

# Hao Zhang

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## Curriculum Vitæ

### Education

- Ph.D.** 09/2007-07/2013, Department of Geophysics, School of Earth and Space Sciences, Peking University. Advisor: Dr. Zengxi Ge; Co-Advisor: Jieyuan Ning  
Dissertation Title: *“Imaging the Rupture Processes of Earthquakes Using the Relative Back-projection Method”*
- B.S.** 09/2003-07/2007, Department of Geophysics, School of Earth and Space Sciences, Peking University. Advisor: Dr. Zengxi Ge  
Thesis Title: *“Simulating the Seismic Responses of 2-D Constant-Gradient Models Using the Boundary Element Method”*

### Work Experience

- Postdoctoral Researcher** 10/2016-current, Department of Geology and Geophysics, University of Utah.  
Mentors: Dr. Kristine Pankow and Dr. Keith Koper
- Postdoctoral Researcher** 10/2013-9/2016, Department of Earth and Planetary Sciences, Northwestern University.  
Mentor: Dr. Suzan van der Lee

### Research Interests

- Microseismic event detection**
- Monitor microseismic events before and after drilling a well into a geothermal reservoir to extract geothermal energy using passive-source field experiments
  - Explore the mechanism of earthquake swarms
  - Study the microseismic events related to mining
- Rupture of Earthquakes**
- Imaging the rupture processes of earthquakes rapidly using the back-projection method
  - Invert the teleseismic waveforms for the slip distribution on the causative faults using the finite fault modeling
- Crustal and Mantle Structure**
- Image the crustal and mantle structure of the North American mid-continental rift using *P*-wave receiver function
  - Study the crustal and mantle structure of the transition zone of Colorado Plateau and east Basin and Range
  - Image the topography of MTZ discontinuities using 3D prestacked Kirchhoff migration
  - Resolve the shear velocity of the topmost-30-m crust using the spatial cross-correlation method

### Honors and Scholarships

- 2013** Excellent Ph.D of Beijing, China
- 2013** Excellent Ph.D of Peking University
- 2012-2013** National Scholarship, China
- 2012-2013** President Scholarship, Peking University
- 2011-2012** Second-Class CASC Scholarship, Peking University
- 2010-2011** Founder Scholarship, Peking University
- 2009-2010** Lee Wei-Wing Scholarship, Peking University
- 2008-2009** First-Class Graduate Student Scholarship, Peking University
- 2007-2008** Outstanding Student in Learning, Peking University

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## Membership

**2010-Present** Member of American Geophysical Union

**2010-Present** Member of Seismological Society of America

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## Programming Languages and Skills

**Proficient** Fortran, C, Python, Perl, Bash, Linux/Mac

**Mastery** MPI, CUDA C, R

**Software** AIMBAT, SAC, GMT, MATLAB

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## Publications

- Peer-Reviewed** **Zhang, H.** and Z. Ge (2017). Steptover rupture of the 2014 Mw7.0 Yutian, Xinjiang earthquake, *Bull. Seismol. Soc. Am.*, 107(2), in press.
- Zhang, H.**, S. van der Lee, E. Wolin, et al., (2016). Distinct crustal structure of the North American mid-continent rift from *P*-wave receiver functions, *J. Geophys. Res.*, 121, doi:10.1002/2016JB013244.
- Zhang, H.**, S. van der Lee, and Z. Ge (2016). Multiarray rupture imaging of the devastating 2015 Gorkha, Nepal earthquake sequence, *Geophys. Res. Lett.*, , 43, doi:10.1002/2015GL066657.
- Zhang, H.**, and Z. Ge (2014). Rupture pattern of the Oct 23, 2011 Van-Merkez, Eastern Turkey earthquake, *Earthq. Sci.*, 27(3). 257-264.
- Yu, H., K. Tao, C. Cai, **H. Zhang**, J. Ning, and Y. Wang (2013), Focal mechanism solutions of the Tohoku earthquake series and their geodynamical implications, *Chinese J. Geophys.* (in Chinese), 56(8), 2655-2669.
- Zhang, H.**, J. Chen, and Z. Ge (2012). Multi-fault rupture and successive triggering during the 2012 Mw8.6 Sumatra offshore earthquake, *Geophys. Res. Lett.*, 39, L22305.
- Zhang, H.**, and Z. Ge (2012). Rupture imaging of the 2010 Mw8.8 great Chilean earthquake using the relative back-projection method, *Acta Scientiarum Naturalium Universitatis Pekinensis* (in Chinese), 48(4), 583-588.
- Zhang, H.**, Z. Ge, and L. Ding (2011). Three subevents composing the 2011 off the Pacific coast of Tohoku earthquake (Mw 9.0) inferred from rupture imaging by back-projecting teleseismic *P* waves, *Earth Planets Space*, 63, 595-598.
- Cai, C., C. Yu, K. Tao, X. Hu, Y. Tian, **H. Zhang**, X. Cui, and J. Ning (2011). Spatial distribution and focal mechanism solutions of the Wenchuan earthquake series: Results and implications, *Earthq. Sci.*, 24, 115-125.
- Zhang, H.**, and Z. Ge (2010), Tracking the rupture of the 2008 Wenchuan earthquake by using the relative back-projection method, *Bull. Seismol. Soc. Am.*, 100(5B), 2551-2560.
- Under Review or Submitted** **Zhang, H.**, K. Pankow, K. Koper, and Z. Ge (2017), Imaging the 2016 MW 7.8 Kaikoura, New Zealand Earthquake with Teleseismic P Waves: A Cascading Rupture Across Multiple Faults, under review.
- Zhang, H.**, S. van der Lee, C. R. Bina, and Z. Ge (2017), Deep Dehydration as a plausible mechanism of the 2013 Mw8.3 Sea of Okhotsk deep-focus earthquake, submitted.
- In Preparation** **Zhang, H.**, S. van der Lee (2017). Conjugate fossil fault system reactivated by the March 2, 2016 Mw7.8 southwest of Sumatran Indonesia earthquake in Wharton basin.
- Zhang, H.**, L. Warren, and S. van der Lee (2017). Rupture mechanism of the 2015 Mw7.8 Bonin deep-focus earthquake.

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## First-author Conference Abstract (\* Oral presentation)

- \***Zhang, H.**, S. van der Lee, E. Wolin et al. (2016). Distinct crustal structure of the North American mid-continent rift from *P*-wave receiver function, Geological Society of America, abstract ID: 287598 (Oral presentation).
- \***Zhang, H.**, S. van der Lee, C. Bina, and Z. Ge (2016). Rupture mechanism of the May 24, 2013 Mw8.3 Sea of Okhotsk deep-focus earthquake, *Seismological Research Letters*, Abstracts of the Seismological Society of America Annual Meeting (Oral presentation).

- Zhang, H.,** S. van der Lee, E. Wolin, et al. (2015). Crustal Structure in the area of the North American mid-continental rift from P-wave receiver function studies, *Eos, Transactions of the American Geophysical Union*, 96, Fall Meeting Supplement, abstract ID: T11C-2906.
- \***Zhang, H.,** S. van der Lee, and SPREE group (2015). High-resolution crustal structure near and of the mid-continent rift system in North America using P-wave receiver functions, *Abstracts of North-Central Section, Geological Society of America*, abstract ID: 255624 (Oral presentation).
- Zhang, H.,** S. van der Lee, E. Wolin, et al. (2014). Crustal structure of and near the North American Mid-continent rift system receiver function studies, *Eos, Transactions of the American Geophysical Union*, 95, Fall Meeting Supplement, abstract ID: S13B-4454.
- \***Zhang, H.,** Z. Ge, and S. van der Lee (2013). Multi-array imaging and multi-subevent inversion of the rupture process of the May 24, 2013 Mw8.3 Sea of Okhotsk deep-focus earthquake, *Eos, Transactions of the American Geophysical Union*, 94, Fall Meeting Supplement, abstract ID: S41C-05 (Oral presentation).
- Zhang, H.,** J. Chen, and Z. Ge (2012). Multiple fault rupture and successive triggering of the April 2012 Mw8.6 northern Sumatra earthquake, *Eos, Transactions of the American Geophysical Union*, 93, Fall Meeting Supplement, abstract ID: S21B-2447.
- Zhang, H.,** L. Ding, and Z. Ge (2011). Rupture pattern of the 2011 Tohoku earthquake and its relationship to the properties of the plate interface of the Northeastern Japan Arc, *Eos, Transactions of the American Geophysical Union*, 92, Fall Meeting Supplement, abstract ID: U51B-0026.
- Zhang, H.,** and Z. Ge (2010). Applying the back projection method to image the rupture process of the 2010 Mw8.8 great Chilean earthquake, *Eos, Transactions of the American Geophysical Union*, 91, Fall Meeting Supplement, abstract ID: S43A-2025.
- \***Zhang, H.,** and Z. Ge (2009). Tracing rupture fronts of great earthquakes using a relative back-projection method, *Abstracts of Chinese Geophysical Union* (Oral presentation).