Jiao Yang

M.sc. Student in Geophysics

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EDUCATION

Sep. 2018–Jun. 2022, *B.Sc.* in Geology, China University of Geosciences (CUG) 4.06/5.0

Sep. 2022–present, *M.Sc.* student in Geophysics, University of Science and Technology of China (USTC) 3.91/4.3

PUBLICATIONS

Jiao Yang, Han Zhang*, Sidao Ni, Zefeng Li and Xuewei Bao (2024) Lithosphere tectonic regionalization with VAE in China and surroundings, *Seis. Res. Lett.* (under review)

CONFERENCE PRESENTATIONS

Jiao Yang, Yunyi Qian and Hao Lv. (2022) A Study on Rupture Styles of Small-medium Earthquakes in Ridgecrest, California based on Source Spectrum, Annual Meeting of Chinese Geoscience Union, Online

Jiao Yang, Sidao Ni, Han Zhang, and Zefeng Li. (2023) Classification of lithospheric structures in East Asia using Rayleigh wave dispersion curves based on a machine learning method, Annual Meeting of Chinese Geoscience Union, Zhuhai, China

ACADEMIC RESEARCH

Classification of China and surrounding regions' lithospheric structure Sep. 2022 – Sep. 2024
with an unsupervised method

Advisor: **Prof. Sidao Ni** (China Academy of Sciences), **Dr. Han Zhang** (China Academy of Sciences)

- Utilized Variational AutoEncoder (VAE) to extract latent features of Rayleigh wave phase velocity dispersion curves in the study area and tested the appropriate number of latent features;
- Used the dispersion curves' variation with the features to classify the lithosphere into four types and analyzed the potential physical meanings of different lithosphere types;
- Calculated the cross-correlation coefficients between the extracted latent features and physical parameters, and analyzed the probable physical meanings of the latent features.

Analysis of earthquakes' rupture styles in Ridgecrest with source spectra Jan. 2022 - Jun. 2022
derived from EGF method

Advisor: **Prof. Sidao Ni** (China Academy of Sciences), **Prof. Yunyi Qian** (Chong Qing University)

- Calculated amplitude spectra of small earthquakes (M<4) through division of target earthquake and empirical Green's function waveforms in the frequency domain;
- Analyzed the amplitude spectra change around the corner frequency and divided the source spectra into two groups (runaway & self-arresting rupture) according to the characteristics of amplitude spectra;
- Analyzed the spatial distribution of two types of ruptures and speculated its probable correlation with regional stress state.

gCAP modification for earthquake source parameter inversion: add the complexity   Dec. 2022 - Feb. 2023
of the source time function (stf) option (class project)

Advisor: **Prof. Sidao Ni** (China Academy of Sciences)

- Modified the Fortran and shell scripts of gCAP to add pulse number in the stf option;
- Downloaded the waveforms of Luding earthquake in 2022 with epicentral distances ranging from 30-90° and applied the modified gCAP to the Luding event;
- Tested the effect on stf pulse numbers and compared the inversion results using different source time function pulses with "true" source time functions according to other research.

AWARDS

2019	National scholarship, CUG
2019	Outstanding intern of coastal topography identification, CUG
2020	Outstanding intern of geological survey, CUG
2022	Graduate student scholarship, First prize, USTC
2023	Graduate student scholarship, First prize, USTC

LANGUAGES & SKILLS

Skills: C, Python, Matlab, Shell scripting, Scikt-learn, PyTorch and Office

Languages: English (TOEFL iBT Total: 105, Reading: 28, Listening: 26, Speaking: 23, Writing: 28), Mandarin (native)