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Associate Professor

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Education

2012–2018 Ph.D in Geophysics, University of Science and Technology of China, Hefei, China
2008–2012 B.S. in Geophysics, University of Science and Technology of China, Hefei, China

Employment

2021/11–present Associate Professor, China University of Geosciences, Wuhan, China
2018/08–2021/09 Postdoctoral Research Associate, Michigan State University, East Lansing, USA

Research Interests

- Structure of the Earth's Deep Interior
- Theory and Observations of Earthquake Source
- Theory of Wave Propagation

Professional Societies & Activities

- Member of the [American Geophysical Union \(AGU\)](#) (2012–present)
- Peer-reviewer of scientific journals: *Geophysical Research Letters*, *Seismological Research Letters*, *Review of Scientific Instruments*, *Journal of Open Source Software*, *Results in Geophysical Sciences*
- Founder of the [SeisMan blog](#) (since 2013), [GMT China Community](#) (since 2016) and [seismo-learn](#) (since 2020)
- Core developer of the [Generic Mapping Tools \(GMT\)](#) and [PyGMT](#) (2018–present)
- Research assistant and database manager for [China Seismological Reference Model](#) (2016–2018)
- Judge for the Outstanding Student Paper Award, AGU Fall Meeting (2018–2020)

Awards & Honors

2021 One Hundred Talents Program, China University of Geosciences, China
2018 President Award, Chinese Academy of Science, China [top 1%]
2018 Outstanding Graduate Student, University of Science and Technology of China, China [top 15%]

- 2017 Outstanding Student Paper Award, 2017 Annual Meeting of Chinese Geoscience Union, China
- 2017 National Scholarship for Doctoral Students, Ministry of Education, China [top 5%]
- 2014 Kwang-Hua Scholarship, Kwang-Hua Education Foundation, China
- 2010 Kwang-Hua Scholarship, Kwang-Hua Education Foundation, China
- 2009 Outstanding Volunteer, University of Science and Technology of China, China

Received Funds

- Startup, CUG One Hundred Talents Program, ¥ 1,800k (2021–2026)

Peer-reviewed Publications

*corresponding author, #co-first author.

13. Yao, J., **Tian, D.**, Sun, L., & Wen, L. (2021). Comment on “Origin of temporal changes of inner-core seismic waves” by Yang and Song (2020). *Earth and Planetary Science Letters*, 553, 116640. doi:[10.1016/j.epsl.2020.116640](https://doi.org/10.1016/j.epsl.2020.116640)
12. Wei, S. S., Shearer, P. M., Lithgow-Bertelloni, C., Stixrude, L., & **Tian, D.** (2020). Oceanic plateau of the Hawaiian mantle plume head subducted to the uppermost lower mantle. *Science*, 370, 983–987. doi:[10.1126/science.abd0312](https://doi.org/10.1126/science.abd0312)
11. **Tian, D.***, Lv, M., Wei, S. S., Dorfman, S. M. & Shearer, P. M. (2020). Global variations of Earth’s 520- and 560-km discontinuities. *Earth and Planetary Science Letters*, 552, 116600. doi:[10.1016/j.epsl.2020.116600](https://doi.org/10.1016/j.epsl.2020.116600)
10. Wessel, P., Luis, J., Uieda, L., Scharroo, R., Wobbe, F., Smith, W. H. F., & **Tian, D.** (2019). The Generic Mapping Tools Version 6. *Geochemistry, Geophysics, Geosystems*, 20(11), 5556–5564. doi:[10.1029/2019GC008515](https://doi.org/10.1029/2019GC008515)
9. Yao, J., **Tian, D.**, Sun, L., & Wen, L. (2019). Temporal change of seismic Earth’s inner core phases: inner core differential rotation or temporal change of inner core surface? *Journal of Geophysical Research: Solid Earth*, 124(7), 6720–6736. doi:[10.1029/2019JB017532](https://doi.org/10.1029/2019JB017532)
8. Fan, W., Wei, S. S., **Tian, D.**, McGuire, J. J., & Wiens, D. A. (2019). Complex and diverse rupture processes of the 2018 Mw 8.2 and Mw 7.9 Tonga-Fiji deep earthquakes. *Geophysical Research Letters*, 46(5), 2434–2448. doi:[10.1029/2018GL080997](https://doi.org/10.1029/2018GL080997)
7. Yao, J., **Tian, D.**#, Lu, Z., Sun, L., & Wen, L. (2018). Triggered seismicity after North Korea’s 3 September 2017 nuclear test. *Seismological Research Letters*, 89(6), 2085–2093. doi:[10.1785/0220180135](https://doi.org/10.1785/0220180135)
6. Yao, J., **Tian, D.**#, Sun, L., & Wen, L. (2018). Source characteristics of North Korea’s 3 September 2017 nuclear test. *Seismological Research Letters*, 89(6), 2078–2084. doi:[10.1785/0220180134](https://doi.org/10.1785/0220180134)
5. **Tian, D.***, Yao, J., & Wen, L. (2018). Collapse and earthquake swarm after North Korea’s 3 September 2017 nuclear test. *Geophysical Research Letters*, 45(9), 3976–3983. doi:[10.1029/2018GL077649](https://doi.org/10.1029/2018GL077649)
4. Wen, L., **Tian, D.**, & Yao, J. (2018). Seismic structure and dynamic process of the Earth’s inner core and its boundary. *Chinese Journal of Geophysics*, 61(3), 803–818. doi:[10.6038/cjg2018L0500](https://doi.org/10.6038/cjg2018L0500) [in Chinese]

3. **Tian, D.**, & Wen, L. (2017). Seismological evidence for a localized mushy zone at the Earth's inner core boundary. *Nature communications*, 8, 165. doi:[10.1038/s41467-017-00229-9](https://doi.org/10.1038/s41467-017-00229-9)
2. Chen, X., **Tian, D.**, & Wen, L. (2015). Microseismic sources during hurricane sandy. *Journal of Geophysical Research: Solid Earth*, 120(9), 6386–6403. doi:[10.1002/2015JB012282](https://doi.org/10.1002/2015JB012282)
1. Zhang, M., **Tian, D.**, & Wen, L. (2014). A new method for earthquake depth determination: stacking multiple-station autocorrelograms. *Geophysical Journal International*, 197(2), 1107–1116. doi:[10.1093/gji/ggu044](https://doi.org/10.1093/gji/ggu044)

Meeting Abstracts

23. Zhang, Y., Byrnes, J. S., Wei, S. S., **Tian, D.**, Wang, F., & Bezada M. (2021). P-wave attenuation tomography of the Tonga-Lau mantle wedge improved by a Bayesian Monte Carlo approach and independently constrained source spectra. Abstract S25D-0276 virtually presented at 2021 AGU Fall Meeting.
22. Meghan, J., Grund, M., Schlitzer, W., Leong, W. J., **Tian, D.**, Yao, J., & Uieda, L. (2021). PyGMT: An open-source Python library for geospatial processing, analysis, and visualization. Abstract IN55C-08 virtually presented at 2021 AGU Fall Meeting.
21. Wei, S. S., Zhang, Y., **Tian, D.**, & Wiens, D. A. (2021). New advances in body-wave attenuation studies of the Tonga subduction zone. Abstract S23B-05 virtually presented at 2021 AGU Fall Meeting.
20. **Tian, D.**, & Wei, S. S. (2021). Source spectra and stress drops of small-to-moderate earthquakes beneath the Alaska peninsula. Abstract T54A-11 virtually presented at 2021 AGU Fall Meeting.
19. Wei, S. S., Shearer, P. M., Lithgow-Bertelloni, C., Stixrude, L., & **Tian, D.** (2021). Oceanic plateau of the Hawaiian mantle plume head subducted to the uppermost lower mantle. Abstract EGU21-13874 virtually presented at EGU General Assembly 2021.
18. **Tian, D.**, Wang, W., Wang, F., & Wei, S. S. (2020). Source spectra of intermediate-depth and deep earthquakes in the Tonga subduction zone. Abstract S054-0012 virtually presented at 2020 AGU Fall Meeting.
17. Wei, S. S., **Tian, D.**, Shearer, P. M., Lv, M., Dorfman, S. M., Lithgow-Bertelloni, C., & Stixrude, L. (2020). Compositional heterogeneities in the mid-mantle revealed by seismic discontinuities and reflectors. Abstract DI016-0008 virtually presented at 2020 AGU Fall Meeting.
16. **Tian, D.**, Wang, W. & Wei, S. S. (2019). Source spectra and stress drop of deep earthquakes in the Tonga subduction zone. Abstract S13C-0458 presented at 2019 AGU Fall Meeting, San Francisco, CA, USA.
15. **Tian, D.**, Wei, S. S., & Shearer, P. M. (2019). Global variations of the 520-km discontinuity. Presented at Gordon Research Conference: Interior of the Earth, South Hadley, MA, USA.
14. **Tian, D.**, Wei, S. S., & Shearer, P. M. (2018). Global variations of the 520-km discontinuity. Abstract DI31C-0024 presented at 2018 AGU Fall Meeting, Washington, DC, USA.

13. **Tian, D.**, Yao, J., & Wen, L. (2017). Collapse and earthquake swarm after North Korea's 3 September 2017 nuclear test. Abstract S43H-2968 presented at 2017 AGU Fall Meeting, New Orleans, LA, USA.
12. **Tian, D.**, & Wen, L. (2017). Three types of Earth's inner core boundary. Abstract DI33B-0404 presented at 2017 AGU Fall Meeting, New Orleans, LA, USA.
11. Yao, J., **Tian, D.**, & Wen, L. (2017). High-precision location, yield and tectonic release of North Korea's 3 September 2017 nuclear test. Abstract S43H-2967 presented at 2017 AGU Fall Meeting, New Orleans, LA, USA.
10. Yao, J., **Tian, D.**, Sun, L., & Wen, L. (2017). Temporal change of seismic Earth's inner core phases: Inner core differential rotation or temporal change of inner core surface? Abstract DI33B-0405 presented at 2017 AGU Fall Meeting, New Orleans, LA, USA.
9. **Tian, D.**, & Wen, L. (2017). Seismological evidence for a localized mushy zone at the Earth's inner core boundary. Presented at Gordon Research Conference: Interior of the Earth, South Hadley, MA, USA.
8. Yao, J., **Tian, D.**, Sun, L., & Wen, L. (2017). Temporal change of seismic Earth's inner core phases: Inner core differential rotation or temporal change of inner core surface? Presented at Gordon Research Conference: Interior of the Earth, South Hadley, MA, USA.
7. **Tian, D.**, & Wen, L. (2016). Seismic structures of the Earth's inner core boundary beneath the Bearing sea and Mexico. Abstract DI43A-2657 presented at 2016 AGU Fall Meeting, San Francisco, CA, USA.
6. **Tian, D.**, & Wen, L. (2015). Varying seismic property of the Earth's inner core boundary. Abstract DI33A-2606 presented at 2015 AGU Fall Meeting, San Francisco, CA, USA.
5. **Tian, D.**, & Wen, L. (2014). Seismic study on the properties of the Earth's inner core boundary. Abstract DI31B-4269 presented at 2014 AGU Fall Meeting, San Francisco, CA, USA.
4. Chen, X., **Tian, D.**, & Wen, L. (2013). Seismic tracking of hurricane sandy. Abstract S11A-2296 presented at 2013 AGU Fall Meeting, San Francisco, CA, USA.
3. **Tian, D.**, & Wen, L. (2013). Regional topography variation of Earth's inner core boundary. Abstract DI23A-2282 presented at 2013 AGU Fall Meeting, San Francisco, CA, USA.
2. Zhang, M., **Tian, D.**, & Wen, L. (2013). A new method for earthquake determination: stacking multiple-station autocorrelograms. Abstract S51A-2301 presented at 2013 AGU Fall Meeting, San Francisco, CA, USA.
1. **Tian, D.**, & Wen, L. (2012). Simulating wave propagation in a faulted medium using a 3D finite difference method. Abstract S43A-2458 presented at 2012 AGU Fall Meeting, San Francisco, CA, USA.

Talks

8. Tectonics & Geophysics Young Scholars Research Symposium. Nanjing University. 2021/01/07.

7. Department of Earth and Space Sciences, Southern University of Science and Technology. 2020/11/27. **[Invited]**.
6. 2nd Annual Earth and Environmental Sciences Student Research Symposium. Department of Earth and Environmental Sciences, Michigan State University. 2019/02/23.
5. Institute of Geology and Geophysics, Chinese Academy of Sciences. 2018/06/15. **[Invited]**
4. Institute of Earthquake Forecasting, China Earthquake Administration. 2018/06/14.
3. 2017 Annual Meeting of Chinese Geoscience Union (CGU). 2017/10/17. **[Invited]**
2. Workshop on Analysis and Applications of Crustal Deformation Data. Hubei Earthquake Administration. 2016/09/21. **[Invited]**
1. China Earthquake Networks Center. 2016/06/30. **[Invited]**

Teaching Experience

Workshops

- Instructor, the UNAVCO Short Course “The Generic Mapping Tools for Geodesy” (2019–2021)
- Instructor, Workshop SCIWS4: “[Become a Generic Mapping Tools Contributor Even If You Can’t Code](#)”, 2019 AGU Fall Meeting (2019)

Students Supervised

Undergraduate Students

- Yangqi Song (2022)

Field Experience

- LEEP (Lake Erie Earthquake exPeriment), 2018/10/12–2018/10/16, install 8 broadband seismic stations around Lake Erie.

Open Source Software

Year indicates when the project was started. All projects are currently ongoing.

- 2014 **HinetPy** – A python package to request and process seismic waveform data from Hi-net.
<https://github.com/seisman/HinetPy/>