

Susan L. Bilek

Earth and Environmental Sciences Dept.

New Mexico Institute of Mining and Technology, Socorro, NM 87801

Email: Susan.Bilek@nmt.edu Webpage: <https://nmt.edu/academics/ees/faculty/sbilek.php>

Professional Preparation:

B.S., with honors, Geosciences, minor in Economics, Penn State University, May 1996

M.S., Earth Sciences/Geophysics, University of California, Santa Cruz, June 1998

M.S. Thesis title: *Lower mantle heterogeneity beneath Eurasia imaged by parametric migration of shear waves*

Ph.D. Earth Sciences/Geophysics, University of California, Santa Cruz, June 2001

Ph.D. Dissertation title: *Multi-scale examination of seismogenic zone processes in circum-Pacific subduction zones*

Turner Postdoctoral Fellow, Dept. Geological Sciences, University of Michigan, 2001-2003

Appointments:

Professor, Earth and Environmental Science Dept., New Mexico Tech, 2014 – present

Associate Professor, Earth and Environmental Sciences Dept., New Mexico Tech, 2008 – 2014

Assistant Professor, Earth and Environmental Sciences Dept., New Mexico Tech, 2003 – 2008

Selected Recent Synergistic Activities:

National/International:

Board of Directors, Seismological Society of America, 2020-2022

Associate Editor, *Geophysical Research Letters*, 2020-present

Editorial Board, *Tectonophysics*, 2016-present

Associate Guest Editor, Subduction Top to Bottom 2, special issue of *Geospheres*, 2016-present

PI of IRIS PASSCAL Instrument Center, Oct 2013-present

IRIS Board of Directors, 2010-2012, Board secretary 2012

Reviewer: NSF, NNSA, *Science*, *Science Advances*, *Nature*, *Nature Geoscience*, *Earth and Planetary*

Science Letters, *Geology*, *Geophysical Research Letters*, *J. Geophysical Research*, *Geochemistry*

Geophysics Geosystems, *Bulletin of the Seismological Society of America*, *Geophysical J. International*,

Tectonophysics, *Geosphere*

Selected University Service (NMT):

Associate VP for Academic Affairs search committee, 2021

EES Department Geo program graduate coordinator, 2008-2011, 2012-2013, 2018-2019, 2021

EES Department Geology/Geochemistry/Geophysics Coordinator 2012 – 2019

NMT Education and Research Efficiency committee, 2019-2023

NMT Budget and Research committee, 2017-2019

NMT Promotions Committee, 2015-2018

NMT Academic Freedom and Tenure Committee Chair, 2015-2017

Manager of NM seismic network, 2005-2014

Funding Record (PI unless otherwise indicated)

Dates	Project	Funding Agency	NMT Amount
2019-2023	Monitoring bedload transport: Advancing seismic and acoustic surrogate methods in ephemeral channels (co-PI)	NSF Geomorphology and Geophysics, BSF (Israel)	\$497,177
2018-2021	Collaborative Research: Geophysical characterization of a karst aquifer using dynamic recharge events (co-PI)	NSF-Hydrologic Sciences	\$480,452
2018-2023	Operations of the IRIS/PASSCAL Instrument Center at New Mexico Tech (for SAGE II)	IRIS/NSF	\$22,318,096
2014-2016	Developing methods for detection and analysis of repeating earthquakes and non-volcanic tremor using Cascadia Initiative Amphibious Network data	NSF-Marine Geology and Geophysics	\$160,000
2013-2018	Operations of the IRIS/PASSCAL instrument center, in support of Seismological Facilities for the advancement of geoscience and EarthScope	IRIS/NSF	\$25,818,673
2013-2018	Collaborative MRI: Development of Geophysical Earth Observatory for Ice Covered Environments (GEOICE)	IRIS/NSF	\$549,000
2013-2018	Greenland Ice Sheet Monitoring Network	IRIS/NSF	\$791,090
2013-2015	Deep megathrust conditions by comparing seismicity rates and source with tremor, slow slip, and the Mw 7.4 Ometepe, Mexico earthquake	NSF-Geophysics	\$161,726
2012-2013	Examining the variation in earthquake parameters along the Nicaragua and Costa Rica subduction zone using onshore and offshore seismic data	NSF-Geophysics	\$61,800
2011-2014	Rio Grande Rift II: Kinematics and dynamics of continental deformation in low strain rate environments (co-PI)	NSF-EarthScope	\$132,972
2009-2014	Monitoring of Seismic Activity Near the Waste Isolation Pilot Plant (WIPP) Site	Washington TRU-Solutions (DOE)	\$543,717
2009-2011	Defining locations and patch sizes for slow earthquake ruptures in subduction zones	NSF-MGG	\$110,300
2008-2010	Characterization of subduction zone earthquake rupture parameters with respect to subduction zone complexity	NSF-MGG	\$117,598
2008-2009	Explosion source characterization of underground nuclear tests at the Nevada test site using data from the LLNL and SNL archives	Los Alamos National Lab	\$54,000
2006-2008	Development and application of modern analysis techniques to determine yields of Nevada Test Site explosions using Sandia National Laboratory seismic data	Sandia University Research Program (SURP)	\$80,000
2006-2008	Examination of earthquake stress drop variations using coda waves	Los Alamos National Lab	\$35,000

2005-2008	Finite element modeling of a subducted topographic high: Determining regional stress changes due to subducting features	NSF-Geophysics	\$132,235
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Current Graduate Students

Rhiannon Vieceli – PhD student
 Jessica Aerts – PhD student
 Jacob Gochenour – PhD student
 John Mitchell McLaughlin – MS student
 Jonathan Schmidt – M.S. student

Previous Graduate Student and Postdoctoral Advisees

Emily Morton, PhD, graduated 2020, scientist at U. Nevada Reno Seismology Lab
 Rosalynn Wang, M.S., graduated 2016, lecturer at Collin College, TX
 Holly Rotman, Ph.D., graduated 2015, data specialist, IRIS PASSCAL, NM
 Stanislav Edel, M.S., graduated 2015, physicist with Infinite Optics, CA
 Steven Bernsen, M.S., graduated 2015, PhD student at University of Maine
 Kyle Murray, M.S., (academic advisor), graduated 2015, PhD student at Cornell
 Ashley Hutton, M.S., (academic advisor), graduated 2015, geophysicist at Chevron
 Paige Czoski, M.S., (academic advisor), graduated 2014, geophysicist at Chevron
 Emily Morton, M.S., graduated 2013, PhD student at NMT
 Katherine Anderson, M.S., graduated 2012, seismologist, Sandia National Lab
 Maya El Hariri, Ph.D., graduated 2012, geophysicist with BP Houston
 Pamela Moyer, M.S., graduated 2010, PhD student at U. of New Hampshire
 Christine Ruhl, M.S., graduated 2010, Assistant Professor, U. Tulsa
 Jana Stankova-Pursley, M.S., graduated 2009, data analyst, USGS NEIC
 John Morton, M.S., graduated 2008, data analyst, LDEO
 Candy Elliott, M.S., graduated 2007, geologist with AMEC Geomatrix
 Kimberly Schramm, postdoctoral researcher, 2006-2010, seismologist, USGS ASL

Teaching Experience (NMT)

Earth Processes (ERTH 101) – 2015, 2021
 Catastrophic Earth (ERTH 150) - 2005, 2006, 2008, 2010, 2014, 2016, 2018
 General Geophysics (ERTH 448) - 2006, 2008, 2010, 2013, 2015, 2017, 2019, 2021
 Computational Methods for Geoscientists (GEOP 501) - 2017
 Theoretical Seismology (GEOP 523) – 2003, 2020
 Observational Seismology (GEOP 524) - 2004, 2005, 2007, 2010, 2012, 2014, 2016, 2018, 2019
 Tectonophysics (GEOP 525) - 2004, 2007, 2009, 2011
 Mechanics of Earthquakes and Faulting (GEOP/GEOL 558) - 2006, 2007, 2009, 2013, 2018
 Subduction Zone Processes (GEOP 572) - 2015
 Graduate Seminar (GEOL/GEOP/HYD 592) – 2013, 2018

Professional Societies and Honors

2020 Elected to Seismological Society of America Board of Directors
 2009 Elected to IRIS Board of Directors
 2007 New Mexico Tech Distinguished Teacher Nominee
 2001 - 2003 Turner Fellowship, University of Michigan
 2000 UC Institute of Geophysics and Planetary Physics Young Fellow

1996 – present SSA and AGU member

Publications: H-index = 25, i10-index=41, total citations = 3801 (as of March 2021, Google Scholar)
(* student or postdoc first author)

1. *Finlay, T.S., Worthington, L.L., Schmandt, B., Ranasinghe, N.R., **Bilek, S.L.**, and Aster, R.C., Teleseismic scattered-wave imaging using a large-N array in the Albuquerque Basin, New Mexico, *Seismo. Res. Lett.*, *91*, 287-303, doi:10.1785/0220190146, 2020.
2. Sweet, J.R., Huerta, A., Winberry, P., Anderson, K., Beaudoin, B., **Bilek, S.L.**, Carpenter, P., and Woodward, R., Building a geophysical Earth observatory for ice-covered environments (GEOICE), submitted, *EOS.*, 2020.
3. Pankow, K.L., Stickney, M., Ben-Horin, J.Y., Litherland, M., Payne, S., Koper, K.D., **Bilek, S.L.**, and Bogolub, K., Regional seismic network monitoring in the eastern Intermountain West, submitted to *Seismo. Res. Lett.*, *91*, 631-646, doi: 10.1785/0220190209, 2020.
4. *Morton, E.A., **Bilek, S.L.**, and Rowe, C., Newly detected earthquakes in Cascadia subduction zone linked to seamount subduction and deformed upper plate, *Geology*, *46*, 943-946, doi:10.1130/G45354.1, 2018.
5. **Bilek, S.L.** and Lay, T., Subduction zone megathrust earthquakes, (invited review paper) *Geospheres*, *14*, doi:10.1130/GES01608.1, 2018.
6. **Bilek, S.L.**, Schmandt, B., Worthington, L.L., Aster, R.C., Finlay, T.S., and Schmidt, J., The 2015 Sevilleta Socorro Magma Body mixed-mode seismic experiment, *Seismo. Res. Lett.*, doi: 10.1785/0220180070, 2018.
7. Sweet, J.R., Anderson, K.R., **Bilek, S.**, Brudzinski, M., Chen, X., DeShon, H., Hayward, C., Karplus, M., Keranen, K., Langston, C., Lin, F-C., Magnani, B., Woodward, R.L., A community experiment to record the full seismic wavefield in Oklahoma, *Seismo. Res. Lett.*, doi:10.1785/0220180079, 2018.
8. Ranasinghe, N.R., Worthington, L.L., Schmandt, B., Jiang, C.X., Finlay, T. , **S.L. Bilek**, and Aster, R.C., Upper crustal shear wave velocity structure of the south-central Rio Grande Rift above the Socorro magma body imaged with ambient noise by the large-N Sevilleta seismic array, *Seismo. Res. Lett.*, *89*, 1708-1719, doi:10.1785/0220180074, 2018.
9. *Ortiz, J.P., Person, M.A., Mozley, P.S., Evans, J.P., and **Bilek, S.L.**, The Role of Fault-Zone Architectural Elements on Pore Pressure Propagation and Induced Seismicity, *Groundwater*, doi:10.1111/gwat.12818, 2018.
10. *Nakai, J.S., Weingarten, M., Sheehan, A.F., **Bilek, S.L.**, and Ge, S., A possible causative mechanism of Raton Basin, New Mexico and Colorado earthquakes using recent seismicity patterns and pore pressure modeling, *J. Geophys. Res.*, doi:10.1002/2017JB014415, 2017.
11. *Nakai, J.S., Sheehan, A.F. and **Bilek, S.L.**, Seismicity of the rocky mountains and Rio Grande Rift from the EarthScope Transportable Array and CREST temporary seismic networks, 2008-2010, *J. Geophys. Res.*, *122*, 1–20, doi:10.1002/2016JB013389, 2017.

12. **Bilek, S.L.** Rotman, H.M., and Phillips, W.S., Low Stress Drop Earthquakes in the Rupture Zone of the 1992 Nicaragua Tsunami Earthquake, *Geophys. Res. Lett.*, 43, doi:10.1002/2016GL070409, 2016.
13. *Zhang, Y., Edel, S.S., Pepin, J., Person, M., Broadhead, R., Stone, W., **Bilek, S.L.**, Mozley, P., and Evans, J.P., Exploring the Potential Linkages Between Oil-Field Brine Reinjection, Crystalline Basement Permeability, and Triggered Seismicity for the Dagger Draw Oil Field, Southeastern New Mexico, USA Using Hydrologic Modeling, *Geofluids*, doi: 10.1111/gfl.12199, 2016.
14. *Morton, E.A. and **Bilek, S.L.**, Preliminary event detection of earthquakes using Cascadia Initiative data, *Seismo. Res. Lett.*, 86, doi:10.1785/0220150098, 1270-1277, 2015.
15. *Morton, E., and **Bilek, S.L.**, Limited dynamic triggering in the Socorro Magma Body region, Rio Grande Rift, New Mexico, *Bull. Seismo. Soc. Am.*, 104, 2182-2193, doi: 10.1785/0120140021, 2014.
16. Wang, K. and **Bilek, S.L.**, Invited review paper: Fault creep caused by subduction of rough seafloor relief, *Tectonophysics*, doi: 10.1016/j.tecto.2013.11.024, 2013.
17. *El Hariri, M., **Bilek, S.L.**, DeShon, H.R., Engdahl, E.R., and Bisrat, S., Along-strike variability of rupture duration in subduction zone earthquakes, *J. Geophys. Res.*, doi:10.1029/2012JB009548, 2013.
18. Pursley, J., **Bilek, S.L.** and Ruhl, C., Earthquake catalogs for New Mexico and bordering areas: 2005-2009, *New Mexico Geology*, 35, 3-12, 2013.
19. *Schramm, K., Patton, H., Abbott, R., **Bilek, S.**, Pancha, A., and Asten, M., Broadband Rayleigh-wave dispersion curve and shear wave velocity structure for Yucca Flat, Nevada, *Bull. Seismo. Soc. Am.*, 102, doi:10.1785/0120110296, 2012.
20. **Bilek, S.L.**, DeShon, H.R., and Engdahl, E.R., Spatial variations in earthquake source characteristics within the 2011 Mw=9.0 Tohoku, Japan rupture zone, *Geophys. Res. Lett.* 39, L09304, doi:10.1029/2012GL051399, 2012.
21. **Bilek, S.L.**, Engdahl, E.R., DeShon, H.R., and El Hariri, M., The 25 October 2010 Sumatra tsunami earthquake: Slip in a slow patch, *Geophys. Res. Lett.* 38, L14306, doi:10.1029/2011GL047864, 2011.
22. *Stankova-Pursley, J., **Bilek, S.L.**, Phillips, W.S. and Newman, A.V., Along-strike variations of earthquake apparent stress at the Nicoya Peninsula, Costa Rica subduction zone, *Geochem. Geophys. Geosyst.*, 12, Q08002, doi:10.1029/2011GC003558, 2011.
23. Wang, K. and **Bilek, S.L.**, Do subducting seamounts generate or stop earthquakes?, *Geology*, 39, 819-822, doi: 10.1130/G31856.1, 2011.
24. *El Hariri, M., and **Bilek, S.L.**, Stress changes and aftershock distribution of the 1994 and 2006 Java subduction zone earthquake sequences, *J. Geophys. Res.*, 116, B06306, doi:10.1029/2010JB008124, 2011.
25. *Moyer, P., **Bilek, S.L.**, and Phillips, W.S., Apparent stress variations near the Osa Peninsula, Costa Rica, influenced by subducted bathymetric features, *Geophys. Res. Lett.*, 38, L02304, doi:10.1029/2010GL045955, 2011.
26. **Bilek, S.L.**, Seismicity along the South American subduction zone: Large earthquakes, tsunamis, and subduction zone complexity (invited review paper), *Tectonophysics*, 495, 2-14, doi: 10.1016/j.tecto.2009.02.037, 2010.
27. *Ruhl, C., **Bilek, S.L.**, and Stankova-Pursley, J., Relocation and characterization of the August 2009 microearthquake swarm above the Socorro Magma Body in the central Rio Grande Rift, *Geophys. Res. Lett.*, 37, L23304, doi:10.1029/2010GL045162, 2010.

28. **Bilek, S.L.**, The role of subduction erosion on seismicity, *Geology*, 38, 479-480, doi:10.1130/focus052010.1, 2010.
29. **Bilek, S.L.**, Elliott, C.E., Lithgow-Bertelloni, C., Triggered seismicity associated with the 1990 Nicoya Gulf, Costa Rica (Mw=7.0) earthquake, *Geochem. Geop Geosystems*, 10, Q04S13, doi:10.1029/2008GC002317, 2009.
30. *Stankova-Pursley, J., **Bilek, S.L.**, Rowe, C.A., and Aster, R.C., Characteristics of the October 2005 microearthquake swarm and reactivation of seismic swarms over decade-scale time periods near Socorro, New Mexico, *Bull. Seismo. Soc. Am.*, 98, 93-105, doi: 10.1785/0120070108, 2008.
31. **Bilek, S.L.** and Engdahl, E.R., Rupture characterization and relocation of aftershocks for the 1994 and 2006 tsunami earthquakes in the Java subduction zone, *Geophys. Res. Lett.*, 34, L20311, doi:10.1029/2007GL031357, 2007.
32. **Bilek, S.L.**, Using earthquake rupture variations along the Sumatra-Andaman subduction system to examine fault zone variations, *Bull. Seismo. Soc. Am.*, 97, S62-S70, doi: [10.1785/0120050622](https://doi.org/10.1785/0120050622), 2007.
33. Geist, E.L., Titov, V.V., Arcas, D., Pollitz, F., and **Bilek, S.L.** Implications of the December 26, 2004 Sumatra-Andaman earthquake on tsunami forecast and assessment models for great subduction zone earthquakes, *Bull. Seismo. Soc. Am.*, 97, S249-S270, doi: 10.1785/0120050619, 2007.
34. **Bilek, S.L.**, Satake, K., and Sieh, K., Introduction to the Special Issue on the 2004 Sumatra-Andaman earthquake, *Bull. Seismo. Soc. Am.*, 97, S1-S5, doi: 10.1785/0120050633, 2007.
35. **Bilek, S.L.**, Influence of subducting topography on earthquake rupture, in *The Seismogenic Zone of Subduction Thrust Faults*, ed. T.Dixon and C.Moore, Columbia University Press, pg. 123-146, doi: 10.7312/dixo13866-005, 2007.
36. Lay, T. and **Bilek, S.L.**, Anomalous earthquake ruptures at shallow depths on subduction zone megathrusts, in *The Seismogenic Zone of Subduction Thrust Faults*, ed. T.Dixon and C.Moore, Columbia University Press, pg. 476-511, doi: [10.7312/dixo13866-015](https://doi.org/10.7312/dixo13866-015), 2007.
37. Geist, E.L., **Bilek, S.L.**, Arcas, D., Synolakis, C.E., Titov, V.V., and Oppenheimer, D.H., Differences in tsunami generation between the December 26, 2004 and March 28, 2005 Sumatra earthquakes, *Earth, Planets, Space*, 58, 185-193, doi: [10.1186/BF03353377](https://doi.org/10.1186/BF03353377), 2006.
38. **Bilek, S.L.** and Lithgow-Bertelloni, C., Stress changes in the Costa Rica subduction zone due to the 1999 Mw=6.9 Quepos earthquake, *Earth Planet. Sci. Lett.*, 230, 97-112, doi: [10.1016/j.epsl.2004.11.020](https://doi.org/10.1016/j.epsl.2004.11.020), 2005.
39. Lay, T., Kanamori, H., Ammon, C.J., Nettles, M., Aster, R., Beck, S.L., **Bilek, S.L.**, Brudzinski, M.R., Butler, R., DeShon, H., Ekstrom, G. Satake, K., Sipkin, S., and Ward, S.N., The great Sumatra-Andaman earthquake of December 26, 2004, *Science*, 308, 1127-1133, doi: 10.1126/science.1112250, 2005.
40. **Bilek, S.L.**, Conrad, C.P. and Lithgow-Bertelloni, C., Slab pull, slab weakening, and their relationship to deep intra-slab seismicity, *Geophys. Res. Lett.*, 32, L14305, doi:10.1029/2005GL022922, 2005.
41. **Bilek, S.L.**, Lay, T., and Ruff, L.J., Radiated seismic energy and earthquake source duration variations from teleseismic source time functions for shallow subduction zone thrust earthquakes, *J. Geophys. Res.*, 109, B09308, doi:10.1029/2004JB003039, 2004.
42. Conrad, C.P., **Bilek, S.L.** and Lithgow-Bertelloni, C., Great earthquakes and slab-pull: Interaction

between seismic coupling and plate-slab coupling, *Earth Planet. Sci. Lett.*, 218, 109-122, doi: [10.1016/S0012-821X\(03\)00643-5](https://doi.org/10.1016/S0012-821X(03)00643-5), 2004.

43. DeShon, H.R., Schwartz, S.Y. **Bilek, S.L.**, Dorman, L.M., Protti, J.M., Gonzalez, V., Flueh, E.R. and Dixon, T.H., Seismogenic zone structure of the southern Middle America Trench, Costa Rica, *J. Geophys. Res.*, 108, 2491, doi:10.1029/2002JB002294, 2003.
44. **Bilek, S.L.**, Schwartz, S.Y. and DeShon, H.R., Control of seafloor roughness on earthquake rupture behavior, *Geology*, 31, 455-458, doi: [10.1130/0091-7613\(2003\)031<0455:COSROE>2.0.CO;2](https://doi.org/10.1130/0091-7613(2003)031<0455:COSROE>2.0.CO;2), 2003.
45. **Bilek, S.L.** and Ruff, L.J., Analysis of the June 23, 2001 Mw=8.4 Peru underthrusting earthquake and its aftershocks, *Geophys. Res. Lett.*, 29, 1960, doi:10.1029/2002GL015543, 2002.
46. **Bilek, S.L.** and Lay, T., Tsunami earthquakes possibly widespread manifestations of frictional conditional stability, *Geophys. Res. Lett.*, 29, 1673, doi:10.1029/2002GL015215, 2002.
47. Geist, E.L. and **Bilek, S.L.**, Effect of depth-dependent shear modulus on tsunami generation along subduction zones, *Geophys. Res. Lett.*, 28, 1315-1318, doi: [10.1029/2000GL012385](https://doi.org/10.1029/2000GL012385), 2001.
48. **Bilek, S.L.** and Lay, T., Depth dependent rupture properties in Circum-Pacific subduction zones, *GeoComplexity and the Physics of Earthquakes*, AGU Geophys. Monograph 120, 165-186, doi: [10.1029/GM120p0165](https://doi.org/10.1029/GM120p0165), 2000.
49. **Bilek, S.L.** and Lay, T., Comparison of depth dependent fault zone properties in the Japan trench and Middle America trench, *Pure and Applied Geophysics*, 154, 433-456, doi: 10.1007/978-3-0348-8679-6_3, 1999.
50. **Bilek, S.L.** and Lay, T., Rigidity variations with depth along interplate megathrust faults in subduction zones, *Nature*, 400, 443-446, doi: [10.1038/22739](https://doi.org/10.1038/22739), 1999.
51. **Bilek, S.L.** and Lay, T., Variation in interplate fault zone properties with depth in the Japan subduction zone, *Science*, 281, 1175-1178, doi: 10.1126/science.281.5380.1175, 1998.
52. **Bilek, S.L.** and Lay, T., Lower mantle heterogeneity beneath Eurasia imaged by parametric migration of shear waves, *Physics of the Earth and Planetary Interiors*, 108, 201-218, doi: [10.1016/S0031-9201\(98\)00105-8](https://doi.org/10.1016/S0031-9201(98)00105-8), 1998.
53. Brocher, T.M., **Bilek, S.L.**, Clayton, R.W., Fuis, G.S., and Okaya, D.A. Stacked wide-angle recordings of air-gun signals from the 1994 Los Angeles Region Seismic Experiment (LARSE), California, *USGS Open File Report 97-132*, doi: [10.3133/ofr97132](https://doi.org/10.3133/ofr97132), 1997.

Recent Abstracts (2015-2020, † winner of student presentation award):

1. *Gochenour, J.A., Bilek, S.L., Woo, H.-B., Luhmann, A.J., Grapenthin, R., Martin, J.B., Seismic responses to the rate-of-change of surface and groundwater level within a karst aquifer system, Santa Fe River Sink-Rise, north-central Florida, AGU fall meeting, December 2020.
2. Luhmann, A.J. **Bilek, S.L.**, Grapenthin, R., Covington, M.D., Seismic observations of possible overpressured air pocket release in karst aquifers, AGU fall meeting, December 2020.
3. *Woo, H.-B., **Bilek, S.L.**, Gochenour, J., Adams, P.N., Luhmann, A., Grapenthin, R., Martin, J.B., Monitoring spatial and temporal changes in seismic velocity of the Florida karst aquifer system with phase cross-correlation and wavelet cross-spectral analysis, AGU fall meeting, December 2020
4. **Bilek, S.L.**, Morton, E.A., Rowe, C.A., A four-year catalog of Cascadia earthquakes using the Cascadia Initiative Amphibious Array and subspace detection algorithms, AGU fall meeting, December 2020.
5. *Vieceli, R.E., Dodge, D.A., **Bilek, S.L.**, Walter, W.R., Assessing the effectiveness of generalized

likelihood ratio test detector schemes in seismic event detection and the avoidance of non-target signals, AGU Fall meeting, December 2020

6. Grapenthin, R., **Bilek, S.**, Luhmann, A., Gochenour, J., Comparison of teleseismic responses at a co-located high-rate and high-density tilt and seismic array in Florida, Seismological Society of America Annual meeting, April 2020.
7. **Bilek, S.L.**, Cadol, D., Laronne, J.B., and Stark, K., Characterizing shallow subsurface seismic attenuation at the Arroyo de los Pinos bedload monitoring site, central New Mexico, AGU Fall meeting 2019.
8. *Aerts, J. and **S.L. Bilek**, Relocation of the 2009 earthquake swarm above the Socorro Magma Body, central New Mexico, USA, AGU Fall meeting, 2019.
9. *Morton, E.A., **Bilek, S.L.**, and Rowe, C.A., Small Cascadia Subduction Zone Earthquakes and Their Ties to Seismogenic Zone Heterogeneities, AGU Fall meeting, 2019.
10. *Penney, L.J., **Bilek, S.L.**, Gochenour, J.A., Luhmann, A.J., Grapenthin, R., and Martin, J.B., Characterization of Environmental Seismic Noise near a Karst Aquifer in Florida, AGU Fall meeting, 2019.
11. *Vieceli, R.E., **Bilek, S.L.**, Dodge, D., Pyle, M., Walter, W.R., Enhancing the earthquake catalog in the Socorro Magma Body region using phase picks produced by a dynamic correlation processor, AGU Fall meeting, 2019.
12. *Fintel, A., Worthington, L., Schmandt, B., **Bilek, S.L.**, Aster, R.C., Finlay, T., Ranasinghe, N., Nakai, J., Using local seismicity recorded on large-N array to identify reflections off the mid-crustal Socorro Magma Body in Socorro, NM, AGU Fall meeting, 2019.
13. *Gochenour, J.A., **Bilek, S.L.**, Grapenthin, R., Luhmann, A.J., Penney, L., Martin, J.B., Expanding environmental seismology to karst aquifer systems: Correlating seismic power to discharge from a conduit network, AGU Fall meeting, 2019.
14. *Ciarico, J., Grapenthin, R., Gochenour, J.A., **Bilek, S.L.**, Luhmann, A.J., Flint, M., High-rate tilt observations at a karst conduit system, AGU Fall meeting, 2019.
15. Sweet, J.R., Huerta, A.D., Winberry, J.P., Anderson, K.R., Beaudoin, B.C., **Bilek, S.L.**, Carpenter, P., Woodward, R.S., Building a geophysical earth observatory for ice-covered environments (GEOICE), AGU Fall meeting, 2019.
16. Worthington, L., Finlay, T., Ranasinghe, N., Schmandt, B., **Bilek, S.L.**, Aster, R.C., Fintel, A., New insights into fault kinematics and basin structure in the southern Albuquerque basin from the dense passive Sevilleta seismic experiment (*invited*), Geological Society of America Annual Meeting, September 2019.
17. Luhmann, A.J., Browning, C.K., Dykhouse, L., Gochenour, J.A., Barbosa, S.A., **Bilek, S.L.**, Grapenthin, R., Summerall, T., Van Der Velde, K., Martin, J.B., Penney, L., Estimating conduit diameter in an eogenetic karst aquifer from modified water temperature signals, Geological Society of America Annual Meeting, September 2019.
18. **Bilek, S.L.**, Seismicity characteristics above the Socorro magma body, central New Mexico (*invited*), New Mexico Geological Society Annual Meeting, April 2019.
19. *Gochenour, J.A., **Bilek, S.**, Grapenthin, R., Luhmann, A.J., Martin, J.B., Barbosa, S.A., Seismic observations of precipitation and recharge-related signals in the Floridan aquifer at Santa Fe River Sink and Rise, Florida, Seismological Society of America meeting, April 2019.
20. *Morton, E.A., **Bilek, S.L.**, Rowe, C.A., Repeating earthquakes in the Cascadia subduction zone and their ties to the seismogenic zone heterogeneities, Seismological Society of America meeting, April 2019.
21. Sweet, J., Anderson, K., Frassetto, A., Beaudoin, B., **Bilek, S.**, Woodward, B., Evolution of the IRIS Portable Facility: New tools for wavefield imaging, rapid response, and magnetotellurics, Seismological Society of America meeting, April 2019.

22. **Bilek, S.L.**, What governs the size, location and frequency of great subduction zone earthquakes and how is this related to the spatial and temporal variation of slip behaviors observed along subduction faults? (*invited*), GeoPRISMS TEI Synthesis and Integration workshop, San Antonio, TX, Feb 2019.
23. **Bilek, S.L.** and Lay, T., Properties of Shallow Subduction Megathrust Earthquakes: A Multi-Decade Review (*invited*), AGU Fall Meeting, December 2018.
24. **Bilek, S.L.** and Morton, E.A., Earthquake Stress Drop Estimates for Shallow Earthquakes Along the Central Oregon Segment of the Cascadia Subduction Zone, AGU Fall Meeting, December 2018.
25. Luhmann, A.J., **Bilek, S.L.**, and Grapenthin, R., Seismic monitoring of artificial and natural recharge events in karst aquifers, AGU Fall Meeting, December 2018.
26. *Morton, E.A., **Bilek, S.L.**, and Rowe, C.A, Newly Detected, Small Earthquakes to Delineate Fault Heterogeneities in the Cascadia Seismogenic Zone, AGU Fall Meeting, December 2018.
27. *Vieceli, R.E., **Bilek, S.L.**, Lowe-Worthington, L., Schmandt, B., Aster, R.C., Dodge, D.A., Pyle, M.L., and Walter, W.R., Using Cross-Correlation Methods to Characterize Earthquakes Associated with the Socorro Magma Body, AGU Fall Meeting, December 2018.
28. Sweet, J., Anderson, K., Beaudoin, B., **Bilek, S.L.**, Frassetto, A., Woodward, B., Evolution of the IRIS Portable Facility: New tools for Wavefield Imaging, Rapid Response, and Magnetotellurics, AGU Fall Meeting, December 2018.
29. Luhmann, A.J., **Bilek, S.L.**, and Grapenthin, R., Seismic responses during recharge events in karst aquifers: Potential records of pressure pulses?, GSA annual meeting, November 2018.
30. Quiros, D., Ranasinghe, N., Pulliam, J., Worthington, L.L., **Bilek, S.**, Feasibility study of vertical seismic profiling methods to image the Socorro Magma Body with a large-N nodal array and local seismicity, 2018 IRIS Workshop, June 2018..
31. **Bilek, S.L.**, Schmidt, J., and Vieceli, R., Earthquake relocation above the Socorro Magma Body, central New Mexico using an 800+ seismic station array, Seismological Society of America Meeting, May 2018.
32. † Morton, E.A., **Bilek, S.L.** and Rowe, C.A., Newly Detected, Small Earthquakes to Delineate Fault Heterogeneities in the Cascadia Seismogenic Zone, Seismological Society of America Meeting, May 2018.
33. *Vieceli, R.E., **Bilek, S.L.** Lowe-Worthington, L., Schmandt, B., Aster, R.C., Dodge, D.A., Pyle, M.L., and Walter, W.R., Using Cross-Correlation Methods to Characterize Earthquakes Associated with the Socorro Magma Body, Seismological Society of America Meeting, May 2018.
34. **Bilek, S.L.**, Luhmann, A.J., Grapenthin, R., Karst aquifer characterization using geophysical remote sensing of dynamic recharge events, AGU Fall meeting, 2017.
35. *Morton, E.A., **Bilek, S.L.**, and Rowe, C.A., Margin-wide Earthquake Subspace Scanning Along the Cascadia Subduction Zone Using the Cascadia Initiative Amphibious Dataset, AGU Fall meeting, 2017.
36. *Vieceli, R.E., **Bilek, S.L.**, Lowe-Worthington, L., Schmandt, B., Aster, R.C., Walter, W.R., Dodge, D.A., Pyle, M.L., Using cross-correlation methods to characterize earthquakes associated with the Socorro Magma Body, AGU Fall meeting, 2017.
37. *Schmidt, J., **Bilek, S.L.**, Worthington, L.L.; Schmandt, B., Aster, R., Using earthquake location and coda attenuation analysis to explore the upper crust above the Socorro Magma Body, AGU Fall meeting, 2017.
38. *Kenefic, L., Morton, E.A., **Bilek, S.L.**, Detections of repeating earthquakes within the Cascadia subduction zone using 2013-2014 Cascadia Initiative Amphibious network data, AGU Fall meeting, 2017.
39. *Ranasinghe, N.R., Worthington, L.L., Schmandt, B., Jiang, C.X., Finlay, T., **Bilek, S.L.**, Aster, R.C., Shallow velocity structure of the Socorro Magma Body from ambient noise tomography using the large-N Sevilleta array, central Rio Grande Rift, New Mexico, AGU Fall meeting, 2017.

40. *Finlay, T., Worthington, L., Schmandt, B., Hansen, S.M., **Bilek, S.L.**, Aster, R., Ranasinghe, N., Virtual source reflection imaging of the Socorro Magma Body, New Mexico, using a dense seismic array, AGU Fall meeting, 2017.
41. **Bilek, S.L.**, Luhmann, A.J., Grapenthin, R., Diniakos, R.S., Morton, E.A., Alexander, E.C., Alexander, S.C., Larsen, M., Green, J.A., Seismic monitoring of karst recharge events – results from a pilot experiment, Geological Society of America annual meeting, October 2017.
42. Luhmann, A.J., **Bilek, S.L.**, Grapenthin, R., and Martin, J., Geophysical characterization of karst aquifers using dynamic recharge events, Geological Society of America annual meeting, October 2017.
43. *Morton, E.A., **Bilek, S.L.**, and Rowe, C.A., Newly detected Cascadia subduction zone earthquakes offshore central Oregon, Geological Society of America annual meeting, October 2017.
44. Bilek, S.L., Morton, E.A., and Rowe, C.A., Newly detected Cascadia subduction zone earthquakes offshore central Oregon using the Cascadia Initiative Amphibious dataset, OBS Symposium, 2017.
45. *Vieceli, R., **Bilek, S.**, Lowe-Worthington, L., Schmandt, B., Aster, R., Using a new temporary seismic network to detect earthquakes in the Socorro Magma Body region, New Mexico Geological Society meeting, 2017.
46. *Finlay, T., Worthington, L., Schmandt, B., Hansen, S., **Bilek, S.**, Aster, R., Ranasinghe, N., Preliminary Results from the Sevilleta Array in the central Rio Grande Rift, NM: Virtual Source Reflection Imaging of the Socorro Magma Body, Seismological Society of America Meeting, April 2017.
47. *Morton, E.A., **Bilek, S.L.**, and Rowe, C.A., Cascadia Seismogenic Zone Seismicity as Detected by the Cascadia Initiative, Seismological Society of America Meeting, April 2017.
48. *Vieceli, R., **Bilek, S.**, Lowe-Worthington, L., Schmandt, B., Aster, R., Applying Cross-Correlation Methods to Broadband and Nodal Data to Detect and Locate Earthquakes Associated with the Socorro Magma Body, Seismological Society of America Meeting, April 2017.
49. Laronne, J.B., **Bilek, S.**, Cadol, D., Gimbert, F., Dietz, M., Halfi, E., Stark, K., Turowski, J., Varyu, D., Understanding bedload transport from seismic signals using various reliable monitoring techniques, EGU Galileo conference From process to signal – advancing environmental seismology, 2017.
50. *Vieceli, R., **Bilek, S.**, Lowe-Worthington, L., Schmandt, B., Aster, R., Applying Cross-Correlation Methods to Broadband and Nodal Data to Detect and Locate Earthquakes Associated with the Socorro Magma Body, EarthScope National Meeting, 2017.
51. *Ranasinghe, N.R., Worthington, L.L., Schmandt, B., Jiang, C.X., **Bilek, S.L.**, and Aster, R., Shallow velocity structure of the Socorro Magma Body from ambient noise tomography using the large-N Sevilleta array, central Rio Grande Rift, New Mexico, EarthScope National Meeting, May 2017.
52. **Bilek, S.L.**, Links Between Earthquake Characteristics and Subducting Plate Heterogeneity in the 2016 Pedernales Ecuador Earthquake Rupture Zone, AGU Fall meeting, 2016 (invited).
53. **Bilek, S.L.**, Luhmann, A.J., Diniakos, R.S., Morton, E.A., Rinehart, A., Alexander, E.C., Alexander, S.C., Larsen, M., Green, J.A., Seismic signals recorded during artificial and natural karst recharge events, AGU Fall meeting, 2016.
54. Beaudoin, B., Anderson, K., and **Bilek, S.L.**, IRIS PASSCAL Instrument Center: Evolving Portable Seismology, AGU Fall meeting 2016.
55. *Diniakos, R.S., **Bilek, S.L.**, Rowe, C., and Draganov, D., Examining seismicity patterns in the 2010 M 8.8 Maule rupture zone, AGU Fall meeting 2016.
56. *Morton, E., **S.L. Bilek**, C. Rowe, Cascadia Seismicity Related to Seamount Subduction as detected by the Cascadia Initiative Amphibious Data, AGU Fall meeting 2016.
57. Person, M., Edel, S., Zhang, Y., Broadhead, R., Pepin, J., Mozley, P.S., Evans, P., **Bilek, S.**, Exploring the potential linkages between oil-field brine reinjection, crystalline basement

- permeability, and triggered seismicity for the Dagger Draw oil field, southeastern New Mexico, USA using hydrologic modeling, GSA annual meeting, September 2016.
58. Luhmann, A.J., **Bilek, S.L.**, Diniakos, R.S., Morton, E.A., Rinehart, A., Alexander, E.C., Alexander, S.C., Larsen, M., Green, J.A., Grapenthin, R., and Spinelli, G.A., Delineating karst conduit location using geophysical signals generated during recharge events, GSA annual meeting, September 2016.
 59. Walter, J., Frohlich, C., **Bilek, S.L.**, and Borgfeldt, T.M., West Texas-New Mexico seismicity: induced and natural sequences along old tectonic features, GSA annual meeting, September 2016.
 60. *Nakai, J., Sheehan, A., and **Bilek, S.L.**, Seismicity of the Rocky Mountains and Rio Grande Rift from the Transportable Array and CREST Temporary Seismic Networks, 2008-2010, GSA annual meeting, September 2016
 61. *Morton, E.A., **Bilek, S.L.**, and Rowe, C.A., Cascadia Seismogenic zone earthquake detection and location, IRIS workshop, June 2016.
 62. *Morton, E.A., **Bilek, S.L.**, and Rowe, C.A., Cascadia Seismogenic zone earthquake detection and location, Seismological Society of America meeting, April, 2016.
 63. **Bilek, S.L.**, Brudzinski, M., Phillips, W.S., Earthquake Source Parameters for Earthquake Swarms Adjacent to Slow Slip, Tremor, and Large Earthquakes in the Oaxaca, Mexico Region, Seismological Society of America meeting, April, 2016.
 64. *Diniakos, R., **Bilek, S.L.**, and Rowe, C., Detection and location of earthquakes along the west coast of Chile: Examining seismicity in the 2010 M 8.8 Maule rupture zone, Seismological Society of America meeting, April, 2016.
 65. Walter, J., Frohlich, C., Gale, J., Borgfeldt, T., **Bilek, S.**, Gerzina, J., Dotray, P., West Texas seismicity and distinguishing natural from anthropogenic causes, IRIS Workshop, June, 2016.
 66. **Bilek, S.L.**, Schmandt, B., Hansen, S., Worthington, L., Aster, R., Schmidt, J., Signal detection and earthquake catalogue development using a short-term, over 800-station, mixed-mode seismic array deployed above the Socorro Magma Body, NM, AGU Fall annual meeting, San Francisco, CA, December 2015.
 67. **Bilek, S.L.**, Phillips, W.S., Walter, J., Peng, Z., Schwartz, S., and Brudzinski, M., Source Parameters for Repeating Earthquakes along the Middle America Trench (invited), AGU Fall annual meeting, San Francisco, CA, December 2015.
 68. *Diniakos, R., **Bilek, S.L.**, Rowe, C., Dragonov, D. and Hayes, G., Detection and location of earthquakes along the west coast of Chile: Examining seismicity in the 2010 M 8.8 Maule and 2014 M 8.1 Iquique earthquake rupture zones, AGU Fall annual meeting, San Francisco, CA, December 2015.
 69. *Morton, E., **Bilek, S.L.**, and Rowe, C., Event Detection and Location of Earthquakes Using the Cascadia Initiative Dataset, AGU Fall annual meeting, San Francisco, CA, December 2015.
 70. *Nakai, J., Sheehan, A., and **Bilek, S.L.**, Inversion of local earthquake and mine blast P and S arrivals recorded at USArray Transportable Array stations to determine crustal velocity structure of the Rio Grande rift and Rocky Mountains, AGU Fall annual meeting, San Francisco, CA, December 2015.
 71. *Zhang, Y., Edel, S., Person, M., Pepin, J., **Bilek, S.L.**, Broadhead, R., Mozley, P., Pore pressure evolution and induced seismicity within the Permian Basin in southeast New Mexico, AGU Fall annual meeting, San Francisco, CA, December 2015.
 72. *Morton, E. and **Bilek, S.L.**, Earthquake detection and location using Cascadia Initiative Data Year 1, Geoprisms Theoretical and Experimental Institute meeting, Redondo Beach, CA, October 2015.
 73. **Bilek, S.L.**, Source Parameters for Small Earthquakes along the Middle America Trench – Focus on 2012 Nicoya Earthquake Rupture Zone, Geoprisms Theoretical and Experimental Institute meeting, Redondo Beach, CA, October 2015.
 74. **Bilek, S.L.**, Earthquake detection and location using Cascadia Initiative Data Year 1 (invited), OBSIP Ocean Bottom Seismology Symposium, Vancouver, WA, Oct 2015.

75. *Nakai, J., Sheehan, A., and **Bilek, S.L.**, Two year catalog of USArray Transportable Array seismicity in the Rio Grande Rift region and implications for induced seismicity and the current state of stress, Earthscope National Meeting, June 2015
76. **S.L. Bilek** and Morton, E., Preliminary event detection of earthquakes using Cascadia Initiative data, Investigating Cascadia Subduction Zone Geodynamics Through Scientific Ocean Drilling workshop, Seattle WA, 2015.
77. Wang, K., Brown, L., Gao, X., and **Bilek, S.L.**, Rupture and creep behaviors of subduction interface controlled by fault zone heterogeneity (invited), EGU meeting, Vienna, 2015.
78. **Bilek, S.L.**, Socorro Magma Body Array – using a mixed mode array to study the shallow magma body (invited), IRIS Technical Interchange Meeting, Albuquerque, April 2015.
79. *Morton, E.A., **Bilek, S.L.**, and Rowe, C.A., Detection of repeating earthquakes using the Cascadia Initiative Amphibious dataset, Seismological Society of America meeting, April, 2015.
80. Winberry, J.P., Huerta, A.D., Bernsen, S.P., Parker, T., Carpenter, P., Woodward, R., Beaudoin, B.C., **Bilek, S.L.**, Anderson, K.R., Development of the next generation of seismological instrumentation for polar environments, Seismological Society of America meeting, April, 2015.
81. *Nakai, J., Sheehan, A., Weingarten, M., **Bilek, S.L.**, Potential induced seismicity in the Raton Basin, Colorado and New Mexico, 2008-2009, Seismological Society of America meeting, April, 2015.