# CRISTINA LOZEJ ARCHER

## Curriculum Vitae

University of Delaware
Integrated Science and Engineering Laboratory (ISELab), #371
221 Academy Street, Newark, DE 19716
+1 302 831 6640
carcher@udel.edu
http://www.ceoe.udel.edu/our-people/profiles/carcher
@WindLady

## Research interests

Meteorology, renewable energy, wind power, climate change, air pollution, numerical modeling of atmospheric processes, computational fluid dynamics.

## Education

| | |
|---|---|
| 2004 | Doctor of Philosophy (Ph.D.) in Civil and Environmental Engineering<br>Stanford University, Stanford, California, USA |
| 1998 | Master of Science (M.S.) in Meteorology<br>San Jose State University, San Jose, California, USA |
| 1995 | Master of Science (M.S.) in Civil and Environmental Engineering<br>Politecnico di Milano, Milan, Italy |

## Appointments

| | |
|---|---|
| 2022–present | **Professor, Unidel Howard Cosgrove Career Development Chair in the Environment**<br>Department of Geography and Spatial Sciences (75%)<br>College of Earth, Ocean, and Environment -and-<br>Department of Mechanical Engineering (25%)<br>College of Engineering<br>University of Delaware |
| 2011–2022 | **Professor** (2018–2022)<br>**Associate Professor** (with tenure: 2015–2018)<br>**Associate Professor** (without tenure: 2011–2015)<br>Program of Physical Ocean Science and Engineering (70%) -and-<br>Department of Geography (30%)<br>College of Earth, Ocean, and Environment, University of Delaware |
| 2022–present | **Director**<br>Center for Research in Wind (CReW), University of Delaware |
| 2018–2022 | **Wind Power Associate Director**<br>Center for Research in Wind (CReW), University of Delaware |
| 2011–2013 | **Visiting Scientist** (June–July 2011; June–August 2012; July–August 2013)<br>National Center for Atmospheric Research, Boulder (Colorado) |

2008–2011 **Assistant Professor**
Department of Geological and Environmental Sciences, California State University - Chico

2005–2011 **Consulting Assistant Professor**
Department of Civil and Environmental Engineering, Stanford University

2007–2008 **Research Associate**
Department of Global Ecology, Carnegie Institution for Science, Stanford (California)

2005–2007 **Atmospheric Modeler**
Bay Area Air Quality Management District, San Francisco (California)

2004–2005 **Post-Doctoral Scholar**
Department of Civil and Environmental Engineering, Stanford University

# Publications

H-index: 33
Number of citations: 5366

Following is a complete list of all my scientific contributions. Links to websites are shown in blue. My authorship is shown in **bold** and my student and postdoc co-authors are shown with a star superscript (*).

## Journal articles

56. Golbazi*, M., and **C. L. Archer**, 2023: Impacts of maritime shipping on air pollution along the US East Coast, *Atmospheric Chemistry and Physics Discussions*, 1–21, doi: 10.5194/acp-2023-7

55. Wu*, S., **C. L. Archer**, and J. D. Mirocha, 2023: New insights on wind turbine wakes from large-eddy simulation: Wake contraction, dual nature, and temperature effects. *Wind Energy*, 1–22, doi: 10.1002/we.2827

54. Ma*, Y., **C. L. Archer**, and A. Vasel-Be-Hagh, 2022: The Jensen wind farm parameterization, *Wind Energy Science*, 7(6), 2407–2431, doi: 10.5194/wes-2022-19

53. Moghani*, M., and **C. L. Archer**, 2022: Impacts of replacing coal with renewable energy sources and electrifying the transportation sector on future ozone concentrations in the U.S. under a warming climate. *Atmospheric Pollution Research*, 13(9), 101522, doi: 0.1016/j.apr.2022.101522

52. Ma*, Y., **C. L. Archer**, and A. Vasel-Be-Hagh, 2022: Comparison of individual versus ensemble wind farm parameterizations inclusive of sub-grid wakes for the WRF model. *Wind Energy*, 25(9), 1573–1595, doi: 10.1002/we.2758

51. Golbazi*, M., **C. L. Archer**, and S. Alessandrini, 2022: Surface impacts of large offshore wind farms. *Environmental Research Letters*, 17(6), 064021, doi: 10.1088/1748-9326/ac6e49

50. Wu*, S., and **C. L. Archer**, 2021: Near-ground effects of wind turbines: Observations and physical mechanisms. *Monthly Weather Review*, 149(3), 879–898, doi: 10.1175/MWR-D-20-0186.1

49. **Archer, C. L.**, S. Wu*, Y. Ma*, and P. A. Jiménez, 2020: Two corrections for turbulent kinetic energy generated by wind farms in the WRF model. *Monthly Weather Review*, 148(12), 4823–4835, doi: 10.1175/MWR-D-20-0097.1

48. Moghani*, M., and **C. L. Archer**, 2020: The impact of emissions and climate change on future ozone concentrations in the U.S. *Air Quality, Atmosphere & Health*, 13, 1465–1476, doi: 10.1007/s11869-020-00900-z

47. **Archer, C. L.**, G. Cervone, M. Golbazi*, N. Al Fahel*, and C. Hultquist, 2020: Changes in air quality and human mobility in the USA during the COVID19 pandemic. *Bulletin of Atmospheric Science and Technology*, 1, 491–514, doi: 10.1007/s42865-020-00019-0

46. Nouri, R., A. Vasel-Be-Hagh, and **C. L. Archer**, 2020: The Coriolis force and the direction of rotation of the blades significantly affect the wake of wind turbines. *Applied Energy*, 277, 115511, doi: 10.1016/j.apenergy.2020.115511

45. Jin*, E., N. Al Fahel*, P. Mondal, H. Li, and **C. L. Archer**, 2020: Energy footprint of food: The case of corn production in Delaware. *Food and Energy Security*, 9(3), doi: 10.1002/fes3.222

44. Al Fahel*, N., and **C. L. Archer**, 2020: Observed onshore precipitation changes after the installation of offshore wind farms. *Bulletin of Atmospheric Science and Technology*, 1, 179–203, doi: 10.1007/s42865-020-00012-7

43. Yan*, C., Y. Pan*, and **C. L. Archer**, 2019: A general method to estimate wind farm power using artificial neural networks. *Wind Energy*, 22(11), 1421–1432, doi: 10.1002/we.2379

42. **Archer, C. L.**, J. F. Brodie*, and S. Rauscher, 2019: Global warming will aggravate ozone pollution in the U.S. Mid-Atlantic. *Journal of Applied Meteorology and Climatology*, 58(6), 1267–1278, doi: 10.1175/JAMC-D-18-0263.1

41. **Archer, C. L.**, and A. Vasel-Be-Hagh*, 2019: Wake steering via yaw control in multi-turbine wind farms: Recommendations based on Large-Eddy Simulation. *Sustainable Energy Technology and Assessments*, 33, 34–43, doi: 10.1016/j.seta.2019.03.002

40. Golbazi*, M., and **C. L. Archer**, 2019: Methods to estimate surface roughness length for offshore wind energy. *Advances in Meteorology*, 2019, 5695481, 15 pp., doi: 10.1155/2019/5695481

39. **Archer, C. L.**, S. Wu*, A. Vasel-Be-Hagh*, J. F. Brodie*, R. Delgado, A. St. Pé, S. Oncley, and S. Semmer, 2019: The VERTEX field campaign: Observations of near-ground effects of wind turbine wakes. *Journal of Turbulence*, 20(1), 64–92, doi: 10.1080/14685248.2019.1572161

38. Moghani*, M., **C. L. Archer**, and A. Mirzakhalili, 2018: The importance of transport to ozone pollution in the U.S. Mid-Atlantic. *Atmospheric Environment*, 191, 420–431, doi: 10.1016/j.atmosenv.2018.08.005

37. **Archer, C. L.**, A. Vasel-Be-Hagh*, C. Yan*, S. Wu*, Y. Pan*, J. F. Brodie*, and A. E. Maguire, 2018: Review and evaluation of wake loss models for wind energy applications. *Applied Energy*, 226, 1187–1207, doi: 10.1016/j.apenergy.2018.05.085

36. Pan*, Y., and **C. L. Archer**, 2018: A hybrid wind farm parameterization for mesoscale and climate models. *Boundary-Layer Meteorology*, 168, 469–495, doi: 10.1007/s10546-018-0351-9

35. Pan*, Y., and **C. L. Archer**, 2018: Precipitation reduction during Hurricane Harvey with simulated offshore wind farms. *Environmental Research Letters*, 13(8), 084007, doi: 10.1088/1748-9326/aad245

34. Yan*, C., and **C. L. Archer**, 2017: Assessing compressibility effects on the performance of large horizontal-axis wind turbines. *Applied Energy*, 212, 33–45, doi: 10.1016/j.apenergy.2017.12.020

33. Vasel-Be-Hagh*, A., and **C. L. Archer**, 2017: Wind farms with counter-rotating wind turbines. *Sustainable Energy Technologies and Assessments*, 24, 19–30, doi: 10.1016/j.seta.2016.10.004

32. Xie*, S., and **C. L. Archer**, 2017: A numerical study of wind turbine wakes for three atmospheric stability conditions. *Boundary-Layer Meteorology*, 165(1), 87–112, doi: 10.1007/s10546-017-0259-9

31. Ghaisas*, N., **C. L. Archer**, S. Xie*, S. Wu*, and E. Maguire, 2017: Evaluation of layout and atmospheric stability effects in wind farms using large-eddy simulation. *Wind Energy*, 20(7), 1227–1240, doi: 10.1002/we.2091

30. Vasel-Be-Hagh*, A., and **C. L. Archer**, 2017: Wind farm hub height optimization. *Applied Energy*,195, 905–921, doi: 10.1016/j.apenergy.2017.03.089

29. Simão, H. P., W. B. Powell, **C. L. Archer**, and W. Kempton, 2017: The challenge of integrating offshore wind power in the U.S. electric grid. Part II: Simulation of electricity market operations. *Renewable Energy*, 103, 418–431, doi: 10.1016/j.renene.2016.11.049

28. **Archer, C. L.**, H. P. Simão, W. Kempton, W. B. Powell, and M. J. Dvorak, 2017: The challenge of integrating offshore wind power in the U.S. electric grid. Part I: Wind forecast error. *Renewable Energy*, 103, 346–360, doi: 10.1016/j.renene.2016.11.047

27. Santos-Alamillos*, **C. L. Archer**, L. Noel*, C. Budischak, and W. Facciolo*, 2017: Assessing the economic feasibility of the gradual decarbonization of a large electric power system. *Journal of Cleaner Production*, 147, 130–141, doi: 10.1016/j.jclepro.2017.01.097

26. Noel*, L., J. F. Brodie*, W. Kempton, **C. L. Archer**, and C. Budischack, 2017: Cost minimization of generation, storage, and new loads, comparing costs with and without externalities. *Applied Energy*, 189, 110–121, doi: 10.1016/j.apenergy.2016.12.060

25. Xie*, S., **C. L. Archer**, N. Ghaisas*, and C. Meneveau, 2017: Benefits of collocating vertical-axis and horizontal-axis wind turbines in large wind farms. *Wind Energy*, 20(1), 45–62, doi: 10.1002/we.1990

24. **Archer, C. L.**, B. A. Colle, D. L. Veron, F. Veron, and M. J. Sienkiewicz, 2016: On the predominance of unstable atmospheric conditions in the marine boundary layer offshore of the U.S. northeastern coast. *Journal of Geophysical Research - Atmospheres*, 121(15), 8869–8885, doi: 10.1002/2016JD024896

23. Colle, B. A., M. J. Sienkiewicz, **C. L. Archer**, D. L. Veron, F. Veron, W. Kempton, and J. E. Mak, 2016: Improving the Mapping and Prediction of Offshore Wind Resources (IMPOWR): Experimental overview and first results. *Bulletin of the American Meteorological Society*, 97(8), 1377–1390, doi: 10.1175/BAMS-D-14-00253.1

22. Ghaisas*, N., and **C. L. Archer**, 2016: Geometry-based models for studying the effects of wind farm layout. *Journal of Atmospheric and Oceanic Technology*, 33, 481–501, doi: 10.1175/JTECH-D-14-00199.1

21. Xie*, S., N. Ghaisas*, and **C. L. Archer**, 2015: Sensitivity issues in finite-difference large-eddy simulations of the atmospheric boundary layer with dynamic subgrid scale models. *Boundary-Layer Meteorology*, 157(3), 421–445, doi: 10.1007/s10546-015-0071-3

20. Xie*, S., and **C. L. Archer**, 2015: Self-similarity and turbulence characteristics of wind turbine wakes via large-eddy simulation. *Wind Energy*, 18(10), 1815–1838, doi: 10.1002/we.1792

19. Firestone, J., **C. L. Archer**, M. P. Gardner, J. A. Madsen, A. K. Prasad, and D. E. Veron, 2015: Opinion: The time has come for offshore wind power in the United States. *Proceedings of the National Academy of Sciences*, 112(39), 11985–11988, doi: 10.1038/nclimate2120

18. Jacobson, M. Z., **C. L. Archer**, and W. Kempton, 2014: Taming hurricanes with arrays of offshore wind turbines. *Nature Climate Change*, 4, 195–200, doi: 10.1038/nclimate2120

17. **Archer, C. L.**, L. Delle Monache, and D. Rife, 2014: Airborne Wind Energy: Optimal locations and variability. *Renewable Energy*, 64, 180–186, doi: 10.1016/j.renene.2013.10.044

16. **Archer, C. L.**, B. A. Colle, L. Delle Monache, M. J. Dvorak, J. Lundquist, B. H. Bailey, P. Beaucage, M. J. Churchfield, A. C. Fitch, B. Kosovic, S. Lee, P. J. Moriarty, H. Simão, R. J. A. M. Stevens, D. Veron, J. and Zack, 2014: Meteorology for coastal/offshore wind energy in the United States: Recommendations and research needs for the next 10 years, *Bulletin of the American Meteorological Society*, 95(4), 515–519, doi: 10.1175/BAMS-D-13-00108.1

15. **Archer, C. L.**, and M. Z. Jacobson, 2013: Geographical and seasonal variability of the global "practical" wind resources. *Applied Geography*, 45, 119–130, doi: 10.1016/j.apgeog.2013.07.006

14. **Archer, C. L.**, S. Mirzaeisefat*, and S. Lee, 2013: Quantifying the sensitivity of wind farm performance to array layout options using large-eddy simulation. *Geophysical Research Letters*, 40(18), 4963–4970, doi: 10.1002/grl.50911

13. Jacobson, M. Z., and **C. L. Archer**, 2012: Saturation wind power potential and its implications for wind energy. *Proceedings of the National Academy of Sciences*, 109(39), 15679–15684, doi: 10.1073/pnas.1208993109

12. Dvorak, M. J., E. D. Stoutenburg, **C. L. Archer**, W. Kempton, and M. Z. Jacobson, 2012: Where is the ideal location for a US East Coast offshore grid? *Geophysical Research Letters*, 39(6), doi: 10.1029/2011GL050659

11. Mason, J. E., and **C. L. Archer**, 2011: Baseload electricity from wind via Compressed Air Energy Storage (CAES). *Renewable and Sustainable Energy Reviews*, 16(2), 1099–1109, doi: 10.1016/j.rser.2011.11.009

10. Dvorak, M. J., **C. L. Archer**, and M. Z. Jacobson, 2010: California offshore wind energy potential. *Renewable Energy*, 35(6), 1244–1254, doi: 10.1016/j.renene.2009.11.022

9. **Archer, C. L.**, and K. Caldeira, 2009: Global assessment of high-altitude wind power. *Energies*, 2(2), 307–319, doi: 10.3390/en20200307

8. Jiang, Q., J. D. Doyle, T. Haack, M. J. Dvorak, **C. L. Archer**, and M. Z. Jacobson, 2008: Exploring wind energy potential off the California coast. *Geophysical Research Letters*, 35(20), doi: 10.1029/2008GL034674

7. **Archer, C. L.** and K. Caldeira, 2008: Historical trends in the jet streams. *Geophysical Research Letters*, 35(8), doi: 10.1029/2008GL033614

6. **Archer, C. L.**, and M. Z. Jacobson, 2007: Supplying baseload power and reducing transmission requirements by interconnecting wind farms. *Journal of Applied Meteorology and Climatology*, 46(11), 1701–1717, doi: 10.1175/2007JAMC1538.1

5. Kempton, W., **C. L. Archer**, A. Dhanju, R. W. Garvine, and M. Z. Jacobson, 2007: Large CO2 reductions via offshore wind power matched to inherent storage in energy end-uses. *Geophysical Research Letters*, 34(2), doi: 10.1029/2006GL028016

4. **Archer, C. L.**, M. Z. Jacobson, and F. L. Ludwig, 2005: The Santa Cruz Eddy. Part 1: Observations and statistics. *Monthly Weather Review*, 133(4), 767–782, doi: 10.1175/MWR2885.1

3. **Archer, C. L.**, and M. Z. Jacobson, 2005b: The Santa Cruz Eddy. Part 2: Mechanisms of formation. *Monthly Weather Review*, 133(8), 2387–2405, doi: 10.1175/MWR2979.1

2. **Archer, C. L.**, and M. Z. Jacobson, 2005a: Evaluation of global wind power. *Journal of Geophysical Research*, 110(D12), doi: 10.1029/2004JD005462

1. **Archer, C. L.**, and M. Z. Jacobson, 2003: Spatial and temporal distributions of U.S. winds and wind power at 80 m derived from measurements. *Journal of Geophysical Research*, 108(D9), doi: 10.1029/2002JD002076

## Book chapters

3. **Archer, C. L.**, and A. F. Blumberg, 2016: Coastal protection via offshore wind farms: A transformative idea. *Blue dunes – Climate change by design*, J. M. Keenan and C. Weisz, Eds., Columbia Books, ISBN 9781941332153, 118–120.

2. **Archer, C. L.**, 2013: Chapter 5 - An introduction to meteorology for airborne wind energy. *Airborne wind energy - Fundamentals and applications*, U. Ahrens, M. Diehl, and R. Schmehl, Eds., Springer, ISBN 978-3-642-39964-0, 81–94. [pdf]

1. Rogner, H. H., R. F. Aguilera, **C. L. Archer**, R. Bertani, S. C. Bhattacharya, M. B. Dusseault, L. Gagnon, H. Haberl, M. Hoogwijk, A. Johnson, M. L. Rogner, H. Wagner, and V. Yakushev, 2012: Chapter 7 - Energy resources and potentials. *Global Energy Assessment - Towards a sustainable future*, H. H. Rogner, Ed., Cambridge University Press, 423–512. [pdf]

## Scientific commentaries and discussions

Short publications (4-5 pages) in either peer-reviewed journals or peer-reviewed online discussions that underwent a less rigorous peer-review than journal papers, generally by the journal editor only.

8. Brodie*, J. F., **C. L. Archer**, and S. A. Rauscher, 2017: Ozone pollution in Delaware: How does climate change influence ozone-related health? *Delaware Journal of Public Health*, 3(6), 6–11

7. Fitch, A. C., J. B. Olson, J. K. Lundquist, J. Dudhia, A. K. Gupta, J. Michalakes, I. Barstad, and **C. L. Archer**, 2013: Corrigendum – Local and mesoscale impacts of wind farms as parameterized in a mesoscale NWP model. *Monthly Weather Review*, 141(4), 1395–1395, doi: 10.1175/MWR-D-12-00341.1

6. **Archer, C. L.**, M. Z. Jacobson, and M. R. V. Santa Maria, 2010a: Comment on "Problem of the second wind turbine - a note on a common but flawed wind power estimation method," by Gans et al. (2010). *Earth System Dynamics Discussions*

5. **Archer, C. L.**, M. Z. Jacobson, and M. R. V. Santa Maria, 2010b: Reply to authors' response to Comment on "Problem of the second wind turbine - a note on a common but flawed wind power estimation method" by Gans et al. (2010). *Earth System Dynamics Discussions*

4. Jacobson, M. Z., and **Archer, C. L.**, 2010: Comment on "Estimating maximum global land surface wind power extractability and associated climatic consequences," by L. M. Miller, F. Gans, and A. Kleidon. *Earth System Dynamics Discussions*

3. **Archer, C. L.**, and K. Caldeira, 2008: Reply to comment by Courtenay Strong and Robert E. Davis on "Historical trends in the jet streams". *Geophysical Research Letters*, 35, L24807, doi: 10.1029/2008GL035114

2. **Archer, C. L.**, and M. Z. Jacobson, 2006: Comment on "Evaluation of a wind power parameterization using tower observations" by Steven M. Lazarus and Jennifer Bewley. *Journal of Geophysical Research*, 111(D10), doi: 10.1029/2005JD006098

1. **Archer, C. L.**, and M. Z. Jacobson, 2004: Correction to "Spatial and temporal distributions of U.S. winds and wind power at 80 m derived from measurements". *Journal of Geophysical Research*, 109(D20), doi: 10.1029/2004JD005099

## Conference proceedings

Short publications (max 6-11 pages) in conference proceedings that underwent a less rigorous peer-review process than journal papers. Each conference proceeding is associated with an oral presentation.

8. Golbazi*, M., and **C. L. Archer**, 2019: Surface roughness for offshore wind energy. *NAWEA/Windtech 2019*, North American Wind Energy Association (NAWEA), University of Massachusetts Amherst (MA), 14–16 October, 11 pp.

7. Moghani*, M., and **C. L. Archer**, 2017: The importance of transport to ozone pollution in Delaware. *Guideline on Air Quality Models: The Changes*, Air and Waste Management Association (AWMA), Chapel Hill (NC), 14–16 November, 6 pp.

6. Yan*, C., and **C. L. Archer**, 2017: An assessment of compressibility effects for large wind turbines using the blade element momentum method. *International Conference of Numerical Analysis and Applied Mathematics (ICNAAM 2017)*, Thessaloniki (Greece), 25–30 September, 5 pp.

5. Pan*, Y., and **C. L. Archer**, 2017: Analysis of the role of large wind farms in reducing the impact of hurricanes near the coast of New Orleans. *International Conference of Numerical Analysis and Applied Mathematics (ICNAAM 2017)*, Thessaloniki (Greece), 25–30 September, 5 pp.

4. **Archer, C. L.**, and K. Caldeira, 2008: Historical trends in the jet streams. *20th Conference on Climate Variability and Change*, American Meteorological Society, New Orleans (LA), 20–24 January, 6 pp.

3. **Archer, C. L.**, P. T. Martien, S.-T. Soong, and S. Tanrikulu, 2006: Comparison of simulated ozone generated with growth-and-control vs. uniformly-reduced emission inventories in California. *14th Joint Conference on the Applications of Air Pollution Meteorology with the Air and Waste Management Association*, American Meteorological Society, Atlanta (GA), 29 January – 2 February, 7 pp.

2. Soong, S.-T., P. T. Martien, **C. L. Archer**, S. Tanrikulu, J.-W. Bao, J. M. Wilczak, S. A. Michelson, Y. Jia, and C. Emery, 2006: Comparison of WRF/CAMx and MM5/CAMx simulations for an ozone episode in California. *14th Joint Conference on the Applications of Air Pollution Meteorology with the Air and Waste Management Association*, American Meteorological Society, Atlanta (GA), 29 January – 2 February, 7 pp.

1. **Archer, C. L.**, and M. Z. Jacobson, 2001: The Santa Cruz Eddy: Observations and numerical simulations. *Ninth Conference on Mesoscale Processes*, American Meteorological Society, Fort Lauderdale (FL), 29 July – 2 August, 7 pp.

## Conference abstracts

Abstracts (300-500 words) published in conferences proceedings about my research. Each abstract is associated with an oral presentation (default) or a poster (when specified). In general, oral presentations are more prestigious than posters, especially when invited.

51. **Archer, C. L.**, 2022: The complex story of how wind turbines affect near-ground meteorological properties, NAWEA/WindTech 2022 conference, University of Delaware, Newark, 20–22 September 2022.

50. Wu*, S., and **C. L. Archer**, 2022: New insights on wind turbine wakes from large-eddy simulation: Wake contraction, dual nature, and temperature effects. NAWEA/WindTech 2022 conference, University of Delaware, Newark, 20–22 September 2022.

49. **Archer, C. L.**, Y. Ma*, and A. Vasel-Be-Hagh*, 2021: The Jensen wind farm parameterization for the WRF and MPAS models, Wind Energy Science Conference (WESC) 2021, Virtual, 25 June 2021.

48. Ma*, Y., and **C. L. Archer**, 2021: A Jensen-based wind farm parameterization for the WRF and MPAS models, $101^{st}$ Annual Meeting of the American Meteorological Society (AMS), Virtual, 10–15 January 2021.

47. Wu*, S., and **C. L. Archer**, 2020: Near-ground effects of wind turbines: Observations and physical mechanisms. 2020 Fall Meeting of the American Geophysical Union (AGU), Virtual, 1–17 December 2020.

46. **Archer, C. L.**, and S. Wu*, 2019: Wind turbines do not enhance vertical mixing near the ground. 100th Fall Meeting of the American Geophysical Union (AGU), San Francisco (CA), 9–13 December 2019 (poster).

45. Moghani*, M., and **C. L. Archer**, 2019: The impacts of emissions and climate change on the future U.S. ozone. $18^{th}$ CMAS Conference, Community Modeling and Analysis System (CMAS), Chapel Hill (NC), 21–23 October 2019 (poster).

44. Golbazi*, M., and **C. L. Archer**, 2019: Surface roughness for offshore wind energy, NAWEA/WindTech 2019 conference, University of Massachusetts, Amherst, 14–16 October 2019 (poster).

43. **Archer, C. L.**, C. Yan*, and Y. Pan *, 2019: A two-dimensional power curve from artificial neural networks to predict wind farm power. $6^{th}$ International Conference Energy and Meteorology, Technical University of Denmark, Copenhagen (Denmark), 25–27 June 2019 (poster).

42. Wu*, S., and **C. L. Archer**, 2019: On the lack of enhanced vertical mixing near the ground under the wake of a wind turbine during the 2016 VERTEX field campaign. $10^{th}$ Conference on Weather, Climate, and the New Energy Economy, $99^{th}$ Annual Meeting of the American Meteorological Society (AMS), Phoenix (AZ), 6–10 January 2019.

41. Moghani*, M., and **C. L. Archer**, 2019: Ozone transport in the U.S. Mid-Atlantic, $21^{st}$ Conference on Atmospheric Chemistry, $99^{th}$ Annual Meeting of the American Meteorological Society (AMS), Phoenix, 6–10 January 2019.

40. St. Pé, A., M. Sperling, A. Choukulkar, **C. L. Archer**, and R. Delgado, 2018: Evaluating wind power prediction uncertainty using scanning Doppler wind lidar. Ninth Conference on Weather, Climate, and the New Energy Economy, $98^{th}$ Annual Meeting of the American Meteorological Society (AMS), Austin (TX), 7–11 January 2018.

39. Pan*, Y., and **C. L. Archer**, 2017: Impacts of a large array of offshore wind farms on precipitation during hurricane Harvey. Fall Meeting of the American Geophysical Union (AGU), New Orleans (LA), 11–15 December 2017.

38. **Archer, C. L.**, and F. Santos-Alamillos*, 2017: Lowest-cost decarbonization of a large electricity system by adding wind farms and high-voltage transmission lines. Fourth International Conference on Energy and Meteorology (ICEM), Bari (Italy), 27–29 June 2017.

37. Brodie*, J. F., **C. L. Archer**, and S. A. Rauscher, 2017: Understanding climate change impacts on ozone concentrations in Delaware. Delaware Climate and Health Conference, Dover (DE), 6 June 2017. (invited)

36. **Archer, C. L.**, W. Kempton, H. P. Simão, and W. B. Powell, 2017: Integration of large amounts of offshore wind power in the U.S. electric grid. Windfarms 2017 Conference, Universidad Pontificia Comillas, Madrid (Spain), May 31–June 2, 2017.

35. **Archer, C. L.**, 2017: IMPOWR: Improving the Mapping and Prediction of Offshore Wind Resources with aircraft and in-situ observations. 2017 International Offshore Wind Partnering Forum, Annapolis (MD), 19–21 April 2017. (invited)

34. Pan*, Y., and **C. L. Archer**, 2016: A hybrid wind farm parameterization for mesoscale and climate models. 2016 Fall Meeting of the American Geophysical Union (AGU), San Francisco (CA), 12–16 December 2016. (poster)

33. Vasel-Be-Hagh*, A., and **C. L. Archer**, 2016: Hub height optimization to increase energy production of wind farms. 2016 Fall Meeting of the American Geophysical Union (AGU), San Francisco (CA), 12–16 December 2016.

32. **Archer, C. L.**, and C. Yan*, 2016: Compressibility effects in wind turbine wakes. Windfarms 2016, University of Texas at Dallas, 23–25 May 2016. (invited)

31. Yan*, C., and **C. L. Archer**, 2015: A Non-Incompressible Non-Boussinesq (NINB) framework for studying atmospheric turbulence. 2015 Fall Meeting of the American Geophysical Union (AGU), San Francisco (CA), 14–18 December 2015.

30. **Archer, C. L.**, W. Kempton, H. P. Simão, and W. B. Powell, 2015: The importance of wind forecast errors for integrating offshore wind power into the electric grid. Third International Conference on Energy and Meteorology (ICEM), Boulder (CO), 22–26 June 2015.

29. **Archer, C. L.**, B. A. Colle, D. Veron, M. J. Sienkiewicz, F. Veron, and J. F. Brodie, 2015: Improving the Mapping and Prediction of Offshore Wind Resources (IMPOWR): Validation of ensembles with historical field data. Third International Conference on Energy and Meteorology (ICEM), Boulder (CO), 22–26 June 2015.

28. Colle, B. A., M. J. Sienkiewicz, **C. L. Archer**, and D. Veron, 2015: The IMPOWR (Improving the Mapping and Prediction of Offshore Wind Resources) project: Evaluation of WRF PBL schemes. 2015 Symposium of the North American Wind Energy Academy (NAWEA), Virginia Tech, Blacksburg (VA), 9–11 June 2015.

27. **Archer, C. L.**, S. Xie*, N. S. Ghaisas*, and C. Meneveau, 2015: Benefits of vertically-staggered wind turbines from theoretical analysis and Large-Eddy Simulations. 2015 Symposium of the North American Wind Energy Academy (NAWEA), Virginia Tech, Blacksburg (VA), 9–11 June 2015.

26. **Archer, C. L.**, 2015: Wind turbine wakes and turbulence from fine to global scale. Symposium on carbon management, Yale University, New Haven (CT), 2 May 2015. (invited)

25. **Archer, C. L.**, and N. S. Ghaisas*, 2015: Optimizing wind farm layout via geometry-based models inclusive of wind direction and atmospheric stability effects. 2015 General Assembly of the European Geosciences Union (EGU), Vienna, Austria, 12–17 April 2015.

24. Xie*, S., **C. L. Archer**, and N. Ghaisas*, 2014: Finite-difference large-eddy simulations of atmospheric turbulence using a Lagrangian scale-dependent sub-grid scale model. 2014 Fall Meeting of the American Geophysical Union (AGU), San Francisco (CA), 15–19 December 2014.

23. **Archer, C. L.**, and N. S. Ghaisas*, 2014: Atmospheric stability effects on wind farm performance using large-eddy simulation. 2014 Fall Meeting of the American Geophysical Union (AGU), San Francisco (CA), 15–19 December 2014. (invited)

22. Ghaisas*, N. S., and **C. L. Archer**, 2014: A geometry-based approach for optimizing wind turbine layout. 67th Annual Meeting of the American Physical Society's Division of Fluid Dynamics, San Francisco (CA), 23–25 November 2014.

21. **Archer, C. L.**, 2014: Forecast error models and offshore wind integration. 2014 Offshore Conference of the American Wind Energy Association, Atlantic City (NJ), 7 October 2014.

20. Brodie*, J. F., D. E. Veron, **C. L. Archer**, and F. Veron, 2014: Modeling offshore wind farm configurations in a mesoscale atmospheric model to optimize power production. 2014 Ocean Science Meeting, Honolulu (HI), 23–28 February 2014 (poster).

19. **Archer, C. L.**, S. Mirzaeisefat*, S. Lee, and S. Xie*, 2013: Quantifying array losses due to spacing and staggering in offshore wind farms. 2013 Fall Meeting of the American Geophysical Union (AGU), San Francisco (CA), 9–13 December 2013. (invited)

18. Xie*, S. and **C. L. Archer**, 2013: Self-similarity and turbulence characteristics of wind turbine wakes via large-eddy simulation. 2013 Fall Meeting of the American Geophysical Union (AGU), San Francisco (CA), 9–13 December 2013. (invited)

17. Jacobson, M. Z., **C. L. Archer**, and W. Kempton, 2013: Taming hurricanes with arrays of offshore wind turbines that simultaneously reduce global warming and air pollution and provide normal electric power. 2013 Fall Meeting of the American Geophysical Union (AGU), San Francisco (CA), 9–13 December 2013. (invited)

16. **Archer, C. L.**, 2013: Optimal locations for airborne wind energy. Airborne Wind Energy Conference (AWEC) 2013, Berlin (Germany), 10–11 September 2013.

15. **Archer, C. L.**, 2013: Why wind energy? Goldschmidt 2013, Florence (Italy), 25–30 August 2013. (invited)

14. **Archer, C. L.**, L. Delle Monache, and D. L. Rife, 2013: Global distributions and temporal variations of low-level jets for Airborne Wind Energy applications. 93rd Annual Meeting of the American Meteorological Society, Austin (TX), 6–10 January 2013 (poster).

13. **Archer, C. L.**, and M. Z. Jacobson, 2012: World, land, and high-altitude saturation wind power potentials. 2012 Fall Meeting of the American Geophysical Union (AGU), San Francisco (CA), 3–7 December 2012 (poster).

12. Brodie*, J. F., D. E. Veron, **Archer, C. L.**, and F. Veron, 2012: Investigation of turbine spacing on turbulent wake effects and power output using a mesoscale atmospheric model. American Wind Energy Association (AWEA) Offshore WINDPOWER Conference and Exposition, Virginia Beach (VA), 9–11 October 2012.

11. **Archer, C. L.**, 2012: Global distributions and temporal variations of low-level wind speed maxima for airborne wind energy applications. Airborne Wind Energy Conference 2012, National Institute of Aerospace, Hampton (VA), 11–12 September 2012.

10. **Archer, C. L.**, 2012: Geographical and seasonal variability of the global "practical" wind power potential. Airborne Wind Energy Conference 2012, National Institute of Aerospace, Hampton (VA), 11–12 September 2012.

9. **Archer, C. L.**, and M. Z. Jacobson, 2010: Seasonal and annual variability of the global on-shore and off-shore wind power resource at 100 m. 2010 Fall Meeting of the American Geophysical Union (AGU), San Francisco, California, 13–17 December 2010.

8. **Archer, C. L.**, M. Sloggy*, E. Liebig*, and A. Rhoades*, 2010: Integrating wind energy in the electricity grid in the US. 2010 General Assembly of the European Geosciences Union, Vienna, 3–7 May 2010.

7. Liebig*, E. C., A. Rhoades*, M. Sloggy*, D. Mills, and **C. L. Archer**, 2009: On the integration of wind and solar energy to provide a total energy supply in the U.S. 2009 Fall Meeting of the American Geophysical Union (AGU), San Francisco, California, 14–18 December 2009 (poster).

6. **Archer, C. L.**, and K. Caldeira, 2008: Global assessment of high-altitude wind power. 2008 Fall Meeting of the American Geophysical Union (AGU), San Francisco, California, 15–19 December 2008.

5. **Archer, C. L.**, and M. Z. Jacobson, 2007: Supplying reliable electricity and reducing transmission requirements by interconnecting wind farms. 2007 Fall Meeting of the American Geophysical Union (AGU), San Francisco, California, 10–14 December 2007.

4. Dvorak, M. J., M. Z. Jacobson, and **C. L. Archer**, 2007: California offshore wind energy potential. Windpower 2007 Conference and Exhibition, June 1–6 2007, Los Angeles, California.

3. **Archer, C. L.**, and M. Z. Jacobson, 2005: Evaluation of global wind power and interconnected wind farms. 2005 Fall Meeting of the American Geophysical Union (AGU), San Francisco, California, 5–9 December 2005.

2. **Lozej, C.**, and R. D. Bornstein, 1999: Comparison of nesting techniques within a meteorological model. Air Pollution 99, Stanford University, Stanford, California, 27–29 July 1999.

1. **Lozej, C.**, and R. D. Bornstein, 1999: Comparison of nesting techniques within MM5: application to a precipitation event over the Western US. Pacific Northwest Weather Workshop, Seattle, Washington, 26–27 February 1999.

## Invited presentations

Guest lectures, presentations, seminars, or panels that I was invited to.

73. "Modeling (and observations) of wind turbine wakes in the atmosphere." Hydrodynamics modeling and implications for offshore wind development, National Academies of Sciences, Engineering, Medicine - Ocean Studies Board, Washington DC, 1 June 2023.

72. "The complex story of how wind turbines affect near-ground properties." Wind Energy Fellows Seminar Series, Mechanical and Industrial Engineering Department, University of Massachusetts, Amherst, 13 April 2023.

71. "The complex story of how wind turbines affect near-ground properties." Department of Civil and Environmental Engineering Seminar Series, MIT, Boston, 10 February 2023.

70. "The complex story of how wind turbines affect near-ground properties." Department of Mechanical Engineering Graduate Seminar, Johns Hopkins University, Baltimore, 1 December 2022.

69. "The complex story of how wind turbines affect near-ground properties." Burgers Symposium, University of Maryland, College Park, 7 October 2022.

68. "Why wind energy?" Global STEWARDS seminar series, University of Maryland, College Park, 6 October 2022

67. "How will climate change impact ozone concentrations in Delaware?" UD Climate Scholars Program, University of Delaware, 27 April 2022.

66. "The complex story of how wind turbines affect near-ground properties." Environmental Engineering Seminar Series, UC Berkeley, 3 March 2022 (virtual).

65. "Numerical simulations of wind turbine wakes for multi-scale geophysical applications." Department of Mechanical Engineering Seminar Series, University of Delaware, 2 February 2022.

64. "The complex story of how wind turbines affect near-ground properties." NASA, Global Modeling and Assimilation Office (GMAO) Seminar series, 28 September 2021 (virtual).

63. "East Coast offshore wind: Where? Why? How?" Ocean Currents Lecture, 15 July 2021 (virtual).

62. "Advanced wake loss modeling for large wind farms with variable wind speed and direction." Bureau of Energy Management (BOEM), Environmental Studies Program (ESP), 2 March 2021 (virtual).

61. Invited panelist, Airborne Wind Energy workshop, National Renewable Energy Laboratory, 2 March 2021 (virtual).

60. "How will climate change impact ozone concentrations in Delaware?" OSHER Institute for Lifelong Learning, 16 October 2020 (virtual).

59. "The complex story of how wind turbines affect near-ground properties." National Center for Atmospheric Research (NCAR), Earth Observing Lab (EOL) seminar series, 4 August 2020 (virtual).

58. "Meteorological applications for wind energy." Delaware Energy Institute, Seminar series, 24 July 2020 (virtual).

57. "Offshore wind power and Vehicle-to-Grid (V2G)." Delaware Climate Tech-in, Power Dialogue seminar series by Bard College, 8 April 2020 (virtual).

56. "Research roadmap for wind conditions and climatic effects." Panel session, $6^{th}$ International Conference Energy and Meteorology (ICEM), Technical University of Denmark, Copenhagen (Denmark), 25–27 June 2019.

55. "Offshore wind energy along the US East Coast." Port of Wilmington Maritime Society (POWMS), Winter Luncheon 2019, 15 March 2019.

54. "On wind farms and hurricanes." Newark-Lewes Colloquia, School of Marine Science and Policy (SMSP), University of Delaware, 19 October 2018.

53. "From observations to numerical simulations to machine learning: Many techniques are needed to address tough wind energy issues." University of Trento (Italy), 14 June 2018.

52. "From observations to numerical simulations to machine learning: Many techniques are needed to address tough wind energy issues." Danish Technical University (DTU), Risø (Denmark), 16 May 2018.

51. "Wind energy, turbulence, and hurricanes: How to save lives and money with meteorology." University of Trento (Italy), 10 April 2018.

50. "Wind energy, atmospheric turbulence, and hurricanes: How to save lives and money with wind turbine wakes." Highlight Seminar Series of the Andlinger Center for Energy and the Environment, Princeton University, Princeton (NJ), 21 September 2017.

49. "The importance of weather forecasting for high penetration of wind power." Panel Session on High Penetration Scenarios, ICEM 2017, Bari (Italy), 27 June 2017.

48. "Wind energy, turbulence, and hurricanes: How to save lives and money with wind turbine wakes." Department of Geography Seminar Series, University of Delaware, Newark (DE), 24 March 2017.

47. "From wind turbines to kites: Numerical simulations of wind flows for multi-scale geophysical applications." Department of Mechanical Engineering and Engineering Science, University of North Carolina Charlotte, Charlotte (NC), 10 November 2016.

46. "PowerBooster platform: Technical description." Shanghai, China, 23 August 2016.

45. "How to reduce wake losses in wind farms: from CFD to simpler methods." Wind Energy Science, Energy, and Policy (WESEP), Iowa State University, 12 November 2015 (webinar).

44. "Wind forecast error and offshore wind power integration." Mid-Atlantic Wind Integration and Transmission (MAOWIT) workshop, University of Delaware, Newark (DE), 25 September 2015.

43. "Wind turbine wakes and turbulence from fine to global scale." Energy Education Workshop, University of Delaware, Lewes (DE), 31 July 2015.

42. "Wind energy applications for commercialization." Meeting to establish possible collaboration China/UD, Kunming Dianchi Water Treatment (DCWT), Kunming, China, 27 March – 4 April 2015.

41. "Air quality improvements in California, Delaware, and US." Meeting to establish possible collaboration China/UD, Kunming Dianchi Water Treatment (DCWT), Kunming, China, 27 March – 4 April 2015.

40. "Numerical simulations of wind turbine wakes for multi-scale geophysical applications." Center for Environmental and Applied Fluid Mechanics (CEAFM), Johns Hopkins University, Baltimore (MD), 6 February 2015.

39. "Atmosphere and Energy Research Group (AERG)." High-Performance Computing symposium, University of Delaware, Newark (DE), 28 January 2015.

38. "Why wind energy?" Princeton University Program in Science, Technology and Environmental Policy (STEP) seminar series, Princeton University, Princeton (NJ), 8 December 2014.

37. "Wind turbines and turbulence: A complex relationship with unexpected benefits." Physical Ocean Science and Engineering (POSE) seminar series, University of Delaware, Newark (DE), 24 October 2014.

36. Wind turbines and turbulence: A complex relationship with unexpected benefits." Mechanical Engineering seminar series, University of Texas at San Antonio, San Antonio (TX), 17 October 2014.

35. "On wind turbine wakes and their interactions with the atmosphere." International Centre for Theoretical Physics, Trieste, Italy, 29 July 2014.

34. "Emerging research needs in offshore wind power." UD Energy Institute Annual Symposium, Newark, Delaware, 14 May 2014.

33. "Wind energy, turbulence, and hurricanes: How to save lives and money with wind turbine wakes." School of Marine and Atmospheric Sciences, Stony Brook University, Stony Brook, New York, 2 April 2014.

32. "What wind turbine wakes can do for you." Center for Carbon-free Power Integration, University of Delaware, Newark (DE), 10 March 2014.

31. "Protecting urban coasts from hurricanes with offshore wind farms." Rebuild By Design's Science Colloquia, World Trade Center, New York, 27 January 2014.

30. "Recent activities of the Center for Carbon-free Power Integration." UD Energy Institute Annual Symposium, Newark, Delaware, 15 May 2013.

29. "The concept of "saturation" as a geophysical limit to wind power potential." Energy Sciences Institute Symposium (inaugural), Yale University, New Haven, Connecticut, 26 April 2013.

28. "Why wind energy?" Department of Environmental Sciences, Rutgers University, New Brunswick, New Jersey, 15 February 2013.

27. "Wind power is abundant and does not cause global warming." MARACOOS annual meeting, Baltimore, Maryland, 1 November 2012.

26. "Challenges in assessing the global wind power potentials." Environmental Research Interdisciplinary Colloquium, University of South Florida, Tampa, Florida, 24 October 2012.

25. "Highlights of past and current AWE." Airborne Wind Energy Conference 2012, National Institute of Aerospace, Hampton (VA), 11–12 September 2012 (opening keynote).

24. "Wind projects." Annual Symposium of the University of Delaware Energy Institute, Newark, Delaware, 6 June 2012.

23. "Challenges of wind power assessment and integration." Environmental Engineering Seminar, University of Delaware, Newark, Delaware, 16 March 2012.

22. "Assessing global and local high-altitude wind power resources." International workshop on new wind power technology development, University of Beijing, Beijing, China, 30 November 2010.

21. "On the challenges on a wind-based energy system." Computer Science, California Institute of Technology, Pasadena, California, 20 October 2010.

20. "Mitigating wind power intermittency via the transmission grid." Third Southern California Smart Grid Research Symposium, University of Southern California, Los Angeles, California, 5 October 2010.

19. "On the challenges on a wind-based energy system." College of Earth, Ocean, and Environment, University of Delaware, Newark, Delaware, 12 August 2010.

18. "Wind energy: a bridge between energy and environment." Department of Control and Computer Engineering, Politecnico di Torino, Torino, Italy, 4 June 2010.

17. "Wind power: a bridge between energy and environment." Civil and Environmental Engineering seminar series, Stanford University, Stanford, California, 8 February 2010.

16. "Integrating wind and solar for a total energy supply in the US." Environmental Engineering Seminar Series, University of California Berkeley, Berkeley, California, 5 February 2010.

15. "The importance of wind power in a clean and renewable future." California Institute of Technology, Pasadena, California, 11 November 2009.

14. "On wind power in 2020". Next Agenda conference, San Francisco, California, 17 September 2009.

13. "The importance of wind power in a clean and renewable future." Research Applications Laboratory, National Center for Atmospheric Research, Boulder, Colorado, 20 May 2009.

12. "Big Wind: Harvesting energy from the sea, the land, and the sky." This Way to Sustainability conference, Chico, California, 6–9 November 2008

11. "Wind power: a bridge between Energy and Environment." Energy Resources Engineering seminar series, Stanford University, Stanford, California, 19 September 2008.

10. "The importance of wind power in a clean and renewable future." Energy seminar, Woods Institute for the Environment, Stanford University, Stanford, California, 16 April 2008.

9. "A quantification of the offshore wind power resource in the Middle Atlantic Bight." Naval Research Laboratory, Monterey, California, 19 July 2007.

8. "How to mitigate wind intermittency?" Atmospheric Group seminar series, Stanford University, Stanford, California, 30 January 2007.

7. Evaluation of global wind power." Climate change series, Bay Area Air Quality Management District, San Francisco, California, 1 August 2006.

6. "Air quality issues in California." Environmental Fluid Mechanics and Hydrology seminar, Stanford University, California, 27 February 2006.

5. "Evaluation of global and interconnected wind power." NASA Ames, Moffett Field, California, 12 January 2006.
4. "Evaluation of global wind power." Meteorology Department, San Jose State University, San Jose, California, 5 October 2005.
3. "Eddy formation in stratified flow past topography: the Santa Cruz Eddy case." Department of Mechanical Engineering, Santa Clara University, Santa Clara, California, 2 February 2005.
2. "(Cool) data analysis techniques for (hot) atmospheric applications." Lawrence Livermore National Laboratory, Livermore, California, 10 September 2004.
1. "A proposed modeling study of the Santa Cruz Eddy." Naval Research Laboratory, Monterey, California, 1 December 2000.

### Other articles

These are scientific articles for the general public that were not peer-reviewed.

4. Ali, S. H., J. Firestone, and **C. L. Archer**, 2017: Why the U.S. Environmental Protection Agency reflects patriotism, National Geographic Voices, February 2017.
3. Null, J., and **C. L. Archer**, 2008: Wind: the ultimate renewable energy source. *Weatherwise*, July-August, 34–40.
2. **Lozej, C.**, 1997: The modeling tool. The Ozone Pollution, I Manuali, 29, Fondazione Lombardia per l'Ambiente, Milano (Italy), 197–205 (in Italian).
1. **Lozej, C.**, 1997: The urban landscape impact on photochemical pollution. The Ozone Pollution, I Manuali, 29, Fondazione Lombardia per l'Ambiente, Milano (Italy), 217–219 (in Italian).

## Research funding

| | Count | Total budget |
|---|---|---|
| Funded projects as PI or Co-PI | 20 | $3,915,023 |
| Funded projects as PI or Co-PI at UD | 17 | $3,827,684 |

Table 1: Summary of my research funding activities.

20. PI: Cristina Archer
Project title: **The Delaware Offshore Wind Training Pilot Program**
Agency: U.S. Department of Labor, Employment & Training Administration (ETA)
Budget: $1,060,000
Dates: 11/1/2022 – 1/31/2024

19. PI: Cristina Archer
Project title: **Field Campaign in Eastern Kazakhstan for Wind Energy Resource Assessment**
Agency: American Councils for Int'l Education
Budget: $24,000 Dates: 1/1/2023 – 2/29/2024

18. PI: Cristina Archer
Project title: **Improving power predictions and understanding environmental impacts of the planned offshore wind farms along the US East Coast**
Agency: First State Marine Wind, LLC

Budget: $100,000
Dates: 9/1/2022 – 8/31/2024

17. PI: Cristina Archer
Co-PI: Ahmad Vasel-Be-Hagh (Tennessee Tech)
Project title: **Advanced wake loss modeling for large wind farms with variable wind speed and direction**
Agency: U.S. Department of the Interior (DOI), Bureau of Ocean Energy Management (BOEM)
Budget: $186,244
Dates: 10/1/2019 – 2/16/2021

16. PI: Cristina Archer
Project title: **The energy footprint of food**
Agency: Delaware Energy Institute (DEI)
Budget: $150,000
Dates: 2/1/2019 - 8/31/2021

15. PI: Cristina Archer
Project title: **Ozone transport modeling**
Agency: Delaware Natural Resources and Environmental Control (DNREC)
Budget: $199,845
Dates: 11/7/2017 - 12/31/2019

14. PI: Cristina Archer
Co-PI: Sara A. Rauscher
Project title: **Understanding climate change impacts on ozone concentrations and human health in Delaware**
Agency: Delaware Natural Resources and Environmental Control (DNREC)
Budget: $109,628
Dates: 8/1/2016 - 9/6/2020

13. PI: Cristina L. Archer
Project title: **Improved understanding of vertical mixing in the lower atmospheric boundary layer in the presence of wind turbines via numerical simulations and measurements**
Agency: National Science Foundation - Physical and Dynamic Meteorology
Budget: $401,776
Dates: 6/1/2016 - 5/31/2020

12. PI: Cristina L. Archer
Project title: **Air quality modeling**
Agency: Delaware Natural Resources and Environmental Control (DNREC)
Budget: $145,161
Dates: 6/1/2015 - 5/31/2018

11. PI: Cristina L. Archer
Project title: **WOLF: Wind Farm Layout Optimization**
Sponsor: HKF Technology
Budget: $248,437
Dates: 6/11/2015 - 12/10/2016

10. PI: Cristina L. Archer
Project title: **Integration costs of renewable energy**
Sponsor: ExxonMobil
Budget: $50,000
Dates: 10/1/2014 - 12/31/2015

9. PI: Cristina L. Archer
Project title: **EAGER: A non-Boussinesq, non-incompressible framework for studying atmospheric turbulence**
Sponsor: National Science Foundation - Physical and Dynamic Meteorology
Budget: $ 111,629
Dates: 1/1/2014 - 12/31/2015

8. PI: Cristina L. Archer
Project title: **Repair and relocation of DNREC wind profiler for UD offshore test site applications**
Sponsor: First State Marine Wind, LLC
Budget: $68,209
Dates: 8/1/2012 - 9/30/2014

7. PI: Brian Colle (State University of New York, Stony Brook)
Co-PI: Cristina L. Archer and Dana L. Veron (UD)
Project title: **Improving atmospheric models for offshore wind resource mapping and prediction using LIDAR, aircraft, and in-ocean observations**
Sponsor: Department of Energy
Budget: $294,255
Dates: 10/1/2011 - 3/31/2015

6. PI: Willett Kempton
Co-PI: Cristina L. Archer and Jeremy Firestone (UD), Warren Powell and Hugo Simao (Princeton University)
Project title: **Mid-Atlantic Offshore Wind Interconnection and Transmission (MAOWIT)**
Sponsor: Department of Energy
Budget: $540,000
Dates: 9/30/2011 - 9/29/2014

5. PI: Cristina L. Archer
Project title: **Summer Research Experience for Undergraduates (REU): Simulating kinetic energy dissipation by wind turbines via two-way coupling of turbulence and aerodynamic numerical models**
Sponsor: University of Delaware Research Foundation
Budget: $3,500
Dates: 6/1/2013 - 5/31/2014

4. PI: Cristina L. Archer
Project title: **Simulating kinetic energy dissipation by wind turbines via two-way coupling of turbulence and aerodynamic numerical models**
Sponsor: University of Delaware Research Foundation
Budget: $35,000
Dates: 6/1/2012 - 5/31/2014

3. PI: Cristina L. Archer
   Project title: **Measuring weather data at the Regional Energy Advancement Program (REAP) facility**
   Sponsor: Private Industry Council (PIC) of Butte County, California
   Budget: $74,974
   Dates: 10/1/2009 - 9/30/2010

2. PI: Cristina L. Archer
   Project title: **On the integration of wind, solar, and other renewables to provide a total energy supply in the U.S.**
   Sponsor: Alliance for Climate Protection
   Budget: $7,365
   Dates: 7/1/2009-12/31/2009

1. PI: Cristina L. Archer
   Project title: **Study of the weather conditions during the summer 2008 wildfires in Butte County**
   Sponsor: California State University Chico Research Foundation
   Budget: $5,000
   Dates: 12/1/2008-5/31/2011

# Awards and Recognitions

- 2022 - Unidel Howard Cosgrove Career Development Chair in the Environment;
- 2013 - International Travel Award, UD Institute for Global Studies;
- 2009 - High-altitude wind power innovator of the year 2009, Airborne Wind Energy Consortium;
- 1998 - Student Travel Award, National Oceanic and Atmospheric Administration/American Meteorological Society;
- 1996 - Best Environmental Thesis Award, Regione Lombardia (Milan, Italy).

# Teaching

## Courses taught

S and F denote Spring and Fall semesters; UD is University of Delaware and CSUC is California State University Chico.

1. Introduction to the environment (ENSC/ENVR 101); UD; F20, F21, F22.
2. Energy on Earth (ENSC 370); UD; F19.
3. Air pollution meteorology (MAST/GEOG/CIEG 415/615); UD; S13, S14, S15, S16, S17, S19, S20, S21, S22, S23.
4. Wind power meteorology (MAST/GEOG 413/613); UD; S12, F13, F14, F16, F18, F20.
5. Earth systems: Science and policy (ENSC/ENVR 300); UD; S16.
6. Physical Ocean Science and Engineering (POSE) seminar (MAST 882); UD; S12.
7. Air pollution meteorology (GEOS 502); CSUC; S11.

8. Energy in the human environment (GEOS 370); CSUC; S09, S10, S11.
9. Earth system science (GEOS 300); CSUC; F08, F09, F10.
10. Science and ethics (GEOS 354); CSUC; S09.
11. Environmental science (GEOS 330); CSUC; S10, S11.
12. Environment I: Principles and practices (GEOS 165); CSUC; F10.
13. Environment II: Atmosphere, water and soils (GEOS 265); CSUC; F10.

### New courses developed

- ENSC 370 – Energy on Earth
  The goals of this course are: 1) to understand energy issues relevant to us humans and 2) to understand the consequences of energy choices (i.e., recognize and quantify the impacts of your own energy choices). I introduce the class to energy sources available on Earth (including coal, petroleum, natural gas, nuclear, geothermal, hydro, wind, solar, wave, tidal, and biomass), energy end-uses (e.g., electricity, transportation, etc.), energy resource assessments, energy conversions, energy system impacts on the environment, and future energy scenarios.
- MAST/GEOG/CIEG 415/615 – Air Pollution Meteorology
  This course is an introduction to meteorological processes that affect air pollution, such as diffusion, atmospheric stability, and turbulence, with a focus on the atmospheric boundary layer. The class includes a hands-on project in which the students, both graduate and undergraduate, use a real air quality model recommended by the U.S. Environmental Protection Agency to simulate a real air pollution case.
- MAST/GEOG 413/613 – Wind Power Meteorology
  This class explores the fundamental concepts of meteorology that are needed to understand onshore, offshore, and airborne wind energy. Topics include: forces affecting winds; terrain and land-use effects; air turbulence; numerical modeling; wind power and energy from turbines; and wind measurement technologies. The class also requires a hands-on project in which the students, both graduate and undergraduate, use available data from the National Renewable Energy Laboratory to identify an ideal location for a wind farm and calculate and compare at least two layout options (such as: wind turbine type, number of wind turbines, spacing, efficiencies).
- ENSC/ENVR 300 – Earth Systems: Science and Policy
  This class is meant to provide an interdisciplinary framework necessary to understand the Earth system approach to environmental science and its intersection with environmental policy and management. Mandatory for all Environmental Science and Environmental Studies undergraduate students, the class was introduced in Spring 2016 for the first time as part of a general revision of the curricula taught by the Department of Geography.

## Advising

### Ph.D. students

- Asim Feroz (Ph.D., Mechanical Engineering, Fall 2022 – present);
- Ali Khanjari (Ph.D., Ocean Engineering, Fall 2022 – present);
- Nicolas Al Fahel (Ph.D., Energy and Environmental Policy, Spring 2019 – present);
- Maryam Golbazi (Ph.D., Ocean Engineering, Fall 2017 – Spring 2022);
- Sicheng (Winston) Wu (Ph.D., Ocean Engineering, Summer 2016 – 2021);

- Mojtaba Moghani (Ph.D., Climatology, Spring 2016 – Spring 2020);
- Yang Pan (Ph.D., Ocean Engineering, Summer 2014 – Spring 2018);
- Chi Yan (Ph.D., Physical Ocean Science and Engineering, Fall 2014 – Spring 2018);
- Shengbai Xie (Ph.D., Ocean Engineering, Fall 2012 – Fall 2015).

## Post-Doctoral scholars

- Yulong Ma (December 2019 – February 2021);
- Enze Jin (August 2019 – Augus 2020);
- Joseph F. Brodie (October 2016 – July 2017);
- Ahmad Vasel-Be-Hagh (September 2015 – September 2017);
- Francisco Santos-Alamillos (September 2015 – February 2016);
- Niranjan Ghaisas (April 2014 – July 2015);
- Sina Mirzaeisefat (March 2012 – March 2013).

## Graduate and undergraduate student interns

- Sena Arisoy (Undergraduate, Summer 2023, UD, Funding: American Councils for International Education);
- Alyssa Wentzel (Undergraduate, Summer 2023, UD, Funding: American Councils for International Education);
- Molly Kerrigan (Undergraduate, Fall 2017, UD, Funding: DENIN);
- Aamir Majeed (Undergraduate, Summer 2017, UD, Funding: DNREC);
- William Facciolo (Undergraduate, Summer 2015, UD, Funding: ExxonMobil);
- Raphaela Z. Madeiros (Undergraduate, Summer 2015, UD, Funding: Pontifical Catholic University, Brazil);
- Lance Noel (Ph.D., Fall 2014 – Spring 2015, UD, Funding: ExxonMobil);
- Adam Cosby (Undergraduate, Summer 2014, UD, Funding: First State Marine Wind);
- Andrew Fleming (Undergraduate, Summer 2014, UD, Funding: EpSCOR);
- Danielle Notvest (Undergraduate, Winter 2013, UD, Funding: MAOWIT);
- Adam Cosby (Undergraduate, Summer 2013, UD, Funding: UDRF REU);
- Andrew McBee (Undergraduate, Spring 2012, UD, Independent study);
- Guillaume Negri (M.S., April–October 2011, CSUC and École Centrale de Lille (France), Funding: CSUC Research Foundation);
- Bryce Kobrin (High school, Fall 2010, Unfunded research);
- Graham Provost (High school, Summer 2009, CSUC, Unfunded internship);
- Abdullah Muratoglu (M.S., March–May 2010, CSUC and Gaziantep University (Turkey), Funding: Council of Higher Education of Turkey);
- Alan Rhoades (Undergraduate, Summer 2009, CSUC, Funding: Alliance for Climate Protection);

- Matthew Sloggy (Undergraduate, Summer 2009, CSUC, Funding: Alliance for Climate Protection);
- Ed Liebig (Undergraduate, Summer 2009, CSUC, Funding: Alliance for Climate Protection);
- Aniruddha Kulkarni (Undergraduate, Spring 2009, CSUC, Funding: CSUC Research Foundation).

### Graduate student advisory committees

- Federica Ive (Ph.D., Department of Civil, Environmental, and Mechanical Engineering, DICAM, Advisor: Prof. Dino Zardi, University of Trento, Italy, 2022);
- Xihao Wang (Ph.D., Department of Economics, Advisor: Jeremy Tobacman, UD, 2020);
- Alexandra St. Pé (Ph.D., Department of Geography and Environmental Systems, University of Maryland Baltimore County (UMBC), 2017);
- Md. Ashfaque-Ur (Auvi) Rahman (Ph.D., School of Marine Science and Policy, UD, 2017);
- Joseph Brodie (Ph.D., School of Marine Science and Policy, UD, 2016);
- Patricia Lawston (Ph.D., Department of Geography, UD, 2016);
- Christopher Hughes (Ph.D., Department of Geography, UD, 2016);
- Bruce Williams (M.S., School of Marine Science and Policy, UD, 2013);
- Heather Thompson (Ph.D., School of Marine Science and Policy, UD, 2013);
- DeAnna Sewell (M.S., School of Marine Science and Policy, UD, 2012);
- Jami Hossain (Ph.D., Department of Energy and Environment, TERI University, New Delhi (India), 2012);
- Luke Leaver (M.S., Department of Petroleum Engineering, Stanford University, 2009).

## Service

### Service to the Department

I serve in the Department of Geography and Spatial Sciences (GSS) of the College of Earth, Ocean, and Environment (CEOE) and in the Department of Mechanical Engineering (ME) of the College of Engineering (COE) at UD; I have also served in the School of Marine Science and Policy (SMSP) of CEOE at UD and in the Department of Geological and Environmental Sciences (GEOS) at CSUC.

| *Date* | *Service or committee* | *Department* |
|---|---|---|
| 2023 | Promotion and Tenure Committee | ME |
| 2023 | Promotion and Tenure Committee | GSS |
| 11/14/2022 | Lecture on wind energy in MAST 100 (Marine science colloquium) | SMSP |
| 2022 | Promotion and Tenure committee | GSS |
| 2022 | Promotion and Tenure Committee | SMSP |
| 2021 | Promotion and Tenure Committee | SMSP |
| 11/13/2021 | Blue and Gold Day | GSS |
| 2020 | Promotion and Tenure Committee | GSS |
| 2020 | Committee to revise the B.S. in Meteorology and Climatology | GSS |

| *Date* | *Service or committee* | *Department* |
|---|---|---|
| 2019-2020 | Graduate Curriculum Committee | SMSP |
| 2019-current | Mentor of junior faculty member Dr. Pinki Mondal | GSS |
| 2019 | Promotion and Tenure Committee | GSS |
| 4/22/2019 | Guest lecture on wind energy in GEOG 236 (Conservation: Global issues) | GSS |
| 2019 | Chair of the Committee to hire a Coastal Ecosystem Modeler | SMSP |
| 4/20/2019 | Guest lecture on wind turbine wakes in MAST 628 (Offshore wind power: Science, engineering, and policy) | SMSP |
| 2019 | Worked on a proposal to merge the POSE, Ocean Engineering, and Coastal Engineering curricula into one, but we did not reach an agreement | SMSP |
| 2018 | Interim POSE Director while Tobias was on sabbatical | SMSP |
| 2018 | Graduate Student Committee | SMSP |
| Summer 2017 | Promotion and tenure committee | GSS |
| 4/17/2017 | Guest lecture on wind energy in GEOG 236 (Conservation: Global issues) | GSS |
| 10/18/2016 | Guest lecture on wind turbine wakes in MAST 628 (Offshore wind power: Science, engineering, and policy) | SMSP |
| Fall 2015 | Web design committee | GSS |
| 2014-2015 | Organized the POSE seminar series | SMSP |
| 11/6/2013 | Guest lecture on wind turbine wakes in MAST 628 (Offshore wind power: Science, engineering, and policy) | SMSP |
| 2012-2014 | POSE curriculum development committee | SMSP |
| 10/2/2012 | Guest lecture on renewable energy in MAST 100 (Marine science colloquium) | SMSP |
| 4/11/2011 | Organized special seminar "A month after the Earth moved: the science behind the Japan disaster" to showcase the Department of Geological and Environmental Sciences expertise on the tsunami and nuclear accident in Japan. | GEOS |
| 2010-2011 | Chair of the Environmental Science curriculum development committee | GEOS |
| 2009-2010 | Chair of the departmental library committee | GEOS |
| 2009 | Recruitment campaign for the Department of Geological and Environmental Sciences | GEOS |
| 2008-2009 | Outstanding M.S. thesis committee | GEOS |
| 2008-2009 | NSCI 101-102 curriculum development committee | GEOS |
| 2008-2009 | Departmental committee on atmospheric research and teaching enhancement | GEOS |
| 2008 | Guest lecture on "Introduction to global warming" in GEOS 165 | GEOS |
| 2008 | Guest lecture on "What wind power can do for you" in GEOS 350 | GEOS |

## Service to the College

I serve in the College of Earth, Ocean, and Environment (CEOE) and in the College of Engineering (COE) at UD; I have also served in the College of Natural Sciences (CNS) at CSUC.

| *Date* | *Service or committee* | *College* |
|---|---|---|
| 2022-current | Director of the Center for Research in Wind (CReW) | CEOE |
| 2023 | Awards Committee (Chair: Wei-Jun Cao; staff member: Chris Moran) | CEOE |
| 2022 | Awards Committee (Chair: Wei-Jun Cao; staff member: Chris Moran) | CEOE |
| 2020 | Contributed to development of REEF@UD program (Ratcliff Foundation) | CEOE |
| 2019 | Promotion and Tenure Committee | CEOE |
| 2018 | Promotion and Tenure Committee | CEOE |
| 2017-current | Director of the Eco-Entrepreneurship Certificate | CEOE |
| April 2017 | Lead efforts to participate to the Science March in Washington DC as a united college with funds from the three Chairs in CEOE | CEOE |
| 2016-current | Member of the scientific committee of First State Marine Wind (FSMW) | CEOE |
| 2015-2017 | CEOE Academic Council | CEOE |
| 4/2013 | Grid Integrated Vehicles software engineer search committee | CEOE |
| 10/7/2012 | Active host in Science Tent at Coast Day | CEOE |
| 10/5/2012 | Invited presentation at Dean's Advisory Committee meeting | CEOE |
| 3/2012 | Search committee for CEOE Assistant Dean for Finance and Administration | CEOE |
| 2011-2022 | Board member of Center for Research in Wind (CReW), formerly the Center for Carbon-free Power Integration (CCPI) | UD |
| 2010 | College representative for the CSU Council on Ocean Affairs, Science and Technology (COAST) | CNS |
| 2008 | Dean advisory committee for industrial partnership development | CNS |
| 2008-2011 | Board member of the Center for Ecological Research | CNS |

## Service to the University

| *Date* | *Service or committee* | *University* |
|---|---|---|
| 11/9/2022 | UD Society of Women Engineers, invited speaker | UD |
| 11/2021-5/2022 | Committee member appointed by President Assanis for new Provost search | UD |
| 4/13/2022 | Judge for the 7th annual DENIN Graduate Research Symposium (judged 6 posters) | UD |
| 8/2021 | Committee member appointed by the Provost to evaluate merger of CEOE and CANR | UD |
| 4/10/2019 | Invited participant to UD Day in DC | UD |
| 2018-2019 | UD Campus Master Committee | UD |
| 2017-2018 | Search committee for two hires in ENEP | UD |
| 2017-current | UD representative for the University Corporation for Atmospheric Research (UCAR) | UD |
| 2017-current | Affiliated faculty of the Energy and Environmental Policy (ENEP) program | UD |

| *Date* | *Service or committee* | *University* |
|---|---|---|
| March 2017 | Lead efforts to convince UD leadership to show support for science and freedom, culminated in the UD statement signed by over 1800 people | UD |
| 3/16/2017 | Invited to represent UD's wind research at the UD Day in DC [video] | UD |
| 10/7/2016 | Guest lecture on wind energy and advanced computer simulations in CISC 879 (Advanced topics in architecture and software systems) | UD |
| 10/6/2016 | Guest lecture on wind energy, turbulence, and hurricanes in CIEG 402 (Sustainable energy technology) | UD |
| Fall 2016 | UD Energy Institute (UDEI) assessment committee | UD |
| 4/27/2016 | Judge for the UD Annual Environmental Case competition | UD |
| Spring 2016 | UD Institute of Energy Conversion (IEC) assessment committee | UD |
| 7/31/2015 | Lecture on wind and turbulence for Energy Education Workshop in Lewes (DE) | UD |
| 4/17/2014 | Guest lecture on energy conservation and wind power in CIEG 167 (Sustainable Energy Technology) | UD |
| 2012-2014 | Environmental Engineering and Water Resource curriculum development committee | UD |
| 4/6/2013 | Guest lecture on global wind power potentials in CIEG 167 (Sustainable Energy Technology) | UD |
| 2/2013 | Organized mini-symposium and workshop on The importance of meteorology to wind energy: Research needs for the next 10 years at UD, sponsored by the UD Energy Institute and Center for Carbon-free Power Integration (27-28 February 2013) | UD |
| 10/2012 | UD representative at the National Center of Atmospheric Research annual member meeting | UD |
| 2012-2013 | Research Computing Advisory committee | UD |
| 10/2011 | UD representative at the National Center of Atmospheric Research annual member meeting | UD |
| 2010-2011 | Curriculum development committee on new General Education pathway themes (Global Development; Sustainability; Food Studies; and Science, Technology and Values) | CSUC |
| 11/8/2010 | Expert panelist for the group "Politics of alternative energy" at the CSU Chico Fall 2010 Town Hall Meeting, a half-day event to expose first-year political science students to current "hot" issues via direct participation in small sessions on specific topics lead by local community experts | CSUC |
| 11/2009 | Organized the world's first conference on Airborne Wind Energy, hosted partly at CSU Chico and partly at the Cleantech Innovation Center in Oroville (CA) on 5-6 November 2009 | CSUC |

## Service to the profession

*Editorial service*

- Guest Editor of special issue Offshore Wind Farms and Climate Change for MDPI Journal of Marine Science and Engineering (2023-current);

- Associate Editor of Wind Energy Science (Copernicus), 2022-current;
- Associate Editor of Bulletin of Atmospheric Science and Technology (Springer), 2019-current;
- Associate Editor of Meteorological Applications (Wiley), 2019-2022;
- Guest Editor of special issue State of the Art of Wind Farm Optimization for MDPI Energies (2018-2019);
- Editorial Panel of the Institution of Civil Engineers (ICE) Proceedings Energy, London (UK), November 2012 – November 2013;
- Guest Editor for the special issue on Wind Energy of Energies, February – September 2009.

*Grant proposal reviews (50)*

- EarthShot, U.S. Department of Energy (DOE), June 2023;
- Energy and Power Management, Small Business Innovation Research (SBIR), National Science Foundation, June 2023 (2);
- Physical and Dynamic Meteorology Division, National Science Foundation, February 2023;
- Dutch Research Agenda (NWA), Research along Routes by Consortia (ORC), March 2023;
- Physical and Dynamic Meteorology Division, National Science Foundation, February 2023;
- New Jersey Department of Environmental Protection, Offshore Wind Research and Monitoring Initiative, January 2023;
- UD SRI, November 2022;
- UD Moore Inventor Fellow competition, October 2022;
- Natural Environment Research Council (NERC), standard grant proposal, March 2022;
- Physical and Dynamic Meteorology Division, National Science Foundation, November 2021;
- Energy 4 Future (E4F) program, European Science Foundation, September 2021;
- UD internal competition for USDA Equipment Grant Program, February 2021;
- Reviewed 13 proposals submitted to CEOE/COE on offshore wind energy from a secret private donor, February 2021;
- Natural Sciences and Engineering Research Council (NSERC) of Canada, Alliance Grant application, November 2020;
- Review of one proposal for UD internal competition for DOE-EPSCoR, November 2020;
- Physical and Dynamic Meteorology Division, National Science Foundation, November 2019;
- CAREER, National Science Foundation, October 2019;
- Panel review of 12 proposals to the Dynamics of Coupled Natural and Human Systems (CNH), National Science Foundation, Alexandria (VA), 16-17 April 2018;
- Physical and Dynamic Meteorology, National Science Foundation, April 2017;
- Division of Ocean Sciences, National Science Foundation, March 2017;
- FONDECYT 2017 (competition by Chile's Fondo Nacional de Desarrollo Cientifico y Tecnologico), December 2016;
- Physical and Dynamic Meteorology, National Science Foundation, May 2016;
- Geography and Spatial Sciences, National Science Foundation, September 2015;
- Physical and Dynamic Meteorology, National Science Foundation, July 2015;

- Advanced Scientific Computer Research (ASCR)'s Leadership Computing Challenge, Department of Energy, April 2015;
- Environmental Frontier Grants, Delaware Environmental Institute (DENIN), January 2014;
- Chemical, Bioengineering, Environmental, and Transport Systems (CBET), National Science Foundation, April 2009.

*Journal article reviews (127)*

- Annals of the New York Academy of Sciences (2018)
- Applied Energy (2018, 2019, 2020)
- Applied Geography (2012, 2013, 2015)
- Atmosphere (2022)
- Boundary Layer Meteorology (2011)
- Bulletin of Atmospheric Science and Technology (2020, 2020, 2021, 2022)
- Bulletin of the American Meteorological Society (2017)
- Climate Dynamics (2018)
- Climatic Change (2009)
- Earth System Dynamics Discussion (2014, 2015, 2017)
- Energies (2009, 2015, 2018)
- Energy (2014)
- Energy Engineering (2020)
- Energy Science and Engineering (2022)
- Energy Storage (2022)
- Environmental Earth Sciences (2023)
- Environmental Pollution (2019)
- Environmental Research Communications (2023)
- Environmental Research Letters (2018, 2019, 2020, 2021, 2021, 2022, 2022)
- Environmental Science and Technology (2012)
- Geography Compass (2010)
- Geophysical Research Letters (2004, 2014)
- Helyon (2022)
- IEEE Access (2019, 2023)
- Joule (2022, 2022, 2023)
- Journal of Applied Meteorology and Climatology (2006, 2016)
- Journal of Atmospheric and Solar-Terrestrial Physics (2005)
- Journal of Cleaner Production (2020)
- Journal of Climate (2008, 2012, 2014)
- Journal of Coastal Management (2014, 2015)
- Journal of Fluid Mechanics (2016, 2018, 2020)

- Journal of Geophysical Research (2004, 2014, 2015)
- Journal of Renewable and Sustainable Energy (2009, 2017, 2019, 2020, 2021)
- International Journal of Climatology (2013, 2014, 2015)
- International Journal of Green Energy (2021)
- International Journal of Hydrogen Energy (2008)
- International Journal of Precision Engineering and Manufacturing-Green Technology (2017)
- Meteorology and Atmospheric Physics (2018, 2021, 2022)
- Meteorological Applications (2017)
- Monthly Weather Review (2011, 2015, 2022)
- Nature Climate Change (2012, 2014)
- Nature Communications (2020, 2021)
- Nature Energy (2016, 2017)
- Nature Scientific Reports (2017)
- Non-linear Processes in Geophysics (2008)
- PLOS ONE (2017)
- Physics of Fluids (2017)
- Proceedings of the National Academy of Science (2011, 2012, 2017, 2019, 2020, 2023)
- Renewable and Sustainable Energy Reviews (2012, 2013, 2020, 2020, 2020)
- Renewable Energy (2013, 2013, 2014, 2015)
- Science Advances (2018)
- Scientific Reports (2021)
- Sustainable Technology and Assessment (2019, 2022)
- Utilities Policy (2008)
- Weather and Forecasting (2010)
- Wind Energy (2008, 2010, 2012, 2014, 2015, 2016, 2018, 2018, 2019, 2019, 2022)
- Wind Energy Science (2019, 2021, 2021, 2022, 2022, 2023)

*Book reviews*

- Book proposal on optimization considerations for weather-driven renewable energies, Elsevier, March 2014;
- Book chapter on the basics of climate change science, societal impacts, and solutions, Climate Central, March 2010.

*Session chair*

- Co-Chair of NAWEA/WindTech 2022 conference, hosted in person at UD (selection of scientific committee; budget for conference; regular biweekly meetings to set timeline, deadlines, decide format of the conference, etc.; address COVID emergency; survey to participants about preferred COVID restrictions; website creation and management; hiring website developer; apply for DOE funds for conference; provide report about Interim event; setup UD account; select and train volunteers; be point of contact for anything; full budget responsibility), 20-22 September 2022;
- Co-Chair of interim event in-lieu of the NAWEA/WindTech 2021 conference, postponed due to COVID19, with 7 one-hour virtual presentations between 9/23/2021 and 10/27/2021, one hosted by UD with DOE Secretary Jennifer Graham, September-October 2021;
- Chair of the Eco-entrepreneurship Forum, featuring eight panelists, 10/28/2020;
- Chair of session "Energy resource assessment – Wind mesoscale to microscale coupling", Fourth International Conference on Energy and Meteorology (ICEM), Bari (Italy), 27–29 June 2017;
- Chair of session "Market and regulation",Windfarms 2017 Conference, Universidad Pontificia Comillas, Madrid (Spain), May 31–June 2, 2017.

*Other*

- External review of P&T case at Johns Hopkins University University, Department of Mechanical Engineering, Baltimore, Maryland (March 2023);
- External review of two P&T cases at Technical University of Denmark (DTU), Department of Wind Energy, Roskilde, Denmark (June 2022);
- Committee to evaluate three candidates for a position of "Researcher in Wind Resource Assessment and Downscaling Model Chain" (entry-level permanent research position) at the Technical University of Denmark (DTU, May 2020);
- Reviewer of five abstracts and then five conference papers submitted to TORQUE 2020 conference (January 2020);
- Committee member to evaluate two candidates for an offshore meteorology professorship at the Technical University of Denmark (DTU, October 2019);
- External review of promotion case at the University of Maryland, Baltimore County (April 2014);
- Ph.D. defense committee for Department of Energy and Environment, TERI University, New Delhi, India (2012).

## Service to the public

| *Date* | *Service type* | *Location* |
|---|---|---|
| 5/11/2023 | Invited presenter at STEMinist Club of the Wilmington Friends High School | Wilmington (DE) |
| 3/2022 | Judge for the Diamond Challenge, a nation-wide high-school competition for future entrepreneurs (evaluated 5 teams) | remote |
| 7/15/2020 | Expert panelist at the public webinar "Virtual Focus on the Coast - Offshore Wind Power" organized by Delaware Sea Grant | remote |
| 3/15/2019 | Expert speaker at the Quarterly Luncheon of the Port of Wilmington Maritime Society (Title of my presentation: "Offshore wind energy along the US East Coast") | Chase Center on the Riverfront, Wilmington (DE) |
| 7/10/2018 | Expert station host ("Wind resource assessment and forecasting") at the offshore wind exchange workshop | Bethany Beach (DE) |

| *Date* | *Service type* | *Location* |
|---|---|---|
| 4/13/2017 | Testimony at the U.S. Environmental Protection Agency on role of ozone transport in Delaware. | EPA, Washington (DC) |
| 4/9/2014 | Lecture on wind and weather for eighth graders at Gauger-Cobbs Middle School. | Gauger-Cobbs Middle School, Newark (DE) |
| 2013 | Advisory committee for AWEfest, the first concert powered by airborne wind energy (AWE) and by bicycles, originally scheduled for Fall 2014 but eventually cancelled due to lack of funds. | New York City |
| 11/5/2012 | Public conversation on wind power at Science Café, an informal and free event organized by the UD Science, Ethics, and Public Policy Program and sponsored by NSF's EPSCoR program. | Deer Creek Tavern, Newark (DE) |
| 10/4/2012 | Presentation on wind power at the Renewable Energy Forum for Environmental Protection Agency staff. | EPA, Philadelphia (PA) |
| 2010 | Small chapter on wind power in Inside science: Renewable energy research, a non-fictional book for eighth graders concerning cutting-edge renewable energy technologies, written by Stuart Kallen. | CSUC |
| 2/26/2010 | Lecture on "The amazing power of wind power" at the Science Colloquium of the Shasta Community College in Redding (CA). | Shasta College, Redding (CA) |
| 9/30/2009 | Public lecture on "The role of wind in a clean and renewable future" as part of the Energy Seminar Series of the Gateway Science Museum. | Gateway Science Museum, Chico (CA) |
| 5/13/2009 | Lecture on wind power at the Butte Community College in Oroville (CA) for the course CNST/ENGR 20 "Energy efficiency and renewable energy". | Butte College, Oroville (CA) |
| 4/27/2009 | Lecture on wind power for students in the Regional Occupational Program (ROP), a public education service that provides practical, hands-on career preparation to high school students who do not plan to attend college. | Paradise High School, Paradise (CA) |
| 3/18/2009 | Public lecture on "Renewable energy: What it can do for you" as part of the Creek Lecture Series organized by the Northern California Natural History Museum. | Barnes and Noble, Chico (CA) |