Joshua Murray

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Education

- **Columbia University** — New York, NY
  Postdoctoral Research Scientist — *September 2024*
  Lamont-Doherty Earth Observatory *With Prof. Peter Kelemen*
- **Massachusetts Institute of Technology** — Cambridge, MA
  PhD — *August 2024*
  Earth, Atmospheric and Planetary Sciences *With Prof. Oli Jagoutz*
- **Princeton University** — Princeton, NJ
  A.B. — *June 2018*
  Concentration in Geosciences. Certificate in Applications of Computing

Publications

- **Sedimentary constraints on silicate weathering during the Taconic orogeny in Newfoundland**
  Joshua Murray, Kristin Bergmann, Oliver Jagoutz. *In prep*
- **Olivine alteration and the loss of Mars' early carbon**
  Joshua Murray, Oliver Jagoutz. *Science Advances* (2024)
- **Palaeozoic cooling modulated by ophiolite weathering through organic carbon preservation**
  Joshua Murray, Oliver Jagoutz. *Nature Geoscience* (2023)
- **Eruption history of the Columbia River Basalt Group constrained by high-precision U-Pb and ^{40}Ar/^{39}Ar geochronology**
  Jennifer Kasbohm, Blair Schoene, Darren Mark, **Joshua Murray**, Stephen Reidel, Dawid Szymanowski, Dan Barfod, Tiffany Barry. *Earth and Planetary Science Letters, 617, 118269* (2023)

Press and Science Communication

- **Mars' missing atmosphere could be hiding in plain sight**
  The Independent; Newsweek; MIT News
- **A mineral produced by plate tectonics has a global cooling effect**
  Business Today; Phys.org; MIT News; Presented, by invitation, at Concord-Carlisle High School
- **The natural levers of Earth's long-term climate**
  Poster at New England Aquarium - Carlson lecture 2022

Talks and Presentations

- **Invited: Ultramafic weathering and the carbon cycle of Earth and Mars**
  Princeton University Solid Earth Brown Bag - April 2024
- **Invited: Glaciations induced by ophiolite weathering through clay formation**
  Stanford University Earth & planetary science seminar - February 2024
- **Invited: Ophiolite obduction and clay formation as a driver of Paleozoic glaciations**
  Brown University geochemistry, mineralogy, and petrology seminar - Fall 2023
- **Increased organic carbon burial through ophiolite obduction**
  NSF-FRES Climate-tectonics workshop 2023 - Talk
- **A sedimentary sink for Mars' early carbon**
  AGU Fall Meeting 2022 - Talk
- **Ophiolite-derived clays enhance organic carbon burial**
  AGU Fall Meeting 2022 - Poster
- **Silicate weathering products of mafic and ultramafic rocks as a control on steady state climate**
  AGU Fall Meeting 2021 - Talk

Honours and Awards

- **MIT EAPS Award for Excellence in Teaching** 2021
  Awarded to teaching assistants 'who have met the highest levels of performance'
- **MIT Presidential Fellowship** 2018-2019
  Funds tuition and living costs for the first academic year at MIT
- **William Bonini '48 Teaching Award** 2018
  Awarded to Princeton Geosciences Senior for commitment to teaching
- **Smith-Newton Environmental Scholar** 2016-2018
  Research funding and support from the High Meadows Environmental Institute
- **Fulbright Sutton Trust US Programme** 2012-2014
  Supports first-generation, low-income UK state school students in attending university in the US

Teaching Experience

- **MIT 12.116 - Analysis of Geologic Data** Spring 2024
  TA. Lead digitization of field maps. Work through cross sections, stratigraphic columns, final report etc.
- **MIT 12.115/12.482 - Field Geology** January 2024
  TA. Organised 3-week trip to Muddy Mountains, NV. Instructed mapping techniques, paper and digital.
- **MIT 12.001 - Introduction to Geology** Fall 2020, Fall 2022
  TA. Organised Western MA trip. Led labs and some lectures. Wrote exam questions. Graded.
- **MIT 12.S597 - Seminar on Teaching in Earth Science** January 2022
  Participant in seminar on pedagogical concepts & strategies for teaching equitably, course design, feedback.
- **Princeton GEO 370 - Sedimentology** Spring 2018
  TA. Organised trip to Shark Bay, Australia. Assisted problem sets.
- **Princeton GEO 373 - Structural Geology** Fall 2017
  Field TA. Helped students with mapping and observation in Southern California.

Languanges and Skills

- **Coding** MATLAB, Java, HTML, R
- **Adobe** Illustrator, Photoshop, Premiere, InDesign
- **Mapping** GIS, MATLAB Mapping Toolbox, Paper & pencil
- **Driving** Automatic, Manual, Field vehicles etc.
- **Laboratory** Mineral separation, Petrographic microscope, Mineral dissolution
- **Interests** Film photography, ultimate (frisbee), cooking and baking

Mentoring and Service

- **Geodynamics Seminar Organiser** 2024-
  Talks include geodynamics, geochemistry, palaeoclimatology, volcanology.
- **Reviewer** 2024
  PNAS; JGR
- **COG3 Seminar Organiser** 2022-2023
  One of two organisers of MIT's seminar in Chemical Oceanography, Geology, Geochemistry, and Geobiology
- **President - EAPS Student Advisory Committee (ESAC)** 2020-2021
  Liaise with students and leadership to build meaningful community through events and dialogue
- **Mentor - Fulbright Sutton Trust US Programme Mentor** 2019-
  Mentored two first-generation British students each year through US university and financial aid apps
- **Assistant Coach - MIT Men's Ultimate** 2019-2024
  Lead practices, logistics, and strategy over short-term (tournaments) and long-term (seasons)
- **Mathey College RCA of the Year** 2017-2018
  Acknowledged for my work building community within the residential college system
- **President - Princeton Undergraduate Geologic Society (PUGS)** 2017-2018
  Organised community building events and a 40 person department field trip to Scotland

Field Experience

- **Isle of Arran, Scotland** 1 week, November 2013
- **Owens Valley, CA** 1 week, March 2015
- **Columbia River Basalt** 11 weeks total. Summer 2015, 2016, 2017
- **Orocopia Mountains, CA** 3 weeks total, October 2015, 2017
- **Andros Island, Bahamas** 2 weeks, March 2016
- **Iceland** 1 week, Summer 2016
- **Altiplano, Bolivia** 4 weeks, Summer 2016
- **Shark Bay, Australia** 2 weeks, March 2018
- **Western Scotland** 1 week, May 2018
- **Piute Mountains, CA** 3 weeks, January 2020
- **White Mountains, NH** 1 week, April 2021
- **Newfoundland, Canada** 2 weeks, November 2021
- **Muddy Mountains, Nevada** 3 weeks, January 2024