Lindsey J. Heagy

email lheagy@eos.ubc.ca
phone 604-836-2715

Education

2012 – current **Doctor of Philosophy in Geophysics**
University of British Columbia
supervised by Dr. Douglas Oldenburg

2012 **Bachelor of Science with Honors in Geophysics**
University of Alberta

Professional Experience

April 2016 – current **Consultant (part-time)**
Aranz Geo Canada Limited
Calgary, AB

November 2015 – April 2016 **Computational Geophysicist (part-time)**
3point Science Inc
Calgary, AB

June 2014 – August 2014 **Geophysics Intern**
Schlumberger Doll Research
Boston, MA

June 2013 – August 2013 **Geophysics Intern**
Schlumberger Electromagnetic Imaging
Richmond, CA

May 2012 – August 2012 **Geophysics Summer Student**
ConocoPhillips Canada
Calgary, AB

May 2011 – August 2011 **Undergraduate Research Intern**
Alfred Wegener Institute of Polar and Marine Research
Bremerhaven, Germany

Teaching Assistantships

2013 – 2016 **EOSC 350: Environmental, Geotechnical, and Exploration Geophysics I**
University of British Columbia
taught by Dr. Douglas Oldenburg

2015 **Directed Studies: Inversion in Applied Geophysics**
University of British Columbia
taught by Dr. Douglas Oldenburg

2012 – 2013 **EOSC 354: Analysis of Time Series and Inverse Theory for Earth Scientists**
University of British Columbia
taught by Dr. Michael Bostock

Service

2017 **Canada Foundation for Innovation (CFI) Grant Application:**
Syzygy Data & Computing, a CFI Cyberinfrastructure Proposal
Principal Investigator: Dr. Michael Lamoureux, University of Calgary
Proposal Committee Member
Syzygy: http://syzygy.ca/, CFI: https://www.innovation.ca/

2017 **Society of Exploration Geophysics Distinguished Instructor Short Course 2017**
Geophysical Electromagnetics: Fundamentals and Applications by Dr. Douglas Oldenburg
Support Instructor
http://disc2017.geosci.xyz

2017 **JupyterCon**
August 22-25, New York, NY
Program Committee Member
https://conferences.oreilly.com/jupyter/jup-ny

2016 **Banff International Research Station: Geophysical Simulation and Inversion**
August 22-25, Banff, AB
Supporting Organizer with Dr. Douglas Oldenburg, Dr. Adam Pidlisecky and Rowan Cockett
http://www.birs.ca/events/2016/2-day-workshops/16w2695

Outreach

2014 — **GeoSci.xyz**: online interactive textbooks for geophysics
Editor and contributor
http://geosci.xyz

2013 — **SimPEG**: software for Simulation and Parameter Estimation in Geophysics
Core developer and contributor
http://simpeg.xyz

Publications

Peer Reviewed Publications

1. Caudillo-Mata, L. A., E. Haber, **L. J. Heagy**, and C. Schwarzbach, 2017, A framework for the upscaling of the electrical conductivity in the quasi-static maxwells equations: Journal of Computational and Applied Mathematics, **317**, 388 – 402

2. Cockett, R., S. Kang, **L. J. Heagy**, A. Pidlisecky, and D. W. Oldenburg, 2015a, Simpeg: An open source framework for simulation and gradient based parameter estimation in geophysical applications: Computers & Geosciences, **85**, 142–154

Peer Reviewed Publications (submitted or in review)

1. **Heagy, L. J.**, R. Cockett, S. Kang, G. K. Rosenkjaer, and D. W. Oldenburg, 2016a, A framework for simulation and inversion in electromagnetics (submitted to computers and geosciences): arXiv preprint arXiv:1610.00804

Non Peer Reviewed Publications

1. Cockett, R., **L. J. Heagy**, and D. W. Oldenburg, 2016, Pixels and their neighbors: Finite volume: The Leading Edge, **35**, 703–706

Patents

1. Wilt, M., N. Cuevas, and **L. J. Heagy**, 2014a, Determining proppant and fluid distribution. (US Patent App. 14/494,313)

Conference Proceedings

(∗ : invited, † : award)

1. **Heagy, L. J.**, R. Cockett, and D. W. Oldenburg, 2017, Modular electromagnetic simulations with applications to steel cased wells, *in* Proceedings of the 6th International Symposium on Three-Dimensional Electromagnetics: 125–129

2. * Kang, S., R. Cockett, **L. J. Heagy**, and D. W. Oldenburg, 2016, Practices to enable the geophysical research spectrum: from fundamentals to applications: Presented at the 2016 AGU Fall Meeting

3. * **Heagy, L. J.**, and D. W. Oldenburg, 2016b, Examining the impact of steel cased wells on electromagnetic signals: Presented at the 2016 AGU Fall Meeting

4. * **Heagy, L. J.**, R. Cockett, and D. W. Oldenburg, 2016c, Geosci: Practices to collaboratively build online resources for geophysics education: Presented at the 2016 AGU Fall Meeting

5. Yang, D., D. W. Oldenburg, and **L. J. Heagy**, 2016, 3d dc resistivity modeling of steel casing for reservoir monitoring using equivalent resistor network, *in* SEG Technical Program Expanded Abstracts 2016: Society of Exploration Geophysicists, 932–936

6. **Heagy, L. J.**, R. Cockett, S. Kang, G. K. Rosenkjaer, and D. W. Oldenburg, 2015b, simpegem: An open-source resource for simulation and parameter estimation problems in electromagnetic geophysics: Presented at the 2015 AGU Fall Meeting

7. **Heagy, L. J.**, R. Cockett, S. Kang, and D. W. Oldenburg, 2015a, Real simulation tools in introductory courses: packaging and repurposing our research code.: Presented at the 2015 AGU Fall Meeting

8. Cockett, R., **L. J. Heagy**, S. Kang, and G. K. Rosenkjaer, 2015b, Development practices and lessons learned in developing simpeg: Presented at the 2015 AGU Fall Meeting

9. **Heagy, L. J.**, R. Cockett, D. W. Oldenburg, and M. Wilt, 2015c, Modelling electromagnetic problems in the presence of cased wells, *in* SEG Technical Program Expanded Abstracts 2015: 699–703

10. Kang, S., R. Cockett, **L. J. Heagy**, and D. W. Oldenburg, 2015, Moving between dimensions in electromagnetic inversions, *in* SEG Technical Program Expanded Abstracts 2015: 5000–5004

11. Cockett, R., S. Kang, and **L. J. Heagy**, 2014, Simpeg: An open-source framework for geophysical simulations and inverse problems: AGU Fall Meeting Abstracts, 07

12. **Heagy, L. J.**, A. R. Cockett, and D. W. Oldenburg, 2014a, Parametrized inversion framework for proppant volume in a hydraulically fractured reservoir, *in* SEG Technical Program Expanded Abstracts 2014: 865–869

13. Caudillo-Mata, L., E. Haber, **L. J. Heagy**, and D. W. Oldenburg, 2014, Numerical upscaling of electrical conductivity: A problem specific approach to generate coarse-scale models, *in* SEG Technical Program Expanded Abstracts 2014: 680–684

14. Fournier, D., **L. J. Heagy**, N. Corcoran, D. Cowan, S. G. R. Devriese, D. Bild-Enkin, K. Davis, S. Kang, D. Marchant, M. S. McMillan, M. Mitchell, G. K. Rosenkjar, D. Yang, and D. W. Oldenburg, 2014, Multi-em systems inversion - towards a common conductivity model for the tli kwi cho complex, *in* SEG Technical Program Expanded Abstracts 2014: 1795–1799

15. Devriese, S. G. R., N. Corcoran, D. Cowan, K. Davis, D. Bild-Enkin, D. Fournier, **L. J. Heagy**, S. Kang, D. Marchant, M. S. McMillan, M. Mitchell, G. K. Rosenkjar, D. Yang, and D. W. Oldenburg, 2014, Magnetic inversion of three airborne data sets over the tli kwi cho kimberlite complex, *in* SEG Technical Program Expanded Abstracts 2014: 1790–1794

16. Wilt, M., **L. J. Heagy**, and J. Chen, 2014b, Hydrofracture mapping and monitoring with borehole electromagnetic (em) methods: Presented at the 76th EAGE Conference and Exhibition 2014

17. † **Heagy, L. J.**, D. W. Oldenburg, and J. Chen, 2014b, Where does the proppant go? examining the application of electromagnetic methods for hydraulic fracture characterization: Presented at the GeoConvention 2014, CSEG
    † Student Honourable Mention Integrated Poster

18. † **Heagy, L. J.**, and D. W. Oldenburg, 2013, Investigating the potential of using conductive or permeable proppant particles for hydraulic fracture characterization, *in* SEG Technical Program Expanded Abstracts 2013: 576–580
    † Awards of Merit (Best Student Paper, Annual Meeting)

Other Conference Presentations

1. **Heagy, L. J.**, 2016, Using open source tools to refactor geoscience education: Presented at the SciPy 2016, Austin, TX, https://youtu.be/IW2LDsevvDk

2. **Heagy, L. J.**, 2015, Using python to span the gap between education, research, and industry applications in geophysics: Presented at the SciPy 2015 Conference in Austin, TX, https://youtu.be/4msHJMBvzaI

3. Rosenkjaer, G. K., **L. J. Heagy**, R. Cockett, S. Kang, and D. W. Oldenburg, 2015, Practical integration of processing, inversion and visualization of magnetotelluric geophysical data: Presented at the SciPy 2015 Conference in Austin, TX

4. * **Heagy, L. J.**, D. W. Oldenburg, M. Wilt, and J. Chen, 2014c, Using electromagnetics to delineate proppant distribution in a hydraulically fractured reservoir: Presented at the SEG Development and Production Forum, Santa Rosa CA
    * Invited to "Best of the Development and Production Forum" at the SEG 2014 Annual Meeting

Awards and Scholarships

2013–2016	NSERC Vanier Scholarship
2014	Four Year Fellowship (FYF) for PhD Students

2013	Alexander Graham Bell Canada Graduate Scholarship
2012	W.H. Mathews Scholarship
2012	Lieutenant-Governors Gold Medal
2012	Governor Generals Silver Medal
2012	APEGGA Past Presidents Medal in Geophysics
2010, 2011	The David K Robertson Award in Geophysics and Geology
2010, 2011	The Encana Geology and Geophysics Scholarship
2011	The APEGGA Scholarship in Geophysics
2009	Pearl Cuthbertson Memorial Award, University of Alberta
2009	Pearson Book Prize for Writing Studies in Science 100, University of Alberta
2009 – 2011	(3) Louis McKinney Post Secondary Scholarship, Government of Alberta
2009 – 2012	(4) Dean's Honor Roll, University of Alberta

Professional Development

Conferences Attended

2017	EM-6: The 6th International Symposium in Three-Dimensional Electromagnetics
2016	FORCE11: The Future of Research Communications and e-Scholarship Meeting
2015 – 2016	(2) SciPy Conference
2014 – 2015	(2) British Columbia Geophysical Society EM Workshop
2014	SEG Development and Production Forum
2014	GeoConvention
2014 – 2016	(3) AGU Annual General Meeting
2011 – 2016	(6) Society of Exploration Geophysics Annual Meeting

Courses Attended

2015	Presenting Data and Information presented by Edward Tufte
2014	SEG Distinguished Instructor Short Course: Microseismic Imaging of Hydraulic Fracturing: Improved Engineering of Unconventional Shale Reservoirs presented by Shawn Maxwell