

Marissa M. Tremblay

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EDUCATION

University of California, Berkeley (UC Berkeley) Ph.D., Earth and Planetary Science (EPS) Advisor: David L. Shuster	2012–2017
Barnard College of Columbia University B.A. Environmental Science, <i>summa cum laude</i>	2008–2012

PROFESSIONAL APPOINTMENTS

Assistant Professor, Purdue University Department of Earth, Atmospheric, and Planetary Sciences (EAPS)	2019–present
Newton International Fellow of the Royal Society Scottish Universities Environmental Research Centre (SUERC) Mentor: Darren Mark	2018–2019
University of California President’s Postdoctoral Fellow University of California, Davis Mentor: Sujoy Mukhopadhyay	2017
Research & Teaching Assistant, UC Berkeley	2012–2017

HONORS AND AWARDS

Marion Milligan Mason Award for Women in the Chemical Sciences, American Association for the Advancement of Science	2020
Doris M. Curtis Outstanding Woman in Science Award, Geological Society of America	2020
Citation for Excellence in Refereeing, American Geophysical Union	2018
Charles & Nancy Naeser Prize, Intl. Standing Committee on Thermochronology	2018
Marie Skłodowska-Curie Individual Fellowship (<i>declined</i>)	2018
The Royal Society Newton International Fellowship	2017
University of California President’s Postdoctoral Fellowship	2017
Lamont-Doherty Earth Observatory Postdoctoral Fellowship (<i>declined</i>)	2017
Louderback Award, UC Berkeley EPS	2015
National Science Foundation Graduate Research Fellowship	2014
Outstanding Graduate Student Mentor, NERDS program, UC Berkeley	2013
Richards Family Graduate Fellowship, UC Berkeley	2012
Departmental Honors, Barnard College Environmental Science	2012
Distinction, Senior Thesis, Barnard College Environmental Science	2012
Phi Beta Kappa	2011
Barry M. Goldwater Scholarship	2011
National Oceanic and Atmospheric Administration Ernest F. Hollings Scholar	2010

PUBLICATIONS

Peer-reviewed

18. Domingos, R., **Tremblay, M.M.**, Militzer, B., and Shuster, D.L., 2020, Simulations and experiments reveal effect of nanopores on helium diffusion in quartz. *ACS Earth and Space Chemistry*, v. 4(11), p. 1906-1912. doi:10.1021/acsearthspacechem.0c00187
17. Carter, J.N., Ickert, R.B., Mark, D.F., **Tremblay, M.M.**, Cresswell, A., and Sanderson, D.C.W., 2020, Production of ^{40}Ar by an overlooked mode of ^{40}K decay with implications for K-Ar geochronology. *Geochronology*, v. 2, p. 355-365. doi:10.5194/gchron-2-355-2020
16. **Tremblay, M.M.**, and Cassata, W.S., 2020, Noble gas thermochronology of extraterrestrial materials. *Elements*, v. 16(5), p.331-336. doi:10.2138/gselements.16.5.331
15. Zeitler, P.K., and **Tremblay, M.M.**, 2020, Measuring noble gases for thermochronology. *Elements*, v. 16(5), p. 343-344. doi:10.2138/gselements.16.5.343
14. Carter, J.N.^G, **Tremblay, M.M.**, and Mark, D.F., 2020, A Bayesian approach to the deconvolution of $^{40}\text{Ar}/^{39}\text{Ar}$ data from mineral mixtures. *Chemical Geology*, v. 554, 119784. doi:10.1016/j.chemgeo.2020.119784
13. Park, Y., Swanson-Hysell, N.L., MacLennan, S.A., Maloof, A.C., Gebreslassie, M., **Tremblay, M.M.**, Schoene, B., Alene, M., Antilla, E.S.C., Tesema, T., and Haileab, B., 2020, The lead-up to the Sturtian Snowball Earth: Neoproterozoic chemostratigraphy time-calibrated by the Tambien Group of Ethiopia. *Geological Society of America Bulletin*, v. 132(5-6), p. 1119-1149. doi:10.1130/B35178.1
12. **Tremblay, M.M.**, Shuster, D.L., Spagnolo, M., Renssen, H., and Ribolini, A., 2019, Temperatures recorded by cosmogenic noble gases since the last glacial maximum in the Maritime Alps: Quaternary Research, v. 91(2), p. 829-847. doi:10.1017/qua.2018.109
11. Dygert, N., Jackson, C.R.M., Hesse, M.A., **Tremblay, M.M.**, Shuster, D.L., and Gu, J.T., 2018, Plate tectonic cycling modulates Earth's $^3\text{He}/^{22}\text{Ne}$ ratio. *Earth and Planetary Science Letters*, v. 498, p. 309-321. doi:10.1016/j.epsl.2018.06.044
10. Ingalls, M., Rowley, D., Olack, G., Currie, B., Li, S., Schmidt, J., **Tremblay, M.**, Shuster, D.L., Lin, D., and Colman, A., 2018, Paleocene to Pliocene low-latitude high elevation of southern Tibet: Implications for tectonic models of India-Asia collision, Cenozoic climate, and geochemical weathering. *Geological Society of America Bulletin*, v. 130(1-2), p. 307-330. doi:10.1130/B31723.1
9. **Tremblay, M.M.**, Shuster, D.L., Balco, G., and Cassata, W.S., 2017, Neon diffusion kinetics and implications for cosmogenic neon paleothermometry in feldspars. *Geochimica et Cosmochimica Acta*, v. 205, p. 14-30. doi:10.1016/j.gca.2017.02.013
8. Garrick-Bethell, I., Weiss, B.P., Shuster, D.L., Tikoo, S.M., and **Tremblay, M.M.**, 2017, Further evidence for early lunar magnetism from troctolite 76535. *Journal of Geophysical Research: Planets*, v. 122(1), p. 76-93. doi:10.1002/2016JE005154
7. Schmidt, J.L., Zeitler, P.K., Pazzaglia, F.J., **Tremblay, M.M.**, Shuster, D.L., and Fox, M., 2015, Knickpoint evolution on the Yarlung Tsangpo, southern Tibet: Evidence for a regional late Cenozoic base level adjustment. *Earth and Planetary Science Letters*, v. 430, p. 448-457. doi:10.1016/j.epsl.2015.08.041
6. **Tremblay, M.M.**, Fox, M., Schmidt, J.L., Tripathy-Lang, A., Wielicki, M.M., Harrison, T.M., Zeitler, P.K., and Shuster, D.L., 2015, Erosion in southern Tibet shut down at 10 Ma due to enhanced rock uplift within the Himalaya. *Proceedings of the National Academy of Sciences*, v. 112(39), p. 12030-12035. doi:10.1073/pnas.1515652112

5. Swanson-Hysell, N.L., Maloof, A.C., Condon, D.J., Jenkin, G.R.T., Alene, M., **Tremblay, M.M.**, Tesema, T., Rooney, A.D., and Haileab, B., 2015, Stratigraphy and geochronology of the Tambien Group, Ethiopia: Evidence for globally synchronous carbon isotope change in the Neoproterozoic. *Geology*, v. 43(4), p. 323-326. doi:10.1130/G36347.1
4. Breecker, D.O., Bergel, S., Nadel, M., **Tremblay, M.M.**, Osuna-Orozco, R., Larson, T.E., and Sharp, Z.D., 2015, Minor stable carbon isotope fractionation between respired carbon dioxide and bulk soil organic matter during laboratory incubation of topsoil. *Biogeochemistry*, v. 123, p. 83-98. doi:10.1007/s10533-014-0054-3
3. **Tremblay, M.M.**, Shuster, D.L., and Balco, G., 2014, Diffusion kinetics of ^3He and ^{21}Ne in quartz and implications for cosmogenic noble gas paleothermometry. *Geochimica et Cosmochimica Acta*, v. 142, p. 186-204. doi:10.1016/j.gca.2014.08.010
2. **Tremblay, M.M.**, Shuster, D.L., and Balco, G., 2014, Cosmogenic noble gas paleothermometry. *Earth and Planetary Science Letters*, v. 400, p. 195-205. doi:10.1016/j.epsl.2014.05.040
1. Straub, M., **Tremblay, M.M.**, Sigman, D.M., Studer, A.S., Ren, H., Toggweiler, J.R., and Haug, G.H., 2013, Nutrient conditions in the subpolar North Atlantic during the last glacial period reconstructed from foraminifera-bound nitrogen isotopes. *Paleoceanography*, v. 28, p. 79-90. doi:10.1002/palo.20013

Other publications

Cohen, B.A., Zellner, N., Wadhwa, M., Turrin, B., **Tremblay, M.M.**, and 26 others, 2020, Geochronology as a Framework for Inner Solar System History. White paper submitted to: *Planetary Science and Astrobiology Decadal Survey 2023-2032*, 7 p.

CONFERENCE PROCEEDINGS, LAST 3 YEARS (* = cancelled due to covid-19)

17. Dennis, D., Scherler, D., Niedermann, S., Hippe, K., Wittman, H., Ravel, L., **Tremblay, M.M.**, Guralnik, B., and Lupker, M., Evaluating the temperature dependence of bedrock hillslope erosion in the Mont Blanc massif using *in situ* cosmogenic ^{14}C - ^{10}Be - ^3He . European Geophysical Union Annual Meeting, virtual.
16. O'Brien, A.C., Hallis, L.J., Regnault, C., Morrison, D.J., Tait, A., Salik, M.A., Blackburn, G., **Tremblay, M.M.**, McKay, E., Ascough, P., Steele, A., Toney, J., Lee, M.R., 2021, Constraining the fall scenario of the Lafayette meteorite using metabolomics. 52nd Lunar and Planetary Science Conference, virtual.
15. **Tremblay, M.M.**, 2020, Utilizing diffusion kinetics to learn more from $^{40}\text{Ar}/^{39}\text{Ar}$ geochronology. American Geophysical Union Fall Meeting, virtual. *Invited*
14. Sprain, C.J., Mittal, T., Fendley, I., **Tremblay, M.M.**, Renne, P., and Mark, D.F., 2020, Improving the resolution of rates and dates by integrating paleomagnetic and high-precision geochronological techniques. American Geophysical Union Fall Meeting, virtual. *Invited*
13. Dennis, D., Scherler, D., Niedermann, S., Hippe, K., Wittmann, H., Ravel, L., **Tremblay, M.M.**, Guralnik, B., and Lupker, M., 2020, Testing the temperature dependence of high-alpine erosion with *in situ* cosmogenic ^{14}C - ^{10}Be - ^3He . American Geophysical Union Fall Meeting, virtual.
12. Domingos, R., **Tremblay, M.M.**, Shuster, D.L., and Miltzer, B., 2020, Simulations and experiments reveal effect of nanopores on helium diffusion in quartz. American Geophysical Union Fall Meeting, virtual.

11. ***Tremblay, M.M.**, 2020, Using noble gas diffusion kinetics to inform geochronology. 30th Annual V.M. Goldschmidt Conference, Honolulu, USA. *Invited*
10. *Brown, N.D., **Tremblay, M.M.**, Uebner, M., Stock, G.M., Balco, G., and Shuster, D.L., 2020, Constraining post-glacial temperatures of rock avalanche deposits in the Yosemite Valley with cosmogenic noble gas and luminescence paleothermometry. European Geophysical Union General Assembly 2020, Vienna, Austria.
9. **Tremblay, M.M.**, Rugenstien, M.A.A., and Caves Rugenstein, J.K., 2020, A Warm, Productive Environment at the India-Asia Suture Zone During a Warm, Productive Oligocene-Miocene World? American Geophysical Union Chapman Conference on the Evolution of the Monsoon, Biosphere and Mountain Building in Cenozoic Asia, Washington, D.C., USA.
8. **Tremblay, M.M.**, Guralnik, B., Phillips, M., Gribenski, N., Haberkorn, A., Hippe, K., Valla, P.G., and Shuster, D.L., 2019, Cosmogenic ^{10}Be - ^{14}C - ^3He observations in Gotthard Pass, Switzerland, document snow-related rock temperature increases during the industrial period. American Geophysical Union Fall Meeting, San Francisco, USA.
7. Carter, J.N., Mark, D.F., and **Tremblay, M.M.**, 2019, A Bayesian approach to deconvolving $^{40}\text{Ar}/^{39}\text{Ar}$ data from multi-component mixtures. American Geophysical Union Fall Meeting, San Francisco, USA.
6. Ickert, R.B., Carter, J.N., Mark, D.F., **Tremblay, M.M.**, Cresswell, A., and Sanderson, D.C.W., 2019, Percent-level production of ^{40}Ar by an overlooked mode of ^{40}K decay. American Geophysical Union Fall Meeting, San Francisco, USA.
5. Pickersgill, A.E., Christou, E., Mark, D.F., Lee, M.R., **Tremblay, M.M.**, Rasmussen, C., Morgan, J.V., Gulick, S.P.S., Schmieder, M., Osinski, G.R., Simpson, S., Kring, D.A., Cockell, C., Collins, G.S., Christeson, G., and Tikoo, S., 2019, 6 million years of hydrothermal activity at Chicxulub? Large Meteorite Impact and Planetary Evolution VI, Brasília, Brazil.
4. **Tremblay, M.M.**, Sprain, C.J., Mark, D.F., and Sanderson, D., 2019, A multi-system approach to determining the ages of vitrified hill forts in Scotland. Geological Society of America Annual Meeting, Phoenix, USA.
3. Schmidt, J.L., Zeitler, P.K., **Tremblay, M.M.**, and Shuster, D.L., 2019, Differential Unroofing Across the Southeastern Lhasa Block and Namche Barwa Antiform. Geological Society of America Annual Meeting, Phoenix, USA.
2. Gribenski, N., Valla, P.G., **Tremblay, M.M.**, Guralnik, B., Phillips, M., Hippe, K., and Shuster, D.L., 2019, Using cosmogenic ^3He for paleotemperature reconstruction in formerly glaciated areas of the central European Alps. International Union for Quaternary Research, Dublin, Ireland.
1. **Tremblay, M.M.**, Mark, D.F., Carter, J.N., Cohen, B.E., Robinson, A., and Chung, P., 2019, Thermal evolution of lunar feldspathic breccias constrained by $^{40}\text{Ar}/^{39}\text{Ar}$ thermochronology. 50th Lunar and Planetary Science Conference, Houston, USA.

INVITED LECTURES (* = cancelled due to covid-19)

Department of Geological Sciences and Engineering, Queen's University	March 2021
Department of Earth Sciences, University of Geneva	December 2020
Purdue Climate Change Research Center	December 2020
Department of Geophysical Sciences, University of Chicago	November 2020
Department of Geology, Carleton College	October 2020

Department of Earth and Atmospheric Sciences, Indiana University	October 2020
Department of Geology and Geophysics, Louisiana State University	October 2020
Department of Earth and Environmental Sciences, Vanderbilt University	February 2020
Department of Geosciences, Princeton University	November 2019
Department of Geology, University of Illinois Urbana-Champaign	October 2019
The Hutton Club, University of Edinburgh	November 2018
School of Geographical & Earth Sciences, University of Glasgow	March 2018
School of Earth and Environmental Sciences, University of Manchester	February 2018
Department of Geoscience, University of Wisconsin–Madison	February 2018
Department of Earth, Atmospheric, and Planetary Sciences, Purdue University	February 2018
Department of Geology and Geophysics, Yale University	February 2018
School of School of Earth and Ocean Sciences, University of Victoria	January 2018
Department of Earth, Ocean and Ecological Sciences, University of Liverpool	November 2017
School of Earth and Environmental Sciences, University of St Andrews	November 2017
Department of Earth and Planetary Science, UC Berkeley	May 2017
Department of Earth and Planetary Sciences, UC Davis	March 2017
Department of Geological Sciences, Stanford University	February 2017
Department of Earth Science, University of California, Santa Barbara	January 2017
Department of Geography and Environment, University of Aberdeen	October 2015
Scottish Universities Environmental Research Centre	October 2015

STUDENTS SUPERVISED

PhD students, advisor

John Fink, Purdue University, EAPS	2020–present
Moshammat Mijjum, Purdue University, EAPS	2020–present
John Carter, SUERC (co-advised with Darren Mark)	2018–present

PhD students, committee member

Austin Blevins, Purdue University, EAPS	2019–present
Laura Chaves, Purdue University, EAPS	2019–present
Erin Donaghy, Purdue University, EAPS	2020–present
Alexandria Koester, Purdue University, EAPS	2019–present
Angus Moore, Purdue University, EAPS	2020–present
Sean Wiggins, Purdue University, EAPS	2020–present

Undergraduate students

Brittany Linn, Purdue Chemistry	2021
Juliana Peckenpaugh, Purdue EAPS	2020–present
John Herring, Purdue EAPS (URSA Scholar)	2020
Simon Mason, Purdue Computer Science (Summer Stay Scholar)	2020
Isabella Zuffoletti, Purdue EAPS (URSA Scholar)	2020
Samantha Golding, Purdue EAPS	2019–2020
Abigail Robinson, SUERC (Paneth Meteorite Trust Intern)	Summer 2018
Matthew Kirk, UC Berkeley EPS	2017–2018
Tristan Bench, UC Berkeley EPS	2016–2017
Maura Uebner, UC Berkeley EPS (Honors thesis)	2015–2017
Sylvia Woodmansee, UC Berkeley EPS	Summer 2015

Sarah Beroff, UC Berkeley EPS (NERDS program)

Summer 2013

DEPARTMENT & UNIVERSITY SERVICE

Executive Committee, Purdue EAPS	2021–present
Safety Committee, Purdue EAPS	2020–present
Graduate Committee, Purdue EAPS	2019–present
Outreach Committee, Purdue EAPS	2019–present
Organizer, EAPS Geology & Geophysics ‘Gaggle’ talk series	2020–2021
Judge, Purdue Undergraduate Research Conference	2020
Panelist at “Ask a Scholar: Goldwater Scholars' Advice for Current Applicants,” National and International Scholarships Office	2020
Coordinator, SUERC seminar series	2018–2019
Member, SUERC self-assessment team, Athena-SWAN Charter application	2018
Co-coordinator, Center for Isotope Geochemistry seminar series, UC Berkeley	2017
Graduate Student Representative, Earth and Planetary Science, UC Berkeley	2015
Co-coordinator, EPS graduate student brown bag seminar, UC Berkeley	2013–2014

PROFESSIONAL SERVICE

Journal Referee: <i>Applied Geochemistry; Boreas; Chemical Physics; Earth and Planetary Science Letters; Earth Surface Dynamics; Geochemistry, Geophysics, Geosystems; Geochimica et Cosmochimica Acta; Geology; The Journal of Geology; Journal of Geophysical Research: Earth Surface; Meteoritics & Planetary Science; Nature; Nature Geoscience; Palaeogeography, Palaeoclimatology, Palaeoecology; Quaternary Geochronology; Science Advances; Tectonics</i>	
Proposal Referee: <i>AAAS Research Competitiveness Program; National Aeronautics and Space Administration; National Science Foundation; UK Science and Technology Facilities Council</i>	
Proposal Review Panelist, <i>US National Science Foundation</i>	2021
Discussion Leader, <i>Evolution of the Lithosphere</i> , Gordon Research Conference on Geochronology	2020–2023
Associate Editor, <i>Geochronology (GChron)</i>	2019–present
Organizing Committee, Thermo2021 Conference	2019–present
Guest Editor, <i>Elements</i> magazine thematic issue on noble gas thermochronology	2019–2020
Session Convener, “ <i>Advances and applications in Quaternary geochronology</i> ” 100 th Annual American Geophysical Union Fall Meeting	2019
Outstanding Student Paper Award Coordinator & Student Travel Grant Reviewer, VGP Section, American Geophysical Union	2017–2018
Session Convener, “ <i>Innovations and Advances and in Thermochronology</i> ” 27 th Annual V.M. Goldschmidt Conference	2017
Session Convener, “ <i>Novel Geochemical Approaches for Quantifying Rates of Surface Processes</i> ” 26 th Annual V.M. Goldschmidt Conference	2016

TEACHING

Purdue University (as Instructor)
EAPS 100 Planet Earth

Spring 2021

EAPS 699 PhD Research	Fall 2020, Spring 2021
EAPS 591 Geo/cosmochemistry	Fall 2020
EAPS 497 Undergraduate Research	Spring 2020, Fall 2020, Spring 2021
EAPS 591 Geologic Dating Methods	Fall 2019

UC Berkeley (as Graduate Student Reader or Graduate Student Instructor)

EPS 124/224 Isotope Geochemistry	Spring 2017
EPS 116 Structural Geology and Tectonics	Spring 2016
EPS 124/224 Isotope Geochemistry	Spring 2015
EPS 117 Geomorphology	Fall 2014
EPS 131 General Geochemistry	Spring 2013

OUTREACH AND VOLUNTEERING

SciLine Expert Source, American Association for the Advancement of Science	2020–present
<i>Science-A-Thon</i> , Earth Science Women’s Network	2018–2020
Speaker, Indiana Astronomical Society 2020 program series	2020
Guest, Purdue College of Science <i>Superheroes of Science</i> podcast	2019
Volunteer, Skype a Scientist	2019–present
Pen pal, Letters to a Pre-Scientist	2018–present
Mentor, Society of Women in the Physical Sciences, UC Berkeley	2013–2015
EPS graduate student outreach, Bay Area Scientists in Schools	2013–2016
Research Mentor, UC Berkeley NERDS program	2013
Alumni Admissions Representative, Barnard College	2014–present

PROFESSIONAL MEMBERSHIPS

American Association for the Advancement of Science (2020–present); American Geophysical Union (2009–present); European Association of Geochemistry (2018–present); European Geosciences Union (2016–present); Geochemical Society (2012–present); Geological Society of America (2009–present); Mineralogical Society of America (2020–present); Meteoritical Society (2017–present); National Association of Geoscience Teachers (2020–present).