Ross Ronan Maguire

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Education

2018 PhD, University of Michigan, Department of Earth and Environmental Sciences
2011 BS, Michigan State University, Department of Geological Sciences

Professional Positions

2019 – present NSF Postdoctoral Fellow, University of New Mexico / Michigan State University
2018 – 2019 Postdoctoral Research Associate, University of Maryland
2012 – 2018 Graduate Student Researcher / Instructor, University of Michigan
2011 – 2012 Petrology Lab Manager, Michigan State University

Awards and Resources

2019 XSEDE Resource Allocation ($7,068 worth of computing resources)
2019 University of Michigan, John Dorr Graduate Academic Achievement Award
2018 American Geophysical Union, Study of the Earth's Deep Interior Graduate Research Award
2017 Michigan Geophysical Union Best Student Presentation Award
2016 XSEDE Resource Allocation ($26,718 worth of computing resources)
2016 Scott Turner Research Award ($1,700)
2015 XSEDE Resource Allocation ($26,718 worth of computing resources)
2014 Scott Turner Research Award ($1,700)

Grants and Fellowships

2020-2023 **co-Investigator** NASA DALI, Development of the SUBLIME seismometer for future Lunar missions (PI : Terry Hurford, Goddard Spaceflight Center)
2019-2021 **Principal Investigator** NSF Postdoctoral Fellowship, Imaging the Yellowstone magmatic system with ambient noise and local earthquake waveforms

Teaching

2021 Natural Hazards and the Environment, Michigan State University (Guest Lecturer)
2020 Introduction to Geology, University of New Mexico (Guest Lecturer)
2019 Computational Data Analysis for Geoscientists, University of New Mexico (Guest Lecturer)
2019 Structural Geology, University of Maryland (Guest Lecturer)
2019 Seismology / Seismic Wave Propagation, University of Maryland (Guest Lecturer)
2018 Field Geophysics, University of Maryland (Guest Lecturer / Field Assistant)
2018 Observational Geophysics, University of Maryland (Guest Lecturer)
2018 Active Tectonics, University of Maryland (Guest Lecturer)
2012 – 2017 Introduction to Geology, University of Michigan (Graduate Student Instructor)
2013 – 2014 Geology Field Camp, University of Michigan (Graduate Student Instructor)

Peer Reviewed Publications

[16] Li, J., Chen, M., Ning, J., Bao, T., **Maguire, R.**, Zhou, T., Constraining the 410-km discontinuity with triplication waveform data : Concept, exploration, and application. *Accepted in Geophysical Journal International*

[15] Fernando, B., Wojcicka, N., **Maguire, R.,** Stahler, S., Stott, A., Ceylan, S., Charlambous C., Clinton, J., Collins, G., Dahmen, N., Froment, M., Golombek, M., Horelston, A., Karatekin, O, Kawamura, T., Larmat, C., Nissen-Meyer, T., Patel, M., Plasman, M., Posiolova, L., Rolland, L., Spiga, A., Teanby, N., Zenhausern, G., Lognonne, P., Banerdt, B., Daubar, I. All quiet on the landing front : InSight's attempt to detect Perseverance landing on Mars. *Accepted in Nature Astronomy*

[14] **Maguire, R.**, Schmerr, N., Lekic, V., Hurford, T., Dai., L., Rhoden, A., (2021) Constraining Europa's ice shell thickness with fundamental mode surface wave dispersion, *Icarus*, `https://doi.org/10.1016/j.icarus.2021.114617`

[13] Kim, D., Davis, P., Lekic, V., **Maguire, R.**, Compaire, N., Schimmel, Stutzmann, E., Scholz, J–R., Panning, M., Clinton, J., Zenhausern, G., Dahmen, N., Irving, J.C.E, Lognonne, P., Banerdt, W.B., Garcia, R., Giardini, D., Hurst, K., Knapmeyer–Endrun, B., Nimmo, F., Pike, T., Pou L., Schmerr, N., Stahler, S., Tauzin, B.,Widmer-Schmidrig, R. Considerations in Structural Interpretations of InSight Seismic Data. *Accepted in Seismological Research Letters*

[12] Stahler, S., Khan, A., Banerdt, B.W., Lognonne. 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., Kawamura, T., Knapmeyer, M., **Maguire, R.**, Marusiak, A., Panning M.P., Perrin, C., Plesa, A., Rivoldini, A., Schmelzbach C., Zenhausern, G., Beucler, E., Charalambous, C., Clinton, J., Dahmen, N., van Driel, M., Horleston, A., Plasman, M., Smrekar, S.E. (2021) Seismic Detection of the Martian Core, *Science*, 373(6553). https://doi.org/10.1126/science.abi7730

[11] **Maguire, R**, Schmerr, N., Pettit, E., Riverman, K., Gardner, C., Della-Giustina, D., Avenson, B., Wagner, N., Marusiak, A.G., Habib, N., Broadbeck, J., Bray, V.J., Bailey, H. (2021) Geophysical constraints on the properties of a subglacial lake in northwest Greenland. *The Cryosphere*, https://doi.org/10.5194/tc-15-3279-2021

[10] Khan, A., Ceylan, S., van Driel, M., Giardini, D., Lognonne, P., Samuel, H., Schmerr, N., Stahler, S., Duran, A., 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-Schnidrig, R., Spohn, T., Smrekar, S.E., Banerdt, W. (2021) Upper mantle structure of Mars from InSight seismic data, *Science*, https://doi.org/10.1126/science.abf2966

[9] Fernando, B., Wojcicka, N., Froment, M., **Maguire, R.**, Stahler, S., Rolland, L., Collins, G. S., Karatekin, O., Larmat, C., Sansom, E., Teanby, N. A., Spiga, A., Karakostas, F., Leng, K., Nissen-Meyer, T., Kawamura, T., Giardini, D., Lognonne, P., Banerdt, W., Daubar, I. (2021), Listening for the Landing : Detecting Perseverance's Landing With InSight. *Earth and Space Science*. https://doi.org/10.1029/2020EA001585

[8] Ritsema, J., **Maguire, R.**, Cobden, L., Goes, S. (2021), Seismic Analyses of Plume Conduits in the Deep Mantle. *In Press in AGU Monograph Series "Mantle Convection and Surface Expressions"*

[7] Daubar, I., Lognonne, P., Teanby, N., Collins, G.S., Clinton, J., Stahler, S., Spiga, A., Kawamura, T., Karakostas, F., Ceylan, S., Malin, M., McEwen, A.S., **Maguire, R.**, Charalambous, C., Onodera, K., Lucas, A., Rolland, L., Vaubaillon, J., Bose, M., Horleston, A., van Buren, M., Pike, T., Stevanovic, J., Huang, Q., Miljkovic, K., Fernando, B., Leng, K., Rajsic, A., Schmerr, N., Wojcicka, N., Wookey, J., Rodriguez, S., Garcia, R., Larmat, C.S., Banks, M.E., Margerin, L., Posiolova, L., Banerdt, B., (2020) A New Crater Near InSight : Implications for Seismic Detectability on Mars. *Journal of Geophysical Research - Planets*, https://doi.org/10.1029/2020JE006382

[6] Jones, T., **Maguire. R.**, van Keken, P.E., Ritsema, J., (2020) Subducted oceanic crust as the origin of seismically slow lower-mantle structures. *Progress in Earth and Planetary Science*, https://doi.org/10.1186/s40645-020-00327-1

[5] Hurford, T. A., Henning, W. G., **Maguire, R.**, Lekic, V., Schmerr, N., Panning, M., Bray, V. J., Manga, M., Rhoden, A. R. (2019). Seismicity on Tidally Active Solid-Surface Worlds. Icarus, 338. https://doi.org/10.1016/j.icarus.2019.113466

[4] **Maguire, R.**, Ritsema, J., Goes, S. (2018). Evidence of Subduction-Related Thermal and Compositional Heterogeneity Below the United States From Transition Zone Receiver Functions. *Geophysical Research Letters*, 45(17), 8913–8922. https://doi.org/10.1029/2018GL078378

[3] **Maguire, R.**, Ritsema, J., Bonnin, M., van Keken, P. E., Goes, S. (2018). Evaluating the Resolution of Deep Mantle Plumes in Teleseismic Traveltime Tomography. Journal of Geophysical Research : Solid Earth, 123(1), 384–400. https://doi.org/10.1002/2017JB014730

[2] **Maguire, R**., Ritsema, J., Goes, S. (2017). Signatures of 660-km topography and compositional heterogeneity in seismic images of upwellings. *Geophysical Research Letters*, 1–19. https://doi.org/10.1002/2017GL073120

[1] **Maguire, R.**, Ritsema, J., van Keken, P. E., Fichtner, A., Goes, S. (2016). P- and S-wave delays caused by thermal plumes. *Geophysical Journal International*, 206(2), 1169–1178. https://doi.org/10.1093/gji/ggw187

Submitted Manuscripts

Huang, Q., Schmerr, N., Beghein, C., Waszek, L., **Maguire, R.**, 3-D Synthetic Modeling of Anisotropy Effects on SS Precursors : Implications for Mantle Flow in the Transition Zone. *In Revision at Geophysical Journal International*

Karakostas, F., Schmerr, N., **Maguire, R.**, Huang, Q., Kim, D., Lekic, V., Nunn, C., Kawamura, T., Menina, S., Lognonne, P., Giardini, D., Banerdt B. Scattering Attenuation of the Martian Interior through Coda Wave Analysis. *Submitted to Seismological Research Letters*

Li, G., Chen., M., Li., J., Ma, X., **Maguire, R.** A Code Package for Meshing the Earth's Spherical Geometry using SPECFEM3D_Cartesian. *Submitted to Seismological Research Letters*

Kim, D, Lekic, V., Irving, J., Schmerr, N., Knapmeyer-Endrun, B., Rakshit, J., Panning, M., Tauzin, B., Karakostas, F., **Maguire, R.**, Huang, Q., Khan, A., Giardini, D., Wieczorek, M., Longonne, P., Banerdt, B. Improving constraints on planetary interiors with PPs receiver functions *Submitted to Journal of Geophysical Research : Planets*

Datasets

Larmat, C., Onodera, K., **Maguire, R.**, Lognonné, P., Data from Modelling to resolve whether SEIS has detected the formation of a 1.5m diameter crater (https ://doi.org/10.18715/jgr_newcratermod_2020)

Selected Conference Presentations

Maguire, R., Schmandt, B., Chen, M., Li, J., Jiang, C., Wilgus, J., Ambient noise waveform imaging of Yellowstone's magmatic system, EGU General Assembly 2021 (Solicited Talk / Convener Highlight)

Stahler, S., Khan, A., Ceylan, S., Duran, A.C., Garcia, R., Giardini, D., Huang, Q., Kim, D., Lognonne, P., **Maguire, R.,**, Marusiak, A., Samuel, H., Schmerr, N., Schimmel, M., Sollberger, D., Stutzmann, E., Banerdt, W., Seismic detection of the Martian core by InSight, EGU General Assembly 2021

Maguire, R., Chen, M., Schmandt, B., Li, J., Jiang, C., Wilgus, H., Imaging Yellowstone's melt distribution with full waveform inversion of ambient noise, SSA Annual Meeting, 2021

Maguire, R., Schmandt, B., Chen, M. Insights into Yellowstone's magmatic system from 3D seismic waveform modeling and inversion, AGU Fall Meeting 2020

Wilgus, J., Schmandt, B., **Maguire, R.**, Jiang, C., Chaput, J., Shear velocity tomography of the crust below Valles Caldera using a densely spaced nodal transect. AGU Fall Meeting 2020

Karakostas, F., Schmerr, N., **Maguire, R.**, Kim, D., Huang, Q., Kawamura, T., Onodera, K., Lognonne, P., Giardini, D., Banerdt, B., S-coda wave analysis of InSight seismic data to determine the scattering and intrinsic attenuation in the crust of Mars, AGU Fall Meeting 2020

Huang, Q., Schmerr, N., **Maguire, R.**, Antonangeli, D., Fernando, B., Leng, K., Nissen-Meyer, T., King, S., Rivoldini, A., Plesa, A., Lithgow-Bertelloni, C., Gudkova, C., Samuel, H., Giardini, D., Lognonne, P., Banerdt, B., Detecting the Mantle Transition Zone of Mars From Seismic Triplicated and Reflected Waves, AGU Fall Meeting 2020

Huang, Q., Schmerr, N., Beghein, C., Waszek, L., **Maguire, R.**, Synthetic Modeling of Anisotropy Effects on SS Precursors : Implications for Mantle Flow in the Transition Zone, AGU Fall Meeting 2020

Fernando, B., Daubar, I., Wojcicka, N., Froment, M., **Maguire, R.**, Larmat, C., Karakostas, F., Rolland, L., Teanby, N., Collins G., Karatekin, O., Spiga, A., Leng K., Lognonne, P., Banerdt, B., Listening for a Landing : the seismic detectability of Mars 2020âs arrival by the InSight lander, AGU Fall Meeting 2020

Goes, S., Yu, C., **Maguire, R.**, Day, E., van der Hilst, R., Ritsema, J., and Jian, J., Thermal and chemical properties of the mantle transition zone from seismic observations, EGU General Assembly 2020

† Gardner, C., **Maguire., R.**, Schmerr, N., Bailey, H., DellaGiustina, D., Avenson, B., Pettit, E., Wagner, N., Marusiak, A., Broadbeck, J., Habib, N., Bray, V., Dahl, P., Carr., C., Weber, R., Constraining the Properties of a Subglacial Lake in Northwest Greenland with Active Source Seismology, AGU Fall Meeting 2019

Moulik, P., **Maguire, R.**, Havlin, C., Gao, C., Lekic, V., Rapid prototyping, interactive visualization and data validation methods for models of planetary interiors, AGU Fall Meeting 2019

van Keken, P.E., Jones, T., Jones, R., Sime, N., Tucker, J., **Maguire, R.**, Ritsema, J., Ballentine, C., Geophysical and geochemical models help constrain the relative importance of oceanic and continental crust recycling, AGU Fall Meeting 2019

Jones, T., Sime, N., **Maguire., R.**, van Keken, P.E., Ritsema, J., The role of crustal recycling : Coevolution of deep-mantle structure and geochemical heterogeneity, AGU Fall Meeting 2019

Huang, Q., Schmerr, N., **Maguire, R.**, Lithgow-Bertelloni, C.,Antonangeli, D., King, S., Detecting the Mantle Transition Zone of Mars From Seismic Reflected Waves, AGU Fall Meeting 2019

Karakostas, F., Schmerr, N., **Maguire, R.**, Huang, Q., Larmat, C., Lognoné, P., Daubar, I., Malin, M., Posiolova, L., Constraints for the Martian meteoroid impact seismic signals through modeling based on comparison of Terrestrial, Lunar and Martian data, AGU Fall Meeting 2019

Maguire, R., Schmerr, N., Lekic, V., Hurford, T., Constraining the thickness of Europa's ice shell with observations of Rayleigh and flexural wave dispersion : Insights from synthetic waveform modeling. SAGE/GAGE workshop 2019.

Jones, T., **Maguire, R.**, Sime, N., van Keken, P.E., Ritsema, J. The geodynamical origin of lowermost mantle structure, Goldschmidt 2019

van Keken, P. E, **Maguire, R.**, Ritsema, J., Jones, T., Sime, N., Nakajima, M. Predictions of the morphology and origin of plumes and LLSVPs from combined geodynamical and seismological modeling, EGU General Assembly 2019

Maguire, R., Schmerr, N., Lekic, V. Constraining the thickness of Europa's ice shell with observations of fundamental mode Rayleigh wave dispersion, Lunar and Planetary Science Conference 2019

Maguire. R., Schmerr, N., Lekic, V., Hurford, T.A. Performance of a broadband seismometer on Europa and implications for the detection of liquid water below its icy surface, AGU Fall Meeting 2018

Moulik, P., Havlin, C., **Maguire, R.**, Lekic, V. Real-time interactive analyses and visualization of massive and diverse seismological observations, AGU Fall Meeting 2018

Maguire, R., Ritsema, J. Seismic observation of a sharp post-garnet phase transition within the Farallon crust, AGU Fall Meeting 2017

Maguire, R., Ritsema, J., Goes, S. Tomographic evidence for basalt segregation in the uppermost lower mantle, Gordon Research Conference 2017

Maguire, R., Ritsema, J., Goes, S. Seismic evidence for a subducted oceanic plateau beneath the southeastern USA, Gordon Research Conference 2017

Maguire, R., Ritsema, J. Imaging the mantle transition zone with the USArray, Michigan Geophysical Union 2017

Maguire, R., Ritsema, J., Bonnin, M., van Keken, P.E., Fichtner, A., Goes, S. Resolving plume tails in the lower mantle with finite frequency tomography : Insight from synthetic experiments, AGU Fall Meeting 2016

Maguire, R., Ritsema, J. Modelling the basalt fraction in the transition zone using P-to-S conversions, Study of Earth's Deep Interior Symposium 2016

Maguire, R., Ritsema, J., van Keken, P.E., Fichtner, A., Goes, S. Investigating the effects of mantle plumes on 3D seismic waveforms, AGU Fall Meeting 2014

Maguire, R., van Keken, P.E., Dibble, M, Davaille, A. Modelling laboratory plumes with numerical techniques : validation, verification, and determination of fluid properties, Computational Infrastructure for Geodynamics Mantle Convection and Lithosphere Dynamics Workshop 2014

† indicates undergraduate supervised

Invited Talks

2021	Michigan State University, Department of Earth and Environmental Sciences Distinguished Lecture Series
2020	Seismological Society of America Virtual Tomography Series, "Cutting Edge Methods in Seismic Tomography"
2020	Michigan State University, Department of Computational Mathematics, Science and Engineering Seminar
2020	University of New Mexico, Department of Earth and Planetary Sciences Seminar
2019	Carnegie Institution for Science DTM Weekly Seminar Series
2019	Smithsonian National Museum of Natural History Seminar
2019	University of Maryland, Department of Geology, Lunchtime Seminar Series

Service

Session Convener, Seismological Society of America 2021 Annual Meeting
Reviewer, Geochemistry, Geophysics, Geosystems
Reviewer, Journal of Geophysical Research : Solid Earth
Reviewer, Geology
Reviewer, Gondwana Research
Reviewer, Earth and Planetary Science Letters
Reviewer, Geophysical Journal International
Reviewer, Geophysical Research Letters

Computer Skills

Programming and Scripting
Python, Fortran, Matlab, C, Bash/Csh, Slurm/PBS (HPC-workload managers)

Seismic Modelling
SPECFEM3D, SPECFEM2D, SES3D, AxiSEM, Mineos, Instaseis

Plotting and Visualization
Matplotlib, GMT, Paraview, Mayavi

References

Dr. Nick Schmerr, University of Maryland (nschmerr@umd.edu)

Dr. Vedran Lekic, University of Maryland (ved@umd.edu)

Dr. Jeroen Ritsema, University of Michigan (jritsema@umich.edu)

Dr. Peter van Keken, Carnegie Institution for Science, (pvankeken@carnegiescience.edu)