

Lindsay O. Prothro

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[Research Website](#)

EDUCATION

Ph.D. Earth Science 2013-2018

Rice University, Houston, TX, USA. Dissertation: *“Glacial retreat patterns and processes on Antarctic continental margins”* [Advisor: J.B. Anderson]

B.Sc. (Magna cum laude) Geology and Geophysics 2009-2013

Louisiana State University, Baton Rouge, LA, USA. Honors Thesis: *“Reinterpreting the stratigraphy of the Florissant Fossil Beds National Monument through correlation by magnetic susceptibility and geochemical comparison”* [Advisor: B.B. Ellwood]

RESEARCH INTERESTS

Glacial Geomorphology and Sedimentology, Marine Geology and Geophysics, Stratigraphy, Quaternary Geology, Paleoclimate, Sea Level Change

PROFESSIONAL APPOINTMENTS

Assistant Professor Fall 2019-present

Department of Physical and Environmental Sciences
Texas A&M University – Corpus Christi, Corpus Christi, TX, USA.

Laboratory and Research Specialist Spring 2019

Department of Environmental Sciences
University of Virginia, Charlottesville, VA, USA. *Ice and Ocean Group*

RESEARCH APPOINTMENTS

Graduate Research Assistant, Department of Earth Science, Rice University 2013-2018

Undergraduate Researcher, Department of Geology and Geophysics, Louisiana State University 2009-2013

PUBLICATIONS (Link: [Google Scholar Profile](#))

Published manuscripts

Majewski, W., **Prothro, L.O.**, Simkins, L.M., Demianiuk, E.J., Anderson, J.B., 2020. Foraminiferal patterns in deglacial sediment in the western Ross Sea, Antarctica, *Paleoceanography and Paleoclimatology* 35, p.e2019PA003716.

Prothro, L.O., Majewski, W., Yokoyama, Y., Simkins, L.M., Anderson, J.B., Yamane, M., Miyairi, Y., Ohkouchi, N., 2020. Timing and pathways of East Antarctic Ice Sheet retreat, *Quaternary Science Reviews* 230, p.106166, doi: 10.1016/j.quascirev.2020.106166.

- Halberstadt, A.R.W., Simkins, L.M., Anderson, J.B., **Prothro, L.O.**, Bart, P., 2018. Characteristics of the deforming bed: Till properties on the deglaciated Antarctic continental shelf, Journal of Glaciology 64, 1014-1027, doi: 10.1017/jog.2018.92
- Greenwood, S.L., Simkins, L.M., Halberstadt, A.R.W., **Prothro, L.O.**, Anderson, J.B., 2018. Holocene reconfiguration and readvance of the East Antarctic Ice Sheet, Nature Communications 9, doi: 10.1038/s41467-018-05625-3
- Prothro, L.O.**, Simkins, L.M., Majewski, W. and Anderson, J.B., 2018. Glacial retreat patterns and processes determined from integrated sedimentology and geomorphology records. Marine Geology, 395, 104-119, doi: 10.1016/j.margeo.2017.09.012
- Simkins, L.M., Anderson, J.B., Greenwood, S.L., Gonnermann, H.M., **Prothro, L.O.**, Halberstadt, A.R.W., Stearns, L.A., Pollard, D. and DeConto, R.M., 2017. Anatomy of a meltwater drainage system beneath the ancestral East Antarctic ice sheet. Nature Geoscience, 10(9), 691-697, doi: 10.1038/NGEO3012
- Yokoyama, Y., Anderson, J.B., Yamane, M., Simkins, L.M., Miyairi, Y., Yamazaki, T., Koizumi, M., Suga, H., Kushara, K., **Prothro, L.**, Hasumi, H., Southon, F.R., Ohkouchi, N. 2016. Widespread collapse of the Ross Ice Shelf during the late Holocene. Proceedings of the National Academies of Sciences 113: 2354-2359.

Manuscripts in preparation

- Prothro, L.O.**, Anderson, J.B., Yokoyama, Y., Majewski, W., Revised glacial retreat chronology and subglacial meltwater influence on ice sheet and ice shelf retreat within Marguerite Bay, Antarctica, *in prep*

Other publications

- Prothro, L.O.**, Ice-induced plowing of the seafloor. *In*: Cochran, K., Bokuniewicz, H., Yager, P.L, eds. Encyclopedia of Ocean Sciences, 3rd ed., 2019, p. 148-154.

RESEARCH PROPOSALS

Funded:

Preliminary evaluation of paleo-intensity of warm water mass incursion onto Antarctic continental shelves, Texas A&M University – Corpus Christi: College of Science & Engineering Research Enhancement Grant, \$2,409, 10/2019 – 6/2020, PI: Lindsay Prothro

TEACHING EXPERIENCE

Instructor of record

<i>Sedimentation and Stratigraphy</i> , TAMUCC	Fall 2020
<i>Historical Geology</i> , TAMUCC	Spring 2020
<i>Freshman Seminar in Local Environmental Science Research</i> , Rice University	Fall 2017

Laboratory Instructor

<i>Earth Systems Evolution and Cycles</i> , upper division course, Rice University	Fall 2014
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Guest lecturer

<i>Seminar: Research in the Geosciences</i> , general undergraduate course, TAMUCC “Glacial change in Antarctica: What can we learn from the geologic record?”	Spring 2020
<i>Polar Environments</i> , general undergraduate course, University of Virginia	Spring 2019

“Sea ice and icebergs” <i>The Cryosphere</i> , upper-division and graduate course, Rice University	Spring 2018
“Ice shelves and sea ice” <i>Freshman Seminar in Local Environmental Science Research</i> , Rice University	Spring 2017
“Antarctic research at sea and in the laboratory” <i>GIS for Geoscientists</i> , upper-division and graduate course, Rice University	Spring 2016
“Applications of raster datasets for geomorphology and sedimentology” <i>The Cryosphere</i> , upper-division and graduate course, Rice University	Spring 2016
“Glacial erosion, transport, and sediments” <i>Earth Systems Evolution and Cycles</i> , upper division course, Rice University	Fall 2015
“Glacial sedimentology”	

FIELD EXPERIENCE

Scientist: Cruise NBP1502 to the Ross Sea, Antarctica, Multibeam bathymetric mapping, subbottom profiling, and sediment core collection (January 23-March 20, 2015, RVIB *Nathaniel B. Palmer*)

Scientist: Detailed stratigraphic fieldwork/sampling at Florissant Fossil Beds National Monument, CO for magnetic susceptibility and geochemical work (July 2012)

Field Assistant: Stratigraphic fieldwork/sampling/magnetic susceptibility analysis of marine Eocene-Oligocene boundary sections at St. Stephens and Red Stick Quarries, AL and Chickasawhay River, MS (April 2011)

AWARDS

Travel awards

South-Central Section Student Travel Grant, GSA Annual Fall Meeting, Seattle, WA	2017
South-Central Section Student Travel Grant, GSA Annual Fall Meeting, Baltimore, MD	2015
Student Travel Grant, WAIS Workshop, Loveland, CO	2015
South-Central Section Student Travel Grant, GSA Annual Fall Meeting, Denver, CO	2013

Academic awards

Outstanding Graduate Student Award in Earth Science, Rice University (\$2000)	2019
Torkild Rieber Award for Excellence in Earth Science, Rice University (\$2000)	2018
Student First Author Paper Award, Rice University (\$1000)	2017
2 nd Place—Industry-Rice Earth Science Symposium (IRESS) Student Poster Session	2017
Honors College Outstanding Thesis Award, LSU	2013
Most Outstanding Senior, Geology, LSU	2012-2013
Jules and Olga Braunstein Memorial Scholarship Senior Award (NOGS)	2012-2013
“Golden Hammer” award for best-in-class final grade at Senior Field Camp, LSU	2012
Harriet Belchic Memorial Field Camp Scholarship, LSU	2012
Most Outstanding Junior, Geology, LSU	2011-2012
Jules and Olga Braunstein Memorial Scholarship Junior Award (NOGS)	2011-2012
Most Outstanding Sophomore, Geology, LSU	2010-2011
Sophomore Honors Distinction, LSU	2011
Patrick F. Taylor Scholar, Geology, LSU	2010-2013

PROFESSIONAL AFFILIATIONS

American Geophysical Union, Geological Society of America

PROFESSIONAL ACTIVITIES AND SERVICE

Journal/Proposal reviewing

Proposal Referee: *National Science Foundation* (2 in 2019, 1 in 2020)

Panel Reviewer: *National Science Foundation* (2020)

Journal Reviewer: *Geophysical Research Letters* (2020), *Geochimica et Cosmochimica Acta* (2020)

Conference Session Convening

West Antarctic Ice Sheet (WAIS) Workshop: *Past Records of Changes and Processes* (2020)

Student committees

Joseph Stearns, Env. Sci. MS, December 2019

Ryan Turner, CMSS MS, expected August 2020

Student Advising

Alicia Jimenez, MS 2020- present

Conference recruiting

GSA Annual Fall Meeting—recruiting for Rice University 2017

GSA Annual Fall Meeting—recruiting for Rice University 2015

Outreach

Co-creator and exhibitor World Oceans Day, Houston Museum of Natural Science 2017
—“The Texas coast and its response to sea level change”. ([link for details](#))

Judge, Rice University Undergraduate Research Symposium. 2017

Judge, Rice University Undergraduate Research Symposium. 2016

Organizer for Geology Club demonstrations, Louisiana Sea Grant’s “Ocean Commotion” event at LSU. 2012

Organizer for Geology Club demonstrations, Super Science Saturday (over 1100 students reached) at LSU. 2012

Developer and exhibitor of “Minerals in our Lives” demonstration for Geoscience educational outreach, 2011-2013. 2011-2013

College leader/Geology workshop leader, Focusing on College and Unlimited Success (FOCUS) program for 10th grade students from under-resourced high schools 2011

Participant in LSU Honors College Coastal Restoration Service Project with the Barataria-Terrebonne National Estuary Program 2010

Leadership positions

Secretary, Geology Club at LSU 2011-2013

Representative, LSU Honors College Student Council 2010-2013

SCIENTIFIC PRESENTATIONS AND ABSTRACTS

27. **Prothro, L.O.**, Anderson, J.B., Majewski, W., Yokoyama, Y. The association of subglacial meltwater with ice-sheet retreat in Marguerite Bay, Antarctica. Geological Society of America Annual Meeting, 10/2020. (talk)
26. **Prothro, L.O.**, Anderson, J.B., Majewski, W., Yokoyama, Y., Simkins, L.M. The association of subglacial meltwater with grounding-line retreat. West Antarctic Ice Sheet Annual Workshop, 10/2019. (talk)
25. **Prothro, L.O.**, Anderson, J.B., Majewski, W., Yokoyama, Y. The role of subglacial meltwater in ice-sheet retreat through Marguerite Bay, Antarctica. INQUA, Dublin, 7/2019. (talk)
24. **Prothro, L.O.**, Majewski, W., Yokoyama, Y., Simkins, L.M., Anderson, J.B., Yamane, M., Ohkouchi, N. Duration of the maximum extent of the East Antarctic Ice Sheet grounding line in the Ross Sea, Antarctica, and subsequent complex retreat. American Geophysical Union, Annual Meeting, 12/2018. (talk) [[abstract](#)]
23. Anderson, J.B., **Prothro, L.O.**, Majewski, W., Yokoyama, Y., Simkins, L.M., Halberstadt, A.R., Greenwood, S., Yamane, M., Ohkouchi, N. LGM and post-LGM paleodrainage reconstruction and timing of retreat in the western Ross Sea. West Antarctic Ice Sheet Annual Workshop, 9/2018. (talk)
22. Demianiuk, E.J., Majewski, W., Baca, M., Popovic, D., **Prothro, L.O.**, Simkins, L.M., Anderson, J.B., Angeles, I.B. Complimentary eDNA and micropaleontological foraminiferal record from glacier-proximal settings in western Ross Sea. Open Science Conference at Polar2018, 6/2018. (poster)
21. **Prothro, L.**, Yokoyama, Y., Simkins, L.M., Anderson, J.B., Majewski, W., Yamane, M., Ohkouchi, N., Marine evidence of a deconvolving Antarctic Ice Sheet during post-LGM retreat of the Ross Sea sector. American Geophysical Union, Annual Meeting, 12/2017. ([poster link](#)) [[abstract](#)]
20. Yokoyama, Y. Anderson, J.B., Yamane, M. Simkins, L., Miyairi, Y., Suga, H., **Prothro, L.**, Okuno, J., and Ohkouchi, N. Holocene sea level change and Antarctic ice shelf retreats. PALSEA2 Workshop, 11/2017. (talk)
19. **Prothro, L.**, Simkins, L.M., Majewski, W., Anderson, J.B. Sedimentary processes at paleo-grounding lines: Glacial and oceanographic interactions during ice-sheet retreat. Geological Society of America, Annual Meeting, 10/2017. (talk) [[abstract](#)]
18. Anderson, J.B., Simkins, L., Greenwood, S., Demet, B., Halberstadt, A.R.H., **Prothro, L.**, Role of grounding zone wedges in grounding line stabilization. Geological Society of America, Annual Meeting, 10/2017. (talk) [[abstract](#)]
17. **Prothro, L.**, Yokoyama, Y., Simkins, L.M., Anderson, J.B., Majewski, W., Yamane, M., Ohkouchi, N. Timing and sea level contributions of the deconvolving Antarctic Ice Sheet during post-LGM retreat of the Ross Sea sector. Geological Society of America, Annual Meeting, 10/2017. (poster) [[abstract](#)]
16. **Prothro, L.**, Anderson, J.B., Simkins, L.M., Majewski, W. Glaciomarine sediment facies: Using geomorphic contexts and multi-proxy analysis to build ice-sheet retreat models. Industry-Rice Earth Science Symposium, 2/2017. (poster)
15. Yokoyama, Y., Anderson, J.B., Yamane, M., Simkins, L., Miyairi, Y., Yamazaki, T., Koizumi, M., Kusahara, K., Suga, H., **Prothro, L.O.**, Hasumi, H., Southon, J.R., Ohkouchi, N. Widespread collapse of the Ross Ice Shelf during the late Holocene reconstructed from compound specific C-14 and meteoric Be-10. American Geophysical Union, Annual Meeting, 12/2016. (talk) [[abstract](#)]

14. **Prothro, L.**, Anderson, J.B., Simkins, L.M., Majewski, W. Glaciomarine sediment facies: Using geomorphic contexts and multi-proxy analysis to build ice-sheet retreat models. American Geophysical Union, Annual Meeting, 12/2016. (poster) [[abstract](#)]
13. Greenwood, S.L., Simkins, L.M., Halberstadt, A.R.W., **Prothro, L.O.**, Anderson, J.B. Holocene reconfiguration and readvance of the East Antarctic Ice Sheet. American Geophysical Union, Annual Meeting, 12/2016. (talk) [[abstract](#)]
12. Halberstadt, A.R., Simkins, L.M., Anderson, J.B., **Prothro, L.O.**, Demet, B.P., Greenwood, S.L., Yokoyama, Y. Post-LGM retreat history in Ross Sea reflects changing controls on marine ice sheet behavior. American Geophysical Union, Annual Meeting, 12/2016. (poster) [[abstract](#)]
11. Anderson, J.B., Simkins, L.M., **Prothro, L.O.** Sedimentological fingerprint of modern and ancient meltwater outbursts across Antarctic continental shelves and slopes. American Geophysical Union, Annual Meeting, 12/2016. (talk) [[abstract](#)]
10. **Prothro, L.O.**, Demet, B.P., Simkins, L.M., Halberstadt, A.R., Anderson, J.B., Majewski, W. Contribution of localized processes to large-scale ice-margin instability. William Smith Meeting, London, England, 6/2016 (talk) [[speaker program and abstract](#)]
9. **Prothro, L.**, Simkins, L., Halberstadt, A.R., Anderson, J.B., Yokoyama, Y., Majewski, W., Demet, B.P. Controls on ice-margin instability and onset of deglaciation following the Last Glacial Maximum. Rice University Department of Earth Science, Departmental Research Seminar, 2/2016. (talk)
8. **Prothro, L.**, Simkins, L., Halberstadt, A.R., Anderson, J.B., Yokoyama, Y., Majewski, W., Demet, B.P., Greenwood, S. Controls on ice-margin instability and onset of deglaciation following the Last Glacial Maximum. Industry-Rice Earth Science Symposium 2/2016 (poster)
7. Demet, B.P., Anderson, J.B., Nittrover, J.A., Simkins, L., Halberstadt, A.R., **Prothro, L.O.** Sedimentary processes of unstable ice sheet grounding zones: Comparing polar and temperate grounding zone wedges using marine geophysical data and outcrop studies. American Geophysical Union, Annual Meeting, 12/2015. (poster) [[abstract](#)]
6. Halberstadt, A.R., Anderson, J.B., Simkins, L., **Prothro, L.O.**, Bart, P.J. Ross sea till properties: Implications for ice sheet bed interaction. American Geophysical Union, Annual Meeting, 12/2015. (poster) [[abstract](#)]
5. Simkins, L., Greenwood, S., Anderson, J.B., **Prothro, L.O.**, Halberstadt, A.R., Stearns, L.A., Demet, B.P. Geologic evidence of a leaky Antarctic Ice Sheet: Tracking meltwater influence on ice-sheet retreat in the Ross Sea, Antarctica since the Last Glacial Maximum. American Geophysical Union, Annual Meeting, 12/2015. (talk) [[abstract](#)]
4. **Prothro, L.**, Simkins, L., Anderson, L., Halberstadt, A.R., Yokoyama, Y., Majewski, W., and Minzoni, R. Refining our understanding of sediment retreat facies and geomorphology for an accurate deglacial history of the Ross Sea. Geological Society of America, Annual Meeting, 10/2015. (poster) [[abstract](#)]
3. **Prothro, L.**, Simkins, L., Anderson, L., Halberstadt, A.R., Yokoyama, Y., Majewski, W., and Minzoni, R. Refining our understanding of sediment retreat facies and geomorphology for an accurate deglacial history of the Ross Sea. West Antarctic Ice Sheet Annual Workshop, 9/2015. (poster)
2. **Prothro, L.** Subglacial meltwater and its role in ice sheet retreat. Rice University Department of Earth Science, Departmental Research Seminar, 4/2015. (talk)
1. **Prothro, L.O.**, Ellwood, B.B., Meyer, H., Ratcliffe, K.T., Tomkin, J.H., and Abbott, L.D., 2013. Reinterpreting the stratigraphy of Florissant Fossil Beds National Monument through correlation by magnetic susceptibility and geochemical comparison. Geological Society of America, Annual Meeting, 10/2013. (poster) [[abstract](#)]

INVITED TALKS

Texas A&M University– Corpus Christi

2019