

# Nathan A. Toké

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## Education

Arizona State University

Ph.D. Geological Sciences, 2011, advised by J Ramón Arrowsmith, “Earthquake Geology, Hazard and Social Vulnerability along the San Andreas Fault.”

Universidad De Granada, Spain, spring 2008

Visiting Graduate Student, Sponsoring Faculty: Antonio Azor, Departamento de Geodinamica

Arizona State University

M.S. Geological Sciences, 2005, advised by J Ramón Arrowsmith, “Paleoseismology, Slip Budget, and Fault Behavior along the Parkfield segment of the San Andreas Fault.”

University of Vermont

B.S. Geology (Cum Laude), 2003, Advised by Paul Bierman.

“Compacted green space and effects on storm water hydrogeology in Burlington, Vermont.”

## Academic Employment

Department Chair (elected), Dept. of Earth Science, Utah Valley University, July 1<sup>st</sup> 2019 – Present

Associate Professor, Dept. of Earth Science, Utah Valley University, July 1<sup>st</sup> 2017 – Present

Assistant Professor, Dept. of Earth Science, Utah Valley University, (2011 –2017)

Graduate Research and Teaching Associate/Fellow, Arizona State University (2003-2011)

## Honors and Awards

Sabbatical 2018-2019 Academic Year: Visiting Faculty Arizona State University Jan. – Mar. 2019.

Dean’s Award for Excellence in Scholarship, UVU College of Science and Health, 2014-2015

NSF GK-12 Fellowship, Arizona State University 2010-2011

NSF IGERT Fellowship in Urban Ecology, Arizona State University 2006-2010

GSA Diversity Scholarship, 2009

Troy L. Péwé Award for Quaternary Geology, Arizona State University, 2006

John Dewey Scholar, University of Vermont, 1999-2003

Vermont Scholars Award, University of Vermont, 1999-2003

NSF-Research Experience for Undergraduates, Plattsburgh State University 2002

Most Outstanding ALANA student, University of Vermont, 2001 and 2002

Salutatorian, People’s Academy High School – Morrisville, Vermont, May 1999

## Professional Memberships

GSA Geological Society of America: Since 2001

SCEC Southern California Earthquake Center: Since 2003

AGU American Geophysical Union: Since 2004

AAG American Association of Geographers: Since 2016

NAGT National Association of Geoscience Teachers: Since 2010

UQFPWG Utah Quaternary Fault Parameters Working Group participant since 2012, member since 2016

SSA *Seismological Society of America*: Active in 2017

AEG *American Association of Environmental and Engineering Geologists*: Active in 2011-2012

### Peer-Reviewed Journal Articles

- DuRoss, C.B., M.P. Bunds, R.D. Gold, R.W. Briggs, N.G. Reitman, S.F. Personius, and N.A. Toké, “Variable normal-fault rupture behavior, northern Lost River fault zone, Idaho, USA” accepted with minor revisions *Geosphere* in July 2019.
- Carlson, J.K., Bemis, S., Toké, N.A., Bishop, B., and T.P. Taylor (2017) “Documentation of seven earthquakes over the past ~7000 years on the west-central Denali fault at the Nenana River, Alaska.” *Bulletin of Seismological Society of America* <https://doi.org/10.1785/0120170070>
- Toké, N.A., J. Thomas, M.P. Bunds, M. Arnoff, D.M. Horns, and J.K. Carlson (2017) “Inferences about Segmentation from Recent Surface Breaks along the Wasatch Front revealed from Lidar, SfM, and Outcrops from American Fork Canyon to Dimple Dell Regional Park, Utah” in Lund, W.R., Emerman, S.H., Wang, W., and A. Zanazzi, eds., *Geology and Resources of the Wasatch: Back to Front: Utah Geological Association Special Publication* vol.46, p. 251-276. Full Text Linked on [Research Gate](#)
- Toké, N.A., C.G. Boone, and JR. Arrowsmith (2014) “Seismic Hazard, Regulations, and Social Vulnerability in Los Angeles, California – Turning Geologic Hazards into Urban Amenities” *Earth’s Future*. Vol. 2, no. 9, 440-457. DOI: 10.1002/2014EF000241 <http://onlinelibrary.wiley.com/doi/10.1002/2014EF000241/abstract>
- Haddad, D. E., Akçiz, S. O., Arrowsmith, J.R., Rhodes, D. D., Oldow, J. S., Zielke, O., Toké, N. A., Haddad, A. G., and Mauer, J., (2012) “Applications of airborne and terrestrial laser scanning to paleoseismology” in: *Seeing the True Shape of Earth's Surface: Applications of Airborne and Terrestrial Lidar in the Geosciences themed issue, Geosphere*, v. 8, no. 4, p. 771-786, DOI: 10.1130/GES00701.1. <http://geosphere.geoscienceworld.org/content/8/4/771.abstract>
- Toké, N.A., JR. Arrowsmith, M.J. Rymer, A. Landgraf, D. Haddad, M. Busch, J. Coyan, and A. Hannah (2011) “Late Holocene slip rate of the San Andreas Fault and its accommodation by creep and moderate magnitude earthquakes at Parkfield, California” *Geology*, 10.1130/G31498.1 <http://geology.geoscienceworld.org/cgi/content/full/39/3/243?ijkey=Lo.bt.nO9TX3c&keytype=ref&siteid=gsgeology>
- El-Ashmawy, L., N.A. Toké, and JR. Arrowsmith (2009) “Geologic Investigations of Urban Sedimentation in Tempe, AZ using retention structures.” *Arizona Hydrological Society Symposium Proceedings*, 10 pp. Full Text linked on [Research Gate](#)
- Toké, N.A., JR. Arrowsmith, J.J. Young, C.J. Crosby (2006) “Paleoseismic and post-seismic observations of fault slip along the Parkfield segment of the San Andreas Fault.” *Bulletin of Seismological Society of America* 96, 221-238. <http://www.bssaonline.org/cgi/content/abstract/96/4B/S221>
- Toké, N.A. and JR. Arrowsmith (2006) “Reassessment of a slip budget along the Parkfield segment of the San Andreas Fault” *Bulletin of Seismological Society of America* 96, 339-348. <http://www.bssaonline.org/cgi/content/abstract/96/4B/S339>
- Rymer, M.J., J.C. Tinsley, III, J.A. Treiman, J.R. Arrowsmith, K.B. Clahan, A.M. Rosinski, W.A. Bryant, H.A. Snyder, G.S. Fuis, N.A. Toké, and G.W. Bawden (2006) “Surface Fault Slip Associated with the 2004 Parkfield, California, Earthquake” *Bull. of the Seis. Soc. of Amer.*, 96, 11 - 27. <http://bssa.geoscienceworld.org/cgi/content/abstract/96/4B/S11>

### Final Technical Reports and Published Maps

- Kleber E.J., Bennett, S.E.K., and N.A. Toké (2018), Surface Fault Rupture Hazard Maps of the Timpanogos Cave and Lehi Quadrangles, Utah County, Utah, in *Detailed Mapping of the Wasatch Fault Zone, Utah and Idaho – Utah Geological Survey Final Technical Report for USGS Award G17AP00001*.

- Toké, N.A. and D. Horns (2017)** “Characterizing the Timing of Ruptures Crossing the Boundary between the Provo and Salt Lake City Segments of the Wasatch fault.” National Earthquake Hazards Reduction Program Technical Report # G16P00104, 22 pp.  
[https://earthquake.usgs.gov/cfusion/external\\_grants/reports/G16AP00104.pdf](https://earthquake.usgs.gov/cfusion/external_grants/reports/G16AP00104.pdf)
- Toké, N.A. and JR. Arrowsmith (2015)** “Documentation of Late Holocene and Present Day Deformation from Creep at the Dry Lake Valley Site on the Central San Andreas Fault?” Southern California Earthquake Center Technical Report #13147, 17 pp. [https://s3-us-west-2.amazonaws.com/files.scec.org/s3fs-public/reports/2013/69f63a37e3d0cac81326dccc45d3e99/13147\\_report.pdf](https://s3-us-west-2.amazonaws.com/files.scec.org/s3fs-public/reports/2013/69f63a37e3d0cac81326dccc45d3e99/13147_report.pdf)
- Toké, N.A. and JR. Arrowsmith (2013)** “Significant ground deformation between 780 and 1031 A.D. at the Dry Lake Valley Paleoseismic Site: Do large earthquakes rupture the creeping section of the San Andreas Fault?” Southern California Earthquake Center Technical Report #12050, 13 pp.  
[https://s3-us-west-2.amazonaws.com/files.scec.org/s3fs-public/reports/2013/69f63a37e3d0cac81326dccc45d3e99/13147\\_report.pdf](https://s3-us-west-2.amazonaws.com/files.scec.org/s3fs-public/reports/2013/69f63a37e3d0cac81326dccc45d3e99/13147_report.pdf)
- Toké, N.A. and JR. Arrowsmith (2009)** “Paleoseismic characterization of earthquakes and a geologic slip rate at Parkfield” U.S. Geological Survey National Earthquake Hazard Reduction Program Technical Report, 31 pp. <http://earthquake.usgs.gov/research/external/reports/07HQGR0094.pdf>
- JR. Arrowsmith and Toké, N.A. (2008)** “Radiocarbon dating for Paleoseismology at Parkfield” Southern California Earthquake Center Technical Report, 8 pp.

### **Papers in Review or Preparation**

**Toké, N. A., J.B. Salisbury, M. Bunds, J.R. Arrowsmith, C. Scott, E.C. Matheson, N. Abueg, T. Sato, L.T. Kellum, J. Anderson, D. Horns, J.K. Carlson, and J. Selck,** “Formation, preservation, and documentation of Holocene deformation from creep using structure from motion at the Dry Lake Valley site on the central San Andreas Fault” *in preparation for submission to Geosphere*

Scott, C.P., N.A. **Toké**, M. Bunds, and M. Shirzaei, Creep Along the Central San Andreas Fault Measured from Surface Cracks, 3D Topographic Differencing, and UAVSAR imagery, *In preparation for Geology*

**Toké, N.A., J. Phillips, C. Langevin, E. Kleber, C.B. DuRoss, A. Hiscock, M. Bunds, D. Horns, J.D. Wells, G. McDonald, and J.K. Carlson.** “Characterizing Surface Ruptures Crossing the Fort Canyon fault between the Provo and Salt Lake City Segments of the Wasatch fault.” *in preparation for submission to BSSA*

### **Professional Meeting Presentations**

*Underlined + italics = Presenting student coauthor*

UVU

2019

Ward, S., R. Richards, B. Whitney, N. **Toké**, and M. Bunds, Preliminary Results from the Toplift Hill Paleoseismic Site: Evidence for 5-7 Basin and Range Normal Faulting Events in Tooele County, Utah Since the Late Pleistocene, *Abstract Submitted to the 2019 Annual Meeting of the American Geophysical Union in San Francisco, CA.*

2018

Bunds, M.P., C. Scott, N. **Toké**, R. Arrowsmith, J. Saldivar, L. Woolstenhulme, J. Phillips, S. Janecke, and J. Evans, Three Dimensional Aseismic Creep Deformation from Differencing of Structure from Motion and LiDAR High Resolution Topography on the San Andreas Fault, California, *2018 Annual Meeting of the American Geophysical Union in Washington D.C.*

Scott, C.P., N.A. **Toké**, M. Bunds, and M. Shirzaei, Creep Along the Central San Andreas Fault Measured from Surface Cracks, 3D Topographic Differencing, and UAVSAR imagery, Poster 116, *Southern California Earthquake Center Annual Meeting, Palm Springs, California, September 9-12, 2018*

**Toké, N.A., D.W. Marchetti, C.M. Bailey, R. Biek, J. Phillips, H. C. Bartram, and C. Forster,** The Thousand Lake

Fault: Earthquake Geology of a Long Recurrence Normal Fault in the Eastern Edge of the Basin and Range, Poster 223, *Southern California Earthquake Center Annual Meeting, Palm Springs, California, September 9-12, 2018*

- Woolstenhulme, L., N. **Toké**, J. Phillips, C. Scott, J. Saldivar, M. Keck, S. Smith, M. Ranney, and M. Bunds, Measurement of Creep on the Central San Andreas Fault, California, with Iterative Closest Point Differencing of Structure from Motion and LiDAR Point Clouds. *Poster 028, The Annual Meeting of the American Association of Geographers, New Orleans, LA: April 13<sup>th</sup>, 2018.*
- Smith, S.M., M. Keck, M. Bunds, M. Ranney, L. Woolstenhulme, J. Phillips, J. Saldivar, and N. **Toké**, A Preliminary Look at the Earthquake Chronology of the Topliff Fault, Utah, from Offset Pluvial Shorelines Mapped with UAS and Structure from Motion. *Poster 047, The Annual Meeting of the American Association of Geographers, New Orleans, LA: April 11<sup>th</sup>, 2018.*
- Toké**, N.A. and J. Phillips, "Reconnaissance Investigation of the Thousand Lake Fault near Bicknell, UT." *Utah Quaternary Fault Parameters Working Group, Salt Lake City Utah: February 14<sup>th</sup>, 2018.*
- J. Phillips and **Toké**, N.A., "A Technical Summary of Events Preserved at the Traverse Ridge Paleoseismic Site." *Utah Quaternary Fault Parameters Working Group, Salt Lake City Utah: February 14<sup>th</sup>, 2018.*
- 2017
- DuRoss, C.B., M.P. Bunds, N.G. Reitman, R.D. Gold, S.F. Personius, R.W. Briggs, N.A. **Toké**, K. Johnson, and L. Lajoie, "Surface displacement in late Quaternary ruptures of the Warm Springs and Thousand Springs sections of the Lost River fault zone" *Abstract submitted to the 2017 Annual Meeting of the American Geophysical Union in New Orleans, LA.*
- Toké**, N.A. and J. Phillips, "Preliminary Investigation of the Thousand Lakes Fault from the mid Miocene to late Pleistocene: An Approach for Characterizing Low Slip Rate Normal Faults Using Geomorphology and Paleoseismology" *Paper No. 114-4, 2017 Annual Meeting of the Geological Society of America Meeting in Seattle, WA.*
- J. Phillips, **Toké**, N.A., C. Langevin, E. Kleber, C.B. DuRoss, A. Hiscock, J.D. Wells, G. McDonald, D. Horns, and J.K. Carlson "The Traverse Ridge Site: A Wasatch Fault Example of the Challenges in Interpreting Earthquake Records and Hazards at Segment Boundaries" *Paper No. 288-10, 2017 Annual Meeting of the Geological Society of America Meeting in Seattle, WA.*
- Toké**, N.A., N. Butterfield, M.P. Bunds, A. Zanazzi, A. Uribe, A. Arendt, and V. Pacheco. Initial Assessments of the Geomorphic Impacts from Two Late Holocene, Drainage-Damming Landslides within the City Creek and Little Cottonwood Creek Watersheds, *iUtah 2017 Summer Symposium, Logan, Utah, July 13<sup>th</sup>, 2017.*
- Toké**, N.A., C. Langevin, J. Phillips, E. Kleber, C.B. DuRoss, J.D. Wells, D. Horns, G. McDonald, and J.K. Carlson "Investigating the History of Large Wasatch Fault Earthquakes Along the Fort Canyon Fault at the Traverse Ridge Paleoseismic Site" *Seismological Society of America Annual Meeting, Denver, CO: April 20<sup>th</sup>, 2017, Poster #22*
- DuRoss, C.B., M.P. Bunds, N.G. Reitman, R.D. Gold, S.F. Personius, R.W. Briggs, N.A. **Toké**, K. Johnson, and L. Lajoie, "The distribution of surface displacements in the 1983 Borah Peak earthquake and prehistoric ruptures of the Warm Springs and Thousand Springs sections of the Lost River fault zone." *Seismological Society of America Annual Meeting, Denver, CO: April 20<sup>th</sup>, 2017, Poster # 1*
- De Lora, M., **Toke**, N., and H. Hungerford. "Assessment of Environmental Injustices Associated with TRI Sites in Utah's Wasatch Front Communities Using Dasymetric Mapping and Geographically Weighted Regression." *The Annual Meeting of the American Association of Geographers, Boston, MA: April 9<sup>th</sup>, 2017.*
- Toké**, N.A., "Investigating the History of Large Earthquake of the Wasatch Fault at the Traverse Ridge Paleoseismic Site in Draper, Utah" *Utah Quaternary Fault Parameters Working Group, Salt Lake City Utah: February 8<sup>th</sup>, 2017.*

2016

- Bunds M., J Andreini, M. Arnold, K. Larsen, A. Fletcher, and N. **Toké**, "New Data on Quaternary Surface Offset and Slip Rates of the Oquirrh Fault (Utah, USA) from DSMs Made with Structure from Motion Methods" *American Geophysical Union Meeting, San Francisco, CA: December 11-16, 2016.*
- Toké**, N. A., M.P. Bunds, J.B. Salisbury, JR. Arrowsmith, T. Sato, D. Horns, N. Abueg, J. Anderson, J.K. Carlson, L. Kellum, E. Matheson, A. Lawrence, and J. Selck "Dry Lake Valley Observations of Historical and Prehistoric Creep on the Central San Andreas Fault" *Southern San Andreas Fault Evaluation (SoSAFE) Workshop: Project Successes and Future Challenges at the Southern California Earthquake Center Annual Meeting, Palm Springs, California, September 10, 2016*

DuRoss, C.B., R.D. Gold, S.F. Personius, R.W. Briggs, N.G. Reitman, M.P. Bunds, N.A. **Toké**, K. Johnson, L. Lajoie, and D.P. Schwartz, "Spatial Distribution of Displacement Along the Northern Part of the 1983 M 6.9 Borah Peak Earthquake Rupture" *Poster #17, Seismological Society of America Annual Meeting, Reno, NV: April 20-22<sup>nd</sup>, 2016.*

**Toké**, N. A., "Paleoseismic Investigation within the Traverse Ridge Segment Boundary: Initial Plans for Summer 2016 Field Work" *Utah Quaternary Fault Parameters Working Group, Salt Lake City, Utah, February 10<sup>th</sup>, 2016.*

Bunds, M., S. Janecke, J. Andreini, M. Arnold, K. Larsen and N.A. **Toké**, "New Data on Holocene Offsets and Slip Rates for the Oquirrh and East Cache Faults from DEMs Made with Structure-from-Motion Methods" *Utah Quaternary Fault Parameters Working Group, Salt Lake City, Utah, February 10<sup>th</sup>, 2016.*

2015

Carlson, J.K., S. Bemis, N. **Toké**, P. Taylor, and B. Bishop "Paleoearthquakes of the past ~2500 years at the Dead Mouse site, west-central Denali fault at the Nenana River, Alaska" *American Geophysical Union Meeting, San Francisco, CA: December 13-18, 2015.*

Bunds M., N.A. **Toké**, A. Lawrence, J.R. Arrowsmith and J.B. Salisbury "Insights into Surface Manifestation of Aseismic vs. Coseismic Fault Slip from UAV Imagery of Creep-Induced Surface Fracturing Along the Central San Andreas Fault" *American Geophysical Union Meeting, San Francisco, CA: December 13-18, 2015.*

Bunds, M., N. A. **Toké**, C.B. DuRoss, R.D. Gold, R.W. Briggs, N. Reitman, K. Johnson, L. Lajoie, S.F. Personius, and A. Fletcher "Applications of Structure from Motion for use in Earthquake Geology Investigations: Examples from the Wasatch and San Andreas Fault." *Paper No. 289-10, Annual Meeting of the Geological Society of America, Baltimore, MD: November 1-4, 2015*

Huffaker, B., N.A. **Toké**, M. Bunds, A. Stallings, and S. Walther "Quantifying Geomorphic Change over Multiple Time Scales along Pleasant Creek, Capitol Reef National Park, Utah" *Paper No. 291-22, Annual Meeting of the Geological Society of America, Baltimore, MD: November 1-4, 2015.*

Butterfield, N.J.F., M. Bunds, A. Zanazzi, and N.A. **Toké** "A Preliminary Look at Geomorphic Impacts and Timing of Two Large, Drainage-Damming Landslides in the Central Wasatch" *Paper No. 207-12, Annual Meeting of the Geological Society of America, Baltimore, MD: November 1-4, 2015.*

**Toké**, N. A., M. Bunds, J.B. Salisbury, A. Lawrence, and J.R. Arrowsmith "Rupture Patterns Due to Aseismic Creep During the 2013-2014 California Drought Match Deformation Structures Observed in the 5000 Year Dry Lake Valley Paleoseismic Record" *Annual Southern California Earthquake Center Meeting, Proceedings and Abstracts Vol. 25, Palm Springs, California, September 12-16, 2015*

Nelsen, M., N.A. **Toké**, S.A. Fellows, and J.W. Jackson "GIS Analysis of the Types and Spatial Extents of Volcanic Hazards in Millard County, Utah" *The 67<sup>th</sup> Annual Rocky Mountain Regional Geological Society of America Meeting, Casper, WY: May 21-23<sup>rd</sup>, 2015.*

**Toké**, N. A., M. Arnoff, J.K. Carlson, M. Bunds, and J. Thomas, "Fault strip mapping and continued exploration of existing Traverse Ridge Salient trenches and natural exposures along the Wasatch Fault" *Utah Quaternary Fault Parameters Working Group, Salt Lake City, Utah, Feb 10<sup>th</sup>, 2015.*

**Toké**, N. A., Arnoff, M., Thomas, J., and M. Bunds. "Documenting Recent Rupture Traces and Paleoseismic Exposures from the Northern Provo to the Southern Salt Lake city Segment of the Wasatch Fault" *Basin and Rang Province Seismic Hazards Summit III, January 12-16<sup>th</sup>, 2015.*

Bunds, M., **Toké**, N. A., Fletcher, A. and M. Arnoff. "Applications of Structure from Motion for use in Earthquake Geology Investigations: Examples from the Wasatch and San Andreas Fault." *Basin and Rang Province Seismic Hazards Summit III, January 12-16<sup>th</sup>, 2015.*

2014

Huffaker, B., S. Walther, and N.A. **Toké** "Analysis of the Geomorphic Impact of a Flood Season on Pleasant Creek, Capitol Reef National Park, Utah" *Geological Society of America Meeting, Abstracts with Programs, Vol. 46, no. 6, Paper No. 124-2, Vancouver, B.C. Canada, October 20<sup>th</sup>, 2014.*

**Toké**, N. A. "Symmetrical Bias in Reporting Slip Rates: Asymmetric Probability Density Functions are Inherent Outcomes of Accounting for Uncertainties in Displacement and Age" *Annual Southern California Earthquake Center Meeting, Proceedings and Abstracts Vol. 24, Palm Springs, California, September 6-10, 2014.*

**Toké**, N.A. "Geomorphic and paleoseismic evidence for multiple surface ruptures along structures between the Salt Lake City and Provo segments of the Wasatch Fault." *Utah Quaternary Fault Parameters Working Group, Salt Lake City, Utah, February 5<sup>th</sup>, 2014.*

2013

- Kellum, L.T. and N.A. **Toké** “Using LiDAR DEMs for Geomorphic Assessment of Lake Bonneville Wave-Cut Terraces and Post-Bonneville Displacement Along the Wasatch Fault.” *Geological Society of America Meeting Abstracts with Programs*, Vol. 45, No. 7, Paper No. 347-3, Denver, Colorado, October 30, 2013.
- Toké, N. A., Carlson, J.K., Barnum, E., Das-Toke, S., Dastrup, D.B., Ivie, H.A., Judd, E., Selck, J., Stuart, K., and J. Whitaker.** “Evidence for Multiple Surface Ruptures with 0.3-1.5 Meter Slip-Per-Event Along Structures Between the Salt Lake City and Provo Segments of the Wasatch Fault” *Geological Society of America Meeting Abstracts with Programs*, Vol. 45, No. 7, Paper No. 238-3, Denver, Colorado, October 29, 2013.
- Simister, A., **Toké, N.A.**, Armstrong, A., and M. Bunds “Timpanogos National Monument: Structural Analysis of Cave System Faults.” *Geological Society of America Meeting, Abstracts with Programs*, Vol. 45, No. 7, Paper 136-1, Denver, Colorado, October 2, 2013.
- Toké, N. A., Salisbury, J.B., J.R. Arrowsmith, L.T. Kellum, E. Matheson, J.K. Carlson, D. Horns, T. Sato, N. Abueg, J. Anderson, and J. Selck.** “Documenting at least 1300 years of aseismic slip: en-echelon shear bands and small-scale ground cracking at the Dry Lake Valley Paleoseismic site along the central San Andreas Fault” *Annual Southern California Earthquake Center Meeting, Proceedings and Abstracts Vol. 23, Palm Springs, California, September 8-11, 2013.*

2012

- Toké, N. A., Abueg, N., Anderson, J., Kellum, L., Selck, J., Sato, T., Salisbury, J.B., and Arrowsmith JR.,** “Recognition of Paleoseismicity along Creeping Faults: Examples from the Dry Lake Valley Site on the central San Andreas” *Eos Transactions, American Geophysical Union*, Fall Meeting, Abstract T22C-02, San Francisco, California, December 4<sup>th</sup>, 2012.
- Toké, N. A., Sato, T., Kellum, L., Abueg, N., Anderson, J., Selck, J., Salisbury, J.B., and Arrowsmith JR.,** “Preliminary Results from the 2012 Dry Lake Valley Paleoseismic Site on the central Creeping section of the San Andreas Fault.” *Annual Southern California Earthquake Center Meeting, Proceedings and Abstracts Vol. 21, Palm Springs, California, September 9-12, 2012.*

2011

- Toké, N. A.,** “Evidence from the Parkfield section of the San Andreas fault: Implications for Extreme Events” *Southern California Earthquake Center – invited talk for the Southern San Andreas Fault Evaluation Workshop Annual Meeting, Palm Springs, California, September 11, 2011.*

ASU

2010

- Toké, N. A., A. Johnson, and K. Nelson.** “Earthquakes, Cities, and Lifelines: Lessons integrating tectonics, society, and engineering in middle school Earth Science” *Eos Transactions. American Geophysical Union*, Fall Meeting, San Francisco, California, December, 2010.
- Toké, N. A., C.G. Boone, and J.R. Arrowsmith.** “Distribution of Seismic Hazard, Regulation, and Vulnerability in greater Los Angeles” *Annual Southern California Earthquake Center Meeting, Proceedings and Abstracts*, Vol. 20, Palm Springs, California, September 11-15, 2010.
- Toké, N. A., E. Cook, C Mead, K. Darby, J. Brian, T Benn, C.G. Boone, S. Fisher, and S. Semken.** “Pedagogy in interdisciplinary higher education: an investigation of faculty and student perspectives.” *12<sup>th</sup> annual CAP LTER Meeting*, Arizona State University, Tempe, Arizona, January 14, 2010.

2009

- Toké, N. A., K. Darby, E. Cook, C Mead, J. Brian, T Benn, S. Fisher, C.G. Boone, and S. Semken.** “Pedagogy in interdisciplinary higher education: an investigation of faculty and student perspectives.” *Annual Geological Society of America Meeting, Abstracts with Programs Vol. 41, No. 7, Portland, Oregon, October 18-21st, 2009.*
- El-Ashmawy, L., N.A. **Toké**, and J.R. Arrowsmith “Sedimentary Geology of Urban Environments: an example of measuring sediment production and composition in Tempe, AZ” *Annual Geological Society of America Meeting, Abstracts with Programs Vol. 41, No. 7, Portland, Oregon, October 18-21<sup>st</sup> 2009.*
- Toké, N. A., J.R. Arrowsmith, M.J. Rymer, A. Landgraf, J. Coyan, M. Busch, D. Haddad** “Long-lived creep, M6 earthquakes, and a Holocene slip rate for the main trace of the San Andreas Fault at Parkfield, California” *Annual Southern California Earthquake Center Meeting, Proceedings and Abstracts*, vol. 19, Palm Springs, California, September 12-16th, 2009.
- El-Ashmawy, L., N.A. **Toké**, and J.R. Arrowsmith “Geologic Investigations of Urban Sedimentation in Tempe, AZ using retention structures.” *Arizona Hydrological Society Symposium Posters*, Scottsdale, Arizona, August 31<sup>st</sup> - September 2<sup>nd</sup>, 2009.

2008

**Toké, N. A.,** J R. Arrowsmith, M. Rymer, A. Landgraf, J. Cohan, M. Busch, D. Haddad Paleoseismic interpretation and a preliminary geologic slip rate for the Parkfield segment of the San Andreas Fault, *Eos Transactions. American Geophysical Union*, Fall Meeting, Abstract T41A-1955, San Francisco, California, December 15-19<sup>th</sup> 2008.

Hale, R. **Toké, N.A.,** Grimm, N. and J R. Arrowsmith “Aridland Urban Hydrology in Phoenix, AZ” *10th annual CAP LTER Meeting*, Arizona State University, Tempe, Arizona, January 10th, 2008.  
2007

**Toké, N.A.** and J R. Arrowsmith “Paleoseismic and Holocene slip rate investigations along the San Andreas Fault, at Parkfield, California” *EOS Transactions American Geophysical Union*, Fall Meeting, Abstract: T43A-1097, San Francisco, California, December 10-14th, 2007.

**Toké, N.A.** and J R. Arrowsmith “Paleoseismic and Holocene slip rate investigations along the San Andreas Fault, at Parkfield, California” *Annual Southern California Earthquake Center meeting*, Proceedings and Abstracts, vol. 17, Palm Springs, CA, September 9-12th, 2007.

**Toké, N.A.** and J R. Arrowsmith “Fluvial Processes in Phoenix, Maricopa County, Arizona: A natural laboratory for studying dryland fluvial systems” *9th annual CAP LTER Meeting*, Arizona State University, Tempe, Arizona, January 10th, 2007.

2006

**Toké, N.A.** and J R. Arrowsmith “Fluvial Processes in Phoenix, Maricopa County, Arizona: A natural laboratory for studying urbanized dryland fluvial systems” *EOS Transactions American Geophysical Union*, Fall Meeting, Abstract: H13A-1356, San Francisco, California, December 11-15th 2006.

Busch, M., J R. Arrowsmith, P.J. Umhoefer, G.M. Gutierrez, N. **Toké,** D. Brothers, E. Dimaggio, S. Maloney, O. Zielke, B. Buchanan “Late Quaternary Faulting in the Cabo San Lucas – La Paz region, Baja California.” *EOS Transactions American Geophysical Union*, Fall Meeting, Abstract: T41D-1612, San Francisco, California, December 11-15th 2006.

Akciz, S.O., L.B. Grant, J R. Arrowsmith, O. Zielke, N.A. **Toké,** G. Noriega, J. Cornoyer, E. Starke, N. Reusseau, B. Campbell “Does the new paleoseismological evidence from the Carrizo Plain section of the San Andreas Fault indicate abnormally high late Holocene slip rates?” *EOS Transactions American Geophysical Union*, Fall Meeting, Abstract: T21E-01, San Francisco, California, December 11-15<sup>th</sup>, 2006.

**Toké, N.A.** and J R. Arrowsmith “Fluvial Geomorphology and Urbanization in Phoenix, Maricopa County, Arizona: A Natural Laboratory for Studying Human Alteration of Dryland Fluvial Systems.” *Binghamton Geomorphology Symposium on the Human Role in Fluvial Systems*, October 20-22<sup>nd</sup>, 2006

2005

**Toké, N.A.** and J R. Arrowsmith "Estimating a Slip Budget along the Parkfield segment of the San Andreas Fault: A Slip Deficit since 1857" *Southern California Earthquake Center Annual Meeting*, Proceedings and Abstracts, vol. 15. Palm Springs, California, September 11-14<sup>th</sup>, 2005

Akciz, S., L.B. Grant, J R. Arrowsmith, O. Zielke, N.A. **Toké,** G. Noriega, E. Starke, and J. Cornoyer. “Constraints on ruptures along the San Andreas Fault in the Carrizo Plain: Initial Results from 2005 Bidart Fan Site Excavations.” *Southern California Earthquake Center Annual Meeting*, Proceedings and Abstracts, vol. 15. Palm Springs, California, September 11-14<sup>th</sup>, 2005.

2004

**Toké, N.A.,** Arrowsmith, J R., Crosby, C.J., and Young, J.J. “Paleoseismology and Tectonic Geomorphology: Results from the Parkfield, CA Segment of the San Andreas Fault.” *EOS Transactions American Geophysical Union*, Fall Meeting, , Abstract T13A 1336, San Francisco, California, December 13-17<sup>th</sup>, 2004.

**Toké, N.A.,** Arrowsmith, J R., Crosby, C.J., and Young, J.J. “Preliminary Paleoseismology Results from the Parkfield, CA Segment of the San Andreas Fault.” *Southern California Earthquake Center Annual Meeting*, Proceedings and Abstract, vol. 14, Palm Springs, California, September 19-21<sup>st</sup>, 2004.

UVM

2003

Klepeis, K.A., Clarke, G.L., and **Toké, N.,** “Exhumation and Topographic Uplift along Continental Strike-Slip and Oblique-Slip Faults in Southwest New Zealand.” *Annual Geological Society of America Meeting*, Abstracts with Programs, Vol. 35, No. 6, Seattle, Washington, November 2-5<sup>th</sup> 2003.

Billow, S., Krasilovsky, M., Rimbault, J., **Toké, N.,** Romanowicz, E.A, and Franz, D.A. “A preliminary hydrogeochemical assessment of the Little Chazy River, northeastern New York” *Northeast Regional Geological*

*Society of America Meeting*, Abstracts with Programs, Vol.35, No.1, Halifax, Nova Scotia, Canada, March 27-29<sup>th</sup>, 2003.

2002

- Toké**, N.A. “Tectonics and Topography: Some New Relationships Identified along the Alpine Fault in New Zealand”, Vermont Geological Society Newsletter, Presentation at Middlebury College, Middlebury, Vermont, spring 2002.
- Klepeis, K.A., Claypool, A., and **Toké**, N., “Dynamic topography in transpressional regimes: an example from the New Zealand plate boundary zone *Northeast Regional Geological Society of America Meeting*, Abstracts with Programs, Vol. 34, No. 1, Springfield, Massachusetts, March 25-27<sup>th</sup>, 2002.
- Lord, A., Lini, A., **Toké**, N., Parris, A., and Bierman, P. “Contrasting evolution of northern New England post-glacial lakes.” *Northeast Regional Geological Society of America Meeting*, Abstracts with Programs, Vol. 34, No. 1, Springfield, Massachusetts, March 25-27<sup>th</sup>, 2002.

## Service and Outreach

### *Service to the University and External to the University:*

2020 Rocky Mountain GSA Section Meeting Technical Program Co-Chair  
SCEC Transitions Mentoring Program Participant Sept. 10<sup>th</sup> and 11<sup>th</sup>, 2018  
Orem City Library Outreach Talk, February 20<sup>th</sup>, 2018  
UGA Field Trip (Presenter/Driver): Geology of the Wasatch Back to Front, Sept. 29-30<sup>th</sup>, 2017  
Center for Ethics Panel Discussion: “Sci-Hub/Ethics of Academic Publishing”, Sept. 28<sup>th</sup>, 2016  
Skype Geology Interview with Johnson, VT Elementary Students, May 25<sup>th</sup>, 2016.  
GIS Day Career Panel, November 19<sup>th</sup>, 2015  
Rock Canyon Day Presenter – The Earth Moves (Quaternary Geology), September 19<sup>th</sup>, 2015  
Orem City Earthquake Preparedness Drill Block Captain, September 17<sup>th</sup>, 2015  
UVU Environmental Studies at Capitol Reef Field Station Committee Spring 2015-Present.  
In Harm’s Way: GEO 3200 Seismic Safety Education Materials for Utah Schools, Fall 2014  
LEAP Tour and K-12student Q/A and Geology Motivational Chat – December 2014  
Scholarship Essay Reviewer for the Utah National Association for Multicultural Education - 2013  
SCEC Participating Institution UVU Point of Contact 2012 - Present  
AEG Intermountain Regional Point of Contact for K-12 Educators 2011 - 2013  
NSF GK-12 7<sup>th</sup> Grade Earth Science Teaching 2010-2011

### *Peer Review:*

2018: JGR Solid Earth (2), Geophysical Research Letters, Utah Geological Association Pub 47.  
2017: Geology  
2016: Utah Geological Association Publication 45 – Geology of the Wasatch Front and Back.  
2015: Journal of Geophysical Research – Solid Earth  
2014: The Geological Society of London  
2014: Utah Geological Association Publication 44 – The Uinta Basin and Mountains.  
2013: Utah Geological Association Publication 43 – Utah’s Far South  
2011: Earth and Planetary Science Letters, Earth Surface Processes and Landforms

### *Professional Meeting Moderator:*

2012 AEG Annual Meeting, Session #4: Faults and Earthquake Hazards  
2009 AHS Annual Symposium, Session #4: Erosion and Sedimentation

### *UVU College of Science Service:*

Re-envisioning the undergraduate GE experience at UVU CS Representative Dec’17-Jan’18  
NSF CSH STEM Scholarship Selection Committee 2013-2016  
Dean’s Day Earth Science Dept. Outreach, 2014-2016  
CSH Science Education Hiring Committee 2013-2014  
CSH Scholarly Activities Committee: 2012-2014



*UVU Department of Earth Science Service:*

Department Chairperson (July 1<sup>st</sup>, 2019-Present)  
Earth Science Seminar Lead (F13, S17, and S18)  
Department Assessment Coordinator 2012-2018  
Retention, Tenure, and Promotion Committee, 2017-2018  
Geography Program Development Committee 2013-Present  
GIS Program Development Committee 2011-Present  
Geology Field Camp Planning Committee 2011-Present  
Organization and Cleaning for PS Renovation May 2016  
Library Needs Assessment Coordinator 2015-2016  
Physical Geography Hiring Committee Co-Chair, 2017-2018  
Petrology Hiring Committee Spring 2017  
Physical Geography Hiring Committee, 2015-2016  
Human Geography Hiring Committee Chair, 2014-2015  
Petrology Hiring Committee Spring 2013  
Lab Manager Hiring Committee Spring 2013

### **Tools, Methods, and Resources**

Publishing: Adobe Creative Suite, HTML, Microsoft Office Suite  
Computational/Geospatial: MatLab, Octave, SPSS, C, AgiSoft Photoscan, ENVI, ERDAS Imagine, ESRI ArcGIS, Google Earth, Image J, P2G, QGIS, Trimble  
Field Methods: RTK GPS, Total Station, Low Altitude Aerial Imagery Collection, Spectroradiometer data collection, Soil Classification, Paleoseismic Characterization, Geologic and Geomorphic Mapping.

## **Student Mentoring and Advising of Research**

### **Current Student Projects**

*Rachel Richards*, BS in Geology, “Paleoseismology and Tectonic Geomorphology of the Topliff Fault”

*Sally Ward*, BS in Environmental Science and Management, “Paleoseismology and Tectonic Geomorphology of the Topliff Fault”

*Brigham Whitney*, BS in Geology, “Paleoseismology and Tectonic Geomorphology of the Topliff Fault”

### **Past Projects and Graduated Students**

*Nicole Abueg*, BS in Geology, “Geochronology of the 2012 Dry Lake Valley Paleoseismic Site – 2012 field season” Now working at *Advanced Laboratories in Salt Lake City*.

*James Anderson*, BS in Geology, 2013. “Creep versus rupture in paleoseismic trenches.” Completed an *MS in Geology at Oklahoma State University*, now with *Devon Energy in Oklahoma City*.

*Michael Arnoff*, BS in Geology, “Paleoseismology of a natural exposure along the northern segment Provo segment of the Wasatch Fault” Working as an *Engineering Geologist in Wyoming*.

*Laila El-Ashmawy*, BS in Civil, Environmental, and Sustainable Engineering, 2011: Research Project: “Urban Sedimentation in a Desert City.” Was with *Schlumberger*, Graduate with an *MS/MBA from Colorado School of Mines*, then was with *International Energy Association*, now *Senior Oil Analyst with Kayrros in Paris, France*.

*Nicholas Butterfield*, BS in Geology, “Impacts and Timing of Two Large, Drainage-Damming Landslides in the Central Wasatch Range” now an *MS in geology student at New Mexico State University*.

*Joseph Kade Carlson*, BS in Geology, 2014 “Paleoseismology of the Wasatch Fault along the Traverse Ridge.” Graduated with an *MS in Geology from University of Kentucky*. was with *SLR Consulting now a Geologist II with Jacobs in Irvine, California*.

*Matt DeLora*, BS in Integrated Studies, “Mapping Environmental Injustice along the Wasatch Front, Utah”  
Now an MS student in GIS at the University of Utah.

*Clayton Forster*, BS in Geology, “Earthquake Geology of the Thousand Lake Fault”

*Bret Huffaker*, BS in Geology, “GIS analyses, Structure from Motion, and Paleohydrology of Pleasant Creek, Capitol Reef National Park” Co-advised by Suzanne Walther. Completed an MS in Geology at Northern Colorado University, was an *Assistant Geologist with Burns and McDonnell in Kansas City*. Now in Law School at the University of Utah.

*Dustin Joe*, BS in Geology, “GIS Assessment of Rockfall Hazard and Recurrence Rates in St. George, UT

*Lawrence Kellum*, BS in Geology, 2014 “Deciphering the position of Bonneville Shoreline Terraces using GIS: Tectonics and Isostasy.” **Geologist I, EA Engineering, Science and Technology, Inc. in Salt Lake City, UT.**

*Chris Langevin*, BS in Geology, “Paleoseismology of the Wasatch Fault at Traverse Ridge.”

*Ephram Matheson*, BS in Geology, “GIS logging of the Dry Lake Valley Paleoseismic site – 2013 field season.” And “Stress analyses of Wasatch segment boundaries” **Geologist at Prolific Mining, Green River, UT.**

*McKay Nelson*, BS in Integrated Studies, “Volcanism in Millard County UT”

*Joseph Phillips*, BS in Geology, “Paleoseismology of the Wasatch Fault at Traverse Ridge.” Now an MS student in Geological Sciences at Brigham Young University.

*Jeff Selck*, Continuing Education in Geology. “Methods in photo-documenting paleoseismic trenches – 2012 field season” was a MS student in Geology at BYU, now a Staff Geologist with IGES, inc in Draper, UT

*Andy Simister*, BS in Geology, “Mapping of Timanogos Cave System Fault.” now **Operations Coordinator at Vivint Smart Home in Orem, UT**

*Alison Stallings*, BS in Geology, “Fluvial Geomorphology and Flash Floods in Pleasant Creek, Capitol Reef National Park” Co-advised with Suzanne Walther

*Jake Stallings*, BS in Geology, “Reconnaissance Strip Mapping of the Topliff Fault.”

*Jason Thomas*, BS in Geology, “GIS Mapping of Faults across the Provo to Salt Lake City segments of the Wasatch Fault.”

*Jack Wells*, BS in Geology, “Field Assistance at the Traverse Ridge Paleoseismic Site.” Now with **Chesapeake Energy Corporation in Oklahoma City.**

## Courses Taught

UVU

**Introduction to Geology (GEO1010)** – Survey of physical geology using concept sketches, classroom group activities, field projects and lectures that incorporate discussion. (15)

**Physical Geography (GEOG 1000)** – Introduction to Physical Geography with an Earth Systems Science perspective linking human environmental interactions. (1 F2F and 1 Online)

**Meteorology (METO1010)** – A survey of weather and global climate processes (2)

**Geologic Hazards (GEO3200)** – We focus on the geologic hazards most central to the Salt Lake City area: Landslide and Earthquakes. In addition to the primary topic students learn about geotechnical evaluation of soils, geomorphology, geologic mapping, seismology, and social vulnerability (8)

**Geomorphology (GEO3500)** – A comprehensive introduction to the construction and evolution of landforms using *Key Concepts in Geomorphology* by Bierman and Montgomery. (6).

**Geographic Information Systems (GEOG 3600)** – Introduction to GIS using ESRI ArcGIS. (2)

**Advanced GIS (GEOG 3650)** – Project-based course using ESRI and additional software platforms. Focusing on Terrain Analysis and other raster-based approaches to geospatial problems. (2)

**Summer Field Geology (GEO 4600)** – I am a primary instructor for the UVU capstone summer field experience. I am the lead on our geomorphic mapping and neotectonics week (8)

**Earth Science Seminar (GEO 495R-07)** – Organizing guest speakers and facilitating student discussion.

Presenting professional development material about grad schools, research, internships, and careers (3)  
**Environmental Remote Sensing (GEOG 3400)** – Introduction to passive and Active Remote Sensing with environmental and earth system applications using ENVI, ArcGIS, QGIS, and AgiSoft (1)  
**Special Topics:** Small enrollment seminars with upper division students: Tectonic Geomorphology, Volcanism, GIS Topics, and Earthquake Geology and Fault Strip Mapping.

ASU

**NSF GK-12 Fellow;** Teaching in Sun Valley Elementary 7<sup>th</sup> Grade Earth Science 2010-2011  
**Interdisciplinary and Career Opportunities in the Geosciences:** *spring 2009*  
**Strike-Slip Tectonics: Evaluating Activity along the SAF** - *University of Potsdam, Germany, Sp. 2008*  
**Field Camp Teaching Assistant, 2005 and 2006.** I participated in one on one instruction in geologic mapping and report writing with ASU field geology students near Payson, AZ.  
**Introductory Geology Teaching Assistant, fall 2005.**  
**Introductory Geology Lab Instructor, spring 2005.**

### Teaching Development Activities

- Engaging Environmental Justice in Geoscience Courses, NAGT AGU Workshop, December 10, 2018.
- UNAVCO Short Course: Hooking undergraduates into geophysics data and methods (GPS, Lidar, InSAR, SfM photogrammetry) through societally important issues, Dec. 11<sup>th</sup>, 2016
- SCEC Workshop on Science Communication: Navigating a Digital Social World, Sept. 11<sup>th</sup>, 2016.
- College of Science and Health Teaching Academy Seminar: Fall 2013
- Utah Meeting of the National Association for Multicultural Education, Feb. 23<sup>rd</sup> 2013.
- UVU Concurrent Enrollment Education Workshop, Feb. 7<sup>th</sup> 2013.
- Council on Undergraduate Research (CUR): Undergrad. Res. Workshop, Dec. 3<sup>rd</sup>, 2012
- Utah Meeting of the National Association for Multicultural Education, Mar. 10<sup>th</sup> 2012.
- UVU New Faculty Teaching Scholars Mentoring and Seminars – Fall 2011 and Spring 2012
- Preparing for an Academic Career in the Geosciences: Workshop for Graduate Students and Post-Doctoral Fellows, NAGT and Stanford University, 2010
- Interdisciplinary Teaching and Pedagogy - co-led - investigation of student and instructor perspectives, Arizona State University 2009-2010.
- Historical Image Archives to Investigate Landscape Change, 2009 GSA Fall Meeting Short Course

### Published Teaching Activities

Toke, N.A., 2019, Mapping Plate Boundaries, SERC GETSI Activiy:

Toke, N.A., 2019, Tectonic Geomorphology in Google Earth, SERC GETSI Activiy:

### Invited Presentations and Colloquia

- **Orem City Library** “Going high and low to study earthquake hazards along the Wasatch fault” with D. Horns and M. Bunds, February 20<sup>th</sup>, 2018.
- **UVU Earth Science Seminar Series** “Utah’s Quaternary Faults: Slow and Slower, but Hazardous” February 6<sup>th</sup>, 2018.
- **David R. Keller Environmental Ethics Symposium** “Fault Zone Regulation, Seismic Hazard, and Social Vulnerability in Los Angeles, California” March 18<sup>th</sup>, 2015.
- **Grand Valley State University** “Socio-Environmental Interactions in the Geosciences: Urbanization, Earth Surface Processes, and Tectonics.” February 12<sup>th</sup>, 2015.
- **UVU Earth Science Seminar Series** “Systematic bias in reporting of geologic fault slip rates:

when probability density functions are important” April 1<sup>st</sup>, 2014.

- **San Jose State University Speaker Series** “Examining the consistency of fault segmentation over the Holocene: What paleoseismology and tectonic geomorphology have revealed along the Wasatch and central San Andreas Fault” February 24<sup>th</sup> 2014.
- **Utah Valley GIS Day Seminar Series** “Hazard or Amenity? GIS-based analyses of Earthquake Fault Zones, Regulation, and Social Vulnerability in Los Angeles, California” November 7<sup>th</sup>, 2013.
- **CSH Seminar Series, 2013– *Science in Service of Humanity*** “The Misbehavior and Undesired Interactions of Faults: Implications for Earthquake Hazards Near and Far” October 23<sup>rd</sup>, 2013.
- **Grand Valley State University** “Hazard or Amenity? Earthquake Fault Zones, Regulation, and Social Vulnerability in Los Angeles, CA” October 10<sup>th</sup>, 2013.
- **UVU Earth Science Seminar Series** “All Quiet on the Western Front? Tales from a trench on the creeping section of the San Andreas Fault.” Presented with Larry Kellum, Nicole Abueg, Jim Anderson, and Jeff Selck on November 27<sup>th</sup>, 2012.
- **UVU Earth Science Seminar Series** “Social Vulnerability and Earthquake Hazards in Los Angeles, CA” November 29<sup>th</sup>, 2011.
- **Intermountain AEG monthly meeting**, “Social Vulnerability and Earthquake Hazards in Los Angeles, CA” November 10, 2011.
- **BYU Geological Sciences Seminar Series** “Social Vulnerability and Earthquake Hazards in Los Angeles, CA” September 29, 2011.
- **University of Granada, Spain, Dept. de Geodinámica colloquium**: “Earthquake history of the central San Andreas Fault: paleoseismology, slip budget analysis, and implications for fault zone structure and seismic hazard.” May, 2008.
- **University of Potsdam, Germany**: Lecturer for a short course on Active Tectonics: “Strike-Slip Tectonics: evaluating tectonic activity along the San Andreas Fault system” April, 2008.

### **Professional Workshops, Certifications, and Short Courses**

- Lake Bonneville Geologic Conference and Short Course, October 3-6, 2018
- SCEC Workshop: Cajon Pass Earthquake Gate Area, September 9<sup>th</sup>, 2018
- Soils as a Tool for Quaternary Geology, with Dr. Missy Eppes, May 5-6, 2017
- Be a Better Reviewer, Advance Your Career, SSA Denver, April 17<sup>th</sup> 2017
- SCEC SoSAFE Workshop: Recent Successes and Future Challenges, September 10<sup>th</sup>, 2016
- OSL 1-Day Sample Collection Training at USU with T. Rittenour and others, May 4<sup>th</sup>, 2016
- California Earthquake Clearinghouse Training and Fieldwork Liability Certification, Sept 12<sup>th</sup> 2015.
- SCEC SoSAFE Geochronology Workshop, Oct. 28, 2014
- Utah Quaternary Fault Parameters working Group Meeting, February 2012-2017
- Environmental Justice in the city, Arizona State University, 2009
- The Superstition Vistas: developing a sustainable city east of Phoenix, AZ, 2008

### **Research Grants**

#### External Support:

Total Awarded: \$172,917  
UVU Portion: \$93,808

#### Internal Support:

Total Awarded: \$75,946  
Student portion: \$17,303

### **CURRENT INTERNAL SUPPORT**

**2019 CSH SAC Faculty Research with Students:** Constraining the timing of Earthquakes on Utah’s Thousand Lake Fault. **\$5,416.**

## PAST EXTERNAL SUPPORT

- 2016 National Earthquake Hazards Reduction Program (NEHRP) Grant**, Co-I with Daniel Horns, Characterizing the timing of ruptures crossing the boundary between the Provo and Salt Lake City segments of the Wasatch Fault: **\$31,366**.
- 2016 NVIDIA Hardware Grant**, 1 Tesla K40 CUDA GPU for image processing SfM of paleoseismic trench exposures ~ **\$3,000** (in kind donation). Received May, 2016.
- 2015 iUtah: Innovative Urban Transitions and Aridregion Hydro-Sustainability – Research Catalyst Grant**, collaborative with Drs. Bunds (PI) and Zanazzi: Multi-disciplinary Investigation of the Timing and Impact of Major Watershed-Damming Landslides in the Central Wasatch: Little Cottonwood and City Creek Canyon Case Studies, Submitted December 1<sup>st</sup>, 2014: **\$18,310**.
- 2013 Southern California Earthquake Center Grant PI**, Co-PI with JR. Arrowsmith (ASU): Examining the cause of significant ground deformation between 780 and 1031 A.D. at the Dry Lake Valley Paleoseismic Site: Do large earthquakes rupture the creeping section of the San Andreas Fault? **\$39,441** (\$23,776 UVU).
- 2012 Southern California Earthquake Center Grant PI**, Co-PI with JR. Arrowsmith (ASU), "Paleoseismic investigation along the inferred northernmost extent of the 1857 rupture: Do large southern San Andreas Fault ruptures extend into the creeping section?" **\$35,000** (\$17,356 UVU).
- 2009 GSA Student Research Grant**, Human modification of hydrologic structure and sedimentation in a desert city, **\$2,800**.
- 2007 National Earthquake Hazards Reduction Program (NEHRP) Grant**, co-written with JR. Arrowsmith (PI), Paleoseismic characterization of earthquakes at Parkfield, **\$43,000**.

## PAST INTERNAL (UVU) and STUDENT SUPPORT

- 2018 UVU GEL Award: PI: Michael Bunds**, Co-Investigators: D. Horns and N. Toké – “Earthquake Hazards Study of the Topliff Fault to Inform Earthquake risk in Utah and Tooele valleys and train students” **\$10,000**.
- 2018 UVU GEL Award: PI: Weihong Wang**, Co-Investigators: N. Toké, M. Bunds, and J. White – “Assessing the impact of 75 years of land use and land cover change on the Utah Lake watershed with remote sensing and spatial modeling” **\$10,000**.
- 2017 URSCA**: Jacob Stallings (student funding): Paleoseismology of the Topliff Hills Fault: **\$2,000**
- 2017 CSH SAC Faculty Research with Students**: Prospective Earthquake Geology Data Collection for Utah Lake, Topliff, and Thousand Lakes Faults. **\$3,915**.
- 2016 CSH SAC Student Support**: Matthew Delora, AAG Travel Support: **\$1,500**
- 2016 CSH SAC Faculty Research with Students**: Characterizing the timing of ruptures crossing the boundary between the Provo and Salt Lake City segments of the Wasatch Fault: Request for Course Reassign Time and Site Excavation.: **\$4,904**.
- 2015 URSCA**: Bret Huffaker: GIS analyses, Structure from Motion, and Paleohydrology of Pleasant Creek, Capitol Reef National Park. **\$2,000**.
- 2015 UVU Faculty Senate Travel Grant**: Matching Support Towards Attending the 2015 Annual Meeting of the Southern California Earthquake Center, September 2015: **\$375.96**
- 2015 CSH SAC Faculty Research with Students**: “Quarter Faculty Summer Salary Support for N.A. Toké: 6 Collaborative Projects Involving Students: **\$1,795**.
- 2015 CSH SAC Faculty Research with Students**: Developing a long (~3000 yr) paleoearthquake record for the west-central Denali Fault at the Nenana River, Alaska – UVU Collaboration with Dr. Bemis and Kade Carlson at the University of Kentucky: **\$3,360**.
- 2014 CSH SAC Faculty Research with Students**: Continued Investigation of the northern Provo Segment of the Wasatch Fault – Reassign time and Radiocarbon Samples. **\$4,100**
- 2014 UVU Student SURFs**: McKay Nelson: Morphology and Origin of Fault Scarps in the Millard, UT

- Volcanic Field (\$1,500), Michael Arnoff: Documenting existing and natural paleoseismic exposures along the Wasatch Fault near Alpine, UT (\$1,500). Total: **\$3,000.**
- 2014 UVU GEL Award:** Co-I with S. Walther – “One-Time Assistance to Establish Geomorphology Projects Engaging Students in Long-Term Monitoring of Utah’s Active Landscapes” **\$9,754.**
- 2014 CSH SAC Student Support:** Attendance of the 2014 Annual SCEC meeting by Ephram Matheson and Emily Esplin: **\$1,400.**
- 2013 CSH SAC Faculty Research with Students:** Paleoseismic Investigation of the northern Provo Segment of the Wasatch Fault – Reassign time fall 2013 and summer field supplies: **\$2,424.**
- 2013 CSH SAC Student Support:** Kade Carlson GSA Presentation: **\$393.**
- 2013 UVU Summer Undergraduate Research Fellowships:** Lawrence Kellum: Using LiDAR to map the Lake Bonneville High Stand Terraces and Wasatch Fault Displacements (\$1,500), Andrew Simister: The origin and kinematics of Timanogos Cave faults (\$1,500): **\$3,000.**
- 2013 GSA Rocky Mountain Section Undergraduate Research:** Lawrence Kellum: **\$350**
- 2012 CSH SAC Student Support:** Abueg field work: \$1000, Selck field work: \$1000, Anderson field work: \$1000, Kellum SCEC presentation: \$660. Total Received: **\$3,660.**
- 2011 CSH SAC Faculty Research with Students:** Development of student-centered earthquake geology research projects: reassign time and supplies: **\$2,600.**

#### UNFUNDED EXTERNAL PROPOSALS

- 2018 Southern California Earthquake Center Grant, Co-I with JR. Arrowsmith (ASU), C. Scott (ASU), and M. Bunds (UVU):** *Measuring near-fault creep along the San Andreas fault using high-resolution differential topography and UAVSAR* **\$24,958** (\$5,150 UVU).
- 2017 NSF I-USE Grant, PI: M. Stevens, Co-I(s): M. Sowder, K. Nielsen, M. Skiles, and W. Wang.** *Cooperative Undergraduate Research Experiences at Capitol Reef:* **\$300,000.**
- 2016 Southern California Earthquake Center, PI: M. Bunds, My Role: Co-I: Using Repeat Structure-from-Motion Photogrammetry Surveys to Map Evolution of Tectonic Geomorphology on the Creeping Sections of the San Andreas Fault:** **\$19,703**
- 2016 NSF I-USE Grant, PI: R. Tafalla and CO-PIs: W. Wang, N. Toké, K. Nielsen, and H. Ogden:** *Capitol Reef Environmental Undergraduate Research Cooperative.* **\$300,000.**
- 2016 National Earthquake Hazards Reduction Program (NEHRP) Grant, Collaborative Research with Brigham Young University and Utah Valley University: Timing, Rate, and Mechanisms of Slip along the Clear Lake Fault, Millard County, Utah. Collaborative with M. Bunds (UVU), S. Nelson (BYU), and J. McBride (BYU):** **\$67,500** (29,496 UVU).
- 2015 US Department of Education, First in the World, CFDA #81.116F, General Education Environmental Research Enhancement Project: Submitted by B. Moulton (Project Director), my proposed role: Project Team Member. Proposed Amount: \$2,046,209 over 4 years.**
- 2015 National Earthquake Hazards Reduction Program (NEHRP) Grant, Co-I(s) Drs. Bunds, Walther, and Zanazzi: Utilizing LiDAR and Geochronology to Assess Slip Rates, Paleoseismic Data Gaps, Slip Distribution, and Landslide Triggering along the Wasatch Fault:** **\$75,689.**
- 2012 NSF STEP SOLICITATION: STEM Success Through Research, Engagement, and Mentoring, D. Horns, PI; Tamara Goetz, CO-PI; Stan Klemetso, CO-PI; Afsaneh Minaie, CO-PI; Nathan A. Toké, CO-PI : \$1,982,909.**