

Justin S. Ball

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CIRES/ Dept. of Geological Sciences, University of Colorado
2200 Colorado Ave #399, Boulder, CO 80309

Education

Ph.D. Geophysics, University of Colorado 5/2016
Advisor: Anne Sheehan

B.A. Physics and Geology, University of Colorado 8/2010

Research Interests

Acoustic and elastic wave propagation; noise interferometry; seismo-acoustic mode coupling and multiple scattering; Rayleigh/Scholte wave tomography; directional signal detection methods; infragravity waves and seafloor compliance; inverse theory and Monte Carlo sampling; time-warping and matched filtering; analog and digital signal processing

Research Experience

Postdoctoral Researcher, CIRES/ University of Colorado 5/2016-present

Graduate Research Assistant, CIRES/ University of Colorado 1/2012-5/2016

-CIRES IRP Grant Recipient:

“Hydroacoustic Monitoring of Antarctic Ice Shelf Collapse” 2015

Undergraduate Research Assistant, University of Colorado 8/2007-8/2010

Teaching Experience

Graduate Teaching Assistant, University of Colorado 8/2010-12/2013

- Structural Field Geology (Fall 2013)

- Planet Earth (Fall 2012)

- Principles of Geophysics (Spring 2012, and E&M guest lectures 2012-2016)

- Introductory Geology (Instructor, Spring 2011)

- Field Geophysics (Fall 2010)

Manuscripts Currently in Preparation

Ball, J.S., and A.F. Sheehan (2017), Improved Nearfield Dispersion Measurements from Analytic Representation of Time-Warped Acoustic Modes, *Manuscript in Preparation for J. Acoust. Soc. Am.*

Ball, J.S., A.F. Sheehan, and T. Scambos (2017), Remote Detection of Cryoacoustic Signals Using Noise Interferometry of Seafloor Pressure Data, *Manuscript in Preparation for Geophys. Res. Lett.*

(presented at AGU Fall Meeting 2016, Paper Number S51C-07)

Ball, J.S., V. Schulte-Pelkum, and A.F. Sheehan (2017), Analytic Representation of Receiver Functions to Resolve Overprinted Phases, *Manuscript in Preparation for Bull. Seismol. Soc. Am.*

Publications

Ball, J.S., O.A. Godin, L.G. Evers, and C. Lv (2016), Long-range correlations of microseism-band pressure fluctuations in the ocean, *Geophys. J. Int.*, 206(2), 825-834, doi: 10.1093/gji/ggw110

Ball, J.S., A.F. Sheehan, J.C. Stachnik, F-C Lin, W.L. Yeck and J.A. Collins (2016), Lithospheric shear velocity structure of South Island, New Zealand from amphibious Rayleigh wave tomography, *J. Geophys. Res.*, 121(5), 3686-3702, doi: 10.1002/2015JB012726

Brown, M.G., O.A. Godin, X., Zang, **J. S. Ball**, N. A. Zabotin, L. Y. Zabolina, and N. J. Williams (2016), Ocean Acoustic Remote Sensing Using Ambient Noise: Results from the Straits of Florida, *Geophys. J. Int.*, 206(1), 574-589, doi: 10.1093/gji/ggw170

Ball, J.S., A.F. Sheehan, J.C. Stachnik, F-C Lin, and J.A. Collins (2014), A joint Monte Carlo analysis of seafloor compliance, Rayleigh wave dispersion, and receiver functions at ocean bottom seismic stations offshore New Zealand, *Geochem., Geophys., Geosyst.*, 15(2), 5051-5068, <http://dx.doi.org/10.1002/2014GC005412>

Ball, J.S., A.F. Sheehan (2014), Hydroacoustic signals of Antarctic origin detected at ocean-bottom seismic stations off New Zealand, *J. Acoust. Soc. Am.* 135, 2307, <http://dx.doi.org/10.1121/1.4877605>

Godin, O.A., N. A. Zabotin, L. Zabolina, **J. S. Ball**, M. G. Brown, and N. J. Williams (2014), Acoustic noise interferometry in the Straits of Florida at 100 m depth: A ray-based interpretation, *J. Acoust. Soc. Am.* 135, 2167, <http://dx.doi.org/10.1121/1.4877042>

Invited Talks

Modeling Shear Velocity from Sediment to Lithosphere Using Passive OBS Data. 2015 *OBSIP Symposium*, 5-6 Oct. 2015, Vancouver, Washington, USA

Time, Frequency, Signal and Noise. *First Symposium of Geology and Geological Engineering Research Projects – UNALMED*, 9-10 Oct. 2014, Medellin, Colombia

Selected Conference Presentations

Ball, J.S. (2017), Improved Nearfield Dispersion Measurements from Analytic Representation of Time-Warped Acoustic Modes, *Seismological Society of America Annual Meeting*, 18-20 Apr. 2017, Denver, CO, USA

Ball, J.S., O.A. Godin, M.G. Brown, N. A. Zabin, L. Y. Zabin, and X. Zang (2015), Application of Time Warping to Passive Acoustic Remote Sensing, *Cargese Ambient Noise Imaging and Monitoring Workshop*, 11-15 May 2015, Cargese, Corsica, France

Ball, J.S., A.F. Sheehan, F-C Lin, and J.A. Collins (2013), In-Situ Calibration of Differential Pressure Gauges at OBS stations off New Zealand, *OBSIP 2013 OBS Workshop*, 21-22 Oct. 2013, Redondo Beach, CA, USA

Research Cruises

R/V Roger Revelle *HOBITSS Recovery*, 6/20/2015-6/30/2015

Assistant OBS Technician, LDEO group

- Recovered trawl-resistant and freefall OBS stations
- Assisted with data quality control and format conversion

R/V Tangaroa *HOBITSS Deployment*, 5/10/2014-5/20/2014

Watchstander/ Deck Assistant

- Assisted LDEO team assembling, deploying and recovering OBS stations
- Assisted PIs with acoustic triangulation of deployed instruments

R/V Marcus Langseth *NOMELT Experiment*, 11/24/2011-12/29/2011

Watchstander/ Deck Assistant

- Operated sub-bottom profiler and multibeam sonar
- Assisted SIO team assembling, deploying and recovering OBS stations
- Assisted Langseth crew deploying and recovering streamers

Industry Experience

Lead Technician, Loudspeaker Division, Innersound LLC 2003-2005

- Constructed, tested and repaired electrostatic transducers, high-voltage power supplies, and amplifiers, and trained new hires to perform these tasks.

Electronic Repair Technician, Robb's Music 2001-2003

- Component-level troubleshooting and repair of audio electronics.

Skills

- Scientific programming in Matlab, Fortran, Perl, Python, C++ and Unix shells on Macintosh, Linux and Solaris operating systems.
- Digital signal processing and timeseries analysis using Matlab, SAC, Antelope, GMT, CPS330 and obspy software.
- Electronic repair and manufacturing
- Scientific instrumentation design and interfacing with embedded systems

Awards

2nd Place in SEG Challenge Bowl Finals, 2015 SEG Annual Meeting, New Orleans, LA

Eagle Scout, Troop 326, Moscow ID, 1999.

