

Caleb Timothy Phillips

My goal is to use computers (via optimization, modeling, and simulation) as a tool to better understand and help solve complex problems. I am motivated by real-world challenges and high impact research that can lead to actionable insights.

My academic and applied research work has focused on statistical modeling and analysis, applied predictive modeling and machine learning, experimental design, and optimization. Most recently, I have applied these skills to problems in the energy sector at the National Renewable Energy Laboratory and to research problems in the medical field with collaborators at Stanford. I have published more than 50 peer reviewed scientific articles, given 20 invited talks, published 20 technical reports. I am currently PI or co-PI grant-funded projects with a combined budget of \$9M+ USD.

I also have extensive experience in the non-profit and education sectors. I've founded two successful 501(c)3 nonprofits in Boulder, Colorado, worked with nonprofits in Portland, Oregon, and taught classes at a middle school (in Palo Alto, California), high school (in Boulder, Colorado) and university (University of Colorado).

In the coming years, I hope to continue to develop these skills, apply them to engaging and relevant problems in diverse areas, and to continue to work at the interface between academic research and practical applications.

Education

Ph.D. - University of Colorado Boulder, Computer Science (2007 – 2012)

Thesis: Geostatistical Techniques for Practical Wireless Network Coverage Mapping

Advisor: Prof. Douglas Sicker

M.S. - University of Colorado Boulder, Computer Science (2007 – 2010)

B.S. - Portland State University (2003 – 2006)

Research Positions

Visiting Researcher - School of Medicine - Stanford University

Dec 2019 – Present (1 mo)

Perform research in collaboration with medical faculty focused on spatio-temporal data analyses and epidemiology.

Senior Scientist - Computational Data Science - National Renewable Energy Laboratory

Aug 2014 – Present (4 yrs 11 mos)

Perform research-based data analysis, data management modeling, and visualization on a variety of projects. Operate as a member of the Analysis and Visualization group.

Assistant Professor Adjunct - University of Colorado, Boulder

Oct 2012 – Present (6 yrs 9 mos)

Perform independent research focused on statistical modeling, large scale simulation, and optimization for a large variety of problems, ranging from, e.g., food systems to wireless networks.

Research Scientist (Consultant) - Natural Resources Defense Council

Aug 2016 – Aug 2017 (1 yr 1 mo)

Led research aimed at quantifying potential retail food recovery and infrastructure costs in three US cities (Nashville, Denver, NYC).

Research Scientist (Consultant) - MapLarge

Apr 2013 – Apr 2014 (1 yr 1 mo)

Develop a variety of geostatistical methods and automated spatial statistical analysis for very large dynamic data sets.

Research Scientist (Consultant) - Mobile Pulse

Jun 2012 – Jun 2013 (1 yr 1 mo)

Performed statistical analysis of large scale real-time mobile network measurements, developed scalable geospatial data-warehousing framework, and geostatistical mapping applications.

Research Fellow - National Science Foundation

Sep 2010 – Aug 2012 (2 yrs)

Develop and implement computer science and mathematics curriculum in social studies classes at the high school level. I am currently working at Boulder High School in Boulder, Colorado.

Graduate Research Assistant - University of Colorado at Boulder

Aug 2007 – May 2012 (4 yrs 10 mos)

Research wireless networks, in particular geostatistical methods for large area coverage mapping, spatial sampling design, measurement based models and model validation, and optimized systems.

Research Fellow - National Science Foundation

May 2010 – Aug 2010 (less than a year)

Worked with scientists at the University of Waikato in New Zealand to instrument devices and analyze data from a large scale rural commercial wireless internet service provider.

Research Assistant - Portland State University

Mar 2006 – Aug 2007 (1 yr 6 mos)

Directed research focusing on wireless networking, systems, and statistical modeling.

Peer-reviewed Publications

C = Conference, J = Journal, O = Other

2019

- J30: Mike Optis, Jordan Per Sauer, Caleb Phillips, Travis Kemper, Lindy Williams, Anna Craig, Shawn Sheng, Jason Fields. OpenOA: An Open-Source Code Base for Operational Analysis of Wind Power Plants. Wind Energy Science. To Appear.
- J29: Peter St. John, Caleb Phillips, Travis Kemper, A. Wilson, Yanfei Guan, Michael Crowley, Mark Nimlos, and Ross Larsen. Message-passing neural networks for high-throughput polymer screening. Journal of Chemical Physics. To Appear.
- J28: Carrie Jurkiewicz, Patrick Burns, Caleb Phillips, Christopher Winstead-Derlega, Andre Burnier, Aaron Reilly, Peter Hackett, Grant Lipman. Day of Ascent Dosing of Acetazolamide for Prevention of Acute Mountain Sickness. High Altitude Medicine and Biology. To Appear.
- J27: Carl Alsup, Grant S. Lipman, David Pomeranz, Rwo-Wen Huang, Patrick Burns, Nicholas Juul, Caleb Phillips et al. "Interstitial Pulmonary Edema Assessed by Lung Ultrasound on Ascent to High Altitude and Slight Association with Acute Mountain Sickness: A Prospective Observational Study." High Altitude Medicine & Biology (2019). [\[download\]](#)
- J26: Jason Hattrick-Simpers, Andriy Zakutayev, Sara C. Barron, Zachary Tim Trautt, Nam Nguyen, Kamal Choudhary, Brian DeCost, Caleb Phillips, A. Gilad Kusne, Feng Yi, Apurva Mehta, Ichiro Takeuchi, John D.

Perkins, and Martin L. Green. An Inter-Laboratory Study of Zn-Sn-Ti-O Thin Films using High-throughput Experimental Methods. ACS Comb. Sci. DOI: 10.1021/acscombsci.8b00158. American Chemical Society. March 19, 2019. [\[download\]](#).

- J25: Carl Alsup, Grant Lipman, Caleb Phillips, Patrick Burns, Viveta Lobo, Carrie Jurkiewicz, Dave Pomeranz. Interstitial Pulmonary Edema Assessed by Lung Ultrasound on Ascent to High Altitude and Slight Association with Acute Mountain Sickness: A Prospective Observational Study. High Altitude Medicine and Biology. May 7, 2019. [\[pubmed\]](#).

2018

- J24: Patrick Burns, Grant S. Lipman, Keiran Warner, Carrie Jurkiewicz, Caleb Phillips, Linda Sanders, Mario Soto, Peter Hackett. Altitude Sickness Prevention with Ibuprofen Relative to Acetazolamide. The American Journal of Medicine (2018). [\[download\]](#).
- J23: Caleb Phillips, Grant S. Lipman, Hallam Gugelmann, Katie Doering & Derrick Lung. Snakebites and climate change in California, 1997–2017, Clinical Toxicology, September 4, 2018. DOI: 10.1080/15563650.2018.1508690. [\[download\]](#).
- C27: Caleb Phillips, Grant Lipman, et al. Climate Change and Snakebites in California, 1997 to 2017. American College of Emergency Physicians (ACEP) Research Forum. October 2-3, 2018.
- J22: Caleb Phillips, Ryan Elmore, Jenny Melius, Pieter Gagnon, Robert Margolis. A data mining approach to estimating rooftop photovoltaic potential in the US. Journal of Applied Statistics. June 18, 2018. DOI: 10.1080/02664763.2018.1492525. [\[download\]](#).
- C26: Rafael Orozco, Shaungwen Sheng, Caleb Phillips. Diagnostic Models for Wind Turbine Gearbox Components Using SCADA Time Series Data. IEEE Prognostics and Health Management (PHM) 2018. Seattle, Washington. June 11 - 13, 2018.
- C25: Anna Craig, Mike Optis, Caleb Phillips, Jordan Perr-Sauer, Jason Fields, John Meissner. Uncertainty quantification in analyses of operational wind plant data. Journal of Physics: Conference Series (JPCS). TORQUE 2018. Milano, Italy. June 20 - 22, 2018.
- J21: Marcus Schwarting, Sebastian Siol, Kevin Talley, Andriy Zakutayev, Caleb Phillips. Automated algorithms for band gap analysis from optical absorption spectra. Materials Discovery, April 18, 2018. [\[download\]](#).
- J20: Andriy Zakutayev, Nick Wunder, Marcus Schwarting, John Perkins, Robert White, Kristin Munch, William Tumas, and Caleb Phillips. An open experimental database for exploring inorganic materials. Nature. Scientific Data. April 3, 2018. [\[open access\]](#) [\[press release\]](#).
- C25: Jordan Perr-Sauer, Adam Duran, Caleb Phillips. Automatic Feature Extraction for Commercial Fleet Analytics using a Scalable Architecture. Conference on Data Analysis (CoDA) 2018. Santa Fe, New Mexico. March 7 - 9, 2018.
- C24: Adam Duran, Caleb Phillips, Jordan Perr-Sauer, Arnaud Konan, Kenneth Kelly. Leveraging Big Data Analysis Techniques for US Vocational Vehicle Drive Cycle Characterization, Segmentation, and Development. SAE International. April 3, 2018. [\[download\]](#).
- C23: Caleb Phillips, Andriy Zakutayev, Nick Wunder, Marcus Schwarting, John Perkins, Robert White, Kristin Munch, William Tumas. Materials Discovery and Learning using the High Throughput Experimental Materials Database (HTEM-DB). Conference on Data Analysis (CoDA) 2018. Santa Fe, New Mexico. March 7 - 9, 2018.
- C22: Bruce Bugbee and Caleb Phillips. Bayesian Machine Learning for High Velocity Streaming Data. DOE ASCR Scientific Machine Learning Workshop (SciML'18). January, 2018. Washington, D.C.
- J19: Robert Margolis, Pieter Gagnon, Jennifer Melius, Caleb Phillips, Ryan Elmore. Estimating rooftop solar technical potential across the U.S. using a combination of GIS-based methods, lidar data, and statistical modeling. Environmental Research Letters (ERL). January 5, 2018. To Appear.

2017

- J18: Nicholas Kanaan, Caleb Phillips, Becky Higbee, Dave Pomeranz, Michael Shaheen, Kristin Fontes, Grant Lipman et al. (2017). Sleep Characterization at High Altitude. Wilderness & Environmental Medicine, 28(4), 366. [\[link\]](#)

- J17: Austin Arrington, Steward Diemont, Caleb Phillips, Ethan Welty. Demographic and landscape-level urban foraging trends in the United States derived from web and mobile app usage. *Journal of Urban Ecology*. [\[download\]](#).
- J16: Grant Lipman, David Pomeranz, Patrick Burns, Caleb Phillips, M. Cheffers, K. Evans, C. Jurkiewicz, N. Juul, P. Hackett. Budesonide Versus Acetazolamide for Prevention of Acute Mountain Sickness. *American Journal of Medicine*. [\[download\]](#).
- J15: Grant Lipman, Kate Shea, Michael Christensen, Caleb Phillips, Patrick Burns, Rebecca Higbee, V. Koskenoja, K. Eifling, B. Krabak. Ibuprofen versus Placebo Effect on Acute Kidney Injury in Ultramarathons: A Randomized Controlled Trial. *Emergency Medicine Journal*. 34 (10). [\[download\]](#).
- J14: Robert Margolis, Pieter Gagnon, Jennifer Melius, Caleb Phillips, Ryan Elmore. Using GIS-Based Methods and Lidar Data to Estimate Rooftop Solar Technical Potential in U.S. Cities. *Environmental Research Letters (ERL)*. May 10, 2017. [\[download\]](#).
- J13: Bruce Bugbee, Caleb Phillips, Hilary Egan, Kenny Gruchalla, Ryan Elmore, Avi Purkayastha. Prediction and characterization of application power use in a high-performance computing environment. *Statistical Analysis and Data Mining: The ASA Data Science Journal*. Wiley Subscription Services Inc., A Wiley Company. February 27, 2017. DOI: 10.1002/sam.11339. [\[abstract\]](#).
- J12: Viveta Lobo, Michelle Hunter-Behrend, Erin Cullnan, Rebecca Higbee, Caleb Phillips, Sarah Williams, Philips Perera, Laleh Gharahbaghian. Caudal Edge of the Liver in the Right Upper Quadrant (RUQ) View Is the Most Sensitive Area for Free Fluid on the FAST Exam. *Western Journal of Emergency Medicine*. January 19, 2017. DOI: 10.5811/westjem.2016.11.30435.

2016

- J11: Steven K. Dailey, Caleb T. Phillips, Joseph M. Radley, Michael T. Archdeacon. Achieving Anatomic Acetabular Fracture Reduction - When is the Best Time to Operate? *Journal of Orthopaedic Trauma*. August, 2016. Volume 30. Issue 8.
- J10: Grant S. Lipman, Mark Christensen, Alexandra DiTullio, Katherine Shea, Louis J. Sharp, Andrew Dalton, Caleb Phillips, Pearly Ng, Jennifer Shangkuan, Brian J. Krabak. Paper Tape Prevents Foot Blisters: A Randomized Prevention Trial Assessing Paper Tape in Endurance Distances II (Pre-TAPED II). *Clinical Journal of Sport Medicine*. To Appear.
- C21: Bruce Bugbee, Caleb Phillips, Kenny Gruchalla, Ryan Elmore, Avi Purkayastha. Exploring HPC Application Power Usage. [Conference on Data Analysis \(CoDA\) 2016](#). March 2-4, 2016. Santa Fe, New Mexico.
- C20: Caleb Phillips, Ross Larson, Kristin Munch, Nikos Kopidakis. Guided Search for Organic Photovoltaic Materials Using Predictive Data Modeling. [Conference on Data Analysis \(CoDA\) 2016](#). March 2-4, 2016. Santa Fe, New Mexico.

2015

- J9: Grant S. Lipman, Mark Christensen, Alexandra DiTullio, Katherine Shea, Louis J. Sharp, Andrew Dalton, Caleb Phillips, Pearly Ng, Jennifer Shangkuan, Brian J. Krabak. Paper Tape Prevents Foot Blisters: Randomized Prevention Trial Assessing Paper Tape in Endurance Distances II (Pre-TAPED II). *Wilderness and Environmental Medicine* 26(2). Abstract. June, 2015.
- J8: Grant S. Lipman, Nicholas C. Kanaan, Caleb Phillips, Dave Pomeranz, Patrick Cain, Kristin Fontes, Becky Higbee, Carolyn Meyer, Michael Shaheen, Sean Wentworth, and Diane Walsh. Study Looking at End Expiratory Pressure for Altitude Illness Decrease (SLEEP- AID). *High Altitude Medicine & Biology*. Volume 16, Number 2, 2015. [\[download\]](#)
- C19: Lobo V, Joshi N, Chao A, Poffenberger C, Williams S, Perera P, Phillips C, Gharahbaghian L. Impact of a one day free bedside ultrasound conference to medical students. Council of Residency Directors Annual Meeting, April 2015, Tuscan, Arizona.
- C18: DiTullio A, Lipman GS, Sharp LJ, Christensen M, Philips C, et al. Paper Tape Prevents Blisters: Prevention Trial Assessing Paper Tape in Endurance Distances II (Pre-TAPED II). Oral Presentation at the Western Regional Society of Academic Emergency Medicine, March 27, 2015. Tucson, AZ.

- C17: Christensen M, Lipman GS, Sharp LJ, Philips C, et al. Paper Tape Prevents Blisters: Prevention Trial Assessing Paper Tape in Endurance Distances II (Pre-TAPED II). Oral Presentation at the Wilderness Medical Society Winter Meeting, Feb 15th, 2015, Park City, UT.
- J7: Grant S. Lipman, Kristin Fontes, Becky Higbee, Michael Shaheen, Nicholas C. Kanaan, Caleb Phillips, Dave Pomeranz, Patrick Cain, Carolyn Meyer, Sean Wentworth. Study Looking at End Expiratory Pressure for Altitude Illness Decrease (SLEEP AID): A Randomized Controlled Trial. Wilderness and Environmental Medicine. Volume 26. Issue 1. March 2015. [\[abstract\]](#)
- C16: Steven K. Dailey, Caleb Phillips, Joseph M. Radley, Michael T. Archdeacon. Achieving Anatomic Acetabular Fracture Reduction - When is the Best Time to Operate? American Academy of Orthopaedic Surgeons (AAOS) Annual Meeting. March, 2015.

2014

- J6: Eric Anderson, Caleb Phillips, Douglas Sicker, Dirk Grunwald Optimization Decomposition for Scheduling and System Configuration in Wireless Networks ACM/IEEE Transactions on Networking. February, 2014. Volume 22. Issue 1.

2013

- J5: Caleb Phillips, Douglas Sicker, and Dirk Grunwald. A Survey of Wireless Path Loss Prediction and Coverage Mapping Methods. IEEE Communications Society Surveys and Tutorials. [\[download\]](#)
- J4: Caleb Phillips, Rhonda Hoenigman, Becky Higbee, Tom Reed. Understanding the sustainability of retail food recovery. PLOS One. October 10, 2013. [\[download\]](#)

2012

- C15: Caleb Phillips, Douglas Sicker, and Dirk Grunwald. Practical Radio Environment Mapping with Geostatistics. IEEE Dynamic Spectrum Access Networks 2012 (DySPAN 2012). 20%. [\[download\]](#), [\[slides\]](#)
- O1: Caleb Phillips. Geostatistical Techniques for Practical Wireless Coverage Mapping. Ph.D. Thesis. University of Colorado at Boulder. Computer Science Department. [\[download\]](#)
- J3: Caleb Phillips, Douglas Sicker, and Dirk Grunwald. Bounding the Practical Error of Path Loss Models. International Journal of Antennas and Propagation. Hindawi Publishing Corporation. Volume 2012. [\[download\]](#)
- J2: Caleb Phillips, Lee Becker, and Elizabeth Bradley. Strange Beta: An Assistance System for Indoor Rock Climbing Route Setting. Chaos: An Interdisciplinary Journal of Nonlinear Science. American Institute of Physics. Volume 22, Issue 1. March, 2012. [\[download\]](#)

2011

- C14: Caleb Phillips, Douglas Sicker, and Dirk Grunwald. Bounding the Practical Error of Path Loss Models in Urban Environments. IEEE Dynamic Spectrum Access Networks 2011 (DySPAN 2011). Aachen, Germany. May 3-6, 2011. [\[download\]](#)
- C13: Eric Anderson, Caleb Phillips, Douglas Sicker, and Dirk Grunwald. Signal Quality Pricing: Decomposition for Spectrum Scheduling and System Configuration. IEEE Dynamic Spectrum Access Networks 2011 (DySPAN 2011). Aachen, Germany. May 3-6, 2011. [\[download\]](#)
- C12: Caleb Phillips, Scott Raynel, Jamie Curtis, Sam Bartels, Douglas Sicker, Dirk Grunwald and Tony McGregor. The Efficacy of Path Loss Models for Fixed Rural Wireless Links. Passive and Active Measurement Conference 2011 (PAM 2011). Atlanta, Georgia. March 20-22, 2011. [\[download\]](#)

2010

- J1: Eric Anderson, Caleb Phillips, Douglas Sicker, and Dirk Grunwald. Modeling Environmental Effects on Directionality. Mathematical and Computer Modeling Journal. Special Issue on Modeling and Simulation of Wireless Networks. June, 2010. Elsevier.

- C11: Eric Anderson, Caleb Phillips, Douglas Sicker, and Dirk Grunwald. Challenges in Deploying Steerable Wireless Testbeds. TridentCom 2010. Berlin, Germany. May 18-20, 2010..
- C10: Caleb Phillips and Elizabeth Bradley. Strange Beta: Chaotic Variations for Indoor Rock Climbing Route Setting. International Conference on Applications in Nonlinear Dynamics (ICAND 2010). Lake Louise, Canada. September, 21-24 2010. Invited. [\[download\]](#)

2009

- C9: Eric Anderson, Caleb Phillips, Harold Gonzales, Kevin Bauer, Douglas Sicker, and Dirk Grunwald. SniffMob: Inferring Human Contact Patterns using Wireless Devices. The 1st ACM International Workshop on Hot Topics of Planet-scale Mobility Measurements. Krakow, Poland. June 22, 2009. [\[download\]](#)
- C8: Caleb Phillips, Suresh Singh, Douglas Sicker, and Dirk Grunwald. Techniques for Simulation of Realistic Infrastructure Wireless Network Traffic. 7th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks. Seoul, Korea. June 23 - 27, 2009. [\[download\]](#)
- C7: Eric Anderson, Gary Yee, Caleb Phillips, Douglas Sicker, and Dirk Grunwald. The Impact of Directional Antenna Models on Simulation Accuracy. 7th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks. Seoul, Korea. June 23 - 27, 2009. [\[download\]](#)
- C6: Eric Anderson, Caleb Phillips, Douglas Sicker, and Dirk Grunwald. Modeling Environmental Effects on Directionality in Wireless Networks. 5th International workshop on Wireless Network Measurements. Seoul, Korea. June 26, 2009. [\[download\]](#)

2008

- C5: Caleb Phillips, Russell Senior, Douglas Sicker, and Dirk Grunwald. Robust Coverage and Performance Testing for Large-Area Wireless Network. Las Vegas, Nevada. October 15 - 17, 2008. (including invited papers). [\[download\]](#)
- C4: Caleb Phillips, Suresh Singh, Douglas Sicker, and Dirk Grunwald. Applying Models of User Activity for Dynamic Power Management in Wireless Devices. MobileHCI. Amsterdam, The Netherlands. September 2 - 5, 2008. [\[download\]](#)
- C3: Eric Anderson, Caleb Phillips, Kevin Bauer, Douglas Sicker, and Dirk Grunwald. Modeling Directionality in Wireless Networks. ACM SigMetrics 2008 (short paper). Annapolis, Maryland. June 2 - 6, 2008. [\[download\]](#)
- C2: Caleb Phillips and Suresh Singh. An Empirical Activity Model for WLAN Users. IEEE INFOCOM 2008 Mini-Symposium. Phoenix, AZ. April 14 - 17, 2008. [\[download\]](#)

2007

- C1: Caleb Phillips and Suresh Singh. Analysis of WLAN traffic in the Wild. IFIP Networking 2007 (short paper). Atlanta, GA. May 14 - 18, 2007.

Invited Talks

- T19: Caleb Phillips. ATHENA: Advancing Transportation Hubs' Efficiency with Novel Analytics. Smart Cities Connect Conference and Expo. Denver, Colorado. April 1 - 4, 2019.
- T18: Caleb Phillips, Marcus Schwarting, Harshil Kamdar, Andriy Zakutayev, John Perkins. Applications of Machine Learning for Materials Discovery using the NREL High Throughput Experimental Materials Database. 21st International Conference on Ternary and Multinary Compounds (ICTMC-21). Boulder, CO. September 9-13, 2018.
- T17: Patrick Burns, Grant Lipman, Peter Hackett, Caleb Phillips et al., Acute Mountain Sickness Prevention With Ibuprofen Relative to Acetazolamide. XII. ISMM World Congress on Mountain Medicine. Kathmandu, Nepal. November, 2018.
- T16: Caleb Phillips, Marcus Schwarting, Harshil Kamdar, Andriy Zakutayev, John Perkins. Applications of Machine Learning for Materials Discovery using the NREL High Throughput Experimental Materials Database.

- Artificial Intelligence for Materials Science (AIMS). National Institute of Standards and Technology (NIST). Gaithersburg, MD. August 7-8, 2018.
- T15: Caleb Phillips. Data-driven Research on Wind & other Renewable Energy Sources at NREL. National Renewable Energy Laboratory Drivetrain Reliability Collaborative (DRC) Meeting. Golden, Colorado. February 20-21, 2018.
 - T14: Adam Duran, Caleb Phillips, Arnaud Konan, and Kenneth Kelly. Leveraging Big Data Analysis Techniques for US Vocational Vehicle Drive Cycle Characterization, Segmentation, and Development. 28th Coordinated Research Council in Orange Grove, California on March 19th-21st, 2018.
 - T13: Caleb Phillips, Andriy Zakutayev, Nick Wunder, Marcus Schwarting, John Perkins, Robert White, Kristin Munch, William Tumas. Soup to Nuts Data Science: A HTEM-DB Story. [High-Throughput Experimental Materials Collaboratory Workshop](#). Gaithersburg, Maryland. February 28-March 2nd, 2018.
 - T12: Monte Lunacek, Jason Fields, Joseph Lee, Shawn Sheng, Caleb Phillips, John Meissner, Anna Craig. WP3 Benchmark Historical Validation Study. WindTech 2017. Boulder, Colorado. October 24-26, 2017.
 - T11: Andriy Zakutayev, Caleb Phillips, et al. High Throughput Experiments at NREL, Materials Database (HTEM DB), and NIST-NREL HTE Round Robin Study. Materials Research and Data Science Conference (MRaDS) 2017. Rockville, Maryland. September 25-27, 2017.
 - T10: Caroline Draxl, Caleb Phillips, George Scott, Walt Musial. Characterization of Offshore Wind Resources in the Contiguous United States. North American Wind Energy Academy (NAWEA). Ames, Iowa. September 26-29, 2017.
 - T9: Caleb Phillips, Jason Fields, Shawn Sheng, Andy Clifton, Monte Lunacek, Joseph Lee. Operational Assessment for Wind Plant Performance. North America Wind Power Industry Big Data and IoT Forum (3rd Annual). Boston, Massachusetts. May 30-31, 2017.
 - T8: John Perkins, Andriy Zakutayev, Caleb Phillips, Jacob Hinkle, Robert White, Kristin Munch, Marcus Schwarting. Transforming Data into Knowledge Using Machine Learning Applied to Experimental Data. Materials Research Society (MRS). MRS Meeting. Spring, 2017.
 - T7: Martin L. Green, Zachary T. Trautt, Jason Hattrick-Simpers, Andriy Zakutayev, John Perkins, Caleb Phillips, Apurva Mehta. High Throughput Experimental Materials Collaboratory (HTEM-C). Materials Research Society (MRS). MRS Meeting. Spring, 2017.
 - T6: Nicholas Juul, Grant Lipman, David Pomeranz, Caleb Phillips, Patrick Burns, Mary Cheffers, Kristina Evans, Carrie Jurkiewicz, Peter Hackett. Dynamic Pulmonary Function Tests As A Predictor of Acute Mountain Sickness. Hypoxia 2017. Lake Louise, Canada. February 7-8, 2017.
 - T5: Caleb Phillips, Bruce Bugbee. Streaming Sensor Data and Data Science for Wind Energy. National Renewable Energy Laboratory Drivetrain Reliability Collaborative (DRC) Meeting. Golden, Colorado. February 20-21, 2017.
 - T4: Caleb Phillips, Hilary Egan, Bruce Bugbee. Prediction and Characterization of Application Power Use in a High Performance Computing Environment. [HPM 2016: HPC Power Management, Knowledge Discovery](#). Invited Talk. Thursday, August 25, 2016. Hanover, Maryland.
 - T3: Hilary Egan, Caleb Phillips, Bruce Bugbee. Power Prediction and Scheduling. Invited Poster. US DOE CSGF Poster Session. July, 2016.
 - T2: Caleb Phillips, Douglas Sicker, and Dirk Grunwald. GENI WiMax: Wireless Coverage Mapping using Geostatistical Techniques. Invited Demo. Global Environment for Networking Innovation Conference 12 (GEC 12). Kansas City, Missouri. November 2-4, 2011.
 - T1: Caleb Phillips. Geostatistical Techniques for Practical Wireless Coverage Mapping. ACM MobiSys Ph.D. Forum. Washington, DC. June 28, 2011. Best Presentation Award.

Technical Reports

- R20: Peter C. St. John, Caleb Phillips, Travis W. Kemper, A. Nolan Wilson, Michael F. Crowley, Mark R. Nimlos, Ross E. Larsen. Message-passing neural networks for high-throughput polymer screening. arXiv: [\[download\]](#)
- R19: JoAnne Berkenkamp, Caleb Phillips. Modeling the Potential to Increase Food Rescue: Denver, New York City, and Nashville. Natural Resources Defense Council (NRDC). October, 2017. R-17-09-B. [\[download\]](#)

- R18: Caleb Phillips, JoAnne Berkenkamp, Amy Moore-Shiple, Jacqueline Cameron, Madeline Keating, Reuben Gregory, Satchel Spencer. Food Rescue Potential: A Study of Three US Cities. Natural Resources Defense Council (NRDC). May 24, 2017. Available upon request: jberkenkamp@nrdc.org.
- R17: Caleb Phillips, Rhonda Hoenigman, Hana Dansky. City of Boulder: Food Waste Audit. Report for the City of Boulder. Boulder Food Rescue. February 3, 2016. [\[download\]](#)
- R16: Adam Duran, Caleb Phillips, Arnaud Konan, Kenneth Kelly. The Development of Vocational Vehicle Drive Cycles and Segmentation. National Renewable Energy Laboratory. Technical Report. NREL/TP-5400-65921. July, 2016.
- R15: Ryan Elmore, Kenny Gruchalla, Caleb Phillips, Avi Purkayastha, Nick Wunder. An Analysis of Application Power and Schedule Composition in a High Performance Computing Environment. National Renewable Energy Laboratory. Technical Report. NREL/TP-2C00-65392. January, 2016. [\[download\]](#)
- R14: Eungsoo Kim, Lance Manuel, Milan Curcic, Shuyi S. Chen, Caleb Phillips and Paul Veers. On the Use of Coupled Wind, Wave, and Current Fields in the Simulation of Loads on Bottom-Supported Offshore Wind Turbines during Hurricanes. Technical Report. NREL/TP-5000-65283. June, 2016. [\[download\]](#)
- R13: Robert Crimi, Elanor Hoak, Ishita Srivastava, Jesse Wisniewski, Jonathan Blackstock, Keerthi Chikalbettu Pai, Melissa Bica, Michelle Bray, Mikhail Chowdhury, Monal Narasimhamurthy, Nika Shafranov, Sachin Muralidhara, Satchel Spencer, Saurabh Sood. Projects in Geospatial Data Analysis: Spring 2016. Editor: Caleb Phillips. University of Colorado. Computer Science Technical Reports. Paper 1036. [\[download\]](#)
- R12: Pieter Gagnon, Robert Margolis, Jennifer Melius, Caleb Phillips, and Ryan Elmore. Rooftop Solar Photovoltaic Technical Potential in the United States: A Detailed Assessment. National Renewable Energy Laboratory. Technical Report. NREL/TP-6A20-65298. January, 2016. [\[download\]](#)
- R11: Mohammad Alasmary, Landon Bedell, Tom Erickson, Joshua Ferge, Taylor Graham, Amir Kashpazha, Hannah Keller, Hui Soon Kim, David Levin, John Raesly, Forrest Tagg Ridler, Stephen Thoma. Projects in Geospatial Data Analysis: Spring 2015. Editor: Caleb Phillips. University of Colorado. Computer Science Technical Reports. Paper 1035. [\[download\]](#)
- R10: Caleb Phillips, Rhonda Hoenigman, Shari Leyshon, and Becky Higbee. Nutrition and very perishable food rescue: a study on the contributions of fresh produce to one food relief agency in Boulder, Colorado. Technical Report. Boulder Food Rescue, Inc. October 30, 2012.
- R9: Caleb Phillips, Douglas Sicker, and Dirk Grunwald. The Stability of the Longley-Rice Irregular Terrain Model for Typical Problems. University of Colorado at Boulder, Tech. Report. CU-CS-1086-11. September, 2011. [\[download\]](#)
- R8: Caleb Phillips, Rhonda Hoenigman, Shari Leyshon, and Becky Higbee. Nutrition and very perishable food rescue: a study on the contributions of fresh produce to one food relief agency in Boulder, Colorado. Technical Report. Boulder Food Rescue, Inc. October 30, 2012.
- R7: Caleb Phillips, Rhonda Hoenigman, and Becky Higbee. Food Redistribution as Optimization. University of Colorado at Boulder, Tech. Report. CU-CS-1085-11. September, 2011. [\[download\]](#)
- T6: Caleb Phillips, Lee Becker, and Elizabeth Bradley. Strange Beta: An Assistance System for Indoor Rock Climbing Route Setting Using Chaotic Variations and Machine Learning. University of Colorado at Boulder, Tech. Report CU-CS-1088-11. October, 2011. [\[download\]](#)
- R5: Gary Yee, Caleb Phillips, Douglas Sicker, and Dirk Grunwald. Wireless Networking Optimizations for Studying Algorithm Interactions. University of Colorado at Boulder, Tech. Report. CU-CS-1070-10. 2010
- R4: Eric Anderson, Caleb Phillips, Gary Yee, Douglas Sicker, and Dirk Grunwald. Challenges in Deploying Steerable Wireless Testbeds. University of Colorado at Boulder, Tech. Report. CU-CS-1058-09. 2009. [\[download\]](#)
- T3: Caleb Phillips and Elizabeth Bradley. Strange Beta: Chaotic Variations for Indoor Rock Climbing Route Setting. University of Colorado at Boulder, Tech. Report. CU-CS-1057-09. 2009. [\[download\]](#)
- R2: Eric Anderson, Caleb Phillips, Douglas Sicker, and Dirk Grunwald. Modeling Directionality in Wireless Networks. University of Colorado at Boulder, Tech. Report. CU-CS-1044-08. 2008. [\[download\]](#)
- R1: Caleb Phillips and Russell Senior. Unwire Portland Proof-of-Concept Network Testin*. UnwirePDX-Watch. May 23, 2007.

Published Datasets

[High Throughput Experimental Materials Database](#). The mission of the High Throughput Experimental Materials Database (HTEM DB) is to enable discovery of new materials with useful properties by releasing large amounts of high-quality experimental data to public. The HTEM DB contains information about materials obtained from high-throughput experiments at the National Renewable Energy Laboratory (NREL).

[WIND Toolkit Offshore Summary Dataset](#). This dataset contains summary statistics for offshore wind resources for the continental United States derived from the Wind Integration National Dataset (WIND) Toolkit.

[U.S. PV-Suitable Rooftop Resources](#). This dataset contains zipcode resolution estimates of suitable area on buildings' rooftops for photovoltaic deployment. 2016.

[HPC Power Measurements](#). Complete power and performance metric data of the [NREL Peregrine system](#) taken from two years of operational data. 2016.

[Combined Wind/Wave Hurricane Model](#). Time-aligned predictions of full field atmospheric data (WRF), ocean current data (HYCOM), and wave data (UMWM) for two major storms: Hurricane Ike and Hurricane Sandy. 2016.

[University of Colorado WiMax](#). Detailed signal quality and performance measurements for University of Colorado GENI WiMax testbed. 2012.

[University of Colorado LTE](#). Dataset of detailed Verizon LTE measurements in Boulder, Colorado. 2012.

[University of Colorado Wide Area Radio Testbed](#). Measurements of outdoor urban wireless propagation using the University of Colorado Wide Area Radio Testbed. 2011

[Portland Municipal Wireless](#). Dataset of coverage and performance-related information of MetroFi, a 802.11x municipal wireless mesh network in Portland, Oregon in 2007.

[University of Colorado Antenna Measurements](#). Dataset of signal strength collected from 2.4 GHz directional antenna. 2009.

[Wireless Traffic in the Wilds of Portland, Oregon](#). Dataset of wireless LAN traffic around Portland, Oregon using a commercial sniffer VWave. 2007.

Popular Press (Selected)

Study: when it rains, snake bites soar. BBC World News Service. Rylee Carlson. September 6, 2018. (Also: [CU Press Release](#), [Stanford Press Release](#), [Popular Science Article](#))

Power from wind: Open Data on AWS. Amazon Web Services (AWS) Big Data Blog. March 20, 2018. By Caleb Phillips, Caroline Draxl, John Readey, and Jordan Perr-Sauer. ([link](#))

Just How Much Food do Cities Squander. WIRED Magazine. October 27, 2017. By Jessica Leigh Hester. ([link](#))

Garbage Can Teach Us a Lot About Food Waste. Smithsonian Magazine. August 26, 2016. By Whitney Pipkin. ([link](#))

The Materials Genome Initiative: The First Five Years. The Whithouse Blog. (w/r/t virtual, high-throughput experimentation facility). August 2, 2016. ([link](#)).

Open data moving food from farm to fork. Engineering and Technology Magazine. April 18, 2016. By Rosemary Peters. ([link](#))

Rooftop solar panels could provide nearly half of US Power. April 14, 2016. By Prachi Patel. ([link](#))

An Easy Way to Prevent Blisters? Try Tape. New York Times. Well. Physical Education. April 13, 2016. By Gretchen Reynolds. ([link](#))

Boulder Food Rescue has growing appetite for slashing waste. Daily Camera. Boulder News. April 10, 2016. By Alex Burness. ([link](#))

How Many People Can the Plants in One City Feed? [FiveThirtyEight](#). Data Lab. December 16, 2014. By Anna Maria Barry-Jester. ([link](#))

Engineering An End To Food Waste With Smarter Logistics For Our Leftovers. Fast Company Co.Exist. January 30, 2014. By Stan Alcorn. ([link](#))

Found fruit: Online map is gateway to edibles. Associated Press. Donna Bryson. Syndicated in newspapers worldwide ([list](#)), including the Denver Post, San Francisco Chronicle, Washington Post, Calgary Herald, and Taiwan News. ([link](#))

Chaos Gives Rock Climbing a Leg Up. September 12th, 2012. Santa Fe Institute News Release. ([link](#))

Climbing with Chaos. *KUNC*. August 5th, 2012. Interview with Jessica McDonald. ([link](#))

Multi-Discipline Research Makes a Big Impact. February 2nd, 2012. *University of Colorado Biofrontiers Institute*. ([link](#)).

CU-Boulder researchers find food rescue can feed the hungry. *Boulder Daily Camera*. October 7th, 2011. By staff writer Heath Urie. ([link](#))

Off The Wall: Climbing With Chaos. By Caleb Phillips. Climbing Magazine. No. 282. October, 2009.

Teaching

Open Projects in Data Science. University of Colorado, Fall 2019. Co-taught with Lindy Williams.

Geospatial Data Analysis (CSCI 4830/7000). University of Colorado, Spring 2016.

Geospatial Data Analysis (CSCI 4830/7000). University of Colorado, Spring 2015.

National Science Foundation (NSF) [Graduate Teaching](#) (GK-12) Fellow. University of Colorado, Boulder/Boulder Highschool. 2010 - 2012.

National Science Foundation (NSF) [Research Experiences for Undergraduates](#) (REU) Mentor/Advisor. Two Students: Mike Ton and Erik Bergal. University of Colorado, Boulder. Spring 2011 - 2012.

Introduction to Unix System Administration (CSCI 4113). Instructor. University of Colorado, Boulder. Spring, 2010.

Introduction to Programming (CSCI 1300). Teaching Assistant. University of Colorado, Boulder. Spring, 2010.

Advising

[Melissa Queen](#). US Department of Energy. Computational Science Graduate Research Fellow. University of Washington. Practicum Co-Advisor with Kristi Potter. Summer, 2019.

[Grace Johnson](#). US Department of Energy. Computational Science Graduate Research Fellow. Stanford. Practicum Co-Advisor with Ross Larson. Summer, 2019.

[Yanbo Ge](#). National Renewable Energy Laboratory. Postdoctoral Researcher. 2019-2021.

[Harshil Kamdar](#). US Department of Energy. Computational Science Graduate Research Fellow. Harvard. Practicum Advisor. Summer, 2018.

[Jordan Perr-Sauer](#). National Renewable Energy Laboratory. Research Participant Program (RPP). University of Colorado, Denver. Data Science Intern. 2017.

[Alexander Van Roijen](#). US Department of Energy. Science Undergraduate Laboratory Internships (SULI). SUNY Binghamton. Summer, 2017.

Rafael Orozco. US Department of Energy. Science Undergraduate Laboratory Internships (SULI). University of Arizona. Summer, 2017.

[Marcus Schwarting](#). US Department of Energy. Science Undergraduate Laboratory Internships (SULI). University of Louisville. Co-mentored with Andriy Zakutayev. Spring, 2016, Fall, 2016, and Summer, 2017.

[Hilary Egan](#). US Department of Energy. Computational Science Graduate Research Fellow. University of Colorado, Boulder. Practicum Advisor. Spring, 2016.

[Austin Arrington](#). State University of New York (SUNY) - College of Environmental Science and Forestry. Master of Science Thesis, Steering Committee. 2016.

[Kalvin Ogbuefi](#) - US Department of Energy. Science Undergraduate Laboratory Internships (SULI). Summer, 2015.

Zach Doyle - Casey Feldman Foundation [Computer Science/Non-Profit Fellowship](#). University of Colorado, Boulder Food Rescue. 2014.

[Sean Weise](#) - Casey Feldman Foundation [Computer Science/Non-Profit Fellowship](#) Mentor. University of Colorado, Boulder Food Rescue. 2012.

[Helen Katich](#). INVST Community Leadership Program. University of Colorado, Boulder Food Rescue. 2012.

[Nora Leccese](#). INVST Community Leadership Program. University of Colorado, Boulder Food Rescue. 2012.

Awards

National Renewable Energy Laboratory. Chairman's Award. November, 2018.

National Renewable Energy Laboratory. Employee of the Month. December, 2016.

National Renewable Energy Laboratory. President's Award. 2015.

University of Colorado. Computer Science Department. Outstanding Research Award. 2012.

[E-Town E-Cheivement Award](#). Boulder Food Rescue. 2012.

University of Colorado. Campus Sustainability Award. Boulder Food Rescue. Partnership for Sustainability. 2012.

University of Colorado. Graduate School. Exceptional Research Nomination. 2011.

ACM MobiSys Ph.D. Forum. Best Presentation Award. 2011.

Department of Computer Science. Outstanding Teaching Assistant. Spring, 2010.

Department of Computer Science. Research and Community Development Award. 2009.

Grants and Fellowships

Department of Energy. Vehicle Technologies Office. ATHENA: Advancing Transportation Hubs' Efficiency Using Novel Analytics. \$5,000,000. 2018-2021. [Press release](#). [Website](#).

Department of Energy. Wind Energy Technology Office - Lab Call. Distributed Wind: Tools Assessing Performance. Researcher and Co-PI with Heidi Tinnesand and Michael Lawson. \$1,500,000. 2018-2019.

Department of Energy. Vehicle Technology Office - Lab Call. Livewire - Data Management Platform for Energy Efficient Mobility Systems. \$2,000,000. Researcher and Co-PI with Johanna Levene. 2018-2020.

National Renewable Energy Laboratory (NREL) Model and Tool Investment Program (MTI). Wind Integration National Dataset (WIND) Toolkit Maintenance. Researcher and Co-PI with Caroline Draxl. 2017.

National Renewable Energy Laboratory (NREL) Laboratory Directed Research & Development Program (LDRD). High-Throughput Experimental Materials Science Virtual Laboratory. Researcher and Co-PI with Andriy Zakutayev. 2017.

National Science Foundation (NSF) Global Environment for Networking Innovation (GENI). Researcher/Network Engineer. University of Colorado, Boulder. GENI WiMax Project. 2010-2011.

National Science Foundation (NSF) [East Asia Pacific Summer Institute](#) (EAPSI) PI/Fellow. University of Waikato, New Zealand. Summer (Winter), 2010.

Academic Service Positions

[High-Throughput Experimental Materials Collaboratory](#). National Institute of Standards and Technology (NIST). Workshop: Gaithersburg, MD. February 28 - March 2nd, 2018.

Energy Efficient High Performance Computing Working Group Workshop at Supercomputing 2016. November 13, 2016. Organizing Committee. [Program](#).

ACM MobiSys 2012 Ph.D. Forum Workshop Chair. June, 2012.

University of Colorado. Department of Computer Science, Graduate Committee Senior Student Representative, 2010-2012.

University of Colorado. Department of Computer Science, Social Committee Chair, 2009-2011.