Zelong Guo

GFZ German Research Centre for Geosciences, Potsdam, Germany

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Academic web: https://zelongguo.github.io/ Zelong Guo

Basic Information

- Date of Birth: 28.09.1993
- Place of Birth: Jinan City, Shandong Province, China

More information and news could be found at my Personal webpage and Github page.

Research Interest

- Earthquake cycle deformation modeling (For the PhD, I mainly focus on postseismic modeling with InSAR)
- Geodetic techniques (InSAR and GNSS)

Work Experiences

- **GFZ GFZ German Research Centre for Geosciences** — *Potsdam, DE*
  Scientific Assistant — *2025.04 – 2025.07*

Education

GFZ German Research Centre for Geosciences — *Potsdam, DE*
PhD in Geodesy/Geophysics (also at **Leibniz University Hannover, IPI**) — *2020.10 – 2025.04*

- Doctorate awarded with great distinction (sehr gut / magna cum laude)
- **Institute:** Section 1.4 Remote Sensing and Geoinformatics
- **Advisor:** Prof. Mahdi Motagh
- **Coursework:** Remote Sensing, Positioning and Navigation, Image Analysis, GIS

Wuhan University — *Wuhan, CN*
Master in Geophysics — *2017.09 – 2020.07*

- **Institute:** School of Geodesy and Geomatics
- **Advisor:** Prof. Yangmao Wen
- **Coursework:** Geophysical Inversion Theory, Geophysics and Geodesy, Advanced Seismology

Shandong University of Science and Technology — *Qingdao, CN*
Bachelor in Geodesy — *2012.09 – 2016.07*

- **Institute:** School of Geomatics
- **Coursework:** Geodesy, Adjustment, GPS, Remote Sensing

Code Packages

- **InSAR and Earthquake Modeling**
  - **S1_TS_proc**
    Some *Shell* scripts based on GAMMA software for automatic batch processing InSAR data, now only Sentinel-1 data supported.
  - **Dislocs**
    A *Python C Extension* for calculating deformation, stress and strain with rectangular and triangular dislocation elements (RDEs and TDEs) in elastic half space. Now it is available in PyPI! More details please check out at my Github dislocs repository.
  - **Seislip**
    Python codes for co- and post-seismic modeling [under developing ...]

- **InSAR Web Visualization**
  - **Earthquakes Deformation Map (EQsMap)**
    Earthquakes deformation map which is deployed at my personal website, please check it out at EQsMap webpage.
- Other **productivity tools**
  - For example, note-taking system based on **Nvim** etc please find them at my Github page.

Publications

Publications as First or Corresponding Authors:

1. ***Guo, Z.***, M. Base, and M. Motagh (2024). Ramp-Flat and Splay Faulting Illuminated by Frictional Afterslip Following the 2017 Mw 7.3 Sarpol-e Zahab Earthquake, *Seismological Research Letter*, 1-14, doi:10.1785/0220230425
2. ***Guo, Z.***, Motagh, M., Hu, J.-C., Xu, G., Haghighi, M. H., Bahroudi, A., et al. (2022). Depth-varying Friction on a Ramp-flat Fault Illuminated by ∼3-year InSAR Observations Following the 2017 Mw 7.3 Sarpol-e Zahab earthquake. ***Journal of Geophysical Research: Solid Earth***, 127, doi: 10.1029/2022JB025148
3. ***Guo, Z.***, Wen, Y., Xu, G., Wang, S., Wang, X., Liu, Y., and Xu, C. (2019). Fault Slip Model of the 2018 Mw 6.6 Hokkaido Eastern Iburi, Japan, Earthquake Estimated from Satellite Radar and GPS Measurements. *Remote Sensing*, 11(14), doi:10.3390/rs11141667.
4. Wen, Y., ***Guo, Z.***, Xu, C., Xu, G., and Song, C. (2019). Coseismic and Postseismic Deformation Associated with the 2018 Mw 7.9 Kodiak, Alaska, Earthquake from Low-Rate and High-Rate GPS Observations. *Bulletin of the Seismological Society of America*, 109(3), 908–918, doi:10.1785/0120180246.

Publications as Co-Authors:

1. Peng, M., Motagh, M., Lu, Z., Xia, Z., ***Guo, Z.***, Zhao, C. and Liu, Q. (2023). Characterization and prediction of InSAR-derived ground motion with ICA-assisted LSTM model. *Remote Sensing of Environment*, 301,113923, doi:10.1016/j.rse.2023.113923
2. Xu, G., Wen, Y., Yi, Y., ***Guo, Z.***, Wang. L., and Xu, C. (2023). Geodetic constraints of the 2015 Mw6.5 Alor, East Indonesia earthquake: a strike-slip faulting in the convergent boundary. *Geophysical Journal International*, 235(1), doi:10.1093/gji/ggad211
3. Zhang, Y., Xu, C., Fang, J. and ***Guo, Z.*** (2021). Focal mechanism inversion of the 2018 Mw7.1 Anchorage earthquake based on high-rate GPS observation. *Geodesy and Geodynamics*, 12(6), 381-391, doi:10.1016/j.geog.2021.09.004

Conferences and Presentations

1. ***Guo, Z.***, Motagh, M., Baes, M. Structural Complexity Revealed by Frictional Afterslip Models and InSAR Observations Following the 2017 Mw 7.3 Sarpol-e Zahab (Iran-Iraq) Earthquake: Insights from Numerical Modeling, *EGU General Assembly 2024*, Vienna, Austria, 2024
2. ***Guo, Z.***, Motagh, M. Fault Geometry and Frictional Afterslip Following the 2017 Mw 7.3 Sarpol-e Zahab (Iran-Iraq) Earthquake: Insights form InSAR and Finite Element Models, *20th Wegener Assembly 2023*, Sousse, Tunisia, 2023
3. ***Guo, Z.***, Motagh, M. Frictional Afterslip Modeling of the 2017 Mw 7.3 Sarpol-e Zahab Earthquake Using InSAR Observations and 2-D Finite Element Method, *Fringe 2023*, Leeds University, Leeds, UK, 2023.
4. ***Guo, Z.***, Motagh, M., Hu, J.-C., Xu, G., Haghighi., M. H., Bahroudi, A. and Fathian, A. (2022). Transient aseismicslip and cRustal Shortening Following 2017 Iran-Iraq (Sarpol-e Zahab) Mw 7.3 Earthquake Inferred from 3 years of InSAR Observations, *EGU General Assembly 2022*, Vienna, Austria, 2022.
5. ***Guo, Z.***, Wen, Y.; Xu, C. and Xu, G. Modeling of Coseismic and Early Postseismic Deformation Associated with the 2018 Mw 7.9 Kodiak, Alaska Earthquake from Static and High-rate GPS Observations (in Chinese), *3rd Congress of China Geodesy and Geophysics*, China, 2018
6. ***Guo, Z.***, Wen, Y.; Xu, G.; Wang S.; and Xu, G.; Wang, X.; Liu, Y.; Xu, C. Slip Distribution of the 2018 Mw 6.6 Hokkaido Eastern Iburi, Japan, Earthquake from InSAR and GPS data (in Chinese), *6th Annual Meeting of Chinese Geoscience Union (CGU)*, China, 2019

Awards and Honors

Honors:

- Best Oral Presentation (English), 20th Wegener Assembly, Tunisia *2023.10*
- Outstanding Graduate, School of Geodesy and Geomatics, Wuhan University *2020.06*
- Outstanding Postgraduate, Wuhan University *2019.12*
- Outstanding Student Paper, 6th China Geoscience Union Annual Meeting (CGU) *2019.12*
- Lequn Academic Star, School of Geodesy and Geomatics, Wuhan University *2019.10*
- Outstanding Student Judge, Shandong University of Science and Technology *2015.06*
- Top Talent in Science and Technology Innovation, Shandong University of Science and Technology *2015.04*
- Outstanding Student Leader, Shandong University of Science and Technology *2013.11*

Awards:

- CSC Scholarship for Doctoral Studies *2020 - 2024*
- National Scholarship (20,000 RMB), Wuhan University *2019.10*
- First-Class Academic Scholarship, School of Geodesy and Geomatics, Wuhan University *2019.10*
- First-Class Academic Scholarship, School of Geodesy and Geomatics, Wuhan University *2018.09*
- Academic Scholarship, School of Geodesy and Geomatics, Wuhan University *2017.09*
- Third Prize, "Challenge Cup" Extracurricular Academic & Technology Competition, Shandong University of Science and Technology *2015.06*
- Jianyuan Scholarship, Shandong University of Science and Technology *2014.12*
- Second Prize, Shandong Province Surveying Skills Competition, Shandong Surveying & Mapping Association *2014.10*
- Second Place in Leveling, Shandong Province Surveying Skills Competition, Shandong Surveying & Mapping Association *2014.05*
- University Scholarship, Shandong University of Science and Technology *2012 - 2016*

Skills and Certifications

- Level-3 Construction Surveyor, Professional Skills Appraisal Center, National Administration of Surveying, Mapping and Geoinformation *2014.10*