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Jet Propulsion Laboratory
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CURRENT POSITION

2019–present

Postdoctoral Researcher

NASA Jet Propulsion Laboratory, California Institute of Technology

Advisors: Prof. Gilles Peltzer, Dr. Eric Fielding

Primary focus: Observation and analysis of plate boundary deformation using remote sensing methods, including synthetic aperture radar (SAR) interferometry

EDUCATION

University of Southern California, Department of Earth Science

Los Angeles, California

Doctor of Philosophy, Geology

Dec 2018

Primary focus: Characterization of prehistoric and modern earthquake ruptures along active faults worldwide, using field and remote sensing methods

University of Texas at Austin, Jackson School of Geosciences

Austin, Texas

Bachelor of Science, Geology

May 2012

Primary focus: Characterizing storage and eruptive conditions of silica-rich magmas in Yellowstone volcanic field and eastern California

TEACHING EXPERIENCE

University of Southern California, Los Angeles, CA

2013–2018

Teaching Assistant

- GEOL 485: Tectonic Geomorphology – Spring 2018
- GEOL 240: Earthquakes – Fall 2013, Fall 2015, Fall 2016
- GEOL 130: The Nature of Scientific Inquiry – Spring 2014

Los Angeles Trade Technical College, Los Angeles, CA

Teaching Assistant

- ASTRON 005: Fundamentals of Astronomy Laboratory (Instructor: Moreno) – Spring 2014

RESEARCH AND WORK EXPERIENCE

University of Southern California, Los Angeles, CA

2014–2018

Research Assistant

Primary role: Advance the collective understanding of fault behavior and active tectonics through geologic interpretation and data analysis

ConocoPhillips, Houston, TX

2012–2013

Geoscience Technician

Primary role: Construct geoscience content for ConocoPhillips' corporate knowledge database

University of Texas at Austin, Austin, TX

2010–2012

Undergraduate Research Assistant

Primary role: Characterize the magmatic storage conditions and eruptive dynamics of effusive rhyolite lavas

PUBLICATIONS

Zinke, R., Hollingsworth, J., Dolan, J.F., Van Dissen, R. (2019). Three-dimensional surface deformation in the 2016 Mw 7.8 Kaikōura, New Zealand, earthquake from optical image correlation: Implications for strain localization and long-term evolution of the Pacific-Australian plate boundary: *Geochemistry, Geophysics, Geosystems*. <https://doi.org/10.1029/2018GC007951>

Zinke, R., Dolan, J.F., Rhodes, E.J., Van Dissen, R., McGuire, C.P., Hatem, A., Brown, N.D., Langridge, R.M. (2018). Multimillennial incremental slip rate variability of the Clarence fault at the Tophouse Road site, Marlborough fault system, New Zealand: *Geophysical Research Letters*. <https://doi.org/10.1029/2018GL080688>

Litchfield, N.J., *et al.* (2018). Surface fault rupture from the Mw 7.8 2016 Kaikōura earthquake, New Zealand, and insights into factors controlling multi-fault ruptures: *Bulletin of the Seismological Society of America*. <https://doi.org/10.1785/0120170300>

Zinke, R., Dolan, J.F., Rhodes, E.J., Van Dissen, R., McGuire, C.P. (2017). Highly variable latest Pleistocene–Holocene incremental slip rates on the Awatere fault at Saxton River, South Island, New Zealand, revealed by lidar mapping and luminescence dating: *Geophysical Research Letters*. <https://doi.org/10.1002/2017GL075048>

Stirling, M.W., *et al.* (2017). The Mw 7.8 2016 Kaikōura earthquake: Surface fault rupture and seismic hazard context: *Bulletin of the New Zealand Society for Earthquake Engineering*.

Dolan, J.F., McAuliffe, L.J., Rhodes, E.J., McGill, S.F., Zinke, R. (2016). Extreme multi-millennial slip rate variations on the Garlock fault, California: Strain super-cycles, potentially time-variable fault strength, and implications for system-level earthquake occurrence: *Earth and Planetary Science Letters*. <https://doi.org/10.1016/j.epsl.2016.04.011>

Zinke, R., Dolan, J.F., Van Dissen, R., Grenader, J.R., Rhodes, E.J., McGuire, C.P., Langridge, R.M., Nicol, A., Hatem, A.E. (2016). Evolution and progressive geomorphic manifestation of surface faulting: A comparison of the Wairau and Awatere faults, South Island, New Zealand: *REPLY: Geology*. <https://doi.org/10.1130/G38188Y.1>

Zinke, R., Dolan, J.F., Van Dissen, R., Grenader, J.R., Rhodes, E.J., McGuire, C.P., Langridge, R.M., Nicol, A., Hatem, A.E. (2015). Evolution and progressive geomorphic manifestation of surface faulting: A comparison of the Wairau and Awatere faults, South Island, New Zealand: *Geology*. <https://doi.org/10.1130/G37065.1>

Zinke, R., Hollingsworth, J., Dolan, J.F. (2014). Surface slip and off-fault deformation patterns in the 2013 Mw 7.7 Balochistan, Pakistan earthquake: Implications for controls on the distribution of near-surface co-seismic slip: *Geochemistry, Geophysics, Geosystems*. <https://doi.org/10.1002/2014GC005538>

Befus, K.S., Zinke, R.W., Jordan, J.S., Manga, M., Gardner, J.E. (2014). Pre-eruptive storage conditions and eruption dynamics of a small rhyolite dome: Douglas Knob, Yellowstone volcanic field, USA: *Bulletin of Volcanology*. <https://doi.org/10.1007/s00445-014-0808-8>

Befus, K.S., Gardner, J.E., and Zinke, R.W. (2012). Analyzing water contents in unexposed glass inclusions in quartz crystals: *American Mineralogist*. <https://doi.org/10.2138/am.2012.4206>

POSTERS AND PRESENTATIONS

Zinke, R., Hollingsworth, J., Dolan, J.F., and Van Dissen, R. Recovering highly detailed, 3D patterns of surface deformation resulting from the 2016 Mw 7.8 Kaikoura, New Zealand earthquake from optical satellite stereo image correlation. Talk G54A-02, American Geophysical Union (AGU) Annual Meeting, Washington, D.C., 14 Dec, 2018. <https://agu.confex.com/agu/fm18/meetingapp.cgi/Paper/410113>

Zinke, R., Hollingsworth, J., Dolan, J.F., and Van Dissen, R. 3D surface deformation in the 2016 Mw 7.8 Kaikōura, New Zealand earthquake from optical image correlation: Implications for strain localization and tectonic evolution of the Pacific-Australian plate boundary. Poster #123 Southern California Earthquake Center (SCEC) Annual Meeting, Palm Springs, CA, 10-12 Sept 2018. https://files.scec.org/s3fs-public/SCEC2018Proceedings.pdf?5Py_ctrusExKnXwUEk0VUFq68RGhc6IC

Zinke, R., Hollingsworth, J., Dolan, J.F., and Van Dissen, R. 3D deformation in the 2016 Mw 7.8 Kaikoura, New Zealand earthquake from optical image correlation. Lithospheric Dynamics Seminar, University of Southern California, Los Angeles, CA, 18 Apr 2018.

Zinke, R., Hollingsworth, J., Dolan, J.F., and Van Dissen, R. 3D deformation in the 2016 Mw 7.8 Kaikoura, New Zealand earthquake from optical image correlation. Tectonics Seminar, University of California, Los Angeles, CA, 11 Apr 2018.

Zinke, R., Hollingsworth, J., Dolan, J.F., and Van Dissen, R. Quantifying 3D Deformation in the 14 November 2016 Mw 7.8 Kaikoura, New Zealand Earthquake Using COSI-Corr Optical Satellite Image Correlation. Poster G53A-0763, American Geophysical Union (AGU) Annual Meeting, New Orleans, LA, 15 Dec 2017. <http://adsabs.harvard.edu/abs/2017AGUFM.G53A0763Z>

Zinke, R., Hollingsworth, J., Dolan, J.F., and Van Dissen, R. 3D deformation in the 2016 Mw 7.8 Kaikoura, New Zealand earthquake from optical image correlation. Special Seminar, California Institute of Technology (Caltech), Pasadena, CA, 17 Nov 2017.

Zinke, R., Hollingsworth, J., Dolan, J.F., and Van Dissen, R. 3D deformation in the 14 November Mw 7.8 Kaikoura, New Zealand earthquake optical satellite image correlation. Special Seminar, California State University, Fullerton, 8 Nov 2017.

Zinke, R., Hollingsworth, J., Dolan, J.F., and Van Dissen, R. Quantifying 3D deformation in the 14 November Mw 7.8 Kaikoura, New Zealand earthquake using a novel technique for correlation of optical satellite imagery. Special seminar, Jet Propulsion Laboratory (JPL), Caltech, Pasadena, CA, 1 Nov 2017.

Zinke, R., Hollingsworth, J., Dolan, J.F., and Van Dissen, R. Quantifying 3D deformation in the 14 November Mw 7.8 Kaikoura, New Zealand earthquake using a novel technique for correlation of optical satellite imagery. Poster 391-4, Geological Society of America (GSA) Annual Meeting, Seattle, WA, 25 Oct 2017. <https://gsa.confex.com/gsa/2017AM/meetingapp.cgi/Paper/306705>

Zinke, R., Dolan, J.F., Rhodes, E.J., Van Dissen, R., and McGuire, C.P. Highly Variable Latest Pleistocene-Holocene Incremental Slip Rates on the Awatere Fault at Saxton River, South Island, New Zealand, Revealed by Lidar Mapping and Luminescence Dating. American Association of Petroleum Geologists (AAPG) West Coast Student Exposition, Northridge, CA, 6 Oct 2017.

Zinke, R., Dolan, J.F., Rhodes, E.J., Van Dissen, R., and McGuire, C.P. Highly variable incremental slip rates on the Awatere fault, South Island, New Zealand. Lithospheric Dynamics Seminar, University of Southern California, Los Angeles, CA, 27 Sept 2017.

Zinke, R., Hollingsworth, J., Dolan, J.F., and Van Dissen, R. Quantifying 3D deformation in the 14 November Mw 7.8 Kaikoura, New Zealand earthquake using a novel technique for correlation of optical satellite imagery. Poster #146, Southern California Earthquake Center (SCEC) Annual Meeting, Palm Springs, CA, 9–11 Sept 2017. <https://files.scec.org/s3fs-public/SCEC2017Proceedings.pdf>

Zinke, R., Dolan, J.F., Rhodes, E.J., Van Dissen, R., and McGuire, C.P. Highly variable incremental slip rates on the Awatere fault, South Island, New Zealand. Pacific Section of the American Association of Petroleum Geologists (PS-AAPG) Annual Meeting, Anchorage, AK, 21 May 2017.

Zinke, R.W., Dolan, J.F., Hatem, A.E., Van Dissen, R.J., Langridge, R.M., Grenader, J., McGuire, C.P., Rhodes, E.J., Nicol, A. Measuring slip in paleoearthquakes using high-resolution aerial lidar data: Combined analysis of the Wairau, Awatere, Clarence, and Hope faults, South Island, New Zealand. Poster T41B-2924, American Geophysical Union (AGU) Annual Meeting, San Francisco, CA, 15 Dec 2016. <https://agu.confex.com/agu/fm16/meetingapp.cgi/Paper/160256>

Zinke, R., Hollingsworth, J., Dolan, J.F. Surface expression and controls on off-fault deformation in the Mw 7.7 Balochistan, Pakistan earthquake. Geoclub Seminar, California Institute of Technology (Caltech), 5 May 2016.

Lidar and Luminescence Dating Analysis of Latest Pleistocene-Holocene Slip Rates on the Awatere Fault: Recent Updates to Fluvial Terrace Dating at Saxton River, South Island, New Zealand. Poster 16-559, Seismological Society of America (SSA) Annual Meeting, Reno NV, 22 Apr 2016.

Zinke, R., Dolan, J.F., Van Dissen, R., McGuire, C.P., Rhodes, E.J., Hatem, A.E., Grenader, J., Langridge, R.M. Lidar and Luminescence Dating Analysis of Latest Pleistocene-Holocene Slip Rates on the Awatere fault at Saxton River, South Island, New Zealand. Poster T31A-2830, American Geophysical Union (AGU) Annual Meeting, San Francisco, CA, 16 Dec 2015. <https://agu.confex.com/agu/fm15/meetingapp.cgi/Paper/83101>

Zinke, R., Dolan, J.F., Van Dissen, R., Grenader, J.R., Rhodes, E.J., McGuire, C.P., Langridge, R.M., Nicol, A., Hatem, A.E., Lidar analysis of the structurally mature Wairau and immature Awatere faults, New Zealand: Evidence for progressive geomorphic manifestation of distributed deformation and structural localization during fault slip. Talk 15-329, Seismological Society of America (SSA) Annual Meeting, Pasadena, CA, 22 April 2015.

Zinke, R., Dolan, J.F., Van Dissen, R., Grenader, J.R., Rhodes, E.J., McGuire, C.P., Langridge, R.M., Nicol, A., Hatem, A.E., Lidar analysis of the structurally mature Wairau and immature Awatere faults, New Zealand: Evidence for progressive geomorphic manifestation of distributed deformation and structural localization during fault slip. Invited talk, Institute of Geological and Nuclear Sciences (GNS Science), Wellington, NZ, 2015.

Zinke, R., Dolan, J.F., Rhodes, E.J., Van Dissen, R.J., Langridge, R.M., Grenader, J.R., McGuire, C., Nicol, A. Analysis of high-resolution lidar digital topographic data along the Marlborough Fault System: The Awatere and Clarence faults, South Island, New Zealand. Poster, Southern California Earthquake Center (SCEC) Annual Meeting, Palm Springs, CA, 12–14 Sept 2015.

Zinke, R.W., Dolan, J.F., Rhodes, E.J., Van Dissen, R., Langridge, R.M., Grenader, J., McGuire, C.P., Nicol, A. Analysis of high-resolution lidar digital topographic data along the Marlborough Fault System: The Awatere and Clarence faults, South Island, New Zealand. Poster T41C-4652, American Geophysical Union (AGU) Annual Meeting, San Francisco, CA, 18 Dec 2014. <https://agu.confex.com/agu/fm14/meetingapp.cgi/Paper/17487>

Zinke, R., Hollingsworth, J., Dolan, J.F. Surface slip and off-fault deformation patterns in the 2013 Mw 7.7 Balochistan, Pakistan earthquake. Poster 319-11, Geological Society of America (GSA) Annual Meeting, Vancouver, BC, Canada, 22 Oct 2014. <https://gsa.confex.com/gsa/2014AM/webprogram/Paper245087.html>

Zinke, R., Hollingsworth, J., Dolan, J.F. Surface slip and off-fault deformation patterns in the 2013 Mw 7.7 Balochistan, Pakistan earthquake: Implications for controls on the distribution of near-surface co-seismic slip. Lithosphere Dynamics Seminar, University of Southern California, Los Angeles, CA, 1 Oct 2014.

Zinke, R., Hollingsworth, J., Dolan, J.F. Surface slip and off-fault deformation patterns in the 2013 Mw 7.7 Balochistan, Pakistan earthquake: Implications for controls on the distribution of near-surface co-seismic slip. Poster, Southern California Earthquake Center (SCEC) Annual Meeting, Palm Springs, CA, 6–8 Sept 2014.

Zinke, R.W., Befus, K.S., Gardner, J.E. Douglas Knob, Yellowstone Caldera: Pre-eruptive storage conditions and eruption dynamics of an obsidian lave dome. Poster V21C-2515, American Geophysical Union (AGU) Annual Meeting, San Francisco, CA, Dec 2011.

https://www.agu.org/meetings/pdf/2011_FM_Program_Book.pdf

VOLUNTEER AND LEADERSHIP EXPERIENCE

- Graduate Student Representative 2015–2016
- Mentor for Young Researchers Program (YRP) 2015

REFERENCES

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38610 Gières, France
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1 Fairway Drive, Avalon 5010
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