

Curriculum Vitae

I. PERSONAL INFORMATION

I.A. UID, Name, Contact Information

Name: Vedran Lekic (Appointed 1/2012, Promoted 7/2018)
Title: Associate Professor
Address: Department of Geology
University of Maryland
College Park, Maryland 20742
301.405.4086
Email: ved@umd.edu
Website: <https://geol.umd.edu/~ved>

I.B. Academic Appointments at UMD:

2018- Associate Professor, Department of Geology, University of Maryland, College Park
2012-2018 Assistant Professor, Department of Geology, University of Maryland, College Park.
2011 Special Member of the Graduate Faculty, Department of Geology, University of Maryland, College Park.

I.D. Other Employment:

2010-2011 National Science Foundation Postdoctoral Fellow at the Department of Geological Sciences, Brown University.
2010 Postdoctoral Fellow at the Berkeley Seismological Laboratory, University of California, Berkeley.

I.E. Educational Background:

Ph.D. Earth and Planetary Science, University of California, Berkeley, December 2009.
A.B. Astronomy & Astrophysics and Earth & Planetary Science, *magna cum laude* Harvard University, May 2004.

II. RESEARCH, SCHOLARLY, & CREATIVE ACTIVITIES

II.C. Articles in Refereed Journals

NB: Underlined names represent undergraduate students under direct supervision, (*) denotes postdoctoral researchers under direct supervision, and (†) denotes graduate students under direct supervision.

1. Li, J., Beghein, C., Davis, P., Kim, D., **Lekic, V.**, Wieczorek, M.A., Schimmel, M., Stutzmann, E., Lognonné, P. and W.B. Banerdt. Crustal Structure Constraints from the Detection of the SsPp Phase on Mars, *Earth and Space Science*, *in review*.

2. Kim., D., Banerdt, W.B., Ceylan, S., Giardini, D., **Lekic, V.**, Lognonné, P., Beghein, C., Beucler, E., Carrasco, S., Charalmbous, C., Clinton, J., Drilleau, M., Duran, A.C., Golombek, M., Joshi, R., Khan, A., Knapmeyer-Endrun, B., Li, J., Maguire, R., Pike, W.T., Samuel, H., Schimmel, M., Schmerr, N., Stähler, S., Stutzmann, E., Wiczorek, M., Xu, Z., Batov, A., Bozdog, E., Dahmen, N., Davis, P., Gudkova, T., Horleston, A., Huang, Q., Kawamura, T., King, S., McLennan, M., Nimmo, F., Plasman, M., Plesa, A.C., Stepanova, E.I., Weidner, E., Zenhäusern, G., Daubar, I.J., Fernando, B., Garcia, R., Posiolova, L.V. and M.P. Panning. Surface Waves and Crustal Structure on Mars, *Science, in review*.
3. Q. Huang, N. Schmerr, S. King, A. Rivoldini, A.-C. Plesa, A. Khan, H. Samuel, M. Drilleau, D. Kim*, R. Maguire, **V. Lekic**, F. Karakostas, M. Bystricky, T. Gudkova, J. Irving, D. Antonangeli, S. Ceylan, A. C. Duran, S. Stähler, M. Collinet, C. Bollinger, F. Bejina, B. Fernando, K. Leng, T. Nissen-Meyer, C. Beghein, L. Waszek, R. Myhill, C. Michaut, N. Siersch, J.-R. Scholz, P. Davis, R. Garcia, P. Lognonné, B. Pinot, R. Widmer-Schmidrig, M. Panning, S. Smrekar, T. Spohn, D. Giardini, W. B. Banerdt, Seismic Detection of the Martian Mantle Transition Zone by InSight, *Proc. Natl. Acad. Sci. USA, in review*.
4. Ringler, A. T., Anthony, R.E., Aster, R.C., Ammon, C.J., Arrowsmith, S., Benz, H., Ebeling, C., Frassetto, A., Kim, Koelemeijer, P., W.-Y., Lau, H.C.P., **Lekic, V.**, Richards, P.G., Schaff, D.P., Vallée, M. and W. Yeck, Achievements and Prospects of Global Broadband Seismic Networks after 30 Years of Continuous Geophysical Observations, *Reviews of Geophysics, in revision*.
5. Horleston, A., Clinton, J., Ceylan, S., Giardini, D., Charalmbous, C., Irving, J., Lognonné, P., Stähler, S., Zenhäusern, G., Dahmen, N., Duran, C., Kawamura, T., Khan, A., Kim, D., Plasman, M., Euchner, F., Beghein, C., Beucler, E., Huang, Q., Knapmeyer, M., Knapmeyer-Endrun, B., **Lekić, V.**, Li, J., Perrin, C., Schimmel, M., Schmerr, N., Stott, A., Stutzmann, E., Teanby, N., Xu, Z., Panning, M. and B., Banerdt. (2022) The far side of Mars: Two distant quakes detected by InSight, *The Seismic Record*, 2(2), 88-99, <https://doi.org/10.1785/0320220007>
6. Moulik*, P., **Lekic, V.**, Romanowicz, B., Ma, Z., Schaeffer, A., Ho, T., Beucler, E., Debayle, E., Deuss, A., Durand, S., Ekström, G., Lebedev, S., Masters, G., Priestley, K., Ritsema, J., Sigloch, K., Trampert, J. and A. M. Dziewonski. (2022) Global reference seismological data sets: multimode surface wave dispersion. *Geophys. J. Int.*, 228(3), pp.1808-1849, <https://doi.org/10.1093/gji/ggab418>
7. Kim*, D., **V. Lekic**, J. Irving, N. Schmerr, B. Knapmeyer-Endrun, R. Joshi, M. Panning, B. Tauzin, F. Karakostas, R. Maguire, Q. Huang, A. Khan, D. Giardini, M. Wiczorek, P. Lognonne and W. B. Banerdt. (2021) Improving constraints on Planetary Interiors with PPs Receiver Functions, *J. Geophys. Res. – Planets*, 126(11), e2021JE006983, <https://doi.org/10.1029/2021JE006983>
8. Kim*, D., Davis, P., **Lekic, V.**, Maguire, R., Compaire, N., Schimmel, M., Stutzmann, E., Irving, J.C.E., Lognonné, P., Scholz, J.-R., Clinton, J., Zenhäusern, G., Dahmen, N., Panning, M., Garcia, R.F., Giardini, D., Hurst, K., Knapmeyer-Endrun, B., Nimmo, F., Pike, W.T., Pou, L., Schmerr, N., Stähler, S.C., Tauzin, B., Widmer-Schmidrig, R. and W.B. Banerdt. (2021) Potential Pitfalls in the Analysis and Structural Interpretation of Mars' Seismic Data from InSight, *Bull. Seismol. Soc. Am.*, 111(6), 2982-3002, <https://doi.org/10.1785/0120210123>

9. Karakostas, F., Schmerr, N., Maguire, R., Huang, Q., Kim*, D., **Lekic, V.**, Nunn, C., Menina, S., Kawamura, T., Lognonné, P., Giardini, D. and W.B. Banerdt. (2021) Scattering Attenuation of the Martian Interior through Coda Wave Analysis, *Bull. Seismol. Soc. Am.*, 111(6), 3035-3054, <https://doi.org/10.1785/0120210253>
10. Schimmel, M., Stutzmann, E., Lognonné, P., Compaire, N., Davis, P., Drilleau, M., Garcia, R., Kim*, D., Knapmeyer-Endrun, B., **Lekic, V.**, Margerin, L., Panning, M., Schmerr, N., Scholz, J.R., Spiga, A., Tauzin, B. and W.B. Banerdt. (2021) Seismic Noise Autocorrelations on Mars, *Earth and Space Science*, e2021EA001755, <http://dx.doi.org/10.1029/2021EA001755>
11. Stähler, S.C., Khan, A., Banerdt, W.B., Lognonné, P., Giardini, D., Ceylan, S., Drilleau, M., Duran, A.C., Garcia, R., Huang, Q., Kim*, D., **Lekic, V.**, Samuel, H., Schimmel, M., Schmerr, N., Sollberger, D., Stutzmann, E., Xu, Z., Antonangeli, D., Davis, P., Irving, J.C.E., Kawamura, T., Knapmeyer, M., Maguire, R., Marusiak, A.G., Panning, M.P., Perrin, C., Plesa, A.-C., Rivoldini, A., Schmelzbach, C., Zenhäusern, G., Beucler, E., Charalambous, C., Clinton, J., Dahmen, N., van Driel, M., Gudkova, T., Horleston, A., Pike, W.T., Plasman, M. and S.E. Smrekar. (2021) Seismic Detection of the Martian Core, *Science*, 373(6553), 443-448, <https://doi.org/10.1126/science.abi7730>
12. Maguire, R., Schmerr, N., **Lekic, V.**, Hurford, T., Dai, L. and A. Rhoden. (2021) Constraining Europa's Ice Shell Thickness with Fundamental Mode Surface Wave Dispersion, *Icarus*, 369, 114617, <https://doi.org/10.1016/j.icarus.2021.114617>
13. Magrini, F., Boschi, L., Gualtieri, L., **Lekic, V.** and F. Cammarano. (2021) Rayleigh-wave attenuation across the conterminous United States in the microseism frequency band, *Scientific reports*, 11(1), 1-9, <https://doi.org/10.1038/s41598-021-89497-6>
14. Knapmeyer-Endrun, B., Panning, M.P., Bissig, F., Joshi, R., Khan, A., Kim*, D., **Lekic, V.**, Tauzin, B., Tharimena, S., Plasman, M., Compaire, N., Garcia, R.F., Margerin, L., Schimmel, M., Stutzmann, E., Schmerr, N., Bozdog, E., Plesa, A.-C., Wiczorek, M.A., Broquet, A., Antonangeli, D., McLennan, S.M., Samuel, H., Michaut, C., Pan, Lu., Smrekar, S.E., Johnson, C.L., Brinkman, N., Mittelholz, A., Rivoldini, A., Davis, P.M., Lognonné, P., Pinot, B., Scholz, J.-R., Stähler, S., Knapmeyer, M., van Driel, M., Giardini, D. and W. B. Banerdt. (2021) Thickness and structure of the Martian crust from InSight seismic data, *Science*, 373(6553), 438-443, <https://doi.org/10.1126/science.abf8966>
15. Huang, M.H., Hudson-Rasmussen, B., Burdick, S., **Lekic, V.**, Nelson, M., Fauria, K., and N. Schmerr. (2021) Bayesian seismic refraction inversion for critical zone science and near-surface applications, *Geochem., Geophys., Geosys.*, <https://doi.org/10.1029/2020GC009172>
16. Khan, A., Ceylan, S., van Driel, M., Giardini, D., Lognonné, P., Samuel, H., Schmerr, N., Stähler, S., Duran, A.C., Huang, Q., Kim*, D., Charalambous, C., Clinton, J., Davis, P., Drilleau, M., Karakostas, F., **Lekic, V.**, Maguire, R., Michaut, C., Panning, M., Pike, W., Pinot, B., Plasman, M., Scholz, J.-R., Widmer-Schmidrig, R., Spohn, T., Smrekar, S. and W. Banerdt. (2021) Imaging the upper mantle structure of Mars with InSight seismic data, *Science*, 373(6553), 434-438, <https://doi.org/10.1126/science.abf2966>
17. Compaire, N., Margerin, L., Garcia, R., Pinot, B., Calvet, M., Orhand-Mainsant, G., Kim*, D., **Lekic, V.**, Tauzin, B., Schimmel, M., Stutzmann, E., Knapmeyer-Endrun, B., Lognonné, P., Pike, W., Schmerr, N., Gizon, L. and W. Banerdt. (2021) Autocorrelation of the ground

vibration recorded by the SEIS-InSight seismometer on Mars, *J. Geophys. Res. - Planets*, 126(4), e2020JE006498, <https://doi.org/10.1029/2020JE006498>

18. Rudolph, M., Lourenco, D., Moulik, P. * and **V. Lekic** (2021), Long-wavelength Mantle Structure: Geophysical Constraints and Dynamical Models. In H. Marquardt, M. Ballmer, S. Cottaar, and J. Kontar (Eds.), *Mantle Convection and Surface Expressions* (pp. 3-19), *Geophysical Monograph Series, Washington, DC, American Geophysical Union*, <https://doi.org/10.1002/9781119528609.ch1>
19. Rudolph, M., Moulik*, P. and **V. Lekic** (2020) Bayesian inference of mantle viscosity from whole-mantle density models, *Geochem., Geophys., Geosys.*, 21(11), e2020GC009335, <https://doi.org/10.1029/2020GC009335>
20. Kim*, D., **Lekić, V.**, Ménard, B., Baron, D. and M. Taghizadeh-Popp (2020). Sequencing seismograms: A panoptic view of scattering in the core-mantle boundary region. *Science*, 368(6496), 1223-1228, <https://doi.org/10.1126/science.aba8972>
21. Ritsema, J. and **V. Lekic** (2020) Heterogeneity of Seismic Wave Velocity in Earth's Mantle, *Ann. Rev. Earth Planet. Sci.*, 48, 377-401, <https://doi.org/10.1146/annurev-earth-082119-065909>
22. Drilleau, M., Beucler, E., Lognonné, P., Panning, M., Knapmeyer-Endrun, Banerdt, W., Beghein, C., Ceylan, S., van Driel, M., Joshi, R., Kawamura, T., Khan, A., Menina, S., Rivoldini, A., Samuel, H., Stahler, S., Xu, H., Bonni, M., Clinton, J., Giardini, D., Kenda, B., **Lekic, V.**, Mocquet, A., Murdock, N., Schimmel, M., Smrekar, S., Stutzmann, E., Tauzin, B., Tharimena, S., (2020) MSS/1: Single-station and single event marsquake inversion, *Earth. Space Sci.*, <https://doi.org/10.1029/2020EA001118>
23. Cunningham†, E. and **V. Lekic** (2020), Constraining properties of sedimentary strata using receiver functions: An example from the Atlantic Coastal Plain of the southeastern United States, *Bull. Seismol. Soc. Am.*, 110 (2): 519–533, <https://doi.org/10.1785/0120190191>
24. P. Lognonné, W.B. Banerdt, W.T. Pike, D. Giardini, U. Christensen, R.F. Garcia, T. Kawamura, S. Kedar, B. Knapmeyer-Endrun, L. Margerin, F. Nimmo, M. Panning, B. Tauzin, J.-R. Scholz, D. Antonangeli, S. Barkaoui, E. Beucler, F. Bissig, N. Brinkman, M. Calvet, S. Ceylan, C. Charalambous, P. Davis, M. van Driel, M. Drilleau, L. Fayon, R. Joshi, B. Kenda, A. Khan, M. Knapmeyer, **V. Lekic**, J. McClean, D. Mimoun, N. Murdoch, L. Pan, C. Perrin, B. Pinot, L. Pou, S. Menina⁽¹⁾, S. Rodriguez, C. Schmelzbach, N. Schmerr, D. Sollberger, A. Spiga, S. Stähler, A. Stott, E. Stutzmann, S. Tharimena, R. Widmer-Schmidrig, F. Andersson, V. Ansan, C. Beghein, M. Böse, E. Bozdog, J. Clinton, I. Daubar, P. Delage, N. Fuji, M. Golombek, M. Grott, A. Horleston, K. Hurst, J. Irving, A. Jacob, J. Knollenberg, S. Krasner, C. Krause, R. Lorenz, C. Michaut, B. Myhill, T. Nissen-Meyer, J. ten Pierick, A.-C. Plesa, C. Quantin-Nataf, J. Robertsson, L. Rochas, M. Schimmel, S. Smrekar, T. Spohn, N. Teanby, J. Tromp, J. Vallade, N. Verdier, C. Vretos, R. Weber, D. Banfield, E. Barrett, M. Bierwirth, S. Calcutt, N. Compaire, C. Johnson, D. Mance, F. Euchner, L. Kerjean, G. Mainsant, A. Mocquet, J. Antonio Rodriguez Manfredi, G. Pont, P. Laudet, T. Nebut, S. de Raucourt, O. Robert, C. Russel, A. Sylvestre-Baron, S. Tillier, M. Wiczorek, C. Yana, P. Zweifel, Constraints on the shallow elastic and anelastic structure of Mars from InSight seismic data, *Nature Geoscience*, 13(3), 213-220, <https://doi.org/10.1038/s41561-020-0536-y>

25. Dottin, J.W. III, Labidi, J., **Lekic, V.**, Jackson, M.G. and J. Farquhar (2020), Sulfur isotope characterization of primordial and recycled sources feeding the Samoan mantle plume, *Earth Planet. Sci. Lett.*, 534, <https://doi.org/10.1016/j.epsl.2020.116073>
26. Mundl-Petermeier, A., Walker, R. J., Fischer, R. A., **Lekic, V.**, Jackson, M. G., & Kurz, M. D. (2020), Anomalous 182-W in high 3He/4He Ocean Island Basalts: Fingerprints of Earth's core? *Geochimica et Cosmochimica Acta*, <https://doi.org/10.1016/j.gca.2019.12.020>
27. Izquierdo[†], K., **Lekic, V.** and L. Montesi (2020), A Bayesian Approach to Infer Interior Mass Anomalies from the Gravity Field of Celestial Bodies, *Geophys. J. Int.*, 220(3), 1687–1699, <https://doi.org/10.1093/gji/ggz544>
28. Kim*, D. and **V. Lekic** (2019) Groundwater Variations from Autocorrelation and Receiver Functions, *Geophys. Res. Lett.*, 46, 13,722–13,729. <https://doi.org/10.1029/2019GL084719>
29. Hurford, T.A., Henning, W.G., Maguire, R., **Lekic, V.**, Schmerr, N., Panning, M., Bray, V., Manga, M., Kattenhorn, S.A., Quick, L. C., Rhoden, A.R. (2019), Seismicity on Tidally Active Solid-Surface Worlds, *Icarus*, <https://doi.org/10.1016/j.icarus.2019.113466>
30. Burdick*, S., Waszek, L. and **V. Lekic** (2019), Seismic Tomography of the Uppermost Inner Core, *Earth Planet. Sci. Lett.*, 528(15), 115789, <https://doi.org/10.1016/j.epsl.2019.115789>
31. Diaferia, G., Cammarano, F., Piana Agostinetti, N., Gao,[†] C., **Lekic, V.**, Molinari, I., and L. Boschi (2019), Seismic Constraints on the Crustal Thermal Structure of the Italian Peninsula, *J. Geophys. Res.*, 124(8), <https://doi.org/10.1029/2019JB018340>
32. Gao[†], C., Cunningham[†], E. and **V. Lekic** (2019), Spurious Low Velocity Zones in Joint Inversions of Surface Waves and Receiver Functions, *Geophys. J. Int.*, 219, 1032-1042, <https://doi.org/10.1093/gji/ggz345>
33. Cunningham[†], E. and **V. Lekic** (2019), Constraining Crustal Structure in the Presence of Sediment: A Multiple Converted Wave Approach, *Geophys. J. Int.*, 219(1), 313-327 <https://doi.org/10.1093/gji/ggz298>
34. Kim, W.-Y., Gold, M., Ramsay, J., Meltzer, A., Wunsch, D., Baxter, S., **Lekic, V.**, Goodling[†], P., Pearson[†], K., Wagner, L., Roman, D., Golden, S. and T.L. Pratt (2018), Mw 4.2 Delaware Earthquake of 30 November 2017, *Seismological Research Letters* <https://doi.org/10.1785/0220180124>
35. Gao[†], C. and **V. Lekic** (2018), Consequences of parameterization choices in surface wave inversion: Insights from transdimensional Bayesian methods, *Geophys. J. Int.* 215(2), 1037–1063, <https://doi.org/10.1093/gji/ggy310>
36. Irving, J.M.E., Cottaar, S. and **V. Lekic** (2018), Seismically determined elastic parameters for Earth's outer core, *Science Advances*, 4(6), eaar2538, <https://doi.org/10.1126/sciadv.aar2538>
37. Goodling[†], P.J., **Lekic, V.** and K. Prestegard (2018), Seismic signature of turbulence during the 2017 Oroville Dam spillway erosion crisis, *Earth Surf. Dynam. Discuss.*, <https://doi.org/10.5194/esurf-2017-71>
38. Olugboji*, T.M., **Lekic, V.** and W.F. McDonough (2017), A statistical assessment of models of the US continental crust using Bayesian inversion of ambient noise surface wave dispersion data, *Tectonics*, <https://doi.org/10.1002/2017TC004468>

39. **Lekic, V.** and K.M. Fischer (2017), On Interpreting Spatially Stacked Sp Receiver Functions, *Geophys. J. Int.*, <https://doi.org/10.1093/gji/ggx206>
40. Mundl, A., Touboul, M., Jackson, M.G., Day, J.M.D., Kurz, M.D., **Lekic, V.**, Helz, R.T., and R.J. Walker (2017), Tungsten-182 Heterogeneity in Modern Ocean Island Basalts, *Science*, 356(6333), 66-69, <https://doi.org/10.1126/science.aal4179>
41. Burdick*, S. and **V. Lekic** (2017), Velocity Variations and Uncertainty from Transdimensional P-wave Tomography of North America, *Geophys. J. Int.*, 209 (2): 1337-1351, <https://doi.org/10.1093/gji/ggx091>
42. Ballmer, M.D., Schumacher, L., **Lekic, V.**, Thomas, C., and G. Ito (2016), Compositional Layering Within the Large Low Shear-Wave Velocity Provinces in the Lower Mantle, *G-cubed*, <http://dx.doi.org:10.1002/2016GC006605>
43. Panning, M.P., Benerdt, W.B., Lognonne, P., Beucler, E., Blanchette-Guertin, J.-F., Christensen, U., Dehant, V., Drilleau, M., Gao[†], C., Garcia, R., Giradini, D., Golombek, M., Gudkova, T., Hempel, S., Kedar, S., Khan, A., Knapmeyer, M., Knapmeyer-Endrun, B., **Lekic, V.**, Minoun, D., Mocquet, A., Pike, W.T., Plesa, A.-C., Rivoldini, A., Schmerr, N., Smrekar, S., Teanby, N.A., Tromp, J., Verhoeven, O., Weber, R., Wiczorek, M., and J. Wookey (2017), Planned Products of the Mars Structure Service for the *InSight* Mission to Mars, *Space Sci. Rev.*, 211(1-4), 611-650, <http://dx.doi.org:10.1007/s11214-016-0317-5>
44. Cottaar, S. and **V. Lekic** (2016), Morphology of Seismically Slow Lower Mantle Structures, *Geophysical Journal International*, **207**(2), 1122-1136 <http://dx.doi.org/10.1093/gji/ggw324>
45. Rudolph, M., **V. Lekic**, and C. Lithgow-Bertelloni (2015), Viscosity jump in the Earth's mid mantle, *Science*, **360** (6266), 1349-1352, <http://dx.doi.org/10.1126/science.aad1929>
46. Reeves[†], Z., **V. Lekic**, N. Schmerr, M. Kohler, and D. Weeraratne (2015), Lithospheric structure across the California Continental Borderland from receiver functions, *Geochem. Geophys. Geosyst.*, **16**, <http://dx.doi.org/10.1002/2014GC005617>.
47. Triana, S.A., D.S. Zimmerman, H.-C. Nataf, A. Thorette, **V. Lekic**, and D. Lathrop (2014), Helioseismology in a bottle: Modal acoustic velocimetry, *New J. Phys.* **16**, 113005, <http://dx.doi.org/10.1088/1367-2630/16/11/113005>.
48. **Kolb, J.** and **V. Lekic** (2014), A Robust Deconvolution Method Based on Transdimensional, Hierarchical, Bayesian Inference, *Geophys. J. Int.*, <http://dx.doi.org/10.1093/gji/ggu079>.
49. Ford, H.A., K.M. Fischer, and **V. Lekic** (2014), Localized shear in the deep lithosphere beneath the San Andreas fault system, *Geology*, **42** (4), 295-298, <http://dx.doi.org/10.1130/G35128.1>
50. Hopper, E., H.A. Ford, K.M. Fischer, **V. Lekic**, and M. J. Fouch (2014), The lithosphere-asthenosphere boundary and the tectonic and magmatic history of the northwestern United States, *Earth Planet. Sci. Lett.*, **69**, 81-89, <http://dx.doi.org/10.1016/j.epsl.2013.12.016>.
51. **Lekic, V.**, and K.M. Fischer (2014), Contrasting lithospheric signatures across the western United States revealed by Sp receiver functions, *Earth Planet. Sci. Lett.* **402**, 90-98, <http://dx.doi.org/10.1016/j.epsl.2013.11.026>.

52. Šrámek, O., W.F. McDonough, E.S., Kite, **V. Lekic**, S.T. Dye, and S. Zhong (2013), Geophysical and geochemical constraints on geoneutrino fluxes from Earth's mantle, *Earth Planet Sci. Lett.*, **361**, 356-366, <http://dx.doi.org/10.1016/j.epsl.2012.11.001>
53. French, S.W., **V. Lekic**, and B. Romanowicz (2013), Waveform tomography reveals channelled flow at the base of the oceanic lithosphere, *Science*, **342**, 227-230, <http://dx.doi.org/10.1126/science.1241514>.
54. **Lekic, V.**, S. Cottaar, A.M. Dziewonski, and B. Romanowicz (2012), Cluster analysis of global lower mantle tomography: A new class of structure and implications for chemical heterogeneity, *Earth Planet. Sci. Lett.*, **357**, 68-77, <http://dx.doi.org/10.1016/j.epsl.2012.09.014>.
55. **Lekic, V.**, K. M. Fischer, and S.W. French (2011), Lithospheric thinning beneath rifted regions of Southern California, *Science*, **334**, 6057, 783-787, <http://dx.doi.org/10.1126/science.1208898>.
56. **Lekic, V.** and B. Romanowicz (2011b), Tectonic regionalization without *a priori* information: a cluster analysis of tomography, *Earth Planet Sci. Lett.* **308**, 151-160, <http://dx.doi.org/10.1016/j.epsl.2011.05.050>.
57. **Lekic, V.** and B. Romanowicz (2011a), Inferring upper mantle structure by full waveform tomography using the spectral element method, *Geophys. J. Int.*, <http://dx.doi.org/10.1111/j.1365-246X.2011.04969.x>.
58. Dziewonski, A., **V. Lekic**, and B. Romanowicz (2010), Mantle Anchor Structure: An argument for bottom up tectonics, *Earth Planet. Sci. Lett.* **299**, 69-79, <http://dx.doi.org/10.1016/j.epsl.2010.08.013>.
59. Panning, M., **V. Lekic** and B. Romanowicz (2010), Importance of crustal corrections in the development of a new global model of radial anisotropy, *J. Geophys. Res.* **115**, B12325, <http://dx.doi.org/10.1029/2010JB007520>.
60. **Lekic, V.**, M. Panning, and B. Romanowicz (2010), A simple method for improving crustal corrections in waveform tomography, *Geophys. J. Int.*, **182**(1), 265-278, <http://dx.doi.org/10.1111/j.1365-246X.2010.04602.x>.
61. **Lekic, V.**, J. Matas, M. Panning, and B. Romanowicz (2010), Reply to "Comment on 'Measurement and implications of frequency dependence of attenuation'" by I. Morozov, *Earth Planet. Sci. Lett.*, **293**, 216-217, <http://dx.doi.org/10.1016/j.epsl.2010.02.039>.
62. **Lekic, V.**, J. Matas, M. Panning, and B. Romanowicz (2009), Measurement and implications of frequency dependence of attenuation, *Earth Planet. Sci. Lett.*, **282**, 285-293, <http://dx.doi.org/10.1016/j.epsl.2009.03.030>.
63. Cammarano, F., **V. Lekic**, M. Manga, M. Panning, and B. Romanowicz (2006), Long-period seismology on Europa: 1. Physically consistent interior models, *J. Geophys. Res.*, **111**, E12009, <http://dx.doi.org/10.1029/2006JE002710>.
64. Panning, M., **V. Lekic**, M. Manga, F. Cammarano, and B. Romanowicz (2006), Long-period seismology on Europa: 2. Predicted seismic response, *J. Geophys. Res.*, **111**, E12008, <http://dx.doi.org/10.1029/2006JE002712>.
65. Dunn, R.A., **V. Lekic**, R.S. Detrick, and D.R. Toomey (2005), Three-dimensional seismic structure of the Mid-Atlantic Ridge (35°N): Evidence for focused melt supply and lower

crustal dike injection, *J. Geophys. Res.*, **110**, B09101,
<http://dx.doi.org/10.1029/2004JB003473>.

II.D. Published in Conference Proceedings

NB: Underlined names represent undergraduate students under direct supervision, (*) denotes postdoctoral researchers under direct supervision, and (†) denotes graduate students under direct supervision.

1. Khan, A., Ceylan, S., van Driel, M., Giardini, D., Lognonne, P., Samuel, H., Schmerr, N., Staehler, S., Duran, A.C., Huang, Q. and Kim*, D., Charalmbous, C., Clinton, J.F., Davis, P.M., Drilleau, M., Karakostas, F., **Lekic, V.**, Maguire, R.R., Michaut, C., Panning, M.P., Pike, W.T., Pinot, B., Plasman, M., Scholz, J.-R., Widmer-Schnydrig, R., Spohn, T., Smrekar, S.E. and W.B. Banerdt (2021, March). Constraints on the Martian Upper Mantle from InSight Seismic Data. In Lunar and Planetary Science Conference (No. 2548, p. 1836).
2. Hurford, T.A., Henning, W.G., Maguire, R., **Lekic, V.**, Schmerr, N., Panning, M.P., Bray, V.J., Manga, M., Kattenhorn, S.A., Quick, L.C. and A. R. Rhoden (2020, March). Tidally-Driven Seismicity on Satellites, Planets, and Exoplanets. In Lunar and Planetary Science Conference (No. 2326, p. 2022).
3. Izquierdo†, K., Montesi, L. G. J., and **V. Lekic** (2020, March). Views of the Interior of the Moon from a Probabilistic Gravity Inversion Approach. In Lunar and Planetary Science Conference (No. 2326, p. 1580).
4. Izquierdo†, K., **Lekic, V.** and L. Montesi (2019, March). Constraining Density Anomalies in the Interior of Planetary Bodies from Gravity Data Using Bayesian Inference and Voronoi Cells. In Lunar and Planetary Science Conference (No. 2132, p. 2157).
5. Maguire, R., Schmerr, N. C., **Lekic, V.**, Hurford, T., Dai, L. and A. Rhoden (2019, March). Constraining the Thickness of Europa's Ice Shell with Observations of Fundamental Mode Rayleigh Wave Dispersion. In Lunar and Planetary Science Conference (No. 2132, p. 2819).
6. Schmerr, N.C., **Lekic, V.**, Mautino†, A., Plescia, J.B., Paul, M., Richardson, D.C., Yu, H. and J.V. DeMartini (2018, March). The Asteroid Probe Experiment (Apex): Seismology at 99942 Apophis. In Lunar and Planetary Science Conference (No. 2083, p. 2467).
7. Hurford, T.A., Henning, W.G., **Lekic, V.**, Schmerr, N., Panning, M.P., Kattenhorn, S., Manga, M., Nimmo, F., Quick, L.C. and A. R. Rhoden (2018, March). Tidally-driven seismicity: An application to Europa. In Lunar and Planetary Science Conference (No. 2083, p. 2414).
8. Mundl, A., Walker, R. J., Touboul, M., Jackson, M. G., Kurz, M. D., Day, J. M. D., **Lekic, V.** and R. T. Helz (2017, March). 182-W Implications for Silicate Magma Ocean Processes in Terrestrial Planets. In Lunar and Planetary Science Conference (No. 1964, p. 1607).
9. Schmerr, N. C., Garnero, E., Hurford, T., **Lekic, V.**, Panning, M., Rhoden, A. and H. Yu (2017, March). Short Aperture Seismic Arrays on Icy Satellites. In Lunar and Planetary Science Conference (No. 1964, p. 1254).
10. Dye, S.T., Huang, Y., **Lekic, V.**, McDonough, W.F., and O. Šrámek (2015), Geo-

II.E. Conferences, Workshops, and Talks (since 2012)

II.E.1 Keynotes

- 2013/6/1 Gordon Research Seminar, Mt. Holyoke, MA. Title: “New mantle structures imaged using full waveform SEM-based tomography”
- 2013/6/4 Gordon Research Conference, Mt. Holyoke, MA. Title: “A long period view of LLSVPs”
- 2013/6/19 COMPRES annual meeting, Keynote speaker, Lake Geneva, WI. Title: “Emerging consensus on large scale shear wave speed structure in the mantle”
- 2014/7/7 Cooperative Institute for Dynamic Earth Research (CIDER), Kavli Institute for Theoretical Physics, University of California, Santa Barbara, CA. ([video](#)) Title: “Seismology 1: Introduction to body waves, surface waves, seismic sources...”
- 2015/1/21 CSEDI Science Plan Workshop, University of California, San Deigo, CA. Title: “Seismological constraints on large and meso-scale structure of the lower mantle.”
- 2015/10/5 Ocean Bottom Seismology Symposium, Vancouver, WA. Title: “Lithospheric structure offshore southern California from receiver functions.”
- 2016/5/25 NSLS-II User Meeting Workshop, Brookhaven National Laboratory, NY. Title: “Viscosity Jump in the Earth’s Mid Mantle.”
- 2016/7/5 Cooperative Institute for Dynamic Earth Research (CIDER), Kavli Institute for Theoretical Physics, University of California, Santa Barbara, CA. ([video](#)) Title: “Seismology 3: Inverse Theory”
- 2017/5/18 EarthScope National Meeting, Anchorage, AK. Title: “What have we learned about the North American lithosphere from EarthScope data.”
- 2018/6/14 IRIS 2018 Workshop, Albuquerque, NM. Title: “A Seismically Sound Foundation: Reference Models and Datasets.”
- 2018/7/13 Cooperative Institute for Dynamic Earth Research (CIDER), Kavli Institute for Theoretical Physics, University of California, Santa Barbara, CA. ([video](#)) Title: “Seismology 3: Inverse Theory” and “Seismology Tutorial 1: Tomography”
- 2020/10/13 Computational Infrastructure for Geodynamics (CIG), Community Workshop, Virtual. Title: Achievements and Unanswered Questions in Seismic Imaging of Earth’s Interior.

II.E.2 Invited Talks

- 2012/1/11 Geological Society of Washington, DC. Title: “Imaging the bottom of tectonic plates: Rifting in Southern California.”
- 2012/4/4 Department of Mineral Sciences, National Museum of Natural History, Smithsonian Institution, Washington, DC. Title: “Lithospheric thinning beneath rifted regions of Southern California.”

- 2012/4/11 Department of Terrestrial Magnetism, Carnegie Institution of Washington, DC. Title: "Lithospheric thinning beneath rifted regions of Southern California."
- 2012/4/12 Department of Earth and Planetary Sciences, Johns Hopkins University, Baltimore, MD. Title: "Lithospheric thinning beneath rifted regions of Southern California."
- 2012/5/18 Seismological Laboratory, California Institute of Technology, CA, Title: "Lithospheric structure beneath Southern California and the Rio Grande Rift."
- 2012/7/5 Symposium on the Study of the Earth's Deep Interior, Leeds, UK. Title: "A re-analysis of lower mantle tomographic models."
- 2012/9/20 Potomac Geological Society, Washington, DC. Title: "Imaging the bottom of tectonic plates: Rifting in Southern California."
- 2012/11/13 Colloque international en anglais, Collège de France, Paris, France ([video](#)). Title: "Cluster analysis of global lower mantle tomography: a new class of structure and implications for chemical heterogeneity."
- 2013/5/9 CIDER Attenuation Workshop, Lamont-Doherty Earth Observatory, Columbia University, New York, NY. Title: "Constraining the frequency dependence of attenuation with free oscillations."
- 2013/9/20 Department of Geosciences, Princeton University, NJ. Title: "Seismic constraints on the deformation of continental lithosphere"
- 2013/10/9 Dept. of Earth & Space Sciences, University of California, Los Angeles, CA. Title: "Seismic constraints on the structure and deformation of continental lithosphere"
- 2014/1/13 Geological and Planetary Sciences Division, Caltech, CA. Title: "Seismic constraints on the structure and deformation of continental lithosphere"
- 2014/1/22 Department of Geology and Geophysics, Yale University, New Haven, CT. Title: "Seismic constraints on the structure and deformation of continental lithosphere"
- 2014/3/20 Department of Geology and Environmental Sciences, James Madison University, Harrisonburg, VA. Title: "Seismic constraints on the structure and deformation of continental lithosphere"
- 2014/7/1 Geoneutrino Working Group Meeting at the Kavli Institute for Theoretical Physics, Santa Barbara, CA. Title: "Properties of LLSVPs and ULZVs"
- 2015/1/22 Department of Geophysics, School of Earth, Energy, and Environmental Sciences, Stanford University, Palo Alto, CA. Title: "Seismic Constraints on Lithospheric Structure and Deformation."
- 2015/2/26 Department of Geological Sciences, University of Florida, Gainesville, FL. Title: "Seismic constraints on the structure and deformation of continental lithosphere."
- 2015/3/12 Distinguished Lecture Series seminar, Department of Geology and Geophysics, University of Utah, Salt Lake City, UT. Title: "Seismic constraints on the structure and deformation of continental lithosphere"
- 2015/4/9 Montana Bureau of Mines and Geology, Montana Tech, Butte, MT. Title: "Seismic constraints on the structure and deformation of continental lithosphere"

- 2015/4/22 Department of Geology, Wayne State University, Detroit, MI. Title: "Seismic constraints on the structure and deformation of continental lithosphere"
- 2015/6/4 Department of Terrestrial Magnetism, Carnegie Institution for Science, Washington, DC. Title: "Lower Mantle Structure Across Scales"
- 2015/9/10 Packard Fellows Meeting, Monterey, CA. Title: "Imaging the Earth's interior with seismic waves"
- 2015/10/7 Department of Geological Sciences, University of Oregon, Eugene, OR. Title: "Seismic constraints on the structure and deformation of continental lithosphere"
- 2015/11/6 Department of Geosciences, Virginia Tech, Blacksburg, VA. Title: "Constraining lithospheric structure using seismology."
- 2015/11/10 Department of Physics, University of Maryland, College Park, MD. Title: "Imaging the Earth's interior using seismic waves."
- 2016/3/8 Rocky Mountain Science Seminar, USGS, Denver, CO. Title: "Constraining lithospheric structure and deformation beneath the United States."
- 2016/5/6 CIDER Community Workshop at Point Reyes, CA. Title: "Inferences and implications of a viscosity increase in the mid mantle."
- 2016/9/4 Geological Society of Washington. Title: "Peering in the Earth with an EarthScope"
- 2016/9/27 Geological Society of America Annual Meeting, Title: "EarthScope-Enabled Insights into the North American Crust and Mantle," paper no. 202-8.
- 2017/1/25 Department of Physics, Howard University, Title: "Imaging the Earth's deep interior using seismic waves."
- 2017/2/17 Department of Earth, Environmental and Planetary Sciences, Case Western Reserve University, Title: "Viscosity and Velocity Structure of the Lower Mantle."
- 2017/11/17 Department of Geophysical Sciences, University of Chicago, Title: "From imaging to hypothesis testing: the future of structural seismology."
- 2018/3/15 Department of Geological Sciences, Brown University, Title: "From imaging to hypothesis testing: the future of structural seismology."
- 2018/5/16 Invited talk at SSA joint meeting in Miami, FL, Title: "The 3-D Reference Earth Model: Status and Preliminary Results"
- 2018/5/23 Department of Earth and Planetary Sciences, University of California, Davis, Title: "Imaging Tectonic Plates with Surface and Converted Waves"
- 2018/9/11 Berkeley Seismology Laboratory, University of California, Berkeley, Title: "Imaging Tectonic Plates with Surface and Converted Waves"
- 2019/5/8 UK-SEDI, University College London, Title: "Sequencing Seismic Data and Models"
- 2019/5/15 Bullard Laboratories, Department of Earth Sciences, University of Cambridge, UK, Title: "Constraining Lithospheric Structure Across the United States"
- 2019/6/4 Solid Earth Science Group, University of Tokyo, Todai, Japan, Title: "Large-Scale Elastic Structure of Lower Mantle with Implications for Viscosity"

- 2019/6/6 Earth Life Science Institute, Tokyo Tech, Ota City, Japan, Title: “Sequencing Seismic Data and Models”
- 2019/9/7 Packard Fellows Meeting, Monterey, CA. Title: “A Journey from the Distant Universe to the Center of the Earth”
- 2020/2/6 Department of Geosciences, University of Arizona, Tucson, AZ, Title: “Promise and Danger in Seismic Inversions from Crust to Core”
- 2020/2/27 Dept. of Atmospheric, Oceanic, and Earth Sciences, George Mason University, VA, Title: “Promise and Danger in Seismic Inversions from Crust to Core”
- 2020/12/1 Berkeley Seismological Laboratory, University of California, Berkeley, CA, Title: “Insights from Sequencing Seismic Data and Models”
- 2021/4/9 Department of Earth and Environmental Sciences, Michigan State University, East Lansing, MI, Title: “Extracting Insights from Geophysical Data and Models”

II.E.8 Non-Refereed Abstracts (since 2012)

NB: Only abstracts first-authored by myself or students / postdocs under my (co)supervision, or in collaborations where I am among first three authors are listed. Underlined names represent undergraduate students under direct supervision, (*) denotes postdoctoral researchers under direct supervision, and (†) denotes graduate students under direct supervision.

1. Myers†, H. P., Lekic, V., & Lathrop, D. P. Optimizing Multi-Sensor Geophysical Observations on a UAV for UXO Detection. *In Symposium on the Application of Geophysics to Engineering and Environmental Problems*. Society of Exploration Geophysicists and Environment and Engineering Geophysical Society, 2022.
2. Khatib†, A., Schmerr, N.C. and V. Lekic, Classifying deep moonquakes using machine learning algorithms, 53rd Lunar and Planetary Science Conference, 2393, 2022.
3. Kim*, D., Lekic, V., Mundl-Petermeier, A., Finlayson, V. and R.J. Walker, Sequencing core diffracting seismic phases: implications for mega-ULVZ properties (Invited), AGU Fall Meeting, DI34A-01, 2021.
4. Kim*, D., Lekic, V., Myers, H., Wike, L., Schmerr, N. and R.R. Ghent, Towards a quantitative understanding of the relationship between properties of seismic waveforms and the underlying scattering media, AGU Fall Meeting, P15C-2119, 2021.
5. Myers†, H. P., Lekic, V. and D. P. Lathrop, Assessing the suitability of UAV-mounted geophysical sensors for UXO detection, AGU Fall Meeting, NS31A-01, 2021.
6. Mills, C., Rudolph, M. and V. Lekic, Identifying Central Tendencies in Ensemble Solutions to Geophysical Inverse Problems, AGU Fall Meeting, S15F-0308, 2021.
7. Khatib, A., Schmerr, N.C., Lekic, V. and R. Maguire, Classifying Deep Moonquakes Using Convolutional Neural Nets and Synthesized Seismic Data, AGU Fall Meeting, S32A-08, 2021.
8. Izquierdo†, K., Montesi, L., and V. Lekic, Inferences of the lunar interior from a probabilistic gravity inversion approach, EGU General Assembly 2020, Online, 4–8 May 2020, EGU2020-22202, <https://doi.org/10.5194/egusphere-egu2020-22202>, 2020.

9. **Lekic, V.**, Kim, D., Huang, M.-H. and B. Menard, Gleaning insights from sequencing geophysical timeseries, Seismological Society of America Meeting, Albuquerque, NM, 2020.
10. Cunningham[†], E., Wagner, L. and **V. Lekic**, Invited: Relationship between crustal structure and intraplate seismicity beneath the south-eastern United States, Seismological Society of America Meeting, Albuquerque, NM, 2020.
11. Kim*, D., **Lekic, V.**, Huang, M. and T. Taira, Toward Large-Scale Groundwater Monitoring with Seismic and Geodetic Data: Case Study and Future Directions, Seismological Society of America Meeting, Albuquerque, NM, 2020.
12. Pearson[†], K., **Lekic, V.**, Wagner, L., Roman, D. and W.-Y. Kim, Low Aftershock Productivity from the 30 November 2017 Delaware Earthquake, Seismological Society of America Meeting, Albuquerque, NM, 2020.
13. Kim*, D., **Lekic, V.**, Menard, B., Mundl-Petermeier, A., Finlayson, V. and R.J. Walker, A Panoptic View of Scattering in the Core-Mantle Boundary Region of the Pacific, AGU Fall Meeting, DI017-08, 2020.
14. Moulik*, P., **V. Lekic**, and B. A. Romanowicz, The 3D Reference Earth Model Project: Reconciled Data, Full-spectrum Tomography and Community Tools, AGU Fall Meeting DI003-08, 2020.
15. **Lekic, V.**, Menard, B., and D. Kim*, Sequencing Geophysical Signals to Glean Structural Insights, AGU Fall Meeting, S057-07, 2020.
16. Myers[†], H. P., **Lekic, V.** and D. P. Lathrop, A Comparative Assessment of Machine Learning Techniques for UXO Detection using Geophysical Sensors, AGU Fall Meeting , NS015-02, 2020.
17. Pearson[†], K.M., **Lekic, V.**, Kim*, D. and M.H. Huang, M.H, Toward Understanding Anomalously Low Aftershock Productivity, AGU Fall Meeting, S038-0015, 2020.
18. Kim*, D., **Lekic, V.**, Schmerr, N.C., Richardson, J.A., Bell, E., Jazayeri, S., Young, K. and R.R. Ghent, R.R, Towards Joint Inversion of Geophysical Datasets in Planetary Analog Studies, AGU Fall Meeting, P063-10, 2020.
19. Moulik*, P., **Lekic, V.**, Ekstrom, G. and B.A. Romanowicz, Earth's Bulk Structure and Heterogeneity from Big Data and Full-Spectrum Tomography, AGU Fall Meeting Abstracts, U42B-03, 2019.
20. Cunningham[†], E., **Lekic, V.** and L.S. Wagner, Lithospheric Structure in the Southeastern US using Reverberation-Corrected Receiver Functions, AGU Fall Meeting, DI13B-0006, 2019.
21. Kim*, D., **Lekic, V.** and B. Menard, Systematic study of Sdiff scattering in the Pacific Basin using a new manifold learning algorithm, AGU Fall Meeting, DI33C-0065, 2019.
22. **Lekic, V.**, Kim*, D., Baron, D., and B. Menard, Sequencing Seismic Data and Models, Seismological Society of America Meeting, April 23-26, Seattle, Washington, 2019.
23. Pearson[†], K.M., **Lekic, V.**, Pratt, T.L., Roman, D.C., Wagner, L.S. and W.-Y. Kim, Aftershock monitoring with a heterogeneous seismic network, Seismological Society of America Meeting, Seattle, Washington, 2019.

24. Olugboji, T., Moulik, P., Plattner, A. and **V. Lekic**, Regionalized properties of the lowermost mantle from spherical Slepian analysis, Seismological Society of America Meeting, Seattle, Washington, 2019.
25. Irving, J., Cottaar, S., **Lekic, V.** and W. Wu, Seismological explorations of Earth's outer core: normal mode and body wave analyses, Seismological Society of America Meeting, Seattle, Washington, 2019.
26. Irving, J., Cottaar, S., **Lekic, V.** and W. Wu, Seismological models of Earth's outer core derived from normal mode data, Geophysical Research Abstracts, EGU General Assembly, EGU2018-10357, 2018.
27. Burdick, S., **Lekic, V.**, and L. Waszek, Exploring deep Earth structure and its uncertainty with transdimensional tomography, Geophysical Research Abstracts, EGU General Assembly, vol. 20, EGU2018-11389, 2018.
28. Gao[†], C., Cunningham[†], E. and **V. Lekic**, Spurious Low Velocity Zones in Joint Inversion of Surface Waves and Receiver Functions, AGU Fall Meeting, DI005, 2018.
29. Cunningham[†], E. and **V. Lekic**, Constraining sedimentary basins in the Southeastern US using P-to-s Receiver Functions, AGU Fall Meeting, S030, 2018.
30. Izquierdo[†], K., Montesi, L. and **V. Lekic**, Using Bayesian Inference to Constrain Density Anomalies Inside Celestial Bodies from Gravity Data, AGU Fall Meeting, P024, 2018.
31. Goodling[†], P., Prestegard, K. and **V. Lekic**, Characterizing along-stream variability in energy dissipation using seismic observations, AGU Fall Meeting, S008, 2018.
32. Maguire*, R., Schmerr, N., **Lekic, V.**, and T. Hurford, Performance of a broadband seismometer on Europa and implications for the detection of liquid water below its icy surface, AGU Fall Meeting, P020, 2018.
33. **Lekic, V.**, Moulik*, P. and B. Romanowicz, 3D Reference Earth Model: Regionalized and Smooth Flavors, AGU Fall Meeting, DI004, 2018.
34. Moulik*, P., **Lekic, V.** and B. Romanowicz, REM-3D Reference Datasets: Reconciling large compilations of normal mode, body and surface wave observations, AGU Fall Meeting, DI004, 2018.
35. Moulik*, P., Havlin, C., Maguire, R., and **V. Lekic**, Real-time interactive analyses and visualization of massive and diverse seismological observations, AGU Fall Meeting, DI007, 2018.
36. Pearson[†], K., Kim, W.-Y., Pratt, T. and **V. Lekic**, Insights from Aftershocks of the 30 November 2017 Dover, DE, Earthquake, AGU Fall Meeting, T022, 2018.
37. Hariharan, A., Moulik*, P. and **V. Lekic**, Probing Mantle Heterogeneity across Spatial Scales: Global Blindspots and Chimeric Models, AGU Fall Meeting, S010, 2018.
38. **Lekic, V.**, Moulik*, P. and B. Romanowicz, Invited: The 3-D Reference Earth Model: Status and Preliminary Results, *Seismological Research Letters*, 89(2B), 2018.
39. Pearson[†], K., Thomas, A.M. and **V. Lekic**, Determining periodicity in non-homogeneous catalogs using a modified Schuster test with application to induced seismicity in Oklahoma, *Seismological Research Letters*, 89(2B), 2018.

40. Cottaar, S., Irving, J. and **V. Lekic**, Updated outer core reference model from a Bayesian inversion of normal mode eigenfrequencies, *Geophysical Research Abstracts*, EGU General Assembly, vol. 19, EGU2017-10683, 2017.
41. Cottaar, S. and **V. Lekic**, Implications for mantle dynamics based on isotropic and anisotropic velocity variations above the core-mantle boundary, *Geophysical Research Abstracts*, EGU General Assembly, vol. 19, EGU2017-4803, 2017.
42. Olugboji*, T., Moulik*, P., Plattner, A. and **V. Lekic**, Intra-LLSVP heterogeneity from spherical slepian analysis, *AGU Fall Meeting*, DI31A-0387, 2017.
43. Cunningham†, E. and **V. Lekic**, Lithospheric structure and relationship to seismicity beneath the Southeastern US using receiver functions, *AGU Fall Meeting*, T11A-0442, 2017.
44. Goodling†, P., **V. Lekic** and K.L. Prestegard, Seismic analysis of the 2017 Oroville Dam Spillway Erosion Crisis, *AGU Fall Meeting*, EP53C-1761, 2017.
45. Hariharan, A., Moulik*, P. and **V. Lekic**, Probing mantle heterogeneity across spatial scales, *AGU Fall Meeting*, DI31A-0389, 2017.
46. Burdick*, S., Waszek, L. and **V. Lekic**, Anisotropic structure of the Inner Core and its uncertainty from transdimensional body-wave tomography, *AGU Fall Meeting*, DI33B-0409, 2017.
47. Gao†, C. and **V. Lekic**, Quantifying uncertainties of seismic Bayesian inversion of Northern Great Plains (Invited), *AGU Fall Meeting*, U13B-06, 2017.
48. Gao†, C. and **V. Lekic**, Assessing the uncertainties of seismic velocity and anisotropy structure of Northern Great Plains using a transdimensional Bayesian approach, *AGU Fall Meeting*, S23A-0774, 2017.
49. **Lekic, V.**, Moulik*, P. and B. Romanowicz, The 3D Reference Earth Model: Status and Preliminary Results, *AGU Fall Meeting*, DI44A-08, 2017.
50. Izquierdo†, K., **V. Lekic** and L. Montesi, Constraining mass anomalies in the interior of spherical bodies using transdimensional Bayesian hierarchical inference, *AGU Fall Meeting*, S32B-04, 2017.
51. Chiorini, S. and **V. Lekic**, Characteristics of swarm seismicity in Northern California, *AGU Fall Meeting*, S53B-0706, 2017.
52. Moulik*, P., **Lekic, V.** and B. Romanowicz, REM-3D Reference Datasets: Reconciling large and diverse compilations of travel-time observations, *AGU Fall Meeting*, DI31A-0388, 2017.
53. Washington, B., **Lekic, V.** and N.C. Schmerr, Characterizing the seismic ocean bottom environment of the Bransfield Strait, *AGU Fall Meeting*, S21C-0734, 2017.
54. Ballmer, M., **Lekic, V.**, Schumacher, L., Ito, G. and C. Thomas, Compositional layering within the large low shear-wave velocity provinces (LLSVPs) in the lower mantle, *Geophysical Research Abstracts*, EGU General Assembly, vol. 18, EGU2017-13620, 2016.
55. Burdick*, S., Moulik*, P., Waszek, L. and **V. Lekic**, Whole Earth P-wave structure from transdimensional tomography, *AGU Fall Meeting*, DI23C-04, 2016.
56. Izquierdo†, K., Montesi, L. and **V. Lekic**, Constraining mass anomalies using trans-dimensional gravity inversions, *AGU Fall Meeting*, NS41A-1892, 2016.

57. Eagon, A.J., Waszek, L., **Lekic, V.**, Schmerr, N.C., and A. M. Bishop Courtier, Constraining mantle discontinuity structure beneath North America using ScS reverberations, *AGU Fall Meeting, D111A-2322*, 2016.
58. **Lekic, V.**, Moulik*, P., Romanowicz, B. and A.M. Dziewonski, The 3D reference Earth model (REM-3D): Update and outlook, *AGU Fall Meeting, D131A-2617*, 2016.
59. Moulik*, P., **Lekic, V.** and B. Romanowicz, REM-3D reference dataset: Reconciling ~100 million surface-wave observations, *AGU Fall Meeting, D131A-2618*, 2016.
60. Gao[†], C. and **V. Lekic**, Quantifying the uncertainties and multi-parameter trade-offs in joint inversion of receiver functions and surface wave velocity and ellipticity, *AGU Fall Meeting, NS31B-02*, 2016.
61. Cunningham[†], E. and **V. Lekic**, Constraining crustal structure in sediment dominated regions: an H-k-V stacking method, *AGU Fall Meeting, S32C-03*, 2016.
62. Chiorini, S., Thomas, A. and **V. Lekic**, Catalog and characteristics of earthquake swarms in Northern California, *AGU Fall Meeting, S53A-2819*, 2016.
63. Olugboji*, T.M., **Lekic, V.**, Burdick*, S. and C. Gao[†], Multi-scale probabilistic seismic imaging with the USArray (Invited), *AGU Fall Meeting, T22D-05*, 2016.
64. Cottaar, S. and **V. Lekic**, Morphology of large and meso-scale slow provinces in the lowermost mantle, Geophysical Research Abstracts, EGU General Assembly, vol. 17, EGU2017-6575, 2015.
65. Mautino[†], A., Adams, M., Stone, D., Triana, S., Lathrop, D., and **V. Lekic**, Assessment of and improvements to acoustic velocimetry in flows in core-like geometries, *AGU Fall Meeting, P41A-2046*, 2015.
66. Schnurr, J., Olugboji*, T., and V. Lekic, Investigating Sources of Uncertainty in Surface Wave Ellipticity Measurements across the USArray, *AGU Fall Meeting, S21B-2681*, 2015.
67. Burdick*, S. and **V. Lekic**, Investigating the Farallon Slab with Probabilistic Traveltime Tomography (Invited), *AGU Fall Meeting, T24A-04*, 2015.
68. Gao[†], C., **Lekic, V.**, and T. Olugboji*, Constraining anisotropy in the US continental lithosphere using a joint inversion of receiver function and ambient noise data, *AGU Fall Meeting, S14A-05*, 2015.
69. Olugboji*, T., **V. Lekic**, Gao[†], C., and W. McDonough, Evaluating models of the US Continental Crust using Ambient Noise Datasets: A Transdimensional Approach, *AGU Fall Meeting, T11A-2860*, 2015.
70. Guandique, J., Burdick*, S., and **V. Lekic**, Characterizing waveform uncertainty due to ambient noise for the Global Seismic Network, *AGU Fall Meeting, S21B-2692*, 2015.
71. Griebel, K., Schmerr, N., Courtier, A., and **V. Lekic**, Imaging Mantle Discontinuities Beneath North America Using ScS Reverberations, *AGU Fall Meeting, D151A-2605*, 2015.
72. **Lekic, V.** and S. Cottaar, Morphology of Large- and Meso-scale structures in the Mid and Lower Mantle, *AGU Fall Meeting, D143B-08*, 2015.
73. **Lekic, V.**, Gao[†], C., Olugboji*, T., and S. Burdick*, Quantifying Uncertainty Across an Array of Seismic Applications (Invited), *AGU Fall Meeting, S31B-04*, 2015.

74. Cunningham[†], E. and **V. Lekic**, The structure of continental crust: comparison of body wave apparent incidence angle and receiver function results, *AGU Fall Meeting, T11D-2915*, 2015.
75. Burdick^{*}, S. and **V. Lekic**, Global travelttime tomography with USArray Transportable Array Data (Invited), *EarthScope National Meeting*, Stowe, VT, June 15-17, 2015.
76. Gao[†], C., Olugboji^{*}, T., and **V. Lekic**, Development of a transdimensional Bayesian joint inversion and its application of USArray ambient noise tomography, *EarthScope National Meeting*, Stowe, VT, June 15-17, 2015.
77. Olugboji^{*}, T., Schnurr, J., Gao[†], C., Cunningham[†], E., Burdick^{*}, S., **V. Lekic**, McDonough, and W., R. Rudnick, The Composition of the US Continental Crust: A Transdimensional Approach, *Gordon Research Conference, Interior of the Earth*, South Hadley, MA, June 7-12, 2015.
78. **Lekic, V.**, Cottaar, S., and J. Matas, Large- and meso-scale structure of Low Shear Velocity Provinces (Invited), *AGU Fall Meeting, D133B-05*, 2014.
79. Gao[†], C. and **V. Lekic**, Transdimensional Bayesian joint inversion of complementary seismic observables with realistic data uncertainties, *AGU Fall Meeting, S53A-4489*, 2014.
80. Cunningham[†], E., **V. Lekic**, New seismic observables constrain structure within the continental lithosphere, *AGU Fall Meeting, T32A-03*, 2014.
81. **Lekic, V.**, French, S.W., B.A. Romanowicz, Low velocities in the oceanic upper mantle and their relation to plumes: insights from SEM-based waveform tomography, *AGU Fall Meeting, D121A-2267*, 2013.
82. Reeves[†], Z.A., **Lekic, V.**, Weeraratne, D.S., M.D. Kohler, Constraining Lithospheric Structure across the California Borderland using Receiver Functions, *AGU Fall Meeting, S31A-2343*, 2013.
83. **Lekic, V.**, Fischer, K.M. Contrasting Lithospheric Signatures Across the Western United States Revealed by Sp Receiver Functions, *EarthScope National Meeting*, 2013.
84. **Lekic, V.**, Matas, J. Constraining lateral temperature and attenuation variations in the lower mantle, *AGU Fall Meeting, D144A-02*, 2012.
85. Cunningham, E.E., Frassetto, A., **Lekic, V.** Obtaining interpretable receiver functions to study lithospheric structure in the central US, *AGU Fall Meeting, T53C-2722*, 2012.
86. Kandell, A., **Lekic, V.**, Stine, A. Antarctic microseism: relationship with sea ice extent and the southern annual mode, *AGU Fall Meeting, S53C-2524*, 2012.
87. Kolb, J., **Lekic, V.** A robust deconvolution method based on transdimensional hierarchical Bayesian inference, *AGU Fall Meeting, S43A-2465*, 2012.
88. **Lekic, V.**, Fischer, K.M. Lithospheric structure of the Rio-Grande Rift and the Colorado Plateau, *AGU Fall Meeting, T13C-2405*, 2011.
89. **Lekic, V.**, French, S. W., Fischer, K. M. Lithospheric Structure Beneath the Salton Trough/Gulf of California Region from Sp Receiver Functions, *AGU Fall Meeting, T21G-05* 2010.

90. **Lekic, V.** and B. Romanowicz, Joint inversion of long period waveform and surface wave dispersion data for crust and mantle structure using the Spectral Element Method, *AGU Fall Meeting*, U23D-0060, 2009.
91. **Lekic, V.** and B. Romanowicz. Global upper mantle radially anisotropic model developed using the spectral element method. *AGU Fall Meeting*, D11A-04, 2008.
92. **Lekic, V.** and B. Romanowicz. Finite frequency upper mantle tomography using the spectral element method. *AGU Fall Meeting*, S32A-05, 2007.
93. **Lekic, V.** and B. Romanowicz. Applying the spectral element method to tomography: crustal effects. *Wilhelm and Else Heraeus Seminar: Density, Temperature and Elastic Constants of Earth's Mantle II, Linderhof, Germany*, 2007.
94. **Lekic, V.,** Reif, C., Dziewonski, A., Sheehan, A., van Summeren, J. Seismic constraints on slab interaction with the transition zone. *AGU Fall Meeting*, U21A-0809, 2006.
95. **Lekic, V.** and B. Romanowicz. Applying the spectral element method to model 3D attenuation in the upper mantle. *AGU Fall Meeting*, S51A-1257, 2006.
96. **Lekic, V.,** Capdeville, Y., Romanowicz, B. Towards a high resolution 3D attenuation model of the upper mantle. *AGU Fall Meeting*, T23A-0536, 2005.
97. **Lekic, V.,** Dunn, R., Toomey, D., Detrick, R. Shallow mantle and crustal structure beneath the Mid-Atlantic Ridge (35N): melt supply and crustal construction. *AGU Fall Meeting*, V11E-0546, 2004.

II.E.13 Patents

Submitted Non-Provisional Patent application: U.S. Application No.: 17/552,175

Title: Vehicle-Based Anomaly Detection Using Artificial Intelligence and Combined Environmental and Geophysical Sensor Data.

II.E.14 Workshops

1. Science Planning Committee Member for the 2022 SAGE/GAGE Community Science Workshop of the Incorporated Research Institutions for Seismology and UNAVCO, Pittsburgh, PA, June 14-16, 2022. <https://www.iris.edu/hq/workshops/2022/06/csw>
2. Co-organizer of the Plenary Session on *Behavior at and Coupling across Key Earth Interfaces*, 2021 GAGE/SAGE Community Science Workshop of UNAVCO and the Incorporated Research Institutions for Seismology, Online, August 17-19, 2021. <https://www.unavco.org/event/gage-sage-2021-science-workshop>
3. Co-organizer of the Cooperative Institute for Dynamic Earth Research (CIDER) Summer School on the nature, origin, and consequences of mantle heterogeneity to be held at the Kavli Institute for Theoretical Physics at University of California, Santa Barbara, July 8-August 4, 2018. <https://www.deep-earth.org>
4. Co-organizer of Cooperative Institute for Dynamic Earth Research (CIDER) workshop on tying observational and experimental investigations of seismic attenuation, held at the Lamont-Doherty Earth Observatory, Columbia University, New York, May 9-11, 2013. <https://www.deep-earth.org>

5. Chief organizer for Cooperative Institute for Dynamic Earth Research (CIDER) workshop on the development of a three-dimensional reference seismic Earth model, held at the University of Maryland, College Park, April 26-27, 2013.

II.F Professional and Extension Publications

II.F.1 Reports and Non-Refereed Monographs

1. Arrowsmith, J R., Brodsky, E. E., Cooper, C. M., Elliott, J. L., Fee, D., Fischer, K.M., Hammond, W. C., La Femina, P., **Lekic, V.**, Wang, H., and Worthington, L. L., Recommendations for Enabling Earth Science Through NSF's Geophysical Facility – A Portfolio Review of EAR Seismology and Geodesy Instrumentation, Report to the US National Science Foundation, April 2021

II.J Sponsored Research

II.J.1 Grants

1. Co-Investigator on "Geophysical Exploration of the Dynamics and Evolution of the Solar System (GEODES)," Sponsored by NASA - Ames Research Center. 10/2019-10/2024.
2. Co-Investigator on "PFI-RP: Automatic detection of buried explosives using a multi-sensor smart aerial vehicle," Sponsored by National Science Foundation. 12/2020-12/2023.
3. Co-Investigator on "Exploring the interior of Mars and the Moon using object-oriented gravity inversions," Sponsored by NASA - Goddard Space Flight Center. 3/2020-3/2023.
4. Co-Investigator on "Sequencing the CVM: Looking for Lithotectonic Blocks in Southern California in Seismic Models using Machine Learning" Sponsored by Southern California Earthquake Center (Prime: National Science Foundation) during 2/2021-1/2023.
5. Principal Investigator on "Collaborative Research: Developing a Three-Dimensional Seismic Reference Earth Model (REM-3D) in Collaboration with the Community" funded by the National Science Foundation Geophysics Program in the amount of \$345,000 during 7/2014 – 6/2021.
6. Principal (Sole) Investigator on "CAREER: Seismic Imaging of Large-Scale Structure in the Lithosphere and the Core-Mantle Boundary Region" funded by the National Science Foundation Geophysics Program and the Division of Advanced Cyberinfrastructure (ACI) Program in the amount of \$647,000 during 7/2014 – 6/2019.
7. Co-Investigator on "Collaborative Research: Bayesian Estimation of Mantle Viscosity Structure and Geodynamic Implications" funded by the National Science Foundation Geophysics Program in the amount of \$39,976 during 9/2016-8/2018.
8. Co-Investigator on "Constraining Europa's Interior Structure and Rotation History through Tidal Tectonic Modeling" funded by National Aeronautics and Space Administration Outer Planets Research in the amount of \$13,434 during 6/2016 – 5/2017.
9. Co-Investigator on "CSEDI Collaborative Research: Investigating the Nature of the Subcontinental Upper Mantle" funded by the National Science Foundation Collaborative

Studies of the Earth's Deep Interior Program in the amount of \$259,998 during 9/2014-8/2016.

10. Principal Investigator on Working Group proposal "Development of a 3D seismic reference Earth model" funded by the Collaborative Institute for Dynamic Earth Research in the amount of \$20,000 during 2013.
11. Co-investigator on Working Group proposal "On the Interpretation of Upper Mantle Seismic Attenuation Measurements" funded by the Collaborative Institute for Dynamic Earth Research in the amount of \$20,000 during 2013.

II.K Fellowships, Gifts, and Other Funded Research

2014-2019	Packard Foundation Fellowship for Science and Engineering - \$875,000
2010-2012	National Science Foundation Postdoctoral Fellowship
2006-2009	National Science Foundation Graduate Research Fellowship
2004-2006	Berkeley Fellowship, University of California, Berkeley

II.O Other Research/Scholarship/Creative Activities

1. Co-organized web-based seminar on identifying and discussing major scientific targets in global seismology for the Incorporated Research Institutions for Seismology *Wavefields* Initiative (August 22nd, 2014).
2. Co-organized web-based seminar on identifying and discussing major scientific targets in regional seismology for the Incorporated Research Institutions for Seismology *Wavefields* Initiative (September 8th, 2014).
3. Co-organized Incorporated Research Institutions for Seismology Workshop Plenary Session: Advancing Earth System Science with Geophysical Observations (June 12-14th, 2018).
4. Co-organized Plenary Session "Behavior at and coupling across key Earth interfaces" at the GAGE/SAGE 2021 Community Science Workshop (August 17-19, 2021)

III. TEACHING, MENTORING, AND ADVISING

III.A Courses Taught

Fall 2021

GEOL898, Pre-Candidacy Research. 1 enrolled.

GEOL899, Doctoral Dissertation Research. 1 enrolled.

Summer 1 2021

GEOL899, Doctoral Dissertation Research. 1 enrolled.

Spring 2021

GEOL457, Seismology. 10 enrolled.

GEOL657, Seismic Wave Propagation. 9 enrolled.

GEOL798, Seminar in Geology. 1 enrolled.

GEOL799, Master's Thesis Research. 1 enrolled.

GEOL898, Pre-Candidacy Research. 1 enrolled.

GEOL899, Doctoral Dissertation Research. 1 enrolled.

Fall 2020

- GEOL200, Earth's Fury: Earthquakes, Volcanoes, and Tsunami. 74 enrolled.
- GEOL447, Observational Geophysics. 2 enrolled.
- GEOL647, Observational Geophysics. 4 enrolled.
- GEOL798, Seminar in Geology. 1 enrolled.
- GEOL799, Master's Thesis Research. 1 enrolled.
- GEOL899, Doctoral Dissertation Research. 1 enrolled.

Summer 2 2020

- GEOL899 0221, Doctoral Dissertation Research. 1 enrolled.

Spring 2020

- GEOL789M, Recent Advances in Geology - Machine Learning in Geoscience. 5 enrolled.
- GEOL898, Pre-Candidacy Research. 1 enrolled.
- GEOL899, Doctoral Dissertation Research. 1 enrolled.

Fall 2019

- GEOL899, Doctoral Dissertation Research. 1 enrolled.

Spring 2019

- GEOL899, Doctoral Dissertation Research. 3 enrolled.

Fall 2018

- GEOL200, Earth's Fury: Earthquakes, Volcanoes, and Tsunami. 113 enrolled.
- GEOL447, Observational Geophysics. 6 enrolled.
- GEOL647, Observational Geophysics. 3 enrolled.
- GEOL899, Doctoral Dissertation Research. 3 enrolled.

Spring 2018

- GEOL457, Seismology. 5 enrolled.
- GEOL657, Seismic Wave Propagation. 6 enrolled.
- GEOL899, Doctoral Dissertation Research. 3 enrolled.

Fall 2017

- GEOL394, Geology Senior Thesis II: Research. 2 enrolled.
- GEOL447, Observational Geophysics. 10 enrolled.
- GEOL647, Observational Geophysics. 3 enrolled.
- GEOL898, Pre-Candidacy Research. 1 enrolled.
- GEOL899, Doctoral Dissertation Research. 2 enrolled.

Spring 2017

- GEOL789E, Recent Advances in Geology - Inverse Theory. 6 enrolled.
- GEOL898, Pre-Candidacy Research. 1 enrolled.
- GEOL899, Doctoral Dissertation Research. 2 enrolled.

Fall 2016

- GEOL200, Earth's Fury: Earthquakes, Volcanoes, and Tsunami. 178 enrolled.
- GEOL447, Observational Geophysics. 7 enrolled.
- GEOL647, Observational Geophysics. 3 enrolled.
- GEOL898, Pre-Candidacy Research. 1 enrolled.
- GEOL899, Doctoral Dissertation Research. 2 enrolled.

Summer 1 2016

- GEOL799, Master's Thesis Research. 1 enrolled.

Spring 2016

- GEOL394, Geology Senior Thesis II: Research. 1 enrolled.

GEOL457, Seismology. 6 enrolled.
GEOL657, Seismic Wave Propagation. 6 enrolled.
GEOL799, Master's Thesis Research. 1 enrolled.
GEOL898, Pre-Candidacy Research. 1 enrolled.
GEOL899, Doctoral Dissertation Research. 2 enrolled.

Fall 2015

GEOL447, Observational Geophysics. 4 enrolled.
GEOL647, Observational Geophysics. 8 enrolled.
GEOL799, Master's Thesis Research. 1 enrolled.
GEOL898, Pre-Candidacy Research. 2 enrolled.

Fall 2014

GEOL200, Earth's Fury: Earthquakes, Volcanoes, and Tsunami. 116 enrolled.
GEOL447, Observational Geophysics. 5 enrolled.
GEOL898, Pre-Candidacy Research. 2 enrolled.

Spring 2014

GEOL457, Seismology. 6 enrolled.
GEOL499, Special Problems in Geology. 1 enrolled.
GEOL657, Seismic Wave Propagation. 2 enrolled.
GEOL799, Master's Thesis Research. 1 enrolled.
GEOL898, Pre-Candidacy Research. 2 enrolled.

Spring 2013

GEOL457, Seismology. 3 enrolled.
GEOL499, Special Problems in Geology. 2 enrolled.
GEOL657, Seismic Wave Propagation. 3 enrolled.
GEOL799, Master's Thesis Research. 1 enrolled.

Fall 2012

GEOL489O, Special Topics - Observational Geophysics. 5 enrolled.
GEOL499, Special Problems in Geology. 1 enrolled.
GEOL789O, Recent Advances in Geology - Observational Geophysics. 5 enrolled.
GEOL799, Master's Thesis Research. 1 enrolled.

Description of Courses Taught

GEOL 200: Earth's Fury

This I-Series course is built around the questions of how scientists study hazards and how societies prepare for these rare but dramatic events? In a very interactive class environment and through hands-on exercises and reading discussions in sections, students study the science behind earthquakes and volcanoes, how it guides monitoring, forecasting, prevention, and response, and the cultural and ethical aspects of these events. Taught in: Fall 2014, enrollment 120; Fall 2016, enrollment 180; Fall 2018, enrollment 114.

GEOL 447 & 647: Observational Geophysics

This course aims to introduce advanced undergraduate students and beginning graduate students to instrument design/performance, signal processing, data analysis and inverse theory in geophysics. Students learn how geophysical instruments work, how to relate their output to physical quantities, how to identify and apply a variety of signal

processing and data analysis techniques. Students learn to formulate, solve and evaluate geophysical inverse problems and develop MATLAB programming skills.

The format of the course is unusual: lectures alternate with in-class MATLAB-based practicals, in which students learn how to apply and implement the ideas they learn in the lectures to actual geophysical datasets.

Taught in: Fall 2012, enrollment 10; Fall 2013, enrollment 17; Fall 2014, enrollment 6; Fall 2015, enrollment 12; Fall 2016, enrollment 10; Fall 2018, enrollment 9.

GEOL 457 & 657: Seismology and Seismic Wave Propagation

This course aims to introduce advanced undergraduate students and beginning graduate students to earthquakes and seismic wave generation and propagation. Students learn about stress and strain, the seismic wave equation, methods for calculating wave propagation through layered and heterogeneous media, imaging of shallow structure using seismic reflection, converted-wave and tomographic imaging of global structure. The final third of the course focuses on describing seismic sources – earthquakes, tremor, slip – understanding rate-and-state friction and ways of characterizing seismic hazard. Taught in: Spring 2013, enrollment 6; Spring 2014, enrollment 8; Spring 2016, enrollment 12.

GEOL 789E: Inverse Problem Theory

This graduate seminar is designed to engage graduate students with the theory and practice of solving inverse problems. The course is framed in the context of Bayesian data analysis, allowing the concepts of inverse theory to be applied to a broad range of problems in the Earth sciences that involve making inferences / drawing conclusions based on observed data. The course culminates in a term paper involving the development and application of a Bayesian inversion for analyzing seismic, gravity, geochemical, and other data.

Taught in: Spring 2015, enrollment 3, with additional 2 auditing; Spring 2017, enrollment 6, with additional 5 auditing.

GEOL 789M: Machine Learning in Geoscience

This graduate seminar is designed to introduce graduate students to machine learning and equip them with tools to apply machine learning to a range of problems in the solid Earth geosciences. Theory underlying modern machine learning methods is covered through hands-on exercises / implementations, culminating in a term project applying techniques learned in class to original research.

Taught in: Spring 2020, enrollment 5, with an additional student auditing.

Co-Instructor, Solid Earth Geophysics

Taught introduction to geophysics to advanced undergraduates and beginning graduate students with Prof. D.W. Forsyth, Dept. of Geological Sciences, Brown University.

Taught in 2010, 2011.

III.B Teaching Innovations

III.B.3 Software, Applications, Online Education, etc.

- 2014-2018 Developed MATLAB-based computational seismic tomography tutorials for the NSF-funded CIDER Summer Program at the Kavli Institute for Theoretical Physics. Graduate students from the United States and abroad were taught, in a hands-on fashion, about the resolving power and limitations of global seismic tomography.
- 2016 Consulted as a subject matter expert in the creation of educational material for the middle school curriculum with the Planet3 platform (<http://exploreplanet3.com>), which combines immersive media and state-of-the-art game design with a visionary teaching approach.

III.B.6 Course or Curriculum Development

- 2012 Designed, developed and taught a new course *Observational Geophysics* in the Department of Geology, which is eligible for meeting the geophysics requirement for majors and geophysics minors. The course incorporates 12 in-class, hands-on, MATLAB practicals in which students apply the concepts taught during lectures to actual geophysical datasets.
- 2013-14 Developing curriculum for GEOL 457/657 – Seismology / Seismic Wave Propagation (offered Spring 2013, 2014), which course aims to introduce advanced undergraduate and beginning graduate students to the study of elasticity, seismic wave propagation, imaging used in seismic exploration, and the characterization of earthquakes.
- 2014-15 Designed, developed, and taught a new course Inverse Problem Theory in the Department of Geology, which aims to give graduate students the theoretical background for and practical application of Bayesian inference and model selection using geodetic, seismological, and geochemical data. The course is framed in the context of Bayesian data analysis, allowing the concepts of inverse theory to be applied to a broad range of problems in the Earth sciences that involve making inferences / drawing conclusions based on observed data. The course culminates in a term paper involving the development and application of a Bayesian inversion for analyzing seismic, gravity, geochemical, and other data.
- 2015-16 Co-developed (with John Merck and Dan Lathrop) a new Geophysics track of the undergraduate Geology major. The geophysics curriculum is designed to meet the requirements of industry, graduate school, and government. For the B.S. degree, the students are required to complete introductory geology and physics requirements (39 credits) and upper-level requirements including Depth options, Context options, and Breadth options (30 - 35 credits) in addition to the General Education Program requirements and the completion of at least 120 credits in total. In order to receive a degree in Geophysics, the department requires that students must have a grade of C- or better in the required geology courses, and an average of C- or better in the supporting courses.
- This new major track will enable students primarily interested in the application of the methods of physics to geosciences issues to take advantage of Geology's growing corps of faculty specialists in geophysics, research expertise, and range of course

offerings in this area in order to gain access to the best careers and most prestigious graduate programs in this field. The proposed track recognizes that the professional requirements for entry into such careers and graduate programs are distinct from those of general geosciences. It is intended, therefore, to encourage rigorous preparation in mathematics and physics that the standard geology professional track does not require, while eliminating onerous geology requirements that are not required for advancement in geophysics.

First students enrolled in the major during the 2016-2017 Academic Year.

<https://www.geol.umd.edu/undergraduate/ugdgeophysmajor.php>

2020 Developed a graduate seminar aimed at introducing graduate students to machine learning and equipping them with tools to apply machine learning techniques to a range of problems in the solid Earth geosciences. We will review the theory behind ML with a focus on recent progress, discuss applications of ML in the geoscience literature, and implement ML techniques including convolutional neural networks (CNN) and dimensionality reduction (TSNE, UMAP, etc.) to analyze datasets from geology, geophysics, geodesy, and geochemistry.

III.C. Advising: Research

III.C.1 Undergraduate

Senior thesis students (GEOL 393/394):

1. Fall 2012 and Fall 2013, Alan Cinsavich – “Intraplate seismicity of the Gorda Plate”
2. Fall 2013 and Fall 2014, Adele Lu – “Removing air-pressure noise from broadband seismic data: application to Antarctica as an analog for the *NASA Insight* Mars Lander”
3. Fall 2015 and Spring 2016, Sutton Chiorini – “Swarm-like seismicity in Northern California”
4. Fall 2016 and Spring 2017, Jeffrey Adams – “Strike-slip faulting on Europa”
5. Spring 2017 and Fall 2018, Peter Meehan – “Origin of the Cheverly Booms”

Physics research experience students (PHYS 299B):

1. Orlando M. Romeo – Analysis of frequency-dependence of P wave traveltime measurements
2. Timothy (Joey) Taylor – Inferring position, size, and shape of subsurface density anomalies from surface gravity observations

Research advisor to (* denotes participants in SeismoABCs):

1. Nicholas Anuforoh, Spring 2013
2. Rannie Ayoub, Spring 2014
3. Benjamin Belzer, Spring 2014
4. Sutton Chiorini*, Fall 2013 – Spring 2017. Sutton presented the research on earthquake swarms that she has carried out in my lab at the 2016 Fall Meeting of the American

Geophysical Union. She went on to attend a Master's program in geophysics at Miami University of Ohio (as a student of Mike Brudzinski), having also been admitted to Lehigh University.

5. Erin Cunningham – Incorporated Research Institutions for Seismology summer 2012 intern from Tulane University. Now, Ph.D. student at the University of Maryland, College Park
6. Jeffrey Gay – Montana State University summer 2012 and 2013 intern. Jeff is currently a M.S. student at the University of Utah.
7. Jonathan Guandique – Incorporated Research Institutions for Seismology summer 2015 intern from Fort Valley State University. He is now an undergraduate student at Penn State University and will be starting our Master's program in Fall 2017.
8. Alex J. Kandell, Spring 2012 – Spring 2013: After graduating from the University of Maryland, College Park, Alex enrolled in a Master's program in seismology at Rice University.
9. Jesse M. Kolb, Spring 2012 – Summer 2013: After graduating from the University of Maryland, College Park, Jesse completed a Master's degree in exploration seismology at the University of Calgary (CREWES), and is currently a software developer at Uber Technologies, Inc.
10. Brendan Lockhart, Fall 2012 – Spring 2014
11. Anthony Mautino, Spring 2014 – Summer 2014: After graduating from the University of Maryland, College Park, Anthony completed a Master's degree in Geology at the University of Maryland, College Park. He was offered), who has been offered a technical software development position at NASA Goddard.
12. Michael Ream, Spring 2012, Fall 2013 – Spring 2014: After graduating from the University of Maryland, College Park, Mike is now a Ph.D. student at Portland State University.
13. Julie Schnerr*, Spring 2015 – Fall 2015: After graduating from the University of Maryland, College Park, Julie is now a Ph.D. student at the University of Hawaii, Manoa.
14. Liam Shaughnessy*, Spring 2016 – Fall 2016: After gaining experience in seismological research in my lab, Liam pursued other applications of seismology, and is currently working on implementing acoustic mode velocimetry (technique developed as part of a collaboration with Prof. Lathrop and colleagues at Grenoble to image flow within rotating spherical containers) in water as part of an on-going collaboration with Prof. Lathrop.
15. Kendall Price – Summer 2016 high school intern from the Montgomery Blair High School.
16. Andrew Will, Fall 2012 – Spring 2013
17. Brittany Washington, Summer 2017: Incorporated Research Institutions for Seismology summer intern from University of New Jersey at Newark. Brittany is studying seismic signals from a high frequency ocean bottom array in Bransfield Strait, Antarctica, and is co-mentored by Prof. Schmerr.

18. Anant Hariharan, Summer 2017: Incorporated Research Institutions for Seismology summer intern from Cornell University. Anant is applying spherical wavelet analysis to multi-scale tomographic model comparison with the goal of identifying lengthscale(s) at which structures imaged by high-frequency travel-time P-wave tomography (which has variable resolution) are compatible with global long period S-wave tomography. He is co-mentored by Dr. Moulik, who is a postdoctoral researcher in my lab. He has been admitted to 6 Ph.D. programs, including the University of Maryland, where he was awarded a Flagship Fellowship. He has also received an NSF Graduate Research Fellowship.
19. Logan Edwards, Summer-Fall 2018: SeismoABCs intern working on detecting anomalous structures in the core-mantle boundary region through the analysis of core-diffracted waves.

III.C.2 Master's

Master's Committees

Zachary Reeves	(M.S.) Qualifying Exam 2013
Zachary Reeves	(M.S.) Thesis Defense 2014
Anthony Mautino	(M.S.) Qualifying Exam 2016
Anthony Mautino	(M.S.) Thesis Defense 2016
Phillip Goodling	(M.S.) Qualifying Exam 2018
Phillip Goodling	(M.S.) Thesis Defense 2018

Primary research advisor to Mr. Zachary Reeves (graduated 2014), who is now employed by the United States Geological Survey National Earthquake Information Center.

Primary research advisor to Mr. Anthony Mautino (graduated 2016), who was offered a technical software development positions at NASA Goddard and is currently working at NIST

Research co-advisor to Mr. Phillip Goodling (graduated 2018), who is now a staff scientist at the United States Geological Survey (USGS).

III.C.3 Doctoral

Primary research advisor to Ms. Erin Cunningham (Ph.D. 2019), Mr. Chao Gao (Ph.D.), and Ms. Karen Pearson (Ph.D.), and co-advisor to Ms. Kristel Izquierdo (Ph.D.) and Ms. Heidi Myers.

PhD Committees

Chao Gao	(Ph.D.) Qualifying Exam 2016	Thesis Defense 2019
Erin Cunningham	(Ph.D.) Qualifying Exam 2016	Thesis Defense 2019
Kristel Izquierdo	(Ph.D.) Qualifying Exam 2018	Thesis Defense 2020
Karen Pearson	(Ph.D.) Qualifying Exam 2018	Thesis Defense 2021
Heidi Myers	(Ph.D.) Qualifying Exam 2021	

III.C.4 Post-Doctoral

Former postdocs:

- Doyeon Kim (Nov. 2018 – 2021), now an Oberassistent at ETH Zurich.
- Raj Moulik (Oct. 2015 - 2021), now a postdoctoral researcher at Princeton University.
- Scott Burdick (Sept. 2014 - 2017), now an Asst. Prof. at Wayne State University.
- Tolulope Olugboji (Oct. 2014 - 2018), now an Asst. Prof. at the University of Rochester (started August, 2018).

III.E Advising: Other than Research Direction

III.E.2 Master's

Member of Master's Committees

Jodi Gaeman	(M.S.) Qualifying Exam 2011
Jeremy Banker	(M.S.) Qualifying Exam 2014
Anna Statkiewicz	(M.S.) Qualifying Exam 2014
Anna Statkiewicz	(M.S.) Thesis Defense 2014
William Kibikas	(M.S.) Qualifying Exam 2016
Meng Guo	(M.S.) Qualifying Exam 2017
Jonathan Guandique	(M.S.) Qualifying Exam 2018
Meng Guo	(M.S.) Thesis Defense 2018
Rebecca Butcher	(M.S.) Qualifying Exam 2018
Kathryn Robbins	(M.S.) Qualifying Exam 2021
Kathryn Robbins	(M.S.) Thesis Defense 2022 (anticipated)

III.E.2 Doctor's

Member of Doctoral Committees

Kevin J. Miller	(Ph.D.) Qualifying Exam 2012
Stephanie Johnston	(Ph.D.) Qualifying Exam 2012
Hailong Bai	(Ph.D.) Qualifying Exam 2013
Lisa S. Walsh	(Ph.D.) Thesis Defense 2013
Kevin J. Miller	(Ph.D.) Thesis Defense 2015
Stephanie Johnston	(Ph.D.) Thesis Defense 2015
Carolyn Planck	(Ph.D.) Qualifying Exam 2015
Scott Whipperfurth	(Ph.D.) Qualifying Exam 2016
Quancheng Huang	(Ph.D.) Qualifying Exam 2017
Angela Marusiak	(Ph.D.) Qualifying Exam 2017

Ernie Bell	(Ph.D.) Qualifying Exam 2017
Hailong Bai	(Ph.D.) Thesis Defense 2017
Samuel Crossley	(Ph.D.) Qualifying Exam 2018
James Dottin	(Ph.D.) Qualifying Exam 2018
Jonathan DeJesus Segarra	(Ph.D.) Qualifying Exam 2018
Joseph G. Galella	(Ph.D.) Qualifying Exam 2020
Quancheng Huang	(Ph.D.) Thesis Defense 2020
Ernest R. Bell, Jr.	(Ph.D.) Thesis Defense 2021
Fabrizio Magrini	(Ph.D.) External Examiner, Univ. Roma Tre 2021
Karla Nunez	(Ph.D.) Thesis Defense 2022 (anticipated)

Dean's Representative

Jonathan DeJesus Segarra	(Ph.D.) Thesis Defense 2021
Heidi B. Komkov	(Ph.D.) Thesis Defense 2021
Sarah C. Burnett	(Ph.D.) Thesis Defense 2021

IV. SERVICE

IV.A. Editorships, Editorial Boards, and Reviewing Activities (since 2012)

Eos Science Adviser (2021-2023)

Associate Editor for *Journal of Geophysical Research – Solid Earth* (2019-2021)

Guest editor for *Tectonics* special issue on the continental crust (2017)

IV.A.3 Reviewing Activities for Journals and Presses

Science, Nature Geoscience, Nature Communications, Geophysical Journal International, Geophysical Research Letters, Physics of Earth and Planetary Interiors, Journal of Geophysical Research, Geochemistry, Geophysics, Geosystems, Earth and Planetary Science Letters, Eos, Precambrian Research, Seismological Research Letters, Journal of Seismology, Bulletin of the Seismological Society of America.

IV.A.4 Reviewing Activities for Agencies and Foundations

National Science Foundation, Division of Earth Sciences (EAR): Geophysics Program, EarthScope Program, Education and Human Resources Program, Geoinformatics Program.

National Science Foundation, Division of Earth Sciences (EAR), Geophysics Program Review Panel Member, Spring 2015.

National Science Foundation, Division of Ocean Sciences (OCE): Marine Geology and Geophysics Program.

National Science Foundation, Faculty Early Career Development Program (CAREER).

Swiss National Science Foundation, Division of Mathematics, Physical and Engineering Sciences.

European Research Council, Starting Grant program

Academia Sinica (Taiwan), Career Development Award

Natural Sciences and Engineering Research Council of Canada

IV.B. Committees, Professional & Campus Service (since 2012)

IV.B.1 Campus Service – Department

Graduate Admissions and Awards Committee (2020-present)

Search Committee for Assistant Professor in Geophysics (2015-2016)

Departmental Colloquium Sole Organizer (Fall 2014, Spring 2015, Fall 2015, Spring 2016)

Faculty Merit Review Committee (2013, 2014, 2015)

Geology Curriculum Review Committee (2015)

Search Committee for Department Chair (2015)

Search Committee for Assistant Professor in Geophysics (2013-2014)

Ad Hoc Award Committee (2012-2014)

Graduate Admissions Committee (2012-2013)

IV.B.2 Campus Service – College

Member Representative of the University of Maryland, College Park to the Incorporated Research Institutions for Seismology Consortium (2012 – present)

IV.B.3 Campus Service – University

- Member of Review Panel for Packard Foundation – Fellowships for Science and Engineering (2015 – present)
- Member of Advisory Board for the Office of Postdoctoral Affairs – starting in January 2017 – which advises on matters of advocacy and on the development of policies to recommend to the provost and campus, serves as a sounding board for innovative programs and professional development opportunities, brings forward faculty perspectives and concerns regarding current issues confronting post-docs, and identifies networking strategies for post-docs, mentors, and potential employers, both academic and otherwise.
- Senator – University Senate (Academic Year 2021-2022). The University Senate is one of the largest and most influential governing bodies at the University of Maryland. The

Senate is composed of faculty, staff, students, and administrators that are peer-elected, volunteer, or appointed. As Senators and Senate Committee members, these constituents directly participate in the shared governance of our University. The primary function of the Senate is to advise the University President on virtually all campus policy matters and concerns, including but not limited to: education, budget, personnel, campus-community, long range plans, facilities, and faculty, staff and student affairs (subject to the limitations imposed by laws or mandates from the University of Maryland System Board of Regents or the Chancellor). www.senate.umd.edu

IV.B.7 Offices and Committee Memberships

2021-present	Incorporated Research Institutions of Seismology Standing Committee on the Global Seismic Network.
2020-2021	Member of National Science Foundation EAR Instrumentation Portfolio Review Committee
2018-2021	Chair of the Quality Assurance Advisory Committee of the Incorporated Research Institutions of Seismology
2018-2019	Chair of Seismological Society of America Richter Award subcommittee of the Seismological Society of America
2018	Study of the Earth's Deep Interior (SEDI) Section Program Committee chair for the American Geophysical Union Fall Meeting
2016-2018	Incorporated Research Institutions of Seismology Instrumentation Services Standing Committee
2016-2018	Seismological Society of America Honors Selection Committee: Frank Press Award subcommittee.
2017	Computational Infrastructure for Geodynamics, Nominating Committee
2016-2018	Seismological Society of America Honors Selection Committee: Richter Award subcommittee
2014	Incorporated Research Institutions of Seismology Undergraduate Internship Program Selection Committee
2014-2015	Councilmember at Large, Geological Society of Washington
2014-2015	Membership Committee, Geological Society of Washington
2013-2015	Incorporated Research Institutions of Seismology Standing Committee on the Global Seismic Network.
2013	Seismology Section Program Committee chair for the American Geophysical Union Fall Meeting

2012 Seismology Section Program Committee co-chair for the American Geophysical Union Fall Meeting

IV.F Community and Other Service

Prince George's County Regional Science Fair judge (Spring 2014)

Washington, DC annual Science, Technology, and Engineering Fair special judge for the Geological Society of Washington (Spring 2017)

V. AWARDS, HONORS AND RECOGNITION

V.1 Research Fellowships, Prizes and Awards (since 2012)

- 2022 University of Maryland Invention of the Year (Information Sciences): Vehicle-Based Anomaly Detection Using Artificial Intelligence and Combined Environmental and Geophysical Sensor Data [Website with more information](#)
- 2016 Kavli Fellow, National Academy of Sciences
- 2015 University of Maryland, College Park Board of Visitors Distinguished Junior Faculty Award
- 2014-2015 *EarthScope* Speaker Series Speaker [Website with more information](#)
- 2014-2019 Packard Foundation Fellowship for Science and Engineering [Website with more information.](#)
- 2014-2019 National Science Foundation CAREER Award [Website with more information.](#)
- 2013 Charles F. Richter Award, Seismological Society of America [Website with more information.](#)