March 20, 2024 **CURRICULUM VITAE**

Mengjie Zheng

Postdoctoral Researcher
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EDUCATION

Ph.D., Solid-Earth Geophysics 09/2018–06/2023
Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing, CN
Advisor: Tao Xu, Zhiming Bai
Advisory Committee: Yinshuang Ai (Chair), Qingtian Lü, Dinghui Yang, Qiusheng Li, Qifu Chen, Ling Chen, Yingjie Yang, Yonghua Li, Xiaobo Tian, Laicheng Miao
Dissertation: Utilizing Short-Period Dense Seismic Nodal Array to Investigate the Crustal Architecture of Metallogenic Zones in South China

B.S., Solid-Earth Geophysics 09/2014–06/2018
China University of Mining and Technology (Beijing), Beijing, CN
Advisor: Yongxu Lu
Thesis: Surface Wave Dispersion Inversion Using the Ant Colony Optimization Algorithm

PROFESSIONAL APPOINTMENTS

Postdoctoral Researcher, University of Colorado Boulder, CO, US 06/2023–Present
Mentor: Anne F. Sheehan

Visiting Scholar, Stony Brook University, NY, US 05/2022–05/2023
Supervisor: Weisen Shen

RESEARCH EXPERIENCES

Postdoctoral Researcher, University of Colorado Boulder 06/2023–Present
Project-1: Joint Bayesian Monte Carlo inversion of OBS-enabled seafloor compliance and Ps converted wave delays, focused on resolving sub-seafloor seismic structures across the Alaska-Aleutian subduction zone at the Alaska Peninsula region. The result was presented at the AGU 2023, currently being developed into a full manuscript intended for submission to JGR: SE.

Visiting Scholar, Stony Brook University 05/2022–05/2023
Project-1: 3-D crust and uppermost mantle model of Italy through joint inversion of Rayleigh wave ellipticity, phase velocities, and receiver functions. This work was shared at GAGE/SAGE 2023 Community Science Workshop, with manuscript preparation now underway.
Project-2: Machine learning in seismology for lithospheric structural regionalization and geothermal heat flux estimation, aimed at mapping the tectonic domains and associated boundaries and estimating geothermal heat flux in the contiguous United States and central and West Antarctica. This work was presented at the AGU 2022.
Project-3: 3-D crustal SiO_2 model in Southeast China via the integrated seismology and petrology analysis of Vp/Vs and S-wave velocity model, with the goal of enhancing constrains on the crustal composition structure and investigate its implications for regional metallogeny. This project is a critical component of my doctoral thesis, and the manuscript will be submitted soon.

Research Assistant, Institute of Geology and Geophysics (CAS) 09/2018–06/2023

Project-1: Investigation of the crustal structures of metallogenic zones in South China using dense seismic nodal array

- Developed Python scripts to conduct spatial clustering analysis, to leverage array-based coherence of nodal seismic observation for surface-wave dispersion quality control.
- Applied double beamforming technique to nodal seismic data for ambient noise imaging.
- Employed classical ambient noise imaging and direct inversion method, to produce detailed seismic images of shallow crustal structure across two respective metallogenic zones in South China that advance understanding of regional metallogeny and tectonic-magmatic evolution.

RESEARCH PROPOSALS

1. NSF, OCE-2420667, Sub-seafloor Seismic Structure and Temporal Variations in the Cascadia Subduction Zone, in pending (**Co-PI**, 2 Years)
2. CRESCENT (Cascadia Region Earthquake Science Center) Seed Grant Program, OBS-Enabled Estimates of Seafloor Sediment S-Velocity for CRESCENT CVM, in pending (**Co-PI,** 1 Year)
3. CIRES Innovative Research Proposal (Internal), How Do Gas Hydrates Breathe? Insights from Ocean-Bottom Seismometer Observations, in pending (**Co-PI,** 18 months)

MANUSCRIPTS IN PREPARATION

1. Zheng Mengjie, Sheehan Anne, Liu Chuanming, Wu Mengyu & Ritzwoller Michael, (2024). Characterizing Sub-seafloor Seismic Structure of the Alaska-Aleutian Subduction Zone Through OBS Observables, *Journal of Geophysical Research: Solid Earth*. (**in prep.**)
2. **Zheng Mengjie**, Shen Weisen, Sui Siyuan & Xu Tao (2024). Crustal Composition Variation in Southeast China and its Implications for Regional Metallogeny (**in prep.**)
3. **Zheng Mengjie**, Shen Weisen, Sui Siyuan & Xu Tao. A three-dimensional crust and uppermost mantle model for Italy and nearby regions (**in prep.**)

PEER-REVIEWED PUBLICATIONS (Access via Google Scholar)

1. **Zheng, M.**, Xu, T., Lü, Q., Lin, J., Huang, M., Bai, Z., Deng, Y., Zhang, Y., Badal, J. (2023). Upper crustal structure beneath the Qin-Hang and Wuyishan metallogenic belts in Southeast China as revealed by a joint active and passive seismic experiment. *Geophysical Journal International*, *232*(1), 190–200. https://doi.org/10.1093/gji/ggac337
2. Hou, J., Xu, T., Lü, Q., **Zheng, M.**, & Bai, Z. (2022). The fine upper crustal structure below the Qin-Hang and Wuyishan metallogenic belts revealed by double beamforming ambient noise tomography, *Chinese Journal of Geophysics*, 65(10), 3881-3899. (in Chinese)
3. **Zheng, M.**, Bai, Z., Xu, T., & Badal, J. (2021). Upper crustal velocity structure of the Ailaoshan-Red River shear zone and its implication for Cenozoic tectonic-magmatic activity: Evidence from ambient noise tomography using short-period dense seismic array. *Physics of the Earth and Planetary Interiors*, *311*, 106643. https://doi.org/10.1016/j.pepi.2021.106643
4. Zhang, M., Wu, Z., Ma, L., Zheng, F., Xie, T., **Zheng, M.**, Hou, J., Liu, Y., Zhang, Y., Xu, T., & Bai, Z. (2022). Research progress of passive source detection technology based on short-period dense seismic array, *Progress in Geophysics*, 35(2): 495-511. (in Chinese)
5. Zhang, L., Bai, Z., Xu, T., Wu, Z., Huang, M., Yu, G., Chen J. & **Zheng, M.** (2020). Cenozoic magmatic activity and oblique uplifting of the Ailao Mountain: Evidence from a short-period dense seismic array. *Science China Earth Sciences*, *63*(9), 1294–1308. https://doi.org/10.1007/s11430-019-9616-y

CONFERENCE PRESENTATIONS

1. Investigating Marine Sediments of the Alaska-Aleutian Subduction Zone Through OBS-Enabled Seafloor Compliance Measurements, AGU Fall Meeting 2023, San Francisco, CA (**Poster Presentation**)
2. A 3-D crust and uppermost mantle model for Italy and nearby regions, GAGE/SAGE 2023 Community Science Workshop, Pasadena, CA (**Poster Presentation)**
3. Mapping the tectonic boundaries using statistical data analysis and its preliminary application to the US and Antarctica, AGU Fall Meeting 2022, Chicago, IL (**Online Talk**)
4. Upper crustal architecture beneath Qin-Hang and Wuyishan metallogenic belts revealed by Wanzai-Yongchun active and passive source joint observation, CGU Meeting 2021
5. Cenozoic tectonic and magmatic activity in Ailaoshan-Red River shear zone: A perspective from seismic ambient noise tomography using the short-period dense seismic array, CGU Meeting 2020, Chongqing, CN (**Talk**)

AWARDS & HONORS

- Recipient of the China National Scholarship Award for Ph.D. Student, Nov 2022
- Scholarship of the International Cooperative Training Program of the University of Chinese Academy of Sciences, May 2022–May 2023
- Merit Student of the University of Chinese Academy of Sciences, 2019-2020

PROFESSIONAL SKILLS

Software Developed: Python package of joint Bayesian Monte Carlo inversion of seafloor compliance and other OBS-enabled observables (https://github.com/LevCarlo/comply_inv)
Programming Languages: Python, MATLAB, Unix Shell, Julia
Software Mastered: Generic Mapping Tools (GMT), Perple_X, Seismic Analysis Code (SAC)

FIELD EXPERIENCES

Slumgullion Landslide, Lake City, CO, US 09/11–09/15, 2023
Field Assistant, Field Deployment of Nodal Seismometers (UC Berkeley)

- Install SmartSolo nodal sensor.
- Conduct active-source experiment with hammer.

Tieling city, Jilin Province, CN 11/2019
Field Assistant, NCISP-10 Broadband Seismic Experiment

- Inspect the operational status of seismic stations.
- Maintain the deployment of seismic stations.
- Conduct quality assurance of seismic waveform records.

OTHERS

Selected Coursera (Access via LinkedIn**)**

- Applied Data Science with Python, University of Michigan, May 2020, ID: 6742A82C2BTY.
- Applied Social Network Analysis in Python, University of Michigan, May 2020, ID: TB5ECRRACSUL.
- Machine Learning, Stanford University, August 2020, ID: Q77F4XMX4VLW
- Neural Networks and Deep Learning, DeepLearning.AI, July 2020, ID: 9RT9RJ8KMYX9