

David Barclay

Dalhousie University, Department of Oceanography
1355 Oxford Street, PO Box 15000
Halifax, Nova Scotia, B3H 4R2
dbarclay@dal.ca, (902) 494-4164
noise.phys.ocean.dal.ca

Education

- 2011 Scripps Institution of Oceanography, University of California, San Diego. Ph.D. in Oceanography
- 2005 McGill University, Canada. B.Sc. Honors in Physics, minor in Music Technology.

Research Experience

- 2015 – Present **Assistant Professor**, Canada Research Chair (Tier II), Ocean Technology Systems, Department of Oceanography, Dalhousie University.
- 2014 **Post-Doctoral Fellow**, ONR Special Research Award in Ocean Acoustics, Applied Ocean Physics and Engineering, Woods Hole Oceanographic Institution. Research topic: 3D ambient noise modeling
Supervisor: *Dr. Ying-Tsong Lin*
- 2013 **Post-Doctoral Scholar**, Deep Ocean Exploration Institute, Woods Hole Oceanographic Institution.
Research topics: Noise modeling using a 3D parabolic equation, spatial properties of sediment generated ambient noise, deep ocean ambient noise.
- 2012 **Post-Doctoral Fellow**, Physical Oceanography, Memorial University of Newfoundland
Supervisors: *Dr. Len Zedel, Dr. Alex Hay*
Research topic: Sediment transport in coastal environments
- 2005 - 2011 **Graduate Researcher**, Acoustical Oceanography, Marine Physical Lab, Scripps Institution of Oceanography, University of California, San Diego.
Supervisor: *Dr. Michael Buckingham*.
Thesis: Ambient Noise in the Deep Ocean
- 2004 **Undergraduate Researcher**, NSERC, Structured Surface Physics Lab, University of British Columbia, supervisor *Dr. Lorne Whitehead*.
- 2003 **Undergraduate Researcher**, NSERC, Dept. of Earth and Ocean Sciences, University of Victoria, supervisors *Dr. Chris Garrett* and *Dr. Svein Vagle*.
- 2002 **Undergraduate Researcher**, NSERC, Atmospheric physics, University of Toronto, supervisor *Dr. Kim Strong*.

Awards

- 2015 Canada Research Chair (Tier II), Ocean Technology Systems
- 2014 Postdoctoral Fellowship, Special Research Award in Ocean Acoustics, Office of Naval Research
- 2012 Deep Ocean Exploration Institution Post-Doctoral Scholar award, Woods Hole Oceanographic Institution.

- 2010 Graduate Traineeship, Special Research Award in Ocean Acoustics, Office of Naval Research.
- 2010 Acoustical Oceanography student presentation, second prize, Acoustical Society of America, Cancun meeting.
- 2009 University of California Ship Grant
- 2009 Student Presentation honorable mention, Underwater Acoustic Measurements, Technology and Results, Nafplion, Greece.
- 2008 Acoustical Oceanography student presentation, second prize, Acoustical Society of America, Paris meeting.
- 2007 Acoustical Oceanography, Best Student Paper, Acoustical Society of America, New Orleans meeting.
- 2005 Doherty Entrance Fellowship, Scripps Institution of Oceanography, University of California, San Diego.
- 2004 Outstanding Teaching Assistant, Faculty of Engineering, McGill University.
- 2002 - 2004 Natural Sciences and Engineering Research Council of Canada Undergraduate Student Research Award.
- 2000 - 2004 Hugh Brock Scholarship, McGill University

Student and HQP Supervision

Post-docs

- 2020 Scott Loranger, beginning Jan. 2020

Graduates (current position)

- 2019 – Marina Antipina, MSc candidate, beginning Sept. 2019.
- 2019 – Jeffrey MacDonald, MSc candidate, Electrical and Computer Engineering, co-supervised with Dr. Jean-Francois Bousquet
- 2018 – Emmanuelle Cook, MSc candidate
- 2018 – Calder Robinson, MSc candidate
- 2017 – 2018 Emma Giesbrecht, M. Marine Management, (*Transport Canada*)
- 2017 – Afolarin Egbewande, PhD candidate, Electrical and Computer Engineering, co-supervised with Dr. Jean-Francois Bousquet
- 2017 – Najeem Shajahan, PhD candidate
- 2016 – Meghan Troup, PhD candidate
- 2016 – 2018 Maxime Miron-Morin, MSc, co-supervised with Dr. Jean-Francois Bousquet, (*Royal Canadian Air Force*)
- 2015 – 2019 Bruce Martin, PhD candidate (*JASCO Applied Sciences*)
- 2015 – Dugald Thomson, PhD candidate
- 2015 - 2017 Carolyn Binder, PhD, co-supervised with Dr. Paul Hines, (*DRDC, scientist*)
- 2015 - 2016 Anne Lombardi, MSc, co-supervised with Dr. Alex Hay (*NSCC, Faculty*)

Undergraduates

- 2019 Zachary Wallot-Beale, NSERC undergraduate student research assistant
- 2017 – 2018 Calder Robinson, undergraduate research assistant, Oceanography honours thesis
- 2016 – 2017 Matthew Auvinen, Oceanography honours student, undergraduate research assistant
- 2016 - 2017 Faisal Fahad Aldenaini, Sebastien Boivin, and Mohammed Alhamoud, Electrical and Computer Engineering capstone project
- 2016 Liang Bao, engineering co-op student, undergraduate research assistant
- 2016 Leo Vinour, visiting student, ENSTA-Bretagne, France
- 2016 Shannon Steele, Oceanography honours student, undergraduate research assistant
- 2015 - 2016 Brian Little and Eric Hamilton, Electrical and Computer Engineering capstone project
- 2015 - 2016 Nick Hansen, Andrew Noujaim and Duc Cuong Dinh, Cody Page, Electrical and Computer Engineering capstone project
- 2015 - 2016 Danielle Moore, biology Co-op student, undergraduate research assistant

Technical Students

- 2019 David Burns, Nova Scotia Community College, Electronics Technician, capstone project

Research Personnel and Staff

- 2019 – Daniel Morrison, IT systems
- 2019 – David Burns, embedded systems programmer
- 2018 – Matt Hatcher, part-time research staff
- 2015 – 2019 Richard Cheel, shared research staff with Dr. Alex Hay (*currently with OFI*)

Student Committees, Examinations, and Support

Committees

Oceanography

- 2016 – Allison Chua, Ph.D. (sup. Doug Wallace)
- 2015 – Tristan Guest, Ph.D. (sup. Alex Hay)
- 2015 – Jenna Hare, Ph.D. (sup. Alex Hay)
- 2015 – Christoph Renkl, Ph.D. (sup. Keith Thompson)
- 2015 – Hansen Johnson, M.Sc. (sup. Chris Taggart)
- 2015 – Shangfei Lin, Ph.D (sup. Jinyu Sheng)
- 2015 – 2017 Matthew Hatcher, M.Sc. (sup. Alex Hay, 2017)
- 2015 – 2018 Pengcheng Wang, Ph.D. (sup. Jinyu Sheng, 2018)

Electrical and Computer Engineering

- 2018 – Xiao Liu, Ph.D. (sup. Jean-Francois Bousquet)
- 2017 – Stefan Murphy, Ph.D. (sup. Paul Hines)
- 2017 – Murwan Bashir, Ph.D. (sup. Dimitry Trukhachev)

Computer Science

- 2019 – Johna Latouf, M.Sc. (sup. Stan Matwin)

Examinations

Oceanography

- 2019 Allison Chua, Qualifying exam (sup. Doug Wallace), External
Chris L'esperance, Ph.D. proposal defense (sup. Douglas Wallace), External
- 2018 Stephanie Mellon, M.Sc. defence (sup. Markus Kienast), Chair
Krysten Rutherford, Ph.D. proposal defence (sup. Katja Fennel), Chair
Lorenza Raimondi, Ph.D. proposal defence (sup. Douglas Wallace), Chair
Subhadeep Rakshit, Qualifying exam (sup. Chris Algar), External
Dylan Degrace, M.Sc. defence (sup. Tetjana Ross/Alex Hay), External
Tristian Guest, Qualifying exam (sup. Alex Hay), Examiner
Colin Hughes, Qualifying exam (sup. Jinyu Sheng), Examiner
- 2017 Shihan Li, M.Sc. defense, (sup. Haibo Nu), Chair
Nadine Lehmann, Ph.D. proposal defence (sup. Markus Kienast), Chair
Yuan Wang, Ph.D. Proposal defence (sup. Jinyu Sheng), Chair
Shangfei Lin, Qualifying exam (sup. Jinyu Sheng), Examiner
- 2016 Christoph Renkle, Qualifying exam (sup. Keith Thompson), Examiner
Pengcheng Wang, Qualifying exam (sup. Jinyu Sheng), Examiner
Yuan Wang, Qualifying exam (sup. Jinyu Sheng), Examiner
Yi Sui, Qualifying exam (sup. Jinyu Sheng), Examiner
- 2015 Jenna Hare, Qualifying exam (sup. Alex Hay), Examiner

Computer Science

- 2019 Mark Thomas, Ph.D Aptitude Defence (sup. Stan Matwin), External

Honours Thesis Reader

- Jonathan Coyne, (sup. Eric Oliver)
Elizabeth Kitching, Honours thesis (sup. Gregory Welsh)

Teaching Experience

Courses taught

Year (term)	Course title (code)	Level (enrollment)
2019 (winter)	Fluid Dynamics (OCEA 4311/5311, PHYS 4311/5311)	4 th year undergrad (4)
2018 (fall)	Acoustical Oceanography (OCEA 4250/5250, PHYS 4250/5250)	4 th year undergrad (2), 1 st year grad (4)
2018 (winter)	Fluid Dynamics (OCEA 4311/5311, PHYS 4311/5311)	4 th year undergrad (3), 1 st year grad (2)
2017 (summer)	Special Topics in Oceanography (Ocean Acoustics)	1 st year PhD (1)
2016 (winter)	Fluid Dynamics (OCEA 4311/5311, PHYS 4311/5311)	4 th year undergrad (2), 1 st year grad (2)
2016 (fall)	Acoustical Oceanography (OCEA 4250/5250, PHYS 4250/5250), with Dr. Alex Hay	1 st year grad (3)

Guest lecturer, field training, and summer school activities

Date/Location	Title/Course	Level
October 30 th , 2018, Dalhousie	Acoustical Oceanography, Conversations with Ocean Scientists (OCEA 1001)	undergraduate
October 18 th , 2018, Dalhousie	Science Speed Dating, First Year Interest Groups: Ocean (FIGS 0004)	undergraduate
August 8 th , 2018, Dalhousie	Lightbulbs as an underwater sound source, Intro. to Field Oceanography (OCEA 3003)	undergraduate
June 2 nd – 9 th , 2018, Cape Verde	Cape Verde TOSST summer school	graduate
February 21 st , 2018, UCLA	Sensing the ocean with noise, New Genres (11D)	undergraduate
November 14 th , 2017, Dalhousie	Acoustical Oceanography, Conversations with Ocean Scientists (OCEA 1000)	undergraduate
October 20 th , 2017, Dalhousie	Science Speed Dating, First Year Interest Groups: Ocean (FIGS 0004)	undergraduate
June 12 th – 15 th , 2017, GEOMAR	Kiel TOSST summer school	graduate
November 23 rd , 2016, Halifax	Optics and Acoustics session: Workshop in experiential high school education:	High-school Teachers
November 1 st , 2016, Dalhousie	Acoustical Oceanography, Conversations with Ocean Scientists (OCEA 1000)	undergraduate
October 5 th , 2016, Dalhousie	Ocean noise, Halifax TOSST summer school	graduate

Field Experience

-
- | | |
|------|--|
| 2018 | Grand Passage propagation experiment , co-PI, measured sound transmission through a turbulent tidal passage. |
| 2017 | Dalcomms 1 Experiment , scientist, R/V Sorsa, measured acoustic channel characteristics using multiple physical oceanographic sensors in St. Margaret's Bay, Nova Scotia. |
| 2017 | Office of Naval Research Seabed Characterization Experiment , scientist, R/V Neil Armstrong, recorded ambient noise at the 'mud patch' south of Martha's Vineyard, Massachusetts. |
| 2016 | Minas Passage, Bay of Fundy , chief scientist, R/V Nova Endeavour, Testing an array for low frequency noise measurement in high flow environments. |

- 2016 **Canyon Acoustics Experiment**, scientist, R/V Neil Armstrong, Recorded ambient noise and transmission loss in a shelf break canyon.
- 2014 **Schmidt Ocean Institute ‘Exploring the Mariana Trench’**, Scientist, R/V Falkor, Measured ambient noise in the Challenger Deep.
- 2013 **Advocate beach**, Bay of Fundy, scientist. Measured spatial properties of the noise field in the sediment due to near shore processes using passive acoustic arrays.
- 2012 **Tongan Trench expedition**, scientist, R/V Revelle. Deployed ‘Deep Sound’ instruments to profile noise field and land on the trench floor.
- 2012 **Advocate beach**, Bay of Fundy, scientist. Measured sediment transport and other near shore processes using active and passive acoustics alongside direct and optical methods.
- 2011 **Mississippi Delta cruise**, chief scientist. Measured ambient noise over 750 miles of the lower Mississippi river from a small sailboat.
- 2011 **Mariana Trench National Geographic cruise**, scientist, M/V Super Emerald. Assisted in deploying deep ocean landers to the bottom of the Sirena Deep.
- 2009 **Deep Sound cruise**, chief scientist, R/V Revelle. Deployed ‘Deep Sound’ in the Mariana Trench during three-week cruise.
- 2009 **Northern Pacific Acoustic Laboratory, Philippine Sea Experiment**, scientist, R/V Kilo Moana. Deployed ‘Deep Sound’ and assisted with operation of the Four Octave Research Array (FORA) during a four-week cruise.
- 2005 **Office of Naval Research Makai Experiment**, Kauai, scientist. Deployed and operated the Fly-By acoustic array during small boat operations.
- 2003 **Ocean Station Papa cruise**, technician, CCGS John P. Tully. Recovered, turned around and re-deployed Air-Sea gas exchange array during a month-long cruise.

Publications (students underlined)

Peer-reviewed book chapters

Cook, E., Barclay, D.R., Richards, C., (2019) *Ambient Noise and Underwater Sound Propagation in the Canadian Arctic*. in Governance of Arctic and Northwest Atlantic Shipping: Perspectives, Issues and Approaches, Eds. Chircop, A., Goerlandt, F., Pelot, R., Aporta, C., Springer, (in press).

Peer-reviewed journals

Auvinen, M.F. and Barclay, D.R., (2019) *The performance of a passive linear array in a tidal channel*, IEEE J. Ocean. Eng., in revisions.

Miron-Morin, M., Barclay, D.R., Bousquet, J.F., (2019) *Analysis of Acoustic Channel Sensitivity with Physical Oceanography Conditions*, IEEE J. Ocean. Eng., submitted.

Barclay, D.R. (2019) *Passive acoustic monitoring of marine animals at in-stream hydrokinetic energy sites: a critical review*. Renewable and Sustainable Energy Reviews, submitted.

Barclay, D.R., Bevans, D., Buckingham, M.J., (2019) *Estimation of the geo-acoustic properties of the New England Mud Patch from the vertical coherence of the ambient noise in the water column*, IEEE J. Ocean. Eng., Revisions submitted.

- Martin, S.B., Barclay, D.R., (2019) *Determining the dependence of marine pile driving sound levels on strike energy, pile penetration, and propagation effects using a linear mixed model based on damped cylindrical spreading*, J. Acoust. Soc. Am., 146, (1)
- Barclay, D.R., Lin, Y.T., (2019) *3D noise modeling in a submarine canyon*, J. Acoust. Soc. Am., Accepted (appearing in special issue on 3D underwater acoustics scheduled for September).
- Thomson, D.J., Dosso, S.E., Barclay, D.R., (2017), *Modeling AUV localization error in a long baseline acoustic positioning system*, IEEE J. Ocean. Eng. 43, 4 pp 955-968,
- Barclay, D.R., Buckingham, M.J., Bevans, D.A., (2017), *The depth dependence of ambient noise coherence in the Challenger Deep*, Acoustic Bulletin, July-August Issue, Institute of Acoustics, UK, pp 36-40
- Barclay, D.R., and Buckingham, M.J., (2014), *Spectral and spatial properties of wind-driven ambient noise at the bottom of the Tonga Trench*, J. Acoust. Soc., 136, pp 2497-2511
- Stark, N., Hay, A.E., Cheel, R., Zedel, L., Barclay, D.R., (2014), *Laboratory Measurements of Coarse Sediment Bedload Transport Velocity Using a Prototype Wideband Coherent Doppler Profiler (MFDop)*, J. Atmos. and Ocean. Tech., 31, pp 999-1011
- Barclay, D.R., Buckingham, M.J. (2013), *The depth-dependence of rain noise in the Philippine Sea*, J. Acoust. Soc. Am., 133, pp 2567.
- Barclay, D.R., Buckingham, M.J. (2013), *Depth dependence of wind-driven, broadband ambient noise in the Philippine Sea*, J. Acoust. Soc. Am., 133, 1, pp 62-71
- Barclay, D.R., Simonet, F. and Buckingham, M. J., (2009), *Deep Sound: A Free-Falling Sensor Platform for Depth-Profiling Ambient Noise in the Deep Ocean*, Marine Tech. Soc. J., 43, 144.
- Barclay, D.R. and Buckingham, M.J. (2009), *On the shapes of natural sand grains*, J. Geophys. Res., 114, B02209.
- Szylowski, M., Mossman, M., Barclay, D., and Whitehead, L. (2006), *Novel fiber-based integrating sphere for luminous flux measurements*, Rev. Sci. Instr. 77, 063102
- Conference Proceedings**
- Auvinen, M.F. and Barclay, D.R., (2017), *Evaluating the performance of a coherent array in a high-flow tidal channel*, Proceedings of the 4th Underwater Acoustics Conference and Exhibition, Skiathos, Greece., pp 837-844
- Lombardi, A. R., Hay, A.E., Barclay, D.R., (2016), *Soundscape characterization in a dynamic acoustic environment: Grand Passage, Nova Scotia, a planned in-stream tidal energy site*. Proc. Meet. Acous. 4ENAL. Vol. 27. No. 1. pp 005001
- Buckingham, M.J., Barclay, D. R. (2013), *Ambient noise measurements with deep sound in the Philippine Sea*. In Proceedings of Meetings on Acoustics ICA2013 (Vol. 19, No. 1, p. 040116). ASA.
- Barclay, D. R., Zedel, L., Hay, A. E., & Hatcher, M. G. (2013), *The spatial properties of breaking wave generated and bedload transport generated noise in the sediment layer of a shallow water wave guide*. In Proceedings of Meetings on Acoustics ICA2013 (Vol. 19, No. 1, p. 005002). ASA.
- Technical Documents and Reports**
- Barclay, D.R., (2019), *Passive Acoustic Monitoring in Tidal Channels and High Flow Environments*, Report for Offshore Energy Research Association and Fundy Ocean Research Center for Energy, The Pathway Program.

- Hines, P.C., Kessel, R., Deveau, T., Whitt, C., Barclay, D.R., Hamilton, J.M., (2018), *ADSA LFS Tertiary Modelling Progress Report*, GeoSpectrum Technologies Inc. Project Report 2018-511.
- Hines, P.C., Kessel, R., Deveau, T., Whitt, C., Barclay, D.R., Hamilton, J.M., (2018), *ADSA LFS Secondary Modelling Progress Report*, GeoSpectrum Technologies Inc. Project Report 2018-507.
- Hines P.C., Hamilton, J.M., Deveau, T., Kessel, R., Whitt, C., Barclay, D.R., (2018), *ADSA LFS Phase 2 Acoustic Modelling*, GeoSpectrum Technologies Inc. Project Report 2018-445.
- Hines P.C., Hamilton, J.M., Deveau, T., Whitt, C., Barclay, D.R., Kessel, R. (2017), *ADSA LFS Preliminary Acoustic Modelling*, GeoSpectrum Technologies Inc. Project Report 2017-417.

Invited Conference Presentations

- Barclay, D.R., Bevans, D., Buckingham, M.J., (2019). *Estimating muddy seabed properties using ambient noise coherence*, Underwater Acoustic Conference and Exhibition, Crete, Greece.
- Barclay, D.R., Lin, Y.T., (2017). *Three-dimensional ambient noise modeling*, The International Conference on UnderWater Networks and Systems, Halifax, Canada.
- Barclay, D. R., Buckingham, M. J., Bevans, D. (2016). *The depth dependence of ambient noise in deep ocean trenches*. J. Acoust. Soc. Am., 140, 4, pp. 2977-2977, Hawaii, USA.
- Barclay, D.R., Lin, Y.T. (2013), *Ambient noise modeling using sound field reciprocity*, J. Acoust. Soc. Am., 134, 5, pp. 4151, San Francisco, USA.
- Barclay, D.R. and Buckingham, M.J., (2011), *Rain noise in the deep ocean*, Underwater Acoustic Measurements, 4th International Conference, Kos, Greece.
- Barclay, D.R. and Buckingham, M.J., (2010), *Ambient noise in the Mariana Trench*, J. Acoust. Soc. Am., 128, 4, pp. 2300, Cancun, Mexico.
- Barclay, D.R. and Buckingham, M.J., (2010), *Ambient noise in the Mariana Trench*, European Conference on Underwater Acoustics, Istanbul, Turkey.
- Barclay, D.R., Simonet, F., and Buckingham, M.J., (2010), *Depth-profiling ambient noise in the deep ocean*, J. Acoust. Soc. Am., 127, 3, pp. 1783, Baltimore, USA.
- Barclay, D.R. and Buckingham, M.J., (2009), *Noise Profiling with 'Deep Sound'*, Underwater Acoustic Measurements, 3rd International Conference, Nafplion, Greece.
- Barclay, D.R. and Buckingham, M.J., (2008), *Doppler Geo-Spectroscopy in the Makai Experiment*, J. Acoust. Soc. Am., 123, 5, pp 3364, Paris, France.

Select Conference Presentations (students underlined)

- Barclay, D.R., Bevans, D., Buckingham, M.J., (2019)., *Estimating ocean acidity using the depth-dependence of ambient noise* Underwater Acoustic Conference and Exhibition, Crete, Greece.
- Barclay, D. R., & Buckingham, M. J. (2019). *The measurement of ocean acidity using the depth-dependence of ambient noise*. J. Acoust. Soc. Am., 145(3), 1654-1655., Louisville.
- Troup, M., Barclay, D.R., Hatcher, M.H., (2019). *Creating an autonomous hovercraft for bathymetric and habitat mapping in shallow waters*, Benthic Ecology Meeting, St John's.
- Barclay, D. R., Bevans, D. A., & Buckingham, M. J. (2018). *Estimating muddy seabed properties using ambient noise coherence*. J. Acoust. Soc. Am., 144(3), pp 1981., Victoria, Canada.

- Thomson, D., Barclay, D. R., Dosso, S. E., & Heard, G. J. (2018). *Short-term fluctuations in the ambient noise field at an Arctic chokepoint horizontal line array*. J. Acoust. Soc. Am., 144(3), 1818-1818., Victoria, Canada.
- Barclay, D.R., Bevans, D., Buckingham M.J., (2018). *The measurement of muddy seabed properties using passive acoustics*, 52nd Canadian Meteorological and Oceanographic Society meeting, Halifax, Canada.
- Troup, M., Barclay, D.R., (2018) *An Autonomous Hovercraft for Bathymetric Surveying in Shallow Waters*, 52nd Canadian Meteorological and Oceanographic Society meeting, Halifax, Canada.
- Miron-Morin, M., Barclay D.R., Bousquet, J.F., (2018). *Shallow water ray-tracing and measured channel estimation comparison*. 52nd Canadian Meteorological and Oceanographic Society meeting, Halifax, Canada.
- Shajahan, N., & Barclay, D. R. (2017). *Partitioning wind and ship generated sound using vertical noise coherence*. J. Acoust. Soc. Am., 142(4), pp 2486., New Orleans.
- Martin, B., Barclay, D. R., and Cole, A. (2017). *Investigating the performance of soundscape metrics using known data sources and numerical simulations*, J. Acoust. Soc. Am. 142, 2501, New Orleans, USA.
- Barclay, D. R., & Lin, Y. T. (2017). *Three-dimensional noise modeling*. J. Acoust. Soc. Am., 142(4), pp 2487. New Orleans.
- Miron-Morin, M., Barclay D.R., Bousquet, J.F., (2017). *Shallow water ray-tracing and measured channel estimation comparison*, International Conference on UnderWater Networks and Systems, Halifax.
- Barclay, D.R., Auvinen, M., (2017), *Performance of a coherent array in a high flow tidal channel*, Underwater Acoustics Conference & Exhibition, Skiathos, Greece.
- Barclay, D. R., Zedel, L., & Hay, A. E. (2017), *Estimating the speed of poroelastic interface waves using ambient noise*, J. Acoust. Soc. Am., 141(5), pp 3590., Boston.
- Barclay, D.R., Buckingham, M.J., Bevans, D. (2016), *The depth dependence of ambient noise coherence in the deep ocean*, Acoustic and Environmental Variability, Fluctuations and Coherence, Institute of Acoustics (UK), Cambridge.
- Moore, D., and Barclay, D.R., (2016) *Modelling the performance of fish tag monitoring stations on the Scotian Shelf*, J. Acoust. Soc. Am. 139, 4, pp 2172, Salt Lake City.
- Moore, D. and Barclay, D.R., (2016) *The performance of fish tag monitoring stations on the Scotian Shelf*, 50th Canadian Meteorological and Oceanographic Society congress, Fredericton. (poster)
- Barclay, D. R., Lin, Y. T. (2015). *Three-dimensional noise modeling in a submarine canyon*. J. Acoust. Soc. Am., 137(4), 2421. Pittsburgh.
- Barclay, D.R., Zedel, L., Hay, A.E., and Lin, Y-T., (2015), *Ambient noise measurements from hydrophones buried in a mixed-gravel beach*, Seabed and Sediment Acoustics, Institute of Acoustics (UK), Bath.
- Barclay, D.R. and Lin, Y-T., (2015) *Ambient noise modeling in shallow water environments*, 49th Canadian Meteorological and Oceanographic Society meeting, Whistler.
- Barclay, D.R. and Lin, Y-T., (2015), *Three-dimensional noise modeling in a submarine canyon*, J. Acoust. Soc. Am., 137, 4, pp 2421, Pittsburgh.

- Barclay, D.R., Buckingham, M.J., Bevans, D. (2015), *Ambient noise in the challenger deep*, Canadian Acoustics Weeks, Halifax.
- Barclay, D.R. and Zedel, L., (2014), *Exploring wave and bedload transport generate noise*, 17th Ocean Sciences meeting, Hawaii.
- Barclay, D.R., Zedel, L., Hay, A., and Hatcher, M. (2013), *Modeling the spatial properties of sediment generated noise*, 1st UAC, pp 235. Corfu, Greece.
- Barclay, D. R., Lin, Y. T. (2013). *Ambient noise modeling using sound field reciprocity*. J. Acoust. Soc. Am., 134(5), 4151. San Francisco.
- Barclay, D.R., Zedel, L., Hay, A., and Hatcher, M. (2013) *The spatial properties of breaking wave generated and bedload transport generated noise in the sediment layer of a shallow water wave guide*, Proc. Meet. Acoust., pp 005002. Montreal, Canada.
- Barclay, D.R., Zedel, L., Hay, A.E., Stark, N., (2012), *The Simulation of Bedload Transport Measurement by Coherent Doppler Backscatter*, AGU Fall Meeting (poster)
- Barclay, D.R., Zedel, L., Hay, A.E., Stark, N., (2012), *Simulating coherent Doppler backscatter from a moving bottom: measuring bedload transport*, Can. Met. & Ocean. Soc. 46th congress, Montreal.
- Barclay, D.R., Buckingham, M.J., (2011), *Rain noise in the deep ocean*, Conference on Underwater Acoustic Measurements, Kos, Greece.
- Barclay, D.R., Buckingham, M.J., (2010), *Deep ocean ambient noise in the Mariana Trench.*, 2nd Pan-American/Iberian Meeting on Acoustics, Cancun, Mexico
- Barclay, D. R., Buckingham, M.J., (2010), *Ambient noise in the Mariana Trench.*, European Conference on Underwater Acoustics, Istanbul, Turkey.
- Barclay, D. R., Buckingham, M. J. (2010). *Ambient noise in the Mariana Trench*. J. Acoust. Soc. Am., 128(4), 2300., Baltimore.
- Barclay, D.R., Buckingham, M.J., (2009), *Ambient Noise Profiling*, Conference on Underwater Acoustic Measurements, Nafplion, Greece.
- Barclay, D.R. and Buckingham, M.J., (2009), *Synthesizing the shape of sand grains*, J. Acoust. Soc. Am., 125, 4, p. 2747. Portland.
- Barclay, D.R., Simonet, F., and Buckingham, M.J., (2008), *Vertical profiling of ambient noise with 'Deep Sound'*, J. Acoust. Soc. Am., 124, 4, p. 2599. Miami.
- Barclay, D. R., Buckingham, M. (2008). *Doppler Geo-Spectroscopy in the Makai Experiment*. J. Acoust. Soc. Am., 123(5), 3364. Paris, France.
- Barclay, D.R. (2008), *Adaptive Characterization of Near and Far field Elements in the Soundscape*, J. Acoust. Soc. Am., 123, 5, p. 3680. (poster) Paris, France.
- Barclay, D.R., Buckingham, M.J., (2007) *The effect of grain shape on the porosity of marine sediments*, J. Acoust. Soc. Am., 122, 5, p. 2940. New Orleans.
- Barclay D.R., Buckingham, M.J., (2006), *Doppler spreading of aircraft harmonics in a shallow-water channel off Kauai*, J. Acoust. Soc. Am., 120, 5, p. 3181. Honolulu.

Workshops

- 2019 *Passive Acoustic Monitoring in Tidal Channels and High Flow Environments*, Halifax, Offshore Energy Research Association and Fundy Ocean Research Center for Energy, Pathway workshop and webinar, lead presenter.

- 2019 *Active acoustics panel discussion*, Halifax, Centre for Ocean Ventures and Entrepreneurship, Offshore Energy Research Association, and Fundy Ocean Research Center for Energy, Pathway workshop, panel member.
- 2019 *Seabed Characterization Experiment Workshop II*, Woods Hole, presenter
- 2018 *Workshop on Contemporary and Emerging Challenges of Shipping in the Northwest Atlantic and Eastern Arctic*, Ocean Frontiers Institute, Module N, presenter.
- 2018 *CFI Turbulence Workshop*, Pictou, presenter
- 2018 *Seabed Characterization Experiment Workshop I*, Applied Physics Lab, University of Washington, presenter

Media, interviews and articles

- Radio*: *Sciographies, Episodes 1-6.*, Shauna Bulman, Nicole Comeau, CKDU, Summer 2018. (<https://podcasts.ckdu.ca/category/sciographies/>)
- Lay language paper*: *Estimating muddy seabed properties using ambient noise coherence*, 176th Meeting of the Acoustical Society of America, press room, 2018. (<https://acoustics.org/5paoa7-estimating-muddy-seabed-properties-using-ambient-noise-coherence-david-r-barclay/>)
- Radio: *Deep ocean noise*, The Talking Show, KCHUNG (1630 AM, Los Angeles), 2018
- Newspaper article: *A palette of gestures: Capturing Dawson City's rivers through sound and dance*, Lori Garrison, Yukon News, June 27, 2017. (<https://www.yukon-news.com/entertainment/a-palette-of-gestures-capturing-dawson-citys-rivers-through-sound-and-dance/>)
- Magazine article: *Tidal power in the Bay of Fundy: A dream without danger?* Kelsey Power, National Observer, June 6, 2017. (<http://www.nationalobserver.com/2017/06/06/analysis/tidal-power-bay-fundy-dream-without-danger>)
- Magazine article: *Nature's roiling roller coaster*, Lynn Haddrall, Grand Magazine, Waterloo, June 2016. (<http://www.grandmagazine.ca/wp-content/uploads/MJGRAND16-Tidal-Bore.pdf>)
- Book: *Deep: Freediving, Renegade Science, and What the Ocean Tells Us About Ourselves*, James Nestor, May 5, 2015.
- Video: *Expanding the Mariana Perspective*, Schmidt Institute of Oceanography, Feb 13, 2015 (<https://www.youtube.com/watch?v=E0ShNt1vpDU>)
- Radio: *7 miles beneath the sea surface. Who goes there?*, Christopher Joyce, Morning Edition, National Public Radio, Dec 19, 2014. (<http://www.npr.org/2014/12/19/371670931/7-miles-beneath-the-sea-s-surface-who-goes-there>)
- Radio: *Deep Sound*, Annie McEwen, Public Radio Exchange, Nov 12, 2013. (<https://beta.prx.org/stories/106938>)
- Lay language paper*: *Deep Ocean Ambient Noise in the Mariana Trench*, 160th Meeting of the Acoustical Society of America, press room, 2010. (<http://acoustics.org/pressroom/httpdocs/160th/barclay.html>)

*Self-authored

Seminars and Public Lectures

- Ambient noise in the ocean*, (2019). Dalhousie Undergraduate Physics Society Lecture Series, Dalhousie University, Halifax, NS.
- Sensing the ocean with ambient noise*, (2019). Department of Physics and Atmospheric Science, Dalhousie University, Halifax, NS.
- Underwater acoustics in the framework of environmental knowledge and operational effectiveness: present challenges and future prospects*, (2018). Centre for Marine Research and Engineering, La Spezia, Italy.
- Sensing the ocean with noise*, (2017). Everyseeker Symposium, Obey Music Festival, Maritime Museum, Halifax, NS.
- Measuring and modelling noise in the ocean*, (2015). Defence Research and Development Canada (DRDC) Atlantic, Dartmouth, NS.
- Measuring and modelling the spatial properties of ambient noise*, (2015). Bedford Institute of Oceanography, Dartmouth, NS.

Awarded Research Funding since 2015 – Awarded to lab (total award value)

2020 – 2023	Canada Nature Fund for Aquatic Species at Risk, <i>Ocean Noise: Tools and solutions for understanding and mitigating impacts on marine life in Atlantic Canada</i> , co-P.I.	(\$680k)
2019 – 2025	NSERC, Interdisciplinary Marine Engineering Research and Industrial Training (iMerit), CREATE, co-P.I.	\$200K, (\$1.6M)
2018 – 2020	Canada Research Chair stipend	\$20k/yr
2018 – 2022	Department of Fisheries and Oceans, Ocean and Freshwater Science Contributions Program, <i>Saving Whales with Innovative Monitoring and Mitigation</i> , co-P.I.	\$100k (\$1.2M)
2018 - 2022	Department of Fisheries and Oceans, Oceans and Freshwater Science Contributions Program, <i>Environmental ocean noise</i> , P.I.	\$189k
2018	Department of Fisheries and Oceans, <i>Environmental ocean noise model development</i> , P.I.	\$22k
2018 – 2020	Geospectrum Technologies Inc., All Domain Situational Awareness Low Frequency Source contract for Defense Research and Development Canada, consultant.	\$24k
2018 – 2020	Geospectrum Technologies Inc., Document review and statement of work development for FORCE, consultant.	\$10k
2018	NRC-IRAP, <i>Autonomous hovercraft for bathymetric surveying</i>	\$10k
2018	Innovacorp, Blue Solutions, <i>Smart Lobster Trap</i> , co-P.I.	\$10k
2018 – 2020	Canadian Foundation for Innovation, <i>Environmental Monitoring, Modelling and Forecasting Infrastructure for Instream Tidal Energy</i> , co-P.I.	\$44k (\$2.7M)
2017 – 2021	Ocean Frontiers Institute, <i>Safe navigation and environmental protection, Arctic noise subproject</i> , co-P.I.	\$24k/yr (\$620k)
2017 – 2018	Innovacorp – Offshore Energy Research Association, <i>How does sound travel in high-energy tidal environments?</i> co-P.I.	\$12.5k (\$65k)

2017	Innovacorp, Early Stage Commercialization Fund, <i>Autonomous hovercraft for bathymetric surveying</i> , P.I.	\$21k
2016 – 2021	NSERC Discovery grant, <i>Measuring and modeling ambient noise in three-dimensional ocean environments</i> , P.I.	\$34k/yr
2016	NSERC Engage grant, <i>Development of a low-frequency high-flow acoustic sensing array for turbulent ocean conditions</i> , P.I.	\$25k
2016	Canadian Foundation for Innovation, <i>MERIDIAN: Marine Environmental Research Infrastructure for Data Integration and Application Network</i> , member of core-scientific team.	(\$5M)
2015 - 2017	Office of Naval Research (USA), Code 32, Ocean Acoustics, <i>Three-dimensional ocean noise modeling</i> , P.I.	\$54k/yr
2015	Canadian Foundation for Innovation, <i>Autonomous deep ocean profilers</i> , P.I.	\$300k

Professional Activities

Associate Editor

Journal of the Acoustical Society of America, Express Letters, (Underwater Sound)

Peer Reviewer (*19 articles since 2015*)

Journal of the Acoustical Society of America

Journal of the Acoustical Society of America-Express Letters

IEEE, Journal of Ocean Engineering

Applied Acoustics

Acoustics Australia

Journal of Atmospheric and Oceanic Technology

Sensors

Journal of Geophysical Research: Oceans

Oceanography

Ocean Yearbook

Proposal reviewer for

Schmidt Ocean Institute

Ocean Frontiers Institute

Technical document reviewer for

Department of Fisheries and Oceans, Canada

Fundy Ocean Research Centre for Energy

GeoSpectrum Technologies Ltd.

Technical Committee Member, special session organizer, session chair, webmaster, Acoustical Oceanography, Acoustical Society of America.

Special session organizer, Canadian Meteorological and Oceanographic Society

Structured session organizer, Conference and Exhibition on Underwater Acoustics, Greece

Institutional Activities

Faculty level

2019 Chair Advisory Committee for the Department of Physics & Atmospheric Science, Head

2018 – Appeals committee, Faculty of Science

2018 – Co-host, *Sciographies*, Faculty of Science podcast.

2017 Chair Advisory Committee for the Department of Physics & Atmospheric Science

Departmental level

2018 – Seminar coordinator, Department of Oceanography.

2018 Hiring committee, Ocean sandbox instructor, Department of Oceanography

2017 – Undergraduate research coordinator

2017 – Graduate Oversight committee member, Department of Oceanography

2017 Search Committee, Professor of Phytoplankton Viability Studies, Department of Oceanography

2015 – 2017 Curriculum committee member, Department of Oceanography

Program and project level

2019 – Interdisciplinary Marine Engineering Research and Industrial Training (iMERIT), Program Management Committee

2019 – iMERIT, Curriculum Committee

2019 Hiring committee, Ocean Graduate School applied coordinator, Ocean Frontiers Institute

2017 – Science advisory committee, Marine Environmental Research Infrastructure for Data Integration and Application Network (MERIDIAN)

2016 - 2018 Post-doctoral fellowship program coordinator, Ocean Frontiers Institute, Dalhousie University