

Stephen G. Mosher

CONTACT INFORMATION	Dept. of Earth and Environmental Sciences University of Ottawa 75 Laurier Avenue East Ottawa, Ontario K1N 6N5	Office: +1(613) 562-5700x6457 stephenmosher@protonmail.com uogeophysics.com
RESEARCH INTERESTS	Ocean-bottom seismometers, seismology, machine learning, signal processing	
SKILLS	Python, ObsPy, MATLAB, L ^A T _E X, Linux, Bash, Git, GMT, ArcGIS, basic French, basic Mandarin, basic HTML, basic CSS	
EDUCATION	<p>(1) Doctorate in Philosophy – Earth Sciences Jan. 2017 - Apr. 2021 University of Ottawa, Ottawa, Canada (P. Audet) • Thesis Title: Novel Applications of Neural Networks in Seismology</p> <p>(2) Master of Science – Earth Sciences Oct. 2016 University of Ottawa, Ottawa, Canada (P. Audet) • Thesis Title: P-Wave Study of the San Andreas Fault Near Parkfield, CA, From Ambient Noise Interferometry of Borehole Seismic Data</p> <p>(3) Bachelor of Science – Physics Apr. 2014 University of Ottawa, Ottawa, Canada • Hons. Thesis: Investigating Mantle Anisotropy Beneath The Explorer Plate Via Shear - Wave Splitting</p>	
RESEARCH ABROAD	<p>(1) University of California Santa Barbara (UCSB) Jan. – Apr. 2020 Supervisor Dr. Zach Eilon • Arranged for a short research term with Dr. Eilon at UCSB in order to investigate novel approaches to solving inverse problems with machine learning.</p>	
EMPLOYMENT	<p>(1) Teaching Assistantships University of Ottawa, Ottawa, Canada</p> <ul style="list-style-type: none">• PHY1300 The Big Bang and Beyond (Andrzej Czajkowski) Jan. – Apr. 2019• GEO3191 Applied Geophysics (Glenn Milne) Sep. – Dec. 2018• PHY2323 Electricity and Magnetism (Michel Godin) Jan. – Apr. 2018• GEO3352 Geological Data Analysis (Pascal Audet) Jan. – Apr. 2017• PHY2390 Astronomy (Nikolay Shtinkov) Sep. – Dec. 2016• GEO1301 The Earth and How it Works (Olivier Nadeau) Jan. – Apr. 2016 <p>(2) Field Work University of Ottawa, Ottawa, Canada July 2018</p> <ul style="list-style-type: none">• Network: Yukon-Northwest Seismic Network (YNSN)• Principal Investigator(s): Pascal Audet• Co-led field season• Performed software upgrades at 5 stations <p>LDEO Columbia University, New York, USA April 2018</p> <ul style="list-style-type: none">• Network: Pacific ORCA• Principal Investigator(s): Jim Gaherty, Göran Ekström, Zachary Eilon• Deployed ocean-bottom seismometers in the open ocean• Performed quality control of ship’s multibeam data• Deployed temperature probes to obtain accurate sound speed profiles <p>University of Ottawa, Ottawa, Canada July 2015</p> <ul style="list-style-type: none">• Network: YNSN• Principal Investigator(s): Pascal Audet• Installed seismometers in VSAT configurations• Assessed quality of telemetered data using a spectrum analyzer • Installations performed in remote areas	

PUBLICATIONS

- (1) **S.G. Mosher**, Z. Eilon, H. Janiszewski, and P. Audet, *Probabilistic Inversion of Seafloor Compliance for Oceanic Crustal Shear Velocity Structure Using Mixture Density Neural Networks*. Submitted to GJI: GJI-S-20-1152 (November, 2020).
- (2) **S.G. Mosher** and P. Audet, *Automatic Detection and Location of Seismic Events From Time-Delay Projection Mapping and Neural Network Classification*. *JGR: Solid Earth*, 125, e2020JB019426 (2020).
- (3) J. Gosselin, P. Audet, C. Estève, M. McLellan, **S.G. Mosher**, and A.J. Schaeffer, *Seismic evidence for megathrust fault-valve behavior during episodic tremor and slip*. *Science Advances*, Vol. 6, no. 4, eaay5174 DOI: 10.1126/sciadv.aay5174 (2020).
- (4) **S.G. Mosher**, C.-V. Christian, and R. Smith *Modelling the effects of stigma on leprosy*. *Mathematical Analysis and Applications in Modeling*. ICMAAM 2018. Springer Proceedings in Mathematics & Statistics, vol 302. Springer, Singapore (2020).
- (5) J. Russell, Z. Eilon, and **S.G. Mosher**, *OBSRange: A New Tool For The Precise Remote Location of Ocean-Bottom Seismometers*. *Seismological Research Letters*, DOI: 10.1785/0220180336 (2019).
- (6) **S.G. Mosher** and P. Audet, *Recovery of P-waves from ambient noise interferometry of borehole seismic data around the San Andreas fault in central California.*, *Bulletin of the Seismological Society of America*, DOI: 10.1785/0120160375 (2017).
- (7) **S.G. Mosher**, P. Audet and I. L'Heureux, *Seismic Evidence for Rotating Mantle Flow Around Subducting Slab Edge Associated with Oceanic Microplate Capture.*, *Geophysical Research Letters*, Vol. 41:13, 4548–4553 (2014).

AWARDS

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|------|---|-------------|
| (1) | Mitacs Globalink Research Award | 2020 |
| (2) | University of Ottawa Student Mobility Scholarship | 2020 |
| (3) | NSERC Michael Smith Foreign Study Supplement | 2020 |
| (4) | SEG Earl D. & Reba C. Griffin Memorial Scholarship | 2019 |
| (5) | NSERC CGS-D (2 years) | 2019 – 2021 |
| (6) | University of Ottawa Excellence Scholarship | 2019 – 2021 |
| (7) | Featured in the University of Ottawa's Annual Research Report | 2018 – 2019 |
| (8) | CSEG Foundation Award | 2019 |
| (9) | KEGS Collett Scholarship in Geophysics | 2018 – 2019 |
| | • Inaugural recipient | |
| (10) | Ontario Graduate Scholarship | 2017 – 2018 |
| (11) | University of Ottawa Excellence Scholarship | 2017 – 2018 |
| (12) | University of Ottawa Admission Scholarship | 2017 – 2021 |
| (13) | The Commission on Graduate Studies | 2016 |
| | • Awarded for best M.Sc. thesis in the Sciences | |
| | • M.Sc. thesis nominated by the department | |

CONFERENCE
PRESENTATIONS

- (1) H. Janiszewski, J. Russell, W. Hawley, Y.J. Tan, C. Lynner, J. Gaherty, Z. Eilon, **S.G. Mosher**, *10+ Years of Broadband OBS Data: Fresh Insights and Persistent Questions*, AGU Annual Fall Meeting (2020) - oral. San Francisco, CA
- (2) **S.G. Mosher** Z. Eilon, and P. Audet, *Inverting OBS compliance signals for oceanic crust and sediment velocity structure using mixture density neural networks*, JpGU-AGU Joint Meeting (2020) - oral. Chiba, Japan
- (3) **S.G. Mosher** and P. Audet, *Cross-Correlation Beamforming for Simultaneous Event Detection and Location in Conjunction With Logistic Regression for Event Discrimination.*, SSA Annual Meeting (2019) - oral. Seattle, WA
- (4) **S.G. Mosher** and P. Audet, *Characterizing Seismicity Offshore Cascadia by Applying Advanced Statistical Learning to Ocean-Bottom Seismic Data.*, KEGS Mini-Symposium (2018) - **invited**, oral. Toronto, ON.
- (5) **S.G. Mosher** and P. Audet, *Characterizing Seismicity Offshore Cascadia by Applying Advanced Statistical Learning to Ocean-Bottom Seismic Data.* KEGS Meeting (2018) - **invited**, oral. Ottawa, ON.
- (6) **S.G. Mosher** and P. Audet, *Detecting offshore seismicity in Cascadia using logistic regression applied to sub-arrays of ocean-bottom seismographs.*, AGU Annual Fall Meeting (2018) - poster. Washington, DC.
- (7) **S.G. Mosher** and P. Audet, *Classifying seismic noise and sources from OBS data using unsupervised machine learning*, AGU Annual Fall Meeting (2017) - poster. New Orleans, LA.
- (8) **S.G. Mosher** and P. Audet, *Unsupervised Machine Learning Clustering Applied to OBS Data*, Ocean-Bottom Seismograph Instrument Pool Symposium (2017) - poster. Portland, ME.
- (9) **S.G. Mosher** and P. Audet, *Seismic interferometry based tomographic imaging of the San Andreas Fault near Parkfield, CA*, Geological Association of Canada – Mineralogical Association of Canada Meeting (2016) - oral. Whitehorse, YT.
- (10) **S.G. Mosher** and P. Audet, *Body-Wave Scattering from Seismic Interferometry: Preliminary Results from the San Andreas Fault near Parkfield, California*, AGU Annual Fall Meeting (2015) - poster. San Francisco, CA.
- (11) **S.G. Mosher** and P. Audet, *Body-Wave Scattering from Seismic Interferometry: Preliminary Results from the San Andreas Fault near Parkfield, California*, **S.G. Mosher** and P. Audet, AGU-CGU Joint Meeting (2015) - poster. Montreal, QC.
- (12) **S.G. Mosher** and P. Audet and I. L'Heureux, *Mantle Flow Around Northernmost Cascadia from Seismic Anisotropy*, CGU Joint Annual Meeting (2014) - poster. Banff, AB.

REFERENCES

- [References available upon request](#)