

Mark Paul Panning

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Education

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| 2004 | UC Berkeley, Ph.D., Geophysics, Thesis Title: “Deep Earth Seismic Structure and Earthquake Source Processes from Long Period Waveform Modelling” |
| 1999 | Indiana University, B.S., Geological Sciences |

Experience

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| 2017-present | Research Scientist, Geophysics and Planetary Geosciences, Jet Propulsion Lab/California Institute of Technology |
| 2008-2017 | Assistant Professor, Dept. of Geological Sciences, University of Florida |
| 2006-2008 | Postdoctoral Fellow, Department of Geosciences, Princeton University |
| 2004-2006 | Postdoctoral Researcher, Berkeley Seismological Lab/Space Sciences Lab |
| 1999-2004 | Graduate Student Researcher/Instructor, University of California, Berkeley |
| 1999 | Research Assistant, Indiana University |

Honors

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| 2006 | Princeton University Teaching Postdoctoral Fellowship in Science and Engineering, Council on Science & Technology |
| 1999 | Berkeley Fellowship, University of California, Berkeley |
| 1998 | Faculty Scholarship Award, Dept. of Geological Sciences, Indiana University |
| 1997 | Junior Award, Dept. of Geological Sciences, Indiana University |

Services and Memberships

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| 2017-present | Chair, Lehmann Medal selection committee, American Geophysical Union |
| 2015-2016 | Member, Lehmann Medal selection committee, American Geophysical Union |
| 2013-2014 | President, American Geophysical Union SEDI focus group |
| 2012-2014 | Member, IRIS Global Seismic Network Standing Committee |
| 2010-2012 | Vice-Chair, American Geophysical Union SEDI focus group |
| 2010-present | Leadership Council, American Geophysical Union |
| 2008-2010 | Program Committee, American Geophysical Union Fall Meeting |
| 2003-present | Executive Committee, American Geophysical Union SEDI focus group (http://www.agu.org/focus_group/SEDI/index.html) |
| 2003-2010 | Web Site Committee, American Geophysical Union |

Peer Reviewed Publications

- S.R. James, E. Sreaton, R.M. Russo, and **M.P. Panning**, "Characterizing hydrostratigraphy of the Floridan aquifer system using ambient seismic noise", *Geophys. J. Int.*, 209, 876-889, 2017
- M.P. Panning**, P. Lognonné, W. B. Banerdt, R. Garcia, M. Golombek, S. Kedar, B. Knapmeyer-Endrun, A. Mocquet, N.A. Teanby, J. Tromp, R. Weber, E. Beucler, J.-F. Blanchette-Guertin, M. Drilleau, T. Gudkova, S. Hempel, A. Khan, V. Lekic, A.-C. Plesa, A. Rivoldini, N. Schmerr, Y. Ruan, O. Verhoeven, C. Gao, U. Christensen, J. Clinton, V. Dehant, D. Giardini, D. Mimoun, W. T. Pike, S. Smrekar, M. Wicczorek, M. Knapmeyer, and J. Wookey, "Planned products of the Mars Structure Service for the InSight mission to Mars", *Space Sci. Rev.*, doi: 10.1007/s11214-016-0317-5, 2016.
- A. Khan, M. van Driel, M. Böse, D. Giardini, S. Ceylan, J. Yan, J. Clinton, F. Euchner, P. Lognonné, **M.P. Panning**, M. Knapmeyer, and W.B. Banerdt, "Single-station and single-event marsquake location and inversion for structure using synthetic Martian waveforms", *Phys. Earth Planet. Int.*, **258**, 28-42, doi: 10.1016/j.pepi.2016.05.017, 2016.
- Hongsresawat, S., **M.P. Panning**, R.M. Russo, D.A. Foster, V. Monteiller, and S. Chevrot, "USArray Shear Splitting Shows Seismic Anisotropy from Both Lithosphere and Asthenosphere," *Geology*, **43**, 667-670, doi: 10.1130/G36610.1, 2015.
- Panning, M.P.**, E. Beucler, M. Drilleau, A. Mocquet, P. Lognonné, W.B. Banerdt, "Verifying single-station seismic approaches using Earth-based data: Preparation for data return from the InSight mission to Mars," *Icarus*, **248**, 230-242, doi: 10.1016/j.icarus.2014.10.035, 2015.
- Weber, R., **M.P. Panning**, N. Schmerr, and M. Knapmeyer, "Modeling approaches in planetary seismology," chapter in *Extraterrestrial Seismology*, ed. V. Tong and R. Garcia, Cambridge University Press, doi: 2015.
- Panning, M.P.**, A. Cao, A. Kim, and B.A. Romanowicz, "Non-linear 3D Born shear waveform tomography in Southeastern Asia," *Geophys. J. Int.*, **190**, 463-475, doi: 10.1111/j.1365-246X.2012.05489.x, 2012.
- Gallego, A, **M.P. Panning**, R.M. Russo, D. Comte, V.I. Mocanu, R.E. Murdie, J.C. Vandecar, "Azimuthal Anisotropy in the Chile Ridge Subduction Region Retrieved from Ambient Noise," *Lithosphere* **3**, 393-400, doi:10.1130/L139, 2011.
- Panning, M.P.**, V. Lekic, and B.A. Romanowicz, "The importance of crustal corrections in the development of a new global model of radial anisotropy," *J. Geophys. Res.*, **115**, B12325, doi:10.1029/2010JB007520, 2010.
- Lekic, V., **M.P. Panning**, and B.A. Romanowicz, "A simple method for improving crustal corrections in waveform tomography," *Geophys. J. Int.*, **182**, 265-278, 2010.
- Lekic, V., J. Matas, **M.P. Panning**, and B.A. Romanowicz, "Reply to Comment on 'Measurement and implications of frequency dependence of attenuation,'" *Earth Planet. Sci. Lett.*, **293**, 216-217, 2010.

Panning, M.P., Y. Capdeville, and B.A. Romanowicz, "Seismic waveform modelling in a 3-D Earth using the Born approximation: potential shortcomings and a remedy," *Geophys. J. Int.*, **177**, 161-178, 2009.

Lekic, V., J. Matas, **M.P. Panning**, and B.A. Romanowicz, "Measurement and implications of frequency dependence of attenuation," *Earth Planet. Sci. Lett.*, **282**, 285-293, 2009.

Romanowicz, B.A., **M.P. Panning**, Y. Gung, and Y. Capdeville, "On the computation of long period seismograms in a 3-D earth using normal mode based approximations," *Geophys. J. Int.*, **175**, 520-536, 2008.

Panning, M.P. and G. Nolet, "Surface Wave Tomography for Azimuthal Anisotropy in a Strongly Reduced Parameter Space," *Geophys. J. Int.*, **174**, 629-648, 2008.

Panning, M.P., V. Lekic, M. Manga, F. Cammarano, and B.A. Romanowicz, "Long-period Seismology on Europa: 2. Predicted Seismic Response," *J. Geophys. Res.*, **111**, E12008, 2006.

Cammarano, F., V. Lekic, M. Manga, **M.P. Panning**, and B.A. Romanowicz, "Long-period Seismology on Europa: 1. Physically Consistent Interior Models," *J. Geophys. Res.*, **111**, E12009, 2006.

Panning, M.P., and B.A. Romanowicz, "A Three Dimensional Radially Anisotropic Model of Shear Velocity in the Whole Mantle," *Geophys. J. Int.*, **167**, 361-379, 2006.

Panning, M.P., and B.A. Romanowicz. "Inferences on Flow at the Base of Earth's Mantle Based on Seismic Anisotropy," *Science*, **303**, 351-353, 2004.

Gung, Y., **M.P. Panning**, and B.A. Romanowicz. "Global Anisotropy and the Thickness of Continents," *Nature*, **422**, 707-711, 2003.

Panning, M.P., D. Dreger, and H. Tkalčić. "Near-Source Velocity Structure and Isotropic Moment Tensors: A Case Study of the Long Valley Caldera," *Geophys. Res. Lett.*, **28**, 1815-1818, 2001.

External Funding

2014-2018 NASA/JPL: "GEMS: GEophysical Monitoring Station, supplemental extension for InSight Mission Phase C/D: Simulations of seismic wave propagation on Mars," \$210,180

2013-2014 NASA/JPL: "GEMS: Geophysical Monitoring Station for InSight Mission Phase B: Verification of single-station approaches with Earth-based data, and preparation of modeling tools for rapid results," \$9822

2012-2014 NSF: “EAGER: Vectorial Anisotropic Body and Surface Wave Tomography Using USArray Data,” \$178,330

2011 IRIS: “Technology Assistance with Implementation and Operation of Transportable Array Element of USArray and Earthscope,” \$34,057

2009-2012 NSF: “Geodynamically Relevant Anisotropic Tomography,” \$148,786

Meeting Abstracts (since 2013)

A. Khan, S. Ceylan, M. van Driel, J. Clinton, M. Böse, F. Euchner, D. Giardini, R. F. Garcia, P. Lognonné, **M. P. Panning**, and W. B. Banerdt. 2017. An iterative inversion technique to improve single station event locations on Mars. EGU General Assembly 2017, Geophysical Research Abstracts, 19, EGU2017-17566-1

J. Clinton, S. Ceylan, D. Giardini, A. Khan, M. van Driel, M. Böse, F. Euchner, R. F. Garcia, M. Drilleau, P. Lognonné, **M. P. Panning**, and W. B. Banerdt. 2017. Blind tests of methods for InSight Mars mission: Open scientific challenge. EGU General Assembly 2017, Geophysical Research Abstracts, 19, EGU2017-17517

S. C. Stähler, S. Kedar, M. van Driel, S. D. Vance, and **M. P. Panning**. 2017. The seismic signatures of the solar system. EGU General Assembly 2017, Geophysical Research Abstracts, 19, EGU2017-5626-2

N. Schmerr, V. Lekic, **M. P. Panning**, T. Hurford, A. Rhoden, E. Garnero, H. Yu. 2017. Investigating the interior of icy worlds with short aperture seismic arrays. Presented at the 2017 Annual Meeting of the Seismological Society of America, April 18-20

W. B. Banerdt, P. Lognonné, D. Giardini, W. T. Pike, U. Christensen, S. De Raucort, J. Umland, K. Hurst, P. Zweifel, S. Calcutt, M. Bierwirth, D. Mimoun, G. Pont, N. Verdier, P. Laudet, T. Hoffman, J. F. Clinton, V. Dehant, M. Golombek, R. Garcia, C. Johnson, S. Kedar, B. Knapemeyer-Endrun, A. Mocquet, **M. P. Panning**, S. Smrekar, N. Teanby, J. Tromp, M. Wiczorek, R. C. Weber, E. Bozdag, E. Beucler, I Daubar, M. Drilleau, T. Kawamura, N. Murdoch, and the InSight/SEIS team. 2017. InSight/SEIS: One year prior to beginning the seismic investigation of Mars. 2017. Presented at the 2017 Annual Meeting of the Seismological Society of America, April 18-20

A.C. Stanciu, R.M. Russo, V.I. Mocanu, J.C. VanDecar, S. Hongsresawat, P.M. Bremner, M.E. Torpey, and **M.P. Panning**. 2016. Lithospheric Delamination or Relict Slab Beneath the Former North American Cratonic Margin in Idaho and Oregon? New Constraints From Seismic Tomography. *Abstract T53D-02 presented at the 2016 Fall AGU meeting, San Francisco, December 12-16.*

S. Kedar, S. Vance, S. Anandkrishnan, W.B. Banerdt, B.G. Bills, J.C. Castillo, H.-H. Huang, J.M. Jackson, P.H. Lognonne, R.D. Lorenz, **M.P. Panning**, W.T. Pike, S.C. Stähler, and V.C. Tsai. 2016. Vital Signs: Seismology of Europa and Other Ocean Worlds. *Abstract P34A-08 presented at the 2016 Fall AGU meeting, San Francisco, December 12-16.*

M.P. Panning, S.C. Stähler, H.-H. Huang, S. Vance, S. Kedar, R.D. Lorenz, and W.T. Pike. 2016. What will Europa sound like? Modeling seismic background noise due to tidal cracking events. *Abstract P31A-2083 presented at the 2016 Fall AGU meeting, San Francisco, December 12-16.*

P.N. Adams, J.M. Jaeger, H.B. Woo, and **M.P. Panning**. 2016. Beach Ridge Evidence for Regional Tilting and Drainage Reorganization in Central Florida. *Abstract EP11A-0987 presented at the 2016 Fall AGU meeting, San Francisco, December 12-16.*

S. Hempel, R. Garcia, R.C. Weber, N.C. Schmerr, **M.P. Panning**, P.H. Lognonné, and W.B. Banerdt. 2016. Preparing for InSight - using the continuous seismic data flow to investigate the deep interior of Mars. *Abstract DI41A-2622 presented at the 2016 Fall AGU meeting, San Francisco, December 12-16.*

S. Ceylan, A. Khan, M. van Driel, J.F. Clinton, M. Boese, F. Euchner, D. Giardini, R. Garcia, P.H. Lognonne, **M.P. Panning**, and W.B. Banerdt. 2016. An Iterative Inversion Technique to Compute Structural Martian Models for Refining Event Locations. *Abstract DI41A-2621 presented at the 2016 Fall AGU meeting, San Francisco, December 12-16.*

S. Vance, B.G. Bills, F. Cammarano, **M.P. Panning**, and S.C. Stähler. 2016. Interior Structure and Habitability of Ocean Worlds. *Abstract DI41A-2602 presented at the 2016 Fall AGU meeting, San Francisco, December 12-16.*

R.C. Weber, W.B. Banerdt, P.H. Lognonne, S. Hempel, **M.P. Panning**, N.C. Schmerr, R. Garcia, B. Shiro, and T. Gudkova. 2016. Mars Internal Structure: Seismic Predictions for Core Phase Arrivals in Anticipation of the InSight Mission. *Abstract DI34A-08 presented at the 2016 Fall AGU meeting, San Francisco, December 12-16.*

H.B. Woo, **M.P. Panning**, P.N. Adams, and A. Dutton. 2016. Isostasy, Elastic Flexure, and Uplift of mid-to-north Florida. *Abstract PP51B-2295 presented at the 2016 Fall AGU Meeting, San Francisco, December 12-16.*

M. P. Panning, S. Stähler, S. Kedar, M. van Driel, T. Nissen-Meyer, and S. Vance. 2016. Modeling planetary seismic data for icy worlds and terrestrial planets with AxiSEM/Instaseis: Example data and a model for the Europa noise environment. *Abstract presented at the joint 48th Division of Planetary Science/11th European Planetary Science Congress meeting, Pasadena, CA, October 16-21, 2016.* Abstract 429.18.

N.C. Schmerr, V. Lekic, **M.P. Panning**, T. Hurford, A. Rhoden, and E. Garnero. 2016. Investigating the interior of icy worlds with small aperture seismic arrays. *presented at the 2016 meeting of the Geological Society of America, Denver, CO, September 25-28, 2016.*

A. C. Stanciu, R. Russo, V. Mocanu, J. VanDecar, S. Hongsresawat, P. Bremner, M. Torpey, and **M. P. Panning**. 2015. Upper-Mantle Seismic Structure Beneath the Western Cordillera in Oregon and Idaho: Preliminary Results from EarthScope IDOR Teleseismic Travel Time Tomography. Abstract T11C-2911 presented at the 2015 Fall AGU meeting, San Francisco, December 14-18.

P. Bremner, **M. P. Panning**, R. Russo, V. Mocanu, A. C. Stanciu, M. Torpey, S. Hongsresawat, and J. VanDecar. 2015. Anisotropic 3-D Crustal Velocity Structure of Idaho/ Oregon from a Joint Inversion of Group and Phase Velocities of Love and Rayleigh Waves from Ambient Seismic Noise: Results from the IDOR Project. Abstract S41B-2744 presented at the 2015 Fall AGU Meeting, San Francisco, December 14-18.

W. B. Banerdt, S. Asmar, D. Banfield, U. Christensen, J. Clinton, V. Dehant, W. Folkner, R. Garcia, D. Giardini, M. Golombek, M. Grott, T. Hudson, C. Johnson, G. Kargl, B. Knapmeyer-Endrun, N. Kobayashi, P. Lognonne, J. Maki, D. Mimoun, A. Mocquet, P. Morgan, **M. P. Panning**, W. T. Pike, T. Spohn, J. Tromp, R. Weber, M. Wiczorek, and C. Russell. 2015. Getting Under Mars' Skin: The InSight Mission to the Deep Interior of Mars. Abstract DI52B-06 presented at the 2015 Fall AGU Meeting, San Francisco, December 14-18.

M. P. Panning, W. B. Banerdt, E. Beucler, J.-F. Blanchette-Guertin, M. Boese, J. Clinton, M. Drilleau, S. R. James, T. Kawamura, A. Khan, P. Lognonne, A. Mocquet, and M. van Driel. 2015. Simultaneous Determination of Structure and Event Location Using Body and Surface Wave Measurements at a Single Station: Preparation for Mars Data from the InSight Mission. Abstract DI43A-2606 presented at the 2015 Fall AGU Meeting, San Francisco, December 14-18.

P. Lognonne, W. B. Banerdt, D. Giardini, W. T. Pike, U. Christensen, D. Mimoun, J. Clinton, V. Dehant, M. Golombek, R. Garcia, C. Johnson, N. Kobayashi, B. Knapmeyer-Endrun, A. Mocquet, **M. P. Panning**, S. Smrekar, J. Tromp, M. Wiczorek, R.C. Weber, E. Beucler, J.F. Blanchette-Guertin, I. Daubar, M. Drilleau, T. Kawamura, S. Kedar, N. Murdoch, K. Hurst, and P. Laudet. 2015. SEIS/INSIGHT: The 2016 Seismic Discovery of Mars. Seismological Society of America, Annual meeting, 2015, Seism. Res. Lett. 86: 627.

R. M. Russo, V. I. Mocanu, A. C. Stanciu, S. Hongsresawat, P. Bremner, M. Torpey, **M. P. Panning**, and D. A. Foster. 2015. Crustal and upper mantle structure and fabrics beneath eastern Idaho and western Oregon: Results from the IDOR Passive Seismic Project. Abstract presented at 2015 Geological Society of America Annual Meeting, Baltimore, MD, November 1-4.

V. Dehant, S. Asmar, W. Folkner, P. Lognonné, W.B. Banerdt, S. Smrekar, A. Rivoldini, U. Christensen, D. Giardini, W.T. Pike, J. Clinton, R. Garcia, C. Johnson, N. Kobayashi, B. Knapmeyer-Endrun, D. Mimoun, A. Mocquet, **M.P. Panning**, J. Tromp, and R. Weber. 2015. "Radioscience and seismic measurements for the INSIGHT mission about interior of Mars." Geophysical Research Abstracts, EGU General Assembly 2015. 17: EGU2015-10526-2

M. S. Duncan, M. B. Weller, J. K. Wicks, N. R. Knezek, B. A. Black, S. A. Johnston, S. Hongsresawat, N. J. Towles, C. Thissen, N. C. Schmerr, **M. P. Panning**, L. Montési, M. Manga, and P. Lognonné. 2015. "Mars Thermal History: Core, Atmosphere, Mantle, Phobos, and Surface (MaTH CAMPS)." 46th Lunar and Planetary Science Conference. Abstract #2900.

P. Lognonné, W. B. Banerdt, R.C. Weber, D. Giardini, W. T. Pike, U. Christensen, D. Mimoun, J. Clinton, V. Dehant, R. Garcia, C. L. Johnson, N. Kobayashi, B. Knapmeyer-Endrun, A. Mocquet, **M.P. Panning**, S. Smrekar, J. Tromp, M. Wiczorek, E. Beucler, M. Drilleau, T. Kawamura, S. Kedar, N. Murdoch, and P. Laudet. 2015. "Science Goals of SEIS, the InSight Seismometer Package." 46th Lunar and Planetary Science Conference. Abstract #2272.

M.P. Panning, R.M. Russo, P.M. Bremner, S. Hongsresawat, V.I. Mocanu, A.C. Stanciu, M. Torpey, and J.C. VanDecar. 2014. "Illumination of Geology and Recent Tectonic History in Idaho and Oregon from Persistent Scattering Extracted from Ambient Noise." Abstract S41A-4449 presented at the 2014 Fall AGU meeting, San Francisco, December 15-19.

J. Wicks, M. Weller, N. Towles, C. Thissen, N. Knezek, S. Johnston, S. Hongsresawat, M. Duncan, B. Black, N. Schmerr, **M.P. Panning**, L. Montesi, M. Manga, and P. Lognonne. 2014. "Mars Thermal History: Core, Atmosphere, Mantle, Phobos and Surface (MaTH CAMPS)." Abstract DI51A-4351 presented at the 2014 Fall AGU meeting, San Francisco, December 15-19.

P. Lognonne, W.B. Banerdt, D. Mimoun, N. Kobayashi, **M.P. Panning**, W.T. Pike, D. Giardini, U. Christenson, Y. Nishikawa, N. Murdoch, T. Kawamura, S. Kedar, and A. Spiga. 2014. "Martian Ambient Seismic Noise: from the first modeling to the future data of the InSight Seismic experiment." Abstract S41A-4457 presented at the 2014 Fall AGU meeting, San Francisco, December 15-19.

H. Fuqua, P. Bremner, M. Diamond, G. Garapic, S. Lock, A. Malik, Y. Nishikawa, S. Panovska, A. Shahr, P. Lognonne, W. Panero, U. Faul, **M.P. Panning**, H. Jimenez-Perez, N. Schmerr, and Q. Williams. 2014. "Consequences and Resolution of Lunar Lower Mantle Partial Melt." Abstract P13D-3860 presented at the 2014 Fall AGU meeting, San Francisco, December 15-19.

S. James, E. Sreaton, R.M. Russo, **M.P. Panning**, P.M. Bremner, A.C. Stanciu, M. Torpey, S. Hongsresawat, and M. Farrell. 2014. "Characterization of Carbonate Hydrostratigraphy Using Ambient Seismic Noise: A Pilot Study in the Floridan Aquifer System, Ocala, FL, USA." Abstract NS41A-3829 presented at the 2014 Fall AGU meeting, San Francisco, December 15-19.

M. Torpey, R.M. Russo, and **M.P. Panning**. 2014. "Seismic Attenuation Tomography of the Rupture Zone of the 2010 Maule, Chile, Earthquake." Abstract S43B-4587 presented at the 2014 Fall AGU meeting, San Francisco, December 15-19.

P.M. Bremner, **M.P. Panning**, R.M. Russo, V.I. Mocanu, A.C. Stanciu, M. Torpey, S. Hongsresawat, and J.C. VanDecar. 2014. "3-D Crustal Velocity Structure of Central Idaho/ Eastern Oregon from Joint Inversion of Rayleigh Wave Group and Phase Velocities Derived from Ambient Seismic Noise: Newest Results from the IDOR Project." Abstract S31B-4404 presented at the 2014 Fall AGU meeting, San Francisco, December 15-19.

S. Hongsresawat, **M.P. Panning**, R.M. Russo, V.I. Mocanu, A.C. Stanciu, P.M. Bremner, M. Torpey, and J.C. VanDecar. 2014. "3-D Modeling for Upper Mantle Anisotropy Beneath Idaho-Oregon (IDOR) Region Using SKS Splitting Intensity Measurements from IDOR Passive Seismic Project Dataset." Abstract S31B-4405 presented at the 2014 Fall AGU meeting, San Francisco, December 15-19.

W.B. Banerdt, S. Smrekar, K. Hurst, P. Lognonné, T. Spohn, S Asmar, D. Banfield, L. Boschi, U. Christensen, V. Dehant, W. Folkner, D. Giardini, W. Goetz, M. Golombek, M. Grott, T. Hudson, C. Johnson, G. Kargl, N. Kobayashi, J. Maki, D. Mimoun, A. Mocquet, P. Morgan, **M.P. Panning**, W. T. Pike, J. Tromp, T. van Zoest, R. Weber, and M. Wieczorek. 2013. "InSight: A Discovery mission to explore the interior of Mars." 44th Lunar and Planetary Science Conference. Abstract #1915.

N.C Schmerr, K.M. Brunt, F. Cammarano, T.A. Hurford, V. Lekic, **M.P. Panning**, A. Rhoden, and J.M. Sauber. 2013. "Seismometers on Europa: Insights from Modeling and Antarctic Ice Shelf Analogs." Abstract P54A-01 presented at the 2013 Fall AGU meeting, San Francisco, December 9-13.

M.P. Panning, E. Beucler, A. Mocquet, M. Drilleau, P. Lognonne, and W.B. Banerdt. 2013. "Testing the ability of the INSIGHT-SEIS experiment to model Mars deep interior." Abstract P51G-1808 presented at the 2013 Fall AGU meeting, San Francisco, December 9-13.

S. Hongsresawat, **M.P. Panning**, R.M. Russo, D.A. Foster, S.Chevrot, and V. Monteiller. 2013. "Implications for Lithospheric and Asthenospheric Anisotropy from USArray-TA Splitting Intensity Measurements and 3-D Anisotropy Model of North America." Abstract S42C-08 presented at the 2013 Fall AGU meeting, San Francisco, December 9-13.

P.M. Bremner, **M.P. Panning**, R.M. Russo, V.I. Mocanu, A.C. Stanciu, M. Torpey, and S. Hongsresawat. 2013. "Isotropic Crustal Velocity beneath Central Idaho/ Eastern Oregon using Ambient Seismic Noise." Abstract T11C-2457 presented at the 2013 Fall AGU meeting, San Francisco, December 9-13.