanta Basu and others
Funds: €462,869 (TU-Delft part)
- Funding Agency: CENER, Spain 2020
Project Title: Offshore wind accelerator: wake modelling challenge
PI: Sukanta Basu
Funds: €9,640
- Funding Agency: Sports Engineering Institute @ TU-Delft 2020
Project Title: Tokyo innovation funds: atmospheric modelling
in support of the Sail Ghost project
PI: Sukanta Basu, co-PI: Anoek Van Vlaardingen
Funds: €25,000
- Funding Agency: Carbon Trust, UK 2017–2018
Project Title: Offshore wind accelerator: boundary layer profiling
PI: Sukanta Basu, co-PI: Simon Watson
Funds: £44,680
- Funding Agency: Sailing Innovation Center, The Netherlands 2017
Project Title: Sail ghost of Enoshima
PI: Sukanta Basu
Funds: €9,075
- Funding Agency: NSF (AGS-EAGER), USA 2016–2018
Project Title: Identifying the limitations of the contemporary planetary
boundary layer schemes using an extended self-similarity-based framework
PI: Sukanta Basu
Funds: \$63,189

- Funding Agency: NSF (CBET), USA

Project Title: A retrospective assessment and future projection of thunderstorm impacts on the field performance of wind turbines

PI: Lance Manuel (University of Texas-Austin), co-PI: Sukanta Basu

Funds: \$199,810 (NCSU-part)

2013–2017
- Funding Agency: Department of Defense, USA

Project Title: Wave optics of deep atmospheric turbulence: from underlying physics towards predictive modeling, mitigation and exploitation

PI: Mikhail Vorontsov (University of Dayton), co-PI: Sukanta Basu

Funds: \$500,000 (NCSU-part)

2012–2016
- Funding Agency: Renaissance Computing Institute (RENCI), USA

Project Title: Micro-siting of wind turbines over complex terrains utilizing the OpenFOAM CFD toolbox and the WRF model

PI: Sukanta Basu

Funds: \$82,757

2011–2014
- Funding Agency: National Renewable Energy Lab, USA

Project Title: Modeling the stable atmospheric boundary layer with computational fluid dynamics for wind energy application

PI: Sukanta Basu

Funds: \$4,272

2011–2012
- Funding Agency: NSF (CBET), USA

Project Title: On turbine loads assessment for ultimate and fatigue limit states for different atmospheric boundary layer stability conditions

PI: Lance Manuel (University of Texas-Austin), co-PI: Sukanta Basu

Funds: \$123,140 (NCSU-part)

2010–2014
- Funding Agency: Department of Energy, USA

Project Title: Enhancing short term wind energy forecasting for improved utility operations

PI: Lead organization: AWS Truepower, co-PI: Sukanta Basu

Funds: \$75,631 (NCSU-part)

2010–2013
- Funding Agency: NSF (CAREER award), USA

Project Title: Towards better representation of the nocturnal low-level jets in new generation large-eddy and mesoscale models

PI: Sukanta Basu

Funds: \$505,060

2008–2014
- Funding Agency: Norman Hackerman Advanced Research, USA

Project Title: Atmospheric stability considerations in design of wind turbines against fatigue

PI: Lance Manuel (University of Texas-Austin), co-PI: Sukanta Basu

Funds: \$51,776 (TTU-part)

2008–2010
- Funding Agency: NSF (Polar science program), USA

Project Title: Understanding, parameterizing and modeling the strongly stratified atmospheric boundary layer processes over the Antarctic Plateau

PI: Sukanta Basu

Funds: \$173,000

2006–2010
- Funding Agency: Texas Advance Research Program, USA

Project Title: Characterization and simulation of turbulence in stably stratified

2006–2009

atmospheric boundary layers
PI: Sukanta Basu, co-PI: Xiaoning Gilliam
Funds: \$86,000

- Funding Agency: Texas Tech University, USA 2006–2009
Project Title: Innovative technologies to investigate fine-scale atmospheric motions and their impact
PI: John Schroeder, co-PI: Sukanta Basu and others
Funds: \$1,000,000

KEY COLLABORATORS

Steve Fiorino (Air Force Institute of Technology, USA); Bert Holtslag (Wageningen University, The Netherlands); Lance Manuel (University of Texas at Austin, USA); Mikhail Vorontsov (University of Dayton, USA); Simon Watson (TU-Delft, The Netherlands).

JOURNAL PUBLICATIONS

Google Scholar Citations: <https://scholar.google.com/citations?user=08bv9p8AAAAJ&hl=en>
Researchgate Page: http://www.researchgate.net/profile/Sukanta_Basu
ORCID: 0000-0002-0507-5349
SCOPUS: 7403656752
ResearcherID: F-9286-2011

Graduate students and post-docs of my research group are indicated by * and †, respectively.

- [82] Baki†, H., & **Basu, S.** (2026). A Chebyshev polynomial-based wind speed profile characterization framework: Applications in mesoscale model evaluation. *Wind Energy*, 29, e70080.
- [81] Baki†, H., Pierzyna*, M., & **Basu, S.** (2026). S2G-DI: A deep learning framework for generating high-resolution wind gust fields from sparse mesonet observations. *Artificial Intelligence for the Earth Systems*, under revision.
- [80] **Basu, S.** (2026). Leveraging deep learning-based foundation models for optical turbulence (C_n^2) estimation under data scarcity [Editor's Pick]. *Applied Optics*, 65, 2497–2504.
- [79] Kosović, B., **Basu, S.**, Berg, J., Berg, L. K., Haupt, S. E., Larsén, X. G., Peinke, J., Stevens, R. J. A. M., Veers, P., & Watson, S. (2026). Impact of atmospheric turbulence on performance and loads of wind turbines: Knowledge gaps and research challenges. *Wind Energy Science*, 11, 509–555.
- [78] Baki†, H., **Basu, S.**, & Lavidas, G. L. (2025). Modelling frontal low-level jets and associated extreme wind power ramps over the North Sea. *Wind Energy Science*, 10, 1575–1609.
- [77] Pierzyna*, M., **Basu, S.**, & Saathof, R. (2025). OTClIM: Generating a near-surface climatology of optical turbulence strength (C_n^2) using gradient boosting. *Artificial Intelligence for the Earth Systems*, 4, e240076.
- [76] Vorontsov, M., Polnau, E., Hammel, S., **Basu, S.**, & Hettiarachchi, D. L. N. (2025). Analysis of atmospheric turbulence dynamics during the total solar eclipse with AI-based sensing. *Journal of the Optical Society of America A*, 42, 1112–1119.
- [75] Baki†, H., & **Basu, S.** (2024). Estimating high-resolution profiles of wind speeds from a global reanalysis dataset using TabNet. *Environmental Data Science*, 3: e32, 1–10.
- [74] Baki†, H., **Basu, S.**, & Lavidas, G. L. (2024). Estimating the offshore wind power potential of Portugal by utilizing gray-zone atmospheric modeling. *Journal of Renewable and Sustainable Energy*, 16, 063306.
- [73] Pierzyna*, M., Hartogensis, O., **Basu, S.**, & Saathof, R. (2024). Intercomparison of flux, gradient, and variance-based optical turbulence (C_n^2) parameterizations. *Applied Optics*, 63, E107–E119.

- [72] Annis, S., Badas, M. G., Horváth, A., & **Basu, S.** (2023). Quantifying the impacts of the angle of attack on the morphology of atmospheric von Kármán vortex streets. *J. Geophysical Research – A*, 128, e2023JD039125.
- [71] Cheneka*, B. R., Watson, S. J., & **Basu, S.** (2023). Quantifying the impacts of synoptic weather patterns on North Sea wind power production and ramp events under a changing climate. *Energy and Climate Change*, 4, 100113.
- [70] Kartal†, S., **Basu, S.**, & Watson, S. J. (2023). A decision tree-based measure-correlate-predict approach for peak wind gust estimation from a global reanalysis dataset. *Wind Energy Science*, 8, 1533–1551.
- [69] Pierzyna*, M., Saathof, R., & **Basu, S.** (2023). II-ML: A dimensional analysis-based machine learning parameterization of optical turbulence in the atmospheric surface layer [**Editor’s Pick**]. *Optics Letters*, 48, 4484–4487.
- [68] **Basu, S.**, & Holtslag, A. A. M. (2022a). A novel approach for deriving the stable boundary layer height and eddy viscosity profiles from the Ekman equations. *Boundary-Layer Meteorology*, 187, 105–115.
- [67] **Basu, S.**, & Holtslag, A. A. M. (2022b). Revisiting and revising Tatarskii’s formulation for the temperature structure parameter (C_T^2) in atmospheric flows. *Environmental Fluid Mechanics*, 22, 1107–1119.
- [66] Li*, B., **Basu, S.**, & Watson, S. J. (2022). Automated identification of “Dunkelflaute” events: A convolutional neural network-based autoencoder approach. *Artificial Intelligence for the Earth Systems*, 1: e220015, 1–17.
- [65] Veers, P., Dykes, K., **Basu, S.**, Bianchini, A., Clifton, A., Green, P., Holttinen, H., Kitzing, L., Kosovic, B., Lundquist, J. K., Meyers, J., O’Malley, M., Shaw, W. J., & Straw, B. (2022). Grand challenges: Wind energy research needs for a global energy transition. *Wind Energy Science*, 7, 2491–2496.
- [64] **Basu, S.**, DeMarco*, A. W., & He†, P. (2021). On the dissipation rate of temperature fluctuations in stably stratified flows. *Environmental Fluid Mechanics*, 21, 63–82.
- [63] **Basu, S.**, He†, P., & DeMarco*, A. W. (2021). Parameterizing the energy dissipation rate in stably stratified flows. *Boundary-Layer Meteorology*, 178, 167–184.
- [62] **Basu, S.**, & Holtslag, A. A. M. (2021). Turbulent Prandtl number and characteristic length scales in stably stratified flows: Steady-state analytical solutions. *Environmental Fluid Mechanics*, 21, 1273–1302.
- [61] Cheneka*, B. R., Watson, S. J., & **Basu, S.** (2021). Associating synoptic-scale weather patterns with aggregated offshore wind power production and ramps. *Energies*, 14, 3903.
- [60] Li*, B., **Basu, S.**, Watson, S. J., & Russchenberg, H. W. J. (2021a). A brief climatology of Dunkelflaute events over and surrounding the North and Baltic sea areas. *Energies*, 14, 6508.
- [59] Li*, B., **Basu, S.**, Watson, S. J., & Russchenberg, H. W. J. (2021b). Mesoscale modeling of a ‘Dunkelflaute’ event. *Wind Energy*, 24, 5–23.
- [58] Lu, N.-Y., Manuel, L., Hawbecker*, P. H., & **Basu, S.** (2021). A simulation study on risks to wind turbine arrays from thunderstorm downbursts in different atmospheric stability conditions. *Energies*, 14, 5407.
- [57] Al-Younis, W., Nevarez, C., Abdullah-Al-Mamun, M., **Basu, S.**, & Voelz, D. (2020). Image shift due to atmospheric refraction: Prediction by numerical weather modeling and machine learning. *Optical Engineering*, 59, 081803.
- [56] **Basu, S.**, Osborn, J., He†, P., & DeMarco*, A. W. (2020). Mesoscale modelling of optical turbulence in the atmosphere: The need for ultrahigh vertical grid resolution. *Monthly Notices of the Royal Astronomical Society*, 497, 2302–2308.
- [55] Cheneka*, B. R., Watson, S. J., & **Basu, S.** (2020). A simple methodology to detect and quantify wind power ramps. *Wind Energy Science*, 5, 1731–1741.
- [54] Couvreux, F., Bazile, E. et al. (2020). Intercomparison of large-eddy simulations of the Antarctic boundary layer for very stable stratification. *Boundary-Layer Meteorology*, 176, 369–400.
- [53] Dai*, Y., **Basu, S.**, Maronga, B., & de Roode, S. (2020). Addressing the grid-size sensitivity issue in large-eddy simulations of stable boundary layers. *Boundary-Layer Meteorology*, 178, 63–89.
- [52] Durán, P., **Basu, S.**, Meißner, C., & Adaramola, M. S. (2020). Automated classification of simulated wind field patterns from multi-physics ensemble forecasts. *Wind Energy*, 23, 898–914.

- [51] **Basu, S.** (2019). A hybrid profile-gradient approach for the estimation of surface fluxes. *Boundary-Layer Meteorology*, 170, 29–44.
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- [43] DeMarco*, A. W., & **Basu, S.** (2017). Estimating higher-order structure functions from geophysical turbulence time-series: Confronting the curse of the limited sample size. *Physical Review E*, 95, 052114.
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- [37] He†, P. H., & **Basu, S.** (2015a). Development of similarity relationships for energy dissipation rate and temperature structure parameter in stably stratified flows: A direct numerical simulation approach. *Environmental Fluid Mechanics*, 16, 373–399.
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BOOK CHAPTERS

Graduate students and post-docs of my research group are indicated by * and †, respectively.

- [2] Basu, S. (2022). Vertical wind speed profiles in atmospheric boundary layer flows, Wind Energy Engineering, 2nd Edition, edited by T. Letcher, Elsevier. ISBN: 9780323993531.
- [1] Basu, S. (2012). Turbulent flow modeling, Handbook of Environmental Fluid Dynamics, Volume Two, edited by H. J. S. Fernando, CRC Press/Taylor & Francis Group, LLC. ISBN: 978-1-4665-5601-0.

CONFERENCE PROCEEDINGS

Graduate students and post-docs of my research group are indicated by * and †, respectively.

- [17] Roy Sarkar, D., Basu, S., Manuel, L., and Goswami, S. (2025). Uncertainty-aware optimization in engineered systems via gradient boosting and differential evolution, NASA and DNV UQ Challenge, in Proceedings of the 33rd European Safety and Reliability & 33rd Society for Risk Analysis Europe Conference, <https://rpsonline.com.sg/proceedings/esrel-sra-e2025/html/toc.html>
- [16] Pierzyna, M., Saathof, R., and Basu, S. (2023). A multi-physics ensemble modeling framework for reliable C_n^2 estimation, in Proceedings of Environmental Effects on Light Propagation and Adaptive Systems VI, vol. 12731, SPIE, pp. 185–191. doi: 10.1117/12.2680997.
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 - [11] Lu, N.-Y., Basu, S., and Manuel, L. (2017). Wind turbine loads during the evening transition period, 35th Wind Energy Symposium, AIAA SciTech Forum, (AIAA 2017-0681), doi: 10.2514/6.2017-0681.
 - [10] Basu, S., and He[†], P. (2015). Estimating refractive index structure parameter (C_n^2) profiles in the atmosphere: A wavelet transform-based approach, *Proceedings of SPIE Optics & Photonics*, doi: 10.1117/12.2188195.
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 - [8] Wang*, Y., and Basu, S. (2014). Estimation of optical turbulence in the atmospheric surface layer from routine meteorological observations: An artificial neural network approach, *Proceedings of SPIE Optics & Photonics*, doi: 10.1117/12.2063168.
 - [7] Nunalee*, C. G., He[†], P., Basu, S., Vorontsov, M. A., and Fiorino, S. T. (2014). Impact of large-scale atmospheric refractive structures on optical wave propagation, *Proceedings of SPIE Optics & Photonics*, doi: 10.1117/12.2063022.
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 - [3] Basu, S., Holtslag, A. A. M., and Bosveld, F. C. (2011). GABLS3-LES intercomparison study, *Workshop Proceedings – ECMWF Workshop on Diurnal Cycles and the Stable Boundary Layer*, 7-10 November, Reading, UK, pages 75-82.
 - [2] Holtslag, A. A. M., Svensson, G., Basu, S., Beare, R. J., Bosveld, F. C., and Cuxart, J. (2011). Overview of the GEWEX Atmospheric Boundary Layer Study (GABLS), *Workshop Proceedings – ECMWF Workshop on Diurnal Cycles and the Stable Boundary Layer*, 7-10 November, Reading, UK, pages 11-24.
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INVITED PRESENTATIONS

Presenters are indicated by asterisks.

- [29] Basu, S. (2026). “AIML-driven modeling of atmospheric turbulence for weather, energy, and defense applications”, 6 March, Johns Hopkins University, Baltimore, USA.
- [28] Basu, S. (2025). “AIML-driven modeling of atmospheric turbulence for weather, energy, and defense applications”, 19 November, University of Alabama, Huntsville, USA.
- [27] Basu, S. (2022). “Outer length scales in nocturnal stable boundary layers”, 11-15 July, Imaging & Applied

Optics Congress, Vancouver, Canada.

- [26] Basu, S. (2022). “Optical turbulence modelling”, Keynote lecture, 7-10 June, International conference on Target and Background Modeling & Simulation, Bagnères-de-Bigorre, France.
- [25] Basu, S. (2019). “Wind energy developments in a changing climate: how can mesoscale modelling help?”, 23-25 July, School of Excellence, University of Messina, Italy.
- [24] Basu, S. (2019). “WRF modelling for wind energy applications”, 10-14 June, Università degli Studi di Cagliari, Italy.
- [23] Basu, S. (2019). “Mesoscale modeling of atmospheric flows for wind energy applications”, 6-10 May, von Kármán Institute for Fluid Dynamics, Belgium.
- [22] Basu, S. (2017). “Generating realistic inflow conditions for next-generation wind turbines”, 13 November, Wageningen University, the Netherlands.
- [21] Basu, S. (2017). “Idealized and realistic large-eddy simulations of optical turbulence (C_n^2)”, 26-29 June, Propagation through and Characterization of Atmospheric and Oceanic Phenomena (pcAOP), San Francisco, CA, USA.
- [20] Basu, S. (2017). “Multiscale modeling of atmospheric refraction and turbulence”, 1 June, Trends and Developments in Laser Based Dimensional Metrology, Lorentz Center, Leiden, The Netherlands.
- [19] Basu, S. (2017). “Mesoscale modeling of atmospheric flows for wind energy applications”, 28 March, von Kármán Institute for Fluid Dynamics, Belgium.
- [18] Basu, S. (2016). “On the scaling-based estimation of optical turbulence in the atmosphere”, 27-29 June, Propagation through and Characterization of Atmospheric and Oceanic Phenomena (pcAOP), Washington DC, USA.
- [17] Basu, S. (2016). “Quasi-universal scaling of boundary-layer wind speeds in mesoscale regime”, University of Oklahoma, Norman, OK, USA.
- [16] Basu*, S., and He, P. (2015). “Extracting various similarity formulations from an extensive database of direct and large-eddy simulations of stably stratified flows”, 27 July, US National Congress on Computational Mechanics, San Diego, CA, USA.
- [15] Basu*, S., and He, P. (2015). “Estimating optical turbulence in the atmosphere utilizing the inherent vertical scaling characteristics of temperature fields”, 7-11 June, Propagation through and Characterization of Distributed Volume Turbulence (pcDVT), Washington DC, USA.
- [14] Basu, S. (2015). “Mesoscale modeling of atmospheric flows for wind energy applications”, 25 February, von Kármán Institute for Fluid Dynamics, Belgium.
- [13] Basu, S. (2014). “Multiscale modeling of atmospheric refraction and turbulence”, 5 November, NATO ET-87 Study Group Meeting, University of Dayton, Dayton, OH, USA.
- [12] Basu*, S., and He, P. (2014). “Quantifying the dependence of temperature and refractive index structure parameters on atmospheric stability using direct and large-eddy simulations”, 13-17 July, Propagation through and Characterization of Distributed Volume Turbulence (pcDVT), Seattle, WA, USA.
- [11] Basu, S. (2013). “Can the LES-Generated datasets complement field measurements?”, 20 November, Brazilian Micrometeorology Workshop, Santa Maria, Brazil.
- [10] Basu, S. (2013). “Addressing a few problems in stable boundary layer turbulence”, 10 April, Environmental Protection Agency, Raleigh, NC, USA.
- [9] Basu, S. (2013). “Mesoscale modeling of atmospheric flows for wind energy applications”, 13 March, von Kármán Institute for Fluid Dynamics, Belgium.
- [8] Basu, S. (2012). “Addressing a few problems in stable boundary layer turbulence”, 20 June, National Center for Atmospheric Research, Boulder, CO, USA.
- [7] Basu, S. (2011). “GABLS3 LES Intercomparison Study”, ECMWF/GABLS Workshop on Diurnal cycles and the stable atmospheric boundary layer, 7-10 November, Reading, UK.
- [6] Basu, S. (2010). “Addressing a few emergent challenges in wind power meteorology”, Department of Mechanical Engineering and Engineering Science, University of North Carolina-Charlotte, NC, USA.
- [5] Basu, S. (2009). “Addressing a few emergent challenges in wind power meteorology”, Visser Lecture, Department of Geography, University of Indiana, Bloomington, IN, USA.

- [4] Basu*, S., Ruiz-Columbié, A., and Harshan, S. (2008). “Deriving Monin-Obukhov similarity functions from dynamic large-eddy simulations”, American Geophysical Union Fall Meeting, 15-19 December, San Francisco, CA, USA.
- [3] Basu, S. (2007). “NEW LES intercomparison case.” Presentation at the GABLS Workshop, Stockholm, Sweden.
- [2] Basu, S. (2007). “Looking beyond dynamic Smagorinsky models for atmospheric boundary layer simulations.” Presentation at the Department of Atmospheric Sciences, University of Washington, Seattle, WA, USA.
- [1] Basu, S. (2004). “Understanding stably stratified atmospheric boundary-layer turbulence: integration of statistical and dynamical approaches with large-eddy simulations.” Presentation at the International Center for Theoretical Physics, 24 April, Trieste, Italy.

TEACHING

- **University at Albany** 2024–Present
 - *ESE 332: Air quality modeling (Spring 2024-2026)*
- **Delft University of Technology** 2016–2023
 - *CIE 4605: Atmospheric Turbulence (Quarter 3, 2017–2022)*
 - *CIE 4707: Air Quality (Quarter 3, 2017–2022)*
 - *AESB 2120: Signal Processing with MATLAB (Quarter 1, 2017–2018)*
 - *AESB 2121: Signals and Systems with PYTHON (Quarter 1, 2019–2022)*
- **North Carolina State University** 2010–2016
 - *MEA 455: Micrometeorology (Fall 2011, 2012, 2014)*
 - *MEA 463: Fluid Physics (Fall 2014)*
 - *MEA 510: Air Pollution Meteorology (Fall 2013, 2015)*
 - *MEA 593: Wind Power Meteorology (Spring 2012, 2014, 2016)*
 - *MEA 707: Planetary Boundary Layer (Spring 2011, 2013, 2015)*
- **Texas Tech University** 2005–2010
 - *ATMO 1300: Introduction to Atmospheric Science (Fall 2005–2008, Spring 2009)*
 - *ATMO 5301: Wind Power Meteorology (Spring 2009–2010)*
 - *ATMO 5301: Atmospheric Dispersion Modeling (Spring 2006, 2008)*
 - *ATMO 5319: Boundary-layer Meteorology (Fall 2007, 2009)*
 - *ATMO 5332: Regional-scale Numerical Weather prediction (Spring 2007)*

RESEARCH GROUP

Current Research Scientists

- Dr. Chau Lam (Chris) Yu
- Dr. Mukul Tewari

Current Post-doctoral Research Associates

- Dr. Harish Baki

Current Graduate Advisees

- Ekaterina Belash (Ph.D., UAlbany) – chair: Sukanta Basu
- Maximilian Pierzyna (Ph.D., TU-Delft) – promoter: Sukanta Basu; co-promoter: Rudolf Saathof
- Emmanuel Kipchirchir (M.S., UAlbany) – chair: Sukanta Basu
- Kazimir Nyzio (Appl. M.S., UAlbany) – mentor: Sukanta Basu

Former Post-doctoral Research Associates

- Dr. Jaya Singh (University at Albany)
Current position: Postdoctoral Researcher, IIT-BHU, India
- Dr. Vikas Dwivedi (University at Albany)
Current position: Postdoctoral Researcher, INSA, Lyon, France
- Dr. Serkan Kartal (TU-Delft)
Current position: Assistant Professor, Computer Engineering, Cukurova University, Adana, Turkey
- Dr. Ping He (NCSU)
Current position: Assistant Professor, Department of Aerospace Engineering, Iowa State University, Ames, USA
- Dr. Arquímedes Ruiz Columbié (TTU)
Current position: Lecturer, Texas Wind Energy Institute, Texas Tech University, Lubbock, USA

Former Ph.D. Advisees

- Bowen Li (TU-Delft; co-advised with Simon Watson, Herman Russchenberg) 2025
Dissertation: Dunkelflaute events – characterization, prediction and future projection
- Bedassa Cheneka (TU-Delft; co-advised with Simon Watson) 2023
Dissertation: Wind power ramps – characterisation, forecasting and future projection
- Patrick Hawbecker (Atmospheric Science, NCSU) 2017
Dissertation: The influence of ambient stability on downburst winds
Current position: Senior Atmospheric Scientist, ArcVera Renewables
Boulder, CO, USA
- Adam DeMarco (Atmospheric Science, NCSU; co-advisor: Russell Philbrick) 2017
Dissertation: Multiscale characterization of the probability density functions of velocity and temperature increment fields
Current position: Commander, 1st Combat Weather Squadron, Joint Base Lewis-McChord, USA
- Kiliyanpilakkil Velayudhan Praju (Atmospheric Science, NCSU) 2017
Dissertation: Scaling characteristics of mesoscale wind fields in the lower atmospheric boundary layer: Implications for wind energy
- Aaron Sims (Atmospheric Science, NCSU; co-advised with Sethu Raman) 2016
Dissertation: Investigation of the mesoscale interaction between the sea breeze circulation and the Sandhills convection
Current position: Atmospheric Scientist, PEMDAS Technologies Innovations, Raleigh, NC, USA

- Yao Wang (Atmospheric Science, NCSU) 2016
Dissertation: Estimating and forecasting optical turbulence in atmosphere using an artificial neural network approach
Current position: Principal Fundamental Analyst, NextEra Energy, Inc., West Palm Beach, FL, USA
- Chris Nunalee (Atmospheric Science, NCSU) 2015
Dissertation: A dynamical characterization of atmospheric von Kármán vortex streets induced by bluff topography
Current position: Director, Energy Resource Assessment and Optimization at NextEra Energy, Inc., West Palm Beach, FL, USA
- Brandon Storm (Ph.D.-IGERT Wind Science and Engineering Fellow, TTU) 2008
Dissertation: Modeling of low-level jets over the Great Plains: Implications for Wind Energy
Current position: Senior Meteorologist, Tradewind Energy, Inc., Lenexa, KS, USA

Former M.S. Advisees

- Kevin Schuurman (TU-Delft) 2023
Thesis: Can Fourier Neural operators replicate the intrinsic predictability of spatiotemporal chaos for the Kuramoto-Sivashinsky system?
Current position: Ph.D. student at TU-Delft, the Netherlands
- Gijs van Ouwkerk (TU-Delft) 2021
Thesis: Novel machine learning methods for short-term solar PV forecasting
- Thom Homsma (TU-Delft; co-advisor) 2021
Thesis: Multi-step ahead ultra-short-term wind power forecasting
Current position: Renewable energy forecast analyst at Eneco Energy Trade B.V., the Netherlands
- Juliëtte Anema (TU-Delft; co-advisor) 2021
Thesis: An automated approach to estimate carbon monoxide emissions from steel plants by utilizing TROPOMI satellite measurements
Current position: Ph.D. student at KNMI, the Netherlands
- Eric Lacoa Arends (TU-Delft; co-advisor) 2021
Thesis: Novel machine learning methods to enhance wind power probabilistic forecasting
Current position: Business Translator D&A Middle Europe at Unilever, the Netherlands
- Camilla van Wirdum (TU-Delft; co-advisor) 2020
Thesis: Extreme convective gusts in a future warmer climate assessed through a convection permitting model
Current position: Junior Innovation Scientist, TNO, the Netherlands
- Haolin Liu (TU-Delft) 2020
Thesis: Characterizing coastal wind speed gradients using Scanning LiDAR data and mesoscale modeling
Current position: Ph.D. student at Hongkong University of Science and Technology
- Qidi Yu (TU-Delft) 2020
Thesis: Mesoscale modelling of waterspouts: an offshore wind energy perspective
Current position: Ph.D. student at University of Bergen, Norway
- Yi Dai (TU-Delft) 2020
Thesis: Addressing the grid-size sensitivity issue in large-eddy simulations of

- stable boundary layers
Current position: Ph.D. student at TU-Delft, the Netherlands
- Kars Trommel (TU-Delft) 2020
Thesis: Wind classification using unsupervised learning: in support of the Olympic sailing competition in Tokyo, Japan
Current position: Management Trainee, R&D Engineering, Philips, the Netherlands
 - Pooja Ramakrishna (TU-Delft; co-advised with Pier Siebesma) 2019
Thesis: Evaluation of a wind farm parameterization in an operational mesoscale model
Current position: InSAR Consultant, SkyGeo, Delft, the Netherlands
 - Adithya Vemuri (TU-Delft; co-advised with Simon Watson) 2019
Thesis: A new coupled modelling framework for turbine inflow generation: mesoscale-synthetic turbulence
Current position: PhD student at von Kármán Institute for Fluid Dynamics, Belgium
 - Jori Dreef (TU-Delft) 2019
Thesis: Simulating frontal low-level jets and quantifying their impact on wind energy production
Current position: A Sustainable Energy Advisor at Pondera Consult B.V., the Netherlands
 - Sam Koch (TU-Delft) 2018
Thesis: Characterization of inflow wind fields using SpinnerLidar measurements during ScanFlow project
Current position: Radar meteorologist at Buienradar, the Netherlands
 - Jeffrey Craft (NCSU) 2013
Thesis: Wind ramp events: Forecast verification and climatology
Current position: Manager, Data Analytics at Clearway Energy Group, Phoenix, AZ, USA
 - Yao Wang (NCSU) 2013
Thesis: Generating realistic inflows for utility-scale wind turbines: A large-eddy simulation-based approach
Current position: Sr. Solutions Project Lead at NextEra Energy, Inc., West Palm Beach, FL, USA
 - Heather Richardson (NCSU) 2012
Thesis: Improving stable boundary layer parameterization in a mesoscale model to better represent nocturnal low-level jets
Current position: Sr. Operations Engineer at WindLogics, North Palm Beach, FL, USA
 - Elizabeth Wilson (NCSU, non-thesis) 2012
Current position: Director of Weather Programs at Synoptic Data PBC, Raleigh, NC, USA
 - Suraj Harshan (TTU) 2009
Thesis: Modeling of Antarctic boundary layer
Current position: Senior Analyst, Swiss Re, India
 - Rachel Rogers (TTU) 2008
Thesis: Forecast verification: A dispersion modeling perspective
Current position: Wind Research Analyst II at Alliant Energy, New York, NY, USA
 - Julie Phillipson (TTU) 2008
Thesis: Bursting events in the stable atmospheric boundary layer
Current position: National Weather Service, Midland/Odessa, TX, USA
 - William Anderson (TTU) 2007
Thesis: A localized dynamic model for large-eddy simulation of the neutrally buoyant

atmospheric boundary layer

Current position: Associate professor, Department of Mechanical Engineering,
University of Texas at Dallas, TX, USA

Former Visiting Researcher

- Zihan Zhao (Ph.D. student, Harbin Institute of Technology Shenzhen, China; recipient of a CSC scholarship)
- Fabrizio Adamu (Erasmus Exchange Student from Università degli Studi di Cagliari, Italy)
- Dr. Wei Li
- Kornel Rozsavolgyi

PROFESSIONAL AFFILIATIONS

American Geophysical Union (AGU)

American Meteorological Society (AMS)

Directed Energy Professional Society

SPIE

The Optical Society (OSA)

SUNY SYSTEM, UNIVERSITY, AND OUTREACH SERVICES

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|--|--------------|
| • Member, Working Group 3, STRIVE Task Force, SUNY | 2026–Present |
| • Member, Middle States Commission on Higher Education (MSCHE), UAlbany | 2026–Present |
| • Member, University-level T&P committee (CPCA), UAlbany | 2025–Present |
| • Chair, Falconer seminar series, ASRC, UAlbany | 2023–Present |
| • Member, The council on Libraries, Information Systems, and Computing (LISC), UAlbany | 2024–2025 |
| • Chair, faculty search committee, ESE Department, UAlbany | 2024–2025 |
| • Member, T&P committee, CNSE college, UAlbany | 2024 |
| • Member, President’s excellence awards committee
Excellence in librarianship, UAlbany | 2023–2024 |
| • Member, faculty search committee, ASRC, UAlbany | 2024 |
| • Member, search committee for meteorologists, SWRCC, UAlbany | 2024 |
| • Member, grant writer search committee, UAlbany | 2023 |
| • Lead coordinator, development of a new M.Sc. track on
Atmospheric Environment Engineering, TU-Delft | 2020–2022 |
| • Collaboration with Sailing Innovation Centre, The Hague, The Netherlands
(weather forecasting for the 2020 Olympics Games, Japan) | 2018–2021 |
| • Committee member, College of Science IT Director search, NCSU | 2016 |
| • Committee member, university-level academic misconduct committee, NCSU | 2014–2015 |
| • Committee member, college-level teaching awards committee, NCSU | 2014–2015 |
| • Science judge, Blue Heron Bowl, MEAS, NCSU | 2013 |
| • Presenter (via skype), South View Middle School, Hope Mills, NC | 2012 |

- Presenter, Sigma-Xi 2012
- Presenter, General Electric, Greenville, SC 2012
- Interviewee, Radio In Vivo 2012
- Instructor, ‘Run on the Wind: Engineering a Clean Tomorrow’ summer camp, TTU 2011
- Organizer, ‘Run on the Wind: Engineering a Clean Tomorrow’ summer camp, TTU 2010
- Co-director, ‘Run on the Wind: Engineering a Clean Tomorrow’ summer camp, TTU 2009
- Chair, Numerical Weather Prediction search committee, Atmospheric Science Group, TTU 2008–2009
- Committee member, various departmental committees 2006–present