Curriculum Vitae

Jonathan Mark Gilligan
Associate Professor
Department of Earth & Environmental Sciences
Vanderbilt University

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Contents

1 Contact Information

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2 Degrees Earned

Ph.D.: 1991, Yale University (Physics). Dissertation, *Precise Multiphoton Spectroscopy of the H_2, HD, and D_2 Molecules and a New Determination of the Ionization Potential of HD.* Advisor: Edward E. Eyler.

B.A.: 1982, Swarthmore College (Physics & Philosophy), with Honors.

3 Employment History

2016–present Associate Professor, Dept. of Civil & Environmental Engineering (secondary), Vanderbilt University.

2009–present Associate Professor, Dept. of Earth & Environmental Sciences, Vanderbilt University.

2008–2009 Research Assistant Professor, Dept. of Earth & Environmental Sciences, Vanderbilt University.

2003–2009 Senior Lecturer, Dept. of Earth & Environmental Sciences, Vanderbilt University.

2000–2003 The Robert T. Lagemann Assistant Professor of Living State Physics, Dept. of Physics & Astronomy, Vanderbilt University.

1996–1998 Associate Director, Center for Molecular and Atomic Studies at Surfaces, Vanderbilt University.

1995–2000 Research Assistant Professor, Dept. of Physics & Astronomy, Vanderbilt University.

1994–1995 Lecturer, Dept. of Physics & Astronomy, Vanderbilt University.

1993–1994 Postdoctoral Research Associate, Cooperative Institute for Research in Environmental Science, National Oceanic & Atmospheric Administration and the University of Colorado. Mentors: James W. Elkins (NOAA) and David W. Fahey (NOAA).

1991–1993 National Research Council Postdoctoral Associate, National Institute of Standards & Technology. Mentor David W. Wineland.

1985–1991 Graduate Student/Teaching Assistant/Research Assistant, Yale University. Mentor Edward E. Eyler.

1983–1985 High school teacher, Commonwealth School, Boston MA.

4 Honors and Awards

2018 The Chancellor's Award for Research, Vanderbilt University (shared with Michael Vandenbergh), recognizing "excellence on the part of faculty for published research, scholarship or creative expression" published in the previous three years ($2000 cash prize)

2017 The Morrison Prize for the highest impact paper published in 2015–2016 on sustainability law and policy (shared with Michael Vandenbergh). Sandra Day O'Connor School of Law, Arizona State University ($10,000 cash prize divided equally between Vandenbergh and myself).

1998 Outstanding Scientific Paper Award, NOAA Environmental Research Labs.

1995 NASA Group Achievement Award for outstanding accomplishments and contributions to the Airborne Southern Hemisphere Ozone Experiment and Measurements to Assess the Effects of Stratospheric Aircraft.

1991–1993 National Research Council Postdoctoral Associate

1985–1986 J.W. Gibbs Fellow, Yale University

5 Research & Creative Expression

5a. Citations and H-Index

As of August 31, 2019, Google Scholar lists 4,798 citations (1,912 since 2014), an h-index of 29 (20 counting only citations since 2014), 11 papers with 100+ citations, including 4 papers with 300+.

5b. Book († denotes peer-reviewed book)

1. † M.P. Vandenbergh and **J.M. Gilligan**. (2017). *Beyond Politics: The Private Governance Response to Climate Change*. New York, NY: Cambridge University Press. ISBN: 978-1107181229 (hardcover), 978-1316632482 (paper). 494 pp.

5c. Articles (* denotes student author, † denotes peer-reviewed article)

1. † S. Elsawah, T. Filatova, A.J. Jakeman, A.J. Kettner, M.L. Zellner, I.N. Athanasiadis, S.H. Hamilton, R.L. Axtell, D.G. Brown, **J.M. Gilligan**, M.A. Janssen, D.T. Robinson, J. Rozenberg, I.I.T. Ullah, and S.J. Lade. (2019). "Eight Grand Challenges in Socio-Environmental Systems Modeling." *Socio-Environmental Systems Modeling*. In Press.

2. † **J.M. Gilligan**. (2019). "Expertise across Disciplines: Establishing Common Ground in Interdisciplinary Disaster Research Teams." *Risk Analysis*. In Press.

3. **J.M. Gilligan**. (2019). "Modelling Diet Choices." *Nature Sustainability*. **2**, 661–662. DOI: 10.1038/s41893-019-0354-7. Invited "News and Views" commentary.

4. **J.M. Gilligan**. (2018). "Carrots and Sticks in Private Climate Governance." *Texas A&M Law Review*. **6**, 179–198

5. **J.M. Gilligan**. (2018). "Climate Modeling: Accounting for the Human Factor." *Nature Climate Change*. **8**, 14–15. DOI: 10.1038/s41558-017-0038-0. Invited "News and Views" commentary.

6. † **J.M. Gilligan**, C.A. Wold*, S.C. Worland*, J.J. Nay*, D.J. Hess, and G.M. Hornberger. (2018). "Urban Water Conservation Policies in the United States." *Earth's Future*. **6**, 955–967. DOI: 10.1029/2017EF000797

7. † A. Maki, E. McKinney*, M.P. Vandenbergh, M.A. Cohen, and **J.M. Gilligan**. (2018). "Employee energy benefits: what are they and what effects do they have on employees?" *Energy Efficiency*. DOI: 10.1007/s12053-018-9721-x. Early online publication

8. † J.J. Nay*, E.K. Burchfield*, and **J.M. Gilligan**. (2018). "A Machine-Learning Approach to Forecasting Remotely Sensed Vegetation Health." *International Journal of Remote Sensing*. **39**, 1800–1816. DOI: 10.1080/01431161.2017.1410296

9. C. Phillips, **J.M. Gilligan**, S. Harper, J. Roberts, and M.P. Vandenbergh. (2018). "Dialogue: Beyond politics: The private governance response to climate change." *Environmental Law Reporter*. **48**, 11049–11062

10. J.B. Ruhl, J. Nay*, and **J.M. Gilligan**. (2018). "Topic Modeling the President: Conventional and Computational Methods." *George Washington Law Review*. **86**, 1243–1315

11. **J.M. Gilligan**. (2017). "Are Cops on the Science Beat?" *Issues in Science and Technology*. **34**, 6–8. Commentary invited by the editor

12. † C. Wilson, S. Goodbred, C. Small, **J. Gilligan**, S. Sams*, B. Mallick, and R. Hale. (2017). "Widespread infilling of tidal channels and navigable waterways in the human-modified tidal deltaplain of southwest Bangladesh." *Elementa*. **5**, 78. DOI: 10.1525/elementa.263

13. † L. Benneyworth[*], **J. Gilligan**, J.C. Ayers, S. Goodbred, G. George[*], A. Carrico, M.R. Karim[*], F. Akter[*], D. Fry[*], K. Donato, and B. Piya[*]. (2016). "Drinking water insecurity: water quality and access in coastal south-western Bangladesh." *International Journal of Environmental Health Research*. **26**, 508–524. DOI: 10.1080/09603123.2016.1194383. **NOTE:** Featured by Taylor & Francis publishers as part of their observance of World Water Day 2017. T&F opened free access to the article and published an accompanying "Research Story" with background on the article: https://web.archive.org/web/20170915110349/http://authorservices.taylorandfrancis.com/world-water-day-2017-2/.

14. † E.K. Burchfield[*] and **J. Gilligan**. (2016). "Agricultural adaptation to drought in the Sri Lankan dry zone." *Applied Geography*. **77**, 92–100. DOI: 10.1016/j.apgeog.2016.10.003

15. † E. Burchfield[*], J.J. Nay[*], and **J. Gilligan**. (2016). "Application of Machine Learning to the Prediction of Vegetation Health." *ISPRS—International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*. **XLI-B2**, 465–469. DOI: 10.5194/isprs-archives-XLI-B2-465-2016

16. † T. Gunda[*], G.M. Hornberger, and **J.M. Gilligan**. (2016). "Spatiotemporal Patterns of Agricultural Drought in Sri Lanka: 1881–2010." *International Journal of Climatology*. **36**, 563–575. DOI: 10.1002/joc.4365

17. † D.J. Hess, C.A. Wold[*], E. Hunter[*], J. Nay[*], S. Worland[*], **J. Gilligan**, and G.M. Hornberger. (2016). "Drought, Risk, and Institutional Politics in the American Southwest." *Sociological Forum*. **31**, 807–827. DOI: 10.1111/socf.12274

18. L.W. Auerbach[*], S.L. Goodbred Jr, D.R. Mondal[*], C.A. Wilson, K.R. Ahmed[*], K. Roy, M.S. Steckler, C. Small, **J.M. Gilligan**, and B.A. Ackerly. (2015). "Reply to 'Tidal river management in Bangladesh'." *Nature Climate Change*. **5**, 492–493. DOI: 10.1038/nclimate2620

19. † L.W. Auerbach[*], S.L. Goodbred Jr., D.R. Mondal[*], C.A. Wilson, K.R. Ahmed[*], K. Roy, M.S. Steckler, C. Small, **J.M. Gilligan**, and B.A. Ackerly. (2015). "Flood risk of natural and embanked landscapes on the Ganges-Brahmaputra tidal delta plain." *Nature Climate Change*. **5**, 152–157. DOI: 10.1038/nclimate2472

20. † G.M. Hornberger, D.J. Hess, and **J. Gilligan**. (2015). "Water Conservation and Hydrological Transitions in Cities in the United States." *Water Resources Research*. **51**, 4635–4649. DOI: 10.1002/2015WR016943

21. M.P. Vandenbergh and **J.M. Gilligan**. (2015). "Beyond Gridlock." *Columbia Journal of Environmental Law*. **40**, 217–303. DOI: 10.2139/ssrn.2533643. **NOTE:** This paper won the 2017 Morrison Prize for the highest-impact paper on sustainability law and policy in 2015

22. **J.M. Gilligan** and M.P. Vandenbergh. (2014). "Accounting for political feasibility in climate instrument choice." *Virginia Environmental Law Journal*. **32**, 1–26. DOI: 10.2139/ssrn.2220788

23. M.P. Vandenbergh, K.E. Toner, and **J.M. Gilligan**. (2014). "Energy and Climate Change: A Climate Prediction Market." *UCLA Law Review*. **61**, 1962–2017

24. † A.R. Carrico, M.P. Vandenbergh, P.C. Stern, G.T. Gardner, T. Dietz, and **J.M. Gilligan**. (2011). "Energy and climate change: Key lessons for implementing the behavioral wedge." *Journal of Energy & Environmental Law*. **2**, 61–67

25. M.P. Vandenbergh and **J.M. Gilligan**. (2011). "Macro-risks: The challenge for rational risk regulation." *Duke Environmental Law and Policy Forum*. **21**, 401–431

26. **J. Gilligan**, T. Dietz, G. Gardner, P. Stern, and M. Vandenbergh. (2010). "The Behavioral Wedge." *Significance*. **7**, 17–20. DOI: 10.1111/j.1740-9713.2010.00405.x. **NOTE:** *Invited paper, subsequently named one of the best papers of 2009 by Significance.*

27. † P.C. Stern, G.T. Gardner, M.P. Vandenbergh, T. Dietz, and **J.M. Gilligan**. (2010). "Design principles for carbon emissions reduction programs." *Environmental Science & Technology*. **44**, 4847–4848. DOI: 10.1021/es100896p

28. † M.P. Vandenbergh, P.C. Stern, G.T. Gardner, T. Dietz, and **J.M. Gilligan**. (2010). "Implementing the behavioral wedge: Designing and adopting effective carbon emissions reduction programs." *Environmental Law Reporter*. **40**, 547–554. **NOTE:** Selected by Environmental Law Institute to reprint as the featured cover story of the 2010 summer reading issue for policymakers of Environmental Forum.

29. † A.R. Carrico*, P. Padgett, M.P. Vandenbergh, **J. Gilligan**, and K.A. Wallston. (2009). "Costly myths: an analysis of idling beliefs and behavior in personal motor vehicles." *Energy Policy*. **37**, 2881–2888. DOI: 10.1016/j.enpol.2009.03.031

30. † T. Dietz, G. Gardner, **J. Gilligan**, P. Stern, and M. Vandenbergh. (2009). "Household actions can provide a behavioral wedge to rapidly reduce U.S. carbon emissions." *PNAS*. **106**, 18452–18456. DOI: 10.1073/pnas.0908738106

31. † M.R. Holcomb*, M.C. Woods*, I. Uzelac, J.P. Wikswo, **J.M. Gilligan**, and V.Y. Sidorov. (2009). "The Potential of Dual Camera Systems for Multimodal Imaging of Cardiac Electrophysiology and Metabolism." *Experimental Biology and Medicine*. **234**, 1355–1372. **NOTE:** *Selected by the editors as the feature article of the month.*

32. M.P. Vandenbergh, J. Barkenbus, and **J.M. Gilligan**. (2008). "Individual Carbon Emissions: The Low-Hanging Fruit." *UCLA Law Review*. **55**, 1701–1758

33. † D.N. Mashburn*, S. Hinkson*, M.C. Woods*, **J.M. Gilligan**, M.R. Holcomb*, and J.P. Wikswo. (2007). "A High-Voltage Cardiac Stimulator for Field Shocks of a Whole Heart in a Bath." *Review of Scientific Instruments*. **78**, 104302–104309

34. † **J.M. Gilligan**. (2006). "Flexibility, Clarity, and Legitimacy: Considerations for Managing Nanotechnolgy Risks." *Environmental Law Reporter*. **36**, 10924–10930

35. † E. Sobol, A. Sviridov, M. Kitai, **J.M. Gilligan**, G.S. Edwards, and N.H. Tolk. (2003). "Time-Resolved Light Scattering Measurements of Cartilage and Cornea Denaturation Due to Free-Electron Laser Radiation." *Journal of Biomedical Optics*. **8**, 216–222

36. † A. Cricenti, R. Generosi, M. Luce, P. Perfetti, G. Margaritondo, D. Talley, J. Sanghera, I. Aggarwal, **J.M. Gilligan**, and N.H. Tolk. (2002). "Surface Characterisation by Near-Field Microscopy and Atomic Force Microscopy." *Advances in Science and Technology*. **32**, 183–192

37. † G. Mensing*, **J. Gilligan**, P. Hari*, E. Hurt*, G. Lüpke, S. Pantelides, N. Tolk, and P. Taylor. (2002). "Defect transition energies and the density of electronic states in hydrogenated amorphous silicon." *Journal of Non-Crystalline Solids*. **299**, 621–625

38. † A. Cricenti, R. Generosi, M. Luce, P. Perfetti, G. Margaritondo, D. Talley, J. Sanghera, I. Aggarwal, **J.M. Gilligan**, and N.H. Tolk. (2001). "Spectroscopic scanning near-field optical microscopy with a free electron laser: CH_2 bond imaging in diamond films." *Journal of Microscopy*. **202**, 446–450

39. † G. Lupke, C.P. Cheney*, J. Sturman*, J.C. Keay*, **J.M. Gilligan**, L.C. Feldman, and N.H. Tolk. (2000). "Materials Science at the WM Keck Free Electron Laser: Infrared Wavelength Selective Materials Modification." *Condensed Matter Theories*. **14**, 349–364

40. † D.B. Talley, L. Shaw, J. Sanghera, I. Aggarwal, A. Cricenti, R. Generosi, M. Luce, G. Margaritondo, **J.M. Gilligan**, and N.H. Tolk. (2000). "Scanning near field infrared microscopy using chalcogenide fiber tips." *Materials Letters*. **42**, 339–344

41. † A. Cricenti, R. Generosi, P. Perfetti, G. Margaritondo, J. Almeida, **J.M. Gilligan**, N.H. Tolk, C. Coluzza, M. Spajer, D. Courjon, and I.D. Aggarwal. (1999). "Interface Applications of Scanning Near-Field Optical Microscopy with a Free Electron Laser." *Physica Status Solidi A: Applied Research*. **175**, 317–329

42. † A. Cricenti, R. Generosi, G. Herold, P. Chiaradia, P. Perfetti, G. Margaritondo, **J.M. Gilligan**, and N.H. Tolk. (1999). "Chemical Contrast Observed at a III-V Heterostructure by Scanning Near-Field Optical Microscopy." *Physica Status Solidi A: Applied Research*. **175**, 345–349

43. † Z. Marka*, C.P. Cheney*, W. Wang*, G. Lupke, **J. Gilligan**, Y. Yao, and N.H. Tolk. (1999). "Nonlinear Energy-Selective Nanoscale Modifications of Materials and Dynamics in Metals and Semiconductors." *Soviet Physics: Technical Physics*. **44**, 1069–1072

44. † D.T. Schaafsma, R. Mossadegh, J.S. Sanghera, I.D. Aggarwal, **J.M. Gilligan**, N.H. Tolk, M. Luce, R. Generosi, P. Perfetti, A. Cricenti, and G. Margaritondo. (1999). "Singlemode Chalcogenide Fiber Infrared SNOM Probes." *Ultramicroscopy*. **77**, 77–81

45. † D.T. Schaafsma, R. Mossadegh, J.S. Sanghera, I.D. Aggarwal, M. Luce, R. Generosi, P. Perfetti, A. Cricenti, **J.M. Gilligan**, and N.H. Tolk. (1999). "Fabrication of Single-Mode Chalcogenide Fiber Probes for Scanning Near-Field Infrared Optical Microscopy." *Optical Engineering*. **38**, 1381–1385

46. † A. Cricenti, R. Generosi, C. Barchesi, M. Luce, M. Rinaldi, C. Coluzza, P. Perfetti, G. Margaritondo, D.T. Schaafsma, I.D. Aggarwal, **J.M. Gilligan**, and N.H. Tolk. (1998). "First Experimental Results with the Free Electron Laser Coupled to a Scanning Near-Field Optical Microscope." *Physica Status Solidi A: Applied Research*. **170**, 241–247

47. † A. Cricenti, R. Generosi, P. Perfetti, **J.M. Gilligan**, N.H. Tolk, C. Coluzza, and G. Margaritondo. (1998). "Free-Electron-Laser Near-Field Nanospectroscopy." *Applied Physics Letters*. **73**, 151–153

48. † J. Sturmann*, R.G. Albridge, A.V. Barnes, J.L. Davidson, **J.M. Gilligan**, G. Lupke, A. Ueda*, and N.H. Tolk. (1998). "Infrared Wavelength-Selective Photodesorption on Diamond Surfaces." *Applied Surface Science*. **129**, 59–63

49. † N.H. Tolk, Z. Hargitai*, Y. Yao*, B. Pratt-Ferguson*, M.M. Albert*, R.G. Albridge, A.V. Barnes, **J.M. Gilligan**, V.D. Gordon*, G. Lupke, A. Puckett*, J. Tully, G. Betz, and W. Husinsky. (1998). "Molecular Effects in Measured Sputtering Yields on Gold at Near Threshold Energies." *Izvestiya Akademii Nauk: Seriya Fizicheskaya*. **62**, 676–679

50. † W. Wang*, G. Lupke, M. Di Ventra, S.T. Pantelides, **J.M. Gilligan**, N.H. Tolk, I.C. Kizilyalli, P.K. Roy, G. Margaritondo, and G. Lucovsky. (1998). "Coupled Electron-Hole Dynamics at the Si/SiO_2 Interface." *Physical Review Letters*. **81**, 4224–4227

51. † Y. Yao*, Z. Hargitai*, M. Albert*, R.G. Albridge, A.V. Barnes, **J.M. Gilligan**, B.P. Ferguson*, G. Lupke, V.D. Gordon*, N.H. Tolk, J.C. Tully, G. Betz, and W. Husinsky. (1998). "New Molecular Collisional Interaction Effect in Low-Energy Sputtering." *Physical Review Letters*. **81**, 550–553

52. † J. Sturmann*, R.G. Albridge, A.V. Barnes, **J. Gilligan**, M.T. Graham*, J.T. McKinley, W. Wang*, X. Yang*, N.H. Tolk, J.L. Davidson, and G. Margaritondo. (1997). "Photoexcitation Spectroscopy and Material Alteration with Free-Electron Laser." *Acta Physica Polonica A*. **91**, 689–696

53. † C.M. Volk*, J.W. Elkins, D.W. Fahey, G.S. Dutton, **J.M. Gilligan**, M. Loewenstein, J.R. Podolske, K.R. Chan, and M.R. Gunson. (1997). "Evaluation of Source Gas Lifetimes from Stratospheric Observations." *Journal of Geophysical Research: Atmospheres*. **102**, 25543–25564

54. † J.W. Elkins, D.W. Fahey, **J.M. Gilligan**, G.S. Dutton, T.J. Baring, C.M. Volk*, R.E. Dunn, R.C. Myers, S.A. Montzka, P.R. Wamsley, A.H. Hayden, J.H. Butler, T.M. Thompson, T.H. Swanson, E.J. Dlugokencky, P.C. Novelli, D.F. Hurst, J.M. Lobert, S.J. Ciciora, R.J. McLaughlin, T.L. Thompson, R.H. Winkler, P.J. Fraser, L.P. Steele, and M.P. Lucarelli. (1996). "Airborne Gas Chromatograph for *in situ* Measurements of Long-Lived Species in the Upper Troposphere and Lower Stratosphere." *Geophysical Research Letters*. **23**, 347–350

55. † C.M. Volk*, J.W. Elkins, D.W. Fahey, R.J. Salawitch, G.S. Dutton, **J.M. Gilligan**, M.H. Proffitt, M. Loewenstein, J.R. Podolske, K. Minschwaner, J.J. Margitan, and K.R. Chan. (1996). "Quantifying Transport Between the Tropical and Mid-Latitude Lower Stratosphere." *Science*. **272**, 1763–1768

56. † E.L. Woodbridge, J.W. Elkins, D.W. Fahey, L.E. Heidt, S. Solomon, T.J. Baring, T.J. Gilpin, W.H. Pollock, S.M. Schauffler, E.L. Atlas, M. Lowenstein, J.R. Podolske, C.R. Webster, R.D. May, **J.M. Gilligan**, S.A. Montzka, K.A. Boering, and R.J. Salawitch. (1995). "Estimates of Total Organic and Inorganic Chlorine in the Lower Stratosphere from *in situ* Measurements during AASE II." *Journal of Geophysical Research*. **100**, 3057–3064

57. † U. Eichmann, J.C. Bergquist, J.J. Bollinger, **J.M. Gilligan**, W.M. Itano, D.J. Wineland, and M.G. Raizen. (1993). "Young's Interference Experiment with Light Scattered from Two Atoms." *Physical Review Letters*. **70**, 2359–2362

58. † W.M. Itano, J.C. Bergquist, J.J. Bollinger, **J.M. Gilligan**, D.J. Heinzen, F.L. Moore, M.G. Raizen, and D.J. Wineland. (1993). "Quantum Measurements of Trapped Ions." *Vistas in Astronomy*. 169–183

59. † W.M. Itano, J.C. Bergquist, J.J. Bollinger, **J.M. Gilligan**, D.J. Heinzen, F.L. Moore, M.G. Raizen, and D.J. Wineland. (1993). "Ultra-High Precision Spectroscopy for Fundamental Physics." *Hyperfine Interactions*. **78**, 211–220

60. † W.M. Itano, J.C. Bergquist, J.J. Bollinger, **J.M. Gilligan**, F.L. Moore, and M.G. Raizen. (1993). "Quantum Projection Noise: Population Fluctuations in Two-Level Systems." *Physical Review A*. **47**, 3554–3570

61. † D. Shiner, **J.M. Gilligan**, B.M. Cook*, and W. Lichten. (1993). "H_2, D_2, and HD Ionization Potentials by Accurate Calibration of Several Iodine Lines." *Physical Review A*. **47**, 4042–4045

62. † **J.M. Gilligan** and E.E. Eyler. (1992). "Precise Determinations of Ionization Potentials and *EF* State Energy Levels of H_2, HD, and D_2." *Physical Review A*. **46**, 3676–3690

63. † M.G. Raizen, **J.M. Gilligan**, J.C. Bergquist, W.M. Itano, and D.J. Wineland. (1992). "Ionic Crystals in a Linear Paul Trap." *Physical Review A*. **45**, 6493–6501

64. † M.G. Raizen, **J.M. Gilligan**, J.C. Bergquist, W.M. Itano, and D.J. Wineland. (1992). "Linear Trap for High-Accuracy Spectroscopy of Stored Ions." *Journal of Modern Optics*. **39**, 233–242

65. † **J.M. Gilligan** and E.E. Eyler. (1991). "High-Resolution Three-Photon Spectroscopy and Multiphoton Interference in Molecular Hydrogen." *Physical Review A*. **43**, 6406–6409

66. † E. McCormack, **J.M. Gilligan**, C. Cornaggia, and E.E. Eyler. (1989). "Measurement of High Rydberg States and the Ionization Potential of H_2." *Physical Review A*. **39**, 2260–2263

67. † E.E. Eyler, **J.M. Gilligan**, E. McCormack*, A. Nussenzweig*, and E. Pollack. (1987). "Precise Two-Photon Spectroscopy of $E \leftarrow X^*$ Intervals in H_2." *Physical Review A*. **36**, 3486–3489

5d. Book Chapters (* denotes student author, † denotes peer-reviewed chapter)

1. † B.A. Ackerly, M. Anam*, **J. Gilligan**, and S. Goodbred. (2017). "Climate and Community: The Human Rights, Livelihood, and Migration Impacts of Climate Change." In: *Climate Change, Migration, and Human Rights*. D. Manou, A. Baldwin, D. Cubie, A. Mijr, and T. Thorp, eds. New York: Routledge, pp. 189–202. ISBN: 9780367136161

2. B.A. Ackerly, M. Anam*, and **J. Gilligan**. (2015). "Environment, Political Economies, and Livelihood Change." In: *Environment, Migration and Adaptation: Evidence and Politics of Climate Change in Bangladesh*. B. Mallick and B. Etzold, eds. Dhaka, Bangladesh: AH Development Publishing House, pp. 27–39. ISBN: 9789849103790

3. **J. Gilligan**. (2010). "People Should Behave Ethically for the Sake of Future Generations." In: *Opposing Viewpoints: Ethics*. R. Espejo, ed. Vol. 2. Gale, pp. 20–32

5e. Articles in Conference Proceedings (* denotes student author, † denotes peer-reviewed article)

1. † K. Ding*, **J.M. Gilligan**, and G.M. Hornberger. (2019). "Avoiding "Day-Zero": A Testbed for Evaluating Integrated Food-Energy-Water Management in Cape Town, South Africa." In: *Proceedings of the 2019 Winter Simulation Conference*. N. Mustafee, K.-H.G. Bae, S. Lazarova-Molnar, M. Rabe, C. Szabo, P. Haas, and Y.-J. Son, eds. Piscataway, NJ, USA: IEEE Press. In press

2. † E.K. Burchfield* and **J.M. Gilligan**. (2016). "Dynamics of Individual and Collective Agricultural Adaptation to Water Scarcity." In: *Proceedings of the 2016 Winter Simulation Conference*. T. Roeder, P. Frazier, R. Szechtman, E. Zhou, T. Huschka, and S. Chick, eds. Piscataway, NJ, USA: IEEE Press, pp. 1678–1689. DOI: 10.1109/WSC.2016.7822216

3. † J.J. Nay*, M. Van der Linden*, and **J.M. Gilligan**. (2016). "Betting and Belief: Prediction Markets and Attribution of Climate Change." In: *Proceedings of the 2016 Winter Simulation Conference*. T. Roeder, P. Frazier, R. Szechtman, E. Zhou, T. Huschka, and S. Chick, eds. Piscataway, NJ, USA: IEEE Press, pp. 1666–1677. DOI: 10.1109/WSC.2016.7822215

4. † **J.M. Gilligan**, C. Brady, J.V. Camp, J.J. Nay*, and P. Sengupta. (2015). "Participatory Simulations of Urban Flooding for Learning and Decision Support." In: *Proceedings of the 2015 Winter Simulation Conference*. L. Yilmaz, W. Chan, I. Moon, T. Roeder, C. Macal, and M. Rossetti, eds. Piscataway, NJ, USA: IEEE Press, pp. 3174–3175. ISBN: 978-1-4673-9741-4. DOI: 10.1109/WSC.2015.7408456. 00000

5. † J.J. Nay* and **J.M. Gilligan**. (2015). "Data-driven Dynamic Decision Models." In: *Proceedings of the 2015 Winter Simulation Conference*. L. Yilmaz, W. Chan, I. Moon, T. Roeder, C. Macal, and M. Rossetti, eds. Piscataway, NJ, USA: IEEE Press, pp. 2752–2763. ISBN: 978-1-4673-9741-4. DOI: 10.1109/WSC.2015.7408381. 00000

6. **J.M. Gilligan**, B.A. Ackerly, and S.L. Goodbred. (2013). "Building Resilience to Environmental Stress in Coastal Bangladesh: An Integrated Social, Environmental, and Engineering Perspective." In: *Bridging the Policy-Action Divide: Challenges and Prospects for Bangladesh*. Bangladesh Development Initiative. Berkeley, CA

7. † K.G. Rogers, J.P. Syvitski, I. Overeem, S. Higgins*, and **J.M. Gilligan**. (2013). "Farming Practices and Anthropogenic Delta Dynamics." In: *Deltas: Landforms, Ecosystems and Human Activities*. Vol. 358. IAHS Publ. Int'l. Assoc. Hydrolog. Sci. Gothenberg SE, pp. 133–142

8. J. Sturmann*, Z. Marka*, M. Albert*, R.G. Albridge, **J.M. Gilligan**, G. Luepke, S. Singh, J.L. Davidson, W. Husinsky, and N.H. Tolk. (2001). "Infrared free-electron laser photoablation of diamond films." In: *Nonresonant Laser-Matter Interaction (NLMI-10)*. International Society for Optics and Photonics, pp. 206–211

9. E. Sobol, A. Sviridov, M. Kitai, **J.M. Gilligan**, and G.S. Edwards. (2000). "Alteration of Absorption Coefficients of Tissue Water as a Result of Heating under IR FEL Radiation with Different Wavelengths." In: *International Biomedical Optics Symposium*. Vol. 3925. SPIE, p. 78

10. E. Sobol, A. Sviridov, M. Kitai, G.S. Edwards, **J.M. Gilligan**, and N.H. Tolk. (1999). "Effect of Wavelength on Threshold and Kinetics of Tissue Denaturation under Laser Radiation." In: *International Biomedical Optics Symposium*. Vol. 3601. SPIE, pp. 122–129

11. **J.M. Gilligan**, J.W. Elkins, D.W. Fahey, G.S. Dutton, C.M. Volk, T.J. Baring, R.E. Dunn, and R.C. Myers. (1994). "Refinement of the Total Organic and Inorganic Chlorine Budgets in the Atmosphere with a New *in situ* Instrument, Airborne Chromatograph for Atmospheric Trace Species (ACATS-IV)." In: *Atmospheric Effects of Aviation Project Workshop*

12. U. Eichmann, J.C. Bergquist, J.J. Bollinger, **J.M. Gilligan**, W.M. Itano, J.G. Raizen, and D.J. Wineland. (1993). "Interference in the Resonance Fluorescence of Two Trapped Atoms." In: *Proceedings of the 11th International Conference on Laser Science*, pp. 43–48

13. W.M. Itano, U. Eichmann, J.C. Bergquist, J.J. Bollinger, **J.M. Gilligan**, M.G. Raizen, and D.J. Wineland. (1993). "Light Scattered from Two Atoms." In: *Proceedings of the 11th International Conference on Laser Science*, pp. 410–419

14. D.J. Wineland, J.C. Bergquist, J.J. Bollinger, W.M. Itano, F.L. Moore, **J.M. Gilligan**, M.G. Raizen, D.J. Heinzen, C.S. Weimer, and C.H. Manney. (1991). "High-Resolution Spectroscopy of Laser-Cooled Ions." In: *Proceedings of the Enrico Fermi Summer School on Laser Manipulation of Atoms and Ions, July 1991, Varenna, Italy*, pp. 539–551

15. D.J. Wineland, J.C. Bergquist, J.J. Bollinger, W.M. Itano, F.L. Moore, **J.M. Gilligan**, M.G. Raizen, D.J. Heinzen, C.S. Weimer, and C.H. Manney. (1991). "Recent Experiments on Trapped Ions at the National Institute of Standards and Technology." In: *Proceedings of the Enrico Fermi Summer School on Laser Manipulation of Atoms and Ions, July 1991, Varenna, Italy*, pp. 553–567

16. E.E. Eyler, **J.M. Gilligan**, and E. McCormack. (1988). "Precise Multiphoton Spectroscopy of H_2." In: *Advances in Laser Spectroscopy III*. Vol. 172. AIP Conference Proceedings, pp. 331–333

17. E.E. Eyler and **J.M. Gilligan**. (1987). "Precise Multiphoton Spectroscopy of Excited States of H_2." In: *Advances in Laser Spectroscopy II*. Vol. 160. AIP Conference Proceedings, pp. 388–390

18. E. McCormack, E.E. Eyler, and **J.M. Gilligan**. (1987). "Precise Photodissociation and Multiphoton Spectroscopy of H_2." In: *Proceedings of the XV International Conference on Quantum Electronics*. Vol. 21. Technical Digest Series. Optical Society of America, pp. 58–60

5f. Patents

1. F.J. Baudenbacher, J.P. Wikswo, R.R. Balcarcel, D. Cliffel, S. Eklund, **J.M. Gilligan**, O. McGuinness, T. Monroe, A. Prokop, M. Stremler, and A. Werdich. (2010). "Apparatus and Methods for Monitoring the Status of a Metabolically Active Cell." 7,704,745 B2. (Apr. 27, 2010)

2. D. Cliffel, F.J. Baudenbacher, J.P. Wikswo, S. Eklund, R.R. Balcarcel, and **J.M. Gilligan**. (2010). "Device and Methods for Detecting the Response of a Plurality of Cells to at Least One Analyte of Interest." 7,713,733 B2. (May 11, 2010)

5g. Software and other products

1. kayadata: Kaya Identity Data for Nations and Regions by **J.M. Gilligan**, Comprehensive R Archive Network (2019): `https://cran.r-project.org/web/packages/kayadata/`

2. kayatool: Interactive Energy and Emissions Policy Analysis Tool by **J.M. Gilligan**, GitHub (2019): `https://github.com/jonathan-g/kayatool`

3. analyzeBehaviorspace: Interactive Analysis of Output from NetLogo Behaviorspace Experiments by **J.M. Gilligan** GitHub (2018): `https://github.com/jonathan-g/analyzeBehaviorspace`

4. forecastVeg: Forecasting Vegetation Health at High Spatial Resolution, by J.J. Nay*, E.K. Burchfield*, and **J.M. Gilligan**, GitHub (2016): `https://github.com/JohnNay/forecastVeg`

5. predMarket: Agent-based model of trader behavior in a climate prediction market. by J.J. Nay*, M. Van der Linden*, and **J.M. Gilligan**, GitHub (2016): `https://github.com/jonathan-g/predMarket`

6. datafsm: Estimating Finite State Machine Models from Data by John J. Nay*, and **J.M. Gilligan**, Comprehensive R Archive Network (2015): `https://cran.r-project.org/web/packages/datafsm/`

7. Floodpartsim: A Participatory Agent-Based Simulation of Urban Flood Risk Management by **J.M. Gilligan**, C.E. Brady, J.V. Camp, J.J. Nay*, and P. Sengupta, GitHub (2015): `https://github.com/jonathan-g/Floodpartsim`

5h. Invited Presentations

1. "Agent-Based Modeling of Community Resilience and Environmental Non-Migration," Invited presentation, Conference on Environmental Non-Migration: Framework, Methods, and Cases, Technical University of Dresden, June 19-21 2019.

2. "Sediment Management and Sea-Level Rise," invited presentation, Fifth Annual Gobeshona International Conference on Climate Knowledge, International Centre for Climate Change and Development, Dhaka, Bangladesh, January 9, 2019.

3. Invited panelist, "What Can an Individual Do to Help Limit Climate Change," public panel discussion at Copenhagen Business School, Aug. 29, 2018.

4. Invited participant, Workshop on Household Actions to Reduce Greenhouse Gas Emissions, Copenhagen Business School, Copenhagen Denmark, August 27–28 2018 (Host paid for travel, lodging, and meals).

5. Invited panelist, "Re-envisioning 'Sustainable' Deltas through Critical Geography," American Association of Geographers Annual Conference, April 2018.

6. "Carrot and Sticks in Private Climate Governance," invited presentation, Joint Conference on Environmental Regulation. The Hagler Institute for Advanced Study at the Texas A&M University School of Law and the Classical Liberal Institute at the New York University School of Law. March 9–10, 2018. (Host paid for travel, lodging, and meals).

7. "Private Governance Approaches to Climate Policy: Pragmatic Responses to Government Inaction," Department colloquium, Department of Environmental Studies, University of Colorado, Boulder, February 7, 2018 (Host covered travel, lodging, meals).

8. "Energy and the Economy of Sri Lanka," invited presentation, Workshop on Assessing Stakeholder Preferences in Planning of Energy Sector in Sri Lanka, Colombo, Sri Lanka, August 11, 2017.

9. "Understanding and Adapting to Water Scarcity at the Community Level," invited keynote presentation, Conference on Recognizing Climate Change Risk of Dry Zone Farmers, Ministry of Disaster Management, Colombo, Sri Lanka, August 10, 2017.

10. "Planning for Environmental Stress and Disasters: The Importance of Interdisciplinary Approaches," invited presentation to the Institute of Town Planners of Sri Lanka and the Organization of Professional Associations of Sri Lanka. Colombo, Sri Lanka, August 9, 2017.

11. "Quantifying the Potential for Greenhouse Gas Emissions Reductions through Private Governance," invited presentation to National Academies Board on Environmental Change and Society. National Academies, Washington, DC, July 11, 2017. (Host covered travel, lodging, & meals).

12. "Connecting Human and Natural Systems: The Role of Agent-Based Simulations," invited keynote talk, CSDMS 2017 Annual Meeting on Modeling Coupled Earth and Human Systems. Boulder, CO. May 23–25 2017. (Host covered travel, lodging, meals, & conference registration). My talk is online at `https://www.youtube.com/watch?v=v6i5_P_OOcU`.

13. "Dynamics of Individual and Collective Agricultural Adaptation to Water Security," invited talk, Winter Simulation Conference 2016, Arlington, VA, December 12, 2016.

14. "Understanding Drought and Decision-Making," Workshop on Agricultural Drought and Policy, American Institute for Sri Lankan Studies, Colombo, Sri Lanka, March 10, 2015.

15. "Land Use, Livelihoods, Vulnerabilities, and Resilience in Coastal Bangladesh," in Session PA010: Livelihoods and Ecosystem Services in Vulnerable Delta Regions: Implications for Policy and Practice, American Geophysical Union Fall Meeting, San Francisco CA, December 2014.

16. "In the Tide Country: Live on an Active Delta in Bangladesh," Department of Geography, University of Georgia, October 20, 2014 (Host covered travel, lodging, & meals).

17. "Integrating Natural and Social Science to Inform Adaptation to Extreme Weather in Bangladesh and Sri Lanka," Symposium on Extreme Weather, Disasters and Indigenous Practices in South Asia, Annual Conference on South Asia, Madison WI October 16, 2014 (American Institute of Sri Lanka Studies covered conference registration and 50% of travel & lodging).

18. "Integrating Social and Natural Science to Understand Vulnerability and Resilience in Coastal Environments," Symposium on Climate Change, Drought, and Agricultural Adaptation, Colombo, Sri Lanka, June 7, 2013.

19. "Climate Change and Disaster Management," Ministry of Disaster Management, Colombo, Sri Lanka, June 5, 2013.

20. "From the Laboratory to the Legislature: Transdisciplinary Perspectives on Global Climate Change" Nashville State Community College, Nashville TN, March 30, 2012.

21. "Don't Raise the Bridge, Lower the River: Geoengineering Technology and Governance" Environmental Governance at the Leading Edge of Technology Conference, George Washington U., Washington DC, March 23, 2011 (Host covered travel, lodging & conference registration).

22. "The Behavioral Wedge: Reducing Greenhouse Gas Emissions by Individuals and Households," Joint Statistical Meetings (American Statistical Association, Statistical Society of Canada, etc.), Vancover BC, August 1, 2010. **NOTE:** Part of a special session to highlight the best papers published in the journal *Significance* during the previous year. (Host covered travel, lodging, & conference registration).

23. Panelist, Pew Charitable Trusts Forum on the Law of the Sea Treaty, Belmont University, Nashville TN, November 18, 2009.

24. "Global Climate Change: Earth Science, Behavioral Science, and Public Policy," Middle Tennessee State University, Murfreesboro TN, October 16, 2009.

25. "From the Laboratory to the Legislature: Why Climate Change is Fundamentally a Transdisciplinary Issue," Belmont University, Nashville TN, February 6, 2009 (Host paid honorarium)

26. "Individual Behavior and Climate Change: The Low-Hanging Fruit," Keynote Address, Summit for a Sustainable Tennessee, David Lipscomb University, Nashville TN, November 13, 2008.

27. "From the Laboratory to the Legislature: Transdisciplinary Perspectives on Environmental Science and Policy," Distinguished Panel Speaker, 10th Beckman Scholars Symposium, Irvine CA, July 26, 2008. (Host covered travel & lodging and paid an honorarium).

28. "Spirituality, Ethics, and the Environment," The Kenan Writers' Encounters: Writers and Artists Engage the Environment, Thomas S. Kenan Institute for the Arts & North Carolina School of the Arts, Winston-Salem NC, April 12, 2008. (Host covered travel, lodging, and paid an honorarium).

29. "Ethics in Geological Time: Should We Care about Distant Future Generations?," The Berry Lecture, Dept. of Philosophy, Vanderbilt University, Nashville TN, March 24, 2008 (honorarium).

30. "Individual Behavior and Greenhouse Gas Emissions," Behavior, Energy, and Climate Change conference, American Council for an Energy Efficient Economy, Sacramento CA, November 7–9, 2007

31. "Flexibility, Clarity, and Legitimacy: Considerations for Managing Nanotechnology Risks," Nanotechnology Governance: Environmental Management from a Global Perspective, Environmental Law Institute and Vanderbilt Center for Environmental Management Studies, Nashville TN, May 19, 2006.

32. "*Et in Arcadia Ego*: Reflections on the Future of Tenure," Symposium on Promoting Scientific Freedom and Responsibility, AAAS Annual Meeting, Philadelphia PA (1998).
33. "Smart Modification of Surfaces with Free-Electron Lasers," ASM Materials Week '97, Indianapolis IN (1997).
34. "Modification of Diamond Films using Free-Electron Lasers," ASM Materials Week '96, Cincinnatti OH (1996).
35. "Quantum Mechanical Measurements with Single Atoms," April Meeting of the American Physical Society, Washington DC (1992).

5i. Published Abstracts

1. K. Best*, **J.M. Gilligan**, K.G. Rogers, A. Carrico, K. Donato, B. Ackerly, and B. Mallick, "A Machine Learning Analysis of Multiple Social Surveys to Understand Environmental Migration in Coastal Bangladesh", Amer. Geophys. Union Fall Meeting 2018
2. A. Witte*, G.M. Hornberger, T. Gunda, and **J.M. Gilligan**, "A Study of the Geographic Variances in Water Salience using Local Newspapers", Amer. Geophys. Union Fall Meeting 2018
3. L.A. Valentine*, C. Wilson, K.G. Rogers, A. Carrico, K. Donato, and **J.M. Gilligan**, "Sediment Accretion and Erosion in Poldered and Non-Poldered Regions within the Ganges-Brahmaputra-Meghna Delta, Bangladesh: Implications for River Channel Migration and Flood Risk", Amer. Geophys. Union Fall Meeting 2018
4. K. Best*, **J.M. Gilligan**, H. Baroud, B. Ackerly, and B. Mallick, "Machine Learning to Identify Drivers of Internal Migration in Coastal Bangladesh", Community Surface Dynamics Modeling System Annual Meeting, 2018.
5. *C.M. Tasich, **J.M. Gilligan**, S.L. Goodbred Jr, R.P. Hale, and C. Wilson, "Modeling Elevation Equilibrium and Human Adaptation in the Ganges-Brahmaputra Delta", Amer. Geophys. Union Fall Meeting 2017
6. C. Tasich*, **J.M. Gilligan**, S. Goodbred, R. Hale, and C. Wilson, "Modeling Elevation Equilibrium and Human Adaptation in Southwest Bangladesh", Community Surface Dynamics Modeling System Annual Meeting, 2017.
7. E.K. Burchfield* and **J.M. Gilligan**, "Dynamics of Individual and Collective Agricultural Adaptation to Water Scarcity", Amer. Geophys. Union Fall Meeting 2016
8. C. Tasich*, **J.M. Gilligan**, S.L. Goodbred, R.P. Hale, and C. Wilson, "Modeling Elevation Equilibrium in the Face of Sea Level Rise ", Amer. Geophys. Union Fall Meeting 2016
9. A. Carrico, **J.M. Gilligan**, and H.B. Truelove, "Actual vs. Perceived Climate Variability among Smallholding Rice Farmers", Amer. Geophys. Union Fall Meeting 2016
10. **J.M. Gilligan**, J.J. Nay*, and M. Van der Linden*, "Prediction Markets and Beliefs about Climate: Results from Agent-Based Simulations", Amer. Geophys. Union Fall Meeting 2015
11. **J.M. Gilligan**, C. Brady, J.V. Camp, J.J. Nay*, and P. Sengupta, "Emotional Engagement with Participatory Simulations as a Tool for Learning and Decision-Support for Coupled Human-Natural Systems: Flood Hazards and Urban Development", Amer. Geophys. Union Fall Meeting 2015
12. M.G. Patrick*, S.L. Goodbred, **J.M. Gilligan**, C.M. Tasich*, S. Hossain, and K.M. Ahmed "Stratigraphic Evolution of the Ganges-Brahmaputra Lower Delta Plain and its Relation to Groundwater Arsenic Distributions", Amer. Geophys. Union Fall Meeting 2015
13. C.M. Tasich*, **J.M. Gilligan**, S.L. Goodbred, C. Wilson, R.P. Hale, and L.W. Auerbach "Rejuvenating Poldered Landscapes: A Numerical Model of Elevation Equilibrium in Coastal Bangladesh", Amer. Geophys. Union Fall Meeting 2015

14. T. Gunda*, **J.M. Gilligan**, and G.M. Hornberger "Forecasts of Agricultural Drought in Sri Lanka", Amer. Geophys. Union Fall Meeting 2015

15. **J. Gilligan**, B. Ackerly, S. Goodbred, and C. Wilson "Land Use, Livelihoods, Vulnerabilities, and Resilience in Coastal Bangladesh," Amer. Geophys. Union Fall Meeting 2014

16. **J. Gilligan** and M. Vandenbergh, "Between Too Little and Too Late: Political Opportunity Costs in Climate Policy Analysis," Amer. Geophys. Union Fall Meeting 2014

17. G.M. Hornberger, **J. Gilligan**, and D. Hess "Water Conservation and Hydrological Transitions in Cities," Amer. Geophys. Union Fall Meeting 2014

18. S. Goodbred, M. Steckler, **J. Gilligan**, B. Ackerly, J. Ayers, C. Wilson, C. Small, and L. Seeber "Dynamic Asia: Coupling of climate, tectonics, rivers, and people defines risk and opportunity for the world's largest human populations," Amer. Geophys. Union Fall Meeting 2014

19. C. Tasich*, S. Goodbred, **J. Gilligan**, and C. Wilson, "Rejuvenating Poldered Landscapes in a Tidally-Dominated, Sediment-Rich Delta: A Numerical Model and Analysis of the Effectiveness of Tidal River Management in Coastal Bangladesh," Amer. Geophys. Union Fall Meeting 2014

20. M. Steckler, S. Goodbred, S. Lowes, **J. Gilligan**, B. Ackerly, K.M. Ahmed, S. Akhter, D. Sousa, C. Wilson, D. Datta, K. Roy, and D. Mondal*, "Enhancing University Courses and Field Schools through Cross-cultural Exchange: Joint US-Bangladeshi Trips to the Ganges-Brahmaputra and Mississippi Deltas," Amer. Geophys. Union Fall Meeting 2014

21. **J. Gilligan**, B. Ackerly, and S. Goodbred, "Integrating social science, environmental science, and engineering to understand vulnerability and resilience to environmental hazards in Bangladesh," Amer. Geophys. Union Fall Meeting 2013.

22. **J. Gilligan**, B. Ackerly, K. Ahmed, L. Auerbach*, L. Benneyworth*, S. Goodbred, J. Jacobi*, D. Mondal*, J. Pickering*, K. Rogers, and K. Roy, "Water and social justice in Bangladesh: A transdisciplinary and intercultural approach," Amer. Geophys. Union Fall Meeting 2013.

23. L. Auerbach*, S. Goodbred, D. Mondal*, C. Wilson, K. Ahmed, K. Roy, M. Steckler, **J. Gilligan**, and S. Nooner "In the Balance: Natural v. Embanked Landscapes in the Ganges-Brahmaputra Tidal Delta Plain", Amer. Geophys. Union Fall Meeting 2013.

24. S. Goodbred, L. Auerbach*, C. Wilson, **J. Gilligan**, K. Roy, K. Ahmed, M. Steckler, L. Seeber, S. Akhter, and S. Hossain*, "A Tale of Two Deltas: Contrasting Perspectives on the Status of Natural and Human-modified Regions of the Ganges-Brahmaputra River Delta," Amer. Geophys. Union Fall Meeting 2013.

25. **J. Gilligan**, "Integrating social and natural science to understand vulnerability and resilience in coastal environments," Coastal Processes and Environments Under Sea-Level Rise and Changing Climate: Science to Inform Management, Joint Penrose/Chapman Conference, Geol. Soc. Amer. & Amer. Geophys. Soc., Galveston TX, 14-19 Apr. 2013.

26. **J. Gilligan**, B. Ackerly, and S. Goodbred, "Building resilience to environmental stress in coastal Bangladesh: An integrated social, environmental, and engineering perspective," Bridging the Policy-Action Divide: Challenges and Prospects for Bangladesh, Bangladesh Development Initiative, Berkeley CA, 22–24 Feb., 2013.

27. J.H. Jacobi*, **J.M. Gilligan**, A.R. Carrico, H.B. Truelove, and G. Hornberger, "Diffusion of a Sustainable Farming Technique in Sri Lanka: An Agent-Based Modeling Approach," Amer. Geophys. Union Fall Meeting 2012, abstract #1479443.

28. L. Auerbach*, S.L. Goodbred, D. Mondal*, K. Roy, K.R. Ahmed*, **J.M. Gilligan**, and B. Ackerly, "Contrasting Pristine and Human-Modified Deltaic Environments: Severe Consequences from Long-Term Coastal Embankments in Southwest Bangladesh," Amer. Geophys. Union Fall Meeting 2012, abstract #1496486.

29. **J.M. Gilligan**, N.H. Tolk, A. Cricenti, R. Generosi, P. Perfetti, C. Coluzza, and G. Margaritondo, "Infrared near-field spectromicroscopy of buried interfaces using free-electron lasers", by Bull. Amer. Phys. Soc. Mar. 1998, p. 2607.

30. "Infrared Wavelength Selective Modification of Doped Hydrogenated Silicon", by C. Parks Cheney*, G. Lüpke, J.C. Keay, **J.M. Gilligan**, L.C. Feldman, N.H. Tolk, S. Chen, P.C. Taylor, Y. Tung, and D.O. Henderson, Bull. Amer. Phys. Soc. Mar. 1998, p. 2302.

31. G. Mensing*, J.M. Gilligan, E. Hurt*, N. Tolk, and P.C. Taylor, "Photoluminescenc Excitation Spectroscopy of a-Si: H using a Free-Electron Laser", Bull. Amer. Phys. Soc. Mar. 1998, p. 2704.

32. Z. Hargitai*, Y. Yao*, **J.M. Gilligan**, B. Pratt-Ferguson*, V.D. Gordon*, A. Puckett*, N.H. Tolk, J. Tully, G. Betz, and W. Husinsky, "Observation of Enhanced Sputtering by Molecular Ions at Near-Threshold Energies", Bull. Amer. Phys. Soc. Mar. 1998, p. 2813.

33. W. Wang*, G. Lüpke, **J.M. Gilligan**, L.C. Feldman, N.H. Tolk, G. Lucovsky, and I.C. Kiziyalli, "Wavelength-Selective Alteration of the Si (001)/SiO2 Interface by Intense Tunable Infrared Radiation", Bull. Amer. Phys. Soc. Mar. 1998, p. 1510.

34. C. Parks Cheney*, G. Lüpke, J.C. Keay, **J.M. Gilligan**, L.C. Feldman, N.H. Tolk, S. Chen, P.C. Taylor, Y. Tung, and D.O. Henderson, "Infrared Wavelength Selective Modification of Doped Hydrogenated Silicon", Bull. Amer. Phys. Soc. Mar. 1998, p. 2302.

35. **J.M. Gilligan**, N.H. Tolk, A. Cricenti, R. Generosi, P. Perfetti, C. Coluzza, and G. Margaritondo, "Infrared Near-Field Spectromicroscopy of Buried Interfaces using Free-Electron Lasers", Bull. Amer. Phys. Soc. Mar. 1998, p. 2607.

36. Z. Hartigai*, Y. Yao*, **J.M. Gilligan**, B. Pratt-Ferguson*, V.D. Gordon*, A. Puckett*, N.H. Tolk, J. Tully, G. Betz, and W. Husinsky, "Observation of Enhanced Sputtering by Molecular Ions at Near-Threshold Energies", Bull. Amer. Phys. Soc. Mar. 1998, p. 2813.

37. Z. Hargitai*, Y. Yao*, M.M. Albert*, A.V. Barnes, **J.M. Gilligan**, V.D. Gordon*, G. Lüpke, B. Pratt-Ferguson*, A. Puckett*, and N.H. Tolk, "Enhancement of Sputtering Yields by Low-Energy Molecular Ions", APS Southeastern Section Meeting Abstracts (1997), p. 9.

38. J. Sturmann*, R.G. Albridge, **J.M. Gilligan**, G. Lüpke, N.H. Tolk, and J.L. Davidson, "Infrared Wavelength-Selective Photodesorption from Diamond Films", APS Southeastern Section Meeting (1997), p. 8.

39. G. Mensing*, **J. Gilligan**, E. Hurt*, N.H. Tolk, and P.C. Taylor, "Photoluminescence Excitation Spectroscopy of a-si: H Using a Free Electron Laser", Bull. Amer. Phys. Soc. March 1997, p. 1202.

40. G.S. Herold*, M.S. Salib*, A. Petrou, B.D. McCombe, G. Mensing*, **J. Gilligan**, N. Tolk, M. Dutta, J. Pamulapati, and P.G. Newman, "Optically Detected Resonance Spectroscopy of Intersubband Transitions in GaAs/AlAs Multiple Quantum Wells", APS Southeastern Section Meeting (1997), p. 4.

41. **J. Gilligan**, G. Mensing*, N. Tolk, M.S. Salib*, A. Petrou, B.D. McCombe, M. Dutta, J. Pamulapati, and P.G. Newman, "Free Electron Laser Optically Detected Resonance Spectroscopy of Intersubband Transitions in GaAs/AlAs Quantum Wells", Bull. Amer. Phys. Soc. Mar. 1997, p. 1209.

42. G.A. Mensing*, E. Hurt*, **J. Gilligan**, N. Tolk, and P.C. Taylor, "Photoluminescence of a-Si: H using a Free Electron Laser", APS Southeastern Section Meeting (1996), p. 12.

43. M.T. Graham*, R.G. Albridge, A. Barnes, B. Barnes*, A. Beth, J. Davidson, **J. Gilligan**, J. McKinley, S. Pantelides, and N. Tolk, Bull. Amer. Phys. Soc. Mar. 1996, p. 2702. "Nonthermal Diffusion of Impurities in Silicon and Diamond",

44. U. Eichmann, J.C. Bergquist, J.J. Bollinger, and **J.M. Gilligan**, "Young's interference experiment with light scattered from two atoms", Bull. Amer. Phys. Soc. **38**, May 1993, p. 1140 (1993).

45. **J.M. Gilligan**, C. Monroe, and D. Wineland, "A miniature linear RF ion trap", Bull. Amer. Phys. Soc., **38**, May 1993.

5j. Research Grants

5j.i. Current Grants

1. "Socioecological System Dynamics Related to Livelihood, Human Migration, and Landscape Evolution," NSF Coupled Human-Natural Systems. Sept. 1, 2017–Feb. 28, 2022. Total funds: $1,498,721 over four and one half years. Vanderbilt portion: Direct costs: $100,067. Indirect costs: $57,083. Total funds: $157,105. Principal Investigator Kimberly Rogers (University of Colorado). I am the principal investigator for the Vanderbilt portion of this project and my role is the lead in computational modeling and geospatial statistical analysis.

2. "Multiscale Modeling and Observations of Landscape Dynamics, Mass-Balance, and Network Connectivity for a Sustainable Gange-Brahmaputra Delta," NSF Coastal SEES. Aug. 1, 2016–Jul. 31, 2020. Total funds: $810,211. Direct costs: $532,163. Indirect costs: $278,048. Principal Investigator Steven Goodbred. I am co-principal investigator and my role is computational modeling, statistical data analysis, and risk analysis.

5j.ii. Pending Grant Proposals

1. "CNH2-L: Participatory Modeling to Facilitate Understanding, Deliberation, and Decision-Making around Flood Hazards," Proposal to Dynamics of Coupled Natural-Human Systems program. Sept. 1, 2019–Aug. 31, 2023. Requested funds: $1,344,496. Principal Investigator, Jonathan Gilligan. Submitted Feb. 14, 2019. Under review.

5j.iii. Previous Grants

1. National Science Foundation: NSF-EAR 1416964, "Water Conservation and Hydrological Transitions in American Cities" Aug. 2014–Jul. 2017. Total funds: $717,000 (direct costs: $496,000, indirect costs: $221,000). Principal Investigator George Hornberger. I was a co-principal investigator and my role in the project was integration of physical and social science with emphasis on statistical analysis and computer modeling of political and policy responses to water stress.

2. Vanderbilt TIPS grant: "VISOR: Vanderbilt Initiative on Smart-city Operations Research" $199,948 over 2 years (direct costs: $199,948, indirect costs: $0). Principal Investigator Gautam Biswas. I was a co-principal investigator and my role was leading a research project studying the impact of gentrification on access to mass-transit in Nashville.

3. Vanderbilt TIPS grant: "Private Governance Approaches to Climate Change" $190,000 over 2 years (direct costs: $190,000; indirect costs: $0). Principal Investigator Michael Vandenbergh. I was a co-principal investigator and my role was project design, statistical analysis, and coordinating undergraduate immersive experiences.

4. "Climate Adaptation, Water-Energy Impacts, Perceptions and Behavior," Vanderbilt University Discovery Grant. Direct costs: $99,532. No indirect costs. Period of Award: Mar. 2011–Feb. 2013. Principal Investigator George Hornberger. I was co-principal investigator and my role was computer modeling of behavioral responses to water scarcity by farmers. I supervised Prof. Hornberger's Ph.D. student John Jacobi for part of his dissertation project which used agent-based modeling of farmer behavior.

5. Office of Naval Research ONR-MURI-N00014-11-1-0683 "Environmental stress and human migration in a low-lying developing nation: A comparison of co-evolving natural and human landscapes in the physically and culturally diverse context of Bangladesh," June 2011–May 2016; no-cost extention through May 2017. Total funds $7.50 million (direct costs$5.55 million, indirect costs $1.95 million). Principal Investigator Steven Goodbred (VU EES). I was one of three co-principal investigators (with Prof. Goodbred and Prof. Brooke Ackerly, Political Science) who shared leadership of the project. From June–December 2011 I served as acting project leader. The project had three major components: physical science, social science, and integrative science. I was the leader of the integrative science team.

6. National Science Foundation: NSF-EAR 1204685, "Climate, Drought, and Agricultural Adaptations: An Investigation of Vulnerabilities and Responses to Water Stress Among Paddy Farmers in Sri Lanka" Sept. 2012–Aug. 2017. Total funds: $3.7 million (direct costs: $2.4 million, indirect costs: $1.3 million). Principal Investigator George Hornberger. I was a co-principal investigator and my role in the project was integration of physical and social science through statistical analysis, analysis of satellite remote sensing imagery, and computer modeling of social networks and interaction between behavior and environmental stress as communities of farmers in Sri Lanka adapt to drought and other climatic change.

5k. Working Papers

1. P.A. Hoover*, **J.M. Gilligan**, M.P. Vandenbergh, and J.H. Clarke, "Assessing Greenhouse Gas Emissions from Electronic versus Printed Documents: A Break-Even Point Analysis." Complete manuscript. Almost ready for submission.

2. K. Best*, **J.M. Gilligan**, H. Baroud, A. Carrico, K. Donato, B. Mallick, and B.A. Ackerly, "Machine-Learning Methods Can Identify Predictors of Migration in Bangladesh from Household Surveys with Many Covariates." Complete draft manuscript, in preparation for submission.

3. **J.M. Gilligan**, M.P. Vandenbergh, M.A. Cohen, and A.E. Wiseman, "Accounting for Policy Plasticity in Climate and Energy Policy Analysis," complete working paper. Developing for submission.

6 Teaching-Related Activities

6a. New courses introduced

1. "Data Science Methods for Smart Cities Applications," A new interdisciplinary University Course launched in Spring 2018. With Abhishek Dubey (Computer Science), Gautam Biswas (Computer Science), Mark Ellingham (Math), David Kosson (Civil and Environmental Engineering), and Claire Smrekar (Public Policy and Education).

2. "Global Climate Change," EES 3310/5310. Introduced Fall 2017. Expanded my course EES 2110/5110 to cover material at a higher level and add a laboratory (increasing from 3 to 4 credit hours). The laboratory is largely computational and introduces students to principles and practices of reproducible research using R and RMarkdown. Laboratory exercises include downloading and analyzing climate data from major online archives; conducting computational experiments using simple models of radiative transfer, geochemical carbon cycle, etc., and analyzing the model output; and analyzing energy demand and CO_2 emissions to assess different emission-mitigation policies. Course and laboratory materials are available at `https://ees3310.jgilligan.org`.

3. "Agent- and Individual-Based Computational Modeling" EES 4760/5760, Introduced Spring 2016. Agent-based computational modeling with emphasis on emergent phenomena and applications in environmental science, ecology, economics, public health, and urban planning. Course materials are available at `https://ees4760.jgilligan.org/`

4. "Water and Social Justice in Bangladesh" EES 390. Introduced Spring 2010. Developed team-taught transdisciplinary graduate capstone seminar (with Steven Goodbred and Brooke Ackerly) combining perspectives from natural sciences, engineering, social sciences, and humanities to study water resources and hazards in Bangladesh with focus on rivers, ground water, and coastal environments. The seminar includes interactions with students and faculty at Bangladeshi universities and field-work in Bangladesh.

5. "Global Climate Change" EES 2110/5110. Introduced Fall 2008. New interdisciplinary course on climate change in earth's with a focus on integrating the science, economics, politics, and ethics of anthropogenic climate change so students leave with a broad perspective on the big picture of the ways different scholarly disciplines contributed to understanding climate change and possible responses to it.

6. "Science, Risk, and Policy," EES2150 (formerly EES 205, GEOL 205). Introduced Spring 2004. Created interdisciplinary course on how society manages deadly risks.

7. "Science and Democracy," EES1111 (formerly EES115F). Introduced Fall 2004. First-year writing seminar on what constitutes science, separating good science from junk science, and how questions of what constitutes good science play into contemporary political and legal disputes.

8. "Deep Geological Disposal of High-Level Radioactive Waste" CE 299. Introduced Spring 2007. Developed team-taught transdisciplinary graduate capstone seminar (with Jim Clarke and Calvin Miller) on disposal of nuclear waste, with a focus on the proposed repository at Yucca Mountain. The seminar combined sociological, ethical, psychological, political, engineering, and geological perspectives on the proposed respository and featured fieldwork in Nevada both to examine the geology and hydrology of the region and to interact with politicians, public officials, and community activists.

9. "New Global Crisis: Energy and Water Resources in the 21st Century" HUM161 (with David Furbish). Co-taught a multidisciplinary undergraduate course on the science, politics, and ethics of energy and water resources.

10. "Earth and the Atmosphere," EES108. Introduced Spring 2004. The atmosphere from the perspective of weather and climate and also as a component of the earth system. Special topics on how weather, pollution, and global change affect human society and how science, economics, and politics interact to manage these impacts.

11. "Nonlinear Dynamics and Chaos," PHYS361. Introduced Fall 2000. Developed a graduate seminar on nonlinear dynamics and chaos with emphasis on drawing connections between the formal mathematical foundations and applications to laboratory science and students' research.

12. "Science in a Democracy," HONS189.02 (team-taught with Lewis Branscomb), Spring, 2000. Developed and co-taught an honors seminar on the interactions of science with public policy, examining issues of fraud and integrity in research, intellectual property, science as an engine of economic growth, technocracy vs. democracy, and environmental regulation. Featured guest lectures and class discussions with Senators Lamar Alexander and William Frist.

6b. Current Graduate Students

6b.i. Advisor:

1. Kelsea Best (Ph.D. student, Earth & Environmental Sciences, Advisor)

2. Pamela Hoover (Ph.D. student, Civil and Environmental Engineering, co-Advisor: Jim Clarke is Hoover's primary advisor; I am supervising her research on the environmental impact of printed versus electronic documents.).

3. Christopher Tasich (Ph.D. student, Earth & Environmental Sciences, Advisor).

6b.ii. Member of Dissertation/Thesis Committee:

1. Moyo Ajayi (Ph.D. Student, Earth & Environmental Sciences).

2. Matthew Dietrich (Ph.D. Student, Earth & Environmental Sciences).

3. Ke "Jack" Ding (Ph.D. Student, Environmental Engineering).

4. George Duffy (Ph.D. Student, Earth & Environmental Sciences).

5. Paul Johnson (Ph.D. Student, Environmental Engineering).

6. Rachel McKane (Ph.D. Student, Sociology).

7. Michaela Peterson (Ph.D. Student, Earth & Environmental Sciences).

8. Thomas Rechtman (Ph.D. Student, Earth & Environmental Sciences).
9. Sarah Williams (Ph.D. Student, Earth & Environmental Sciences).

6c. Former Graduate Students

6c.i. Advisor:

1. David Knorr (M.S. 2019, Earth & Environmental Sciences, Advisor. Current position: Staff Scientist, NewFields Inc., Atlanta GA.)
2. Emily Burchfield (Ph.D. 2017, Environmental Engineering, Advisor. Current position: Tenure-track Assistant Professor, Utah State University, Dep't. of Environment and Society).
3. John Nay (Ph.D. 2017, Integrated Computational Decision Science, Advisor. Current position: Information Law Institute Fellow, School of Law and Center for Data Science, New York University; Affiliate, Berkman-Klein Center for Internet and Society, Harvard University; and CEO, Skopos Labs, Inc.).
4. Rachel Shumaker (M.S. 2017, Earth & Environmental Sciences, Advisor. Current position: Science Teacher, Dillard Middle School, Yanceyville, NC).
5. Laura Benneyworth (Ph.D. 2016, Environmental Management and Policy, Advisor. Current position: Tennesee Dep't. of Transportation).
6. John Jacobi (Ph.D. 2014, Environmental Engineering. Current position: Natural Catastrophe Modeling Manager, SCOR Reinsurance). George Hornberger was Jacobi's primary advisor. I supervised research using agent-based modeling of farmer decision-making that formed one third of his dissertation.

6c.ii. Member of Dissertation/Thesis Committee:

1. Jennifer Bradham (Ph.D. 2019, Earth & Environmental Sciences).
2. Leslie Gillespie-Marthaler (Ph.D. 2019, Environmental Engineering).
3. Kate Nelson (Ph.D. 2018, Environmental Engineering, Dissertation Committee).
4. Scott C. Worland (Ph.D. 2018, Environmental Engineering, Dissertation Committee).
5. Christian Hung (former Ph.D. Student, Economics, Dissertation Committee).
6. Brooke Patton (M.S. 2017, Earth & Environmental Sciences, Committee).
7. Leslie Duncan (Ph.D. 2017, Environmental Engineering, Dissertation Committee).
8. Thushara Gunda (Ph.D. 2017, Environmental Engineering, Dissertation Committee).
9. Jennifer Pickering (Ph.D. 2016, Earth & Environmental Science, Dissertation Committee).
10. Elena Wilmot (former Ph.D. student, Earth & Environmental Sciences, Dissertation Committee).
11. Kendra Abkowitz (Ph.D. 2015, Environmental Engineering, Dissertation Committee).
12. Elizabeth Stone (M.S. 2015, Earth & Environmental Science, Committee).
13. Gregory George (M.S. 2014, Earth & Environmental Science, Committee).
14. Shelley Donohue (M.S. 2013, Earth & Environmental Science, Committee).
15. Courte Voorhees (Ph.D. 2012, Community Research & Action, Dissertation Committee).
16. Ryan Haupt (M.S. 2012, Earth & Environmental Science, Committee).

17. Patricia Conway (former Ph.D. student, Community Research & Action, Dissertation Committee).
18. Luis Fong (Ph.D. 2005, Physics, Dissertation Committee).
19. Andrew Rose (Ph.D. 2001, Physics, Dissertation Committee).
20. Christine Cheney (Ph.D. 2001, Physics, Dissertation Committee).

6d. Undergraduate Advisees

1. Kelsey Kaline (Class of 2014, Independent major in Environmental Policy).
2. Courtney van Stolk (2013, Independent major in Environmental Policy).
3. Jeremy Doochin (2010, Indepdendent major in Environmental Policy).

6e. Undergraduate Research Projects Supervised

1. Margaret Dorhout (2018–, EES major): Supervising research on extreme weather patterns in Bangladesh.
2. Asaf Roth (2019–, computer science major): Supervising research on time-series analysis of electricity consumption by buildings on Vanderbilt campus.
3. Emma Rimmer (2018–, Environmental Sociology major, EES minor): Supervising research on household energy efficiency in the United States.
4. Madeline Allen (2018–2019, EES major): Supervising senior honors thesis research on flood modeling (in collaboration with Professors Mark Abkowitz and Janey Camp in Civil & Environmental Engineering).
5. Umang Chaudhry (2017–2019, EES and Science Communications double-major): Supervised independent research project during academic year, summer research project, and senior honors thesis research on impacts of gentrification on activities of daily life for public-transit users in the Nashville Metropolitan Statistical Area.
6. Miguel Moravec (2017–2018, EES and CSET double-major): Supervised summer research and supervising senior honors thesis research on the impacts of gentrification on mobility among low-income resildents of the Nashville Metropolitan Statistical Area.
7. Marc Chen (2016–2017, Economics major): Co-supervised senior honors thesis research on poverty, access to public-transit, and employment in Nashville, and served as second reader of honors thesis. Mr. Chen's thesis was awarded highest honors.
8. Austin Channell (2015–2017, Civil Engineering major): Supervised immersive undergraduate research project on reducing individual and household greenhouse gas emissions. Mr. Channell won a Vanderbilt Undergraduate Summer Research fellowship to support this work and won a prize for his presentation of this work at the 2016 Vanderbilt Undergraduate Research Fair.
9. Heebong Kim (2016, EES major): Supervised honors enrichment project on science policy.
10. Joshua Timm (2015–2016, Political Science major): Supervised independent research on media bias in reporting on climate and weather and immersive research on corporate energy conservation as part of a TIPs project. Second reader on senior honors thesis.
11. Michael Diamond (2014, EES major): Supervised field research in Bangladesh.
12. Michael Diamond (2012, EES major): Supervised independent honors research project on the feasibility of terraforming Mars.

13. Michael Kofsky (2010–11, Political Science major): Supervised independent research on the environmental footprints of delivering movies for home viewing by mailing DVD's versus streaming broadband.

14. Jeremy Doochin (2008–09, Independent major in Environmental Policy): Supervised independent research project on corporate greenhouse gas emissions reduction.

15. Kelley Coffman (2004–05, Medicine, Health, & Society major): Supervised senior honors thesis on citizen response to environmental contamination by Oak Ridge National Laboratory. Ms. Coffman received high honors for her thesis.

16. Megan O'Grady (2002–03, Physics major): Co-supervised senior research project and honors thesis together with Prof. John Wikswo. Ms. O'Grady subsequently won an NSF Graduate Fellowship.

7 Service

7a. Service to Profession

2019 With Michael Vandenbergh, I co-organized a conference on "The Tenth Anniversary of the Behavioral Wedge" at Vanderbilt Law School, Feb. 29–Mar. 1, 2019.

2018 Panelist, NSF grant review (Division of Civil, Mechanical, and Manufacturing Innovation)

2018 Member, Working Group on the Use of Socio-Environmental Systems Modeling in Actionable Science, National Socio-Environmental Synthesis Center (National Science Foundation and University of Maryland).

2018 Co-Chair, Environmental and Sustainability Applications Track, Winter Simulation Conference (Gothenburg, Sweden), Dec. 9–12 2018. Responsible for working with a European counterpart to develop the ESA track, including inviting speakers and session proposals, coordinating peer-review of submitted papers, appointing session chairs, and scheduling session.

2017 Invited reviewer of National Academies report, *The Human Element: Integrating Social and Behavioral Sciences in the Weather Enterprise*

2017–2018 Participant, NSF workshop on Interdisciplinary Disaster Research. Developing resources on best practices for interdisciplinary disaster research.

2017–present Member, Human Dimensions Working Group, Community Surface Dynamics Modeling System (University of Colorado, Boulder).

2017 Founding member and member of launch team, The Erdős Institute for Collaborative Research, Innovation, and Entrepreneurship, Columbus, OH. The Erdős Institute is an offshoot of a joint effort by Vanderbilt and Ohio State to foster innovative collaborative interdisciplinary research by faculty, and to stimulate the commercialization of research products through partnerships with private industry and sources of early investment funds.

2016–present External Advisory Committee, Urban Water Innovation Network, an NSF-sponsored sustainability research network ($12.5 million funding).

2016–present Organizing committee, Annual Conference on Artificial Intelligence and the Law, Vanderbilt Law School.

2016–present Program Committee, Environmental and Sustainability Applications track, Winter Simulation Conference, IEEE and INFORMS.

2015 Organizing Committee: Food, Energy, Water Systems Nexus Challenges Workshop: Technology and Information Fusion (sponsored by NSF, Nov. 5–6, 2015).

2007 Represented Vanderbilt University at Oak Ridge National Laboratory University Liaisons Meeting: Opportunities for Collaborative Research on Climate Change, Sept 26.

2008 Session organizer and chair, "Quantifying Individual Emissions," Consumption, Law, & Environment Conference, Vanderbilt Law School (Apr. 17–19, 2008).

2006 Chair, "Intra- and Inter-Generational Equity" session, Consumption, Law, & Environment Workshop, Vanderbilt Law School (Oct. 19–20, 2006).

1997 Chair, Program Session on Laser and Ion-Beam Processing, ASM Materials Week '97, Indianapolis, IN.

1996 Co-Chair, Program Session on Laser and Ion-Beam Processing, ASM Materials Week '96, Cincinnati, OH.

1996 Organizing Committee, 5th Annual Workshop of the Consortium for Nanostructured Materials, Nashville TN.

Ongoing Review grant proposals for National Science Foundation, U.S. Department of Energy, UK National Environmental Research Council, and Indo-US Science & Technology Forum.

Ongoing Review reports for National Academy of Sciences.

Ongoing Review journal manuscripts for Nature Climate Change, Nature Communications, Climatic Change, Energy Policy, Environmental Science & Technology, Royal Society of Chemistry, PLOS ONE, Sustainability Science, Energy Policy, Energy Economics, Environmental Modeling & Software, ACM Transactions on Autonomous and Adaptive Systems, International Journal of Biometeorology, Proceedings of the National Academy of Sciences of India, and International Journal of Sustainable Transportation.

Ongoing Review book proposals and manuscripts for Cambridge University Press, Oxford University Press, and Columbia University Press.

7b. Service to Community

2019 Presented tutorial on "What Science Can and Cannot Say about Climate Change" as part of a training workshop for journalists from the Midwestern U.S., organized by Inside Climate News at the Freedom Forum First Amendment Center, Nashville TN, Mar. 7.

2018 Addressed Rotary Club of McMinnville TN on the impacts of climate change in middle Tennessee. McMinnville TN, Dec. 6.

2018 Intervewed by WCPI, McMinnville TN Public Radio station on the impacts of climate change in middle Tennessee. McMinnville TN, Dec. 6.

2018 Addressed Breakfast Club of Nashville (businesswomen's group) on private-sector responses to climate change. Nashville TN, Nov. 29.

2018 Presented tutorial on "What Science Can and Cannot Say about Climate Change" as part of a training workshop for journalists from the Southeastern U.S., organized by Inside Climate News at the Freedom Forum First Amendment Center, Nashville TN, Sept. 24.

2018 Organized day-long workshop on "Data-Methods for Equitable Development in Nashville," with participants from Metro Nashville government, Metropolitan Planning Organization, and many community group.

2017–present Member, Environmental Public Health Community Advisory Group, Metro Nashville Department of Public Health. Working with Dr. Sanmi Areola (Deputy Director, Metro Department of Public Health) to establish a research network for monitoring air quality in public housing units and provide research opportunities for Vanderbilt undergraduate and graduate students.

2017 "Beyond Gridlock: The Private Governance Response to Climate Change." Public lecture (with Michael Vandenbergh) at Nashville Public Library as part of the "Thinking out of the Lunch Box" series. (Apr. 5).

2015–2017 Collaboration with University School of Nashville physics teacher Wilson Hubbell to incorporate scientific literacy about mathematical and computational modeling into high-school science curricula (Funding for USN from an Edwin E. Ford Leadership Challenge Grant).

2011–2012 Co-author, *Sustainable Tennessee*, a report to state and local decision makers on the impacts of climate change on Tennessee and possible adaptations. Oak Ridge National Laboratory and Sustainable Tennessee.

2009 Briefed representatives of Senators Corker and Alexander on environmental aspects of the Convention on the Law of the Sea Treaty (organized by the Pew Charitable Trusts), Nov. 18.

2009 Invited panelist, "Health in Tennessee: The Impact of Climate Change," Public Policy Forum with Tennessee State Legislature (organized by Papasan Institute for Government Relations, U. Memphis), June 3.

2007–2009 Advisory Board on Environment, The Tennessean Newspaper.

2008 Testimony about climate change before Tennessee House Committee on Conservation and Environment, Feb. 28.

2006 Co-Organizer, Nashville Forum on Christianity and the Environment, Scarritt-Bennett Center, Sept. 30.

2006 Panelist, Belcourt Theatre discussion of genetically modified food. Apr. 7.

2005 "Democracy in the Age of Science" Public lecture at Nashville Public Library as part of the "Thinking out of the Lunch Box" series. (Sept. 7).