

## KEVIN MICHAEL WARD

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### EDUCATION

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#### The University of Arizona

Tucson, AZ

Ph.D. in Geosciences, December 2016

*Advisers:* Susan L. Beck and George Zandt

*Dissertation:* Imaging the Lithospheric Structure of the Central Andes from the Joint Inversion of Multiple Seismic Data Sets.

#### The University of Arizona

Tucson, AZ

M.S. in Geosciences, August 2012

*Advisers:* George Zandt and Susan L. Beck

*Thesis:* The Structure of the Crust and Uppermost Mantle Beneath the Central Andes from Ambient Noise Tomography.

#### The Pennsylvania State University

University Park, PA

B.S. in Geosciences, May 2010

*Advisers:* Kevin P. Furlong and David M. Bice

*Thesis:* Kinematic Analysis of the Marlborough Fault Zone, New Zealand since the Early Miocene.

#### Linn-Benton Community College

Albany, OR

A.A.S. in Accounting Technology, June 2002

### PROFESSIONAL APPOINTMENTS

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#### South Dakota School of Mines & Technology

Rapid City, SD

Assistant Professor of Geology, August 2018 – Current

#### The University of Utah

Salt Lake City, UT

Postdoctoral Scholar, September 2016 – July 2018

*Supervisor:* Fan-Chi Lin

### RESEARCH INTERESTS

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- Subduction zones
- Cordilleran tectonics and cyclicity in orogenic systems
- Characterizing the nature and evolution of crustal magma reservoirs
- Advancing joint seismic imaging methods
- Large-N nodal geophone deployments

### PEER-REVIEWED PUBLICATIONS (718 citations; h-index 17; i10-index 18; [Google Scholar](#) October 1<sup>st</sup>, 2020)

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[26] Haney, M. H., [Ward, K. M.](#), Tsai, V. C., and Schmandt, B., (2020), Bulk Structure of the Crust and Upper Mantle beneath Alaska from an Approximate Rayleigh-Wave Dispersion Formula, *Seismology Research Letters*, v. XX, no. X, p. 1-12. [doi:10.1785/0220200162](https://doi.org/10.1785/0220200162)

- [25] Berg, E. M., Lin, F., Allam, A., Schulte-Pelkum, V., **Ward, K. M.**, and Shen, W., (2020), Shear Velocity Model of Alaska via Joint Inversion of Rayleigh Wave Ellipticity, Phase Velocities, and Receiver Functions across the Alaska Transportable Array. *Journal of Geophysical Research: Solid Earth*, v. 125, no. 2, p. 1-22. [doi:10.1029/2019JB018582](https://doi.org/10.1029/2019JB018582)
- [24] Wang, Y., Lin, F., and **Ward, K. M.**, (2019), Ambient noise tomography across the Cascadia subduction zone using dense linear seismic arrays and double beamforming, *Geophysical Journal International*, v. 217, no. 3, p. 1668-1680. [doi:10.1093/gji/ggz109](https://doi.org/10.1093/gji/ggz109)
- [23] Pavlis, G. L., Bauer, M. A., Elliott, J. L., Koons, P., Pavlis, T. L., Ruppert, N., **Ward, K. M.**, and Worthington, L. L., (2019), A unified three-dimensional model of the lithospheric structure at the subduction corner in southeast Alaska: Summary results from STEEP, *Geosphere*, v. 15, no. 2, p. 382-406. [doi:10.1130/GES01488.1](https://doi.org/10.1130/GES01488.1)
- [22] **Ward, K. M.**, Lin, F., and Schmandt, B., (2018), High-resolution receiver function imaging across the Cascadia subduction zone using a dense nodal array, *Geophysical Research Letters*, v. 45, no. 22, p. 12218-12225. [doi:10.1029/2018GL079903](https://doi.org/10.1029/2018GL079903)
- [21] **Ward, K. M.**, and Lin, F., (2018), Lithospheric structure across the Alaskan cordillera from the joint inversion of surface waves and receiver functions, *Journal of Geophysical Research: Solid Earth*, v. 123, no. 10, p. 8780-8797. [doi:10.1029/2018JB015967](https://doi.org/10.1029/2018JB015967)
- [20] Jiang, C., Schmandt, B., **Ward, K. M.**, Lin, F., and Worthington, L. L., (2018), Upper mantle seismic structure of Alaska from Rayleigh and S-wave tomography, *Geophysical Research Letters*, v. 45, no. 19, p. 10350-10359. [doi:10.1029/2018GL079406](https://doi.org/10.1029/2018GL079406)
- [19] Jiang, C., Schmandt, B., Farrell, J., Lin, F., and **Ward, K. M.**, (2018), Seismically anisotropic magma reservoirs underlying silicic super-eruptions, *Geology*, v. 46, no. 8, p. 727-730. [doi:10.1130/G45104.1](https://doi.org/10.1130/G45104.1)
- [18] Farrell, J., Wu, S., **Ward, K. M.**, and Lin, F., (2018), Persistent Noise Signal in the Fairfield Nodal Three-Component 5-Hz Geophones, *Seismology Research Letters*, v. 89, no. 5, p. 1609-1617. [doi:10.1785/0220180073](https://doi.org/10.1785/0220180073)
- [17] Pritchard, M. E., de Silva, S. L., Michelfelder, G., Zandt, G., McNutt, S. R., Gottsmann, J., West, M. E., Blundy, J., Christensen, D. H., Finnegan, N. J., Minaya, E., Sparks, R. S. J., Sunagua, M., Unsworth, M. J., Alvizuri, C., Comeau, M. J., del Potro, R., Díaz, D., Diez, M., Farrell, A., Henderson, S. T., Jay, J. A., Lopez, T., Legrand, D., Naranjo, J. A., McFarlin, H., Muir, D., Perkins, J. P., Spica, Z., Wilder, A., and **Ward, K. M.**, (2018), Synthesis: PLUTONS: Investigating the relationship between pluton growth and volcanism in the central Andes, *Geosphere*, v. 14, no. 3, p. 954-982. [doi:10.1130/GES01578.1](https://doi.org/10.1130/GES01578.1)
- [16] McFarlin, H., Christensen, D. H., McNutt, S., **Ward, K. M.**, Ryan, J., Zandt, G., and Thompson, G., (2017), Receiver function analyses of Uturuncu volcano, Bolivia and vicinity, *Geosphere*, v. 14, no. 1, p. 50-64. [doi:10.1130/GES01560.1](https://doi.org/10.1130/GES01560.1)
- [15] Wu, S., **Ward, K. M.**, Farrell, J., Lin, F., Karplus, M., and Smith, R. B., (2017), Anatomy of Old Faithful from subsurface seismic imaging of the Yellowstone Upper Geyser Basin, *Geophysical Research Letters*, v. 44, no. 20, p. 10240-10247. [doi:10.1002/2017GL075255](https://doi.org/10.1002/2017GL075255)
- [14] Delph, J. R., Abgarmi, B., **Ward, K. M.**, Beck, S. L., Özacar, A. A., Zandt, G., Sandvol, E., Türkelli, N., and Kalafat, D., (2017), The effects of subduction termination on the continental lithosphere: Linking volcanism, deformation, surface uplift, and slab tearing in central Anatolia, *Geosphere*, v. 13, no. 6, p. 1788-1805. [doi:10.1130/GES01478.1](https://doi.org/10.1130/GES01478.1)

- [13] **Ward, K. M.**, Delph, J. R., Zandt, G., Beck, S. L., and Ducea, M. N., (2017), Magmatic evolution of a Cordilleran flare-up and its role in the creation of silicic crust, *Scientific Reports*, v. 7, no. 9047. [doi:10.1038/s41598-017-09015-5](https://doi.org/10.1038/s41598-017-09015-5)
- [12] **Ward, K. M.**, and Lin, F., (2017), On the Viability of Using Autonomous Three-Component Nodal Geophones to Calculate Teleseismic Ps Receiver Functions with an Application to Old Faithful, Yellowstone, *Seismology Research Letters*, v. 88, no. 5, p. 1268-1278. [doi:10.1785/0220170051](https://doi.org/10.1785/0220170051)
- [11] Garzione, C. N., McQuarrie, N., Perez N. D., Ehlers, T. A., Beck, S. L., Kar, N., Eichelberger, N., Chapman, A. D., **Ward, K. M.**, Ducea, M. N., Lease, R. O., Poulsen, C. J., Wagner, L. S., Saylor, J. E., Zandt, G., and Horton, B. K., (2017), Tectonic Evolution of the Central Andean Plateau and Implications for the Growth of Plateaus, *Annual Review of Earth and Planetary Sciences*, v. 45, no. 1, p. 529-559. [doi:10.1146/annurev-earth-063016-020612](https://doi.org/10.1146/annurev-earth-063016-020612)
- [10] Delph, J. R., **Ward, K. M.**, Zandt, G., Ducea, M. N., and Beck, S. L., (2017), Imaging a magma plumbing system from MASH zone to magma reservoir, *Earth and Planetary Science Letters*, v. 457, p. 313-324. [doi:10.1016/j.epsl.2016.10.008](https://doi.org/10.1016/j.epsl.2016.10.008)
- [09] **Ward, K. M.**, Zandt, G., Beck, S. L., Wagner, L. S., and Tavera, H., (2016), Lithospheric structure beneath the northern Central Andean Plateau from the joint inversion of ambient noise and earthquake-generated surface waves, *Journal of Geophysical Research: Solid Earth*, v. 121, no. 11, p. 8217-8238. [doi:10.1002/2016JB013237](https://doi.org/10.1002/2016JB013237)
- [08] Perkins, J. P., **Ward, K. M.**, de Silva, S. L., Zandt, G., Beck, S. L., and Finnegan, N. J., (2016), Surface uplift in the Central Andes driven by growth of the Altiplano Puna Magma Body, *Nature Communications*, v. 7, no. 13185. [doi:10.1038/ncomms13185](https://doi.org/10.1038/ncomms13185)
- [07] Pepper, M., Gehrels, G., Pullen, A., Ibanez-Mejia, M., **Ward, K. M.**, and Kapp, P., (2016), Magmatic history and crustal genesis of western South America: Constraints from U-Pb ages and Hf isotopes of detrital zircons in modern rivers, *Geosphere*, v. 12, no. 5, p. 1532-1555. [doi:10.1130/GES01315.1](https://doi.org/10.1130/GES01315.1)
- [06] Delph, J. R., Biryol, C. B., Beck, S. L., Zandt, G., Beck, S. L., and **Ward, K. M.**, (2015), Shear wave velocity structure of the Anatolian Plate: anomalously slow crust in southwestern Turkey, *Geophysical Journal International*, v. 202, no. 1, p. 261-276. [doi:10.1093/gji/ggv141](https://doi.org/10.1093/gji/ggv141)
- [05] **Ward, K. M.**, (2015), Ambient noise tomography across the southern Alaskan Cordillera, *Geophysical Research Letters*, v. 42, no. 9, p. 3218-3227. [doi:10.1002/2015GL063613](https://doi.org/10.1002/2015GL063613)
- [04] Beck, S. L., Zandt, G., **Ward, K. M.**, and Scire, A., (2015), Multiple styles and scales of lithospheric foundering beneath the Puna Plateau, central Andes, *Geological Society of America Memoirs*, v. 212. [doi:10.1130/2015.1212\(03\)](https://doi.org/10.1130/2015.1212(03))
- [03] **Ward, K. M.**, Zandt, G., Beck, S. L., Christensen, D. H., and McFarlin, H., (2014), Seismic imaging of the magmatic underpinnings beneath the Altiplano-Puna volcanic complex from the joint inversion of surface wave dispersion and receiver functions, *Earth and Planetary Science Letters*, v. 404, p. 43-53. [doi:10.1016/j.epsl.2014.07.022](https://doi.org/10.1016/j.epsl.2014.07.022)
- [02] **Ward, K. M.**, Porter, R. C., Zandt, G., Beck, S. L., Wagner, L. S., Minaya, E., and Tavera, H., (2014), Erratum: Ambient noise tomography across the Central Andes, *Geophysical Journal International*, v. 196, no. 2, p. 1264-1265. [doi:10.1093/gji/ggt429](https://doi.org/10.1093/gji/ggt429)
- [01] **Ward, K. M.**, Porter, R. C., Zandt, G., Beck, S. L., Wagner, L. S., Minaya, E., and Tavera, H., (2013), Ambient noise tomography across the Central Andes, *Geophysical Journal International*, v. 194, no. 3, p. 1559-1573. [doi:10.1093/gji/ggt166](https://doi.org/10.1093/gji/ggt166)

[A] **Ward, K. M.**, Delph, J. R., and Beck, S. L., (2016), Extending Recent Seismic Imaging Successes to South America. *Eos*, 97. [doi:10.1029/2016EO051271](https://doi.org/10.1029/2016EO051271)

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**SELECTED CONFERENCE ABSTRACTS**

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- [47] **Ward, K. M.**, Rabade, S., Richards, C., Tape, C., and Allam, A., (2019), A 400-node linear array crossing the Denali fault and Alaska subduction zone, *Eos Trans. American Geophysical Union*, 2019 Fall Meeting Suppl., Abstract T41F-0303. (Poster)
- [46] Berg, E. M., Lin, F., Allam, A., Schulte-Pelkum, V., **Ward, K. M.**, and Shen, W., (2019), Shear Velocity Model of Alaska via Joint Inversion of Rayleigh Wave Ellipticity, Phase Velocities, and Receiver Functions across the USArray, *Eos Trans. American Geophysical Union*, 2019 Fall Meeting Suppl., Abstract S53E-0500. (Poster)
- [45] **Ward, K. M.**, Wang, Y., Dunham, A. M., Lin, F., Kiser, E. D., and Schmandt, B., (2019), Synthesis of Results from a Dense Nodal Geophone Array Deployed Along the Cascadia Subduction Zone, *Seismological Society of America 2019 Annual Meeting*. (Invited Oral)
- [44] **Ward, K. M.**, Lin, F., and Farrell, J., (2018), Characterizing the Dimensions and Internal Structure of the Yellowstone Magmatic Reservoir Using a Dense Nodal Geophone Array, *Eos Trans. American Geophysical Union*, 2018 Fall Meeting Suppl., Abstract V33D-0251. (Poster)
- [43] Wang, Y., **Ward, K. M.**, and Lin, F., (2018), Ambient noise tomography across the Cascadia subduction zone using dense linear seismic arrays and double beamforming, *Eos Trans. American Geophysical Union*, 2018 Fall Meeting Suppl., Abstract S11A-03. (Oral)
- [42] Berg, E. M., Lin, F., **Ward, K. M.**, and Shen, W., (2018), Joint Bayesian Inversion Across the USArray in Alaska using Surface Wave Dispersion, Rayleigh Wave Ellipticity, and Receiver Functions, *Eos Trans. American Geophysical Union*, 2018 Fall Meeting Suppl., Abstract S33A-05. (Oral)
- [41] Jiang, C., Schmandt, B., **Ward, K. M.**, Lin, F., and Worthington, L. L., (2018), Upper Mantle Seismic Structure of Alaska from Rayleigh and S-wave Tomography, *Eos Trans. American Geophysical Union*, 2018 Fall Meeting Suppl., Abstract S33A-07. (Oral)
- [40] Lin, F., Wu, S., Wang, Y., **Ward, K. M.**, and Farrell, J., (2018), High Resolution Passive Seismic Imaging Using Dense Geophone Arrays, *Eos Trans. American Geophysical Union*, 2018 Fall Meeting Suppl., Abstract S53A-06. (Invited Oral)
- [39] Jiang, C., Schmandt, B., Farrell, J., Lin, F., and **Ward, K. M.**, (2018), Seismically Anisotropic Magma Reservoirs Underlying Silicic Calderas, Implications for the Evolution of Magmatic Bodies, *Eos Trans. American Geophysical Union*, 2018 Fall Meeting Suppl., Abstract T13C-07. (Invited Oral)
- [38] Lin, F., Wang, Y., Wu, S., Berg, E., **Ward, K. M.**, Allam, A., and Farrell, J., (2018), High Resolution Imaging Using Dense Geophone Arrays, *Asia Oceania Geosciences Society 2018 Annual Meeting*. (Oral)
- [37] Wu, S., Lin, F., Farrell, J., **Ward, K. M.**, Karplus, M., and Smith, R. B., (2018), Anatomy of Old Faithful from Subsurface Seismic Imaging of Yellowstone National Park, Upper Geyser Basin, *Seismological Society of America 2018 Annual Meeting*. (Poster)

- [36] Beck, S. L., Portner, D. E., Bishop, B. T., Koch, C., Rodriguez, E. E., Lynner, C., Ryan, J. C., **Ward, K. M.**, Delph, J. R., Wagner, L. S., Alvarado, P. A., Porter, R. C., and Scire, A., (2018), Contributions of Modern Seismic Imaging to Understanding the Andean Convergent Margin, Seismological Society of America 2018 Annual Meeting. (Invited Oral)
- [35] Delph, J. R., and **Ward, K. M.**, (2018), The Evolution and Seismic Expression of a Lithospheric-scale Magmatic System: The Puna Plateau. Chapman Conference: Merging Geophysical, Petrochronologic, and Modeling Perspectives of Large Silicic Magma Systems, 2018. (Invited Oral)
- [34] **Ward, K. M.**, and Lin, F., (2017), On the Viability of Using Autonomous Three-Component Nodal Geophones to Calculate Teleseismic Ps Receiver Functions with an Application to the Old Faithful Hydrothermal System and the Cascadia Subduction Zone, Eos Trans. American Geophysical Union, 2017 Fall Meeting Suppl., Abstract S31D-04. (Oral)
- [33] Lin, F., and **Ward, K. M.**, (2017), Lithospheric Structure across the Alaskan Cordillera from Surface Waves and Receiver Functions, Eos Trans. American Geophysical Union, 2017 Fall Meeting Suppl., Abstract S41E-08. (Oral)
- [32] Wu, S., Lin, F., Farrell, J., **Ward, K. M.**, Karplus, M., and Smith, R. B., (2017), Anatomy of Old Faithful hydrothermal system from subsurface seismic imaging of the Yellowstone Upper Geyser Basin, Eos Trans. American Geophysical Union, 2017 Fall Meeting Suppl., Abstract V24A-03. (Oral)
- [31] McQuarrie, N., Garzione, C. N., Perez N. D., Ehlers, T. A., Beck, S. L., Kar, N., Eichelberger, N., Chapman, A. D., **Ward, K. M.**, Ducea, M. N., Lease, R. O., Poulsen, C. J., Wagner, L. S., Saylor, J. E., Zandt, G., and Horton, B., (2017), The Tectonic Evolution of the Central Andean Plateau and Geodynamic Implications for the Growth of Plateaus, Eos Trans. American Geophysical Union, 2017 Fall Meeting Suppl., Abstract T31E-07. (Oral)
- [30] Trow, A., Pankow, K. L., Wannamaker, P. E., Lin, F., and **Ward, K. M.**, (2017), Seismic Imaging of a Prospective Geothermal Play, Using a Dense Geophone Array, Eos Trans. American Geophysical Union, 2017 Fall Meeting Suppl., Abstract NS13A-0008. (Poster)
- [29] **Ward, K. M.**, and Cao, W., (2017), Magmatic evolution of an active cordilleran magmatic flare-up episode, Geological Society of America Abstracts with Programs, Vol. 49, No. 6. (Invited Oral)
- [28] **Ward, K. M.**, Lin, F., Wu, S., Farrell, J., and Smith, R. B., (2017), Subsurface seismic imaging of the Yellowstone Upper Geyser Basin hydrothermal system, Geological Society of America Abstracts with Programs, Vol. 49, No. 6. (Oral)
- [27] Beck, S. L., Zandt, G., Wagner, L. S., **Ward, K. M.**, Delph, J. R., Lynner, C., Portner, D. E., Bishop, B. T., Alvarado, P. A., Porter, R. C., Scire, A., Linkimer, L., and Koch, C., (2017), Contributions of modern seismic imaging to understanding the formation of the Andes, Geological Society of America Abstracts with Programs, Vol. 49, No. 6. (Invited Oral)
- [26] Garzione, C. N., McQuarrie, N., Perez N. D., Ehlers, T. A., Beck, S. L., Kar, N., Eichelberger, N., Chapman, A. D., **Ward, K. M.**, Ducea, M. N., Lease, R. O., Poulsen, C. J., Wagner, L. S., Saylor, J. E., Zandt, G., and Horton, B. K., (2017), The tectonic evolution of the Central Andean Plateau and geodynamic implications for the growth of plateaus, Geological Society of America Abstracts with Programs, Vol. 49, No. 6. (Invited Oral)
- [25] Delph, J. R., Abgarmi, B., **Ward, K. M.**, Beck, S. L., Özacar, A. A., Zandt, G., Sandvol, E., Türkelli, N., and Kalafat, D., (2017), The effects of subduction termination on the continental lithosphere: Linking volcanism, deformation, surface uplift, and slab tearing in central Anatolia. European Geophysical Union, General Assembly 2017, Abstract EGU2017-1086. (Oral)

- [24] **Ward, K. M.**, Delph, J. R., Zandt, G., Beck, S. L., and Ducea, M. N., (2016), Quantifying the Plutonic to Volcanic Relationship Along the Puna Plateau: Implications for Cordilleran Plateau Evolution, Eos Trans. American Geophysical Union, 2016 Fall Meeting Suppl., Abstract V33E-3173. (Poster)
- [23] Delph, J. R., **Ward, K. M.**, Zandt, G., Ducea, M. N., and Beck, S. L., (2016), Seismic Imaging of a Magma Plumbing System from MASH Zone to Magma Reservoir, Eos Trans. American Geophysical Union, 2016 Fall Meeting Suppl., Abstract V44A-06. (Oral)
- [22] Haney, M. M., Tsai, V. C., and **Ward, K. M.**, (2016), Widespread imaging of the lower crust, Moho, and upper mantle from Rayleigh waves: A comparison of the Cascadia and Aleutian-Alaska subduction zones, Eos Trans. American Geophysical Union, 2016 Fall Meeting Suppl., Abstract T11D-2645. (Poster)
- [21] Lynner, C., Beck, S. L., Zandt, G., **Ward, K. M.**, Delph, J. R., Porritt, R. W., Long, M. D., and Wagner, L. S., (2016), Radial anisotropy from ambient noise tomography in the Central Andes, Eos Trans. American Geophysical Union, 2016 Fall Meeting Suppl., Abstract S33F-08. (Oral)
- [20] Porritt, R. W., **Ward, K. M.**, Porter, R. C., Portner, D. E., Lynner, C., Beck, S. L., and Zandt, G., (2016), Slab geometry of the South American margin from joint inversion of body waves and surface waves, Eos Trans. American Geophysical Union, 2016 Fall Meeting Suppl., Abstract DI31B-2633. (Poster)
- [19] Wu, S., Lin, F., Farrell, J., **Ward, K. M.**, Karplus, M., and Smith, R. B., (2016), Carbonate melts in the hydrous upper mantle and their role in H<sub>2</sub>O controlled metasomatic mantle transformation, Eos Trans. American Geophysical Union, 2016 Fall Meeting Suppl., Abstract V24A-03. (Oral)
- [18] **Ward, K. M.**, Zandt, G., Beck, S. L., and Delph, J. R., (2016), Is magmatic addition a significant crustal growth mechanism in Cordilleran systems?, Geological Society of America Abstracts with Programs, Vol. 48, No. 7. (Oral)
- [17] Haney, M. M., Tsai, V. C., and **Ward, K. M.**, (2016), Moho depth and structure of the crust and upper mantle beneath Southern Alaska from Dix inversion of Rayleigh-wave phase velocity maps, Seismological Society of America 2016 Annual Meeting. (Oral)
- [16] **Ward, K. M.**, Zandt, G., Beck, S. L., and Wagner, L. S., (2015), Seismic imaging of the upper mantle beneath the northern Central Andean Plateau: Implications for surface topography, Eos Trans. American Geophysical Union, 2015 Fall Meeting Suppl., Abstract T33G-02. (Oral)
- [15] Perkins, J. P., **Ward, K. M.**, de Silva, S. L., Zandt, G., Beck, S. L., and Finnegan, N. J., (2015), Melt production constrained by the topographic signature of the Altiplano-Puna Magma Body, Eos Trans. American Geophysical Union, 2015 Fall Meeting Suppl., Abstract T33G-05. (Oral)
- [14] Beck, S. L., Zandt, G., Scire, A., **Ward, K. M.**, Portner, D., Bishop, B., Ryan, J. C., Wagner, L. S., and Long, M., (2015), Subduction zone science - examples of seismic images of the Central Andes and subducting Nazca Slab, Eos Trans. American Geophysical Union, 2015 Fall Meeting Suppl., Abstract T41G-02. (Invited Oral)
- [13] Beck, S. L., Zandt, G., **Ward, K. M.**, and Delph, J. R., (2015), Mapping the continental lithosphere - 25 years of seismic imaging in the Andes, Geological Society of America Abstracts with Programs, Vol. 47, No. 7, p. 233. (Invited Oral)
- [12] **Ward, K. M.**, (2015), Ambient noise tomography across the Alaskan Cordillera, Seismological Society of America 2015 Annual Meeting. (Poster)
- [11] **Ward, K. M.**, Zandt, G., Beck, S. L., Wagner, L. S., Minaya, E., and Tavera, H., (2014), Imaging a Precambrian Mantle Suture in the Subandean Lithosphere by Surface Wave Tomography, Eos Trans. American Geophysical Union, 2014 Fall Meeting Suppl., Abstract T32A-07. (Oral)



- [10] McFarlin, H. M., Christensen, D. H., Thompson, G., McNutt, S. R., Ryan, J. C., **Ward, K. M.**, Zandt, G., and West, M. E., (2014), Receiver Function Analyses of Uturuncu Volcano, Bolivia and Lastarria/Cordon Del Azufre Volcanoes, Chile, Eos Trans. American Geophysical Union, 2014 Fall Meeting Suppl., Abstract V31E-4792. (Poster)
- [09] McFarlin, H., Christensen, D. H., Thompson, G., McNutt, S., Ryan, J. C., **Ward, K. M.**, Zandt, G., and West, M., (2014), Receiver function analyses of Uturuncu volcano, Bolivia, Seismological Society of America 2014 Annual Meeting. (Poster)
- [08] Zandt, G., **Ward, K. M.**, and Beck, S. L., (2014), Geophysical constraints on the crustal-scale magmatic architecture of the central Andean Altiplano-Puna volcanic complex, Californian Goldschmidt Conference, Arc magmatism and crustal forensics in the Andes Workshop. (Invited Oral)
- [07] **Ward, K. M.**, Zandt, G., Beck, S. L., Christensen, D. H., and McFarlin, H., (2013), Seismic imaging of a nascent batholith in the central Andes, Eos Trans. American Geophysical Union, 2013 Fall Meeting Suppl., Abstract V12B-06. (Oral)
- [06] Delph, J. R., Biryol, C. B., Beck, S. L., Zandt, G., and **Ward, K. M.**, (2013), Shear-wave velocity structure of the Anatolian plate and surrounding regions using ambient noise tomography, Eos Trans. American Geophysical Union, 2013 Fall Meeting Suppl., Abstract T31E-2561. (Poster)
- [05] Wagner, L. S., Beck, S. L., Zandt, G., Long, D. L., Tavera, H., Minaya, E., Biryol, C. B., Bishop, B., Eakin, C. M., Franca, G. S., Knezevic Antonijevic, S., Kumar, A., Ryan, J. C., Scire, A. C., **Ward, K. M.**, and Young, B. E., (2013), The continental distillery: building thick continental crust in the central Andes, Eos Trans. American Geophysical Union, 2013 Fall Meeting Suppl., Abstract T42B-06. (Oral)
- [04] Roecker, S. W., Beck, S. L., Morell, M., **Ward, K. M.**, Zandt, G., Meltzer, A., Stachnik, J. C., Russo, R. M., Torpey, M., and Benz, H., (2013), Aftershocks and Images of South Central Chile: Results from the Analysis of the IMAD Data Set, Eos Trans. American Geophysical Union, 2013 Spring Meeting Suppl., Abstract S23C-06. (Oral)
- [03] **Ward, K. M.**, Zandt, G., Beck, S. L., Porter, R. C., Wagner, L. S., Minaya, E., and Tavera, H., (2012), The structure of the crust and uppermost mantle beneath the central Andes from ambient noise tomography: imaging the Neogene to modern batholith, Eos Trans. American Geophysical Union, 2012 Fall Meeting Suppl., Abstract T24C-04. (Oral)
- [02] Zandt, G., Beck, S. L., **Ward, K. M.**, and Wagner, L. S., (2012), Seismic imaging of a modern cordilleran batholith in the central Andes, Geological Society of America Abstracts with Programs, Vol. 44, No. 7, p. 382. (Invited Oral)
- [01] Ryan, J. C., **Ward, K. M.**, Porter, R. C., Zandt, G., Beck, S. L., Wagner, L. S., Minaya, E., and Tavera, H., (2011), Preliminary results from the CAUGHT experiment: investigation of the north central Andes subsurface using receiver functions and ambient noise tomography, Eos Trans. American Geophysical Union, 2011 Fall Meeting Suppl., Abstract T11B-2323. (Poster)

#### **PUBLISHED SEISMIC DATASETS**

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- [C] **Kevin M. Ward**, Eric D. Kiser (2019): Seismic imaging of the magmatic and hydrothermal systems beneath Lassen Volcanic National Park using a nodal seismometer array. International Federation of Digital Seismograph Networks. Dataset/Seismic Network. [doi:10.7914/SN/2M\\_2019](https://doi.org/10.7914/SN/2M_2019)
- [B] Amir Allam, Carl Tape, **Kevin M. Ward** (2019): 400 node deployment along the intersection of the Denali Fault and Parks Highway. International Federation of Digital Seismograph Networks. Dataset/Seismic Network. [doi:10.7914/SN/ZE\\_2019](https://doi.org/10.7914/SN/ZE_2019)

[A] **Kevin M. Ward**, Fan-Chi Lin, Eric D. Kiser, Amanda M. Thomas, Brandon Schmandt (2017): Central Oregon Dense 3C Node Transect. International Federation of Digital Seismograph Networks. Dataset/Seismic Network. [doi:10.7914/SN/ZO\\_2017](https://doi.org/10.7914/SN/ZO_2017)

#### **PUBLISHED EARTH MODELS**

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[VI] IRIS DMC (2018), Data Services Products: Alaska-S+SW-2018, 3D shear-wave velocity model of Alaskan upper mantle from the joint inversion of teleseismic S-wave travel-time residuals and Rayleigh wave dispersion. [doi:10.17611/DP/EMCAKSSW18](https://doi.org/10.17611/DP/EMCAKSSW18)

[V] IRIS DMC (2018), Data Services Products: Alaska.ANT+RF.**Ward**.2018, 3D shear-wave velocity model of the Alaskan Cordillera from the joint inversion of ambient noise tomography and receiver functions. [doi:10.17611/DP/EMCALANTRFWARD18](https://doi.org/10.17611/DP/EMCALANTRFWARD18)

[IV] IRIS DMC (2017), Data Services Products: APVC+Puna.ANT+RF.**Ward**.2017, 3D shear-wave velocity model of the Altiplano-Puna Volcanic Complex (APVC) and the Puna Plateau. [doi:10.17611/DP/EMVAPVCP17](https://doi.org/10.17611/DP/EMVAPVCP17)

[III] IRIS DMC (2016), Data Services Products: BO.ANT+TPWT.**Ward**.2016, 3D shear-wave velocity model of the Bolivian Orocline (BO). [doi:10.17611/DP/EMCBOANTTPWT16](https://doi.org/10.17611/DP/EMCBOANTTPWT16)

[II] IRIS DMC (2015), Data Services Products: APVC.ANT+RF.**Ward**.2014, 3D shear-wave velocity model of the Altiplano-Puna Volcanic Complex (APVC). [doi:10.17611/DP/9991876](https://doi.org/10.17611/DP/9991876)

[I] IRIS DMC (2015), Data Services Products: Andes.ANT.**Ward**.2013, 3D shear-wave velocity model of the Central Andes from ambient noise tomography. [doi:10.17611/DP/10009357](https://doi.org/10.17611/DP/10009357)

#### **INVITED DEPARTMENT COLLOQUIUM PRESENTATIONS**

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[06] **Ward, K. M.**, (2019), What can you do with a thousand seismometers in Alaska?, South Dakota School of Mines & Technology, Rapid City, South Dakota, April 5<sup>th</sup>.

[05] **Ward, K. M.**, (2018), What can you do with a thousand seismometers? Emerging results from dense passive source seismic arrays, USGS Dakota Water Science Center, Rapid City, South Dakota, December 4<sup>th</sup>.

[04] **Ward, K. M.**, (2018), Cordilleran Tectonics: Examples from the Central Andes, Cascadia, and Yellowstone, South Dakota School of Mines & Technology, Rapid City, South Dakota, April 5<sup>th</sup>.

[03] **Ward, K. M.**, (2017), Magmatic Evolution of a Cordilleran High Plateau, University of Rochester, Rochester, New York, March 6<sup>th</sup>.

[02] **Ward, K. M.**, (2017), Magmatic Evolution of a Cordilleran High Plateau, Stony Brook University, Stony Brook, New York, February 14<sup>th</sup>.

[01] **Ward, K. M.**, (2016), Seismic Imaging of the Central Andean Plateau: Magma Reservoirs and Isostatic Contributions to Modern Topography, Guy F. Atkinson Distinguished Lecture Series, University of Utah, Salt Lake City, Utah, September 22<sup>nd</sup>.

#### **FUNDED PROPOSALS**

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[C] **Ward, K. M.**, (2020), Collaborative Research: Cascadia2020: Investigating subduction zone segmentation with a 3D high-resolution Vp model. Award amount **\$146,898** (February 15<sup>th</sup>, 2020 – January 31<sup>st</sup>, 2023). National Science Foundation, EAR – Geophysics ([1946396](https://www.nsf.gov/awardsearch/showAward?AWDNO=1946396)).



[B] **Ward, K. M., (2019)**, RAPID: Collaborative Research: Subduction zone imaging following the 2018 Anchorage earthquake. Award amount **\$6,116** (February 15<sup>th</sup>, 2019 – January 31<sup>st</sup>, 2020). National Science Foundation, EAR, XC – Crosscutting Activities Pro ([1917368](#)).

[A] **Ward, K. M., and Lin, F., (2017)**, Imaging the Cascadia Subduction Zone in unprecedented detail with receiver functions and a dense geophone array. Award amount **\$17,383** (July 1<sup>st</sup>, 2017 – June 30<sup>th</sup>, 2018). University of Utah Funding Incentive Seed Grant Program.

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## TEACHING EXPERIENCE

- **Instructor of Record (South Dakota School of Mines & Technology)**
  - GEOL 737, Global Seismology, **Fall 2020**
  - GEOL 491, Independent Studies: Global Seismology, **Fall 2020**
  - GEOL 491, Independent Studies: Subduction Zones, **Fall 2020**
  - GEOE 324/L, Engineering Geophysics I, **Spring 2020, Spring 2019**
  - GEOL 456/L/556/L, Global Geophysics, **Fall 2019**
  - GEOL 790, Graduate Seminar, **Fall 2019**
  - GEOL 444/544, Orogenic Systems, **Spring 2019**
  - GEOL 465, Senior Research II, **Spring 2019**
- **Workshop Instructor (University of Arizona)**
  - Ambient noise tomography workshop instructor ~ Participants included individuals from several South American and North American universities ranging from graduate students to professors. Part of the NSF funded Multi-Scale Imaging of Modern South America (MIMOSA) project, **January 2016**. PIs Prof. Susan L. Beck and Prof. George Zandt.
- **Teaching Assistant (University of Arizona)**
  - GEOS 322, Introduction to Geophysics, **Spring 2016** (Prof. Richard A. Bennett)
  - GEOS 170A, Earth: From Birth to Death, **Fall 2014** (Dr. Jessica Kapp)
  - GEOS 218, Geological Disasters and Society, **Spring 2014** (Prof. Randall M. Richardson)
  - GEOS 218, Geological Disasters and Society, **Fall 2011** (Prof. Susan L. Beck)
  - GEOS 322, Introduction to Geophysics, **Spring 2011** (Prof. Susan L. Beck)
- **Teaching Intern (Pennsylvania State University)**
  - EARTH 106, The Geology and Tectonics of Africa, **Fall 2009** (Prof. Andrew A. Nyblade)

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## FIELD EXPERIENCE

- **South Dakota School of Mines & Technology**
  - Designed and led a four-day department field trip to Yellowstone National Park, **Fall 2019**. Participants ranged from incoming freshmen through graduate students and faculty/staff.
  - Orchestrated the design, logistics, and implementation of a large (85 stations) three-component nodal 3-D seismic array in Lassen Volcanic National Park, **Summer 2019**. Seismic PIs Prof. Kevin M. Ward and Prof. Eric D. Kiser.
  - Assisted in the deployment and retrieval of a large (400 stations) three-component nodal seismic array across the Alaskan subduction zone, **Winter 2019**. Seismic PIs Prof. Carl H. Tape, Dr. Amir A. Allam, and Prof. Kevin M. Ward.
- **University of Utah**
  - Assisted in the deployment and retrieval of a large (290 stations) three-component nodal seismic array around the Upper Geyser Basin in Yellowstone National Park, **Fall 2017**. Seismic PIs Prof. Fan-Chi Lin and Dr. Jamie Farrell.

- Orchestrated the design, logistics, and implementation of a large (174 stations) three-component nodal 2-D seismic array in central Oregon, **Summer 2017**. Seismic PIs Prof. Fan-Chi Lin and Dr. Kevin M. Ward.
  - Assisted in the deployment of a large (~500 stations) three-component nodal seismic array around Old Faithful in Yellowstone National Park, **Fall 2016**. Seismic PIs Prof. Fan-Chi Lin and Dr. Jamie Farrell.
  - Assisted in the deployment and pullout of a large (96 stations) three-component nodal seismic array transecting the San Jacinto fault in Southern California, **Fall 2016**. Seismic PI Dr. Amir A. Allam.
- **University of Arizona**
    - Assisted in the pullout of a large (50 stations) broadband seismic array in Bolivia/Peru for the NSF funded continental dynamics project Central Andean Uplift and the Geodynamics of High Topography (CAUGHT), **Fall 2012**. Seismic PIs Prof. Susan L. Beck, Prof. George Zandt, and Prof. Lara S. Wagner.
    - Assisted in the deployment of a large (40 stations) broadband seismic array in Peru for the NSF funded continental dynamics project PerU Lithosphere and Slab Experiment (PULSE), **Summer 2011**. Seismic PIs Prof. Susan L. Beck, Prof. George Zandt, Prof. Lara S. Wagner, and Prof. Maureen D. Long.
    - Assisted in the deployment of a large (50 stations) broadband seismic array in Bolivia/Peru for the NSF funded continental dynamics project Central Andean Uplift and the Geodynamics of High Topography (CAUGHT), **Summer 2010**. Seismic PIs Prof. Susan L. Beck, Prof. George Zandt, and Prof. Lara S. Wagner.

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#### STUDENTS SUPERVISED

- Hannah N. Duncan, South Dakota School of Mines & Technology (B.S. 2019) ~ Investigating Structural Differences along the Denali Fault using Receiver Functions from a Dense Geophone Array, **Fall 2018 - Spring 2019**.

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#### AWARDS AND SCHOLARSHIPS

- College of Science Scholarship Award – Geosciences (**Spring 2016**)
- GeoDaze Best Presentation – Geophysics (**Spring 2016**)
- Sulzer Earth Sciences Scholarship (**Spring 2016**)
- GeoDaze Best Presentation – Geophysics (**Spring 2015**)
- UAGS and GEOCLUB, GRL publication fee award (**Fall 2014**)
- John & Nancy Sumner Scholarship (**Summer 2014**)
- Sulzer Earth Sciences Scholarship (**Spring 2014**)
- GeoDaze Best Presentation – Geophysics (**Spring 2013**)
- Outstanding Student Paper Award AGU – Tectonophysics (**Fall 2012**)
- Chevron-Texaco Geology Fellowship (**Summer 2012**)
- Galileo Circle Scholar (**Spring 2012**)
- BP Geophysics Scholarship (**Fall 2011**)
- Chevron-Texaco Scholarship (**Summer 2011**)
- Barton P. Cahir Award Endowment in Earth and Mineral Sciences (**Spring 2009**)
- James and Nancy Hedberg Scholarship in Geosciences (**Fall 2009**)
- Scholarship from the Arthur P. Honess Memorial Fund (**Fall 2008**)
- Outstanding Accounting Technology Student (**Spring 2002**)
- Janie Conner scholarship (**Spring 2002**)

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#### COMMUNITY AND INSTITUTIONAL SERVICE

- **Peer-Review**
  - Geochemistry, Geophysics, Geosystems (**2020**)
  - *Seismological Research Letters* (**2018, 2020**)
  - *Tectonophysics* (**2018, 2019**)
  - *Nature Communications* (**2019**)

- *Geophysical Research Letters* (2019)
  - *Journal of Geophysical Research – Solid Earth* (2016-2019)
  - *Geosphere* (2018)
  - *Earth and Planetary Science Letters* (2018)
  - *Journal of South American Earth Sciences* (2017)
- **Committee**
    - SDSMT, University, Faculty Senate Representative (2020)
    - SDSMT, University, University Curriculum Committee (2020-2021)
    - SDSMT, GGE Department, Graduate Programs, standing member (2018-2021)
    - SDSMT, GGE Department, Geology B.S. Program, standing member (2019-2021)
    - SDSMT, GGE Department, Undergraduate Recruiting, standing member (2019-2021)
    - SDSMT, GGE Department, Lab and Field Safety, standing member (2019-2021)
    - SDSMT, GGE Department, Four Semester Course Rotation, ad hoc member (2018)
- **Conference Session Convener**
    - Seismological Society of America (2019). Emerging Science from the EarthScope Transportable Array in Alaska and Western Canada. Ruppert, N. A., Miller, M. S., and [Ward, K. M.](#)
    - American Geophysical Union (2017). T23D: Multidisciplinary Approaches to Outstanding Questions in Andean Tectonics. Perez N. D., Saylor, J. E., and [Ward, K. M.](#)
- **General**
    - Outstanding Student Paper Award Judge for American Geophysical Union Fall Meeting (2016-2019)
    - Incorporated Research Institutions for Seismology voting member representative (2019)
    - University of Arizona geophysics search committee graduate student representative (2015)
    - American Geophysical Union student volunteer (2015)
    - GeoDaze treasurer chair (2014-2015)
    - Graduate student faculty representative (2014)
    - University of Arizona Geophysics Society (UAGS) President (2012-2014)
    - GeoDaze field-trip committee chair (Spring 2013)
    - Field Trip assistant for the NSF funded SAGUARO program (Spring 2012)
    - GeoDaze field-trip committee chair (Spring 2012)
    - GeoDaze field-trip committee co-chair (Spring 2011)

#### CONFERENCES, WORKSHOPS, AND SHORT COURSES ATTENDED

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- Seismological Society of America (SSA), Annual Meeting (2015, 2019)
- American Geophysical Union (AGU), Fall Meeting (2010-2019)
- Early Career Geoscience Faculty: Teaching, Research, and Managing Your Career, Workshop (2019)
- Advancing Integrative Volcanology with Community Experiments, Workshop (2018)
- Seismic Instrumentation Technology Symposium (IRIS), Workshop (2018)
- Near Surface Geophysics for Hydrology (CUAHSI), Workshop (2018)
- Towards a 3D model of the Cascadia Subduction Zone (ES), Synthesis Workshop (2018)
- Incorporated Research Institutions for Seismology (IRIS), Workshop (2012, 2014, 2016, 2018)
- Geological Society of America (GSA), Annual Meeting (2008, 2016-2017)
- EarthScope (ES), National Meeting (2015, 2017)
- Subduction Zone Observatory (IRIS), Workshop (2016)
- EarthScope USArray Data Processing and Analysis (ES), Short Course (2015)

#### PROFESSIONAL MEMBERSHIPS

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- National Association of Geoscience Teachers – NAGT (2020-2021)
- Geological Society of America – GSA (2013-2021)

- Seismological Society of America – SSA (**2012-2021**)
- American Geophysical Union – AGU (**2010-2020**)