Eileen R. Martin
she/her

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Academic Appointments

Associate Professor, Colorado School of Mines, Golden, CO — Apr. 2024-present
- Department of Geophysics (60% appointment)
- Applied Math and Statistics Department (40% appointment)
- Hydrologic Science and Engineering Program Faculty

Assistant Professor, Colorado School of Mines, Golden, CO — Jan. 2022-Apr. 2024
- Department of Geophysics (60% appointment)
- Applied Math and Statistics Department (40% appointment)
- Hydrologic Science and Engineering Program Faculty

Assistant Professor, Virginia Tech, Blacksburg, VA — Aug. 2018 - Mar. 2024
- Department of Mathematics
- Program in Computational Modeling and Data Analytics
- Department of Geosciences, affiliate faculty (starting Dec. 2019)
- Note: on leave Jan. 2022 - Mar. 2024

Research Assistant Professor, Colorado School of Mines, Golden, CO Jun.-Dec. 2021
- Unremunerated Appointment in Department of Geophysics

Affiliate, Lawrence Berkeley National Laboratory, Berkeley, CA — 2016-2020
- Earth and Environmental Sciences Area, Geophysics Department

Education

Ph.D. Computational and Mathematical Engineering, **Stanford University**
Dissertation: June 2018
Passive Imaging and Characterization of the Subsurface with Distributed Acoustic Sensing

M.S. Geophysics **Stanford University**
Masters research presentation: June 2017
Stanford DAS Array: Ambient Noise and Earthquake Recordings

B.S. Dean's Scholars Honors Mathematics, **University of Texas at Austin**
Dean's Honored Graduate, graduated with high honors May 2012
Honors thesis: *Global Coordinate Systems: Continuously Moving Finite-Dimensional Unit Norm Tight Frames on Smooth Manifolds*

B.S. Computational Physics **University of Texas at Austin**
Graduated with high honors May 2012

Honors, Awards, Fellowships

Presidential Early Career Award for Scientists and Engineers, Pres. Biden	2025
J. Clarence Karcher Award, Society of Exploration Geophysicists	2024
Undergraduate Research Scholars Mentor Award, Mines	2024
Kavli Fellow, National Academy of Sciences	2024
Early Career Prize, SIAM Activity Group on Geosciences	2023
NSF CAREER Grant Recipient, NSF Office of Advanced Cyberinfrastructure	2021
Luther and Alice Hamlett Junior Faculty Fellow, Virginia Tech AIS	2019-2022

Gene Golub Dissertation Award, Stanford ICME	2018
Best student poster paper at SEG Annual Meeting, co-author	2017
Schlumberger Innovation Fellowship	2016-2017
DOE Computational Science Graduate Fellowship	2012-2016
Stanford ICME Student Leadership Award	2014
NSF Graduate Research Fellowship Program, award offered	2012
Dean's Honored Graduate, UT-Austin College of Natural Sciences	2012
Barry M. Goldwater Scholarship	2011-2012

Journal Articles

1. S. Yuan, F. Bernauer, J. Wassermann, **E.R. Martin**, H. Igel, 2025, "Tracking vehicle sources using six-component seismic point measurements," recently accepted to Seismica, preprint link.
2. D.J.A. Chambers, A. Tourei, **E.R. Martin**, J. Shragge, A.T. Ankamah, J.A. Hole, R. Czarny, J. du Toit, G. Goldswain, T. Dean, J. McGuiness, 2025, "Distributed acoustic sensing deployment strategies for longwall mines," International Journal of Rock Mechanics and Mining Sciences, 189, article no. 106090, preprint link.
3. J.M. Manos, D. Gräff, **E.R. Martin**, P. Paitz, F. Walter, A. Fichtner, B.P. Lipovsky, 2024, "DAS to Discharge: Using Distributed Acoustic Sensing (DAS) to infer glacier runoff," Journal of Glaciology, 70, article no. e67, preprint link.
4. D. Chambers, G. Jin, A. Tourei, A.H.S. Issah, A. Lellouch, **E.R. Martin**, D. Zhu, A. Girard, S. Yuan, T. Cullison, T. Snyder, S. Kim, N. Danes, N. Punithan, S. Boltz, M.M. Mendoza, 2024, "DASCore: a Python Library for Distributed Fiber Optic Sensing," Seismica, 3(2), preprint link.
5. X. Ji, M. Xiao, **E.R. Martin**, T. Zhu, 2024, *Statistical Evaluation of Seismic Wave Velocity Models of Permafrost*, Journal of Cold Regions Engineering, 38(3), article no. 04024021, preprint link.
6. Z. Dejneka, D. Homa, J. Buontempo, G. Crawford, **E.R. Martin**, L. Theis, A. Wang, G. Pickrell, 2024, *Magnetic Field Sensing via Acoustic Sensing Fiber with Metglas 2605SC Cladding Wires,* Photonics, 11(4), article no. 348.
7. A.H. Issah, **E.R. Martin**, 2024, *Impact of Lossy Compression Errors on Passive Seismic Data Analyses,* Seismological Research Letters, 95(3), pp. 1675-1686, preprint link, code link.
8. A. Tourei, X. Ji, G. Fernando Rocha Dos Santos, R. Czarny, Z. Wang, M. Hallissey, **E.R. Martin**, M. Xiao, T. Zhu, D. Nicolsky, A. Jensen, 2024, *Mapping Permafrost Variability and Degradation Using Seismic Surface Waves, Electrical Resistivity and Temperature Sensing: A Case Study from Arctic Alaska,* Journal of Geophysical Research: Earth Surface, 129(3), article no. e2023JF007352. preprint link and data link.
9. K.M. Yost, A. Yerro, **E.R. Martin**, R.A. Green, 2024, *A CPT Database for Multiple Thin-Layer Correction Procedure Development,* Earthquake Spectra, 40(1), pp. 803-827. Database and code link
10. Z.J. Spica, J. Ajo-Franklin, G.C. Beroza, B. Biondi, F. Cheng, B. Gaite, B. Luo, **E.R. Martin**, J. Shen, C. Thurber, L. Viens, H. Wang, A. Wuestefeld, H. Xiao, T. Zhu, 2023, *PubDAS: a PUBlic Distributed Acoustic Sensing datasets repository for geosciences*, Seismological Research Letters, 94(2A), pp. 983-998. Preprint link, data link.
11. J.A. Mjehovich, G. Jin, **E.R. Martin**, J. Shragge, 2023, *Rapid surface-deployment of a DAS system for earthquake hazard assessment*, J. Geotech. Geoenviron. Eng., 149(5), 04023027. Data link.

12. Z. Hileman, D. Homa, **E.R. Martin**, G. Pickrell, A. Wang, 2022, *Development of a multimaterial optical fiber for fully distributed magnetic sensing applications*, IEEE Sensors Letters, 6(1), pp. 1-4.

13. K. Yost, A. Yerro, R.A. Green, **E.R. Martin**, J. Cooper, 2022, *MPM Modeling of Cone Penetrometer Testing for Multiple Thin-Layer Effects in Complex Soil Stratigraphy*, J. Geotech. Geoenviron. Eng., 148(2), 04021189.

14. J. Cooper, **E.R. Martin**, K.M. Yost, A. Yerro, R.A. Green, 2022, *Robust identification and characterization of thin soil layers in cone penetration data by piecewise layer optimization*, Computers and Geotechnics, 141, article no. 104404.
Code link, preprint link.

15. J. Kump, **E.R. Martin**, 2021, *Multichannel Analysis of Surface Waves Accelerated (MASWAccelerated): Software for Efficient Surface Wave Inversion Using MPI and GPUs*, Computers & Geosciences, 156, article no. 104903.
Code link, preprint link

16. K.M. Yost, R.A. Green, S. Upadhyaya, B.W. Maurer, A. Yerro-Colom, **E.R. Martin**, J. Cooper, 2021, *Assessment of the Efficacies of Correction Procedures for Multiple Thin Layer Effects on Cone Penetration Tests,* Soil Dynamics and Earthquake Engineering, 144, 106677.

17. N.J. Lindsey, **E.R. Martin**, 2021, *Fiber-optic Seismology*, Annual Review of Earth and Planetary Sciences, 49, pp. 309-336.
Preprint link

18. T. Zhu, J. Shen, **E.R. Martin**, 2021, *Sensing Earth and Environment Dynamics by Telecommunication Fiber-optic Sensors: An Urban Experiment in Pennsylvania USA*, Solid Earth, 12(1), pp. 219-235.
Data link

19. **E.R. Martin**, 2021, *A Linear Algorithm for Ambient Seismic Noise Double Beamforming Without Explicit Crosscorrelations,* Geophysics, 86(1), pp. IJF-V89.
Code link , preprint link

20. G. Fang, Y.E. Li, Y. Zhao, **E.R. Martin**, 2020, *Urban Near-surface Seismic Monitoring using Distributed Acoustic Sensing*, Geophysical Research Letters, 47(6), e2019GL086115.

21. Z.J. Spica, M. Perton, **E.R. Martin**, G.C. Beroza, B.L. Biondi, 2020, *Urban Seismic Site Characterization by Fiber-Optic Seismology*, Journal of Geophysical Research: Solid Earth, 125(3), e2019JB018656.

22. **E.R. Martin**, F. Huot, Y. Ma, R. Cieplicki, S. Cole, M. Karrenbach, B.L. Biondi, 2018, *A Seismic Shift in Scalable Acquisition Demands New Processing: Fiber-Optic Seismic Signal Retrieval in Urban Areas with Unsupervized Learning for Coherent Noise Removal*, IEEE Signal Processing Magazine, **35**(2), pp. 31-40.
Code link

23. N.J. Lindsey, **E.R. Martin**, S. Cole, D. Dreger, S. James, B. Freifeld, B. Biondi, J. Ajo-Franklin, 2017, *Fiber-Optic Network Observations of Earthquake Wavefields*, Geophysical Research Letters, **44**(23), pp. 11792-11799.
Code link

24. S. Dou, N. Lindsey, A. Wagner, T. Daley, B. Freifeld, M. Robertson, J. Peterson, C. Ulrich, **E.R. Martin**, J. Ajo-Franklin, 2017, *Distributed Acoustic Sensing for Seismic Monitoring of the Near Surface: A Traffic-Noise Interferometry Example*, Scientific Reports, 7, article 11620.

25. Y. Li, H. Yang, **E.R. Martin**, K.L. Ho, L. Ying, 2015, *Butterfly Factorization*, Multiscale Model. Simul., 13, pp. 714-732.

26. D. Freeman, R. Hotovy, **E.R. Martin** , 2014, *Moving Finite Unit Norm Tight Frames for S^n*, Illinois J. of Math, 58, pp. 311-322.

Book Chapters

1. **E.R. Martin**, N.J. Lindsey, B. Biondi, J.B. Ajo-Franklin, 2022, "Introduction to Interferometry of Fiber Optic Strain Measurements." *Distributed Acoustic Sensing in Geophysics: Methods and Applications*, edited by Y. Li, M. Karrenbach, J.B. Ajo-Franklin, American Geophysical Union Geophysical Monograph Series, John Wiley & Sons, pp. 113-130. Preprint link.
2. B. Biondi, S. Yuan, **E.R. Martin**, F. Huot, R.G. Clapp, 2022 "Using telecommunication fiber infrastructure for earthquake monitoring and near-surface characterization." *Distributed Acoustic Sensing in Geophysics: Methods and Applications*, edited by Y. Li, M. Karrenbach, J.B. Ajo-Franklin, American Geophysical Union Geophysical Monograph Series, John Wiley & Sons, pp. 131-148.

Professional Periodicals

1. **E.R. Martin**, 2023, *Geoscientists Around the Globe: Interview with Yunyue Elita Li,* Geoscientists Around the Globe column, The Leading Edge, 42(11), pp. 782-782, doi.org/10.1190/tle42110782.1
2. T. Ore, **E.R. Martin**, I. Rubio-Cisneros, A. Girard, J. Ma, S. Kanakiya, O. Sanuade, A. Titov, R. de Souza, 2023, *Research Committee Update: Hot Topics in Geophysics: progress, trends, and perspectives*, The Leading Edge, 42(5), pp. 360-363, doi.org/10.1190/tle42050360.1.
3. W. Trainor-Guitton, **E.R. Martin**, V. Rodríguez Tribaldos, N. Taverna, V. Dumont, 2022, *Distributed Sensing and Machine Learning Hone Seismic Listening*, Eos, 103, doi.org/10.1029/2022EO220121.
4. A. Titov, A. Girard, **E.R. Martin**, 2021, *Research Committee Update: Working with – and for – early-career researchers*, The Leading Edge, 40(6), pp. 464-464.
5. S. Jakkampudi, J. Shen, W. Li, A. Dev, T. Zhu, **E.R. Martin**, 2020, *Footstep Detection in Urban Seismic Data with a Convolutional Neural Network*, The Leading Edge, 39(9), pp. 654-660.
6. **E.R. Martin**, 2020, *Research Committee Update: Shining a Light on Cities with Seismic Data*, The Leading Edge, 39(6), pp. 437-437.
7. **E.R. Martin**, C. Castillo, S. Cole, S. Sawasdee, S. Yuan, R. Clapp, M. Karrenbach, B. Biondi, 2017, *Seismic Monitoring Leveraging Existing Telecomm Infrastructure at the Stanford Distributed Acoustic Sensing Array: Active, Passive and Ambient Noise Analysis*, The Leading Edge, 36(12), pp. 1025-1031.

Publications Under Review

1. S. Yuan, F. Bernauer, C.M. Liao, E. Niederleithinger, **E.R. Martin**, C. Hadziioannou, J. Wassermann, H. Igel, 2024, "Bridge monitoring using six-component ground motion measurements," recently submitted, preprint link.
2. J.J. McGuire, A.J. Barbour, Z.J. Spica, V. Rodríguez Tribaldos, Z. Zhan, B.P. Lipovsky, R.J. Mellors, E. Biondi, C. Yoon, M. Karrenbach, A.T. Ringler, J. Atterholt*, A. Nayak, T. Sawi, L. Viens, **E.R. Martin**, A.L. Husker, P. Bodin, M.P. Moschetti, Q. Shi, N.C. Miller, P. Puri, 2025, "Fiber Optic Sensing for Earthquake Hazards Research, Monitoring and Early Warning," recently submitted.
3. R.M. Willis, J. Grimm, F. Stanek, P. Edme, A. Fichtner, B. Lipovsky, P. Paitz, F. Water, M.R. Siegfried, **E.R. Martin**, 2025, "Creating a Comprehensive Cryoseismic Catalog at Rhonegletscher: A Scalable Approach Using Distributed Acoustic Sensing and Machine Learning," recently submitted.

4. L. Gou, M. Xiao, T. Zhu, **E.R. Martin**, Z. Wang, G. Rocha dos Santos, D. Nicolsky, X. Ji, 2025, "A Digital Twin Based on Differentiable Modeling for Predicting Permafrost Thermodynamic Characteristics Under an Embankment Road in Utqiaġvik, Alaska," recently submitted.

Conference Papers

1. X. Ji, M. Xiao, **E.R. Martin**, "Hysteresis Model of Permafrost Thermal State Variation with Air Temperature in Utqiaġvik, Alaska, Based on Distributed Temperature Sensing," Geotechnical Frontiers, 2-5 March, 2025, Louisville, KY, pp. 69-78.
2. K.M. Yost, R.A. Green, A. Yerro, **E.R. Martin**, *Utilizing CPT Databases to Better Inform Liquefaction Evaluations,* 18th World Conference on Earthquake Engineering, 30 June - 5 July, 2024, Milan, Italy.
3. A. Tourei, **E.R. Martin**, D.J.A. Chambers, A. Ankamah, J. Hole, *An Unsupervised Autoencoder-Based Deep Learning Model for Enhancing Noise Characterization and Seismic Event Detection in Underground Coal Mines Using Distributed Acoustic Sensing Monitoring,* ARMA 58th US Rock Mechanics / Geomechanics Symposium, 23-26 June, 2024, Golden, CO.
4. K.M. Yost, A. Yerro, R.A. Green, **E.R. Martin**, *Harnessing Numerical Tools to Study the Limitations of CPTs for Characterizing Complex Soil Stratgraphies for Liquefaction Assessment*, 12th National Conference on Earthquake Engineering, Salt Lake City, Utah, 27 June - 1 July, 2022.
5. K.M. Yost, J. Cooper, R.A. Green, **E.R. Martin**, A. Yerro, *Correcting measured CPT q_c for multiple thin layer effects*, accepted to 5th International Symposium on Cone Penetration Testing, CPT '22, Bologna, Italy, 8 June - 10 June, 2022.
6. **E.R. Martin**, J. Kump, S. Morgan, T. Zhu, *Analyzing Massive, Passive DAS Data in Wavelet-compressed Form*, 2021, SEG — AGU Advances in Distributed Sensing for Geophysics Workshop, online, 8-9 Feb.
7. F. Huot, **E.R. Martin**, Z. Spica, B. Biondi, *Distributed Acoustic Sensing (DAS) for large-scale urban monitoring and geologic hazard mitigation using preexisting telecommunication infrastructure*, 2019, SEG/EAGE Workshop on Geophysical Aspects of Smart Cities, Singapore, 10-12 Dec.
8. T. Zhu, **E.R. Martin**, J. Shen, *New Signals in Massive Data Acquired by Fiber Optic Seismic Monitoring Under Pennsylvania State University*, 2019, SEG/EAGE Workshop on Geophysical Aspects of Smart Cities, Singapore, 10-12 Dec., preprint.
9. **E.R. Martin**, *Scalable Seismic Acquisition and Algorithms for Next-Generation Engineering Geophysics*, (invited) 2019, International Conference on Engineering Geophysics, Al Ain, United Arab Emirates, 9-12 Oct.
10. **E.R. Martin**, *A Scalable Algorithm for Cross-correlations of Compressed Ambient Seismic Noise*, 2019, 89th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: 10.1190/segam2019-3216637.1
11. **E.R. Martin**, B. Biondi, *Eighteen months of near-surface monitoring with ambient noise at the Stanford Fiber Optic Seismic Observatory*, 2018, 88th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: 10.1190/segam2018-2997853.1
12. F. Huot, **E.R. Martin**, B. Biondi, *Automated ambient-noise processing applied to fiber-optic seismic acquisitions (DAS)*, 2018, 88th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: 10.1190/segam2018-2997880.1
13. **E.R. Martin** and B.L. Biondi, *Ambient noise interferometry across two-dimensional DAS arrays*, 2017, 87th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: 10.1190/segam2017-17677759.1

14. B. Biondi, **E.R. Martin**, S. Cole, M. Karrenbach, N. Lindsey, *Earthquakes analysis using data recorded by the Stanford DAS array*, 2017, 87th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: 10.1190/segam2017-17745041.1
15. F. Huot, Y. Ma, R. Cieplicki, **E.R. Martin**, B. Biondi, *Automatic noise exploration in urban areas*, 2017, 87th Ann. Internat. Mtg. SEG Expanded Abstracts (awarded best student poster paper). doi: 10.1190/segam2017-17774369.1
16. J.B. Ajo-Franklin, S. Dou, N. Lindsey, T. Daley, B. Freifeld, **E.R. Martin**, C. Ulrich, T. Wood, I. Eckblaw, A. Wagner, M. Robertson, *Timelapse surface wave monitoring of permafrost thaw using distributed acoustic sensing and a permanent automated seismic source*, 2017, 87th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: 10.1190/segam2017-17774027.1
17. **E.R. Martin**, B. Biondi, M. Karrenbach, S. Cole, *Ambient noise interferometry from DAS array in underground telecommunications conduits*, 2017, EAGE Annual Meeting Proceedings. doi: 10.1190/segam2017-17774027.1
18. **E.R. Martin**, B.L. Biondi, M. Karrenbach, S. Cole, *Continuous Subsurface Monitoring by Passive Seismic with Distributed Acoustic Sensors- The "Stanford Array" Experiment*, 2017, Extended Abstracts of the 1st EAGE Workshop on Practical Reservoir Monitoring. doi: 10.3997/2214-4609.201700017
19. **E.R. Martin**, P. Wills, D. Hohl, J.L. Lopez, *Using machine learning to predict production at a Peace River thermal EOR site*, Proceedings of the 2017 SPE Reservoir Simulation Conference. SPE-192696-MS. doi: 10.2118/182696-MS
20. **E.R. Martin**, N.J. Lindsey, S. Dou, J.B. Ajo-Franklin, A. Wagner, K. Bjella, T.M. Daley, B. Freifeld, M. Robertson, C. Ulrich, *Interferometry of a roadside DAS array in Fairbanks, AK*, 2016, 86th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: 10.1190/segam2016-13963708.1
21. **E.R. Martin**, J. Ajo-Franklin, N. Lindsey, T.M. Daley, B. Freifeld, M. Robertson, C. Ulrich, S. Dou, A. Wagner, *Interferometry of ambient noise from a trenched distributed acoustic sensing array*, 2015, 85th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: 10.1190/segam2015-5902207.1
22. J. Ajo-Franklin, N. Lindsey, T.M. Daley, B. Freifeld, **E.R. Martin**, M. Robertson, C. Ulrich, A. Wagner, *A field test of distributed acoustic sensing for ambient noise recording*, Expanded Abstracts of the 2015 SEG Ann. Internat. Mtg. doi: 10.1190/segam2015-5926936.1

Technical Reports

1. A.H. Issah, **E.R. Martin**,L. Tenorio, *Querying Large-Scale Seismic Data through Coherence Analysis,* Center for Wave Phenomena report, 2025.
2. S. Yuan, **E.R. Martin**, *Potential Higher-Mode Bias in DAS-Based MASW for Near-Surface Characterization,* Center for Wave Phenomena report, 2025.
3. Y. Song, S. Yuan, **E.R. Martin**, *Bayesian Inversion of Microseismic Events at the FORGE Geothermal Site,* Center for Wave Phenomena report, 2025.
4. N. Punithan, **E.R. Martin**, J. Shragge, A. Tourei, I. Lim Chen Ning, *Challenges in Automating Near-Surface Characterization Using Dark Fiber and Ambient Noise,* Center for Wave Phenomena report, CWP-1045, 2025.
5. A. Tourei, **E.R. Martin**, *A Deep Learning Model for Enhancing DAS Data Management and Seismic Event Detection,* Center for Wave Phenomena report, Center for Wave Phenomena report, 2025.
6. B. Badghaish, **E.R. Martin**, *Hydraulic Fracture Modeling for Distributed Acoustic Sensing: Understanding Strain Response in Shale Reservoirs,* Center for Wave Phenomena report, Center for Wave Phenomena report, 2025.

7. S. Yuan, **E.R. Martin**, *Target-oriented amplitude tomography with joint translational, rotational and strain measurements,* Center for Wave Phenomena report, 2024.
8. N. Punithan, **E.R. Martin**, I. Lim Chen Ning, A. Tourei, *Preliminary Results of Utilizing Ambient Noise DAS Recordings for Near Subsurface Characterization,* Center for Wave Phenomena report, 2024.
9. Y. Song and **E.R. Martin**, *Preliminary analysis of micro-seismic events based on DAS data related to Enhanced Geothermal System,* Center for Wave Phenomena report, 2024.
10. T. Snyder, S. Yuan, **E.R. Martin**, D. Homa, Z. Dejneka, G. Pickrell, A. Wang, L. Theis, *Computational Modeling of the Driving Forces Behind Fiber-optic Distributed Magnetic Sensing,* Center for Wave Phenomena report, 2024.
11. A.H. Issah and **E.R. Martin**, *Coherence Analysis Estimation for Event Detection,* Center for Wave Phenomena report, 2024.
12. A.H. Issah, **E.R. Martin**, *Errors incurred in lossy compression of seismic data,* CWP report, 2023.
13. S. Yuan, T. Snyder, **E.R. Martin**, D. Homa, G. Pickrell, A. Wang, L. Theis, *Towards integrated fiber-optic distributed acoustic and magnetic sensing: theory, simulation and observation,* CWP report, 2023.
14. A.H. Issah, **E.R. Martin**, *Wavelet decomposition for passive data compression and processing,* CWP report, 2022.
15. **E.R. Martin**, *Eighteen months of continuous near-surface monitoring with DAS data collected under Stanford University*, SEP 172, 2018.
16. F. Huot, **E.R. Martin**, B. Biondi, *Automated ambient noise processing applied to fiber optic seismic acquisition*, SEP 172, 2018.
17. **E.R. Martin**, B. Biondi, G. Fabient-Ouellet, R.G. Clapp, *Sensitivity analysis of distributed acoustic sensing arrays*, SEP 170, 2017.
18. **E.R. Martin**, B. Biondi, *Time-lapse changes in ambient noise interferometry and dispersion analysis at the Stanford DAS Array*, SEP 170, 2017.
19. R. Clapp, S. Farris, T. Dahlke, **E.R. Martin**, *C++11 non-linear solver*, SEP 170, 2017.
20. **E.R. Martin**, B. Biondi, S. Cole, M. Karrenbach, *Overview of the Stanford DAS Array-1 (SDASA-1)*, SEP 168, 2017.
21. B. Biondi, **E.R. Martin**, S. Cole, M. Karrenbach, *Earthquakes analysis using data recorded by the Stanford DAS Array*, SEP 168, 2017.
22. **E.R. Martin**, B. Biondi, *Ambient noise interferometry on two-dimensional DAS arrays*, SEP 168, 2017.
23. F. Huot, Y. Ma, R. Cieplicki,**E.R. Martin**, B. Biondi, *Automatic noise exploration in urban areas*, SEP 168, 2017.
24. E. Williams, **E.R. Martin**, *Detection and removal of coherent anthropogenic noise from passive seismic data*, SEP 165, 2016.
25. **E.R. Martin**, N. Lindsey, S. Dou, J. Ajo-Franklin, A. Wagner, K. Bjella, T. Daley, B. Freifeld, M. Robertson, C. Ulrich, *Interferometry of a roadside DAS array in Fairbanks, AK*, SEP 163, 2016.
26. **E.R. Martin**, J. Ajo-Franklin, N. Lindsey, T. Daley, B. Freifeld, M. Robertson, C. Ulrich, S. Dou, A. Wagner, *Applying interferometry to ambient seismic noise recorded by a trenched distributed acoustic sensing array*, SEP 158, 2015.
27. **E.R. Martin**, *Compression for effective memory bandwidth use in forward modeling*, SEP 152, 2014.

28. **E.R. Martin**, R. Clapp, H. Le, C. Leader, D. Nichols, *SEPVector: a C++ inversion library*, SEP 152, 2014.
29. M. Denolle, S. de Ridder, J. Chang, **E.R. Martin**, T. Dahlke, H. Arevalo-Lopez, Sr., S. Levin, *Scholte-wave excitation*, SEP 150, 2013.

Software, Data Products and Patents

1. D.J.A. Chambers, G. Jin, A.H. Issah, D. Zhu, A. Tourei, **E.R. Martin**, S. Kim, N. Danes, S. Boltz, latest update: v0.0.13, 2023, Distributed Acoustic Sensing Data Analysis Ecosystem, https://github.com/DASDAE/dascore , doi: 10.5281/zenodo.8033776
2. A. Tourei, X. Ji, G. Rocha dos Santos, R. Czarny, S. Rybakov, Z. Wang, M. Hallissey, **E.R. Martin**, M. Xiao, T. Zhu, D. Nicolsky, A. Jensen, C. McComb, 2023, "Seismic and Electrical Resistivity Datasets for Characterizing Permafrost in Alaska," Arctic Data Center, doi:10.18739/A2V40K14Q
3. A.H. Issah, **E.R. Martin**, latest update: 2023, Issah-SRL-compression-2023, https://github.com/aissah/Issah-SRL-compression-2023, doi: 10.5281/zenodo.8284352
4. Z.D. Hileman, D. Homa, G. Pickrell, **E.R. Martin**, "Magnetic Sensing Optical Fiber," Attorney Docket Number: VTIP 22-054 (222204-1125), patent filed June 2023. Note: provisional patent filed in 2022.
5. Z. Spica, J. Ajo-Franklin, G. Beroza, B. Biondi, F. Cheng, B. Gaite, B. Luo, **E.R. Martin**, J. Shen, C. Thurber, L. Viens, H. Wang, A. Wuestefeld, H. Xiao, T. Zhu, 2022, "PubDAS: a PUBlic Distributed Acoustic Sensing datasets repository for geosciences," Globus, Dataset Collection, https://app.globus.org/file-manager?originid=706e304c-5def-11ec-9b5c-f9dfb1abb183&originpath=%2F
6. K.M. Yost, A. Yerro Colom, **E.R. Martin**, R. Green, 2022, "Data Associated with a CPT Database for Multiple Thin-Layer Correction Procedure Development," University Libraries, Virginia Tech, Dataset and Code, doi: 10.7294/21408450.v1
7. J. Mjehovich, G. Jin, **E.R. Martin**, J. Shragge, 2022, "Cross-correlated ambient data recorded on a distributed acoustic sensing array," Dryad, Dataset, doi:10.5061/dryad.3j9kd51k9
8. J.L. Kump, **E.R. Martin**, W. Ray, latest update: 2022, Cross-correlations in the wavelet domain, https://github.com/jlk9/wavelet_xcorr
9. **E.R. Martin**, N.J. Lindsey, A. Lellouch, latest update: 2022, Introduction to Using DAS Data, https://github.com/DAS-RCN/IntroToDASData
10. S. Paulus, B. Pearl, **E.R. Martin**, latest update: 2021, DASDataProducts, release: v1.0.0, https://github.com/eileenrmartin/DASDataProducts/tree/v1.0.0-alpha , doi: 10.5281/zenodo.5764266
11. J.C. Cooper, **E.R. Martin**, latest update: 2021, Soil Layer Optimization for Improving Cone Penetrometer Data, https://github.com/jonc7/Soil-Layer-Optimization
12. T. Zhu, J. Shen, **E.R. Martin**, 2021, "Sensing Earth and environment dynamics by telecommunication fiber-optic sensors: an urban experiment in Pennsylvania, USA," Penn State Data Commons, Dataset, https://www.datacommons.psu.edu/commonswizard/MetadataDisplay.aspx?Dataset=6290
13. J.L. Kump, E.R. Martin, latest update: 2020, Multichannel Analysis of Surface Waves Accelerated, https://github.com/jlk9/MASWA
14. E.R. Martin, latest update: 2020, A linear algorithm for double beamforming of ambient noise interferometry, https://github.com/eileenrmartin/doubleBeamforming
15. E.R. Martin, F. Huot, Y. Ma, R. Cieplicki, latest update: 2017, Detection and removal of vehicles from ambient noise interferometry, https://github.com/eileenrmartin/IEEEsigproc_ambientDAS

16. E.R. Martin, latest update: 2015, A linear algorithm for surface wave dispersion image calculation from ambient noise interferometry, https://github.com/eileenrmartin/fastdispersionimages

External Funding, Support

NVIDIA Academic Grants Program
Amount to Colorado School of Mines: Two GPUs
Resilient Infrastructure Made Possible by Seismic Data at the Edge
PI: E.R. Martin, Co-PIs: J. Shragge and A. Girard (Mines, Geophysics)
Gift awarded Dec. 2024 with no designated period of performance

ARPA-E subcontract through Virginia Tech
Amount to Colorado School of Mines: $187,967
Multi-physics, Intelligent Sensing System (MISS) for Real-time, Look-ahead While Drilling
Subcontract PI: E.R. Martin, Lead PI: J. Vantassel (VT, CEE)
Period of Performance: 8/1/24 - 07/31/27

US Geological Survey, NEHRP Program
Amount to Colorado School of Mines: $91,336
Initial investigation and continuous monitoring of site-specific near-surface shear-wave structures in the Reno-Carson City urban corridor using seismic rotational measurement
PI: S. Yuan (Mines, Geophysics), Co-PI: E.R. Martin
Period of Performance: 05/06/2024 - 05/05/2025

Subcontract with Sentek Instrument (Prime Sponsor, DOE SBIR)
Amount to Colorado School of Mines: $41,232
Distributed fiber optic electromagnetic sensing for subsurface monitoring of carbon storage sites
PI: A. Wang, Co-PIs: G. Pickrell (Virginia Tech, Materials Science & Engineering), D. Homa (Virginia Tech, Materials Science & Engineering), E.R. Martin (lead at Mines), S. Yuan (Geophysics, Mines)
Period of Performance: 7/10/23-4/9/24

NSF 2243963, Earth Sciences Instrumentation and Facilities
Amount to Colorado School of Mines: $37,512
Collaborative Research: CFS (Track III): Centers for Transformative Environmental Monitoring Programs (CTEMPs)
PI at Lead Institution: Adrian Harpold (Univ. of Nevada Reno, Natural Resources & Environmental Science), Co-PIs: E.R. Martin (lead PI at Mines), M. Hausner (Desert Research Institute, Hydrology), J. Selker (Oregon State, Biological and Ecological Engineering), C. Udell (Oregon State, Biological and Ecological Engineering), M. Wengrove (Oregon State, Civil and Construction Engineering), S. Tyler (Univ. of Nevada Reno, Geological Sciences & Engineering), C. Kratt (Univ. of Nevada Reno, Geological Sciences & Engineering)
Period of Performance: 7/15/23-6/30/27

NSF 2148614, Geoinformatics Program
Amount to Colorado School of Mines: $483,833
Catalytic: Distributed Acoustic Sensing Data Analysis Ecosystem (DASDAE)
PI: E.R. Martin, Co-PI: G. Jin (Mines, Geophysics)
Period of Performance: 7/1/22-6/30/25

Subcontract number 1841, Luna Innovations (Prime Sponsor, DOE STTR)
Amount to Colorado School of Mines: $125,000
Cloud-based Management and Analysis of Large, Complex Distributed Acoustic Sensing

Data
PI at Luna: D. Rountree, Co-PIs: E.R. Martin (lead at Mines), G. Jin (Mines, Geophysics)
Period of Performance: 2/14/22 - 1/20/23

Subaward 62681767-227888, Stanford University (Prime Sponsor, AFRL)
Amount to Colorado School of Mines: $196,560
Towards Enhanced Seismic Monitoring with Distributed Acoustic Sensing (DAS)
P.I.: E.R. Martin
Period of Performance: 8/1/21 - 7/31/26

NSF 2046387, Office of Advanced Cyberinfrastructure
Amount: $398,024 awarded to date ($509,722 total intended)
CAREER: Scalable Computational Seismology for All
PI: E.R. Martin
Period of Performance: 7/1/21 - 6/30/26

Subcontract 3437-AFR-2S+, Luna Innovations, Inc.
Amount to Virginia Tech: $187,150
Swift and QUiet Airfield Assessment Device (SQUAAD), Phase II
PI: R. Green (Virginia Tech, Civil & Environmental Engineering), Co-PI: E.R. Martin
Period of Performance: 3/1/21-3/1/23

NSF 2034366, Signals in the Soil Program
Amount to Virginia Tech (most transferred to Mines): $216,167
SitS: Collaborative Research: Understand and Forecast Long-term Variations of In-situ Geophysical and Geomechanical Characteristics of Degrading Permafrost in the Arctic
PI: M. Xiao (Penn State, Civil & Environmental Engineering), Co-PIs: E.R. Martin (lead PI at Virginia Tech), D. Nicolsky (University of Alaska Fairbanks, Geophysical Institute), T. Zhu (Penn State, Geosciences), A. Jensen (University of Alaska Fairbanks, Anthropology)
Period of performance: 1/1/21-12/31/25

DOE DE-FE0091786, Office of Fossil Energy
Amount: $1,874,999 total = $1,499,999 DOE + $375,000 non-DOE
Fully Distributed Acoustic and Magnetic Field Monitoring via a Single Fiber Line for Optimized Production of Unconventional Resource Plays
Lead PI: G. Pickrell (Virginia Tech, Materials Science and Engineering), PIs: L. Ma (Sentek Instrument LLC), E.R. Martin
Period of performance: 10/1/19-6/30/22

MAA Tensor Women and Mathematics Grant
Amount: $6,000
SURE: Speakers and Undergraduate Research Engagement
PI: G. Matthews (Virginia Tech, Math), Co-PI: E.R. Martin
Period of performance: 6/1/21-5/31/22

Subcontract 4000175567, UT-Batelle, LLC for Oak Ridge National Laboratory
Amount: $94,985
Fast Comparative Algorithms for Sensor Array Summaries
PI: E.R. Martin
Period of Performance: 11/11/19-8/15/21

NSF 1937984, Engineering for Civil Infrastructure program
Amount: $157,973

EAGER: Exploration of an Interdisciplinary Approach to Resolving a Critical Issue in Evaluating Liquefaction Hazard of Challenging Soil Sites
PI: E.R. Martin, Co-PIs: A. Yerro Colom and R. Green (both Virginia Tech Civil & Environmental Engineering)
Period of Performance: 8/1/19-7/31/22

MAA Tensor Women and Mathematics Grant
Amount: $6,000
SURE: Speakers and Undergraduate Research Engagement
PI: G. Matthews (Virginia Tech Math), Co-PIs: E.R. Martin and L. Zietsman (Virginia Tech Math)
Period of performance: 6/1/19-5/31/20

DE-SC0019630, DOE Phase I STTR with Luna Innovations
Amount to Virginia Tech: $51,433
Advanced Computational Methods Towards High-Resolution Fiber Optic Distributed Acoustic Sensing
PI: D. Rountree (Luna Innovations), Co-PI: E.R. Martin
Period of performance: 2/19/19-11/18/19

Internal Funding

Luther and Alice Hamlett Undergraduate Research Support, AIS
Total amount: $6,000
Spring 2019: Data compression for next-generation seismic sensor networks
Spring 2020: Footstep removal to protect resident privacy in urban seismology data
Summer 2021: Compression and Data Product Streams in Permafrost Thaw Monitoring
PI: E.R. Martin
Period of performance: 1/14/19-6/30/25

Luther and Alice Hamlett Junior Faculty Fellowship, AIS
Amount varies annually depending on investment fund returns.
Period of performance: 8/19 - 7/22

Seed Grant from Penn State Institute of Energy and the Environment
Amount: $50,000 (at Penn State)
Lighting Up the Subsurface for Tomorrow's City: Initiating a Penn State DAS Array for Mapping Near-Surface Geology
PI: T. Zhu (Penn State Geosciences), Co-PIs: E.R. Martin, A. Nyblade (Penn State Geosciences), P. Fox (Penn State Civil & Env. Engineering)
Period of performance: 3/1/19-12/31/19

Invited Talks

SSA Photonic Seismology workshop — Vancouver, BC, Canada, Oct. 2024
EEPS Seminar — Washington University in St. Louis, St. Louis, MO, Sep. 2024
Showcase session, ARMA 58th US Rock Mechanics / Geomechanics Symposium — Golden, CO, Jun. 2024
SIAM Activity Group on Geosciences Webinar — SIAM, remote, Mar. 2024
AGU Fall Meeting session on Leveraging Distributed Acoustic Sensing in Modern Monitoring Applications (invited) — San Francisco, CA, Dec. 2023
DEEPS Seminar — Brown University, Providence, RI, Oct. 2023
BGC Engineering Seminar — BGC Engineering, hybrid, Golden, CO, Aug. 2023
GNEM Seminar — Sandia National Laboratories, remote, Sandia, NM, Jul. 2023
SIAM Conference on Mathematical & Computational Issues in Geosciences (prize lecture) — Bergen, Norway, Jun. 2023
Conference on Data Analysis (invited) — Santa Fe, NM, Apr. 2023

Computational Math Seminar — CU Boulder, Boulder, CO, Jan. 2023
Geologic Hazards Science Center Seminar — US Geological Survey, remote, Oct. 2022
Geo Seminar Series — Colorado State University, Ft. Collins, CO, Sep. 2022
EAS Seminar — University of Houston, Houston, TX, Apr. 2022
SeismoTea Seminar — University of Utah, Apr. 2022
AMS Colloquium — Colorado School of Mines, Feb. 2022
Numerical Analysis and Scientific Computing Seminar, NYU Courant, remote, Nov. 2021
DAS Workshop - Infrastructure & Imaging - NHERI@UTexas — Baton Rouge, LA and virtual, Oct. 2021
Southern California Earthquake Center Annual Meeting (plenary) — remote, Sep. 2021
GAGE/SAGE Community Science Workshop (plenary) — remote, Aug. 2021
Caltech Seismological Lab Seminar — Caltech, remote, Apr. 2021
IRIS Board of Directors Meeting — remote, Feb. 2021
Heiland Lecture — Colorado School of Mines, remote, Feb. 2021
AGU Fall Meeting session on Observation of Rotation, Strain and Translation in Seismology - Applications, Instrumentation and Theory (invited), remote, Dec. 2020
Scientific Computing and Numerics Seminar — Cornell University, remote, Nov. 2020
Applied Geophysics Research Seminar — ExxonMobil, remote, Aug. 2020
Mathematics and Computer Science Division Seminar — Argonne National Lab, remote, Jul. 2020
Earthquake Science Center Seminar — US Geological Survey, remote, Jul. 2020
Institute of Geophysics Seminar — University of Hamburg, remote, Jun. 2020
EGU General Assembly session on Ambient noise seismology: Topics, targets, tools & techniques (invited) — remote, May 2020
Women in Data Science at Stanford Earth (invited) — Stanford University, Nov. 2019
International Conference on Engineering Geophysics (invited) — Al Ain, UAE, Oct. 2019
BiSEPPS Seminar — Harvard University, Cambridge, MA, May 2019
Solid Earth Brownbag Seminar — Princeton University, Princeton, NJ, May 2019
IRIS Workshop: Foundations, Frontiers and Future Facilities for Seismology (plenary) — Albuquerque, NM, Jun. 2018
Heiland Lecture — Colorado School of Mines, Golden, CO, Jan. 2018
Seismology Seminar — Lawrence Livermore National Lab, Livermore, CA, 2017

Tutorial Presentation Materials

Distributed Acoustic Sensing, Remote Online Sessions for Emerging Seismologists, video of lecture on YouTube — remote global audience, Jul. 2021
Why we love arrays for data science, Women in Data Science Worldwide Workshops, video of lecture on YouTube — remote global audience, Mar. 2021
An Introduction to Seismology with Distributed Acoustic Sensing, AGU Fall Meeting, video of same material recorded for YouTube — Washington, DC, Dec. 2018

Research Advising

Postdoctoral Researchers and Research Associates Supervised

Dr. Shihao Yuan, Dept. of Geophysics — CSM, Dec. 2022-present
Dr. Frantisek Stanek, Dept. of Geophysics — CSM, Feb.-Nov. 2022

Graduate Student Theses Supervised

Badr Badghaish, Geophysics M.S. — CSM, Aug. 2024 - present
Reynaldo Vite-Sánchez, Geophysics Ph.D. — CSM, May 2024 - present
Yida Song, Geophysics Ph.D. — CSM, Aug. 2023 - present
Nikhil Punithan, Geophysics Ph.D. co-advised with J. Shragge — CSM, May 2025 - present
Ahmad Tourei, HSE Ph.D. co-advised with J. Hole — VT, Sep. 2021 - Aug. 2022; CSM, Aug. 2022 - present

Hafiz Issah, AMS Ph.D. VT, Aug.-Dec. 2021; CSM, Jan. 2022 - present
Georgia Brooks, AMS M.S. (thesis link to add) CSM, Jan. 2024 - Aug. 2025
Nikhil Punithan, Geophysics M.S. CSM, Aug. 2023 - May 2025
co-advised with J. Shragge
Tomas Snyder, HSE M.S. (thesis link to add) CSM, Jan. 2023 - Dec. 2024
Sarah Morgan, Mathematics M.S. (thesis link) VT, Aug. 2020 - May 2022
Julius Grimm, Applied Geophysics M.S. (thesis link) IDEA League, graduated Aug. 2021
co-advised with P. Paitz, P. Edme, A. Fichtner, F. Walter
Joseph Kump, Mathematics M.S. (thesis link) VT, graduated May 2021

Undergraduate and Non-thesis Masters Student Researchers Supervised
Ryan Zaff, Geosciences major Penn State, Summer 2025
Melissa Unlu, Computer science major UH, Summer 2024
Cash Cherry, Geophysics major CSM, Fall 2023 - spring 2024
Pablo Chang Huang, Geophysics major CSM, Summer 2023 - Spring 2024
Mia Jungman, Geophysics major CSM, Spring 2023 - Spring 2024
Seunghoo Kim, Geophysics major CSM, Fall 2022 - Spring 2023
Brandon Pearl, Computer Science M.Eng. researcher VT, Fall 2021-Spring 2022
Samantha Paulus, CMDA and Nanoscience major VT, Spring 2021-Spring 2022
Tony Artis, CMDA major VT, Spring 2020-Spring 2022
Firaol Woldemariam, CMDA major VT, Spring 2021-Fall 2021
Jon Cooper, Mathematics M.S. researcher VT, Spring 2021-Fall 2021
Anu Trivedi, Mathematics major VT, Fall 2019-Spring 2021
Srikanth Jakkampudi, Mathematics and CMDA major VT, Fall 2019-Spring 2020
Sarah Morgan, Mathematics major VT, Fall 2019-Spring 2020
Tarun Nadipalli, CMDA major VT, Spring 2019
Ethan Williams (coadvised, B. Biondi) Geophysics & Music major, Stanford, Summer 2016

Graduate Thesis Committee Member
Arsya Kadyanto, M.S. with Y. Li, Geophysics, CSM, degree in progress
Ana Cantu, M.S. with K. Singha and D. Benson, HSE, CSM, degree in progress
Duke Ozomah, M.S. with A. Tura, Geophysics, CSM, degree in progress
Noah Perkovich, Ph.D. with Y. Li, Geophysics, CSM, degree in progress
Reinaldo Sabbagh, Ph.D. with A. Tura, Geophysics, CSM, degree in progress
Roman Yermakov, Ph.D. with A. Tura, Geophysics, CSM, degree in progress
Moses Adebayo, Ph.D. with K. Singha, HSE, CSM, degree in progress
Zachary Katz, Ph.D. with M. Siegfried, Geophysics, CSM, degree in progress
Victor Fakeye, Ph.D. with G. Jin, Geophysics, CSM, degree in progress
Ana Garcia-Ceballos, Ph.D. with G. Jin, Geophysics, CSM, degree in progress
Donglin Zhu, Ph.D. with G. Jin, Geophysics, CSM, degree in progress
Alexander Ankamah, Ph.D. with J. Hole, Geosciences, VT, degree in progress
Hannah Verboncoeur, Ph.D. with M. Siegfried, Geophysics, CSM, degree in progress
Peiyao Li, Ph.D. with G. Jin, Geophysics CSM, degree in progress
Ryan Harmon, Ph.D. with K. Singha, HSE CSM, degree awarded Aug. 2025
Rachel Willis, Ph.D. with M. Siegfried, Geophysics, CSM, degree awarded Aug. 2025
Sweta Rai, Ph.D. with D. Nychka, S. Bandyopadhyay, AMS, CSM, degree Aug. 2025
Xiaohang Ji, Ph.D. with M. Xiao, CEE Penn State, degree awarded May 2025
Derrick Chambers, Ph.D. with J. Shragge, Geophysics CSM, degree awarded Dec. 2024
Maggie Bailey, Ph.D. w. Nychka, Bandyopadhyay, AMS, CSM, degree awarded Aug. 2024
Junzhu Shen, Ph.D. with T. Zhu, Geosciences Penn State, degree awarded Aug. 2024
Reynaldo Vite Sánchez, M.S. with E. Bozdag, Geophysics, CSM, awarded May 2024
Joseph Cherayil, M.S. with Tura, Simmons, Geophysics, CSM, degree awarded May 2024
Skye Hart, M.S. with Y. Li, Geophysics, CSM, degree awarded May 2024
Nhat Nguyen, Ph.D. with L. Massa, AOE VT, degree awarded Aug. 2023

Kaleigh Yost, Ph.D. with R. Green, CEE — VT, degree awarded Dec. 2022
Amin Baghbadorani, Ph.D. with J. Hole, Geosciences — VT, degree awarded Aug. 2022
Joseph Mjehovich, M.S. with G. Jin, Geophysics — CSM, degree awarded May 2022
Zachary Hileman, Ph.D. with G. Pickrell, MSE — VT, degree awarded May 2022
ThaoVy Nguyen, M.S. with R. Hewett, Mathematics — VT, degree awarded May 2021
Taewon Cho, Ph.D. with J. Chung, Mathematics — VT, degree awarded May 2021

External Examiner of Dissertations
S. Ouellette, Ph.D. with J. Dettmer, Geoscience, — Univ. of Calgary, Jul. 2024
L. Qu, Ph.D. with K. Innanen, Geoscience, — Univ. of Calgary, Dec. 2023
J. Bustamante Restrepo, Ph.D. with G. Fabien-Ouellet, Mineral Engineering, — Polytechnique Montreal, Dec. 2023

Teaching

Instructor, Parallel Scientific Computing (CSM, MATH 440/540) — Fall 2025
Instructor, Digital Signal Processing (CSM, GPGN 404) — Spring 2025
Instructor, Mathematical Geophysics (CSM, GPGN 229) — Spring 2025
Instructor, Applied Mathematics I (CSM, Math 514) — Fall 2024
Instructor, Mathematical Geophysics (CSM, GPGN 229) — Spring 2024
Instructor, Applied Mathematics I (CSM, MATH 514) — Fall 2023
Instructor, Graduate Reading Seminar (CSM, GPGN 583) — Fall 2023
Instructor, Mathematical Geophysics (CSM, GPGN 229) — Spring 2023
Instructor, Parallel Scientific Computing (CSM, MATH 440/540) — Spring 2023
Instructor, Mathematical Geophysics (CSM, GPGN 229) — Spring 2022
Instructor, BEPUR: Broadening Engagement and Participation in Undergraduate Research (VT, MATH 2984) — Fall 2021
Project Mentor, Capstone Project (VT, CMDA 4864) — Fall 2021
Senior team project on optimal detection of targets in GPR data
Instructor, BEPUR: Broadening Engagement and Participation in Undergraduate Research (VT, MATH 2984) — Spring 2021
Instructor, CS Foundations for CMDA (VT, CMDA 3634) — 2 sections, Fall 2020
Instructor, CS Foundations for CMDA (VT, CMDA 3634) — Spring 2020
Instructor, Extreme-Scale Inverse Problems (VT, MATH 5984) — Fall 2019
Instructor, Integrated Quantitative Science I (VT, CMDA 2005) — Fall 2019
Project Mentor, Capstone Project (VT, CMDA 4864) — Fall 2019
Senior team project on removing footstep signals from urban seismic data
Instructor, CS Foundations for CMDA (VT, CMDA 3634) — Spring 2019
Instructor, Integrated Quantitative Science I (VT, CMDA 2005) — Fall 2018
ICME Teaching Fellow 2016-2018, status to recognize student teaching experience
Course assistant, Intro. to Scientific Computing (Stanford, CME 108) — Winter 2016
Project Mentor, Projects in App. & Comp. Math (Stanford, CME 181) — Spring 2015
Undergrad project on statistical analysis of bicycle sharing network data
Instructor, Introduction to Scientific Python (Stanford, CME 193) — Winter 2015
Instructor, Short course on Python at SIAM Conference on Geosciences, — June 2015
Project Mentor, Projects in App. & Comp. Math (Stanford, CME 181) — Winter 2014
Undergrad project on tsunami modeling using Hawaiian bathymetry
STEM Tutor, Longhorn Center for Academic Excellence — Aug. 2011-May 2012
UT-Austin Division of Diversity and Community Engagement
Tutored students in introductory math, statistics, physics, and chemistry courses
Documented tutoring and workshops for grant application materials

Professional Service, Outreach

Member, Mines AMS Undergrad. Recruiting & Outreach Committee, Sep. 2023-present
Member, Earthscope PIIAC Committee — May 2025-present

Member, Earthscope IIAC Committee Jul. 2023-Jun. 2025
Member, SEG JEDI Committee Apr. 2021-present
Chair, Sep. 2024-present
Vice-chair, Sep. 2022-Sep. 2024
Organizing Committee Member SIAM Conference on Mathematical and Computational Issues in the Geosciences, Oct. 2024 – present (to occur Oct. 2025)
Organizing Committee Member, SEG Workshop on Role of Fiber in Geophysics: Now and Beyond, Nov. 2024 – present (to occur June 2025)
Co-coordinator, Mines GP Social Media Jan. 2023-present
Member, Mines GP Reimagine Committee Jan. 2022-present
Undergraduate advising, Undergraduate Geophysics Majors Mar. 2022-present
Member, Mines AMS Dept. Outreach and Recruitment Committee Sep. 2023-present
Member, Mines AMS Research Committee Aug. 2024-present
Member, Mines GP Graduate Advisory Committee Aug. 2023-present
Member, Mines AMS Graduate Committee Aug. 2022-Jul. 2024
Led review of CAM graduate curriculum (Oct.-Dec. 2022)
Member, Mines AMS Graduate Computing Resources Committee Dec. 2022-Dec. 2023
Member, USGS Powell Center on distributed acoustic sensing Oct. 2022-present
Advisor, Undergraduate Geophysics Majors Mar. 2022-present
Panelist, APS Conference for Undergraduate Women in Physics Jan. 2024
Member, SEG Research Committee Oct. 2018-Aug. 2023
Co-organized multiple post-convention research workshops
Co-founded Early Career Research Subcommittee
Steering Committee Member, NSF-funded DAS Research Coordination Network
Co-leader of Machine Learning Working Group Feb. 2020-Jul. 2023
Co-leader of RCN-affiliated virtual workshops
Co-organizer, DAS RCN hands-on tutorial and DASDAE tutorial May-June 2023
Member, Mines AMS Computing Resources Working Committee Dec. 2022-May 2023
Co-organizer, Women Earth Data Scientists Day at Mines Apr. 2023
Co-organizer, Distributed Acoustic Sensing Tutorial at SSA Annual Meeting Apr. 2023
Co-convener, AGU Fall Meeting session "Near-Surface Geophysics in a Changing Climate" Dec. 2022
Co-organizer, Mines GP100 alumni tutorial on distributed acoustic sensing Nov. 2022
Associate editor, *Computers & Geosciences* Nov. 2018-Oct. 2022
Co-organizer, IMAGE Post-convention workshop "High-Performance Computing - What Does the Future Look Like?" Sep. 2022
Member, EarthScope Board Nominating Committe May-July 2022
Co-organizer DAS tutorial workshop at Community Surface Dynamics Modelling System Annual Meeting May 2022
Co-organizer, Speakers and Undergraduate Research Engagement Feb. 2019-Dec. 2021
Program to guide women undergrad math students through first research projects, and bring diverse women mathematicians for research talks and career path discussions
Advisor, Undergraduate Math Majors, Traditional Option Aug. 2020-Dec. 2021
Member, CMDA Computing Curriculum Committee Aug. 2018-Dec. 2021
Co-convener, AGU Fall Meeting session "Observing Wave Field Gradients in Seismology-Applications, Instrumentation and Theory" Dec. 2021
Guest Editor, IEEE CiSE: DOE Computational Science Graduate Fellowship Research Showcase published Nov. 2021
Co-organizer, IMAGE Post-convention workshop "Distributed Fiber-Optic Sensing in Applied Geophysics" Oct. 2021
Co-organizer, GAGE/SAGE Short course "Distributed Acoustic Sensing: Scientific Frontiers and Community Needs" Aug. 2021
Member, Virginia Tech Math Dept. Colloquium Committee Aug. 2020-Jul. 2021
Instructor, Remote Online Sessions for Emerging Seismologists (ROSES) lesson on

Distributed Acoustic Sensing July 2021

Panelist, AGU EPSP Connects: Surface processes applications of environmental seismology and distributed acoustic sensing (DAS) Q&A May 2021

Member, SEG Equity in Process Task Force Aug. 2020-Apr. 2021

Faculty sponsor/organizer, 3rd Women in Data Science Blacksburg at Virginia Tech conference April 2021

Panelist, Virginia Tech Assoc. for Women in Computing research panel Mar. 2021

Member, DOE CSGF Screening Committee 2020, 2021

Session Co-Chair, AGU Fall Meeting session on Data Science and Machine Learning for Natural Hazard Sciences Dec. 2020

Panelist, discussion on women in geosciences for Diversity and Inclusion in Geoscience course at University of Wyoming Oct. 2020

Co-Organizer, SEG Annual International Meeting Post-convention Workshop on DAS: Advances in Fiber Optic Sensing Over the Last Decade Oct. 2020

Speaker, UT-Austin Dean's Scholars Honors Program Friday Lunch Talk Sep. 2020

Co-Lead, DAS Virtual Workshop and Tutorial Aug. 2020
Three-afternoon virtual workshop and tutorial supported by DAS RCN and IRIS;
8 speaker presentations with extensive discussion, and 150-250 participants/day;
Developed new Jupyter notebooks for hands-on coding with public DAS data;
Managed Slack channel for participants to network/discuss with 10 Workshop Guides.

Member, Virginia Tech Math Dept. Technology Committee Aug. 2018 - Aug. 2020

Judge, Virginia Tech Socially Determined COVID-19 Social Data Project Apr. 2020

Faculty sponsor/organizer, 2nd Women in Data Science Apr. 2020
Blacksburg at Virginia Tech conference (converted to online event with 3 speakers)

Panelist, Virginia Tech Assoc. for Women in Mathematics internship panel Feb. 2020

Session co-chair, SEG/EAGE Workshop on Geophysical Aspects of Smart Cities, session on Fiber-based Distributed Acoustic Sensing Dec. 2019

Co-Organizer, SEG Annual International Meeting Post-convention Workshop on Real-time Processing for Large-Scale Streaming Seismic Data, agenda Sep. 2019

Chair, Session on 'Distributed Acoustic Sensing: VSP, Modeling and Imaging Approaches' at SEG Annual International Meeting Sep. 2019

Mentor, DOE CSGF High Performance Computing Workshop Jul. 2019

Panelist, Early Career Panel, DOE CSGF Annual Program Review Jul. 2019

Mentor, Student mentoring program run by Virginia Tech Sep. 2018 - May 2019
chapter of American Women in Mathematics

Co-Organizer, Session on 'Photonic and Nonintertial Seismology' at Seismological Society of America Annual Meeting Apr. 2019

Speaker, Virginia Tech Undergraduate Math Club Apr. 2019

Volunteer, ASA DataFest at Virginia Tech Apr. 2019

Faculty sponsor/organizer, 1st Women in Data Science conference at VT Feb. 2019

Organizer, Session on 'Computational Advances for Large-Scale Geophysical Data' at SIAM CS&E Feb. 2019

Judge, CMDA Fall Data Competition at Virginia Tech Nov. 2018

Panelist, UT-Austin Association for Women in Mathematics career panel Nov. 2018

Speaker, UT-Austin Undergraduate Math Club Nov. 2018

Special section associate editor, *Interpretation* 2018
Special issue on 'Distributed Acoustic Sensing and its Oil Field Potential'

Mentor, ICME first-year mentoring program Sep. 2017-Jun. 2018

Co-organizer, Stanford Computational Geosciences Seminar Jan.-Mar. 2018
Brought in 9 speakers from outside Stanford, organized 1 hr. course EARTH 310

Co-chair, Session on 'Earth Model Building Strategies and Inputs' at SEG Annual International Meeting Sep. 2017

Co-organizer, SEG Data Analytics Post-Convention Workshop Sep. 2017
Invited early-career speakers and moderated panel on data science education

Student panel Stanford Aeronautics & Astronautics faculty search Spring 2017
Mentor, Stanford Women in Math Mentoring Oct. 2016-Jun. 2017
President, Stanford SEG student chapter 2014-2015

Skills

Preferred programming languages: C, C++ and Python
HPC tools: MPI, openMP, CUDA, TBB
Profiling tools: Tau, HPM, NVCC, Vampir
Scientific tools: MATLAB, Mathematica, COMSOL, IDL
Environment and development tools: Docker, Singularity, Doxygen, Git, Jupyter Notebooks, Google Cloud Compute Engine, Amazon Web Services