Matias Romero

mromero6@wisc.edu | Google Scholar | ORCiD | www.matias-romero.com

Education

PhD in Geoscience — Madison, WI, USA
Department of Geoscience, University of Wisconsin-Madison — *Aug. 2022 – present*
- Dissertation: Quaternary evolution of the Patagonian and Cordilleran ice sheets
- Advisors: Prof. Shaun Marcott and Prof. Marissa Tremblay

Licentiate in Geology — Córdoba, Argentina
Universidad Nacional de Córdoba — *Mar. 2015 – Mar. 2019*
- Thesis: Using loess records to understand past atmospheric conditions
- Advisors: Prof. Diego Gaiero and Dr. Gabriela Torre

B.Sc. in Geology — Córdoba, Argentina
Universidad Nacional de Córdoba — *Mar. 2012 – Mar. 2015*

Research Interests

My research investigates the interplay between climate, ice sheets, and landscape evolution. I combine fieldwork, geochemical analyses, remote sensing, and numerical modeling to reconstruct past ice-sheet behavior and identify the climatic forcings that drive such changes. This interdisciplinary perspective provides essential context for interpreting today's rapidly evolving landscapes and improves our ability to assess the future behavior of the cryosphere.

Research and Teaching Experience

Graduate Research Assistant — Sep. 2022 – Present
Department of Geoscience, University of Wisconsin-Madison — *Madison, WI*

Graduate Teaching Assistant
Department of Geoscience, University of Wisconsin-Madison — *Madison, WI*
- FA 2022 GEOSCI 335: Climatic Environments of the Past
- FA 2024 GEOSCI 335: Climatic Environments of the Past

Research Assistant — Mar. 2019 – Mar. 2022
Universidad Nacional de Córdoba — *Córdoba, Argentina*
- Glacial geomorphology and geology of the northern Antarctic Peninsula
- Advisor: Jorge Strelin

Manuscripts in Preparation

2. **Romero, M.**, Wickert, A.D., Van Wyk de Vries, M., and Gowan, E.J. Accelerated mass loss of the Patagonian Icefields since the Little Ice Age.

1. Kennedy, T.M., Goehring, B., Jones, A.G., Gorin, A.L., Marcott, S.A., Shakun, J.D., Hein, A., **Romero, M.**, Ponce, J.F., Van Wyk de Vries, M.S., Wickert, A.D., and Caffee, M.W. Benchmarking the retreat of three Patagonian glaciers against their Holocene fluctuations with in situ ^{14}C–^{10}Be dating. In prep for *Quaternary Science Reviews*.

Manuscripts submitted

4. **Romero, M.**, Van Wyk de Vries, M., Fedotova, A., Ito, E., Shapley, M.D., Magnani, M.B., Wickert, A.D., Jones, A.G., Marcott, S.A., Strelin, J.A., Brignone, G., Penprase, S.B., and Caffee, M.W. A revised Holocene history of Glaciar Upsala, Southern Patagonia using seismic imagery, lake sediment cores, and moraine ages. In review, *Quaternary Science Reviews*.

3. **Romero, M.**, Strelin, J.A., Kaplan, M.R., Martini, M.A., Flores, E., Barrionuevo, M., Lepper, K., and Schaefer, J.M. Glacier and sea-level fluctuations on James Ross Island, Antarctica, during the last 50,000 years. In review, *Quaternary Science Reviews*.

2. **Romero, M.**, Simms, A.R., and Strelin, J.A. A record of Holocene relative sea-level changes and ice fluctuations on Nelson Island, South Shetland Islands, Antarctica. In review, *Quaternary Research*.

1. Mizerit, I., Bechis, F., **Romero, M.**, García Morabito, E. Glacial geomorphology of the Nahuel Huapi region, northern Patagonia (41° S): Landform assemblages and implications for glacial history. In review, *Quaternary International*.

Peer-Reviewed Publications

13. Orellana-Salazar, Y., Marcott., S.A., Tremblay, M.M., **Romero, M.**, Moreno-Yaeger, P., Mixon, E.E., Jones, A.G., and Barth, A.M. (2025). A ^{3}He-based Holocene glacial chronology from Villarrica volcano, Chile. *Quaternary Science Reviews*, 372, 109707.

12. Brignone, G., **Romero, M.**, de Vries, M. V. W., Ito, E., Shapley, M., and Piovano, E. L. (2025). Do ice-dam rupture events leave a distinctive signature in proglacial lake sediments?. *Quaternary Research*, 123, 70-82.

11. Singer, B. S., Moreno-Yaeger, P., Townsend, M., Huber, C., Cuzzone, J., Edwards, B. R., **Romero, M.** ... and Amigo, Á. (2024). New perspectives on ice forcing in continental arc magma plumbing systems. J*Journal of Volcanology and Geothermal Research*, 455, 108187.

10. **Romero, M.**, Penprase, S. B., Van Wyk de Vries, M. S., Wickert, A. D., Jones, A. G., Marcott, S. A., ... and Caffee, M. W. (2024). Late Quaternary glacial maxima in southern Patagonia: insights from the Lago Argentino glacier lobe. *Climate of the Past*, 20(8), 1861–1883.

    - Selected as highlight paper by *Climate of the Past*

9. Cuzzone, J.K., **Romero, M.**, and Marcott, S.A. (2024): Modeling the timing of Patagonian Ice Sheet retreat in the Chilean Lake District from 22–10 ka, *The Cryosphere*, 18(3), 1381-1398.

8. Jones, A.G., Marcott, S.A., Gorin, A.L., Kennedy, T.M., Shakun, J.D., Goehring, B.M., Menounos, B., Clark, D.H., **Romero, M.** and Caffee, M.W. (2023). Four North American glaciers advanced past their modern positions thousands of years apart in the Holocene. *The Cryosphere*, 17(12), pp.5459–5475.

7. Van Wyk de Vries, M., Ito, E., Shapley, M., **Romero, M.**, and Brignone, G. (2023). Investigating paleoclimate and current climatic controls at Lago Argentino using sediment pixel intensity time series. *J Paleolimnol*. https://doi.org/10.1007/s10933-023-00296-7

6. Van Wyk de Vries, M., **Romero, M.**, Penprase, S., Ng, G., and Wickert, A. (2023). Increasing rate of 21st century volume loss of the Patagonian Icefields measured from proglacial river discharge. *Journal of Glaciology*, 1–16. doi:10.1017/jog.2023.9

    - Short-listed for the Graham Cogley Award by the *International Glaciological Society*

5. Wickert, A. D., Barnhart, K. R., Armstrong, W. H., **Romero, M.**, Schulz, B., Ng, G. H. C., ... and MacGregor, K. R. (2023). Automated ablation stakes to constrain temperature-index melt models. *Annals of Glaciology*, 64(92), 425-438.

4. Van Wyk de Vries, M., Ito, E., **Romero, M.**, Shapley, M., and Brignone, G. (2023). Periodicity of the Southern Annular Mode in Southern Patagonia, insight from the Lago Argentino varve record. *Quaternary Science Reviews*, 304, 108009.

3. Van Wyk de Vries, M., Ito, E., Shapley, M., Brignone, G., **Romero, M.**, Wickert, A. D., ... and MacGregor, K. R. (2022). Physical Limnology and Sediment Dynamics of Lago Argentino, the World's Largest Ice-Contact Lake. *Journal of Geophysical Research: Earth Surface*, 127(3), e2022JF006598.

2. **Romero, M.**, Torre, G., and Gaiero, D. M. (2021). Paleoenvironmental changes in southern South American dust sources during the last glacial/interglacial transition: Evidence from clay mineral assemblages of the pampean loess. *Quaternary International*, 580, 11–21.

1. Emslie, S. D., **Romero, M.**, Juáres, M. A., and Argota, M. R. (2020). Holocene occupation history of pygoscelid penguins at Stranger Point, King George (25 de Mayo) Island, northern Antarctic Peninsula. *The Holocene*, 30(1), 190–196.

Datasets

5. Perito Moreno weather stations (Version 20221013). Zenodo. https://doi.org/10.5281/zenodo.7193187.

4. Automated Ablation Stake Data; Code and Associated Weather-station Data Included (1.0.0). Zenodo. https://doi.org/10.5281/zenodo.7615567

3. Shapefiles of Lago Argentino-Río Santa Cruz glacial landforms. Zenodo. https://doi.org/10.5281/zenodo.14648929

2. XRF data of sediment cores from Lago Argentino (Glaciar Upsala). Zenodo. https://doi.org/10.5281/zenodo.15390387

1. Lago Argentino digital core scans and stratigraphic logs (1.0). Zenodo. https://doi.org/10.5281/zenodo.5815107

Conference Abstracts

13. **Romero, M.**, Marcott, S. A., Cuzzone, J. K., Tremblay, M. M., Jones, A. G., and Caffee, M. W. Reconstructing the Demise of the Patagonian Ice Sheet During the Last Deglaciation. AGU Fall Meeting, 2025.

12. **Romero, M.**, Marcott, S. A., Cuzzone, J. K., Tremblay, M. M., and Jones, A. G. A Data-Model Comparison of Ice Sheet Demise in Northern Patagonia During the Last Deglaciation. EGU General Assembly, April 2025.

11. **Romero, M.**, Marcott, S. A., Cuzzone, J. K., Tremblay, M. M., Jones, A. G., Hietpas, E., and Orellana-Salazar, Y. A Record of Northern Patagonian Ice Sheet Thinning During the Last Deglaciation. AGU Fall Meeting, December 2024.

10. **Romero, M.**. Reconstructing the demise of the Patagonian Ice Sheet. Graduate Climate Conference, November 2024.

9. **Romero, M.**, Cuzzone, J., Jones, A. G., and Marcott, S. A. Cosmogenic nuclide constraints on the Patagonian Ice Sheet demise during the last deglaciation. Goldschmidt Conference, August 2024.

8. **Romero, M.**, Cuzzone, J.K., Jones, A.G., Bushmaker, S., and Marcott, S.A. Post-Glacial dynamics of the Patagonian Ice Sheet across the Southern Volcanic Zone. XXI INQUA Congress, Sapienza University of Rome, Italy, July 2023.

7. **Romero, M.**, Van Wyk de Vries, M. S., Jones, A. G., Fedotova, A., Penprase, S. B., Brignone, G., ... and Strelin, J. A. Late Holocene fluctuations of Upsala Glacier, Southern Patagonia. AGU Fall Meeting, December 2022.

6. **Romero, M.**, Wickert, A. D., MacGregor, K. R., Van Wyk de Vries, M. S., Penprase, S. B., Carnevale, I., ... and Strelin, J. A. Investigating glacier mass loss in the South Shetland Islands using open-source data loggers and off-the-shelf sensors. AGU Fall Meeting, December 2022.

5. **Romero, M.**, Wickert, A. D., Van Wyk de Vries, M. S., Penprase, S. B., Strelin, J. A., Jones, A. G., and Marcott, S. A. Ice mass loss of the Southern Patagonian Icefield during the last millennium. AGU Fall Meeting, December 2021.

4. **Romero, M.**, Torre, G., and Gaiero, D. M. Paleoenvironmental changes in southern South American dust sources recorded by clay minerals of the Pampean loess. Blowing South Symposium, November 2021.

3. **Romero, M.**, Simms, A. R., and Strelin, J. A. Holocene sea-level change in the South Shetland Islands revisited. PALSEA Meeting, September 2021.

2. **Romero, M.**, Penprase, S. B., Van Wyk de Vries, M. S., Wickert, A. D., MacGregor, K. R., Brignone, G., ... and Strelin, J. A. Geomorphological expression of the Last Glacial Maximum (LGM) in Lago Argentino, Southern Patagonian Icefield. AGU Fall Meeting, December 2020.

1. **Romero, M.**, Strelin, J.A., and Kaplan, M.R. Evidence of early Holocene glacial advances in Lachman Beach, James Ross Island, Antarctic Peninsula, and high-latitude linkages in the Southern Hemisphere. Latin American Colloquium of Geosciences, Hamburg University, Germany, September 2019.

Invited Talks

Climate-Ice Group, University of Leeds, UK	July 2025
CICTERRA, Universidad Nacional de Córdoba, Argentina	July 2024
Climate & Environment Group Lunch Bunch talks, Brown University, USA	April 2024
Geochronology class, University of Minnesota–Twin Cities, USA	November 2023
CICTERRA, Universidad Nacional de Córdoba, Argentina	September 2021
AAPG Student Chapter, Binghamton University, USA	November 2021
Carlini Station, Antarctica	February 2021
Ice–Ocean Group, University of Virginia, USA	August 2020
Marambio Station, Antarctica	February 2020

Fellowships, Awards, and Grants

UW–Madison Latin American, Caribbean and Iberian Studies Program travel grant	2025
Thomas E. Berg Award for Excellence in Teaching	2025
C.F. Schiesser Outstanding Student Research Paper Award	2025
UW–Madison Geoscience Department travel grant	2025
UW–Madison Latin American, Caribbean and Iberian Studies Program travel grant	2024
Mark and Carol Ann Solien Graduate Assistantship	2024
Graduate Climate Conference travel grant	2024
UW-Madison Latin American, Caribbean and Iberian Studies Program travel grant	2023
UW-Madison Scholarship Hub travel grant	2023
paleoCAMP (Paleoclimate Summer School) participation grant	2023
Department of Geoscience Weeks Graduate Research Assistantship	2022
International Association of Sedimentologists (IAS) postgraduate research grant	2020
Hamburg University (LAC 2019) travel grant	2019
PAIS/IODP Antarctic School travel grant	2019
CONICET (Argentine scientific council) research fellowship	2019

Fieldwork and Expeditions

British Columbia, Canada	July-August 2025
Northern Patagonia, Chile	January 2025
British Columbia, Canada	September 2024
Tropical Andes, Bolivia	July 2024
Northern Patagonia, Chile and Argentina	January 2024
Northern Patagonia, Chile and Argentina	January 2023
Northern Patagonia, Chile and Argentina	January 2022
Whitewater River, Minnesota, USA	August 2021
Northern Andes, Argentina	May 2021
South Shetland Islands, Antarctica	November 2020-April 2021
Southern Patagonia, Argentina	February-March 2020
James Ross Island, Antarctica	January 2020-February 2020
Southern Patagonia, Argentina	July-August 2019
Tierra del Fuego, Argentina	April 2019
James Ross Island, Antarctica	January 2019-February 2019

South Shetland Islands, Antarctica January 2018-March 2018

Professional Skills

Fieldwork

I have conducted fieldwork in polar regions, alpine environments, high-altitude terrains (up to 20,000 ft), and also on-board sailing expeditions. Skills include: geomorphological mapping, sediment logging, stratigraphic surveying, sampling for cosmogenic/radiocarbon/OSL dating, topographic surveying with dGPS GNSS Trimble, drone surveying, lake sediment coring (gravity and Kullenberg coring), instrumentation deployment on glaciers, discharge measurement, trace metal sampling.

Laboratory

Cosmogenic nuclide surface exposure dating geochemistry: physical rock processing (jaw crusher, roll-mill grinder, sieving, frantzing), Quartz purification, Be extraction (clean lab operation, including handling of concentrated HF, column chemistry for Be extraction, Be precipitation in ammonia), target oxidation and packing for AMS analysis.

Lacustrine and marine sedimentology: Initial core description, X-Ray Diffraction (XRD), X-Ray Fluorescence (XRF), magnetic susceptibility and bulk density determination, clay minerals separation.

Computer

Microsoft Office, Adobe Illustrator, Agisoft Metashape, ArcGIS, QGIS, Python, Rstudio, LaTeX, Matlab, Ice sheet modeling (ICESHEET, ISSM).

Language

Spanish: Native. English: Advanced proficiency (TOEFL iBT 103/120).

Public Service and Outreach

Reviewer for: Geochronology (GChron), Quaternary Science Reviews, Communications Earth & Environment, Earth and Planetary Science Letters.

Session convener at AGU 2024, 9–13 December 2024, Washington, D.C.

Session convener at Goldschmidt 2024, 18–23 August 2024, Chicago.

Professional Development Chair, GGSA, UW-Madison (2024).

Instructor of the Volcanoes and Ice Summer Program (VISP) in the Chilean Patagonia, January 2023 and 2025.

Instructor of online course on Antarctic geology (in Spanish):El Antartico, un continente asombroso.

National Park volunteering at Perito Moreno glacier, Los Glaciares National Park, Argentina.

Professional Memberships

European Geophysical Union (EGU)	2025-
Quaternary Research Association (QRA)	2021-
American Geophysical Union (AGU)	2020-
International Association of Sedimentologists (IAS)	2019-2022
Geological Society of America (GSA)	2019-2022