
CURRICULUM VITAE

MATTHEW J. FOUCH

Carnegie Institution of Washington
Department of Terrestrial Magnetism
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PROFESSIONAL PREPARATION

Carnegie Institution of Washington	Seismology	Postdoc	1999-2000
Brown University	Geophysics	Ph.D.	1999
Brown University	Geophysics	Sc.M.	1996
Pomona College	Geology	B.A.	1993

PROFESSIONAL APPOINTMENTS

07/2011-present Staff Scientist
Dept. of Terrestrial Magnetism, Carnegie Institution of Washington, Washington, DC

07/2011-present Research Professor
School of Earth and Space Exploration, Arizona State University, Tempe, AZ

08/2009-07/2010 Associate Director for Graduate Education
School of Earth and Space Exploration, Arizona State University, Tempe, AZ

07/2006-06/2011 Assistant and Associate Professor (tenured and promoted 05/2007)
School of Earth and Space Exploration, Arizona State University, Tempe, AZ

07/2001-06/2011 Visiting Investigator
Dept. of Terrestrial Magnetism, Carnegie Institution of Washington, Washington, DC

12/2000-06/2006 Assistant Professor
Dept. of Geological Sciences, Arizona State University, Tempe, AZ

01/1999-12/2000 Harry Oscar Wood Postdoctoral Research Fellow
Dept. of Terrestrial Magnetism, Carnegie Institution of Washington, Washington, DC

01/1999-02/2001 Visiting Scholar
Dept. of Geological Sciences, Brown University, Providence, RI

01/1994-12/1998 Graduate Research and Teaching Assistant
Dept. of Geological Sciences, Brown University, Providence, RI

RESEARCH INTERESTS

- Terrestrial and planetary seismology
- Structure and dynamics of the lithosphere and sublithospheric mantle
- Array- and network-based broadband seismic studies
- Seismic instrumentation development
- Integrative data visualization and data workflows

FIELD EXPERIENCE

2005-2009 Co-leader, High Lava Plains Continental Dynamics seismic experiment (HLP)

2005-2007 EarthScope/USArray Transportable Array Arizona Siting Coordinator

2002-2007 Co-leader, Consortium for Arizona Regional Seismic Experiment (COARSE)

1999 Kaapvaal Seismic Array, southern Africa

1998 Side Edge of Kamchatka Slab (SEKS) deployment, Kamchatka, Russia
(assisted Yale University as PASSCAL field engineer)

1997-1999 North American Mantle Anisotropy and Discontinuity experiment (NOMAD)

1994-1996 Massachusetts to Missouri broadband seismometer array (MOMA)

1993 Total station surveys of crustal strain in Hawai'i

SERVICE TO THE PROFESSION

Associate Editor: *J. Geophys. Res.*; **Peer referee:** *Bull. Seismo. Soc. Am.*, *Earth Planet. Sci. Lett.*, *Geology*, *Geophys. J. Int.*, *Geophys. Res. Lett.*, *J. Geophys. Res.*, *Phys. Earth Planet. Int.*, *Science*;
Reviewer/panelist: NSF-Geophysics, NSF-MG&G, NSF-Polar Programs, NSF-IF, NSF-ITR, NSF-MARGINS, NSF-CD, NSF-CSEDI, NASA-PGG, CRDF, NERC, CFI

PROFESSIONAL AFFILIATIONS

- American Geophysical Union
- Seismological Society of America
- Geological Society of America
- South African Geophysical Association

HONORS AND AWARDS

- 2007-2009** EarthScope Speaker Series lecturer
2007 Presidential Earth Career Award for Scientists and Engineers (PECASE)
2006 Faculty Early Career Development Award (CAREER), National Science Foundation
2005 Woodford-Eckis Lectureship, Pomona College
1999 Brown University Outstanding Thesis Award (Honorable Mention)
1999 Sigma Xi Outstanding Graduate Student Award
1997 Outstanding Student Presentation Award, Seismology section, American Geophysical Union
1995 Best Student Paper Award, Seismological Society of America, Eastern section annual meeting
1993 Hill/McIntyre Geology Prize, Pomona College

COURSES TAUGHT - ARIZONA STATE UNIVERSITY (2001-2011)

GLG101	Introduction to Physical Geology	S2002, S2003, F2010
GLG400/500	Geology Colloquium	F2004, S2009
GLG410/598	Computers in Earth&Space Exploration	S2009, S2010
GLG412/598	Geotectonics	S2001, S2004, S2006
GLG418/598	Geophysics	F2001, F2003, F2005, F2006
GLG419/598	Geodynamics	F2002, F2004
GLG598	Subduction Zones	F2003
GLG598	EarthScope Seminar	S2007, S2010
GLG490/598	Advanced Seismology	F2008
GLG490/598	Geophysical Planetary Exploration	S2011

POSTDOCTORAL RESEARCHER MENTORING - ARIZONA STATE UNIVERSITY

Caroline Beghein, 2006-2007 (currently in tenure-track faculty position at UCLA)

GRADUATE STUDENT MENTORING - ARIZONA STATE UNIVERSITY

Primary Advisor

John West, Ph.D., primary advisor, entered program Fall 2010
Jeff Lockridge, M.S., co-advisor (w/ Ramón Arrowsmith), expected graduation Summer 2011
Kevin Eagar, Ph.D., primary advisor, graduated Summer 2010 (currently at Shell Oil Co.)
Angela Magee, M.S., co-advisor (w/ Amanda Clarke), graduated Summer 2010
Jeff Roth, Ph.D., primary advisor, (left program in 2008 for position at ExxonMobil)
John West, M.S., primary advisor, graduated Spring 2010
Jeff Roth, M.S., primary advisor, graduated Fall 2006
Shaji Nair, Ph.D., primary advisor, (left program in 2009 to change occupations)
Teresa Lassak, M.S., primary advisor (transferred to Ph.D. program Fall 2004)
Karen Anglin, M.S., primary advisor, graduated Spring 2005
Jesse Yoburn, M.S., primary advisor, graduated Spring 2005

Thesis Committee Member

Chelsea Allison, Ph.D. candidate	Tammie Diedrich, Ph.D., Summer 2007
Patty Lin, Ph.D. candidate	Dan Toffelmier, M.S., Fall 2006
Chunpeg Zhao, Ph.D. candidate	Mike Thorne, Ph.D., Fall 2005
Melissa Bunte, Ph.D. candidate	Deanne Rogers, Ph.D., Fall 2005
Wendy Hawley, Ph.D. candidate	Sean Ford, M.S., Fall 2005
Olaf Zielke, Ph.D., Fall 2009	Jacob Spinsby, M.S., Fall 2005
Teresa Lassak, Ph.D., Summer 2009	Nathan Toke, M.S., Fall 2005
Kim Genareau, Ph.D., Summer 2009	Jeri Young, Ph.D., Spring 2004
Abby Bull, Ph.D., Summer 2009	Melissa Moore, M.S., Spring 2003
Miriam Riner, Ph.D., Fall 2008	Lee Amoroso, Ph.D., Fall 2001
Nick Schmerr, Ph.D., Fall 2008	Aaron McMahon, M.S., Spring 2001

UNDERGRADUATE STUDENT MENTORING - ARIZONA STATE UNIVERSITY

Jonathan Delph, undergraduate research advisor, 2010-present
Eun-Sun (Jeni) Chong, undergraduate research advisor, 2009-present
Joel Derig, Honors Thesis advisor, 2010-2011
Adam Rumpf, Honors Thesis advisor, 2010-2011
Lauren Mattatall, undergraduate research advisor, 2006-2007
Ken Jones, undergraduate research advisor, 2005
Christine Bernot Smith, Honors Thesis advisor, 2004
Kelly Hermanson, undergraduate research advisor, 2004
Jeff Lockridge, undergraduate research advisor, 2003
Aubrey Watson, undergraduate research advisor, 2002
Christine Bernot, undergraduate research advisor, 2001-2004

STUDENT HONORS - ARIZONA STATE UNIVERSITY

2010	Kevin Eagar	Best Student Paper Award, SSA National Meeting
2009	John West	Best Student Paper Award Honorable Mention, EarthScope National Meeting
2007	Kevin Eagar	Best Student Paper Award, Fall AGU Meeting (Seismology section)
2007	Lauren Mattatall	Best Student Paper Award, EarthScope National Meeting
2005	Teresa Lassak	Best Student Paper Award, Fall AGU Meeting (Tectonophysics section)

PUBLICATIONS

* denotes ASU student author; ^ denotes non-ASU student author

44. **Fouch, M.J.** and T. Becker, Structure and dynamics of the western United States crust and mantle, in prep. for *Ann. Rev. Earth Planet. Sci.*, 2011.
43. **Fouch, M.J.**, and J.D. West*, The mantle flow field beneath the western United States, in prep. for *Earth Planet. Sci. Lett.*, 2011.
42. **Fouch, M.J.**, L. Handley*, and J.R. Arrowsmith, Small-scale variations in seismic anisotropy across the San Andreas Fault near Parkfield, California, in prep. for *Geophys. Res. Lett.*, 2011.
41. Holt, W., **M.J. Fouch**, E. Klein, J.D. West, and L.M. Flesch, Short-term versus steady-state crustal deformation in western U.S. Great Basin: Evidence for transient coupling with mantle flow?, in prep. for *Earth Planet. Sci. Lett.*, 2011.
40. Eagar*, K.C., and **M.J. Fouch**, FuncLab: A MATLAB interactive toolbox for handling receiver function datasets, submitted to *Seis. Res. Lett.*, 2011.
39. James, D.E., **M.J. Fouch**, R.W. Carlson, and J.B. Roth, Slab fragmentation, edge flow and the origin of the Yellowstone hotspot track, submitted to *Earth Planet. Sci. Lett.*, 2011.
38. Eagar*, K.C., **M.J. Fouch**, D.E. James, R.W. Carlson, and the High Lava Plains Seismic Working Group, Crustal structure beneath the High Lava Plains of eastern Oregon and surrounding regions from receiver function analysis, *J. Geophys. Res.*, doi:10.1029/2010JB007795, 2011.
37. Lin, F., M.H. Ritzwoller, Y. Yang, M.P. Moschetti, and **M.J. Fouch**, The stratification of seismic azimuthal anisotropy in the western US, *Nature Geoscience*, 4, doi: 10.1038/NGEO1036, 2010.
36. Wagner, L., D.W. Forsyth, **M.J. Fouch**, and D.E. James, Detailed three-dimensional shear wave velocity structure of the northwestern United States from Rayleigh wave tomography, *Earth Planet. Sci. Lett.*, doi:10.1016/j.epsl.2010.09.005, 2010.
35. Eagar*, K.C., **M.J. Fouch**, and D.E. James, Receiver function imaging of upper mantle complexity beneath the Pacific Northwest, United States, *Earth Planet. Sci. Lett.*, doi:10.1016/j.epsl.2010.06.015, 2010.
34. Beghein, C., J.A. Snoke, and **M.J. Fouch**, Depth constraints on azimuthal anisotropy in the Great Basin from Rayleigh wave phase velocity maps, *Earth Planet. Sci. Lett.*, doi:10.1016/j.epsl.2009.11.036, 2010.
33. Long, M.D., H. Gao^, A. Klaus^, L.S. Wagner, **M.J. Fouch**, D.E. James, and E. Humphreys, Shear wave splitting and the pattern of mantle flow beneath eastern Oregon, *Earth Planet. Sci. Lett.*, doi:10.1016/j.epsl.2009.09.039, 2009.
32. West*, J.D., **M.J. Fouch**, J.B. Roth*, and L. Elkins-Tanton, Vertical mantle flow associated with a lithospheric drip beneath the Great Basin, *Nature Geoscience*, 2, doi:10.1038/NGEO526, 2009.
31. Roth*, J.B., **M.J. Fouch**, D.E. James, and R.W. Carlson, Three-dimensional seismic velocity structure of the northwestern United States, *Geophys. Res. Lett.*, 35, L15304, doi:10.1029/2008GL03466, 2008.
30. Eagar*, K.C., and **M.J. Fouch**, Detection of a unique earthquake swarm in eastern Arizona, *Arizona Geology*, 37, 1-5, 2007.
29. Semken, S., **M.J. Fouch**, E.J. Garnero, P. Zah, and D. Lippert, EarthScope's USArray engages American Indian stakeholders, *EOS Trans. AGU*, 88, pp. 309-316, 2007.
28. **Fouch, M.J.**, Imaging continental deformation: EarthScope in the field and the classroom, IRIS Newsletter, issue 3, 8-9, 2006. (invited)
27. **Fouch, M.J.**, and S. Rondenay, Seismic anisotropy of stable continental interiors, Continental Anisotropy special issue of *Phys. Earth Planet. Int.*, (D. Eaton and A. Jones, eds.), 158, 292-320, doi:10.1016/j.pepi.2006.03.024, 2006.
26. Frassetto^, A., H. Gilbert, G. Zandt, S. Beck, and **M.J. Fouch**, Support of high topography in the southern Basin and Range based on composition and architecture of the crust in the Basin and Range and Colorado Plateau, *Earth Planet. Sci. Lett.*, 249, pp. 62-73, doi:10.1016/j.epsl.2006.06.040, 2006.
25. Lassak*, T.M., **M.J. Fouch**, C.E. Hall, and E. Kaminski, Seismic characterization of mantle flow in subduction systems: Can we resolve a hydrated mantle wedge?, *Earth Planet. Sci. Lett.*, 243, pp. 632-649, doi:10.1016/j.epsl.2006.01.022, 2006.

24. Yoburn*, J.B., **M.J. Fouch**, J.R. Arrowsmith, and G.R. Keller, A new GIS-driven geophysical database for the southwestern United States, in Sinha, A.K., ed., *Geoinformatics: Data to Knowledge: Geological Society of America Special Paper 397*, pp. 249-267, doi: 10.1130/2006.2397(20), 2006.
23. Stern, R.J., E. Kohut, S.H. Bloomer, M. Leybourne, **M.J. Fouch**, and J. Vervoort, Depth profiling outputs of the subduction factory: The Guguan cross-chain, *Contrib. Min. Pet.*, doi: 10.1007/s00410-005-0055-2, 2006.
22. Aster, R., B. Beaudoin, J. Hole, **M. Fouch**, J. Fowler, D. James, and the PASSCAL Staff and Standing Committee, IRIS PASSCAL program marks 20 years of scientific discovery, *Eos Trans. AGU*, 86, 171-172, 2005.
21. Anglin*, D.K., and **M.J. Fouch**, Seismic anisotropy in the Izu-Bonin subduction system, *Geophys. Res. Lett.*, 32, doi:10.1029/2005GL022714, 2005.
20. Maupin, V., E.J. Garnero, T. Lay, and **M.J. Fouch**, Azimuthal anisotropy in the D'' layer beneath the Caribbean, *J. Geophys. Res.*, 110, B08301, doi:10.1029/2004JB003506, 2005.
19. Anderson[^], M.E., G. Zandt, E. Triep, **M. Fouch**, and S. Beck, Anisotropy and mantle flow in the Chile-Argentina subduction zone from shear-wave splitting analysis, *Geophys. Res. Lett.*, 31, doi:10.1029/2004GL020906, 2004.
18. Garnero, E.J., V. Maupin, T. Lay, and **M.J. Fouch**, Variable azimuthal anisotropy in Earth's lowermost mantle, *Science*, 306, 259-261, 2004b.
17. Garnero, E.J., M. Moore*, T. Lay, and **M.J. Fouch**, Isotropy or weak vertical transverse isotropy in D'' beneath the Atlantic Ocean, *J. Geophys. Res.*, 109, doi:10.1029/2004JB003004, 2004a.
16. **Fouch, M.J.**, P.G. Silver, D.R. Bell, and J.N. Lee[^], Small-scale variations in seismic anisotropy near Kimberley, South Africa, *Geophys. J. Int.*, 157, 764-774, doi: 10.1111/j.1365-246X.2004.02234.x, 2004.
15. **Fouch, M.J.**, D.E. James, J.C. VanDecar, S. van der Lee, and the Kaapvaal Seismic Group, Mantle seismic structure beneath the Kaapvaal and Zimbabwe cratons, *S. African J. Geol.*, 107, 35-46, 2004.
14. Silver, P.G., **M.J. Fouch**, S.S. Gao, M. Schmitz, and the Kaapvaal Seismic Group, Seismic anisotropy, mantle fabric, and the magmatic evolution of Precambrian southern Africa, *S. African J. Geol.*, 107, 47-60, 2004.
13. Shirey, S.B., J.W. Harris, D.E. James, **M.J. Fouch**, P. Deines, S.H. Richardson, P. Cartigny, F. Viljoen, Regional patterns in the paragenesis and age of inclusions in diamond, diamond composition and the lithospheric seismic structure of southern Africa, *Lithos*, 71, 243-258, 2003.
12. Stern, R.J., **M.J. Fouch**, and S.L. Klemperer, An overview of the Izu-Bonin-Mariana subduction factory, in *Inside the Subduction Factory*, edited by J.M. Eiler, pp. 175-222, American Geophysical Union, Washington, DC, 2003.
11. James, D.E., and **M.J. Fouch**, Formation and evolution of Archaean cratons: insights from southern Africa, in The Early Earth: Physical, Chemical and Biological Development, *Spec. Pub. 199*, edited by C.M.R. Fowler, C.J. Ebinger, and C.J. Hawkesworth, pp. 1-26, Geological Society, London, 2002.
10. Shirey, S.B., J.W. Harris, S.H. Richardson, **M.J. Fouch**, D.E. James, P. Cartigny, P. Deines, F. Viljoen, Diamond genesis, seismic structure, and evolution of the Kaapvaal-Zimbabwe craton, *Science*, 297, 1683-1686, 2002.
- 9a. **Fouch, M.J.**, K.M. Fischer, and M.E. Wysession, Erratum to "Lowermost mantle anisotropy beneath the Pacific: Imaging the source of the Hawaiian plume", *Earth Planet. Sci. Lett.*, 195, 299-300, 2002.
9. **Fouch, M.J.**, K.M. Fischer, and M.E. Wysession, Lowermost mantle anisotropy beneath the Pacific: Imaging the source of the Hawaiian plume, *Earth Planet. Sci. Lett.*, 190, 167-180, 2001.
8. James, D.E., **M.J. Fouch**, J.C. VanDecar, S. van der Lee, and the Kaapvaal Seismic Group, Tectospheric structure beneath southern Africa, *Geophys. Res. Lett.*, 28, 2485-2488, 2001.
7. **Fouch, M.J.**, K.M. Fischer, E.M. Parmentier, M.E. Wysession, and T.J. Clarke, Shear wave splitting, continental keels, and patterns of mantle flow, *J. Geophys. Res.*, 105, 6255-6276, 2000.
6. Wysession, M.E., A. Langenhorst, **M.J. Fouch**, K.M. Fischer, G.I. Al-Eqabi, P.J. Shore, T.J. Clarke, Lateral variations in compressional/shear velocities at the base of the mantle, *Science*, 284, 120-125, 1999.
5. Fischer, K.M., **M.J. Fouch**, D.A. Wiens, and M.S. Boettcher, Anisotropy and flow in Pacific subduction zone back-arcs, *Pure Appl. Geophys.*, 151, 463-475, 1998.

4. **Fouch, M.J.**, and K.M. Fischer, Shear wave anisotropy in the Mariana subduction zone, *Geophys. Res. Lett.*, 25, 1221-1224, 1998.
3. Fischer, K.M., M.E. Wysession, T.J. Clarke, **M.J. Fouch**, G.I. Al-eqabi, P.J. Shore, R.W. Valenzuela, A. Li, and J.M. Zaslow, The 1995-1996 Missouri to Massachusetts broadband seismometer deployment, *IRIS Newsletter*, 6-9, Summer 1996.
2. **Fouch, M.J.**, and K.M. Fischer, Mantle anisotropy beneath northwest Pacific subduction zones, *J. Geophys. Res.*, 101, 15,987-16,002, 1996.
1. Wysession, M.E., K.M. Fischer, T.J. Clarke, G.I. Al-Eqabi, **M.J. Fouch**, P.J. Shore, R.W. Valenzuela, A. Li, and J.M. Zaslow, Slicing into the earth, *Eos Trans. AGU*, 77, 477-482, 1996.

INVITED PRESENTATIONS: UNIVERSITIES AND COMPANIES

- Fouch, M.J.**, Revising paradigms of plate tectonics for the western United States, U. Southern California, 2011.
- Fouch, M.J.**, Revising paradigms of plate tectonics for the western United States, Columbia University (LDEO), 2011.
- Fouch, M.J.**, Revising paradigms of plate tectonics for the western United States, University of Texas-El Paso, 2011.
- Fouch, M.J.**, Revising paradigms of plate tectonics for the western United States, Yale University, 2010.
- Fouch, M.J.**, Revising paradigms of plate tectonics for the western United States, California Institute of Technology, 2009.
- Fouch, M.J.**, Revising paradigms of plate tectonics for the western United States, Arizona State University, 2009.
- Fouch, M.J.**, Hotsheets and cool drips: New views of western United States crust and mantle dynamics, University of Colorado, Boulder, 2009.
- Fouch, M.J.**, Seismological structure and mantle dynamics of the western United States, EarthScope Capitol Hill Science Symposium, Washington, DC, 2009.
- Fouch, M.J.**, Plate tectonics and the mantle flow field beneath western North America, UC Berkeley, 2009.
- Fouch, M.J.**, Plate tectonics and the mantle flow field beneath western North America, SUNY Stony Brook, 2009.
- Fouch, M.J.**, Seismological structure and mantle dynamics of the western United States, NSF GEO Director EarthScope briefing, Washington, DC, 2009.
- Fouch, M.J.**, Plate tectonics and the mantle flow field beneath western North America, University of Illinois Urbana-Champaign, 2008.
- Fouch, M.J.**, Plate tectonics and the mantle flow field beneath western North America, University of Oregon, 2008.
- Fouch, M.J.**, Mantle dynamics of the western United States, Smithsonian National Museum of Natural History, 2008.
- Fouch, M.J.**, Seismic structure and dynamics of the northwestern United States: Unleashing the power of EarthScope, National Science Foundation, 2008.
- Fouch, M.J.**, Probing mantle dynamics of the northwestern United States: The High Lava Plains Seismic Experiment, Geological Society of Washington, 2008.
- Fouch, M.J.**, Mantle structure and dynamics of the northwestern United States, Carnegie Institution of Washington, Department of Terrestrial Magnetism, 2008.
- Fouch, M.J.**, Mantle dynamics of the northwestern United States: Unleashing the power of Earthscope, Harvard University, 2008.
- Fouch, M.J.**, Seismic structure of the northwestern United States: Unleashing the power of Earthscope, University of Maryland, 2008.
- Fouch, M.J.**, Seismic structure of the Pacific Northwestern United States, Brown University, 2007.
- Fouch, M.J.**, EarthScoping the western United States: Geophysical structure of the crust and upper mantle, UCLA, 2007.
- Fouch, M.J.**, EarthScoping the western United States: Geophysical structure of the crust and upper mantle, Purdue University, 2007.
- Fouch, M.J.**, Probing mantle dynamics, Arizona State University, 2006.
- Fouch, M.J.**, Probing subduction zone dynamics: Constraints from seismic anisotropy, Oregon State University, 2006.
- Fouch, M.J.**, Probing subduction zone dynamics: Constraints from seismic anisotropy, University of Oregon, 2006.
- Fouch, M.J.**, Probing subduction zone dynamics: Constraints from seismic anisotropy, University of California, Davis, 2005.
- Fouch, M.J.**, Probing subduction zone dynamics: Constraints from seismic anisotropy, University of California, Santa Cruz, 2005.

- Fouch, M.J.**, Probing mantle dynamics: Constraints from seismic anisotropy, Department of Terrestrial Magnetism, Carnegie Institution of Washington, 2005.
- Fouch, M.J.**, Probing subduction zone dynamics: Constraints from seismic anisotropy, National Science Foundation, 2005.
- Fouch, M.J.**, Imaging mantle seismic structure using broadband seismic arrays: Case studies from southern Africa and the southwestern United States, Massachusetts Institute of Technology, 2005.
- Fouch, M.J.**, Exploring Earth's deep interior: Earthquakes, diamonds, and Earth's oldest rocks, Woodford-Eckis Lecture, Pomona College, 2005.
- Fouch, M.J.**, Mantle seismic structure beneath transportable seismic arrays: Case studies from southern Africa and the southwestern United States, University of Houston, 2004.
- Fouch, M.J.**, Seismic structure beneath southern Africa: Results from the Kaapvaal Project and a proposal for high resolution imaging of the Bushveld Province, Bushveld Egoli Branch Annual Meeting, Pretoria, South Africa, 2004.
- Fouch, M.J.**, and D.E. James, Seismic structure beneath southern Africa: Results from the Kaapvaal Project and a proposal for high resolution imaging of the Bushveld Province, DeBeers Corporate Headquarters, Johannesburg, South Africa, 2004.
- Fouch, M.J.**, and D.E. James, Kaapvaal Project and AfricaArray: Focus on the Bushveld, Anglo Platinum Corporate Headquarters, Johannesburg, South Africa, 2004.
- Fouch, M.J.**, Imaging broad ranges of southern Africa mantle seismic structure, Washington University, 2004.
- Fouch, M.J.**, Mantle seismic structure beneath southern Africa, Scripps Institution of Oceanography, 2002.
- Fouch, M.J.**, Mantle seismic structure beneath southern Africa, University of Arizona, 2002.

INVITED PRESENTATIONS: PROFESSIONAL MEETINGS AND WORKSHOPS

** denotes ASU student author; ^ denotes non-ASU student author*

- Fouch, M.J.**, Portable Broadband Seismology: A PI Perspective, IRIS Seismic Instrumentation Technology Symposium Albuquerque, NM, June, 2011. (**Keynote**)
- Holt, W.E., **M.J. Fouch**, L.M. Flesch, E.C. Klein, and J.D. West*, Short-term versus steady-state crustal deformation: Are some anomalies driven by transient coupling with mantle flow?, AGU Fall Meeting, Abstract G44A-06, 2010.
- Fouch, M.J.**, Integrated Earth Models: Scientific Motivations and Examples, Cyberinfrastructure Summer Institute for Geoscientists, UC San Diego, August, 2010. (**Keynote**)
- Fouch, M.J.**, Introduction to EarthScope science and data, Cyberinfrastructure Summer Institute for Geoscientists, UC San Diego, August, 2010. (**Keynote**)
- Fouch, M.J.**, Hotsheets and cool drips: New views of western United States crust and mantle dynamics, COMPRES National Meeting, Stevenson, WA, 2010. (**Keynote**)
- Eagar*, K.C., **M.J. Fouch**, D.E. James, and R.W. Carlson, P-to-S receiver function imaging of the crust beneath the High Lava Plains of Eastern Oregon, SSA National Meeting, 2010. (**Best Student Paper Award**)
- Wagner, L.S., **M.J. Fouch**, M.D. Long, D.E. James, and D.W. Forsyth, Surface wave constraints on the causes of High Lava Plains volcanism, SSA National Meeting, 2010.
- Egbert, G., A. Schultz, and **M.J. Fouch**, Regional electrical conductivity of the Pacific Northwestern U.S. from EMScope, SSA National Meeting, 2010.
- James, D.E., **M.J. Fouch**, J.B. Roth*, R.W. Carlson, and the High Lava Plains Seismic Working Group, Slab fragmentation beneath the Pacific Northwest: Implications for flood volcanism and migrating hotspots, High Lava Plains Project 4th Annual Meeting, Bend, OR, 2010.
- Wagner, L., **M.J. Fouch**, and D.E. James, Surface wave constraints on the causes of High Lava Plains volcanism, High Lava Plains Project 4th Annual Meeting, Bend, OR, 2010.
- Eagar*, K.C., **M.J. Fouch**, D.E. James, R.W. Carlson, J.D. West*, and the High Lava Plains Seismic Working Group, P-to-S receiver function imaging of the crust beneath the High Lava Plains of Eastern Oregon, High Lava Plains Project 4th Annual Meeting, Bend, OR, 2010.

- West*, J.D., **M.J. Fouch**, J.B. Roth*, and L.T. Elkins-Tanton, The Great Basin lithospheric drip: Detection of vertical mantle flow, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract U33C-05, 2009.
- Fouch, M.J.**, Shear wave splitting and patterns of mantle flow, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract S13C-03, 2009.
- Fouch, M.J.**, Imaging large-scale continental deformation across the western United States, GSA Abstracts with Programs, 2008.
- Fouch, M.J.**, and J.D. West*, Plate tectonics and the mantle flow field beneath western North America, EarthScope National Meeting, May, 2009.
- Fouch, M.J.**, and J.D. West*, High-resolution imaging of the mantle flow field beneath western North America, *Eos Trans. AGU*, 89(53), Fall Meet. Suppl., Abstract U53C-06, 2008.
- Fouch, M.J.**, F-C. Lin^, M.H. Ritzwoller, and J.D. West*, Seismic azimuthal anisotropy beneath the western United States from ambient noise tomography and shear wave splitting, *Eos Trans. AGU*, 89(53), Fall Meet. Suppl., Abstract S32B-01, 2008.
- Fouch, M.J.**, Imaging large-scale continental deformation across the western United States, GSA Abstracts with Programs, 2008.
- Fouch, M.J.**, Seismology in the Transportable Array era, EarthScope USArray Transportable Array Team Meeting, Custer, SD, 2008. (**Keynote**)
- Fouch, M.J.**, Transportable Array: The Big Picture, IRIS National Meeting, Stevenson, WA, 2008. (**Keynote**)
- Fouch, M.J.**, Beyond earthquake locations and magnitudes: Seismic imaging of Earth's interior, AS-1 Seismograph Workshop, Maryland Science Center, Baltimore, MD, 2007. (**Keynote**)
- Fouch, M.J.**, High Lava Plains Project, MARGINS/GeoSwath workshop, EarthScope National Meeting, Monterey, CA, 2007.
- Fouch, M.J.**, An overview of EarthScope, "Using EarthScope data in the classroom" workshop, EarthScope National Meeting, Monterey, CA, 2007.
- Fouch, M.J.**, and the HLP Seismic Working Group, High Lava Plains seismic array data analysis status and preliminary shear wave splitting results, High Lava Plains Project 1st Annual Meeting, Bend, OR, 2006.
- Eagar*, K.C., **M.J. Fouch**, and the HLP Seismic Working Group, High Lava Plains seismicity: Are there any earthquakes, or are we just too deaf to hear them?, High Lava Plains Project 1st Annual Meeting, Bend, OR, 2006.
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- Fouch, M.J.**, and D.E. James, Imaging deep structure beneath CEO, Central and Eastern Oregon Continental Dynamics workshop, Salt Lake City, UT, 2005.
- Fouch, M.J.**, Understanding seismic tomograms, receiver functions, and seismic anisotropy for the non-seismologist, Seismology short course for EarthScope National Meeting, Santa Ana Pueblo, New Mexico, 2005. (**Keynote**)
- Fouch, M.J.**, Mantle seismic structure beneath transportable seismic arrays: Examples from dense and coarse configurations, EarthScope Rocky Mountain Workshop I, Socorro, NM, 2004.

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- Hanson-Hedgecock, S., L.S. Wagner, and **M.J. Fouch**, Imaging the lithospheric structure of the High Lava Plains, Oregon with ambient noise tomography, AGU Fall Meeting, Abstract T51C-2062, 2010.
- James, D.E., **M.J. Fouch**, R.W. Carlson, and J.B. Roth*, Seismic evidence for the influence of subduction and slab fragmentation on flood volcanism in the Cascadian backarc and on the Snake River Plain/Yellowstone hotspot track, AGU Fall Meeting, Abstract DI42A-07, 2010.
- Nadeau, D.R., C. Baru, **M.J. Fouch**, and C.J. Crosby, Data fusion and visualization with the OpenEarth Framework (OEF), AGU Fall Meeting, Abstract IN21A-1320, 2010.
- Ritzwoller, M.H., Lin, F, Y. Yang, M.P. Moschetti, and **M.J. Fouch**, The stratification of seismic azimuthal anisotropy in the western US, AGU Fall Meeting, Abstract DI33C-02, 2010.
- West*, J.D., **M.J. Fouch**, and J R. Arrowsmith, EMERALD: A flexible framework for managing seismic data, AGU Fall Meeting, Abstract S13C-2022, 2010.
- Lin, F., M. Ritzwoller, M. Moschetti, Y. Yang, and **M. Fouch**, The stratification of azimuthal anisotropy in the western US and the construction of surface wave empirical sensitivity kernels based on USArray, IRIS Annual Workshop, June, 2010.
- Lockridge*, J., **M. Fouch**, and J R. Arrowsmith, Analysis of spatial and temporal seismicity patterns within Arizona during the deployment of the EarthScope Transportable Array (March 2006 to April 2009), IRIS Annual Workshop, June, 2010.
- West*, J., **M. Fouch**, and J R. Arrowsmith, EMERALD: Managing the Explosion in Seismic Data, IRIS Annual Workshop, June, 2010.
- Long, M.D., L.S. Wagner, **M.J. Fouch**, and D.E. James, Upper mantle anisotropy beneath the High Lava Plains, Oregon, USA: Linking mantle structure and dynamics to surface tectonomagmatism, EGU Spring Meeting, 2010.
- Brumbaugh, D.S., J R. Arrowsmith, S.L. Beck, M. Diaz, **M.J. Fouch**, B. Hodge, and G. Zandt, Arizona Integrated Seismic Network: A new era in seismology for Arizona, SSA National Meeting, 2010.
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- Long, M.D., **M.J. Fouch**, L.S. Wagner, and D.E. James, Upper mantle structure and anisotropy beneath the High Lava Plains: Linking upper mantle dynamics to surface tectonomagmatism, SSA National Meeting, 2010.
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- Fouch, M.J.**, E.J. Garnero, M.S. Thorne, P. Lin, N. Schmerr, R. Weber, M.S. Robinson, and H. Yu, Small Aperture Lunar Seismic Arrays (SALSAs), Ground-Based Geophysics on the Moon workshop, Tempe, AZ, 2010.
- Thorne, M.S., N. Schmerr, R. Weber, **M.J. Fouch**, and E.J. Garnero, Analysis of seismic scattering on the Moon by waveform modeling, Ground-Based Geophysics on the Moon workshop, Tempe, AZ, 2010.
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- Holt, W.E., **M.J. Fouch**, E. Klein, J.D. West*, and L.M. Flesch, GPS measured contraction in Nevada in the vicinity of the Great Basin mantle drip, EarthScope National Meeting, May, 2009.
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- Lee[^], J.N., **M.J. Fouch**, P.G. Silver, Very small-scale variations in shear wave splitting beneath Kimberley, South Africa, *Eos Trans. AGU Suppl.*, 82, S273, 2001.
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GRANTS FUNDED AND PENDING

Italics denote ASU lead PI

#	Title	Agency	ASU funds	Duration	Fouch %	Role/Collaborators
18.	Collaborative Research: Dynamics of Crust-Mantle Coupling through Combined Analysis and Modeling of EarthScope Seismic, Geodetic, and Geologic Data (<i>current</i>)	NSF-EarthScope	\$231,536	3 years 07/01/2011-06/30/2014	100%	Lead PI Co-PIs: B. Wernicke, Caltech B. Holt, SUNY Stony Brook J. Davis, LDEO
17.	Bridging Data, New Technologies, and Communities to Enable and Communicate EarthScope Exploration and Discovery (<i>current</i>)	NSF-EarthScope	\$2,400,000	4 years 01/01/2012-12/31/2015	20%	Co-PIs: <i>R. Arrowsmith, ASU (20%),</i> <i>E. Garnero, ASU (20%), S. Semken, ASU (20%), W. Taylor, ASU (20%)</i>
16.	MEMS-based Lightweight, Sensitive, Autonomous Lunar Seismometer Development (<i>current</i>)	NASA PIDDP	\$893,228	4 years 04/01/2010-03/31/2014	25%	Co-PIs: <i>H. Yu, ASU (25%)</i> <i>E. Garnero, ASU (25%)</i> <i>M. Robinson, ASU (25%)</i>
15.	Collaborative Research: Probing the Earth's Outer Core for a Stratified Layer (<i>current</i>)	NSF-Geophysics	\$195,318	2 years 01/01/2010-12/31/2011	50%	Co-PIs: <i>E. Garnero, ASU (50%)</i> <i>C. Houser, UC Santa Cruz</i>
14.	CAREER: Integrating Multidisciplinary Geophysical Studies Through the EarthScope Initiative (<i>current</i>)	NSF-EarthScope	\$573,811	6 years 06/01/2006-05/31/2012	100%	Sole PI
13.	Collaborative Research: Understanding the Causes of Continental Intraplate Tectonomagmatism: A Case Study in the Pacific Northwest (<i>current</i>)	NSF-Continental Dynamics	\$751,578	6 years 08/01/2005 – 08/31/2011	100%	Sole ASU PI Co-PIs: Collaborators from 6 institutions
12.	Seismic Hazard Update for the State of Arizona	Arizona Geological Survey	\$45,614	3 years 06/27/2008-06/26/2011	50%	Co-PI: <i>R. Arrowsmith, ASU (50%)</i>
11.	Flight Readiness Development of a Miniature Lunar Seismometer Based on Molecular Electronic Transducers	NASA Steckler Space Grant	\$69,872	9 months 01/01/2010-09/30/2010	100%	Lead PI Co-PIs: <i>H. Yu, ASU (0%)</i> <i>E. Garnero, ASU (33%)</i> <i>M. Robinson, ASU (33%)</i>
10.	Acquisition of a Linux PC Cluster for Joint Geodynamical and Seismological Research at Arizona State University	NSF-IF	\$75,000	3 years 01/01/2008-12/31/2010	33%	Co-PIs: <i>A. McNamara, ASU (33%)</i> <i>E. Garnero, ASU (33%)</i>
9.	USArray Transportable Array Siting Reconnaissance	EarthScope/USArray	\$105,552	1.2 years 04/01/2005-05/31/2006	50%	Lead PI Co-PI: <i>S. Semken, ASU (50%)</i>
8.	USArray Transportable Array Siting Outreach Reconnaissance	IRIS E&O	\$30,179	1.5 years 01/01/2005-06/30/2006	50%	Co-PI: <i>S. Semken, ASU (50%)</i>
7.	Native American Perspectives and Preferences Bearing on EarthScope Deployments in the Southwest	NSF-EarthScope	\$29,998	1 year 03/01/2005-02/28/2006	25%	Co-PIs: <i>S. Semken, ASU (25%)</i> <i>E. Garnero, ASU (25%)</i> <i>P. Zah, ASU (25%)</i>
6.	Mantle Dynamics of the Izu-Bonin Subduction System	NSF-MARGINS	\$135,052	2.5 years 07/01/2003 – 12/31/2005	100%	Sole PI

5.	Preliminary Seismic Investigation of the Structure and Evolution of the Southern Basin and Range to Colorado Plateau Transition in Central Arizona	ASU CLAS	\$19,747	1 year 01/01/2003 – 12/31/2003	50%	Lead PI Co-PI: Ed Garnero, ASU (50%)
4.	Project SLAM: A Flexible Field Seismology and Earthquake Studies Teaching Module	IRIS E&O	\$19,000	1 year 07/01/2002 – 06/30/2003	100%	Sole PI
3.	Collaborative Research: Multidisciplinary Investigations of Structure and Deformation Beneath Southern Africa	NSF- Geophysics	\$52,429	2 years 01/01/2002 – 12/31/2003	100%	Sole ASU PI Co-PI: Aibing Li, U. Houston
2.	Collaborative Research: Creation of a Geospatial Data System for the Transition Between the Colorado Plateau and Basin and Range Provinces (Geoinformatics in Action)	NSF-ITR	\$199,913	3 years 09/01/2001 – 08/31/2004	25%	Co-PIs: <i>R. Arrowsmith, ASU (25%)</i> <i>S. Reynolds, ASU (25%)</i> <i>W. Stefanov, ASU (25%)</i> Several UTEP colleagues
1.	Technician Support: Geosciences Computing at Arizona State University (Phase I)	NSF-IF	\$210,000	3 years 03/01/2001 – 02/28/2004	40%	Co-PIs: <i>E. Garnero, ASU (40%)</i> <i>S. Peacock, ASU (20%)</i>

SERVICE

Present

- Chair, EarthScope USArray Advisory Committee (2009-present)
- Member, EarthScope/USArray Transportable Array Working Group (2010-present)
- Member, IRIS Data Management System Standing Committee (2010-present)
- Member, IRIS Coordinating Committee (2010-present)
- Member, AGU Fall Meeting Program Committee (2010-present)
- Member, NSF-Continental Dynamics panel (2011-2013)

Past

- Associate Editor, *Journal of Geophysical Research-Solid Earth* (2009-2010)
- Chair, EarthScope/USArray Transportable Array Working Group (2008-2010)
- Member, IRIS PASSCAL Program Manager Search Committee (2010)
- Co-organizer, SSA annual meeting special session on High Lava Plains (2010)
- Co-organizer, Ground-Based Geophysics on the Moon workshop (Tempe, AZ) (2010)
- Panel member, multiple NSF programs (2006, 2007, 2010)
- Member, IRIS PASSCAL Standing Committee (2003-2009)
- Member, NASA Lunar Surface Scenarios for Human Exploration Specific Action Team (2009)
- Institutional Representative, Incorporated Research Institutions for Seismology (IRIS) (2004-2009)
- Member, EarthScope USArray Transportable Array Working Group (2005-2008)
- Member, EarthScope USArray Advisory Committee (2007-2008)
- Co-organizer, EarthScope Native American workshop at ASU (2006)
- Member, EarthScope Data Products Standing Committee (2004)
- Reviewer of numerous manuscripts for professional journals
- Reviewer of numerous proposals for US, UK, and Canadian funding agencies
- Co-organizer of several special sessions for American Geophysical Union national meetings

Community Outreach

- Provided interviews for specials with Discovery Channel, National Geographic, Phoenix TV stations
- Presented seismology talks to several local geology clubs, Boy Scout troops, and service organizations
- Presented seismology talks to Petrified Forest National Park staff and visitors
- Gave job/career interviews to several students at local high schools
- Coordinated several IRIS/SSA and EarthScope distinguished lectures at ASU
- Organized seismology displays at ASU Earth Sciences Day
- Provided interviews to local TV and radio stations following local, regional, and global earthquakes
- Provided interviews to local radio stations regarding bomb testing at Nevada Test Site
- Provided interview to radio stations regarding SESE research