

Abhijit Ghosh

Associate Professor of Geophysics

Department of Earth and Planetary Sciences • University of California, Riverside

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(CV updated on Aug 2023)

Education

PhD in Geophysics, 2007-2011

Department of Earth & Space Sciences, University of Washington, Seattle, WA, USA

MS in Earth & Atmospheric Sciences (Geophysics), 2005-2007

School of Earth & Atmospheric Sciences, Georgia Institute of Technology, Atlanta, GA, USA

MS in Geology, 2002-2004

Department of Geology, University of Calcutta, Kolkata, India

BS in Geology (with Mathematics and Physics), 1999-2002

Department of Geology, University of Calcutta, Kolkata, India

Appointments

Associate Professor, 2018-present, Earth and Planetary Sciences, University of California, Riverside, USA

Assistant Professor, 2012-2018, Earth and Planetary Sciences, University of California, Riverside, USA

NSF-GeoPRISMS Postdoctoral Fellow, 2012, Earth & Planetary Sciences, UC Santa Cruz, USA

Research Associate, 2011, Earth & Space Sciences, University of Washington, USA

Junior Research Fellow, 2005, Geological Sciences, Jadavpur University, India

Awards and Honors

NSF-GeoPRISMS Distinguished Lecturer 2018-19

Associate Editor of the Seismological Research Letters published by the Seismological Society of America
2018-Present

NSF-GeoPRISMS Postdoctoral Fellow, 2012

Publications (in peer-reviewed journals)

Niyogi, S., **A. Ghosh**, Kumar, A., & Hammack, R. W. (2023). Tremor signals during fluid injection are generated by fault slip. *Science*, 381(6657), 553–558. <https://doi.org/10.1126/science.adh1331>.

Ding HY, Zhou YJ, Ge ZX, Taymaz T, **A. Ghosh**, Xu HY, Irmak TS, Song XD (2023). High-Resolution Seismicity

Imaging and Early Aftershock Migration of the 2023 Kahramanmara (SE Türkiye) W7.9 & 7.8 Earthquake Doublet. *Earthquake Science*, 36(0): 1-16, doi: 10.1016/j.eqs.2023.06.002.

Senapati, B., Kundu, B., Perfettini, H., Gahalaut, V. K., Singh, A. K., **A. Ghosh**, & Rao, N. P. (2023). Fault resonance process and its implications on seismicity modulation on the active fault system. *Tectonophysics*, 229920. <https://doi.org/10.1016/j.tecto.2023.229920>.

Chaudhuri, K., & **A. Ghosh** (2023). Very Low Frequency Earthquakes Modulate Regular Fast Earthquakes at the Central Range in Taiwan. *Geophysical Research Letters*, 50(5). <https://doi.org/10.1029/2022gl102505>.

Hutchison, A., Zhou, Y., & **A. Ghosh** (2023). Comment on “Sources of Long-Range Anthropogenic Noise in Southern California and Implications for Tectonic Tremor Detection” by Asaf Inbal, Tudor Cristea-Platon, Jean-Paul Ampuero, Gregor Hillers, Duncan Agnew, and Susan E. Hough. *Bulletin of the Seismological Society of America*. <https://doi.org/10.1785/0120190171>.

Li, B., Wu, B., Bao, H., Oglesby, D. D., **A. Ghosh**, Gabriel, A., et al. (2022). Rupture heterogeneity and directivity effects in back-projection analysis. *Journal of Geophysical Research: Solid Earth*, <https://doi.org/10.1029/2021jb022663>.

Zhou, Y., Yue, H., Zhou, S., Fang, L., Zhou, Y., Xu, L., Liu, Z., Wang, T., Zhao, L. & **A. Ghosh**. (2022). Microseismicity along Xiaojiang Fault Zone (Southeastern Tibetan Plateau) and the characterization of interseismic fault behavior. *Tectonophysics*, 229364. <https://doi.org/10.1016/j.tecto.2022.229364>.

Chaudhuri, K., & **A. Ghosh** (2022). Widespread Very Low Frequency Earthquakes (VLFEs) Activity Offshore Cascadia. *Geophysical Research Letters*, 49(13). <https://doi.org/10.1029/2022gl097962>.

Zhou, Y., Ren, C., **A. Ghosh**, Meng, H., Fang, L., Yue, H., et al. (2022). Seismological Characterization of the 2021 Yangbi Foreshock-Mainshock Sequence, Yunnan, China: More than a Triggered Cascade. *Journal of Geophysical Research: Solid Earth*, 127(8). <https://doi.org/10.1029/2022jb024534>.

Hubbard, M., Mukul, M., Gajurel, A. P., **A. Ghosh**, Srivastava, V., Giri, B., Seifert, N., & Mendoza, M. M. (2021). Orogenic Segmentation and Its Role in Himalayan Mountain Building. *Frontiers in Earth Science*, 9, 641666. <https://doi.org/10.3389/feart.2021.641666>.

Zhou, Y. J., **A. Ghosh**, Fang, L. H., Yue, H., Zhou, S. Y., and Su, Y. J. (2021). A high-resolution seismic catalog for the 2021 MS6.4/MW6.1 Yangbi earthquake sequence, Yunnan, China: Application of AI picker and matched filter. *Earthq Sci.*, 34, doi: 10.29382/eqs-2021-0031.

Zhou, Y., H. Yue, L. Fang, S. Zhou, L. Zhao, and **A. Ghosh** (2021). An Earthquake Detection and Location Architecture for Continuous Seismograms: Phase Picking, Association, Location, and Matched Filter (PALM). *Seismol. Res. Lett.* 93, 413–425, doi: 10.1785/0220210111.

Cortez, J. T., Oglesby, D. D., Kyriakopoulos, C., Wu, B., Chaudhuri, K., **A. Ghosh**, & Douilly, R. (2021). On the Rupture Propagation of the 2019 M6.4 Searles Valley, California, Earthquake, and the Lack of Immediate Triggering of the M7.1 Ridgecrest Earthquake. *Geophysical Research Letters*, 48(4). <https://doi.org/10.1029/2020gl090659>.

Karplus, M. S., M. Pant, S. N. Sapkota, J. Nábělek, A. A. Velasco, L. B. Adhikari, **A. Ghosh**, S. L. Klemperer, V. Kuna, M. M. Mendoza, & J. Braunmiller (2020). A Rapid Response Network to Record Aftershocks of the 2015 M 7.8 Gorkha Earthquake in Nepal, *Seismol. Res. Lett.* 91, 2399–2408, doi: 10.1785/0220190394.

- Lanza, F., Thurber, C. H., Syracuse, E. M., Power, J. A., & **A. Ghosh** (2020). Seismic tomography of compressional wave velocity and attenuation structure for Makushin Volcano, Alaska. *Journal of Volcanology and Geothermal Research*, 393, 106804. <https://doi.org/10.1016/j.jvolgeores.2020.106804>.
- Yamada, M., Kandel, T., Tamaribuchi, K., and **A. Ghosh** (2019). 3D Fault Structure Inferred from a Refined Aftershock Catalog for the 2015 Gorkha Earthquake in Nepal. *Bulletin of the Seismological Society of America*, 110 (1): 26–37. doi: <https://doi.org/10.1785/0120190075>.
- Wu, B., Oglesby, D. D., **A. Ghosh**, & Li, B. (2019). A Dynamic Rupture Source Model for Very Low-Frequency Earthquake Signal Without Detectable Nonvolcanic Tremors. *Geophysical Research Letters*, 46(21), 11934–11943. <https://doi.org/10.1029/2019gl084135>.
- Mendoza, M. M., **A. Ghosh**, Karplus, M. S., Klemperer, S. L., Sapkota, S. N., Adhikari, L. B., & Velasco, A. (2019), Duplex in the Main Himalayan Thrust illuminated by aftershocks of the 2015 Mw 7.8 Gorkha earthquake. *Nature Geoscience*, DOI:10.1038/s41561-019-0474-8.
- Li, B., **A. Ghosh**, & Mendoza, M. M. (2019). Delayed and sustained remote triggering of small earthquakes in the San Jacinto Fault Region by the 2014 Mw 7.2 Papanoa, Mexico Earthquake. *Geophysical Research Letters*, 46. <https://doi.org/10.1029/2019GL084604>.
- Hutchison A. A., and **A. Ghosh** (2019). Repeating VLFEs during ETS events in Cascadia track slow slip and continue throughout inter-ETS period, *Journal of Geophysical Research: Solid Earth*, 124, 554-565. doi: 10.1029/2018JB016138.
- Hutchison A. A., and **A. Ghosh** (2017). Ambient tectonic tremor in the San Jacinto Fault, near the Anza Gap, detected by multiple mini seismic arrays, *Bulletin of the Seismological Society of America*, 107(5), 1985-1993. doi: 10.1785/0120160385.
- Li, B., and **A. Ghosh** (2017), Near-continuous tremor and low-frequency earthquake activities in the Alaska-Aleutian subduction zone revealed by a mini seismic array, *Geophys. Res. Lett.*, 44, doi:10.1002/2016GL072088.
- Mendoza, M., **A. Ghosh**, and S. S. Rai (2016), Dynamic triggering of small local earthquakes in the central Himalaya, *Geophys. Res. Lett.*, 43, doi:10.1002/2016GL069969.
- Kundu, B., **A. Ghosh**, M. Mendoza, R. Burgmann, V.K. Gahalaut, and D. Saikia (2016), Tectonic tremor on Vancouver Island, Cascadia, modulated by the body and surface waves of the Mw 8.6 and 8.2, 2012 East Indian Ocean earthquake, *Geophys. Res. Lett.*, 43, doi: 10.1002/2016GL069755.
- Hutchison, A. A., and **A. Ghosh** (2016), Very low frequency earthquakes spatiotemporally asynchronous with strong tremor during the 2014 episodic tremor and slip event in Cascadia, *Geophys. Res. Lett.*, 43, doi:10.1002/2016GL069750.
- Li, B., and **A. Ghosh** (2016), Imaging Rupture Process of the 2015 Mw 8.3 Illapel Earthquake Using the US Seismic Array, *Pure Appl. Geophys.*, doi:10.1007/s00024-016-1323-y.
- Ghosh, A.**, E. Huesca-Pérez, E. E. Brodsky, and Y. Ito (2015), Very low frequency earthquakes in Cascadia migrate with tremor, *Geophys. Res. Lett.*, 42, doi:10.1002/2015GL063286.
- Huesca-Pérez, E., and **A. Ghosh** (2015), Crustal anisotropy from tectonic tremor under Washington State in the Cascadia, *Geophys. Res. Lett.*, 42, doi:10.1002/2014GL062614.

Thomas, T. W., J. E. Vidale, H. Houston, K. C. Creager, J. R. Sweet, and **A. Ghosh** (2013), Evidence for tidal triggering of high-amplitude rapid tremor reversals and tremor streaks in northern Cascadia, *Geophys. Res. Lett.*, 40, doi:10.1002/grl.50832.

Ghosh, A., J. E. Vidale, and K. C. Creager (2012), Tremor asperities in the transition zone control evolution of slow earthquakes, *J. Geophys. Res.*, 117, B10301, doi:10.1029/2012JB009249.

Gomberg, J., K. C. Creager, J. R. Sweet, J. E. Vidale, **A. Ghosh**, and A. J. Hotovec (2012), Earthquake spectra and near-source attenuation in the Cascadia subduction zone, *J. Geophys. Res.*, 117, B05312, doi:10.1029/2011JB009055.

Zhang, J., P. Gerstoft, P. M. Shearer, H. Yao, J. E. Vidale, H. Houston, and **A. Ghosh** (2011), Cascadia tremor spectra: Low corner frequencies and earthquake-like high-frequency falloff, *Geochem. Geophys. Geosyst.*, 12, Q10007, doi: 10.1029/2011GC003759.

Vidale, J. E., A. J. Hotovec, **A. Ghosh**, K. C. Creager, and J. Gomberg (2011), Tiny intraplate earthquakes triggered by nearby episodic tremor and slip in Cascadia, *Geochem. Geophys. Geosyst.*, 12, Q06005, doi:10.1029/2011GC003559.

Gershenzon, N. I., G. Bambakidis, E. Hauser, **A. Ghosh**, and K. C. Creager (2011), Episodic tremors and slip in Cascadia in the framework of the Frenkel-Kontorova model, *Geophys. Res. Lett.*, 38, L01309, doi:10.1029/2010GL045225.

Ghosh, A., J. E. Vidale, J. R. Sweet, K. C. Creager, A. G. Wech, H. Houston, and E. E. Brodsky (2010), Rapid, continuous streaking of tremor in Cascadia, *Geochem. Geophys. Geosyst.*, 11, Q12010, doi:10.1029/2010GC003305.

Ghosh, A., J. E. Vidale, J. R. Sweet, K. C. Creager, A. G. Wech, and H. Houston (2010), Tremor bands sweep Cascadia, *Geophys. Res. Lett.*, 37, L08301, doi:10.1029/2009GL042301.

Gomberg, J., and the Cascadia 2007 and Beyond Working Group (2010), Slow-slip phenomena in Cascadia from 2007 and beyond: A review, *GSA Bull.*, v. 122, no. 7/8, p. 963-978, doi: 10.1130/B30287.1.

Ghosh, A., J. E. Vidale, Z. Peng, K. C. Creager, and H. Houston (2009), Complex nonvolcanic tremor near Parkfield, California, triggered by the great 2004 Sumatra earthquake, *J. Geophys. Res.*, 114, B00A15, doi:10.1029/2008JB006062.

Ghosh, A., J. E. Vidale, J. R. Sweet, K. C. Creager, and A. G. Wech (2009), Tremor patches in Cascadia revealed by seismic array analysis, *Geophys. Res. Lett.*, 36, L17316, doi: 10.1029/2009GL039080.

Ghosh, A., A.V. Newman, A. M. Thomas, and G. T. Farmer (2008), Interface locking along the subduction megathrust from *b* value mapping near Nicoya Peninsula, Costa Rica. *Geophys. Res. Lett.*, 35, doi: 10.1029/2007GL031617.

Majumdar, R. K., **A. Ghosh**, and D. Das, (2006), Geoelectric and geochemical studies for hydrological characterization of southern part of Sagar Island, South 24-Parganas, West Bengal, India. *Journal of Geophysics*, Vol. 27, No. 4, pp 109-118.

Invited presentations

Ghosh, A. (2022), Two flavors of earthquakes, *Division of Geological and Planetary Sciences, CalTech, Pasadena, CA, USA*

Ghosh, A. (2022), Very low frequency earthquakes (VLFEs): bridge between offshore and onshore seismicity in Cascadia, *Department of Earth and Space Sciences, University of Washington*

Ghosh, A. (2022), Structural complexities control rupture dynamics of 2015 Gorkha earthquake, *International Virtual Workshop on Global Seismology and Tectonics*

Ghosh, A. (2021), Lessons learned from recent aftershock studies, *USGS Earthquake Science Center Seminars, US Geological Survey*

Ghosh, A. (2020), Science of earthquake hazards in India, *Vaibhav – a global summit to discuss "global challenges such as climate change, health issues and sustainable energy resources".*

Ghosh, A. (2019), How faults shift gears, *Indian Statistical Institute, Kolkata, India*

Ghosh, A. (2019), A broad spectrum of fault slip – Himalaya to Aleutian, *National Geophysical Research Institute, Hyderabad, India*

Ghosh, A. (2019), Ridgecrest earthquake sequence in July 2019: what it means for SoCal, *The Inland Geological Society, Jurupa, CA, USA*

Ghosh, A. (2019), Wide spectrum of fault behavior, *Northwestern University, IL, USA*

Ghosh, A. (2018), Imaging complex fault behaviors using seismic arrays, *University of California, Santa Barbara, CA, USA*

Ghosh, A. (2018), Earthquake country: when is the big one coming?, *Loma Linda University, CA, USA*

Ghosh, A. (2018), Complex behavior of the San Jacinto Fault and its potential implications on seismic hazards, *Workshop on Future Earthquakes in Southern California and Preparedness, Chapman University, CA, USA*

Ghosh, A., A. A. Hutchison, and J. Hawthorne (2017), Abundant spontaneous VLFE activities in Cascadia during ETS and inter-ETS time periods, *American Geophysical Union Fall Meeting 2017, San Francisco, USA*

Ghosh, A. (2017), Abundant very low frequency earthquakes (VLFEs) in Cascadia, *Joint Workshop on Slow Earthquakes 2017, Matsuyama, Japan*

Ghosh, A. (2017), Global observations of a wide spectrum of earthquakes, *Earthquake Research Institute, University of Tokyo, Tokyo, Japan*

Ghosh, A. (2017), Slow earthquakes – a major player in the plate boundary fault dynamics, *Megathrust Dynamics Symposium, Rhodes Island, Greece*

Ghosh, A. (2017), Wide spectrum of fault behavior, *Department of Earth Sciences, Indian Institute of Science Education and Research, India*

Ghosh, A. (2017), Slow and fast earthquakes: diverse modes of fault slip, *Scripps Institution of Oceanography, University of California, San Diego, CA*

Ghosh, A. (2016), Wide spectrum of fault behavior, *Keynote Talk at Georgia Tech EAS Symposium, Georgia Tech, Atlanta, GA*

Ghosh, A. (2016), A wide spectrum of fault slip in multiple plate boundaries, *Department of Earth, Planetary, and Space Sciences, University of California, Los Angeles, CA*

Ghosh, A. (2015), 2015 Mw 7.8 Gorkha Earthquake in Nepal: Current Status, *Geological Survey of India, Kolkata, India*

Ghosh, A. (2015), Many Facets of Slow Earthquakes: San Andreas to Aleutians, *Department of Earth Sciences, University of Southern California, Los Angeles, CA*

Ghosh, A. (2015), Slow Earthquakes: A Global Overview, *Department of Earth Sciences, Indian Institute of Science Education and Research, India*

Ghosh, A. (2013), Slow earthquakes and tremor: imaging a wide spectrum of fault slip using mini-seismic arrays. *Incorporated Research Institutions for Seismology (IRIS) Webinar Series*

Ghosh, A. (2013), Slow earthquakes and tremor: where are we headed, *Dept. of Earth and Planetary Sciences, University of California, Berkeley, CA*

Ghosh, A. (2012), Transition zone of the Cascadia subduction fault: insights from seismic imaging of slow earthquakes. *AGU Fall Meeting 2012, San Francisco, CA*

Ghosh, A. (2012), Slow earthquakes and the complex nature of fault motion. *Division of Geological and Planetary Sciences, CalTech, Pasadena, CA*

Ghosh, A. (2012), Imaging complex evolution of slow earthquakes using seismic arrays. *Earthquake Research Center, US Geological Survey, Menlo Park, CA.*

Ghosh, A., J. E. Vidale, and K. C. Creager (2011), Imaging slow earthquakes in Cascadia using multiple seismic arrays. *Adam Dziewonski Symposium, Dept of Earth & Planetary Sciences, Harvard University.*

Ghosh, A., J. E. Vidale, and K. C. Creager (2010), Initial results from the Array of Arrays in Cascadia. *8th Joint Meeting of US-Japan Natural Resources Panel on Earthquake Research, Nagaoka, Japan, 2010.*

Ghosh, A. (2010), Non-volcanic tremor and slow slip: a new window into fault motion. *Institute of Geophysics, University of Texas, Austin.*

Ghosh, A. (2010), Non-volcanic tremor and slow slip: reshaping our understanding of fault motion. *Dept of Geology, University of Calcutta, India.*

Teaching

Graduate: Global Seismology (GEO 271), Array Seismology (GEO 272)

Advance undergraduate: Structural Geology (GEO 116)

Lower division undergraduate: Earthquake Country (GEO 008)

Freshman Advising Seminar (NASC 093)

Service

Associate Editor: Seismological Research Letters published by Seismological Society of America

Referee: Nature, Nature Communication, Nature Geosciences, Science, Geophysical Research Letters, Journal of Geophysical Research, G-cubed, Bulletin of Seismological Society of America, Earth and Planetary Science Letters, Pure and Applied Geophysics, Geophysical Journal International, Journal of Earth System Science, Tectonophysics, Physics of Earth Planetary Interiors, USGS review

Reviewed NSF proposals

Convener of the earthquake triggering session at SSA Annual Meeting 2022
Convener of the slow slip and tremor session at SSA Annual Meeting 2017
Convener of the slow slip and tremor session at AGU Fall Meeting 2016
Convener of the slow slip and tremor session at SSA Annual Meeting 2016
Convener of the slow slip and tremor session at SSA Annual Meeting 2015
Co-convener of the slow slip and tremor session at AGU Fall Meeting 2012
Co-convener of the slow slip and tremor session at AGU Fall Meeting 2011
Outstanding Student Paper Awards Judge at AGU Fall Meeting 2011