Ranpeng Li

rli@geomar.de ● https://ranpengli.github.io/ ● Kiel, Germany

EDUCATION

05/2024 - present — **Ph.D.,** Geodynamics, CAU/GEOMAR, Kiel, Germany
Dissertation: Modeling the Effects of Phase Transitions on Mantle Convection and Their Role in Planetary Evolution
Project description: Computational geodynamic modeling with the community software ASPECT. Model analysis and interpretation, implementation, testing and validation of new modeling approaches, method development.
Advisor: Dr. Juliane Dannberg

08/2021 - 05/2024 — **M.Sc.**, Geology, University of Florida
Thesis: Exploring Mantle Convection Styles through Earth's History: The Role of Phase Transitions
Advisor: Dr. Juliane Dannberg
GPA: 4.0/4.0

09/2017 - 12/2020 — **B.Sc.**, ***with honors***, Earth Science, University of California, Santa Barbara
Honors thesis: Regularization for body wave tomography of Alaska
Advisor: Dr. Zach Eilon
GPA: 3.7/4.0

PUBLICATIONS

2026 — **Li, R.**, Dannberg, J., Gassmöller, R., & Myhill, R. (under review). *Modeling thermodynamically consistent phase transitions in multi-component assemblages: An entropy method for geodynamic models.* https://egusphere.copernicus.org/preprints/2026/egusphere-2026-1972/

2025 — **Li, R.**, Dannberg, J., Gassmöller, R., Lithgow-Bertelloni, C., & Stixrude, L. (2025). *How Phase Transitions Impact Changes in Mantle Convection Style Throughout Earth's History: From Stalled Plumes to Surface Dynamics.* Geochemistry, Geophysics, Geosystems, 26(2), e2024GC011600. https://doi.org/10.1029/2024GC011600

2022 — Dannberg, J., Gassmöller, R., **Li, R.**, Lithgow-Bertelloni, C., & Stixrude, L. (2022). *An entropy method for geodynamic modeling of phase transitions: Capturing sharp and broad transitions in a multi-phase assemblage.* Geophysical Journal International, 231(3), 1833-1849. https://doi.org/10.1093/gji/ggac293

2020 — Sun, J., Rudnick, R. L., Kostrovitsky, S., Kalashnikova, T., Kitajima, K., **Li, R.**, & Shu, Q. (2020). *The origin of low-MgO eclogite xenoliths from Obnazhennaya kimberlite, Siberian craton.* Contributions to Mineralogy and Petrology, 175(3), 1-22. https://doi.org/10.1007/s00410-020-1655-6

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INVITED TALKS

12/2025
New Orleans, USA
AGU 2025: *Phase Transitions Induce Changes in Mantle Convection During Planetary Secular Cooling.*

12/2025
New Orleans, USA
AGU 2025: *Modeling Phase Transitions in a Heterogeneous Mantle Using a Multi-Component Entropy Method.*

05/2025
Potsdam, DE
GFZ Potsdam Geodynamic Modeling Section Seminar: *How Phase Transitions Impact Changes in Mantle Convection Style Throughout Earth's History: From Stalled Plumes to Surface Dynamics.*

02/2025
Online
ASPECT Annual User Meeting: *How Phase Transitions Impact Changes in Mantle Convection Style Throughout Earth's History: From Stalled Plumes to Surface Dynamics.*

OTHER TALKS

05/2025
Bristol, UK
University of Bristol Earth Sciences Seminar: *How Phase Transitions Impact Changes in Mantle Convection Style Throughout Earth's History: From Stalled Plumes to Surface Dynamics.*

06/2023
South Hadley, USA
Gordon Research Seminar & Conference: *Phase Transitions Impact Variations in Layering of Convection Throughout Earth's History: Modeling with a New Entropy Method and Visco-plastic Rheology.*

ADDITIONAL CONFERENCE ABSTRACTS

2024
Li, R., Dannberg, J., Gassmöller, R., Lithgow-Bertelloni., & Stixrude, L. (2024) *How Phase Transitions Impact Convection Style, Material Exchange, and Surface Dynamics throughout Earth's History: A Modeling Study.* AGU 2024

2024
Li, R., Dannberg, J., Gassmöller, R., Lithgow-Bertelloni., Stixrude, L., & Myhill, R. (2024) *How Phase Transitions Impact Changes in Mantle Convection Style Throughout Earth's History: From Stalled Plumes to Surface Dynamics.* EGU 2024 https://doi.org/10.5194/egusphere-egu25-6598

2024
Dannberg, J., Gassmöller, R., Myhill, R., Saxena, A., Fraters, M., & **Li, R.** (2024) *Modelling Grain Size Evolution and its Role in Mantle Dynamics: From Small-scale Convection to Passive Margin Collapse.* EGU 2024 https://doi.org/10.5194/egusphere-egu25-13052

2023
Li, R., Dannberg, J., Gassmöller, R., Lithgow-Bertelloni., & Stixrude, L. (2023) *Exploring Mantle Convection Styles through Earth's History: The Role of Phase Transitions.* AGU 2023

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2023 Van Avendonk, H.J., Bangs, N.L., Becel, A., Adams, S., Amadori, C., Chen, J.Y., Evans, S., Gurcay, S., **Li, R.**, Krysova, A. and Obi, V. (2023) *Marine seismic study to investigate the formation of the rifted margins of the Carolina Trough and Blake Plateau.* AGU 2023

2022 **Li, R.**, Dannberg, J., Gassmöller, R., Lithgow-Bertelloni., & Stixrude, L. (2022) *Phase transitions impact variations in layering of convection throughout Earth's history: Insights from a new entropy method.* AGU 2022

2021 **Li, R.**, Dannberg, J., Gassmöller, R., Lithgow-Bertelloni., & Stixrude, L. (2021) *How phase transitions change convection patterns through the Earth's history: A modeling study.* AGU 2021

PROFESSIONAL AND TEACHING EXPERIENCE

2022 Fall **Teaching Assistant - Earth Materials**
Instructor: Dr. Matt Smith (UF)
Duties: lead mineralogy lab sections, maintain microscopes, support student learning during office hours, grade lab assignments

2022 Summer **Teaching Assistant - Age of Dinosaurs**
Instructor: Dr. Ryan Wilhelmi (UF)
Duties: support student learning during office hours, grade assignments

2021 Fall **Teaching Assistant - Environmental & Engineering Geology**
Instructor: Dr. Courtney Sprain (UF)
Duties: support student learning during office hours, grade assignments

10/2019 - 03/2020 **Research Assistant – Mineralogy sample preparation**
Supervisor: Dr. Roberta Rudnick (UCSB)
Duties: Mineral separation methodology for steel mortar and pestle rock crushing, Frantz magnetic separation, and heavy liquids density separation.

HONORS, AWARD, AND SCHOLARSHIPS

2024 Horn Award, UF Geological Sciences Department
Recognized for exceptional eagerness, inspiration, contributions to the department, academic excellence, and research activity

2021, 2022 & 2023 UF Grinter Fellowship Award
$6,000 recruitment incentive awarded to exceptional incoming PhD students.

2021, 2022 & 2023 UF Graduate Student Council Travel Grant
$1,200 in total

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2021, 2022 & 2023	UF Geological Sciences Department Travel Support *$1,500 in total*
2021, 2022 & 2023	UF LUCEI Travel Grant *$900 in total*
2020	German Academic Exchange Research Internship in Science & Engineering
2019	Mineralogical Society of America's Undergraduate Prize

OUTREACH AND SERVICE

2026	Student representative, DokTeam, GEOMAR
2026	Student representative, Helmholtz Juniors
2022 - 2025	Lecturer, Scientist in Every Florida School (>40 lecture hours in total)
2022 - 2024	Treasurer, GeoGrads Student Organization
2022 - 2023	Organizer, Department Brown Bag Seminars
2022 & 2023	Volunteer, Can You Dig It at Florida Museum of Natural History

FIELD EXPERIENCE

08/2023	**Blake Plateau, Offshore Southeast USA** PI: Dr. Harm Van Avendonk (UT Austin) Four-week high energy marine seismic investigation on the Atlantic passive margin with R/V Marcus Langseth. OBS deployment and retrieval.
03/2022	**Death Valley, CA, USA** Instructor: Dr. Jim Vogl (UF) One-week field trip to study the tectonics and the metamorphic core complex in Death Valley.
05/2018 & 03/2020	**Mojave Desert, CA, USA** Instructor: Dr. Alex Wrobel (UCSB) A four-day field trip to practice the field methodology and a five-day trip to study the structural geology of Mojave Desert. Mapping and field methods.
12/2019	**Semail Ophiolite, Oman** Instructor: Drs. Matt Rioux and Susannah Porter (UCSB) Two-week field trip to study the Semail Ophiolite and related UHP rocks, Snowball earth related deposits, and Neoproterozoic sedimentary formations in Oman.