

# 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  
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## 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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](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. 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](https://doi.org/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](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)

## 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 Geoscience 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 (Lake Erie Earthquake exPeriment), 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