

Hui Gao

PhD, degree expected June 1, 2026
Department of Earth Sciences, University at Buffalo

✉ hgao7@buffalo.edu

☎ (+1) 716-907-3645

🌐 [Hui Gao](#)

🆔 [0000-0001-5960-0906](#)

🔗 [hui-97](#)

Research Interests

I am interested in Ice sheet mass change, ice-atmosphere-ocean-topography interactions, glacier dynamics, data assimilation in ice sheet modeling, and tipping points in the climate system.

I investigate them using a combination of multi-source remote sensing data (laser altimetry, satellite imageries, etc.), climate model outputs (ocean reanalysis, climate and firn densification model outputs, etc.), statistical analysis (time series analysis, curve fitting, geospatial data analysis, etc), and numerical ice sheet modeling.

I am open to further exploring machine learning and deep learning methods, innovative and fundamental in-situ measurements, numerical model optimization, etc.

Education

PhD in Geological Sciences, University at Buffalo, Buffalo, NY 2019 - 2026

Advisor: Beata Csatho

Thesis Title: *Patterns and Pathways of Greenland Ice Sheet Mass Loss in Recent Decades*

Bachelor of Engineering (Remote Sensing), Shandong Normal University, Shandong, China 2015 - 2019

Publications

In Review

1. **Hui Gao**, Beata M Csatho, Anton F Schenk, Michael J Croteau, Surendra Adhikari, Ivan Parmuzin, Nicole-Jeanne Schlegel, Max Brils, Michiel R. van den Broeke, Denis Felikson, Bryant Loomis, Brooke Medley, Brice Noël, Sophie Nowicki, and Kristin Poinar, Nearly three decades of laser altimetry reveal strong regional contrasts and glacier-driven ice losses in Greenland, in review, *Proceedings of the National Academy of Sciences* (2026), [preprint](#)
2. Natalia H. Andersen, Sebastian B. Simonsen, Karina Nielsen, Mai Winstrup, Baptiste Vandecrux, **Hui Gao**, Beata Csatho, Anton Schenk, and Louise Sandberg Sørensen, A State-Space Model for Monitoring Greenland Ice Sheet Surface Elevation Change from CryoSat-2, in review, *The Cryosphere* (2025), [preprint](#)
3. Holly Kyeore Han, Surendra Adhikari, Lambert Caron, **Hui Gao**, Parviz Ajourlou, Shfaqat Abbas Khan, and Beata Csatho. Discrepancy in satellite altimetry products hinders robust retrieval of GIA signals from bedrock GNSS data in Greenland, in review, *Geophysical Research Letters* (2026), [preprint](#)
4. Mohammad Salmani, Beata Csatho, Jason Briner, Sophie Nowicki, Ivan Parmuzin, Heidi Eberhardt, **Hui Gao**, Ana Carolina Luzzi, and Golsa Talebigheshlaghi. Nearly half of Greenland's post-Little Ice Age area loss occurred since 2000, in review, *Communications Earth & Environment* (2026), [preprint](#)

In Preparation

1. **Hui Gao**, Beata M Csatho, and Sophie Nowicki, Rapid Mass Loss of Kangerlussuaq Glacier and its High Sensitivity to Climatic Forcing, in preparation for *Journal of Glaciology*.
2. **Hui Gao**, Beata M Csatho, and Denis Felikson, Inland Dynamic Thinning Limits of Greenland Tidewater Glaciers, in preparation for *Nature Geoscience*.

Presentations

1. Rapid Mass Loss of Kangerlussuaq Glacier and its High Sensitivity to Climatic Forcing, talk, **IGS Northeast Glaciology Meeting**, Buffalo, NY, Mar. 2026
2. Ice Dynamics of Kangerlussuaq Glacier, Greenland, since 1990 by Combining Observation and Modeling, poster, **American Geophysical Union Fall Meeting**, New Orleans, LA, Dec. 2025
3. Greenland Mass Balance from Laser Altimetry between 1995 and 2020, poster, **American Geophysical Union Fall Meeting**, Washington, D.C., Dec. 2024
4. Greenland Ice Sheet Mass Balance from Laser Altimetry, talk, **IGS Symposium on Verification and Validation of Cryospheric Models**, Newcastle, UK, Aug. 2024
5. Ambiguities in Partitioning Greenland Ice Mass Loss into Surface and Ice Dynamics Components, poster, **American Geophysical Union Fall Meeting**, San Francisco, CA, Dec. 2023
6. Reconstruction of Greenland Ice Sheet Mass Balance Using Laser Altimetry Measurements, poster, **American Geophysical Union Fall Meeting**, Chicago, IL, Dec. 2022
7. Reconstruction of Greenland Ice Sheet Mass Balance Using Laser Altimetry Measurements, poster, **ICESat-2 Science Symposium**, Austin, TX, Oct. 2022.
8. Roles of the subglacial drainage system and bed topography on driving the evolution of Jakobshavn Isbrae, poster, **American Geophysical Union Fall Meeting**, online, Dec. 2021
9. Statistical analysis of the correlations between climatic factors and Greenland Ice Sheet mass balance, poster, **American Geophysical Union Fall Meeting**, online, Dec. 2020

Academic Services

1. **NASA review panel**, *panelist*, Jun. 2025

Awards and Assistantships

1. Research Assistant (2021—2026), Department of Earth Sciences, University at Buffalo
2. Teaching Assistant (2019—2021), Department of Earth Sciences, University at Buffalo
 - a. GLY 101 Natural Hazards
 - b. GLY 102 Climate Change
3. Pegrum Professional Development Award, Department of Earth Sciences, University at Buffalo
4. Financial support for the IGS symposium in Newcastle (2024), Northumbria University
5. Graduate Student Association Conference Funding (2024), University at Buffalo

Professional Development

1. **ISMIP7 pre-AGU workshop**, New Orleans, participant, Dec. 2025
2. **ISSM Workshop 2025**, Dartmouth College, participant, Mar. 2025
3. **UW & NASA Earth Sciences Hackweek, ICESat-2 track**, University of Washington, **project lead**, Aug. 2024
4. **GeoSmart Hackweek 2023** on Application of Machine Learning in Hydrology and Cryosphere Science, University of Washington, participant, Oct. 2023
5. **International Summer School in Glaciology**, University of Alaska, Fairbanks (UAF) / Oslo University, participant, Jun. 2022
6. **ICESat-2 Hackweek**, University of Washington, participant, Mar. 2022

Professional Skills

1. **Software Competencies:** ENVI, ArcGIS, SPSS, QGIS
2. **Programming Languages:** Python, R, MATLAB, C/C++, C#, JavaScript, SQL Server