

US Geological Survey
Earthquake Science Center
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EDUCATION

- 2011 Ph.D. Geophysics, *Department of Geophysics, Stanford University*
Dissertation: Precise Earthquake Source Parameter Estimation
Advisor: Prof. Gregory Beroza
- 2008 M.S. Geophysics, *Department of Geophysics, Stanford University*
- 2005 B.A. Applied Mathematics, with Geophysics emphasis, *Yale University*

RESEARCH INTERESTS

Earthquake source physics: *Physical parameters that describe earthquake rupture, such as stress drop and radiated seismic energy; Relationship of these parameters to earthquake magnitude, location, mechanism and other earthquake attributes; Use of empirical Green's functions and direct methods to understand the source of small and local earthquakes, as well as great, $M_w > 8.5$ earthquakes.*

Earthquake hazard and risk: *Earthquake early warning; Development of tools for rapid estimation of earthquake source parameters, particularly for great, $M_w > 8.5$ earthquakes, through the establishment of a global empirical Green's function database.*

Ground motion: *How earthquake source parameters, such as stress drop, control ground motion; How uncertainty is understood and modeled in ground motion; Use of simple earthquake physics based relationships to model the underlying simplicity of the complex empirical ground motion equations.*

APPOINTMENTS

- 2013 – present Mendenhall Postdoctoral Scholar *supervisor: Tom Hanks*
US Geological Survey, Menlo Park
- 2012 Postdoctoral Scholar
Department of Geophysics, Stanford University
- 2012 Instructor, *Understanding Natural Hazards, Quantifying Risk, and*
Increasing Resilience in Highly Urbanized Regions
Department of Geology and Environmental Sciences, Stanford University
- 2006 – 2011 Graduate Student Researcher *with Gregory Beroza*
Department of Geophysics, Stanford University
- 2010 Summer Intern for Europe Earthquake Model Development
Risk Management Solutions, Newark, CA
- 2009 Graduate Student Research in NSF EAPSI *with Satoshi Ide*
Department of Earth and Planetary Sciences, University of Tokyo
- 2009 Teaching Assistant, *Department of Geophysics, Stanford University*
Courses: *Journey to the Center of the Earth;*
Earthquakes and Volcanoes

GRANTS AND AWARDS

- 4/2012 – “A Theoretical Framework for the NGA-West Relationships”
12/2012 PG&E Lifelines Grant, Postdoctoral Co-Investigator
- 2012 Outstanding Student Paper Award, 2011 Fall AGU Meeting
- 2011 SSA Student Presentation Award, 2011 SSA Meeting, Memphis, TN
- 2010 SSA Student Presentation Award, 2010 SSA Meeting, Portland, OR
- 2006 – 2010 Gabilon Stanford Graduate Fellowship *Awarded to top incoming graduate students*
- 6/2009 – “Scaled Radiated Energy in Earthquakes Estimated from the Seismic Coda”
9/2009 NSF East Asia and Pacific Summer Institute Fellowship
- 2009 1st place Oral Presentation, Stanford School of Earth Sciences Research Review
- 2008 Outstanding Student Paper Award, 2008 Fall AGU Meeting
- 2005 Honors in the Major, Applied Mathematics, Yale University

PUBLICATIONS

- 2013 **Baltay, A. S.**, T. C. Hanks and G. C. Beroza (2013) Stable Stress Drop Measurements and their Variability: Implications for Ground-Motion Prediction, *Bull. Seism. Soc. Am.*, **103**(1), doi: 10.1785/0120120161. <http://www.bssaonline.org/content/103/1/211.full>
- 2011 Ide, S., **A. Baltay** and G. C. Beroza, (2011) Shallow Dynamic Overshoot and Energetic Deep Rupture of the 2011 Mw 9.0 Tohoku-Oki Earthquake, *Science* **332**, 6036, pp 1426 - 1429, doi:10.1126/science.1207020. <http://www.sciencemag.org/content/332/6036/1426.full.html>
- 2011 **Baltay, A.**, S. Ide, G. Prieto, and G. C. Beroza, (2011) Variability in Earthquake Stress Drop and Apparent Stress, *Geophys. Res. Lett.* **38**, L06303, doi:10.1029/2011GL046698 <http://www.agu.org/pubs/crossref/2011/2011GL046698.shtml>
- 2010 **Baltay, A.**, G. Prieto, and G. C. Beroza, (2010) Radiated seismic energy from coda measurements indicates no scaling in apparent stress with seismic moment, *J. Geophys. Res.* **115**(B8), 1-12, doi:10.1029/2009JB006736 <http://www.agu.org/pubs/crossref/2010/2009JB006736.shtml>

MANUSCRIPTS

- Baltay, A. S.**, G. C. Beroza and S. Asawachaisujja, Ground motion prediction from tremor (*in preparation*)
- Baltay, A.**, S. Ide, G. C. Beroza, Radiated energy of great earthquakes from teleseismic empirical Green's function deconvolution (*in preparation for submission to PAGEOPH topical edition, "Earthquake Source Physics on Various Scales"*)
- Baltay, A.** and T. C. Hanks, Understanding the NGA-West ground-motion prediction equations for PGA and PGV (*in preparation for submission to the Bull. Seism. Soc. Am.*)

INVITED TALKS

- NGA-East SSHAC Workshop 2 – Proponent Discussions and Remaining Critical Issues and Data Needs, UC Berkeley, “Comments on Stress Drop Distributions,” October 13, 2011.
- Risk Management Solutions, Brown Bag Guest Speaker, "Apparent stress, stress drops, and variability in Western US and Eastern Honshu, Japan, Earthquakes," October 19, 2011.

Earthquake Science Center Seminars, USGS Menlo Park, "Apparent stress, stress drops, and variability in Western US and Eastern Honshu, Japan, Earthquakes," June 29, 2011.

Berkeley Seismological Laboratory Seminar Series, "Radiated Seismic Energy and Stress Drop of Magnitude 2-9 Earthquakes in Tohoku, Japan," April 19, 2011.

NGA-East, SSHAC Workshop 1 – Critical Issues and Data Needs, UC Berkeley, "Stress Drop and Scaled Energy," November 17, 2010.

Earthquake Science Center Seminars, USGS Menlo Park, "Scaled Seismic Energy in Japan and the Western US: Empirical Green's Function Analysis using the Seismic Coda," February 24, 2010.

ORAL CONFERENCE PRESENTATIONS

Baltay, A. S., S. Ide and G. C. Beroza (2012), Radiated Energy of Recent Great Earthquakes, ECGS Source Meeting, Luxembourg, October 2 – 5.

Baltay, A., T. C. Hanks and G. Beroza (2012), Understanding the NGA-West Ground-Motion Prediction Equations for PGA and PGV, SSA 2012, San Diego, Calif., 17 – 19 April.

Baltay, A., S. Ide, and G. Beroza (2011), Radiated Energy of Great Earthquakes, presented at SCEC-ERI Joint Workshop, Stanford University, Calif., 10 – 11 Dec.

Baltay, A., S. Ide, and G. Beroza (2011), Radiated Energy of Great Earthquakes, Abstract S51E-02 presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5 – 9 Dec.

Baltay, A., G. A. Prieto, S. Ide, T. Hanks and G. C. Beroza (2010), Another Look at Strong Ground Motion Accelerations and Stress Drop, Abstract S34B-07 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13 – 17 Dec.

Baltay, A., S. Ide, G. Prieto, and G. Beroza (2009), Scaled Seismic Energy in Japan and the Western US, Eos Trans. AGU, 90(52), Fall Meet. Suppl., Abstract S43C-07.

Baltay, A., G. A. Prieto and G. C. Beroza (2008), Estimation of Scaled Seismic Energy, Apparent Stress and Acceleration, Eos Trans. AGU, 90(52), Fall Meet. Suppl., Abstract S43C-07.

Baltay, A., G. A. Prieto and G. C. Beroza (2008), Revisiting energy estimates using the seismic coda and empirical Green's functions, 2008 SSA Annual Meeting Abstracts.

POSTER PRESENTATIONS

Baltay, A. S., T. C. Hanks and G. C. Beroza (2012), Understanding the NGA-West ground-motion prediction equations for PGA and PGV, ECGS Source Meeting, Luxembourg, 2 – 5 Oct.

Baltay, A., S. Asawachaisujja and G. Beroza (2012), Using Tremor to Predict Strong Ground Motion, Abstract presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3 – 7 Dec.

Baltay, A., G. C. Beroza and T. C. Hanks (2012), Understanding the NGA-West ground-motion prediction equations for PGA and PGV, 2012 SCEC Fall Meeting.

Ide, S., **A. Baltay,** S. Tamura and G. C. Beroza (2011), Shallow Dynamic Overshoot and Energetic Deep Rupture in the 2011 Mw 9.0 Tohoku-Oki Earthquake U51B-0032

Baltay, A., T. Hanks, G. Prieto, S. Ide and G. C. Beroza (2011), Comparison of RMS-acceleration and Brune stress drops for Crustal Earthquakes In Japan, 2011 SSA Annual Meeting Abstracts.

Baltay, A., M. Nyst, T. Tabucchi, and P. Seneviratna (2010), Style of deformation and earthquake risk assessment: A comparison between California and Mediterranean countries, 2010 SCEC Fall Meeting, Abstract 1-055.

- Baltay, A. S.,** G. Prieto, S. Ide, and G. C. Beroza (2010), Energetic and Enervated Earthquakes: Real Scatter in Apparent Stress and Implications for Ground Motion Prediction, 2010 SSA Annual Meeting Abstracts.
- Baltay, A.,** G. A. Prieto, S. Ide and G. C. Beroza (2009), Scaled Seismic Energy in Japan and the Western US,, Eos Trans. AGU, 90(52), Fall Meet. Suppl., Abstract S43C-07.
- Baltay, A.S.,** G.A. Prieto, S. Ide and G.C. Beroza (2009), Scaled Seismic Energy in Japan and the US by Empirical Green's Function Analysis, 2009 SCEC Fall Meeting, Abstract 1-086.
- Baltay, A. S.,** G. A. Prieto, G. C. Beroza (2009) Scaling Behavior of Radiated Energy Using the Seismic Coda. 2009 SSA Annual Meeting Abstracts.
- Baltay, A.,** G. A. Prieto and G. C. Beroza (2007), Revisiting energy estimates using the seismic coda and empirical Green's functions, 2008 SSA Annual Meeting Abstracts.
- Baltay, A.,** G. A. Prieto and G. C. Beroza (2008), Revisiting Energy Estimates Using the Seismic Coda and Empirical Greens Function Corrections, 2008 SCEC Fall Meeting, Abstract 1-057.
- Baltay, A.,** G. A. Prieto and G. C. Beroza (2007), Revisiting Energy Estimates Using the Seismic Coda, , Eos Trans. AGU, 88(52), Fall Meet. Suppl., Abstract S53B-1274.
- Baltay, A.,** J. Park (2005), Constraints on Source Rupture From the Directivity of P Waves Excited by the Sumatra Andaman Megathrust, Eos Trans. AGU, 86(18), Jt. Assem. Suppl., Abstract U53A-08.

SYNERGISTIC ACTIVITIES

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| Ongoing | Manuscript reviewer <i>Geophysical Journal International, Bulletin of the Seismological Society of America, Journal of Geophysical Research, Geology</i> |
| 2008 – 2012 | Earthquake Trail Field Guide for 6 th grade field trips |
| 2008 – 2012 | Educational Outreach Programs, <i>School of Earth Sciences</i> |
| 2012 | Seismology <i>coordinated and taught class to visiting Singaporean 9th grade girls</i> |
| 2011 | Session Chair, AGU Meeting 2011, <i>Big Sources</i> |
| 2010 – 2011 | Mentor, Girls Middle School, <i>Great Ecology Experiment</i> |
| 2010 | Session Chair, AGU Meeting 2010, <i>Earthquake Source Studies III</i> |
| 2009 – 2010 | Yale Class of 2005 5 th Reunion Class Gift Fundraising Co-Chair
<i>Coordinated effort to raise over \$206,000 of charitable donations.</i> |
| 2008 – 2010 | Graduate Student Programming Board, <i>Stanford University</i>
<i>Coordinated and organized social and cultural events for graduate students</i> |
| 2008 | Community Housing Associate, <i>Rains Houses, Stanford University</i> |
| 2007 | Graduate Student Advisory Committee, <i>School of Earth Sciences</i> |

STUDENTS SUPERVISED

- Sirada Asawachaisujja (Chulalongkorn University, Bangkok, Thailand), SURGE Undergraduate Summer Intern, Stanford University

MEDIA AND PUBLIC OUTREACH

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| 2011 | TV Interview about Tohoku earthquake research <i>NBC Bay Area</i> |
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COLLABORATORS

Gregory Beroza (Stanford University), David Boore (USGS Menlo Park), Tom Hanks (USGS Menlo Park), Satoshi Ide (University of Tokyo), Norm Abrahamson (PG&E/UC Berkeley), Marleen Nyst (Risk Management Solutions), German Prieto (Universidad de los Andes, Bogota), Pasan Seneviratna (RMS), Taronne Tabucci (RMS), Cheslea Williams (RMS), Mary Lou Zoback (Stanford University)

PROFESSIONAL AFFILIATIONS

American Geological Union, Seismological Society of America, Southern California Earthquake Center

REFERENCES

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Universidad de los Andes, Bogotá, Colombia
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