

**DOYEON KIM**

Imperial College London  
Earth Science and Engineering

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I am a terrestrial and planetary seismologist with a background in both engineering and earth / planetary science. My scientific interests center on improving our understanding of processes within planetary interiors that involve interactions between contrasting materials, from the regolith and crust of the Moon and asteroids which potentially contain valuable geological resources including lava tubes and void spaces, ice deposits, and magma-tectonic systems, to largely unexplored core-mantle boundary regions in deep planetary interiors. My ongoing research areas largely include leveraging geophysical techniques developed for studying Earth structures in order to investigate the internal structures, dynamics and evolution of the planetary bodies in our solar system.

**CURRENT POSITION**

2023.10.01- Lecturer, Imperial College London

**PROFESSIONAL BACKGROUND**

2021-2023 Senior Scientist, *Institute of Geophysics*, ETH Zürich  
2018-2021 Postdoctoral Fellow, *Department of Geology*, University of Maryland  
2013-2018 Ph.D. *Earth and Atmospheric Sciences*, Cornell University  
2010-2012 M.S. *Civil and Environ. Engineering*, Yonsei University, S. Korea  
Sept 2010 B.A. *Civil and Environ. Engineering*, Yonsei University, S. Korea

**PUBLICATIONS**

- 2023 [36]Drilleau, M., et al., Structure of the Martian crust below InSight from surface waves and body waves generated by nearby meteoroid impacts, *in revision*.  
[35]Herret, M.-T., et al., Decoupling of short-lived radiogenic and helium isotopes in the Marquesas hotspot, *Chem. Geol.* <https://doi.org/10.1016/j.chemgeo.2023.121727>  
[34]Maguire, R., et al., Moment tensor estimation of event S1222a and implications for tectonics near the dichotomy boundary in southern Elysium Planitia, Mars, *GRL*: <https://doi.org/10.1029/2023JE007793>  
[33]Ceylan, S., et al., Revisiting the seismicity of Mars as recorded by InSight, *GRL*: <https://doi.org/10.1029/2023JE007826>  
[32]Kim, D., et al., Global average crustal thickness revealed by surface waves orbiting Mars, *GRL*: <http://doi.org/10.1029/2023GL103482>  
[31]Irving, J. C. E., et al., First observation of core-transiting seismic phases on Mars, *PNAS*: <https://doi.org/10.1073/pnas.2217090120>  
[30]Kim, D., et al., Structure along the martian dichotomy constrained by Rayleigh and Love waves and their overtones, *GRL*: <https://doi.org/10.1029/2022GL101666>  
2022 [29]Knapmeyer, M., et al., The global seismic moment rate of Mars after Event S1222a, *GRL*: <https://doi.org/10.1029/2022GL102296>  
[28]Kim, D., et al., Surface waves and crustal structure on Mars, *Science*: <https://doi.org/10.1126/science.abq7157>  
[27]Posiolova, L. et al., Large hypervelocity impact on Mars co-located by orbital imaging and surface seismic recording, *Science*: <https://doi.org/10.1126/science.abq7704>  
[26]Stähler C. S., et al., Tectonics of Cerberus Fossae unveiled by marsquake, Mars, *Nature Astronomy*: <https://www.nature.com/articles/s41550-022-01803-y>  
[25]Ceylan, S., et al., The marsquake catalogue from InSight, sols 0-1011, *PEPI*: <https://doi.org/10.1016/j.pepi.2022.106943>  
[24]Huang, Q., et al., Seismic detection of the Martian mantle transition zone by InSight, *PNAS*: <https://doi.org/10.1073/pnas.2204474119>  
[23]Dahmen, N. L., et al. MarsQuakeNet: A more complete marsquake catalogue obtained by deep learning techniques. *JGR*: <https://doi.org/10.1029/2022JE007503>  
[22]Duran, C., et al., Observation of a core-diffracted P-wave and implications for the lower

- mantle structure of Mars, *GRL*: <https://doi.org/10.1029/2022GL100887>
- [21] Li, J., et al., Crustal Structure constraints from the detection of the SsPp Phase on Mars, *Earth and Space Science*: <https://doi.org/10.1029/2022EA002416>
- [20] Panning, M. P., et al., Locating the largest event observed on Mars with multi-orbit surface waves, *GRL*: <https://doi.org/10.1029/2022GL101270>
- [19] Kawamura, T., et al., Largest Marsquake Ever Detected by InSight: S1222a, *GRL*: <https://doi.org/10.1029/2022GL101543>
- [18] Wiczorek, M. A., et al., InSight constraints on the global character of the Martian crust, *JGR*: <https://doi.org/10.1029/2022JE007298>
- [17] Horleston, A. C., et al., The Far Side of Mars: Two Distant Marsquakes Detected by InSight, *The Seismic Record*: <https://doi.org/10.1785/0320220007>
- 2021 [16] Karakostas, F., et al., Scattering attenuation of the Martian interior through coda wave analysis, *BSSA*: <https://doi.org/10.1785/0120210253>
- [15] Kim, D., et al., Improving subsurface constraints on Earth and Mars with PPs receiver functions, *JGR*: <https://doi.org/10.1029/2021JE006983>
- [14] Kim, D., et al., Potential pitfalls in the analysis and structural interpretation of Mars' seismic data from InSight, *BSSA*: <https://doi.org/10.1785/0120210123>
- [13] Stähler, S. C., et al., Seismic detection of the Martian core, *Science*: <https://doi.org/10.1126/science.abi7730>
- [12] Knapmeyer-Endrun, B., et al., Crustal thickness and layering of Mars from InSight seismic data, *Science*: <https://doi.org/10.1126/science.abf8966>
- [11] Khan, A., et al., Imaging the upper mantle structure of Mars with InSight seismic data, *Science*: <https://doi.org/10.1126/science.abf2966>
- [10] Schimmel, M., et al., Seismic Noise Autocorrelations on Mars. *Earth and Space Science*: <https://doi.org/10.1029/2021EA001755>
- [9] Compaire, N., et al., Autocorrelation of the ground vibration recorded by the SEIS InSight seismometer on Mars, *JGR*: <https://doi.org/10.1029/2020JE006498>
- 2020 [8] Kim, D., et al., Sequencing Seismograms: A panoptic view of scattering in core-mantle boundary region, *Science*: <https://doi.org/10.1126/science.aba8972>
- [7] Brown, L., and D. Kim, Extensive sills in the crust from deep seismic reflection profiling seismic data, *Geosciences*: <https://doi.org/10.3390/geosciences10110449>
- 2019 [6] Kim, D., and V. Lekic, Groundwater variations from autocorrelation and receiver functions, *GRL*: <https://doi.org/10.1029/2019GL084719>
- [5] Kim, D., et al., Enhanced resolution of the subducting plate interface in Central Alaska from autocorrelation of local earthquake coda, *JGR*: <https://doi.org/10.1029/2018JB016167>
- [4] Kim, D., and L. D. Brown, From trash to treasure: 3D basement imaging with “excess” data from oil and gas exploration, *AAPG Bulletin*: <https://doi.org/10.1306/12191817420>
- 2018 [3] Kim, D., et al., Magma “bright spots” mapped beneath Krafla, Iceland, using RVSP imaging of reflected waves from microearthquakes, *J. Volcanology and Geotherm. Res.:* <https://doi.org/10.1016/j.jvolgeores.2018.04.022>
- 2017 [2] Kim, D., et al., Magma reflection imaging in Krafla, Iceland, using microearthquake sources, *JGR*: <https://doi.org/10.1002/2016JB013809>
- 2016 [1] Quiros, D. A., L. D. Brown, and D. Kim Seismic interferometry of railroad induced ground motions: body and surface wave imaging, *GJI*: <https://doi.org/10.1093/gji/ggw033>

## INVITED TALKS

- 2023 Seismology of the core-mantle boundary region of Earth, *International Workshop on Multi-messenger Tomography of the Earth*  
 Exploration of the Moon, Mars and Beyond Using Geophysical Methods, *the 84<sup>th</sup> EAGE Annual Conference*  
 Planetary Seismology, *EGU General Assembly 2023*  
 Department Colloquium, Department of Earth Science and Engineering, *Imperial College London, 2023*
- 2022 Invited lecture, Institute for Geology and Mineralogy, *University of Cologne*  
 Department Colloquium, Department of Urban and Environmental Engineering, *Ulsan National Institute of Science and Technology, Korea*

- 2021 Department Colloquium, Earth and Planetary Sciences, *Rutgers University*  
Exploring multi-scale mantle dynamics with computational methods, *AGU Fall Meeting*  
Artificial Intelligence in Seismology, *International Forum on Pohang Earthquake*, POSCO International Center, Republic of Korea  
Seismology and Geodynamics Seminar, Institute of Geophysics, ETH  
The Geological Society of Washington, March meeting
- 2020 Potomac Geophysical Society, December meeting  
Multi-disciplinary InSights on Mantle Heterogeneity from Geochemistry, Imaging, Modeling, and Experiments, *AGU Fall Meeting*.  
Geology department colloquium, *University of Maryland*.  
Geoscience and Machine Learning Seminar, *Zhejiang University*.  
UK Geophysics & Tectonics Seminar, hosted by *University of Kentucky*.
- 2019 Global Seismographic Network (GSN) Design Goals SIG Presentations, 2019  
IRIS Design Goals Working Group, *AGU Fall Meeting*.

### TEACHING EXPERIENCE

- 2022-2023 *Lecturer*, ETH  
Seismic Wave
- 2021 *Co-Lecturer*, University of Maryland  
Introduction to Seismology
- 2017 *Teaching Assistant*, Cornell University  
Analysis of Sustainable Energy Systems
- 2016 *Teaching Assistant*, Cornell University  
Introduction to Seismology
- 2013-2014 *Teaching Assistant*, Cornell University  
Calculus for Engineers / Calculus II
- 2010-2012 *Teaching Assistant*, Yonsei University  
Basic surveying and practice

### GRANTS/AWARDS

- 2023 AAAS Newcomb Cleveland Prize
- 2018 SSA 2018 Student Presentation Award
- 2018 Meyer Bender '29 and Stephen Bender '58 Memorial Award
- 2014-2017 Cornell University Graduate Conference Grant
- 2017 Sidney Kaufman Travel Funds, Earth and Atmospheric Sciences
- 2016 Graduate Research Travel Grant
- 2014-2016 Earth Energy IGERT Grant from NSF
- 2014 Long Fellowship, Cornell University

### FIELDWORK EXPERIENCE

- 2016 Laguna del Maule, Chile  
Shallow lacustrine reflection profiling / servicing broadband seismic stations  
Pawnee, Oklahoma, USA  
Deployment of nodal instruments / servicing broadband seismic stations  
Syracuse, New York, USA  
Deployment of PASSCAL broadband seismic stations
- 2015 Ithaca, New York, USA  
Deployment of PASSCAL broadband seismic stations
- 2014 Ethiopia  
Deployment/Service PASSCAL broadband seismic stations
- 2014 Belen, New Mexico, USA  
Deployment/Service of PASSCAL TEXAN recorders

### PROFESSIONAL SERVICE

- 2023 NASA's *InSightSeers* program <https://astrobiology.nasa.gov/news/insightseers-program/>
- 2021-present InSight Marsquake Service frontline team <https://doi.org/10.12686/a19>

*Curriculum Vitae: Doyeon Kim*

Spring 2020	Panelist for a NASA grant review committee
2014-2017	Cornell University Graduate Conference Grant
2020-2021	Session chair for a technical session at SSA
2019-present	Judge for the AGU Outstanding Student Paper Award
2018-present	Reviewer for Journal of Geophysical Research, Geophysical Research Letters, Geophysical Journal of International, Journal of Volcanology and Geothermal Research, Icarus, Earth and Planetary Science Letters, Nature, G-Cubed, Physics of the Earth and Planetary Interiors, NSF Research Proposals