田冬冬

教授 博士生导师

中国地质大学（武汉）
地球物理与空间信息学院
湖北省武汉市洪山区鲁磨路 388 号
档案楼 512B 室

dtian@cug.edu.cn
0000-0001-7967-1197
me.seisman.info
seisman

教育经历

2018　地球物理学博士，中国科学技术大学，中国安徽省合肥市
2012　地球物理学学士，中国科学技术大学，中国安徽省合肥市

工作经历

2022/12 至今　　教授，中国地质大学（武汉），地球物理与空间信息学院
2021/11–2022/11　特任教授，中国地质大学（武汉），地球物理与空间信息学院
2018/08–2021/09　博士后研究助理，密西根州立大学，地球与环境科学系

研究方向及兴趣

- 地球深部结构
- 地震震源理论及观测
- 地震波传播理论

学术团体及服务

学术团体

- 美国地球物理联合会（AGU）会员（2012 至今）
- 中国地球物理学会（CGS）会员（2022 至今）
- 中国地震学会会员（2024 至今）

学术服务

- Earthquake Research Advances 副主编（2024 至今）
- 中国地震学会地震学专业委员会委员（2024 至今）
- Generic Mapping Tools (GMT) 指导委员会委员（2024 至今）
- 期刊/基金审稿人: *Nature Communications*, *Journal of Geophysical Research: Solid Earth*, *Geophysical Research Letters*, *Seismological Research Letters*, *Review of Scientific Instruments*, *Journal of Open Source Software*, *Results in Geophysical Sciences*, 华北地震科学, 国家自然科学基金青年科学基金
- 创办博客及网站 SeisMan 博客 （2013）、GMT 中文社区 （2016）和 地震“学” （2020）

- Generic Mapping Tools (GMT) 和 PyGMT 核心开发者（2018 至今）
- 中国地震学参考模型研究助理及数据库管理员（2016–2018）
- AGU 秋季会议 Outstanding Student Paper Award 评审（2018–2020）
- 中国地震学参考模型工作组成员（2023 至今）

学院服务

- 地空学院学位评定分委员会委员（2023–2025）

荣誉

2022 湖北省高层次人才计划
2021 中国地质大学（武汉）“百人计划”
2018 中国科学院院长奖
2018 中国科学技术大学优秀毕业生
2017 中国地球科学联合学术年会优秀学生论文奖
2017 博士生国家奖学金

科研基金

- 中国地质大学（武汉）中央高校优秀青年团队，5 万，2023/01-2024/12，排名 5/6
- 国家自然科学基金面上项目 No. 42274122，56 万，2023/01–2026/12，主持
- 中国地质大学（武汉）“百人计划”科研启动经费，200 万，2021/11–2026/12，主持

已发表论文

* 通讯作者，# 共同一作

21. Li, J.*, **Tian, D.**, Li, M., Chu, R. (2025). Small-Scale Heterogeneities in the Lowermost Mantle Near the Perm Anomaly. *Journal of Geophysical Research: Solid Earth*, *130*(8), e2025JB031160. doi:10.1029/2025JB031160

20. Li, J.*, **Tian, D.***, Li, M., Sun, D., Mao Z., Dobrosavljevic V. (2025). Ultralow Velocity Zones at the Core-Mantle Boundary Near the Caroline Hotspot. *Journal of Geophysical Research: Solid Earth*, *130*(7), e2024JB030763. doi:10.1029/2024JB030763

19. Li, J.*, Sun, D., **Tian, D.** (2024). Localized Ultra-Low Velocity Zone as a Strong Scatterer at the Core-Mantle Boundary Beneath Central America. *Journal of Geophysical Research: Solid Earth*, *129*(12), e2024JB029287. doi:10.1029/2024JB029287

18. Li, J.*, **Tian, D.**, Sun, D., Tong, P. (2024). D” structures beneath the East China Sea resolved by P-wave slowness anomalies. *Journal of Geophysical Research: Solid Earth*, *129*(11), e2024JB029584. doi:10.1029/2024JB029584

17. **Tian, D.** (2024). HinetPy: A Python package for accessing and processing NIED Hi-net seismic data. *Journal of Open Source Software*, *9*(98), 6840. doi:10.21105/joss.06840

16. Li, J.*, Zhang, B., Sun, D., **Tian, D.**, Yao, J. (2024). Detailed 3D structures of the western edge of the Pacific Large Low Velocity Province. *Journal of Geophysical Research: Solid Earth*, *129*(4), e2023JB028032. doi:10.1029/2023JB028032

15. **Tian, D.***, & Wen, L. (2023). Comment on "Inner Core Rotation Captured by Earthquake Doublets and Twin Stations" by Yang and Song. *Geophysical Research Letters*, *50*(15), e2023GL103173. doi:10.1029/2023GL103173

14. **Tian, D.***, Wei, S. S.*, Wang, W., & Wang, F. (2022). Stress drops of intermediate-depth and deep earthquakes in the Tonga slab. *Journal of Geophysical Research: Solid Earth*, *127*, e2022JB025109. doi:10.1029/2022JB025109

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

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

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

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

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

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

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

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

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

4. 温联星 *, **田冬冬**, 姚家园 (2018). 地球内核及其边界的结构特征和动力学过程. *地球物理学报*, *61*(3), 803–818. doi:10.6038/cjg2018L0500

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

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

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

会议摘要

口头报告

8. Wei, S. S., & **Tian, D.** (2022). Stress drops of small-to-moderate earthquakes beneath the Alaska Peninsula. 2022 AGU Fall Meeting, Chicago, IL, USA. ID: S42A-02.

7. Zhang, Y., Wei, S. S., Byrnes, J. S., **Tian, D.**, Wang, F., & Bezada M. (2022). P-wave attenuation structure of the Tonga subduction zone and implications for mantle wedge processes. 2022 AGU Fall Meeting, Chicago, IL, USA. ID: DI23A-06.

6. **Tian, D.** (2022). Source spectra and stress drops of small-to-moderate earthquakes beneath Tonga and the Alaska Peninsula. 2022/2021 Annual Meeting of Chinese Geosciecen Union, online.

5. 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. 2021 AGU Fall Meeting, online. ID: IN55C-08.

4. Wei, S. S., Zhang, Y., **Tian, D.**, & Wiens, D. A. (2021). New advances in body-wave attenuation studies of the Tonga subduction zone. 2021 AGU Fall Meeting, online. ID: S23B-05.

3. 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. EGU General Assembly 2021, online. ID: EGU21-13874.

2. **Tian, D.**, & Wei, S. S. (2021). Source spectra and stress drops of small-to-moderate earthquakes beneath the Alaska peninsula. 2021 AGU Fall Meeting, online. ID: T54A-11.

1. **Tian, D.**, & Wen, L. (2017). Seismological evidence for a localized mushy zone at the Earth's inner core boundary. 2017 Annual Meeting of Chinese Geoscience Union, Beijing, China.

张贴海报

21. 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. 2021 AGU Fall Meeting, online. ID: S25D-0276.

20. **Tian, D.**, Wang, W., Wang, F., & Wei, S. S. (2020). Source spectra of intermediate-depth and deep earthquakes in the Tonga subduction zone. 2020 AGU Fall Meeting, online. ID: S054-0012.

19. 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. 2020 AGU Fall Meeting, online. ID: DI016-0008.

18. **Tian, D.**, Wang, W., & Wei, S. S. (2019). Source spectra and stress drop of deep earthquakes in the Tonga subduction zone. 2019 AGU Fall Meeting, San Francisco, CA, USA. ID: S13C-0458.
17. **Tian, D.**, Wei, S. S., & Shearer, P. M. (2019). Global variations of the 520-km discontinuity. Gordon Research Conference: Interior of the Earth, South Hadley, MA, USA.
16. **Tian, D.**, Wei, S. S., & Shearer, P. M. (2018). Global variations of the 520-km discontinuity. 2018 AGU Fall Meeting, Washington, DC, USA. ID: DI31C-0024.
15. **Tian, D.**, Yao, J., & Wen, L. (2017). Collapse and earthquake swarm after North Korea's 3 September 2017 nuclear test. 2017 AGU Fall Meeting, New Orleans, LA, USA. ID: S43H-2968.
14. **Tian, D.**, & Wen, L. (2017). Three types of Earth's inner core boundary. 2017 AGU Fall Meeting, New Orleans, LA, USA. ID: DI33B-0404.
13. Yao, J., **Tian, D.**, & Wen, L. (2017). High-precision location, yield and tectonic release of North Korea's 3 September 2017 nuclear test. 2017 AGU Fall Meeting, New Orleans, LA, USA. ID: S43H-2967.
12. 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? 2017 AGU Fall Meeting, New Orleans, LA, USA. ID: DI33B-0405.
11. **Tian, D.**, & Wen, L. (2017). Seismological evidence for a localized mushy zone at the Earth's inner core boundary. Gordon Research Conference: Interior of the Earth, South Hadley, MA, 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? Gordon Research Conference: Interior of the Earth, South Hadley, MA, USA.
9. **Tian, D.**, & Wen, L. (2016). Seismic structures of the Earth's inner core boundary beneath the Bearing sea and Mexico. 2016 AGU Fall Meeting, San Francisco, CA, USA. ID: DI43A-2657.
8. **Tian, D.**, & Wen, L. (2015). Varying seismic property of the Earth's inner core boundary. 2015 AGU Fall Meeting, San Francisco, CA, USA. ID: DI33A-2606.
7. **Tian, D.**, & Wen, L. (2014). Seismic study on the properties of the Earth's inner core boundary. 2014 AGU Fall Meeting, San Francisco, CA, USA. ID: DI31B-4269.
6. **Tian, D.**, & Wen, L.(2014). Topography and properties of the Earth's inner core boundary. 2014 Annual Meeting of Chinese Geophysical Society, Beijing, China.
5. Chen, X., **Tian, D.**, & Wen, L. (2013). Seismic tracking of Hurricane Sandy. 2013 AGU Fall Meeting, San Francisco, CA, USA. ID: S11A-2296.
4. **Tian, D.**, & Wen, L. (2013). Regional topography variation of Earth's inner core boundary. 2013 AGU Fall Meeting, San Francisco, CA, USA. ID: DI23A-2282.
3. Zhang, M., **Tian, D.**, & Wen, L. (2013). A new method for earthquake determination: stacking multiple-station autocorrelograms. 2013 AGU Fall Meeting, San Francisco, CA, USA. ID: S51A-2301.

2. **Tian, D.**, & Wen, L. (2013). Simulating wave propagation in a faulted medium using a finite difference method. 2013 Annual Meeting of Chinese Geophysical Society, Kunming, Yunnan, China.
1. **Tian, D.**, & Wen, L. (2012). Simulating wave propagation in a faulted medium using a 3D finite difference method. 2012 AGU Fall Meeting, San Francisco, CA, USA. ID: S43A-2458.

学术报告

2021/01/07 南京大学

2020/11/27 南方科技大学

2019/02/23 Michigan State University

2018/06/15 中国科学院地质与地球物理研究所

2018/06/14 中国地震局地震预测所

2016/09/21 湖北省地震局

2016/06/30 中国地震台网中心

教学经验

本科生课程

- 连续介质力学（2025）
- 地球科学绘图基础（2025）

研讨会

- UNAVCO 短期课程 “The Generic Mapping Tools for Geodesy”，指导讲师（2019–2022）
- AGU 秋季会议研讨会 SCIWS4: “Become a Generic Mapping Tools Contributor Even If You Can’t Code”，指导讲师（2019）
- InSAR 理论与实践暑期课程 “GMTSAR and Beyond”，指导讲师（2024）

指导学生

博士研究生

- 刘璇，中国地质大学（武汉），2022/09–（硕博连读）
- 周新宇，中国地质大学（武汉），2025/09–

硕士研究生

- 赵浩亮，中国地质大学（武汉），2023/09–
- 刘小余，中国地质大学（武汉），2023/09–
- 晏俊，中国地质大学（武汉），2024/09–

本科生

- 周新宇，中国地质大学（武汉），2024/09–2025/06 （校级优秀毕业论文）
- 买鸿轩，中国地质大学（武汉），2023/11–2024/06
- 宋杨奇，中国地质大学（武汉），2022/02–2022/06

野外经历

- **LEEP** (**L**ake **E**rie **E**arthquake ex**P**eriment), 2018/10/12–2018/10/16，在 Erie 湖周边安装 8 个宽频带地震仪

开源软件

2014 至今 **HinetPy** | https://github.com/seisman/HinetPy/
用于从 Hi-net 网站申请和处理地震波形数据的 Python 包
唯一开发者

2018 至今 **PyGMT** | https://www.pygmt.org/
地学制图工具 GMT 的 Python 接口
核心开发者

2018 至今 **GMT** | https://www.generic-mapping-tools.org/
地学制图工具 Generic Mapping Tools.
核心开发者