# Junyi Gong

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## Education

- **Wuhan University, M.S. Candidate in Solid Earth Physics** (GPA: 3.73/4.00) *2021 - Present*
  Thesis (in preparation): Crustal thickness and *Vp/Vs* ratio in the central-southern Tibetan Plateau based on a modified *H*-$\kappa$-*c* method.
  Advisor: Prof. Jiangtao Li and Assoc. Prof. Mengkui Li
- **Wuhan University, B.S. in Geophysics** (GPA: 3.93/4.00) *2017 - 2021*
  Thesis: Modeling the impact of freshwater discharge on barotropic dissipation in the offshore area of the Mekong estuary with the Princeton Ocean Model.
  Advisor: Assoc. Prof. Hok Sum Fok

## Research Interests

- **Receiver Function Techniques**
  (1) Efficient calculation and imaging for dense-array receiver functions
  (2) Resolving receiver function in 2D or 3D medium (e.g., RF kernel, RF adjoint tomography)
- **Lithospheric Tectonics with Seismic Imaging**
  (1) Seismic imaging of various tectonic structures (e.g., faults, intracrustal melting, subducting slabs).
  (2) Integrating seismic observations with other data to gain insights into tectonic processes.
- **Other:** Anything seismic that helps to understand Earth's structures ☺. E.g.,
  - ❖ Methods to handle seismic data, such as seismic interferometry for coda wave or ambient noise
  - ❖ Forward modeling, parameterization, inversion techniques that help resolve complex structures
  - ❖ New application of seismic data, such as oceanic / planetary / environmental seismology

## Research Experience

- **Antarctica Subsurface Structure near Kunlun Station** *2023 - present*
  This program is based on the seismic records obtained during China's 39th Antarctic expedition. My responsibilities include:
  (1) Conducting initial quality control of raw seismic records and extracting receiver functions.
  (2) Analysing receiver functions to decipher the subsurface structure (ongoing).
- ***H*-$\kappa$-*c* Analysis in the Central-southern Tibetan Plateau** *2021 - present*
  This study aims to investigate block differences and possible crustal partial melting regions in the central-southern Tibetan Plateau. My contributions include:
  (1) Implementing stability analysis by adjusting the Input/Output structures of raw *H*-$\kappa$-*c* codes.
  (2) Designing and developing a Matlab App to compare and archive the stability analysis results.
  (3) Analysing ~400 stations and discovering two isolated high-$\kappa$ patches in the southern Tibet.
- **Ocean Tide Simulation near Mekong Estuary** *2019 - 2021*
  This study tries to delineate the influence of Mekong River freshwater discharge on the ocean tides through simulation. My contributions included:
  (1) Incorporating tidal analysis codes with Princeton Ocean Model.
  (2) Applying real-time river discharge and compatible tidal elevation open boundary conditions.
  (3) Assessing the influence of discharge from simulated barotropic dissipation and harmonic constants.
- **Inverting Geomagnetic Field Model from Swarm Satellite Data** *2018 - 2019*
  This is a *National Undergraduate Innovation and Entrepreneurship Training Program*. I worked on:
  (1) Developing a Fortran code to set up the inverse problem based on team members' MATLAB code.
  (2) Utilizing the Math Kernel Library to solve the inverse problem.

## Publications

1. **Junyi Gong**, Jiangtao Li and Mengkui Li (2023). Isolated crustal partial melting in the southern Tibetan Plateau from *H-κ-c* method. *Geophysical Research Letters*. doi:10.1029/2023GL106363
2. Hongrui Peng, Hok Sum Fok, **Junyi Gong** and Lei Wang (2020). Improving stage-discharge relation in the Mekong river estuary by remotely sensed long-period ocean tides. *Remote Sensing*.

## Presentations

1. **Junyi Gong**, Jiangtao Li, Yudi Pan, Yu Zhang, Mengkui Li and Yuande Yang (2023/10, Oral). Characteristics of receiver functions from the short-term dense array at Kunlun station in Antarctica. *Annual Meeting of Chinese Geoscience Union (CGU), Zhuhai, China.*
2. **Junyi Gong**, Jiangtao Li and Mengkui Li (2023/4, Oral). Crustal thickness and *Vp/Vs* ratio in the central-southern Tibet Plateau from *H-κ-c* method. *Congress of China Geodesy and Geophysics (CCGG), Wuhan, China.*
3. **Junyi Gong**, Jiangtao Li and Mengkui Li (2022/12, Online Oral Poster). Crustal thickness and *Vp/Vs* ratio in the central-southern Tibet Plateau from *H-κ-c* method. *Annual Meeting of Chinese Geoscience Union (CGU).*
4. **Junyi Gong**, Jiangtao Li and Mengkui Li (2022/11, Online Oral). Distribution of crustal thickness and *Vp/Vs* ratio in the central-southern Tibet Plateau and its implications. *Workshop on Tectonics and Geophysics in the east part of Tibetan Plateau (WTGTP).* (Presented by Prof. Jiangtao Li)

## Honors and Awards

- **Outstanding Student Scholarship** *2018/2019/2020/2022*
  *Sponsored by Wuhan University*
- **Wuhan University Graduate Outstanding Freshman Scholarship** *2021*
  *Sponsored by Wuhan University*
- **Wangzhizhuo Scholarship** *2020*
  *Sponsored by School of Remote Sensing and Information Engineering, Wuhan University*
- **National Scholarship** *2018*
  *Sponsored by Ministry of Education of the People's Republic of China*

## Technical Skills

- **Languages:** Chinese (Native), English (TOEFL: 103)
- **Programing Languages:** MATLAB, Python, C, Fortran, Linux Shells
- **Technical Softwares:** SAC, GMT
- **Document/Presentation:** Microsoft Office (Word/PowerPoint/Visio), Overleaf