

ELLIOT GRUNEWALD

397 Panama Mall, Stanford, CA 94305
(650) 724-9939 — elliotg@stanford.edu

Education

- **Ph.D., Geophysics Department, Stanford University** 2010
Dissertation Title: *Characterization of Near-Surface Nuclear Magnetic Resonance Relaxation Measurements for Groundwater Applications*
- **M.S., Geophysics Department, Stanford University** 2008
- **Sc.B. Geology-Physics/Mathematics, Brown University** 2005
Magna cum Laude and Departmental Honors
Thesis Title: *Intensity Modeling of Historical Earthquakes near Tokyo and Catalog Implication for Long-term Seismicity and Moment Release in the Kanto Region*

Employment

- **Chief Geophysicist, Vista Clara Inc., Mukilteo, WA** 2010-present
Developing new methodologies for NMR-based subsurface characterization under federally-funded R&D programs, heading product sales, and supervising commercial groundwater investigations.
- **Visiting Consulting Professor, Stanford University, Stanford California** 2011-present
Collaborating with the Environmental Geophysics Group at Stanford on topics related to the application of NMR for near-surface characterization
- **Postdoctoral Scholar, Stanford University, Stanford California** 2011
Conducted research on the integration of surface-NMR and logging-NMR data and investigated the NMR response of aquifer materials under near-surface measurement conditions
- **Research Assistant, Stanford University, Stanford, CA** 2005-2010
Performed research on topics including: the NMR properties of aquifer materials; estimation of pore-scale properties from near-surface NMR data; neural network analysis of ground penetrating radar data
- **Consulting Scientist, Vista Clara Inc., Mukilteo, WA** 2009
Assisted in final production stages of the GMR system, a novel surface-based NMR instrument for non-invasive groundwater imaging and characterization.
- **Geophysical Research Assistant, USGS Earthquakes Hazards, Menlo Park CA** 2005
Modeled the location and magnitude historical Japanese earthquakes using intensity observations as part of a large collaborative project to assess Tokyo's seismic hazard
- **Summer Geophysical Research Intern, USGS Earthquakes Hazards, Menlo Park CA** 2004
Collected and analyzed seismograms and intensity data for historical earthquakes in Northern California and Japan
- **Geophysical Field Intern, Dawson Geophysical, Breezewood PA** 2003
Worked as part of a geophysical field team during surveying, source drilling, and recording phases of a large 3-D seismic exploration project

Teaching

- **Lecturer for 6th Grade Earth Science Teachers Workshop, Stanford University** 2009
Designed a summer workshop for 6th grade educators to improve the quality of earth science courses — spearheaded a teaching module on “Earth’s water” with a fellow graduate student
- **Teaching Assistant: GP 190 “Near-Surface Geophysics”, Stanford University** 2009
Organized and directed weekly field-based labs for an graduate-level course on near-surface geophysical methods. Held weekly office hours and collaborated with instructors to optimize lectures and assignments.
- **Teaching Assistant for GP 104 “The Water Corse”, Stanford University** 2008
Planned and directed weekly labs for an introductory earth science course on water resources; held weekly office hours and delivered two class lectures on surface water storage and fluxes
- **Teaching Assistant for GE 145 “Structural Geology”, Brown University** 2005
Directed labs, fieldtrips, and review sessions for an upper-level structural geology course; guided student development of term projects and worked with the professor to update the course curriculum
- **Teaching Assistant for GE 22 “Physical Processes in Geology”, Brown University** 2004, 2005

Lectured and facilitated group learning in labs, fieldtrips, and review sessions for an introductory geology for two semester course offerings.

Service

- **American Geophysical Union Near Surface Executive Committee** 2008-present
Appointed as the sole student representative on executive committee; spearheaded campaign to enhance student communication and expand student engagement in focus group activities.
- **Graduate Student Advisory Committee Representative, Stanford University** 2008-2009
Elected to represent student interests at the department and school-wide administrative level
- **Student New Faculty Search Committee, Stanford University** 2006-2008
Interview new faculty candidates and developed student recommendations to the faculty
- **Community Associate for Graduate Housing, Stanford University** 2007-2008
Selected as a community associate for an on campus residence of more than 100 graduate serving to increase interaction and communication between residents
- **Undergraduate Meiklejohn Student Advisor, Brown University,** 2004-2005
Selected by faculty to serve as a student advisor — advised entering freshman students on curriculum design, time-management, and the transition to from high school to college

Honors and Awards

- **Department Citizenship Award, Geophysics Department, Stanford University** 2010
One award presented to a graduating PhD student to recognize contributions to the department.
- **AGU Outstanding Student Paper Award, International** 2008
Awards presented by each AGU section recognizing outstanding research
- **British Petroleum Research Grant, Stanford University** 2008
One award given annually in the Department of Geophysics
- **Society of Exploration Geophysicists Scholarship, International** 2007, 2008, 2009
Scholarships awarded annually to student education and research
- **ARCS Graduate Scholar Award, National Organization** 2007
Seven awards given annually to Stanford students engaged in promising scientific research
- **AGU Outstanding Student Paper Award for Coauthored Work, International** 2007
Awards presented by each AGU section recognizing outstanding research
- **McGee Grant, Stanford University** 2006
Grants awarded by the School of Earth Sciences to support independent graduate research
- **Lydia Shaw King Award, Brown University Geology Department** 2005
One award annually recognizing outstanding academics, research, and service to the department
- **Sarah Lamendola Award, Brown University Geology Department** 2004
One award given annually to support independent undergraduate thesis research

Professional Affiliations

- **American Geophysical Union** 2005-present
Near Surface Geophysics Focus Group
- **Society of Exploration Geophysicists** 2006-present
Near Surface Geophysics Section
- **Environmental and Engineering Geophysical Society** 2011-present

Peer-Reviewed Publications

- **Grunewald, E.** and R. Knight (2012) Conditions leading to non-exponential T_2^* relaxation and implications for surface NMR measurements, *Geophysics*, *in press*.
- Knight, R., **E. Grunewald**, T. Irons, K Dlubac., Y-Q Song, H. Bachman, B. Grau, D. Walsh, J. Abraham, J. Cannia (2012) Field Experiment Provides Ground Truth for Surface NMR Measurement, *Geophy. Res. Lett.*, doi:10.1029/2011GL050167, *in press*.
- **Grunewald, E.** and R. Knight (2011) A laboratory study of NMR relaxation times in unconsolidated heterogeneous sediments, *Geophysics*, 76, No. 4 G73–G83, doi: 10.1190/1.3581094

- **Grunewald, E.** and R. Knight (2011) The effect of pore size and magnetic susceptibility on the surface NMR relaxation parameter T_2^* , *Near Surface Geophysics*, 9, No. 2, 169-178, doi: 10.3997/1873-0604.2010062
- Walsh, D.O., **E. Grunewald**, P. Turner, A. Hinnell, and P. Ferre (2011), Practical limitations and applications of short dead time surface NMR *Near Surface Geophysics*, 9, No. 2, 103-111, doi: 10.3997/1873-0604.2010073
- **Grunewald, E.** and R. Knight (2009) A laboratory study of NMR relaxation times and pore coupling in heterogeneous media, *Geophysics*, 74, E215, doi:10.1190/1.3223712.
- **Grunewald, E. D.** and R. Stein (2006) A new 1649-1884 catalog of destructive earthquakes near Tokyo and implications for the long-term seismic process, *J. Geophys. Res.*, 111, B12306, doi:10.1029/2005JB004059.
- Stein, R.S., S. Toda, T. Parsons and **E. Grunewald**, (2006) A new probabilistic seismic hazard assessment for greater Tokyo, *Phil. Trans. R. Soc. A.*, 364 (1845), 1965-1988

Other Publications

- D.O., Walsh, **E. Grunewald**, P. Turner, I. Frid (2010) Javelin: A Slimhole and Microhole NMR Logging Tool, *FastTimes*, 15, no. 3, 67-72.

Conference Presentations

- **Grunewald, E.D.**, J. Walbrecker, R. Knight, (2011) , Sensitivity of NMR decay times to pore geometry in the presence of magnetic inhomogeneities, Abstract #NS12A-02, presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.
- Walsh, D.O. and **E.D. Grunewald** (2011) NMR methods, applications and trends for groundwater evaluation and management, Abstract #NS13A-01, presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.
- Walsh, D.O., **E.D. Grunewald** (2011) Surface and borehole NMR methods for characterizing groundwater, *52nd Experimental NMR Conference, April 2011, Asilomar, CA.*
- Walsh, D., **E. Grunewald**, Turner P. (2011) Applications and advantages of a short dead-time for surface nuclear magnetic resonance (SNMR) measurements, *SAGEEP, May 2011, Charleston, SC.*
- Knight R., K Dlubac, **E. Grunewald**, B. Grau, N. Bachman, Y.-Q. Song, G. Steele, J. Williams. Nuclear magnetic resonance logging to estimate permeability in the high plains aquifer, *SAGEEP, May 2011, Charleston, SC.*
- **Grunewald, E.**, R. Knight, D. Walsh, Evaluation of surface-NMR spin echo measurements of T_2 , *SAGEEP, May 2011, Charleston, SC.*
- **Grunewald, E.** and R. Knight (2010) Conditions leading to non-exponential decay of the surface-NMR signal and implications for water content estimation. *SEG Expanded Abstracts*, 29, 3951-3955.
- Knight, R. J., J.D. Abraham, J. Cannia, K.I. Dlubac, B. Grau, **E.D. Grunewald**, T. Irons, Y.Q. Song, D. Walsh (2010) Field experiment provides ground truth for surface NMR measurement. *Eos Trans. AGU, 91(26) Fall Meet. Suppl., Abstract #NS22A-08*
- Walsh, D., P. Turner, P., I. Frid, R. Shelby, **E.D. Grunewald**, E. Magnuson, J.J. Butler, C.D. Johnson, J.C. Cannia, D.A. Woodward, K.H. Williams, J.W. Lane. (2010) Field demonstration of slim-hole borehole nuclear magnetic resonance (NMR) logging tool for groundwater investigations, *Eos Trans. AGU, 91(26) Fall Meet. Suppl., Abstract #NS23A-1455.*
- **Grunewald, E.** and Knight, R. (2009) Conditions leading to non-exponential T_2^* relaxation and implications for the interpretation of MRS measurements, *Eos Trans. AGU, 90(52) Fall Meet. Suppl., Abstract NS31B-0378*
- **Grunewald, E.** and R. Knight, (2009) Interpreting Earth's field NMR measurements of T_2^* for hydrogeologic applications, *4th International Workshop of Magnetic Resonance Sounding, Grenoble.*
- **Grunewald, E.** and R. Knight, (2008) Estimating pore properties from NMR relaxation time measurements in heterogeneous media, *Eos Trans. AGU, 89(53), Fall Meet. Suppl., Abstract NS43B-1193. [Awarded Outstanding Student Paper]*
- **Grunewald, E.** and R. Knight (2007) A laboratory study of NMR relaxation times and pore coupling in heterogeneous porous media, *Eos Trans. AGU, 88(52), Fall Meet. Suppl., Abstract NS31B-0378.*

- Bauer, J., B. Winfrey, **E. Grunewald**, V. Lakshmi, (2007) Integrating remotely sensed data for water budget studies in the San Luis Basin, *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., Abstract H31A-0131. *[Awarded Outstanding Student Paper]*
- Knight, R., **E. Grunewald**, R. Allen-King, S. Moysey, and D. Gaylord (2007) The use of ground-penetrating radar data in the development of facies-based hydrogeologic models, *GSA Workshop on 3D Geological Mapping for Groundwater Application*, Denver, October 2007.
- Knight, R., V. Laskshmi, **E. Grunewald**, K. Benham and H. Zebker (2007) Integration of remote sensing, hydrologic, and geophysical data to determine the time-varying behavior of a hydrogeologic system, *GSA Abstracts*, 39(6), Paper 97-3.
- Stein, R., S. Toda, T. Parsons, **E. Grunewald** (2006) A new probabilistic seismic hazard assessment for greater Tokyo, *Eos Trans. AGU*, 87(52), Fall Meet. Suppl., Abstract S24A-05.
- **Grunewald, E. D.** (2005) A new catalog of historical earthquakes near Tokyo and implications for the long-term seismic process, *Eos Trans. AGU*, 86(52), Fall Meet. Suppl., Abstract S21-0207.