

Jeremy D. Shakun

Associate Professor

Department of Earth & Environmental Sciences

Boston College
Devlin Hall, 140 Commonwealth Ave.

Ph. 617-552-1625

2013-2019 Assistant Professor, Boston College, Earth & Environmental Sciences
Winter 2013 Visiting Instructor, Middlebury College, Geology
Fall 2012 Lecturer, Northeastern University, Earth and Environmental Sciences
2010-2013 Postdoctoral Fellow at Boston University, Woods Hole Oceanographic Institution, Harvard University, Lamont Doherty Earth Observatory
Fall 2009 Lecturer, Oregon State University, Geosciences
2006-2010 Research Assistant, Oregon State University, Geosciences
2005-2006 Teaching Assistant, Oregon State University, Geosciences
2003-2005 Research and Teaching Assistant, University of Massachusetts, Geosciences
Summer 2002 Field mapping, USGS EDMAP Program, Uinta Mountains, Utah

Education

2012 NOAA Climate and Global Change Postdoctoral Fellow

advisor: Maureen E. Raymo

2010 Ph.D., Geology, Oregon State University

"Analyzing large paleoclimate datasets: Implications for past and future climate change"

advisor: Peter U. Clark

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equilibrium-line altitudes and paleoclimate, northeastern Utah"

advisor: Jeffrey S. Munroe

Philosophy

I am a paleoclimatologist who uses the geologic record to understand the behavior of the climate system on decadal to million-year time scales. Given the complexity and interdisciplinary nature of climate science, my research takes a broad and highly collaborative approach. I generate new reconstructions of climate change from glacier, cave, and marine deposits using various geochemical techniques as well as mine existing data to address central questions in paleoclimatology. This work involves a balance between field, laboratory, and statistical components, and collaboration with various types of specialists. I am keenly interested in effectively communicating science to students and nonscientists. I believe this can best be accomplished by providing a holistic perspective that links the detailed techniques and problems in earth science to the big-picture issues surrounding global change.

- 2017 PALSEA2 workshop, Cancun, Mexico: *Minimal East Antarctic Ice Sheet retreat onto land during the past 8 Myr*
- 2017 GSA annual meeting, Seattle, WA, *Pliocene Greenland Ice Sheet growth recorded by in situ ¹⁰Be decrease in multiple marine sediment cores*
- 2017 Woods Hole Oceanographic Institution, Marine Chemistry and Geochemistry: *Polar ice sheet variability over the last 8 Myr from cosmogenic nuclides in marine sediments*
- 2016 Boston University, Biogeosciences Seminar: *The long view on climate change, from the Ice Age to the Anthropocene*
- 2016 AMQUA Biennial meeting, Santa Fe, NM: *From the Ice Age the Anthropocene: What the last 21,000 years tells us about 21st century climate change and beyond*
- 2015 AGU fall meeting, San Francisco, CA: *An 800-kyr record of global surface ocean ¹⁸O and implications for ice volume-temperature coupling*
- 2015 MIT, Oceans/Climate Seminar: *Eight million years of Greenland and Antarctic Ice Sheet dynamics from in situ cosmogenic nuclides in marine sediments*
- 2015 University of Wisconsin-Madison, Department of Geology and Geophysics: *An 800-kyr record of global surface ocean ¹⁸O and implications for ice volume-temperature coupling*
- 2015 EGU an5ETQQ 0912 0 612 792 reW* nBT/F3 11.04 Tf1 0 0 1 90.024 505.63 Tm0ET.y0 612 792 reW* nBT/F5 11.0

2010 SynTraCE-21 workshop, Mt. Hood, OR: *Surface climate evolution during the last deglaciation in proxy records and the SynTraCE-21 model simulation*

Professional Activities

2018- Co-leader

- Current Danielle LeBlanc
Using cosmogenic nuclides in ice-rafted debris to constrain ice sheet dynamics associated with Heinrich events
- 2018 Chris Halsted
Constraining Laurentide Ice Sheet thinning in New England with ¹⁰Be dipsticks
- 2018 Celeste Gambino
A uranium-lead chronology of speleothem deposition in the Canadian Arctic
- 2018 Cole Vickers
Coherent Holocene expansion of a tropical Andean and African glacier
- 2017 Nicole Biller
Widespread Arctic permafrost thaw during Marine Isotope Stage 11 recorded by speleothems
- 2017 Alexandria Koester
Rapid thinning of the Laurentide Ice Sheet in coastal Maine during late Heinrich Stadial 1

Undergraduate

- Current Parker Walsh
Deciphering controls on speleothem growth rates from a global late Quaternary dataset
- Current Hannah Fagan
Global and regional temperature evolution during the last glacial period, 40-20 ka
- 2019 Alex Chansky
Visualizing 20th and 21st century warming with a dynamic map of southward shifting US states
- 2019 Alexandria Kleinschmidt
Speleothem records of Holocene climate variability from the southern Canadian Rockies
- 2017 Peter Brennan
Late Pleistocene speleothem records of Canadian permafrost and climate
- 2016 Heather Roman-Stork
A late Holocene speleothem record of Caribbean climate from Puerto Rico
- 2016 Courtney Cameron
What controls views on climate change at Boston College?
- 2015 Kristy Barnes
A paleoclimate reconstruction using beetles at Arclid Quarry, Cheshire
- 2015 Andrew Jonpe

Prior to Boston College:

2014 Weston Observatory Colloquium Series, Weston, MA talk:
and why we disagree

2014 Boston College Fossil Free [divestment panel](#)

2014

- 2016 Bierman, P. R., **Shakun, J. D.**, Corbett, L. B., Rood, D. H., and Zimmerman, S. A persistent and dynamic East Greenland Ice Sheet over the past 7.5 million years. *Nature*, 540, 256-260.
Highlighted in corresponding Nature News and Views article
- 2016 **Shakun, J. D.**, Raymo, M. E., and Lea, D. W. An early Pleistocene Mg/Ca- ^{18}O record from the Gulf of Mexico: Evaluating ice sheet size and pacing in the 41-kyr world. *Paleoceanography*, doi:10.1002/2016PA002956.
- 2016 Clark, P. U., **Shakun, J. D.**, Marcott, S. A., Mix, A. C., Eby, M., Kulp, S., Levermann, A., Milne, G. A., Pfister, P. L., Santer, B. D., Schrag, D. P., Solomon, S., Stocker, T. F., Strauss, B. H., Weaver, A. J., Winkelmann, R., Archer, D., Bard, E., Goldner, A., Lambeck, K., Pierrehumbert, R. T., and Plattner, G.-K. Consequences of twenty-first-century policy for multi-millennial climate and sea-level change. *Nature Climate Change*, 6, 360-369.
- 2015 **Shakun, J. D.**, Clark, P. U., Marcott, S. A., Brook, E. J., Lifton, N. A., Caffee, M., and Shakun, W. R. Cosmogenic dating of Late-Pleistocene glaciation, southern tropical Andes, Peru. *Journal of Quaternary Science*, doi:10.1002/jqs.2822.
- 2015 **Shakun, J. D.**, Clark, P. U., He, F., Lifton, N. A., Liu, Z., and Otto-Bliesner, B. L. Regional and global forcing of glacier retreat during the last deglaciation. *Nature Communications*, 6, doi:10.1038/ncomms9059.
Highlighted in Science magazine, Editors' Choice, Sept. 11, 2015, 349, 1179.
- 2015 Cross, M., McGee, D., Broecker, W. S., Quade, J., **Shakun, J. D.**, Cheng, H., Lu, Y., and Edwards, R. L. Great Basin hydrology, paleoclimate, and connections with the North Atlantic: A speleothem trace element and stable isotope record from Lehman Caves, NV. *Quaternary Science Reviews*, doi:10.1016/j.quascirev.2015.06.016.
- 2015 **Shakun, J. D.**, Lea, D. W., Lisiecki, L. E., and Raymo, M. E. An 800-kyr record of global surface ocean ^{18}O and implications for ice volume-temperature coupling. *Earth and Planetary Science Letters*, 426, 58-68.
- 2014 Nelson, A., Bierman, P. R., **Shakun, J. D.**, and Rood, D. Using *in situ* cosmogenic ^{10}Be as a sediment source tracer in Greenland's paraglacial environment. *Earth Surface Processes and Landforms*, doi: 10.1002/esp.3565.
- 2013 Marcott, S. A., **Shakun, J. D.**, Clark, P. U., and Mix, A. C. A reconstruction of global and regional temperature for the last 11,300 years. *Science*, 339, 1198-1201.
- 2013 He, F., **Shakun, J. D.**, Clark, P. U., Carlson, A. E., Liu, Z., Otto-Bliesner, B. L., and Kutzbach, J. E. Northern Hemisphere forcing of Southern Hemisphere climate during the last deglaciation. *Nature*, 494, 81-85.
- 2012 Schmittner, A., Urban, N., **Shakun, J. D.**, Mahowald, N. M., Clark, P. U., Bartlein, P. J., Mix, A. C., and Rosell-Mele, A. Response to Comment on "Climate sensitivity estimated from temperature reconstructions of the Last Glacial Maximum." *Science*, 337, 1294.
- 2012 **Shakun, J. D.**, Clark, P. U., He, F., Marcott, S. A., Mix, A. C., Liu, Z., Otto-Bliesner, B. L., Schmittner, A., and Bard, E. Global warming preceded by increasing carbon dioxide concentrations during the last deglaciation. *Nature*, 484, 49-54.

- 2019 Davis, P.T., Marcott, S.A., Vavrus, C., Barth, A., **Shakun, J.D.**, Caffee, M.W. Precise cosmogenic measurements in support of Younger Dryas age for Fourth of July cirque outer moraine, Colorado Front Range, USA. GSA annual meeting, Phoenix, AZ.
- 2019 *Halsted, C.T., **Shakun, J.D.**, Corbett, L.B., Bierman, P.R., Davis, P.T., Goehring, B.M., *Koester, A.J., Caffee, M.W. Reconstructing the paleo-elevation and erosion patterns of the southeastern Laurentide Ice Sheet using in-situ cosmogenic ^{10}Be and ^{14}C . IUGG annual meeting, Montreal, Canada.
- 2019 *Halsted, C.T., **Shakun, J.D.**, Corbett, L.B., Bierman, P.R., Davis, P.T., Goehring, B.M., *Koester, A.J., Caffee, M.W. Assessing the erosivity and deglacial thinning history of the southeastern Laurentide Ice Sheet using in-situ cosmogenic ^{10}Be and ^{14}C . INQUA quadrennial meeting, Dublin, Ireland.
- 2019 *Biller, N., **Shakun, J.D.**

- 2018 *Gambino, C., McGee, D., Ramezani, J., Khadivi, S., **Shakun, J.D.**, Wong, C. Direct U-Pb age constraints on Arctic speleothem formation and their implications for climate change in deep time. Goldschmidt annual meeting, Boston, USA.
- 2018 **Shakun, J.D.**, Bierman, P.R., Corbett, L.B., Underwood, K., Rizzo, D., Zimmerman, S., Caffee, M., Naish, T., Golledge, N., Hay, C. Eight million years of polar ice sheet variations from cosmogenic nuclides in marine sediments. Goldschmidt annual meeting, Boston, USA.
- 2018 Ramezani, J., *Gambino, C., **Shakun, J.D.**, McGee, D., Khadivi, S. Direct U-Pb age constraints on Arctic speleothem formation and their implications for climate change in deep time. EGU annual meeting, Vienna, Austria.
- 2018 Davis, P.T., **Shakun, J.D.**, Bierman, P.R., *Koester, A.J., Corbett, L.B., *Halsted, C.T. Boise Rock, not the glacial erratic that we thought, but rather part of the landslide history of Franconia Notch, New Hampshire. Northeast GSA meeting, Burlington, VT.
- 2018 Corbett, L.B., Bierman, P.R., **Shakun, J.D.**, Davis, P.T., Goehring, B.M., *Koester, A.J., *Halsted, C.T. Constraining glacial history and process on Mount Mansfield, Vermont's highest peak, with in situ cosmogenic ^{10}Be and ^{14}C . Northeast GSA meeting, Burlington, VT.
- 2018 *Halsted, C.T., Shakun, J.D., Bierman, P.R., Davis, P.T., Corbett, L.B., Caffee, M.W. Measuring ^{10}Be ages from top to bottom in Franconia Notch, NH, to constrain Laurentide Ice Sheet history. Northeast GSA meeting, Burlington, VT.
- 2017 **Shakun, J.D.**, *Biller, N., McGee, D., Hardt, B.F., Wong, C.I., Ford, D., Lauriol, B. Widespread permafrost thaw during the Marine Isotope Stage 11 from Arctic speleothems. AGU annual meeting, New Orleans, LA.
- 2017 *Gambino, C., **Shakun, J.D.**, McGee, D., Ramezani, J., Khadivi, S., Wong, C.I. A uranium-lead chronology of speleothem deposition in the Canadian Arctic. AGU annual meeting, New Orleans, LA.
- 2017 *Vickers, A., Shakun, J.D., Goehring, B., Kelly, M.A., Jackson, M.S., Jomelli, V. Tropical Andean and African glacier extent through the Holocene asses with proglacial *in situ* ^{14}C and ^{10}Be measurements. AGU annual meeting, New Orleans, LA.
- 2017 **Shakun, J.D.**, Corbett, L.B., Bierman, P.R., Underwood, K., Rizzo, D.M., Zimmerman, S.R., Caffee, M.W., Naish, T. INVITED. Minimal East Antarctic Ice Sheet retreat onto land during the past 8 Myr. PALSEA2 workshop, Cancun, Mexico.
- 2017 **Shakun, J.D.**, Corbett, L.B., Bierman, P.R., Zimmerman, S.H. INVITED. Pliocene Greenland Ice Sheet growth recorded by *in situ* ^{10}Be decrease in multiple marine sediment cores. GSA annual meeting, Seattle, WA.
- 2017 Corbett, L.B., Bierman, P.R., Neumann, T.A., Graly, J.A., **Shakun, J.D.**, Caffee, M.W., Dunai, T., Zimmerman, S.H. Analysis of three cosmogenic isotopes in subglacial cobbles helps unravel Greenland's exposure and erosion history. GSA annual meeting, Seattle, WA.
- 2017 Barth, A.M., Marcott, S.A., Horvath, A., **Shakun, J.D.**, Licciardi, J.M. Early deglacial thinning of the Laurentide Ice Sheet followed by rapid regional deglaciation. GSA annual meeting, Seattle, WA.
- 2017 *Koester, A.J., **Shakun, J.D.**, Bierman, P.R., Davis, P.T., Corbett, L.B., Goehring, B.M., Vickers, A., Zimmerman, S.H. Rapid thinning of the Laurentide Ice Sheet at Mt. Washington, NH, during the Bølling warming, constrained by analysis of cosmogenic ^{14}C and ^{10}Be . GSA annual meeting, Seattle, WA.
- 2017 Bierman, P.R., Corbett, L.B., **Shakun, J.D.**, Schmidt, A.H. Counting atoms to place human impacts in a geologic context. GSA annual meeting, Seattle, WA.
- 2017 Vavrus, C., Barth, A.M., Marcott, S.A., Ceperley, E.G., **Shakun, J.D.**, Caffee, M.W. A late Holocene

- 2014 Marcott, S.A., **Shakun, J.D.**, Clark, P.U., Mix, A.C., Pierrehumbert, R., Goldner, A.P. Long-term perspective underscores need for stronger near-term policies on climate change. AGU annual meeting, San Francisco, CA.
- 2014 Hoffman, J.S., Clark, P.U., Pisias, N.G., Marcott, S.A., **Shakun, J.D.** Estimating age model uncertainties for the last interglaciation. AGU annual meeting, San Francisco, CA.
- 2014 **Shakun, J.D.**, Lea, D.W., Lisiecki, L.E., Raymo, M.E. An 800-kyr record global surface ocean $^{18}\text{O}_{\text{sw}}$ and implications for ice volume-temperature coupling. AGU annual meeting, San Francisco, CA.
- 2014 **Shakun, J.D.**, Lea, D.W., Lisiecki, L.E., Raymo, M.E. SST and ice volume over the past eight interglacials. PAGES Holocene workshop, Mt. Hood, OR.
- 2014 **Shakun, J.D.** INVITED. How unique is recent climate change in the context of the Holocene? Swedish Royal Academy of Sciences conference on “Climate Change in the light of IPCC AR5”, Stockholm, Sweden.
- 2013 **Shakun, J.D.**, Bierman, P.R. A 7 Myr record Greenland glaciation and erosion from *in situ* ^{10}Be in marine sediments. AGU annual meeting, San Francisco, CA.
- 2013 Lea, D.W., Saraswat, R., DiNezio, P.N., Tierney, J.E., **Shakun, J.D.**, Blaauw, M. The hydrological response of the Indian Ocean during the LGM and deglaciation. AGU annual meeting, San Francisco, CA.
- 2013 He, F., **Shakun, J.D.**, Clark, P.U. Transient simulation of global changes of the hydrological cycle during the last deglaciation. AGU annual meeting, San Francisco, CA.
- 2013 Bierman, P.R., **Shakun, J.D.** *In situ* produced ^{10}Be in marine sediment records 7 million years of

A.M., Caffee, M.W., Davis, P.T. ^{10}Be -based chronologies of late Pleistocene and Holocene cirque glaciation across western North America. GSA annual meeting, Charlotte, NC.

2012

- A latest Pleistocene and Holocene chronology of alpine glaciation for western North America. GSA annual meeting, Portland, OR.
- 2009 Marcott, S.A., Clark, P.U., **Shakun, J.D.**, Brook, E.J., Novak, A., Caffee, M.W. A latest Pleistocene and Holocene chronology of alpine glaciation for the western United States. Past Global Changes Young Scientists' Meeting, Corvallis, OR.
- 2008 **Shakun, J.D.**, Shaman, J. Southern Hemisphere PDO?: Interhemispheric symmetry suggests tropical forcing of Pacific decadal variability. AGU annual meeting, San Francisco, CA.
- 2008 **Shakun, J.D.**, Clark, P.U., Marcott, S.A., Brook, E.J., Caffee, M.W. ¹⁰Be constraints on the timing of the Last Glacial Maximum and deglaciation in the northern Peruvian Andes. American Quaternary Association biennial meeting, State College, PA.
- 2007 **Shakun, J.D.**, Clark, P.U., Marcott, S.A., Brook, E.J., Caffee, M.W. ¹⁰Be constraints on the timing of the Last Glacial Maximum and deglaciation in the northern Peruvian Andes. AGU annual meeting, San Francisco, CA.
- 2007 Marcott, S.A., Clark, P.U., **Shakun, J.D.**, Brook, E.J. A Holocene chronology of alpine glaciation for the western United States. AGU annual meeting, San Francisco, CA.
- 2005 **Shakun, J.D.**, Burns, S.J., Fleitmann, D., Kramers, J., Matter, A., Al-Subary, A. A record of changes in the Indian Monsoon from ~29 to 11 ka based on a stalagmite from Socotra Island, Yemen. AGU annual meeting, San Francisco, CA.
- 2005 Laabs, B.J.C., Munroe, J.S., **Shakun, J.D.**, Caffee, M. New evidence of synchronicity between deglaciation of the Uinta Mountains and the fall of Lake Bonneville. GSA annual meeting, Salt Lake City, UT.
- 2003 **Shakun, J.D.**, Munroe, J.S., Laabs, B.J.C. Last Glacial Maximum equilibrium-line altitudes and paleoclimate, northeastern Utah. GSA annual meeting, Seattle, WA.
- 2003 Laabs, B.J.C., **Shakun, J.D.**, Munroe, J.S., Mickelson, D.M., Singer, B.S., Caffee, M. Cosmogenic-exposure age limits on the Last Glacial Maximum in the south-central Uinta Mountains, northeastern Utah. GSA annual meeting, Seattle, WA.

Media Interviews

1-24-18NBC Boston:

3-12-13 Congressman Peter DeFazio (OR-D) House floor [statement](#)
3-10-13 Forbes: [What excellent news: earth warmer than in most of the past 11,300 years](#)
3-9-13 The Atlantic: [We're Screwed: 11,000 years' worth of climate data prove it](#)
3-9-13 Wired.com: ['Hockey stick' climate graph gets more dramatic](#)
3-8-13 CNN: [Global warming is epic, long-term study says](#)
3-8-13 NPR: [Past century's global temperature change is fastest on record](#)
3-8-13 Scientific American: [Global average temperatures are close to 11,000-year peak](#)
3-8-13 Bloomberg Businessweek: [Recent heat spike unlike anything in 11,000 years](#)
3-7-13 NBC News: [Warming fastest since dawn of civilization, study shows](#)
3-7-13 New York Times: [Global temperatures highest in 4000 years](#)
3-7-13 Bloomberg:

[degrees lower](#)

11-25-11 NYT Dot Earth: [Study finds limited sensitivity of climate to CO2](#)

11-25-11 Environmental Research Web: [Is climate sensitivity lower than IPCC finding?](#)

11-25-11 Investors.com: [Global warming models called into question by new study](#)

11-25-11 ABC Science: [Global warming rate less than feared](#)

11-24-11 New York Times: [How much will the earth warm up?](#)

11-24-11 Time: [New study suggests climate change may be \(slightly\) less severe than feared](#)

11-24-11 New Scientist: [CO2 may not warm the planet as much as thought](#)

11-24-11 Physorg.com: [Climate sensitivity to CO2 more limited than extreme projections – research](#)

8-7-09 Science Daily: [Long debate ended over cause, demise of ice ages? Research into earth's wobble](#)