David Barclay

Dalhousie University, Department of Oceanography

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Biographical Information

Citizenship: *Canadian*; Languages: *English*, *French* (officially bilingual)

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	**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*.

Field Experience

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	**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.

Teaching Experience

2007	Private group tutor for Scripps graduate students covering partial differential equations
2003 – 2005	Teaching Assistant, Department of Mathematics and Statistics, Tutorial lectures MATH 222 Calculus III, MATH 223 Linear Algebra, MATH 263 Ordinary Differential Equations
2005	McGill Mathematics Drop-in Help Desk, impromptu one-on-one tutoring on any undergraduate course offered by the Department of Mathematics and Statistics.

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

Peer Reviewed Publications

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. Am (accepted)

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. and Buckingham, M.J. (2013), *The depth-dependence of rain noise in the Philippine Sea*, J. Acoust. Soc. Am., 133, pp 2567.

Barclay, D.R. and 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

Invited Conference Presentations

Barclay, D.R., Lin, Y.T. (2013), *Ambient noise modeling using sound field reciprocity,* J. Acoust. Soc. Am. Volume 134, 5, p. 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. Volume 127, 3, p. 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, p. 3364, Paris, France.

Other Conference Presentations

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., 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

Barclay, D.R. and Buckingham, M.J., (2009), *Synthesizing the shape of sand grains*, J. Acoust. Soc. Am., 125, 4, p. 2747.

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.

Barclay, D.R. (2008), *Adaptive Characterization of Near and Far field Elements in the Soundscape*, J. Acoust. Soc. Am., 123, 5, p. 3680. (poster)

Barclay, D.R. and Buckingham, M., (2007) *The effect of grain shape on the porosity of marine sediments*, J. Acoust. Soc. Am., 122, 5, p. 2940.

Barclay D.R. and Buckingham, M.J., (2006), *Doppler spreading of aircraft harmonics in a shallow-water channel off Kauai*, J. Acoust. Soc. Am., 120, 5, p. 3181.

Professional Activities

Technical Committee Member, Acoustical Oceanography, Acoutical Society of America.

Reviewer for the Journal of the Acoustical Society of America, Journal of the Acoustical Society of America-Express Letters, Acoustics Australia and the Journal of Geophysical Research, Oceans.