

LAUREN M SIMKINS
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RESEARCH FOCUS

Glacial geology, Geomorphology, Sedimentology, Coastal and marine processes, Quaternary geochronology

EDUCATION

Doctor of Philosophy in Geological Sciences, University of California Santa Barbara, 2014

'Antarctic raised beaches: Insight on geochronology, relative sea level, and coastal processes,' under the advisement of Drs. Alexander Simms (UCSB) and Regina Dewitt (ECU)

Bachelors of Science in Geology & LSAMP Scholar, Oklahoma State University, 2009

PROFESSIONAL APPOINTMENTS

Assistant Professor, Department of Environmental Sciences, University of Virginia, 2018- present

Postdoctoral Research Associate, Department of Earth Science, Rice University, 2014-2018

RESEARCH APPOINTMENTS

Graduate Research Assistant, Department of Geological Sciences, University of California Santa Barbara, 2010-2014

Graduate Research Assistant, Department of Physics, Oklahoma State University, 2010

Undergraduate Research Assistant, Boone Pickens School of Geology, Oklahoma State University, 2008-2010

UNIVERSITY TEACHING

Instructor of Record for Polar Environments (Fall 2019) and Beaches Coasts and Rivers (Fall 2018) at the [University of Virginia](#); The Cryosphere at [Rice University](#) (Spring 2016, Spring 2018).

Laboratory Instructor for Coastal Processes and Management (Spring 2014), Dinosaurs (Spring 2014), Paleoclimate (Fall 2013), Physical Geology (Spring 2012) at the [University of California Santa Barbara](#); Environmental Geology (Spring 2009, Fall 2009) at [Oklahoma State University](#)

Guest Lecturer for Society and Climate Change, Paleoceanography, Sedimentology, Antarctic Geology courses at [Rice University](#), Sedimentology and Stratigraphy, Coastal processes and management, Physical Geology, Geologic Hazards courses at the [University of California Santa Barbara](#)

RESEARCH MENTORSHIP

University of Virginia Catherine Leigh (BS), Delaney Buskard (BS), Alan Zhai (BS), Mackenzie Carter (BS)

Rice University Christine Kendrick (HS), Bethany Fowler (BS), Adlai Fonesca (Visiting), Kelsey Crocker (BS)

University of California Santa Barbara Angela Roman (Santa Barbara City College), Adrian Gallardo (Santa Barbara City College), Gustavo Muro (Ventura City College), Eugene Wang (Santa Barbara City College), Richard Mata (Mount San Antonio College), Francisco Contreras (Oxnard City College), Anna Lovelace (Oxnard City College), Masoud Razavi (Oxnard City College), Stacia Ott (Oxnard City College)

RESEARCH PROPOSALS

Paleo-coastal response to higher-than-present sea level, The University of Virginia Committee on Sustainability, \$8,000, 1/2019-9/2019, PI: Lauren Simkins

NSFPLR-NERC: Thwaites Glacier Offshore Research (THOR), NSF Division of Polar Programs: Antarctic Glaciology, \$242,494, 4/2018-3/2023, PI: Lauren Simkins, Co-I: John Anderson

Collaborative Research: Topographic controls on Antarctic Ice Sheet grounding line behavior - integrating models and observations, NSF Division of Polar Programs: Antarctic Glaciology, \$300,433, 9/2018-8/2021, PI: Lauren Simkins, Co-I: John Anderson

CMP1602P: Retreat dynamics of marine-based ice sheets, International Union for Quaternary Research (INQUA), \$9,000, 6/2016-6/2019, Co-Is: Lilja Bjarnadottir, Sarah Greenwood, S.L., Lauren Simkins, Monica Winsborrow

AWARDS & FELLOWSHIPS

Travel Awards West Antarctic Ice Sheet Workshop (2016), PALSEA2 Workshop (2016), IODP Antarctic Cenozoic Ice and Climate History Workshop (2016), West Antarctic Ice Sheet Workshop (2015)

Fellowships Philip and Aida Siff Educational Foundation Graduate Fellowship (2013-2014, UCSB), NSF Louis Stokes Alliance for Minority Participation Bridge to Doctorate (2010-2012, UCSB), NASA Oklahoma Space Grant Fellowship (2010, OSU), NSF Louis Stokes Alliance for Minority Participation Scholar (2008-2009, OSU), NSF International Research Experience for Students in Turkey (2008, OSU)

Academic Awards Alumni Graduate Award for Research Excellence (2014, UCSB), Coastal Geological Society Scholarship Award (2013, UCSB), Devon Energy Scholarship Award (2009, OSU), GSA-Subaru Minority Student Scholarship Award (2009, OSU)

PUBLICATIONS

- Demet, B.P., Nittrouer, J.A., Anderson, J.B., **Simkins, L.M.**, Sedimentary processes at ice sheet grounding-zone wedges: examples from Antarctica and Washington state. *Earth Surface Processes and Landforms*, *in press*. [doi:10.1002/esp.4550]
- Halberstadt, A.R., **Simkins, L.M.**, Anderson, J.B., Prothro, L.O., Bart, P.J. Characteristics of the deforming bed: Till properties on the deglaciated Antarctic continental shelf, *Journal of Glaciology*, 1-14. [doi: 10.1017/jog.2018.92]
- Simms, A., Whitehouse, P., **Simkins, L.**, Nield, G., DeWitt, R., Bentley, M., 2018. Late Holocene relative sea levels near Palmer Station, northern Antarctic Peninsula, strongly controlled by late Holocene ice-mass changes, *Quaternary Science Reviews* 199, 49-59. [doi: 10.1016/j.quascirev.2018.09.017]
- Simkins, L.M.**, Greenwood S.L., Anderson, J.B., 2018. Diagnosing ice sheet grounding line stability from landform morphology. *The Cryosphere*, 12, 2707-2726. [doi: 10.5194/tc-12-2707-2018]
- 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, 3176. [doi: 10.1038/s41467-018-05625-3]
- Prothro, L.O., **Simkins, L.M.**, Majewski, W., Anderson, J.B., 2017. 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]
- Anderson, J.B., **Simkins, L.M.**, Bart, P.J., De Santis, L., Halberstadt, A.R.W., Olivo, E. and Greenwood, S.L., 2018. Seismic and geomorphic records of Antarctic Ice Sheet evolution in the Ross Sea and controlling factors in its behaviour. *Geological Society, London, Special Publications*, 475, SP475-5. [doi: 10.1144/SP475.5]
- Simkins, L.M.**, Anderson, J.B., Greenwood, S.L., Gonnermann, H., Prothro, L.O., Halberstadt, A.R.W., Stearns, L.A., Pollard, D., DeConto, R.M., 2017. Anatomy of a meltwater drainage system beneath the ancestral East Antarctic Ice Sheet. *Nature Geoscience*, 10, 691-697. [doi: 10.1038/ngeo3012]
- Simkins, L.M.**, Anderson, J.B., Demet, B.P., 2017. Grounding line processes of the southern Cordilleran Ice Sheet in the Puget Lowland, *Geological Society of America Field Guide* 49, 53-65. [doi:10.1130/2017.0049(03)]
- Simkins, L.M.**, Anderson, J.B., Greenwood, S.L., 2016. Glacial landform assemblage reveals complex retreat of grounded ice in the Ross Sea, Antarctica. *in* Dowdeswell, J. A., Canals, M., Jakobsson, M., Todd, B. J., Dowdeswell, E. K. & Hogan, K. A. (eds). *Atlas of Submarine Glacial Landforms: Modern, Quaternary and Ancient*. Geological Society of London, *Memoirs*, 46, 353–356. [doi: 10.1144/M46.168]
- Simkins, L.M.**, DeWitt, R., Simms, A.R., Briggs, S., Shapiro, R., 2016. Investigation of optically stimulated luminescence behavior of crystalline rock surfaces: A look forward. *Quaternary Geochronology*, 36, 161-173. [doi: 10.1016/j.quageo.2016.09.002]
- Halberstadt, A.R.W., **Simkins, L.M.**, Greenwood, S.L., Anderson, J.B., 2016. Paleo-ice sheet behaviour: retreat scenarios and changing controls in the Ross Sea, Antarctica. *The Cryosphere* 10, 1003-1020. [doi:10.5194/tc-10-1003-2016]
- Yokoyama, Y., Anderson, J.B., Yamane, M. **Simkins, L.M.**, Miyairi, Y., Yamazaki, T., Koizumi, M., Suga, H., Kusahara, K., Hasumi, H., Southon, J.R., Ohkouchi, N., 2016. Widespread collapse of the Ross Ice Shelf during the late Holocene, *Proceedings of the Academy of National Sciences*, 113(9), 2354-2359. [doi: 10.1073/pnas.1516908113]
- Simkins, L.**, Simms, A., Regina DeWitt, 2015. Assessing the link between coastal morphology, wave energy, and sea ice throughout the Holocene from Antarctic raised beaches: *Journal of Quaternary Science* 30, 335-348. [doi: 10.1002/jqs.2782]
- Simkins, L.**, Simms, A., DeWitt, R., 2013. Relative sea-level history of Marguerite Bay derived from optically stimulated luminescence-dated raised beaches: *Quaternary Science Reviews* 77, 141-155. [doi: 10.1016/j.quascirev.2013.07.027]
- Simkins, L.**, DeWitt, R., Simms, A., 2013. Methods to reduce sample carrier contamination for luminescence measurements: *Ancient TL* 31 (1), 19-27. [http://www.ecu.edu/cs-cas/physics/Ancient-Timeline/upload/ATL_31-1_Simkins.pdf]
- Simkins, L.**, Simms, A., Cruse, A., Troiani, T., Atekwana, E., Puckette, J., Yokoyama, Y., 2012. Correlation of early and mid-Holocene events using magnetic susceptibility in estuarine cores from the Gulf of Mexico: *Palaeogeography, Palaeoclimatology, and Palaeoecology* 346-347, 95-107. [doi:10.1016/j.palaeo.2012.05.024]
- Simms, A., Ivins, E., DeWitt, R., Kouremenos, P., **Simkins, L.**, 2012. Timing of the Little Ice Age in the Antarctic Peninsula from optically stimulated luminescence of cobble surfaces within raised beaches: *Quaternary Science Reviews* 47, 41-55. [doi:10.1016/j.quascirev.2012.05.013]

Simms, A., Aryal, N., **Miller, L.**, Yokoyama, Y., 2010. The Incised Valley of Baffin Bay, Texas: A Tale of Two Climates: *Sedimentology* 57, 642-669. [doi: 10.1111/j.1365-3091.2009.01111.x]

SUBMITTED MANUSCRIPTS

Prothro, L.O., Majewski, W., Yokoyama, Y., **Simkins, L.M.**, Anderson, J.B., Yamane, M., Miyairi, Y., Ohkouchi, N. The dynamic retreat of the East Antarctic Ice Sheet: An assessment of timing, pathways, and forcings, *Quaternary Science Reviews*.

CONFERENCE PRESENTATIONS (Last four years)

- Simkins, L.**, Bjarnadóttir, L., Greenwood, S., Winsborrow, M., 2018. Retreat dynamics of marine-based ice sheets: perspectives from diverse high-latitude continental margins. AGU.
- Simkins, L.**, Carter, S., Schroeder, D., Greenwood, S., 2017. Meltwater drainage beneath ice sheets: What can we learn from uniting observations of contemporary and paleo-subglacial hydrology? AGU. (talk)
- Greenwood, S., **Simkins, L.**, Anderson, J., 2017. Diagnosing ice sheet grounding line stability from landform morphology. AGU. (talk)
- Prothro, L., Yokoyama, Y., **Simkins, L.**, Anderson, J., Majewski, W., 2017. Marine evidence of a deconvolving Antarctic Ice Sheet during post-LGM retreat of the Ross Sea sector. AGU.
- Steel, E., **Simkins, L.**, Reynolds, L., Fidler, M.K., 2017. Insights into alluvial fan dynamics: Evolution of the Miocene Elephant Trees Formation, Anza Borrego Desert, CA. AGU.
- Anderson, J., **Simkins, L.**, Greenwood, S., Demet, B., Halberstadt, A.R., Prothro, L., 2017. Role of Grounding Zone Wedges in Grounding Line Stabilization: Case Study from Ross Sea. GSA. (talk)
- Prothro, L., Yokoyama, Y., **Simkins, L.**, Anderson, J., Majewski, W., 2017. Timing and sea level contributions of the deconvolving Antarctic Ice Sheet during post-LGM retreat of the Ross Sea sector. GSA.
- Prothro, L., **Simkins, L.**, Anderson, J., Majewski, W., 2017. Sedimentary processes at paleo-grounding lines: glacial and oceanographic interactions during ice-sheet retreat. GSA. (talk)
- Demet, B., Nitttrouer, J., Anderson, J., **Simkins, L.**, 2017. Sedimentary processes at ice sheet grounding zone wedges: Examples from Antarctica and Washington State (U.S.A.). GSA. (talk)
- Simkins, L.**, Anderson, J.* , 2017. Uncovered anatomy of a subglacial hydrological system coupled to past ice sheet grounding lines. SCAR Past Antarctic Ice Sheet Dynamics Meeting, Trieste, Italy. (talk)
- Horton, B.P., Peltier, W.R., Roy, K., Ashe, E., Shaw, T., Engelhart, S.E., Khan, N.S., Kopp, R.E., **Simkins, L.**, Vacchi, M., Woodworth, S.A., 2017. Holocene sea-levels from Greenland to Antarctica. EGU. (talk)
- Simkins, L.**, Greenwood, S., Anderson, J., 2016. C21D-06: Signatures of ice-marginal landforms formed at marine-based grounding lines. AGU. (talk)
- Greenwood, S., **Simkins, L.**, Halberstadt, A.R., Prothro, L., Anderson, J., 2016. C41B-0656: Holocene reconfiguration and readvance of the East Antarctic Ice Sheet. AGU. (talk)
- Yokoyama, Y., Anderson, J.B., Yamane, M. **Simkins, L.M.**, Miyairi, Y., Yamazaki, T., Koizumi, M., Suga, H., Kushara, K., Hasumi, H., Southon, J.R., Ohkouchi, N., 2016. PP11E-04: Widespread collapse of the Ross Ice Shelf during the late Holocene reconstructed from compound specific C-14 and meteoric Be-10, AGU. (Invited talk)
- Anderson, J., **Simkins, L.**, Prothro, L., 2016. C51F-03: Sedimentological fingerprint of modern and ancient meltwater outbursts across Antarctic continental shelves and slopes. AGU. (talk)
- Horton, B., Ashe, E., Engelhart, S., Khan, N., Kopp, R., Long, A., Peltier, R., Roy, K., Shaw, T., **Simkins, L.**, Vacchi, M., 2016. PP44A-01: A 'pole to pole' database of relative sea-level records. AGU. (talk)
- Halberstadt, A.R., **Simkins, L.**, Anderson, J., Prothro, L., Demet, B., Greenwood, S., Yokoyama, Y., 2016. C53C-0730: Post-LGM Retreat History in Ross Sea Reflects Changing Controls on Marine Ice Sheet Behavior. AGU.
- Prothro, L., Anderson, J., **Simkins, L.**, Majewski, W., 2016. C53C-0736: Glaciomarine Sediment Facies: Using Geomorphic Contexts and Multi-Proxy Analysis to Build Ice-Sheet Retreat Models. AGU.
- Simkins, L.**, Anderson, J., Prothro, L., Greenwood, S., Halberstadt, A.R., Stearns, L., Pollard, D., DeConto, R., Gonnermann, H., 2016. Antarctic Ice Sheet retreat influenced by subglacial meltwater outbursts. West Antarctic Ice Sheet Initiative Workshop, Sterling, Virginia. (talk)
- Anderson, J., Halberstadt, A.R., Yokoyama, Y., **Simkins, L.**, Prothro, L., Greenwood, S., 2016. Complex post-LGM ice sheet retreat history in Ross Sea: Changing controls on marine ice sheet stability. West Antarctic Ice Sheet Initiative Workshop, Sterling, Virginia. (talk)
- Simkins, L.**, Bjarnadóttir, L., Greenwood, S., Winsborrow, M., 2016. Retreat dynamics of marine-based ice sheets: What can we learn from merging Arctic and Antarctic continental shelf records. PALSEA2 Meeting, Mt. Hood, Oregon.
- Simkins, L.**, Anderson, J., Greenwood, S., Halberstadt, A.R., Prothro, L., Stearns, L., Demet, B., 2016. Signatures of meltwater influence on ice-sheet retreat from Antarctic continental shelves. Geologic Society of London Glaciated Margins Meeting, London, England. (talk)

- Anderson, J., **Simkins, L.**, Halberstadt, A.R., Demet, B., Prothro, L., Greenwood, S., Bart, P., 2016. Variable styles and rates of grounding line retreat revealed by high-resolution multibeam data from Ross Sea, Antarctica. Geologic Society of London Glaciated Margins Meeting, London, England. (*talk*)
- Prothro, L., Demet, B., **Simkins, L.**, Halberstadt, A.R., Anderson, J., Majewski, W., 2016. Contribution of localized processes to large-scale ice-margin instability. Geologic Society of London Glaciated Margins Meeting, London, England. (*talk*)
- Yokoyama, Y., Anderson, J., Yamane, M. **Simkins, L.**, Miyairi, Y., Yamazaki, T., Koizumi, M., Suga, H., Kusahara, K., Hasumi, H., Southon, J.R., Ohkouchi, N., 2016. Widespread collapse of the Ross Ice Shelf during the late Holocene. Goldschmidt, Yokohama, Japan. (*talk*)
- Simkins, L.**, Greenwood, S.L., Anderson, J.B., Prothro, L.O., Halberstadt, A.R., Stearns, L.A., Demet, B.P., 2015. 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. AGU. (*talk*)
- Halberstadt, A.R., **Simkins, L.**, Anderson, J.B., Prothro, L.O., Bart, P.J., 2015. Ross Sea till properties: Implications for ice-bed interactions. AGU.
- Demet, B., Anderson, J., Nittrover, J., **Simkins, L.**, Halberstadt, A.R., Prothro, L.O., 2015. Sedimentary processes of unstable ice sheet grounding zones: Comparing polar and temperate grounding zone wedges using marine geophysical data and outcrop studies. AGU.
- Prothro, L., **Simkins, L.**, Anderson, J., Halberstadt, A.R., Yokoyama, Y., Majewski, W., Minzoni, R., 2015. Refining our understanding of sediment retreat facies and geomorphology for an accurate deglacial history of the Ross Sea. GSA, Baltimore, MD.
- Simkins, L.**, Greenwood, S.L., Anderson, J.B., Halberstadt, A.R., Prothro, L.O., Demet, B.P., Stearns, L.A., 2015. Evidence of meltwater influence on rapid ice-sheet retreat in the Ross Sea, Antarctica. West Antarctic Ice Sheet Initiative Workshop, Loveland, CO. (*talk*)
- Halberstadt, A.R., Greenwood, S.L., **Simkins, L.**, Anderson, J.B., 2015. Ross Sea ice stream paleodrainage: retreat scenarios and changing controls. West Antarctic Ice Sheet Initiative Workshop, Loveland, CO.
- Prothro, L., **Simkins, L.**, Anderson, J., Halberstadt, A.R., Yokoyama, Y., Majewski, W., Minzoni, R., 2015. Refining our understanding of sediment retreat facies and geomorphology for an accurate deglacial history of the Ross Sea. West Antarctic Ice Sheet Initiative Workshop, Loveland, CO.
- Simkins, L.**, Halberstadt, A., Greenwood, S., Anderson, J., Majewski, W., Minzoni, R., Prothro, L., Demet, B., Demianiuk, E., Muñoz, Y., 2015. Geomorphic and sedimentological record of complex and episodic post-LGM ice-sheet retreat in the western Ross Sea, Antarctica. International Union for Quaternary Research, Nagoya, Japan. (*talk*)
- Greenwood, S., **Simkins, L.**, Halberstadt, A., Anderson, J., Demet, B., Muñoz, Y., Prothro, L., 2015. Time-varying configuration of ice flow in the western Ross Sea reveals competing West and East Antarctic ice sources during the last glacial period. International Union for Quaternary Research, Nagoya, Japan. (*talk*)
- Simkins, L.**, Simms, A., DeWitt, R., 2015. Antarctic raised beaches as a storm proxy: assessing the link between coastal morphology and climate change throughout the Holocene. International Union for Quaternary Research, Nagoya, Japan. (*talk*)

INVITED TALKS

[College of William and Mary](#) (2018), [University of Illinois, Chicago](#) (2018), [University of Virginia](#) (2018), [Scripps Institution of Oceanography](#) (2017), [University of Houston](#) (2017), [Ohio State University](#) (2017), [Houston Museum of Natural Science](#) (2016), [Oklahoma State University](#) (2016), [Louis Stokes Midwest Center of Excellence Voices of Success Panelist](#) (2016), [Occidental College](#) (2016), [California State University Fullerton](#) (2014), [Rice University](#) (2014), [Aera Energy](#) (2013)

ACADEMIC SERVICE

Editorial Service Geological Society of London Books Editor (2018-present)

Journal Referee Journal of Quaternary Research, Geology, GSA Today, Physical Geography, Sedimentary Geology, The Cryosphere, Quaternary Science Reviews, Science Advances

Proposal Referee NSF Geomorphology and Land-use Dynamics Program, NSF Polar Programs: Antarctic Earth Sciences, NSF Polar Programs: Antarctic Glaciology

Conference Organization [AGU 2018 Grant Review](#) for Global Environmental Change student travel, [GSA 2017 Session](#) 'Glacier and Ice Sheet Grounding Lines,' [GSA 2017 Field Trip Leader](#) 'Grounding line processes of the southern Cordilleran Ice Sheet: Whidbey Island, Puget Lowlands,' [AGU 2016 Session](#) 'Geophysical and Geological Records of Glaciated Margins'

Media Article Science Commentary The Guardian, The Wall Street Journal, The New York Times, USA Today

Board Member Oklahoma State University Boone Pickens School of Geology Advisory Committee (2016-present)