

David Barclay

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

- 2020 - present **Associate Professor** (tenured), Canada Research Chair (Tier II), Ocean Technology Systems, Department of Oceanography, Dalhousie University.
- 2015 - 2019 **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

2022	Researcher in Residence, Ocean Networks Canada
2015 - 2025	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

Field Experience

2021	Strytan hydrothermal vent experiment , scientist, active and passive acoustic recordings of a shallow hydrothermal vent in Iceland.
2021	Challenger and Sirena Deep cruise , scientist, DSSV Pressure Drop, deployed the Deep Acoustic Lander to the bottom of the Mariana Trench.
2020	Bras D'or barachois experiment , co-PI, deployed micro-UUVs and ROV in multiple barachois to develop community-based monitoring program.
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

Smith, B., Barclay, D.R., (2022) *The sound of hydrothermal vents*. in Noisy Oceans: Monitoring Seismic and Acoustic Signals in the Marine Environment, Eds. Bayrakci, G., Klingelhoefer, F. AGU Wiley, in press.

Cook, E., Barclay, D.R., Richards, C., (2020) *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, Cham, pp 105 - 133.

Peer-reviewed journals

Egbewande, A.L., Bousquet, J-F, Barclay. D.R., (2022) *The Effect of Directional Ambient Noise on an Underwater Acoustic Link in Shallow Environments*, IEEE J.O.E, early access

- Barclay, D. R. (2022). *Oceanography by ear*. J. Acous. Soc. Am., 151, (4), pp R7 - R9.
- Cook, E., Barclay, D.R., Richards, C., (2022) *Real-Time Acoustic Observations in the Canadian Arctic Archipelago*, J. Acous. Soc. Am., 151, (3), pp 1607 - 1614
- Marotte, E., Wright, A.J., Breeze H., Wingfield, J., Matthews, L.P., Risch, D., Merchant, N.D., Barclay, D.R., Evers, C., Lawson, J., Lesage, V., Moors-Murphy, H., Nolet, V., Theriault, J.A. (2022) *Recommended metrics for quantifying underwater noise impacts on North Atlantic right whales*, Mar. Poll. Bull., 175, 113361
- Bates, A.E. et al., (2021) *Global COVID-19 lockdown highlights humans as both threats and custodians of the environment*, Bio. Con., 109175
- Halliday, W.D., Barclay, D.R., Barkley, A.N., Cook, E., Dawson J., Hilliard, C.R., Hussey, N.E., Jones, J.M., Juanes, F., Marcoux, M., Niemi, A., Nudds, S., Pine, M.K., Richards, C., Scharffenberg, K., Westdal, K., Insley, S.J. (2021), *Underwater sound levels in the Canadian Arctic, 2014–2019*, Mar. Pol. Bul., 168, 112437.
- Loranger, S., Barclay D. R., Buckingham, M.J. (2021), *Implosion in the Challenger Deep: Echo sounding with the shock wave*. Oceanography 34 (2).
- Shajahan, N., Barclay, D. R., & Lin, Y. T. (2020), *Quantifying the contribution of ship noise to the underwater sound field*, J. Acous. Soc Am., 148, (6), pp 3863 – 3872.
- Miron-Morin, M., Barclay, D.R., Bousquet, J.F., (2020) *The Oceanographic Sensitivity of the Acoustic Channel in Shallow Water*, IEEE J. Ocean. Eng., 46 (2), pp 675 - 686.
- Thompson, D.J., Barclay, D.R. (2020), *Real-time observations of the impact of COVID-19 on underwater noise*, J. Acous. Soc. Am., 147, (5), pp 3390 – 3396.
- Martin, S.B., Lucke, K., Barclay, D.R., (2020), *Techniques for distinguishing between impulsive and non-impulsive sound in the context of regulating sound exposure for marine mammals*, J. Acoust. Soc. Am., 147, (4), pp 2159-2176.
- 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., 45, (1), pp 51 – 59.
- Auvinen, M.F. and Barclay, D.R., (2019) *Performance of a passive linear array in a tidal channel*, IEEE J. Ocean. Eng.
- Barclay, D.R., Lin, Y.T., (2019) *Three-dimensional ambient noise modeling in a submarine canyon*, J. Acoust. Soc. Am., 146, (1) pp 1953 – 1964.
- 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), pp 109 – 121.
- 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), *On the spatial properties of ambient noise in the Tonga Trench, including effects of bathymetric shadowing*, 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**
- Binder, C. M., Thomson, D. J., Wallot-Beale, Z., MacDonnell, J. T., Martin, S. B., Kowarski, K. A., Lumsen, E., Gaudet, B., Barclay, D.R., (2021) *Employing Royal Canadian Air Force Sonobuoys for Passive Acoustic Monitoring of Whales*. Proc. Meet. on Acous. UACE, 44, 1, pp. 010002)
- Ghannadrezaii, H., MacDonald, J., Bousquet, J. F., Barclay, D.R. (2021), *Statistical Channel State Information Acquisition for Underwater Acoustic Channels*, UCOMMS
- Ghannadrezaii, H., MacDonald, J., Bousquet, J. F., Barclay, D.R. (2020), *Channel Quality Prediction for Adaptive Underwater Acoustic Communication*. UCOMMS
- Einecke Schmitz, P., Pelot, R., Goerlandt, F., Barclay, D.R. (2020), *A Framework for Cumulative Risk Assessment (CRA) for Marine Shipping: A Case Study in the Kitikmeot Region*, CTRF 2020 Annual Conference, Sep. 18
- 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**
- Martin, S.B., M.M. Zykov, C. Robinson, P.C. Hines, T.J. Deveau, and D.R. Barclay. (2022). *Under-ice Propagation and Ambient Sound Model Improvements: Final Report for*

W7707/206555 TA-8. Document 02675, Version 1.0. Technical report by JASCO Applied Sciences, Hines Ocean S&T, and 44 N Consulting for Atlantic Research Centre, Defence Research and Development Canada.

- Martin, S.B., P. Borys, D.R. Barclay, C.C. Wilson, C. Robinson, J. Hamilton, and R. Kessel. **(2021)**. *Modelling Design and Performance of Drifting or Moored Vertical Line Array in the Arctic*. CAATEX Drifter Data Analysis and Modelling, Final Report for Modelling Task Authorization Contract W7707-206555 TA-5 for DRDC.
- Martin, S.B., J. MacDonald, C.C. Wilson, Z. Wallot-Beale, H. Ghannadrezaii, D.R. Barclay, F. Pace, J.F. Bouquet, E.E. Maxner, C.B. Lawrence, and L. Muzi. **(2020)**. *How does sound propagate in a tidal channel?* Technical report by JASCO Applied Sciences and Dalhousie University for OERA.
- Hasselman, D.; Barclay, D.; Cavagnaro, R.; Chandler, C.; Cotter, E.; Gillespie, D.; Hastie, G.; Horne, J.; Joslin, J.; Long, C.; McGarry, L.; Mueller, R.; Sparling, C.; Williamson, B. **(2020)**. *2020 State of the Science Report - Chapter 10: Environmental Monitoring Technologies and Techniques for Detecting Interactions of Marine Animals with Turbines*. Report for Ocean Energy Systems (OES).
- Hines, P.C., Deveau, T.J., Hamilton J., Kessel, R., Barclay, D.R., Martin, S.B., Nams D., **(2020)** *Arctic Acoustic Propagation Projections to 2040*, Document 01992, Version 1.0. Technical report by JASCO Applied Sciences, Hines Ocean Science and Technology, Seamount Analytics, JMH Consulting & Design, Dalhousie University, and GeoSpectrum Technologies Inc. for Defence Research and Development Canada.
- 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 2018511.
- 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.

Popular Media Coverage

The impact of COVID-19 on underwater noise in: (print) The Narwhal, The Guardian, The Observer, Toronto Star, The Smithsonian, National Wildlife Magazine, (television) CTV, (radio) Radio-Canada - L'heure du monde, National Public Radio - Morning Edition, BBC – Stories in Sound, The Decibel Globe and Mail podcast

Exploring the Challenger Deep in: (print) National Geographic, Chronicle-Herald, (television) Global News (radio) CBC – Mainstreet, National Public Radio – Morning Edition

Invited Conference Presentations

- Barclay, D. R., Martin, S. B., Hines, P. C., Borys, P., Robinson, C. L., Hamilton, J., & Deveau, T. (2022). *Coupled modeling of the seasonal transmission loss in the Beaufort Sea*. J. Acoust. Soc. Am., 151(4), A48-A48, Denver, USA
- Barclay, D. R. (2021). *The effect of COVID-19 on underwater sound*. (Hot Topics in Acoustics session), J. Acoust. Soc. Am., 150(4), pp A210, Seattle, USA
- Barclay, D.R. (2021). *The vertical structure of sound in the Challenger Deep*, Underwater Acoustics Conference and Exhibition, (online).
- Barclay, D.R., Thomson, D., (2021)., *An update to: Real-time observations of the impact of COVID-19 on underwater sound*, J. Acoust. Soc. Am. (online).
- Barclay, D.R., (2019). *On geoacoustic inversions, sediment acoustics, and deep ocean ambient noise*, J. Acoust. Soc. Am., San Diego, USA.
- 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.

Invited Public Presentations

- Barclay, D.R., (2020) *Sound and noise in the ocean*, St. Francis Yacht Club Wednesday Yachting Luncheon, San Francisco, USA
- Barclay, D.R., (2017) *Sensing the ocean using ambient noise*, Obey Convention/Everyseeker festival, Halifax, N.S.

Select Conference Presentations

- 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, USA.
- 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.
- 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.
- Barclay, D. R., & Lin, Y. T. (2017). *Three-dimensional noise modeling*. J. Acoust. Soc. Am., 142(4), pp 2487. New Orleans.
- 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.
- 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.

Student and HQP Supervision

Post-docs

- 2020 – 2021 Scott Loranger, *currently postdoc at Woods Hole Oceanographic Institute*
- 2021 – 2022 Romina Gehrmann, *currently research assistant at Meridian, Dalhousie.*

Graduates

- 2022 – Kimberly Franklin, MSc candidate, co-supervised with Dr. Sarah Fortune
- 2021 – Robert Drinnan, MSc candidate
- 2020 – Brendan Smith, PhD candidate
- 2020 – Nikita Kovaloff, MSc candidate
- 2019 – Marina Antipina, MSc candidate, **Completed**, now at Dalhousie, Ph.D.
- 2019 – 2022 Jeffrey MacDonald, MSc candidate, Electrical and Computer Engineering, co-supervised with Dr. Jean-Francois Bousquet, **Completed**

- 2018 – Emmanuelle Cook, PhD candidate
- 2018 – 2020 Calder Robinson, MSc candidate, **Completed**, now at *JASCO Applied Sciences*
- 2017 – 2018 Emma Giesbrecht, M. Marine Management, **Completed**, now at *Transport Canada*.
- 2017 – 2022 Afolarin Egbewande, PhD candidate, Electrical and Computer Engineering, co-supervised with Dr. Jean-Francois Bousquet, **Completed**, now at *Ericsson*.
- 2017 – 2022 Najeem Shajahan, PhD candidate, **Completed**, now at *U.Vic, post-doc*.
- 2016 – Meghan Troup, PhD candidate
- 2016 – 2018 Maxime Miron-Morin, MSc, co-supervised with Dr. Jean-Francois Bousquet, **Completed**, (*deceased*).
- 2015 – 2019 Bruce Martin, PhD candidate, **Completed**, now at *JASCO Applied Sciences*.
- 2015 – Dugald Thomson, PhD candidate
- 2015 - 2017 Carolyn Binder, PhD, co-supervised with Dr. Paul Hines, **Completed**, now at *Defence Research and Development Canada (DRDC)*, scientist.
- 2015 - 2016 Anne Lombardi, MSc, co-supervised with Dr. Alex Hay, **Completed**, now at *Nova Scotia Community College (NSCC)*, Faculty.

Undergraduates

- 2022 – 2023 Matt Mar, Oceanography honours student
- 2019 – 2021 Zachary Wallot-Beale, NSERC undergraduate student research assistant, Oceanography honours student
- 2019 – 2020 Michael Beaudoin, Oceanography honours student
- 2017 – 2018 Calder Robinson, undergraduate research assistant, Oceanography honours student
- 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 – 2020	Matt Hatcher, part-time research staff (<i>currently at UW Australia</i>)
2015 –	Richard Cheel, shared research staff with Dr. Alex Hay

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

2022 – 2025	Office of Naval Research (USA), Code 32, Ocean Acoustics, <i>Sensing the ocean with deep acoustic profilers and landers</i> , P.I.	\$503k
2022	Ocean Networks Canada, Researcher in Residence.	\$8k
2020 – 2021	Ocean Frontiers Institute Seed Fund, <i>Acoustic Bait Technologies</i> , co-P.I.,	
2020 – 2025	NSERC Canada Research Chair, Tier II (renewal), Ocean Technology Systems	\$500k
2020	Ocean Frontiers Institute Seed Fund, <i>Passive acoustic detection and monitoring of hydrothermal vents</i> , P.I.	\$18k
2020	Ocean Frontiers Institute Seed Fund, <i>Autonomous hovercraft for acoustic monitoring of tidal energy devices</i> , P.I.	\$16k
2020 - 2023	Ocean Frontiers Institute, Phase II, <i>Knowledge Co-production and Transdisciplinary Approaches for Sustainable Nunatsiavut Futures</i> , co-P.I.	\$50k (\$4M)
2019 – 2023	MITACS Accelerate, with JASCO Applied Sciences, <i>Shipping noise characterization in shallow water</i> , co-P.I.	\$146k
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 - 2023	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, Phase I, <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
2015 - 2020	NSERC Canada Research Chair, Tier II, <i>Ocean Technology Systems</i> .	\$500k

Professional Activities

Associate Editor

Journal of the Acoustical Society of America, Express Letters, (Underwater Sound)
 Geoscientific Instrumentation, Methods, and Data Systems, European Geosciences Union

Peer Reviewer

Journal of the Acoustical Society of America
 Journal of the Acoustical Society of America-Express Letters
 IEEE, Journal of Ocean Engineering
 Applied Acoustics
 Journal of Theoretical and Computational Acoustics
 Acoustics Australia
 Journal of Atmospheric and Oceanic Technology
 Sensors
 Journal of Geophysical Research: Oceans
 Oceanography
 Arctic Sciences
 Ocean Yearbook

Proposal reviewer for

Schmidt Ocean Institute
 Ocean Frontiers Institute
 Sustainable Development Technology Canada

MITACS

Technical document reviewer for
Department of Fisheries and Oceans, Canada
Fundy Ocean Research Centre for Energy
GeoSpectrum Technologies Ltd.

Technical Committee Chair (2022 - 2024), 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

- 2021 – Graduate coordinator, Department of Oceanography
- 2021 Hiring committee, Graduate student administrator, Department of Oceanography
- 2018 – 2021 Seminar coordinator, Department of Oceanography.
- 2018 Hiring committee, Ocean sandbox instructor, Department of Oceanography
- 2017 – Undergraduate research coordinator
- 2017 – 2021 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
- 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