

# Dongdong Tian

## Ph.D. Candidate in Geophysics

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## Education

- 2018 (expected)    **Ph.D. Candidate** in Geophysics  
University of Science and Technology of China, Hefei, China
- 2012                **B.S.** in Geophysics  
University of Science and Technology of China, Hefei, China  
Thesis: *Simulating seismic wave propagation in 3D heterogeneous isotropic media using staggered-grid finite differences* (supervised by Prof. Lianxing Wen)

## Research Interests

- Structure of the Earth's Deep Interior
- Mechanisms of Small Seismic Events (Microseisms, Nuclear Explosions, Collapses)
- Numerical Simulation of Wave Propagation in Complex Media
- Full Waveform Inversion
- Seismic Interferometry

## Professional Societies & Activities

- 2012 – present    Member of the American Geophysical Union (AGU)
- 2016 – present    Research assistant and database manager for [China Seismological Reference Model](#)
- 2016 – present    Founder and primary contributor of [GMT China Community](#)
- 2017 – present    Peer-reviewer of scientific journals: *Geophysical Research Letters* (1)

## Awards & Honors

- 2017    Outstanding Student Paper Award, 2017 Annual Meeting of Chinese Geoscience Union, China
- 2017    **National Scholarship for Doctoral Students**, Ministry of Education, China  
(Awarded to top 5% of all doctoral students in China)
- 2014    Guanghua Scholarship for Graduate Students, Guanghua Education Fund, China

## Peer-reviewed Publications

6. Yao, J., **Tian, D.**, Sun, L., & Wen, L. Temporal change of seismic Earth's inner core phases: inner core differential rotation or temporal change of inner core surface? *under review*.
5. **Tian, D.**, Yao, J., & Wen, L. Collapse and earthquake swarm after North Korea's 3 September 2017 nuclear test. *under review*.
4. Wen, L., **Tian, D.**, & Yao, J. Seismic structure and dynamic process of the Earth's inner core and its boundary. *Chinese Journal of Geophysics*. *accepted*. [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)

## Papers in Preparation

4. **Tian, D.**, & Wen, L. Three types of Earth's inner core boundary.
3. **Tian, D.**, & Wen, L. Improved relative moment tensor inversion method and applications to clusters of small earthquakes.
2. Yao, J., **Tian, D.**, & Wen, L. High-precision location, yield and tectonic release of North Korea's 3 September 2017 nuclear test.
1. **Tian, D.**, & Wen, L. Simulating wave propagation in a faulted medium using a 3D finite difference method.

## Meeting Abstracts

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

3. **Tian, D.** Seismological evidence for a localized mushy zone at the Earth's inner core boundary. *2017 Annual Meeting of Chinese Geoscience Union (CGU)*, Beijing, China. Oct. 17, 2017. **[invited]**
2. **Tian, D.** Getting started with GMT in 60 minutes. *Workshop on Analysis and Applications of Crustal Deformation Data*, Wuhan, China. Sep. 21, 2016. **[invited]**
1. **Tian, D.** Seismic study on the properties of the Earth's inner core boundary. *China Earthquake Networks Center*, Beijing, China. Jun. 30, 2016. **[invited]**

## 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/>

## **Expertise & Skills**

<b>Languages</b>	Mandarin Chinese, English.
<b>Programming</b>	C, Fortran, Perl, Shell, Python, MPI, LaTeX.
<b>Seismological Tools</b>	SAC, GMT, SOD, ObsPy, TauP.
<b>Synthetics</b>	Reflectivity Method, Finite Difference Method, Generalized Ray Theory, GRT-FD Hybrid method.
<b>Others</b>	gCAP (moment tensor inversion), Match&Locate (Small event detection and location), hk (receiver function).