

MATTHEW W. HERMAN  
Assistant Professor  
Department of Geological Sciences  
California State University, Bakersfield  
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## Professional Appointments

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<b>California State University, Bakersfield</b> , Bakersfield, CA	
Assistant Professor	Aug 2020–Present
<b>Utrecht University</b> , Utrecht, The Netherlands	
Postdoctoral Researcher, Tectonophysics Research Group (Supervisor: Rob Govers)	2017–2020
<b>The Pennsylvania State University</b> , University Park, PA	
NASA Ph.D. Fellow, Department of Geosciences	2015–2017
Teaching Assistant, Department of Geosciences	2010–2015

## Education

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<b>The Pennsylvania State University</b>	
Ph.D. Geosciences (Advisor: Kevin Furlong)	2017
Dissertation: <i>Deformation Processes Throughout the Earthquake Cycle</i>	
M.S. Geosciences (Advisor: Kevin Furlong)	2012
Thesis: <i>Regional Moment Tensors from the 2010-2012 Canterbury Earthquake Sequence, South Island, New Zealand</i>	
<b>Amherst College</b>	
B.A. Geology and Physics (double major), Magna cum laude (GPA: 3.87/4.00) (Advisor: John Cheney)	2009
Thesis: <i>P-T Paths of Biotite-Sillimanite-Garnet Gneisses from the Highland Mountains, Southwest Montana</i>	

## Peer-Reviewed Publications

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- Herman, M.W.**, Furlong, K.P. (2024). Implications of recent earthquakes for megathrust coupling and seismicity in the vicinity of the Shumagin Gap. In J.T. Freymueller, N.A. Ruppert, & M.A. Jadamec (Eds.), *Tectonics and Seismic Structure of Alaska and Northwestern Canada: EarthScope and Beyond*. 656 pp.
- Herman, M.W.**, Furlong, K.P., Benz, H.M. (2023). Substantial upper plate faulting above a shallow subduction megathrust earthquake: Mechanics and implications of the surface faulting during the 2016 Kaikoura, New Zealand, earthquake. *Tectonics* 42, e2022TC007645.
- D'Acquisto, M., **Herman, M.**, Riva, R., Govers, R. (2023). Can plate bending explain the observed faster landward motion of lateral regions of the subduction zone after major megathrust earthquakes? *Journal of Geophysical Research: Solid Earth* 128, e2022JB025431.
- Simons, W., Broerse, T., Shen, L., Kleptsova, O., Nijholt, N., Hooper, A., Pietrzak, J., Morishita, Y., Naeije, M., Lhermitte, S., **Herman, M.**, Sarsito, D., Efendi, J., Govers, R., Vigny, C., Abidin, H., Pramono, G., Nugroho, C., Visser, P., Riva, R. (2022). A tsunami generated by a strike-slip event: constraints from GPS and SAR data on the 2018 Palu earthquake. *Journal of Geophysical Research: Solid Earth* 127, e2022JB024191.
- Paulssen, H., Micallef, T., Bouwman, D.R., Ruigrok, E., **Herman, M.**, Fadel, I., van der Meijde, M., Kwadiba, M., Maritinkole, J., Ntibinyane, O. (2022). Rifting of the Kalahari Craton through Botswana? New seismic evidence. *Journal of Geophysical Research: Solid Earth* 127, e2021JB023524.
- McKenzie, K.A., Furlong, K.P., **Herman, M.W.** (2022). Regional and local patterns of upper-plate deformation in Cascadia: The importance of the down-dip extent of coupling relative to upper-plate strength contrasts. *Tectonics* 41, e2021TC007062.
- Blasweiler, M., **Herman, M.W.**, Houtsma, F., Govers, R. (2022). Tectonic context and possible triggering of the 2019-2020 Puerto Rico earthquake sequence. *Seismological Research Letters* 93, 2A, 584-593.

- Cromwell, C.W., Furlong, K.P., Bergman, E.A., Benz, H.M., Yeck, W.L., **Herman, M.W.** (2022). Seismotectonic analysis of the 2019-2020 Puerto Rico sequence: The value of absolute earthquake relocations in improved interpretations of active tectonics. *Seismological Research Letters* 93, 2A, 544-554.
- Herman, M.W.**, Furlong, K.P. (2021). Triggering an unexpected earthquake in an uncoupled subduction zone. *Science Advances* 7, 13, eabf7590.
- McKenzie, K.A., Furlong, K.P., **Herman, M.W.** (2020). Bi-directional loading of the subduction interface: Evidence from kinematics of slow slip events. *Geochemistry, Geophysics, Geosystems* 21, e2020GC008918.
- Herman, M.W.**, Govers, R. (2020). Locating fully locked asperities along the South America subduction megathrust: A new physical inter-seismic inversion approach in a Bayesian framework. *Geochemistry, Geophysics, Geosystems* 21, e2020GC009063.
- Herman, M.W.**, Govers, R. (2020). Stress evolution during the megathrust earthquake cycle and its role in triggering extensional deformation in subduction zones. *Earth and Planetary Science Letters* 544, 116379.
- Herman, M.W.**, Furlong, K.P., Govers, R. (2018). The accumulation of slip deficit in subduction zones in the absence of mechanical coupling: Implications for the behavior of megathrust earthquakes. *Journal of Geophysical Research: Solid Earth* 123, 8260-8278.
- Meyers, B., **Herman, M.W.**, Furlong, K.P., Pananont, P. (2018). Evaluating the state of stress and seismic hazard in Thailand and vicinity through finite element modeling. *Journal of Asian Earth Sciences* 166, 260-269.
- Kintner, J.A., Ammon, C.J., Cleveland, K.M., **Herman, M.** (2018). Rupture processes of the 2013-14 Minab earthquake sequence, Iran. *Geophysical Journal International* 213, 1898-1911.
- Govers, R., Furlong, K.P., van de Wiel, L., **Herman, M.W.**, Broerse, T. (2018). The geodetic signature of the earthquake cycle at subduction zones: Model constraints on the deep processes. *Reviews of Geophysics* 56, 6-49.
- Furlong, K.P., **Herman, M.** (2017). Reconciling the deformational dichotomy of the 2016 Mw 7.8 Kaikoura, New Zealand, earthquake. *Geophysical Research Letters* 44, 6788-6791. (Research Commentary)
- Nealy, J.N., **Herman, M.W.**, Moore, G.L., Hayes, G.P., Benz, H.M., Bergman, E.A., Barrientos, S.E. (2017). The 2017 Valparaiso earthquake sequence and the megathrust patchwork of central Chile. *Geophysical Research Letters* 44, 8865-8872.
- Pananont, P., **Herman, M.W.**, Pornsopin, P., Furlong, K., Habangkaem, S., Waldhauser, F., Wongwai, W., Limpisawad, S., Warnitchai, P., Kosuwan, S., Wechbunthung, B. (2017). Seismotectonics of the 2014 Chiang Rai, Thailand, earthquake sequence. *Journal of Geophysical Research: Solid Earth* 122, 6367-6388.
- Herman, M.W.**, Nealy, J.L., Yeck, W.L., Barnhart, W.D., Hayes, G.P., Furlong, K.P., Benz, H.M. (2017). Integrated geophysical characteristics of the 2015 Illapel, Chile, earthquake. *Journal of Geophysical Research: Solid Earth* 122, 4691-4711.
- Herman, M.W.**, Furlong, K.P. (2016). Revisiting the Canterbury earthquake sequence after the 14 February 2016 Mw 5.7 event. *Geophysical Research Letters* 43, 7503-7510.
- Herman, M.W.**, Furlong, K.P., Hayes, G.P., Benz, H.M. (2016). Foreshock triggering of the 1 April 2014 Mw 8.2 Iquique, Chile, earthquake. *Earth and Planetary Science Letters* 447, 119-129.
- Hayes, G.P., **Herman, M.W.**, Barnhart, W.D., Furlong, K.P., Riquelme, S., Benz, H.M., Bergman, E., Barrientos, S., Earle, P.S., Samsonov, S. (2014). Continuing megathrust earthquake potential in Chile after the 2014 Iquique earthquake. *Nature* 512, 295-298.
- Herman, M.W.**, Herrmann, R.B., Furlong, K.P., Benz, H.M. (2014). Using regional moment tensors to constrain the kinematics and stress evolution of the 2010-2013 Canterbury earthquake sequence, South Island, New Zealand. *Tectonophysics* 633, 1-15.
- Hayes, G.P., Furlong, K.P., Benz, H.M., **Herman, M.W.** (2014). Triggered aseismic slip adjacent to the 6 February 2013 Mw 8.0 Santa Cruz Islands megathrust earthquake. *Earth and Planetary Science Letters* 388, 265-272.

## In Review

- Govers, R., **Herman, M.W.**, van de Wiel, L.Y., Nijholt, N. (*In Review at Tectonics*). Probabilistic Assessment of the Causes of Active Deformation in Greece, western Anatolia, and the Balkans Using Finite Element Models.

## U.S. Geological Survey Publications

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- Schmitt, R., **Herman, M.**, Barnhart, W., Furlong, K., Benz, H. (2023). The 2023 Kahramanmaras, Turkey, Earthquake Sequence. U.S. Geological Survey Story Map. ([link](#))
- Wood, K., Stern, L., Furlong, K., Benz, H., Briggs, R., **Herman, M.**, Goldberg, D., (2021). 2020-2021 Alaska Peninsula Earthquake Sequence. U.S. Geological Survey Story Map. ([link](#))
- Herman, M.W.**, Hayes, G.P., Smoczyk, G.M., Turner, R., Turner, B., Jenkins, J., Davies, S., Parker, A., Sinclair, A., Benz, H.M., Furlong, K.P., and Villasenor, A. (2015). Seismicity of the Earth 1900-2013 Mediterranean Sea and vicinity. U.S. Geological Survey Open-File Report 2010–1083-Q, scale 1:10,000,000.
- Benz, H.M., **Herman, M.**, Tarr, A.C., Hayes, G.P., Furlong, K.P., Villasenor, A., Dart, R.L., and Rhea, S. (2011). Seismicity of the Earth 1900-2010 Australia Plate and Vicinity. U.S. Geological Survey Open-File Report 2010-1083-G, scale 1:15,000,000.
- Benz, H.M., **Herman, M.**, Tarr, A.C., Hayes, G.P., Furlong, K.P., Villasenor, A., Dart, R.L., and Rhea, S. (2011). Seismicity of the Earth 1900-2010 New Guinea and Vicinity. U.S. Geological Survey Open-File Report 2010-1083-H, scale 1:8,000,000.
- Benz, H.M., **Herman, M.**, Tarr, A.C., Furlong, K.P., Hayes, G.P., Villasenor, A., Dart, R.L., and Rhea, S. (2011). Seismicity of the Earth 1900–2010 Eastern Margin of the Australia Plate. U.S. Geological Survey Open-File Report 2010-1083-I, scale 1:8,000,000.

## Grants

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### Awarded

- California Air Resources Board (Co-PI) Awarded Spring 2025  
*Developing protocols to track carbon capture, utilization, and storage projects in California (\$188,581)*
- DOE Office of Fossil Energy and Carbon Management (Co-PI) Awarded Fall 2024  
*Elk Hills CO2 Storage Project (EHStore) (\$34,194,691)*
- U.S. Geological Survey Intergovernmental Personnel Act Detailee (PI) 2023–2024  
Assigned to collaborate with National Earthquake Information Center on response to 2023 Turkey earthquake sequence and continuing work on earthquake seismotectonics. (\$23,300)
- DOE Basic Energy Sciences - Reaching a New Energy Sciences Workforce Program (Co-PI) 2023–2026  
*Nanopore Characterization for Geologic Storage of H2 and CO2*  
*Award Number: DE-SC0023639 (\$1,695,000)*
- U.S. Geological Survey Intergovernmental Personnel Act Detailee (PI) 2021–2022  
Assigned to collaborate with National Earthquake Information Center on seismotectonics aspects of earthquake response. (\$20,499)
- NWO User Support Programme Space Research (GO) (Co-PI) 2020–2024  
*Fingerprinting vertical land motion from the earthquake cycle above subduction zones*  
*Award Number: ALWGO.2019.001*
- NASA Graduate Earth and Space Science Fellowship 2014–2017  
*From megathrust to the surface: Quantifying upper plate deformation at subduction zones throughout the earthquake cycle*  
*Award Number: NNX14AL21H*

### Under Review

- Statewide California Earthquake Center Submitted  
*Identifying Potential Seismogenic Structures in the Northern San Andreas Plate Boundary Fault System (\$22,497)*
- National Science Foundation Science and Technology Centers Program (Pre-Proposal) Submitted  
*EARTH-DT: Enabling Advanced Research for Tectonic Hazards with Digital Twins*

### Student Funding

- NSME Career Pathways Research Program (Maggie Izumi) 2024-2025  
*Seismotectonics of the 2024 Taiwan Earthquake Sequence (\$4,000)*
- Geological Society of America (Maggie Izumi) 2024  
*On To the Future Travel Award (\$1,000)*

## Awards

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### California State University, Bakersfield

Bronze Award for Excellence in Sponsored Programs	2024
Gold Award for Excellence in Sponsored Programs	2022

### The Pennsylvania State University

Graduate Student Colloquium 1st place Ph.D. (Post-Comps) Talk – 2018 Deines Lecture	Spring 2017
Graduate Student Colloquium 1st place Ph.D. (Pre-Comps) Talk	Spring 2015
American Geophysical Union Outstanding Student Paper Award, Tectonophysics Section, Fall Meeting	2012
Graduate Student Colloquium 1st place Master's Talk	Spring 2012
Paul D. Krynine Scholarship	Fall 2011–2016
Charles Knopf, Sr. Memorial Scholarship for Outstanding First-Year Graduate Students	Fall 2010
Chevron AGU Fall Meeting Travel Award	Fall 2010

## Software

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**Hdef** (<https://github.com/mherman09/Hdef>)

Package for modeling fault-generated deformation in an elastic half-space. ([Link to tutorials](#)).

**TQTec** (<https://github.com/mherman09/tqttec>)

Package for thermal modeling of tectonic processes.

**GTECTON** (<https://github.com/RobMAGovers/GTecton>)

Finite element platform for modeling lithospheric geodynamic systems.

## Student Mentoring

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### Academic Advising

Elyssa Cazares	Braedon Scarry
Abdullah Masri	Alyssa Tafoya
Sara Rodriguez	Samantha Taylor-Moore

### Research Advising

(CSUB: California State University, Bakersfield; UU: Utrecht University; PSU: Pennsylvania State University)

#### Masters

Brian Aguilar (CSUB) – Independent Research	2024
Briana Acevedo (CSUB) – Committee Member	2022–2024
Toni Ramirez (CSUB) – Committee Member	2021
Jasper Van Weers (UU) – co-advised with Hanneke Paulssen	2019
Dagmar Bouwman (UU) – co-advised with Hanneke Paulssen	2018

#### Bachelors

Lucila Iraheta (CSU Chico)	2025
Braedon Scarry (CSUB)	2025
Jeremiah Hanna (CSUB)	2025
Maggie Izumi (CSUB)	2024–2025
Alissa Montejo (CSUB)	2023–2024
Danny Dorado (CSUB)	2021–2023
Jose “Trini” Trinidad (CSUB)	2022
Marjolein Blasweiler (UU)	2020
Teus van Dam (UU)	2020
Fenna Houtsma (UU)	2020
Lucas Eskens (UU)	2018
Jort Jansen (UU)	2018
Mitchell Hastings (PSU)	2017

Robert Drewicz (PSU)	2013
Eric Guth (PSU)	2013

#### Doctoral

Nicolai Nijholt (UU) – Doctoral Examination Committee Member	2019
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### **Teaching**

<b>California State University, Bakersfield</b>	<b>Last Taught</b>
GEOL 1009: How The Earth Works	Fall 2021
GEOL 1209: Dangerous Earth	Spring 2025
GEOL 2010: Physical Geology	Spring 2023
GEOL 3090: Principles of Geophysics	Spring 2025
GEOL 4030: Lithospheric Geodynamics	Fall 2022
GEOL 4770: Special Topics in Geology - Earthquakes	Spring 2024
GEOL 4770: Special Topics in Geology - Advanced Topics in Tectonics	Fall 2024
GEOL 4800: Research Participation	Spring 2024
GEOL 4908: Senior Field Seminar	Spring 2022
GEOL 5770: Advanced Topics in Tectonics	Fall 2024

#### **The Pennsylvania State University**

Co-developer and TA – “Plate Tectonics”	Fall 2016
Co-developer and TA – “Earthquake Information Project”	2014–2015
Field Camp – “Contact Metamorphism and Cooling of the Alta Stock”	2015
Teaching Assistant – “Physical Processes in Geology”	Fall 2011, Fall 2013
Teaching Assistant – “Natural Disasters: Hollywood vs. Reality”	Spring 2013, Spring 2014
Teaching Assistant – “Geology of Climate Change”	Spring 2011
Teaching Assistant – “Geology of the National Parks”	Fall 2010

#### **Short Courses/Workshops**

“Unraveling The Thermal Signature Of Mountain Building” – GSA Connects 2024, Anaheim, CA	Sep 2024
“Philosophy and Practice of Geodynamic Modeling” – Kasetsart University, Bangkok, Thailand	Sep 2022
“Modeling Earthquake Deformation” – Kasetsart University, Bangkok, Thailand	Jun 2015
“Flexure and Heat Flow” – Chevron, Houston, TX	2013

#### **Online Tutorials ([link](#))**

“Beginner’s Guide to Unix”	
“Beginner’s Guide to Awk”	
“Introduction to Generic Mapping Tools (versions 4 and 5)”	

#### **Amherst College**

Teaching Assistant – “Dynamics”	Fall 2008
Teaching Assistant – “Mineralogy”	Fall 2007
Teaching Assistant – “Introductory Physics II: Electromagnetism and Optics”	Spring 2007
Teaching Assistant – “Principles of Geology”	Fall 2006

### **Invited Research Presentations**

San Joaquin Geological Society Dinner Meeting <i>TBD</i>	Jun 2025
University of South Florida Geoscience Seminar <i>Why Plate Boundary Coupling Matters: Enigmatic Earthquake Behavior in the Shumagin Islands Section of the Aleutian Subduction Zone</i>	8 Mar 2024
San Joaquin Geological Society Dinner Meeting <i>Where Faults Get Stuck: The Nature of Plate Boundary Coupling and Implications for Earthquakes</i>	13 Feb 2024

NSME Fall 23 Teacher-Scholar Lecture Series <i>The Year in Earthquakes: Moving Earthquake Science Forward in 2023</i>	7 Dec 2023
CSUB Physics Colloquium <i>Geophysics and Geodynamics of the 2023 Turkey Earthquake Sequence</i>	21 Feb 2023
USGS Earthquake Science Center Seminar <i>Earthquakes at an Uncoupled Subduction Zone: The 2020-2021 Shumagin Gap Earthquake Sequence (<a href="#">link to video</a>)</i>	17 Aug 2022
Sacramento State Geology Colloquium <i>Earthquakes at an Uncoupled Subduction Zone</i>	16 Nov 2021
USGS NEIC Coffee Klatch Series <i>Triggering an Unexpected Earthquake in an Uncoupled Subduction Zone: Modeling the 2020 M7.8 and M7.6 Shumagin Islands Earthquakes</i>	6 May 2021
CSUB Department of Geological Sciences Speaker Series <i>Seismology and Geodesy and Modeling, Oh My: New Developments and Opportunities in Seismotectonics and Geodynamics</i>	15 Mar 2021
CSUB NSME Faculty Lecture Series <i>Earthquakes Causing Earthquakes: Lessons for California from Triggered Earthquakes Around the World</i>	4 Mar 2021
Caltech Seismolab Seminar <i>The mechanics of plate interface coupling and implications for the behavior of subduction zone earthquakes</i>	12 Feb 2021
Penn State Geodynamics Seminar <i>The mechanics of plate interface coupling and implications for the behavior of subduction zone earthquakes</i>	4 Feb 2021
USGS NEIC Coffee Klatch Series <i>Megathrust Coupling Mechanics and Earthquake Slip</i>	14 May 2020
Utrecht University Seismology Seminar <i>Constraining Patterns of Interseismic Locking and Slip Deficit in Subduction Zones and Their Relationship to Great Earthquake Ruptures</i>	31 Oct 2019
Utrecht University Seismology Seminar <i>Crustal Faulting Above A Ruptured Subduction Megathrust In The 2016 Kaikoura, New Zealand, Earthquake</i>	31 Jan 2019
Penn State Geodynamics Seminar <i>Post-seismic Relaxation Masks Subduction Zone Locking in South America or: How I Learned to Stop Worrying and Love 3D Modeling</i>	4 Apr 2018
Penn State Deines Lecture (for best presentation at PSU Geosciences Graduate Student Colloquium) <i>Loading, Triggering, and Relaxing: Observations and Models of Subduction Earthquake Processes</i>	3 Apr 2018
TU Delft <i>Understanding Megathrust Earthquakes Through Observations and Models</i>	13 Mar 2018

## Service to Scientific Community

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### Manuscript Reviewer

*Bulletin of the Seismological Society of America*  
*Communications Earth and Environment*  
*Earth and Planetary Science Letters*  
*Earth, Planets Space*  
*Frontiers in Earth Sciences*  
*Geophysical Journal International*  
*Geophysical Research Letters*  
*Journal of Geophysical Research: Solid Earth*  
*Journal of Open Source Software*  
*Nature Communications*

*Nature Geoscience*  
*New Zealand Journal of Geology and Geophysics*  
*PLOS ONE*  
*Progress in Earth and Planetary Science*  
*Science Advances*  
*Scientific Reports*  
*Seismological Research Letters*  
*Tectonics*  
*Tectonophysics*  
*Terra Nova*

### Textbook Reviewer

*Natural Hazards and Disasters* (Oxford University Press)

### Proposal Reviewer

U.S. National Science Foundation Frontier Research in Earth Science Program  
 U.S. National Science Foundation Geophysics Program  
 U.S. National Science Foundation Marine Geology and Geophysics Program  
 Fondo Nacional de Desarrollo Científico y Tecnológico (Chile)  
 Swiss National Science Foundation

### Conference Session Convener

*Crustal deformation in subduction zones and the megathrust earthquake cycle: Progress from observations and models* (American Geophysical Union 2022 Fall Meeting)  
*The August 2021 Haiti and South Sandwich Islands Earthquakes* (American Geophysical Union 2021 Fall Meeting)  
*Advances in understanding earthquake sequences and (a) seismic slip across scales* (European Geoscience Union 2020 General Assembly)

### Other

SZ4D Modeling Collaboratory for Subduction Member	2022-2025
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### Service to University Community

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#### California State University, Bakersfield

##### University

Research Council of the University	2025
2025 CERC Carbon Management and Energy Innovation Symposium Moderator	25 Apr 2024
2025 Emergency Preparedness Fair Co-Organizer	2024-2025
Faculty Advisory Committee for Research, Scholarship, and Creative Activity	2025
Academic Affairs Committee	2024-2025
2024 California Energy Research Center Carbon Symposium Panelist	12 Apr 2024
Discussion Panel with National Academies of Science, Engineering, and Medicine	24 Jan 2024
Member of CSUB/Industry/Government Group visiting LLNL	16-17 Jan 2024
Breakout Room Facilitator at CSUB-LLNL MOU Signing	19 Sep 2023
Carbon Sequestration and Storage Workshop	20 Apr 2023
Southern California Region Junior Science and Humanities Symposium Judge	Jan-Feb 2023
2023 Emergency Preparedness Fair Co-Organizer	2022-2023
Alumni Hall of Fame Selection Committee	2022

##### College

NSME Strategic Planning Committee	Fall 2024
NSME Summer Teacher-Scholar Workshop	20 Aug 2024
<i>Strategies to Enhance Student Engagement Post-Pandemic</i>	
2024 DOE FECM / NETL Carbon Management Research Project Review Meeting	5-9 Aug 2024
2024 CSUB Student Research Competition Judge	1 Mar 2024
2023 CSUB Student Research Competition Judge	3 Mar 2023
Center for Environmental Studies Affiliate Member	2021-2022

##### Department

Environmental Science Program Committee Chair	2022-2025
Department of Geological Sciences Website Committee Chair	2022-2025
CSUB Geology Club Faculty Advisor	2024-2025
2024 Geology Newsletter	Jun 2024
2024 CSUB Future Runner Day Volunteer	6 Apr 2024
2024 CSUB Engineering Day Presenter	23 Feb 2024
2023 NSME Open House Volunteer	12 Oct 2023
Kern High School District Counselors Visit Volunteer	28 Sep 2023
Department of Geological Sciences Research Opportunity Flyers	Sep 2023
CSUB Doctoral Program in Educational Leadership Program Research Consultant	Apr-May 2023



2023 CSUB Future Runner Day Volunteer	18 Mar 2023
2022 Zzyzx Field Trip Organizer	Fall 2022
Geology Program Review	2020-2021

## **Pennsylvania State University**

Penn State Geodynamics Seminar Coordinator	2012–2016
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## **Community Outreach**

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### **Media Appearances**

KGET Channel 17 ( <a href="#">Interview about December 2024 Cape Mendocino Earthquake</a> )	6 December 2024
Kern Education Television Network <i>Do The Math</i> ( <a href="#">link to interview</a> )	8 October 2024
Valley Public Radio ( <a href="#">Interview about August 2024 Kern County earthquake</a> )	7 August 2024
<i>Inside Edition</i> ( <a href="#">Interview about April 2024 New Jersey Earthquake</a> )	8 April 2024
MSNBC <i>Deadline: White House</i> ( <a href="#">Interview about April 2024 New Jersey Earthquake</a> )	5 April 2024
TV Globo <i>Jornal Nacional</i> ( <a href="#">Interview about April 2024 New Jersey Earthquake</a> )	5 April 2024
CNN <i>Inside Politics with Dana Bash</i> ( <a href="#">Interview about April 2024 New Jersey Earthquake</a> )	5 April 2024
<i>Eos</i> (“ <a href="#">The 2023 Turkiye-Syria Earthquakes Shifted Stress in the Crust</a> ”)	24 August 2023
KGET Channel 17 ( <a href="#">Interview about August 2023 Ojai Earthquake Shake Alert</a> )	21 August 2023
KGET Channel 17 ( <a href="#">In-studio live interview about February 2023 Turkey Earthquakes</a> )	16 February 2023
KGET Channel 17 ( <a href="#">Taped interview about February 2023 Turkey Earthquakes</a> )	13 February 2023
Bakersfield Californian ( <a href="#">Interview about February 2023 Turkey Earthquakes</a> )	8 February 2023

### **Museum & General Science Talks**

Ridge Route Communities Museum	10 June 2023
<i>The Faults in Our Yard: Geology, Tectonics, and Earthquakes of Southern California Faults</i>	
60+ Club of CSUB Coffee with Professor	17 October 2022
<i>Earthquakes in Southern California</i>	
Ridge Route Communities Museum	30 July 2022
<i>Earthquake Histories: Records and Science of the 1857 Fort Tejon Earthquake</i> ( <a href="#">link to video</a> )	
Buena Vista Museum of Natural History & Science Meet the Expert	17 February 2022
<i>Do Earthquakes Cause More Earthquakes?</i> ( <a href="#">link to video</a> )	
Buena Vista Museum of Natural History & Science Meet the Expert	23 September 2021
<i>Earthquakes in Kern County and Beyond</i> ( <a href="#">link to video</a> )	

### **School Visits**

Totnes Independent School (Virtual Visit) (Totnes, UK)	3 December 2024
Ramon Garza Elementary School (Bakersfield, CA)	26 September 2024
Evergreen Elementary School Career Day (Bakersfield, CA)	9 May 2024
American School of the Hague (Wassenaar, Netherlands)	April 2018, April 2019
Stone Valley Community Charter School Science Fair Judge (Huntingdon, PA)	March 2014
Penn State “Shake, Rattle, and Rocks” (University Park, PA)	January 2013

### **Real World Globes**

“Global Earthquakes and Volcanoes”	In Development
“Magnetic Anomalies of the Ocean” ( <a href="#">link</a> )	2019

### **Utrecht University**

“Earthquake Cycle at Subduction Zones” ( <a href="#">link to video</a> )	June 2018
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### **European Geosciences Union**

“The Art of the 15-minute Talk” ( <a href="#">link</a> )	2018
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## **Professional Associations**

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Society of Exploration Geophysicists Pacific Coast Section	2021–Present
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Seismological Society of America Member	2021–Present
Southern California Earthquake Center Member	2020–Present
Geological Society of America Member	2019–Present
European Geosciences Union Member	2018–Present
American Geophysical Union Member	2010–Present

## Professional Development

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### Research

The Alaska-Aleutian Subduction Zone: Integrated Science and Future Opportunities Workshop	10 Jan 2025
2025 USGS Subduction Zone Science Meeting	8-9 Jan 2025
EarthScope InSAR Processing and Analysis (ISCE+) Short Course	Aug 2023
SCEC Workshop: Coordinating Post-Earthquake Field Data Collection	Jan 2022
STEM-NET Webcast – NSF GEO Directorate Programs and CSU Awardees	Dec 2021
COMET InSAR Training Workshop (University of Leeds)	Nov 2019

### Teaching

CSUB Quantitative Reasoning Learning Community	Feb-Apr 2021
Quality Matters Design Your Online Course Workshop	Feb 2021
CSUB Teaching Online with Proficiency Series	Aug 2020

## Conference Proceedings

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\* Invited †Student

2025

Furlong, K.P., Kummerfeldt, S.R., McKenzie, K.A., **Herman, M.W.** (2025). Earthquakes in a Complex Evolving Plate Boundary Fault System: Lessons from the Mendocino Triple Junction. Abstract SE08-A009 to be presented at Asia Oceania Geoscience Society Annual Meeting 2025, Singapore, 27 Jul–1 Aug.

\***Herman, M.W.**, Furlong, K.P. (2025). Constraining Megathrust Coupling in the Shumagin Gap Region of the Aleutian Subduction Zone. Abstract C002812 to be presented at Japan Geoscience Union Meeting 2025, Chiba, Japan, 25–30 May.

Furlong, K.P., **Herman, M.W.**, McKenzie, K.A. (2025). Hidden Extreme Rate Burial/Exhumation in a Migrating Basin-Orogen System at the Mendocino Triple Junction, California, USA. Abstract EGU25-12310 to be presented at European Geoscience General Assembly 2025, Vienna, 27 Apr–2 May.

2024

**Herman, M.W.**, Furlong, K.P., Benz, H.M. (2024). Constraining Megathrust Coupling Transitions in the Shumagin Gap Region. Abstract T51A-04 presented at 2024 American Geophysical Union Fall Meeting, Washington, D.C., 9–13 Dec.

†Izumi, M., Qi, Y., Wu, Y., Song, L., **Herman, M.W.** (2024). Characterization of Rock Properties for Geologic Storage of H<sub>2</sub> and CO<sub>2</sub> Using Electromagnetic Methods. Abstract MR43A-3124 presented at 2024 American Geophysical Union Fall Meeting, Washington, D.C., 9–13 Dec.

Song, L., †Arias, O., Lisabeth, H., Bhattacharjee, A., †Garza, T., Gilbert, B., **Herman, M.W.** (2024). Micrometer- to Nanometer-scale Characterization of Shale Caprocks, Implications for Hydrogen-brine-mineral Interactions. Abstract MR13B-3202 presented at 2024 American Geophysical Union Fall Meeting, Washington, D.C., 9–13 Dec.

Furlong, K.P., McKenzie, K.A., **Herman, M.W.**, Kirby, E. (2024). Cryptic Evidence in the Landscape for Extreme Vertical Tectonism at the Mendocino Triple Junction. Abstract EP23B-1314 presented at 2024 American Geophysical Union Fall Meeting, Washington, D.C., 9–13 Dec.

**Herman, M.W.**, Furlong, K.P., McKenzie, K.A. (2024). Revisiting the Coseismic Fault Geometry of the 1906 San Andreas Earthquake North of Point Arena. Abstract 143-4 presented at GSA Connects 2024, Anaheim, CA, 22–25 Sep.

Song, L., †Arias, O., †Garza, T., †Izumi, M., †Tarpoley, M., Gilbert, B., Lisabeth, H., Wu, Y., **Herman, M.W.**, Guo, J., Acharya, T. (2024). A Synchrotron X-Ray Nanotomography Study of the Pore Morphology of Shale: Implications for Caprock Integrity in Geologic Hydrogen Storage. Abstract 14-11 presented at GSA Connects 2024, Anaheim, CA, 22–25 Sep.

Furlong, K.P., McKenzie, K.A., **Herman, M.W.** (2024). The Slab Window, the Plate Boundary, and the Faults: Controls on the Formation and Evolution of the San Andreas. Abstract 73-3 presented at GSA Connects 2024, Anaheim, CA, 22–25 Sep.

\***Herman, M.W.**, Furlong, K.P., Benz, H.M. (2024). Forty-five years of the Shumagin Gap: What Recent Earthquakes Tell Us About this Seismic Gap (*Invited*). Abstract presented at 2024 SSA Annual Meeting, Anchorage, AK, 29 Apr–3 May.

Furlong, K.P., McKenzie, K.A., **Herman, M.W.**, Benz, H.M., Villasenor, A. (2024). Seismic Imaging of the Mendocino Triple Junction: Unraveling the Geodynamics of a Fundamental Plate Boundary Transition. Abstract presented at 2024 SSA Annual Meeting, Anchorage, AK, 29 Apr–3 May.

Furlong, K.P., **Herman, M.W.**, McKenzie, K.A. (2024). Big Slip on Small Faults - How Does Extreme Fault Slip Occur on Short-to-Moderate Length Faults. Abstract presented at 2024 European Geoscience Union General Assembly, Vienna, Austria and Online, 14–19 Apr.

2023

**Herman, M.W.**, Furlong, K.P., Govers, R. (2023). Resolving Locked Asperities in Subduction Zones with Onshore and Offshore Geodetic Measurements: Opportunities and Challenges. Abstract G43B-0497 presented at 2023 American Geophysical Union Fall Meeting, San Francisco, CA and Online Everywhere, 11–15 Dec.

Furlong, K.P., **Herman, M.W.**, McKenzie, K.A. (2023). The Missing Mountains of the Mendocino Triple Junction. Abstract T43A-01 presented at 2023 American Geophysical Union Fall Meeting, San Francisco, CA and Online Everywhere, 11–15 Dec.

Furlong, K.P., McKenzie, K.A., **Herman, M.W.** (2023). Plate Tectonics as a Learning Portal for Quantification. Abstract ED43B-06 presented at 2023 American Geophysical Union Fall Meeting, San Francisco, CA and Online Everywhere, 11–15 Dec.

Song, L., Lisabeth, H., †Lozano, R., †Rubalcaba, J., †Taylor-Moore, S., †Tengelsen, R., †Valle, O., Bhuvan, P., Cihan, A., Gilbert, B., Glubokovskikh, S., Wu, Y., Acharya, T., Guo, J., **Herman, M.W.**, Rathburn, A. (2023). A Comparative Study of Synchrotron X-ray Micro- and Nanotomography for the Assessment of Potential CO<sub>2</sub>/H<sub>2</sub> Reservoirs. Abstract MR34A-08A presented at 2023 American Geophysical Union Fall Meeting, San Francisco, CA and Online Everywhere, 11–15 Dec.

Furlong, K.P., **Herman, M.W.**, McKenzie, K.A. (2023). Heat Flow Constraints on Crustal Deformation and Earthquake Activity in the Vicinity of the Mendocino Triple Junction at the Northern San Andreas Plate Boundary, USA. Abstract presented at 28th IUGG General Assembly, Berlin, Germany, 11–20 Jul.

Furlong, K.P., **Herman, M.W.** (2023). Insights into subduction zone coupling from the 2020-2021 Alaska (Shumagin) earthquake sequence. Abstract presented at 28th IUGG General Assembly, Berlin, Germany, 11–20 Jul.

Govers, R., **Herman, M.W.**, Nijholt, N. (2023). Probabilistic Assessment of the Causes of Active Deformation in Greece, western Anatolia, and the Balkans Using Spherical Finite Element Models. Abstract presented at 2023 European Geoscience Union General Assembly, Vienna, Austria and Online, 23–28 Apr.

2022

**Herman, M.W.**, Furlong, K.P., Benz, H.M. (2022). Upper plate faulting above a shallow subduction megathrust earthquake: Mechanics and implications of the extreme surface faulting during the 2016 Kaikoura, New Zealand, earthquake. Abstract presented at 2022 American Geophysical Union Fall Meeting, Chicago, IL and Online Everywhere, 12–16 Dec.

Govers, R., **Herman, M.W.**, van der Wiel, L., Nijholt, N. (2022). Searching for Order in the Jungle: Probabilistic Assessment of the Causes of Active Deformation in the East Central Mediterranean Using Spherical Finite Element Models. Abstract presented at 2022 American Geophysical Union Fall Meeting, Chicago, IL and Online Everywhere, 12–16 Dec.

**Herman, M.W.**, Furlong, K.P., McKenzie, K.A. (2022). Upper plate faulting above a shallow subduction megathrust earthquake: Mechanics and implications of the extreme surface faulting during the 2016 Kaikoura, New Zealand, earthquake. Abstract presented at GSA Connects 2022, Denver, CO, 9–12 Oct.

**Herman, M.W.**, Furlong, K.P. (2022). Subduction Megathrust Coupling in the Shumagin Gap Region Inferred From the 2020-2021 Earthquake Sequence. Abstract presented at 2022 SSA Annual Meeting, Bellevue, Washington, 19–23 Apr.

2021

**Herman, M.W.**, Furlong, K.P., Benz, H. (2021). Further Evidence for Patterns of Subduction Zone Coupling in the Shumagin Gap from the 22 July 2021 Mw 8.2 Megathrust Earthquake. Abstract presented at American Geophysical Union Fall Meeting 2021, New Orleans, LA & Online Everywhere, 13–17 Dec.

**Herman, M.W.**, Furlong, K.P., McKenzie, K.A., Govers, R. (2021). What is coupled in subduction zones? Quantitative estimates of megathrust asperity distributions from slip deficit maps. Abstract presented at American Geophysical Union Fall Meeting 2021, New Orleans, LA & Online Everywhere, 13–17 Dec.

†Cromwell, C., Furlong, K.P., Bergman, E., Benz, H., Yeck, W.L., **Herman, M.W.** (2021). Calibrated Earthquake Relocations in the Northeastern Caribbean and Their Implications for Seismotectonic Interpretations of the 2019-2020 Puerto Rico Sequence. Abstract presented at American Geophysical Union Fall Meeting 2021, New Orleans, LA & Online Everywhere, 13–17 Dec.

Furlong, K.P., McKenzie, K.A., **Herman, M.W.** (2021). Exhuming Forearc Terranes: The Role of Subduction Earthquake Cycle Coupling. Abstract presented at American Geophysical Union Fall Meeting 2021, New Orleans, LA & Online Everywhere, 13–17 Dec.

- Furlong, K.P., **Herman, M.W.**, McKenzie, K.A. (2021). The Effects of a Triple Junction, STEP Fault and Back-Arc Spreading on Megathrust Earthquakes in the South Sandwich Island. Abstract presented at American Geophysical Union Fall Meeting 2021, New Orleans, LA & Online Everywhere, 13–17 Dec.
- Govers, R., **Herman, M.W.**, van der Wiel, L., Nijholt, N. (2021). A Probabilistic Assessment of the Causes of Active Deformation in the East Central Mediterranean Using Spherical Finite Element Models. Abstract presented at American Geophysical Union Fall Meeting 2021, New Orleans, LA & Online Everywhere, 13–17 Dec.
- Govers, R., Broerse, T., **Herman, M.W.** (2021). Tectonic Context of the August 2021 South Sandwich Islands Earthquake Sequence: Plate Boundary Geometry and Kinematics at Active STEPs. Abstract presented at American Geophysical Union Fall Meeting 2021, New Orleans, LA & Online Everywhere, 13–17 Dec.
- Herman, M.W.**, Furlong, K.P., Govers, R. (2021). Upper plate deformation above an uncoupled megathrust: Investigating the role of spatially varying coupling in producing patterns of subduction zone strain. Abstract presented at GSA Connects 2021, Portland, OR, 10–13 Oct.
- Herman, M.W.**, Furlong, K.P. (2021). Triggering an Unexpected Earthquake in an Uncoupled Subduction Zone. Abstract presented at 2021 SSA Annual Meeting, 19–23 Apr.
- Furlong, K.P., **Herman, M.W.** (2021). Triggering an Unexpected Earthquake in an Uncoupled Subduction Zone. Abstract EGU21-418 presented at 2021 European Geoscience Union General Assembly (“vEGU”), 19–30 Apr.

2020

- Herman, M.W.**, Nijholt, N., van der Wiel, L., Govers, R. (2020). A method for constraining the causes of active tectonic deformation using 2D finite element models in a Bayesian framework. Abstract G017-09A presented at 2020 American Geophysical Union Fall Meeting, 1–17 Dec.
- D’Acquisto, M., **Herman, M.W.**, Govers, R. (2020). On the cause of enhanced landward motion of the overriding plate after a major subduction earthquake. Abstract G019-03 presented at 2020 American Geophysical Union Fall Meeting, 1–17 Dec.
- \***Herman, M.W.**, Govers, R., Furlong, K.P. (2020). Stress evolution during the megathrust earthquake cycle and its role in triggering extensional deformation in subduction zones (*Invited*). Abstract presented at 2020 GSA Connects Online, 26–30 Oct.
- Herman, M.W.**, Govers, R., Nijholt, N., van der Wiel, L.Y. (2020). Probabilistic constraints on lithospheric forces, fault tractions, and rheology in the eastern Mediterranean region. Abstract EGU2020-18364 presented at 2020 European Geoscience Union General Assembly (“Sharing Geoscience Online”), 3–8 May.

2019

- Herman, M.W.**, Govers, R. (2019). Resolving locked asperities and slip deficit in unlocked regions: A new inversion method applied in the South America subduction zone. Abstract T051H-0359 presented at 2019 American Geophysical Union Fall Meeting, San Francisco, CA, 9–13 Dec.
- Govers, R., **Herman, M.W.** (2019). Causes of extensional deformation in subduction zones following megathrust earthquakes. Abstract T13H-0333 presented at 2019 American Geophysical Union Fall Meeting, San Francisco, CA, 9–13 Dec.
- Herman, M.W.**, Govers, R. (2019). The evolution of extensional deformation throughout subduction zone earthquake cycles. Geological Society of America Abstracts with Programs, vol. 51, no. 5.
- Herman, M.W.**, Govers, R. (2019). The relationship between earthquake cycle processes and normal faulting earthquakes in subduction zones: A case study of the 2011 Tohoku earthquake. Abstract EGU2019-12766 presented at 2019 European Geoscience Union General Assembly, Vienna, Austria, 7–12 Apr.

2018

- Simons, W.J., Riva, R., Pietrzak, J., **Herman, M.W.**, Hooper, A.J., Vigny, C., Susilo, S., Sarsito, D.A., Sofian, S., Broerse, T., Kleptsova, O., Lhermitte, S., Nijholt, N., Shen, L., Efendi, J., Naeije, M., Bhat, H.S., Morishita, Y., Govers, R.M.A. (2018). Tsunami potential of the 2018 Sulawesi earthquake from GNSS constrained source mechanism. Abstract NH23F-3553 presented at 2018 American Geophysical Union Fall Meeting, Washington, DC, 10–14 Dec.
- Herman, M.W.**, Govers, R. (2018). Modeling the spatial and temporal evolution of normal faulting earthquakes in the upper plate of the Japan subduction zone after the 2011 Tohoku earthquake. Abstract G23C-0614 presented at 2018 American Geophysical Union Fall Meeting, Washington, DC, 10–14 Dec.
- Furlong, K.P., **Herman, M.W.**, Rogers, D.B. (2018). Quantifying plate tectonics in the classroom – Magnetic anomalies, Euler poles, and plate motions on a sphere. Abstract ED23C-0928 presented at 2018 American Geophysical Union Fall Meeting, Washington, DC, 10–14 Dec.
- Herman, M.W.**, Govers, R. (2018). Overprinting the signal of inter-seismic coupling on subduction megathrusts throughout the earthquake cycle. Abstract EGU2018-8003 presented at 2018 European Geoscience Union General Assembly, Vienna, Austria, 8–13 Apr.

2017

**Herman, M.W.,** Furlong, K.P., Govers, R. (2017). Implications of loading/unloading a subduction zone with a heterogeneously coupled interface. Abstract T23F-0675 presented at 2017 American Geophysical Union Fall Meeting, New Orleans, LA, 11–15 Dec.

Furlong, K.P., **Herman, M.W.** (2017). Linkages between the megathrust and upper-plate deformation: Lessons from the deformational dichotomy of the 2016 Kaikoura New Zealand earthquake. Abstract T23F-0678 presented at 2017 American Geophysical Union Fall Meeting, New Orleans, LA, 11–15 Dec.

2016

**Herman, M.W.,** Govers, R., Furlong, K.P. (2016). Constraining interseismic deformation processes in subduction zones through simple mechanical models. Abstract T13A-2669 presented at 2016 Fall Meeting, American Geophysical Union, San Francisco, CA, 12–16 Dec.

2015

**Herman, M.W.,** Furlong, K.P., Hayes, G.P., Benz, H.M. (2015). Foreshock (and slow slip?) triggering of the 1 April 2014 Mw 8.2 Iquique, Chile, earthquake. Abstract T41D-01 presented at 2015 Fall Meeting, American Geophysical Union, San Francisco, CA, 14–18 Dec.

**Herman, M.W.,** Yeck, W., Nealy, J., Hayes, G.P., Barnhart, W., Benz, H.M., Furlong, K.P. (2015). Integrated geophysical characteristics of the 2015 Illapel, Chile, earthquake. Abstract S54C-04 presented at 2015 Fall Meeting, American Geophysical Union, San Francisco, CA, 14–18 Dec.

2014

**Herman, M.,** Furlong, K., Hayes, G., Benz, H. (2014). Assessing the utility of strong motion data to determine static ground displacements during great megathrust earthquakes: Tohoku and Iquique. Abstract S31D-4449 presented at 2014 Fall Meeting, American Geophysical Union, San Francisco, CA, 15–19 Dec.

2013

**Herman, M.W.,** Furlong, K.P., Hayes, G. (2013). Constraining the static deformation process of the great 2011 Tohoku earthquake using high rate GPS. Abstract S43A-2496 presented at 2013 Fall Meeting, American Geophysical Union, San Francisco, CA, 9–13 Dec.

2012

**Herman, M.W.,** Furlong, K.P., Herrmann, R.B., Benz, H. (2012). Using regional moment tensors to constrain kinematics and stress evolution during the 2010-2012 Canterbury, New Zealand, earthquake sequence. Abstract T33A-2644 presented at 2012 Fall Meeting, American Geophysical Union, San Francisco, CA, 3–7 Dec.

2011

**Herman, M.W.,** Furlong, K.P., Herrmann, R.B., Benz, H. (2011). Using regional moment tensors to constrain earthquake processes following the 2010 Darfield and 2011 Canterbury New Zealand earthquake sequences. Abstract S21C-07 presented at 2011 Fall Meeting, American Geophysical Union, San Francisco, CA, 5–9 Dec.

2010

**Herman, M.W.,** Furlong, K.P., Benz, H., Hayes, G.P. (2010). A comparison of transpressional boundaries: what New Zealand can tell us about tectonics in New Guinea. Abstract T13B-2195 presented at 2010 Fall Meeting, American Geophysical Union, San Francisco, CA, 13–17 Dec.

2009

**Herman, M.W.,** Cheney, J.T., Harms, T.A., (2009). Metamorphism and P-T paths of K-feldspar-garnet-sillimanite-biotite bearing rocks from the Highland Mountains, southwestern Montana. Geological Society of America Abstracts with Programs, Vol. 41, No. 3, p. 16.

2008

**Herman, M.W.,** Chappelow, J.E., Herrick, R.R. (2008). New crater depth data for Mercury derived from MESSENGER Flyby 1 Imagery. Eos Trans. American Geophysical Union, 89(53), Fall Meet. Suppl., Abstract U21A-0013.