Curriculum Vitae 01 Sept 2023

DOYEON KIM

Imperial College London
Earth Science and Engineering
Email: doyeon.kim@erdw.ethz.ch
Webpage: http://doyeonkim.us/

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 POSITIONS

2023.10.01- Lecturer, Imperial College London
2021-present Visiting Assistant Professor, University of Maryland

PROFESSIONAL BACKGROUND

2021-2023 Senior Scientist, 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 review.*
[35]Herret, M.-T., et al., Decoupling of short-lived radiogenic and helium isotopes in the Marquesas hotspot, *in revision.*
[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., at 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]Wieczorek, 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 autcorrelation 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 CIPS Seminar, *UC Berkeley*

Bullard Seminar, *University of Cambridge*

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 84th EAGE Annual Conference*

Planetary Seismology, *EGU General Assembly 2023*

Department Colloquium, Department of Earth Science and Engineering, *Imperial College London*, *2023*

	Invited lecture, Institute for Geology and Mineralogy, *University of Cologne*
2022	Department Colloquium, Department of Urban and Environmental Engineering, *Ulsan National Institute of Science and Technology, Korea*
	Department Colloquium, Earth and Planetary Sciences, *Rutgers University*
2021	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
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