

Tiegan E. Hobbs

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Education

PhD Geophysics (2019)

School of Earth & Atmospheric Sciences, Georgia Institute of Technology

Thesis: *Using Dense Geodetic and Seismic Instrumentation to Characterize Postseismic Behavior of the Nicoya Megathrust* (Andrew Newman)

MSCE Geotechnical Engineering (2019)

School of Civil & Environmental Engineering, Georgia Institute of Technology

MSc Geophysics (2014)

School of Earth & Ocean Sciences, University of Victoria

Thesis: *Insights from the Mw 7.8 Haida Gwaii Earthquake: Static Stress Modelling and Empirical Green's Function Analysis* (John Cassidy and Stan Dosso)

BSc Geology (2012)

Department of Earth & Planetary Science, McGill University

Honours Thesis: *Seismic Anisotropy in Southern Quebec using SkS Splitting* (Fiona Darbyshire)

Published Work

Hobbs, T.E., Newman, A.V., Protti, M. (2019), *Enigmatic Upper-Plate Sliver Transport Paused by Megathrust Earthquake and Afterslip*. Earth and Planetary Science Letters, PII:S0012-821X(19)30285-7.

Hobbs, T.E., Kyriakopoulos, C., Newman, A.V., Protti, M., Yao, D. (2017), *Large and Primarily Updip Afterslip following the 2012 Mw 7.6 Nicoya, Costa Rica earthquake*. Journal of Geophysical Research: Solid Earth, 122, doi:10.1002/2017JB014035.

Yao, D., Walter, J.I., Meng, X., **Hobbs, T.E.**, Peng, Z., Newman, A.V., Schwartz, S.Y., Protti, M. (2017), *Detailed Spatio-Temporal Evolution of Microseismicity and Repeating Earthquakes following the 2012 Mw7.6 Nicoya Earthquake*. Journal of Geophysical Research: Solid Earth, doi:10.1002/2016JB013632.

Bird, A.L., Cassidy, J.F., Kao, H., Leonard, L.J., Allen, T.I., Nikolaishen, L., Dragert, H., **Hobbs, T.E.**, Farahbod, A.M., Bednarski, J.M., James, T.S., Lamontagne, M., Shan, S., Hyndman, R., Fine, I.V., Cherniawsky, J.Y., Brillon, C., Wang, K., and Rogers, G.C., (2016), *The October 2012 magnitude (MW) 7.8 earthquake offshore Haida Gwaii, Canada*. Summary of the Bulletin of the International Seismological Centre, **49**, 7-12.

Darbyshire, F.A., Bastow, I.D., Forte, A.M., **Hobbs, T.E.**, Calvel, A., Gonzalez-Monteza, A., Schow, B. (2015), *Variability and Origin of Seismic Anisotropy Across Eastern Canada: Evidence from Shear-wave Splitting Measurements*. Journal of Geophysical Research: Solid Earth, **120**, 8404–8421, doi:10.1002/2015JB012228.

Hobbs, T.E., Cassidy, J.F., Dosso, S.E., and Brillon, C. (2015), *Coulomb Stress Changes Following the Mw 7.8 2012 Haida Gwaii, Canada Earthquake: Implications for Seismic Hazard*. Bulletin of the Seismological Society of America, **105**, 2B. doi: 10.1785/0120140158.

Hobbs, T.E., Cassidy, J.F., and Dosso, S.E. (2015), *Rupture Process of the Mw 7.8 2012 Haida Gwaii Earthquake from an Empirical Green's Function Method*. Bulletin of the Seismological Society of America, **105**, 2B. doi: 10.1785/0120140175.

Hobbs, T.E. and Darbyshire, F.A (2012), *Point Estimates of Crustal Thickness Using Receiver Function Stacking*. McGill Science Undergraduate Research Journal, **7**, p. 19–25.

Work In Preparation

Hobbs, T.E., Yao, D., Newman, A.V., Peng, Z., Protti, M. (2020), *Investigating Apparent Anticorrelation of Repeating Aftershocks and Afterslip in Nicoya, Costa Rica*. Journal of Geophysical Research — In Prep.

Hobbs, T.E., Frost, J.D., Sadegh, M. (2020), *Multivariate Analysis of Landslide Triggers Along the Big Sur Coastline, California*. Geophysical Research Letters — In Prep.

Hobbs, T.E., Journeay, J.M., Rao, A., Silva, V., Cassidy, J. (2020), *Benchmarking Canada's National Seismic Risk Model*. Earthquake Spectra — In Prep.

Conference Proceedings

Hobbs, T.E., Journeay, J.M., Bird, A.L. *Assessing and Communicating Risk from Low-Activity Faults in British Columbia, Canada*. 2019 SAGE/GAGE Workshop, Portland, OR, USA, 2019. *Poster Presentation*.

Hobbs, T.E., Newman, A.V., Protti, M. *Unexpected forearc sliver translation during relocking of the Nicoya, Costa Rica megathrust*. Megathrust Modeling Workshop (Modeling Collaboratory for Subduction Research Coordination Network), Eugene, OR, USA, 2019. *Poster Presentation*.

Hobbs, T.E. *Seismicity in British Columbia*. Union of British Columbia Municipalities Convention, Vancouver, BC, Canada, 2019. *Invited Presentation*.

Newman, A.V., **Hobbs, T.E.**, Kyriakopoulos, C., Protti, M., Dixon, T., Schwartz, S.Y. *Translating megathrust behavior into the Nicoya Crust, revealing a dynamic dance across the seismic cycle*. Annual Meeting of the Seismological Society of America, Seattle, WA, USA, 2019. *Oral Presentation*.

Schmidt, B.E., Lawrence, J., Meister, M., Dichek, D., Ramey, C., Spears, A., Mullen, A., Bryson, F., **Hobbs, T.E.** *In Situ Observations of the Erebus Glacier Tongue Grounding Zone by the Icefin HROV*. European Geophysical Union General Assembly, Vienna, Austria, 2019. *Oral Presentation*.

Hobbs, T.E., Yao, D., Newman, A.V., Peng, Z., Protti, M. *Investigating Apparent Anticorrelation of Repeating Aftershocks and Afterslip in Nicoya, Costa Rica*. American Geophysical Union Fall Meeting, Washington, DC, USA, 2018. ID: T52B-03. *Oral Presentation*.

Hobbs, T.E., Newman, A.V., Protti, M. *Transient Forearc Sliver Transport Found During Postseismic Recovery*. Wegener 2018: 19th General Assembly of WEGENER, Grenoble, France, 2018. *Oral Presentation*.

Hobbs, T.E., Newman, A.V., Protti, M. *Episodic forearc sliver translation during relocking of the Nicoya, Costa Rica megathrust: an unexpected observation*. Joint Meeting of the Latin American and Caribbean Seismological Commission and the Seismological Society of America, Miami, FL, USA, 2018. *Invited Presentation*.

Hobbs, T.E., Newman, A.V., Protti, M. *Unexpected forearc sliver translation during relocking of the Nicoya, Costa Rica megathrust*. UNAVCO Science Workshop, Boulder, CO, USA, 2018. *Poster Presentation*.

Hobbs, T.E., Newman, A.V., Protti, M. *Accelerated sliver transport during transition from postseismic to inter-seismic conditions*. American Geophysical Union Fall Meeting, New Orleans, LA, USA, 2017. ID: G43A-0902. *Poster Presentation*.

Voss, N.K., Liu, Z., **Hobbs, T.E.**, Schwartz, S.Y., Malservisi, R., Dixon, T., Protti, M. *Aseismic Slip Throughout the Earthquake Cycle in Nicoya Peninsula, Costa Rica*. American Geophysical Union Fall Meeting, New Orleans, LA, USA, 2017. ID: T13E-02. *Oral Presentation*.

Hobbs, T.E., Newman, A.V., and Peng, Z. *Defining the Temporal Relationship Between Afterslip and Aftershocks Using Dense Seismic and Geodetic Networks in Nicoya, Costa Rica*. Seismological Society of America Annual Meeting, Denver, CO, USA, 2017. *Oral Presentation*.

Hobbs, T.E., Kyriakopoulos, C., Newman, A.V., Yao, D., Dixon, T., Protti, M. *Recovering the Full Afterslip Following the 2012 Mw 7.6 Nicoya, Costa Rica Earthquake*. American Geophysical Union Fall Meeting, San Francisco, CA, USA, 2016. ID: 137120. *Oral Presentation*.

Newman, A.V., Yao, D., Kyriakopoulos, C., Moore-Driskell, M.M., **Hobbs, T.E.**, Peng, Z., Schwartz, S., Protti, M., Gonzalez, V. *The Possible Decapitation of a Megathrust Indenter: Evidence from Imaging of Time-dependent Microseismic Structures before and after the 2012 Mw 7.6 Nicoya, Costa Rica*. American Geophysical Union Fall Meeting, San Francisco, CA, USA, 2016. ID: 149139. *Oral Presentation*.

Newman, A.V., **Hobbs, T.E.**, Kyriakopoulos, C., Dixon, T., Schwartz, S.Y., Protti, M. *Partitioning of the Total Slip Signal through the Seismic Cycle: Results from the Nicoya Seismic Cycle Observatory (NSCO)*. Subduction Zone Observatory Workshop, Boise, ID, USA, 2016. *Poster Presentation*.

Hobbs, T.E., Newman, A.V., Yao, D., Protti, M. *Continued Trenchward Procession of Upper Plate GPS Sites Following the 2012 Mw 7.6 Nicoya Earthquake*. General Assembly of the Latin American and Caribbean Seismological Commission, San Jose, Costa Rica, 2016. Paper Number 230. *Oral Presentation*.

Walter, J.I., Kao, H., Meng, X., Peng, Z., **Hobbs, T.E.**, Dotray, P., Newman, A.V., Mulder, T. *Dynamic interactions between the October 28th 2012 Haida Gwaii and January 5th 2013 Craig earthquakes and other faults in Southeast Alaska*. American Geophysical Union Fall Meeting, San Francisco, CA, USA, 2015. Abstract ID: S13D-07. *Oral Presentation*.

Hobbs, T.E., Newman, A.V., Protti, M. *Continued Trenchward Procession of Upper Plate GPS Sites Following the 2012 Mw 7.6 Nicoya Earthquake*. American Geophysical Union Fall Meeting, San Francisco, CA, USA, 2015. Abstract ID: T43C-3017. *Poster Presentation*.

Newman, A.V., Kyriakopoulos, C., Feng, L., **Hobbs, T.E.**, Dixon, T.H., Malservisi, R., Protti, J.M. *The Continuum of Slip along the Subduction Megathrust: Observations and Understanding Gained from the Nicoya Seismic Cycle Observatory*. Seismological Society of America Annual Meeting, Pasadena, CA, USA, 2015. *Invited*.

Hobbs, T.E., Cassidy, J.C., and Dosso, S.E. *Possible Interactions between the 2012 Mw 7.8 Haida Gwaii Subduction Earthquake and the Transform Queen Charlotte Fault*. American Geophysical Union Fall Meeting, San Francisco, CA, USA, 2014. Abstract ID: S23A-4483. *Poster Presentation*.

Hobbs, T.E., Cassidy, J.C., and Dosso, S.E. *Rupture Properties of the Mw 7.7 2012 Haida Gwaii Earthquake from an Empirical Green's Function Method*. Seismological Society of America Annual Meeting, Anchorage, AK, USA, 2014. Abstract ID: 14-003. *Oral Presentation*.

Hobbs, T.E., Cassidy, J.C., and Dosso, S.E. *Coulomb Stress Changes Resulting from the Mw 7.7 2012 Haida Gwaii Earthquake*. Seismological Society of America Annual Meeting, Anchorage, AK, USA, 2014. Abstract ID: 14-002. *Poster Presentation*.

Hobbs, T.E., Brillon, C., Cassidy, J.C., Dosso, S.E., and Dragert, H. *Coulomb Stress Changes Following the Mw 7.7 2012 Haida Gwaii Earthquake*. Canadian Geophysical Union Annual Meeting, Saskatoon, SK, Canada, 2013. Abstract ID: 3D4.3--6606. *Oral Presentation*.

Hobbs, T.E., and Darbyshire, F.A. *SkS Splitting Measurement of Seismic Anisotropy in Southern & Central Quebec*. Canadian Geophysical Union Annual Meeting, Banff, AB, Canada, 2012. *Poster Presentation*.

Darbyshire, F.A., and **Hobbs, T.E.** *Crustal Thickness Variations Across Central and Southern Québec From Receiver Function Analysis*. Canadian Geophysical Union Annual Meeting, Banff, AB, Canada, 2011. *Poster Presentation*.

Hobbs, T.E., and Darbyshire, F.A. *Crustal Thickness Variations Across Eastern Canada and Maine From Receiver Function Analysis*. American Geophysical Union Fall Meeting, San Francisco, CA, USA, 2010. Abstract ID: T33D-2285. *Poster Presentation*.

Speaking Engagements

Hobbs, T.E., Journeay, M., Cassidy, J.C. *Earthquakes in British Columbia: Preparing for the 'Big One' and the 'Other Ones'*. Metro Vancouver Regional District & Regional Engineers Advisory Committee Utility Tabletop Exercise, Burnaby, BC, Canada, 2019.

Hobbs, T.E., Journeay, M. *An Earthquake Risk Profile of Canada: Knowledge to Inform Disaster Resilience Planning*. Director General Interdepartmental Table on Earthquake Risk, Government of Canada, Ottawa, ON, Canada, 2019.

Hobbs, T.E., Journeay, M. *Eastern Canada Earthquake Scenarios*. Earthquake Risk Modeling in Canada: From Knowledge to Action, London, ON, Canada, 2019.

Unrefereed Works

Hobbs, T.E. (2019), *Can science tell when a large earthquake will be followed by an even larger one?*, Temblor, <http://doi.org/10.32858/temblor.056>

- Hobbs, T.E.** (2019), *Over 66 million people participate in international ShakeOut; prompts evaluation of personal preparedness*, Temblor, <http://doi.org/10.32858/temblor.052>
- Hobbs, T.E.** (2019), *Indonesian “Black Swan” quake: a painful reminder of last year’s M 7.5 Palu shock*, Temblor, <http://doi.org/10.32858/temblor.044>
- Hobbs, T.E.** (2019), *August 1, 2019, magnitude-6.8 Chile earthquake reveals stress is building on the megathrust*, Temblor, <http://doi.org/10.32858/temblor.042>
- Hobbs, T.E.** (2019), *How Apollo 11’s moonquakes changed our understanding of earthquakes*, Temblor, <http://doi.org/10.32858/temblor.041>
- Stein, R.S., Rollins, C., Sevilgen, V. **Hobbs, T.E.** (2019), *M 7.1 SoCal earthquake triggers aftershocks up to 100 mi away: What’s next?*, Temblor, <http://doi.org/10.32858/temblor.038>
- Stein, R.S., **Hobbs, T.E.**, Rollins, C., Ely, G., Sevilgen, V., Toda, S. (2019), *Magnitude 7.1 earthquake rips northwest from the M6.4 just 34 hours later*, Temblor, <http://doi.org/10.32858/temblor.037>
- Hobbs, T.E.**, Rollins, C. (2019), *Earthquake Just North of Cascadia is Felt Along Canada’s West Coast*, Temblor, <http://doi.org/10.32858/temblor.036>
- Hobbs, T.E.**, Rollins, C. (2019), *Earthquake early warning system challenged by the largest SoCal shock in 20 years*, Temblor, <http://doi.org/10.32858/temblor.035>
- Hobbs, T.E.** (2019), *The first Marsquake is recorded*, Temblor, <http://doi.org/10.32858/temblor.031>
- Hobbs, T.E.**, Stein, R.S. (2019), *El Salvador Earthquake: A Moderate Event in An Area of Extreme Seismic Risk*, Temblor, <http://doi.org/10.32858/temblor.025>
- Hobbs, T.E.** (2019), *Deep earthquake in Peru is felt along the length of South America*, Temblor, <http://doi.org/10.32858/temblor.024>
- Hobbs, T.E.** (2019), *Large Earthquake in Papua New Guinea re-ruptures major fault in just 19 years: More to follow?*, Temblor, <http://doi.org/10.32858/temblor.022>
- Hobbs, T.E.** (2018 – present) *T. Hobbs Field Research Blog* Retrieved from <https://thobbsfield.wordpress.com>
- Hobbs, T.E.** (2018, October-December) *Planetary Habitability & Technology Blog* Retrieved from <https://nobusinesslikesnowbusiness.wordpress.com>
- Hobbs, T.E.** (2018, July 11-25) *Alaska Amphibious Community Seismic Experiment Blog* Retrieved from <https://alaskaamphibious.wordpress.com/2018/07/11/> ; <https://alaskaamphibious.wordpress.com/2018/07/18/>
- Hobbs, T.E.**, Toda, S. (2018), *Did Tuesday’s M 7.9 Kodiak earthquake nudge the Alaskan Megathrust closer to failure?*, Temblor, <http://doi.org/10.32858/temblor.005>
- Hobbs, T.E.** (2018, January 23) *M 7.9 Alaska earthquake strikes off the coast of Kodiak Island, triggering a tsunami and questions*. Retrieved from <http://temblor.net/earthquake-insights/m7-9-alaska-earthquake-strikes-off-the-coast-of-kodiak-island-triggering-a-tsunami-and-questions-6143/>

Techniques

GPS & seismic fieldwork	Risk Modelling (OpenQuake)	Coulomb stress analysis
H/V spectral ratio	Slope Stability Analysis	GIS Software
Surface wave dispersion	Empirical Green’s functions	Geodetic inversion
SkS splitting	Receiver function stacking	InSAR processing

Experience & Training

Postdoctoral Seismic Risk Scientist Natural Resources Canada, 2019-present

Consultant & Field Party Leader Europa Seismic Package Science Development Team, Washington Glacier Deployment (NASA ICEE-2), 2019-present

Field Technician RISEUP Planetary Habitability & Technology Field Work in Antarctica (NASA PSTAR), 2018

Apply-to-Sail Participant Alaska Amphibious Community Seismic Experiment (GeoPRISMS), 2018

Short Course Aftershock Forecasting (SSA), 2018

Short Course Probabilistic Seismic Hazard Analysis with Slab 2.0 (SSA), 2018

Teaching Assistant Georgia Institute of Technology, Earth & Atmospheric Sciences, 2015-2018

Short Course Communicating Science for Impact (UNAVCO), 2018

Short Course Gipsy-X User Training (JPL), 2017

Instructor, Georgia Tech 'Kids Interested in Discovering Science' Club, 2015-2017

Short Course Probabilistic Seismic Hazard Analysis (SSA), 2017

Short Course Advanced INSAR Processing (UNAVCO), 2015

Teaching Assistant University of Victoria, School of Earth & Ocean Sciences, 2012-2014

Research Assistant, University of British Columbia, Department of Civil Engineering, 2012

Short Course Practical Sequence Stratigraphy: Concepts and Applications (CSPG), 2012

Geological Assistant, Osisko Gold, 2011

Awards

Award for Outstanding Service

Georgia Institute of Technology, School of Earth and Atmospheric Sciences
2019

Student Presentation Honorable Mention

GeoPRISMS
2018

Student Presentation Award

Seismological Society of America
2018

NSERC Post-Graduate Doctoral Fellowship

Natural Sciences and Engineering Research Council of Canada
2016 – 2018

Kurt Frankel Award for Excellence in Field Work

Georgia Institute of Technology, School of Earth and Atmospheric Sciences
2017

Student Travel Award

Seismological Society of America
2017

Invitation for Dean's Lecture Series

University of Victoria, Faculty of Graduate Studies
2014

Fellowship for Graduate Students

University of Victoria, Faculty of Science
2012, 2013

Student Travel Award

Canadian Geophysical Union
2012, 2013

Introduction to Research Scholarship

GEOTOP, Montreal, Quebec

2012

Logan Award

McGill University, Faculty of Science

2011

Frederick M. Connell Award

McGill University, Faculty of Science

2011

Graham Scholarship in Science

McGill University, Faculty of Science

2011

Involvement

Curriculum Development, Master of Disaster Program

Emergency Management British Columbia

2019 – current

Scientist, Skype A Scientist Program

<https://www.skypeascientist.com/>

2018 – current

Coordinator, Georgia Tech Science Showcase Series

Ponce City Farmers Market, Atlanta, GA

2018

Science Coordinator, Graduate Student Symposium

Georgia Institute of Technology, School of Earth and Atmospheric Sciences

2017

Member, Society of Exploration Geophysicists

Georgia Institute of Technology Chapter

2015 – 2018

First Year Mentoring Chair, Graduates in Earth and Atmospheric Sciences Council

Georgia Institute of Technology

2015 – 2017

Vice President, Graduates in Earth and Atmospheric Sciences Council

Georgia Institute of Technology

2014 – 2016

Volunteer & Member, Planetary Society

Georgia Institute of Technology Chapter

2014 – 2016

Volunteer, 'Let's Talk Science' National Outreach Program

University of Victoria

2013 – 2014

Vice President External, Montereian Society

Department of Earth and Planetary Science's Undergraduate Student Council

McGill University

2010 – 2011

President, Environmental Residence Council

Vice President of Environment, University Residence Council

McGill University

2008 – 2009

Professional Organizations

American Geophysical Union (*AGU*)

Seismological Society of America (*SSA*)

Society of Exploration Geophysicists (*SEG*)

Latin American and Caribbean Seismological Coalition (*LACSC*)