

# JINGTAO LAI

## Research Scientist

School of Geographical and Earth Sciences  
University of Glasgow

East Quadrangle, University of Glasgow  
University Avenue, Glasgow, G12 8QQ, UK  
Jingtao.Lai@glasgow.ac.uk  
laijingtao.github.io

## EDUCATION

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**PhD in Geology**, University of Illinois at Urbana-Champaign, USA 2015–2020  
Dissertation: Constraining tectonic and climatic controls on glacial/postglacial landscape evolution using numerical modeling  
Advisor: Dr. Alison Anders

**BSc in Geology**, Peking University, China 2011–2015

## APPOINTMENTS

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Research Scientist, University of Glasgow 2024-now  
Marie Skłodowska-Curie Postdoctoral Fellow/Postdoctoral Researcher, GFZ Potsdam 2021-2024  
Graduate Research/Teaching Assistant, UIUC 2015-2020

## RESEARCH INTERESTS

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- Interactions between climate, glacial processes, and Earth surface processes
- Fluvial and glacial geomorphology
- Numerical modeling of Earth surface processes

## PUBLICATIONS

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### Submitted or in preparation

- [9] **J. Lai**, K. Huppert, and J. Braun. “Sediment Dynamics Control Transient Fluvial Incision - Comparison of Sediment Conservation Schemes in Models of Bedrock-Alluvial River Channel Evolution”. Preprint in *ESS Open Archive*. Submitted to *Journal of Geophysical Research: Earth Surface*, in revision. 2023. DOI: 10.22541/essoar.169903595.56113017/v1.

### Peer reviewed

- [8] **J. Lai** and K. Huppert. “Climate-Driven Topographic Asymmetry Enhanced by Glaciers: Implications for Drainage Reorganization in Glacial Landscapes”. In: *Geophysical Research Letters* 51.13 (2024), e2024GL109087. DOI: 10.1029/2024GL109087.
- [7] **J. Lai** and K. Huppert. “Asymmetric Glaciation, Divide Migration, and Postglacial Fluvial Response Times in the Qilian Shan”. In: *Geology* 51.9 (2023), pp. 860–864. DOI: 10.1130/G51086.1.
- [6] L. Gao, C. He, G. Rao, C.-J. Yang, X. Yuan, **J. Lai**, P. Tang, and L. Wu. “Numerical Examination of the Geomorphic Indicators for Lateral Fold Growth”. In: *Geomorphology* 432 (2023), p. 108702. DOI: 10.1016/j.geomorph.2023.108702.
- [5] A. M. Anders, **J. Lai**, and S. Marshak. “Development of Foreland Intracratonic Plateaus (Ozark Plateau and Appalachian Plateaus): A Consequence of Topographic Inversion Due To Erosion of Adjacent Fold-Thrust Belts”. In: *Tectonics* 41.4 (2022). DOI: 10.1029/2021TC006957.

- [4] C. Cullen, A. M. Anders, **J. Lai**, and J. L. Druhan. “Numerical Modeling of Groundwater-driven Stream Network Evolution in Low-relief Post-glacial Landscapes”. In: *Earth Surface Processes and Landforms* October (2021), pp. 1–14. DOI: 10.1002/esp.5278.
- [3] **J. Lai** and A. M. Anders. “Climatic Controls on Mountain Glacier Basal Thermal Regimes Dictate Spatial Patterns of Glacial Erosion”. In: *Earth Surface Dynamics* 9.4 (2021), pp. 845–859. DOI: 10.5194/esurf-9-845-2021.
- [2] **J. Lai** and A. M. Anders. “Tectonic Controls on Rates and Spatial Patterns of Glacial Erosion through Geothermal Heat Flux”. In: *Earth and Planetary Science Letters* 543 (2020), p. 116348. DOI: 10.1016/j.epsl.2020.116348.
- [1] **J. Lai** and A. M. Anders. “Modeled Postglacial Landscape Evolution at the Southern Margin of the Laurentide Ice Sheet: Hydrological Connection of Uplands Controls the Pace and Style of Fluvial Network Expansion”. In: *Journal of Geophysical Research: Earth Surface* 123.5 (2018), pp. 967–984. DOI: 10.1029/2017JF004509.

## SELECTED CONFERENCE ABSTRACTS

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- [9] **J. Lai** and K. Huppert. “Climate-Driven Topographic Asymmetry Enhanced by Glaciers: Implication for Divide Stability in Glacial Landscapes”. In: *EGU General Assembly 2024*. EGU, 2024.
- [8] **J. Lai** and K. Huppert. “Relief evolution in mountain ranges controlled by glacier dynamics”. In: *AGU Fall Meeting 2023*. AGU. 2023.
- [7] **J. Lai** and K. Huppert. “Asymmetric glaciation, divide migration, and postglacial fluvial response times in the Qilian Shan”. In: *EGU General Assembly 2023*. EGU. 2023.
- [6] **J. Lai** and K. Huppert. “Cross-divide topographic contrasts created by asymmetrical glaciation: A case study from the northeastern Qilian Shan”. In: *EGU General Assembly 2022*. EGU. 2022.
- [5] **J. Lai** and K. Huppert. “What We Can Expect from Our Model—a Comparison of Sediment Conservation Schemes in Models of Bedrock-alluvial River Channel Evolution”. In: *AGU Fall Meeting 2021*. AGU. 2021.
- [4] **J. Lai** and A. M. Anders. “Climatic controls on mountain glacier basal thermal regimes dictate spatial patterns of glacial erosion”. In: *EGU General Assembly 2021*. EGU. 2021.
- [3] **J. Lai** and A. M. Anders. “Tectonic controls on rates and spatial patterns of glacial erosion through geothermal heat flux”. In: *AGU Fall Meeting 2019*. AGU. 2019.
- [2] **J. Lai**, A. Anders, and S. Marshak. “The influence of flexural unloading and rock fractures on landscape evolution at the boundary between a cratonic platform and an orogen: A case study of uplift in the southern Ozark Plateau”. In: *GSA Annual Meeting in Phoenix, Arizona, USA-2019*. GSA. 2019.
- [1] **J. Lai** and A. Anders. “Climatic controls on glacial erosion – insights from numerical glacial landscape evolution modeling”. In: *GSA Annual Meeting in Indianapolis, Indiana, USA-2018*. GSA. 2018.

## FUNDING

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**Marie Skłodowska-Curie Postdoctoral Fellowship** (as P.I.) 2022-2023  
 Funding agency: European Union’s Horizon Europe Framework Programme  
 Grant number: 101064307  
 Amount awarded: €130,385.52

Project: POSTCOLD - Understanding the influence of sediment dynamics on postglacial landscape evolution

## TEACHING

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Teaching assistantship at UIUC 2017–2020

- GEOL 107 Physical Geology: Lab instructor, Spring 2018, Spring 2019 (rank as excellency), Spring 2020 (rank as excellency), Fall 2020
- GEOL 401 Geomorphology: Fall 2017
- GEOL 143 History of Life: Fall 2018
- GEOL 118 Natural Disasters: Fall 2017, Spring 2018, Spring 2019

### Guest lectures

Glacier dynamics and glacial geomorphology (UIUC GEOL 107 Physical Geology)	Apr 2020
Glacial erosion (UIUC GEOL 401 Geomorphology)	Oct 2019
Glacier dynamics (UIUC GEOL 401 Geomorphology)	Oct 2017

## MENTORING

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Yasmine Loussaief, master student at University of Potsdam	2024-
Kexin Yi, PhD student at Peking University/University of Rennes 1	2023-
Cecilia Cullen, master student at UIUC	2016-2018

## AWARDS & HONORS

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EGU Outstanding Student and PhD candidate Presentation Award	2021
SESE Research Review Outstanding Poster Award, Geology, UIUC	2020
CSDMS Student Modeler Award, 3rd place	2019
SESE Research Review Outstanding Poster Award, Geology, UIUC	2017
Wanless Graduate Fellowship, Department of Geology, UIUC	2015
Model Student of Academic Records, Peking University	2013
Merit Student, Peking University	2012

## INVITED TALKS

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University of Rennes, France	July 2024
GFZ Potsdam, Earth Surface Geochemistry Seminar, Germany	Feb 2024
University of Potsdam, Germany	Oct 2022
Zhejiang University, China	Dec 2021
China University of Geosciences (Wuhan), China	Dec 2021
Peking University, China	Dec 2021
GFZ Potsdam, Geomorphology Seminar, Germany	May 2021
CSDMS Annual Meeting 2019, USA	May 2019

## SERVICE & OUTREACH

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### Peer Review

Reviewer for *Nature Communications*, *Geophysical Research Letters*, *Journal of Geophysical Research: Earth Surface*, *Journal of Open Source Software*, *Journal of Mountain Science*.

### Conference session convener

#### EGU General Assembly 2024

Interaction between climate, rock glaciers, and proglacial processes across scales

#### AGU Fall Meeting 2023

Fluid flow, sediment transport, and landscape evolution in fluvial systems across scales

#### EGU General Assembly 2022-2023

Advances in modelling of erosion, sediment dynamics, & landscape evolution

### Outreach

Panelist at the Long Night of Sciences GFZ Earth Surface Process Modelling public Q&A, 2022

Exhibitor at the UIUC Engineering Open House, 2019

## SKILLS

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### Computer skills

Python (main tool for numerical modeling, data analysis and visualization), C/C++

ArcGIS, QGIS, Matlab, Git, ~~W~~<sup>L</sup>~~A~~<sup>T</sup>~~E~~<sup>X</sup>

Linux-based high-performance computing environments

### Language skills

Chinese (native language), English (fluent)