Lianxing Wen
Professor of Geophysics

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Professional Preparation

- Ph.D. Geophysics, California Institute of Technology, 1998.
- M.S., Geophysics, Chinese Academy of Sciences, 1991.
- B.S., Geophysics, University of Science and Technology of China, 1988.

Professional Appointments

- 2000 - present, Faculty member, Department of Geosciences, Stony Brook University
- 1998 - 2000, Carnegie Fellow, Department of Terrestrial Magnetism, Carnegie Institution of Washington
- 1998 - 1998, Assistant Scientist, Seismological Laboratory, California Institute of Technology
- 1993 - 1998, Research Assistant, Seismological Laboratory, California Institute of Technology
- 1991 - 1993, Assistant Research Fellow, Institute of Geophysics, Chinese Academy of Sciences

Honors and Awards

- James B. Macelwane Medal, American Geophysical Union, 2003.
- Fellow, American Geophysical Union, 2003.

Professional Services

- Working Group for the China Seismological Reference Model project, National Natural Science Foundation of China (team leader), 2016-.
- Geophysics Advisory Panel, National Natural Science Foundation of China, 2011-2014.
- Committee on "Grand Challenges on Earthquake Hazard Mitigation in China" (report lead author), Chinese Academy of Sciences, China Earthquake Administration, and National Natural Science Foundation of China, 2010-2011.

- Associate Editor, Journal of Geophysical Research, 2009-2015.
- Lehmann Medal Committee, American Geophysical Union, 2010-2014.
- Macelwane Medal Committee, American Geophysical Union, 2008-2010.
- Standing Committee of the Global Seismic Network, the Incorporated Research Institutions for Seismology (IRIS), 2003-2006.
- National Research Council Review Committee on NASA's Earth Science 25-year vision, 2004.
- Geophysics Advisory Panel, National Science Foundation, 2004.

Research Interests:

Professor Wen is a theoretical and observational seismologist and geodynamicist. His main research is directed toward understanding the structure, dynamics, composition and evolution of the Earth and other planets. He uses seismic waves to probe the internal structure of the Earth and its change with time, combines seismic, geodetic and mineral physics data to constrain the composition of the Earth and Martian mantle, and develops geodynamical models of how Earth's internal processes govern the Earth's continental drift, surface uplift, surface large igneous province, geochemistry, intra-plate deformation and volcanism. He also has a strong interest in the physical mechanisms of Earth's changing stress and strain, and the detection, relocation and physical mechanism of various un-conventional seismic sources including nuclear tests, induced earthquakes, hurricanes and deep earthquakes. Over the course of research, he has developed many new techniques for simulating viscous flow and seismic wave propagation, detecting/locating small and unconventional seismic sources, and classifying various types of seismic events.

Professor Wen leads two national-level initiatives in seismology in China. He is the proposer and the team leader of the China Seismological Reference Model (CSRM) project initiated by the National Natural Science Foundation of China and the lead author of a designated report entitled "Grand Challenges on Earthquake Hazard Mitigation in China" to the Chinese Academy of Sciences, the China Earthquake Administration, and the National Natural Science Foundation of China.

Governmental Document

- **Wen, L.**, Chen, R. and Yu, S. (ed.), Grand challenges on earthquake hazard mitigation in China, A designated report to Chinese Academy of Sciences, China Earthquake Administration, and National Natural Science Foundation of China, 2011.

Peer-reviewed publications

- Zhang, M. and **Wen, L.**, Reexamination Confirming Additional Seismic Evidence for the 12 May 2010 Low-Yield Nuclear Test, *Earthquake Research Advances*, https://doi.org/10.1016/j.eqrea.2024.100350, 2024.

- Xiao, X., Wu, J., Wang, W., Sun, L., Wang, X., Ma, J., Tong, Y., Liang, X., Tiao, X., Li, H., Chen, Q.-F., Yu, S., and **Wen, L.**, CSRM-1.0: A China Seismological Reference Model, *J. Geophys. Res. Solid Earth*, 129 (9), e2024JB029520, https://doi.org/10.1029/2024JB029520, 2024.
- Zhang, X. and **Wen, L.**, Comment on "An Evaluation of the Timing Accuracy of Global and Regional Seismic Stations and Networks" by Yang et al. (2021) *Seis. Res. Lett.*, https://doi.org/10.1785/0220230292, 2024.
- Zhu, J. and **Wen, L.**, Hydroacoustic study of fin whales around the Southern Wake Island: type, vocal behavior and temporal evolution from 2010 to 2022, *J. Acoust. Soc. Am.* , 155, 3037–3050, doi.org/10.1121/10.0025776, 2024.
- Xu, Y. and **Wen, L.**, Non-double-couple components of seismic source: method and application to the 2014-2015 Bárðarbunga volcanic event sequence, Iceland, *J. Geophys. Res. Solid Earth*, 129, e2023JB028592. https:// doi.org/10.1029/2023JB028592, 2024.
- Zhang, X. and **Wen, L.**, PREM-like velocity structure in the outermost core from global SKS and ScS waveform modeling, *Phys. Earth Planet. Inter.*, 344, 107091, https://doi.org/10.1016/j.pepi.2023.107091, 2023.
- Tian, D. and **Wen, L.**, Comment on "Inner Core Rotation Captured by Earthquake Doublets and Twin Stations" by Yang & Song, 2022, *Geophys. Res. Lett.*, 50 (15), e2023GL103173, https://doi.org/10.1029/2023GL103173, 2023.
- Ma, J., Sun, L., Wang, W., Wu, J., Wang, X. and **Wen, L.**, Uppermost mantle seismic Pn-velocity in continental China and its tectonic implications, *J. Geophys. Res. Solid Earth*, 128, e2022JB025667, https://doi.org/10.1029/2022JB025667, 2023.
- Xiao, X., Sun, L., Wang, X. and **Wen, L.**, Simultaneous inversion for surface wave phase velocity and earthquake centroid parameters: methodology and application, *J. Geophys. Res. Solid Earth*, 127, e2022JB024018, https://doi.org/10.1029/2022JB024018, 2022.
- Mao, Z. and **Wen, L.**, A three-dimensional adaptive receiver function migration method: (I) theory, *J. Geophys. Res. Solid Earth*, accepted.
- Cheng, S., Xiao, X., Wu, J., Wang, W., Sun, L., Wang, X. and **Wen, L.**, Crustal thickness and Vp/Vs variation beneath continental china revealed by receiver function analysis, *Geophys. J. Int.*, 228, 3, 1731-1749, https://doi.org/10.1093/gji/ggab433, 2022.
- Lu, Z. and **Wen, L.**, Months-long crustal deformation driven by aseismic slips and pore pressure transients triggered by local and regional earthquakes, *Geophys. Res. Lett.*, 48, 16, e2021GL095148, 2021.
- Zhu, J., Chen, X. and **Wen, L.**, Maximum covariance direction method for unconventional seismic sources, *Geophys. J. Int.*, 227, 2, 813–831, https://doi.org/10.1093/gji/ggab232, 2021.
- Xiao, X., Cheng, S., Wu, J., Wang, W., Sun, L., Wang, X. and **Wen, L.**, Shallow seismic structure beneath the continental China revealed by P-wave polarization, Rayleigh wave ellipticity and receiver function, *Geophys. J. Int.*, 225, 2, 998-1019, https://doi.org/10.1093/gji/ggab022, 2021.

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- Lei, W. and **Wen, L.**, Widespread small-scale anisotropic structure in the lowermost mantle beneath the North American continent and northeastern Pacific, *Seis. Res. Lett.*, 91 (5): 2779-2790, 2020.
- **Wen, L.**, Earth's Structure, Core. In: Gupta H. (eds) *Encyclopedia of Solid Earth Geophysics*. Encyclopedia of Earth Sciences Series. Springer, Cham, 2020.
- Tang, L., Zhang, M. and **Wen, L.**, Support vector machine classification of seismic events in the Tianshan orogenic belt, *J. Geophys. Res. Solid Earth*, doi: 10.1029/2019JB018132, 2020.
- Wang, Y., He, Y., Lu, G. and **Wen, L.**, Seismic, thermal and compositional structures of the stagnant slab in the mantle transition zone beneath southeastern China, *Tectonophysics*, Article 228208, 2020.
- Yao, J., Tian, D., Sun, L. and **Wen, L.**, Temporal change of seismic Earth's inner core phases: inner core differential rotation or temporal change of inner core surface?, *J. Geophys. Res. Solid Earth*, doi:10.1029/2019JB017532, 2019.
- Xu, Y. and **Wen, L.**, Relative directivity inversion of small earthquake rupture, *Geophys. J. Int.*, 218(1), 631-639, doi:10.1093/gji/ggz179, 2019.
- Lu, Z. and **Wen, L.**, Strong hydro-related localized long-period crustal deformation observed in the Plate Boundary Observatory borehole strainmeters, *Geophys. Res. Lett.*, doi10.1029/2018GL080856, 2018.
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- Tang, L., Lu, Z., Zhang, M., Sun, L. and **Wen, L.**, Seismicity induced by simultaneous abrupt changes of injection rate and well pressure in Hutubi gas field, *J. Geophys. Res. Solid Earth*, doi:10.1029/2018JB015863, 2018.
- Chen, Y., Meng, L., Zhang, A. and **Wen, L.**, Source complexity of the 2015 Mw 7.9 Bonin earthquake, *Geochemistry, Geophysics, Geosystems*, doi:10.1029/2018GC007489, 2018.
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Some writing may be of value

- Water, WR and **Wen, L.**, Preface to the focus section on North Korea's September 2017 nuclear test and its aftermath, *Seismol. Res. Lett.*, 89 (6): 2013–2016, https://doi.org/10.1785/0220180281(2018).

News Commentary

- **Wen, L.**, Response to "The Planet Inside: scientists are probing the secrets of the inner core—and learning how it might have saved life on Earth", by Pual Voosen, *Science*, 11 April, 2022 (https://www.science.org/content/article/scientists-probing-secrets-earths-inner-core-saved-life-planet).