Luke Fairchild | Curriculum Vitae

University of California, Berkeley | Department of Earth & Planetary Science
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Education

- **University of California, Berkeley** — **Berkeley, CA**
  PhD Student, Earth and Planetary Sciences — *2015–present*
- **Carleton College** — **Northfield, MN**
  Undergraduate Student, Geology (Honors), cum laude — *2011–2015*
  Thesis: *High temperature emplacement of clastic breccia dikes and implications for the development and magnetization of impact craters*

Experience

Teaching

- **Teaching Assistant** — **University of California, Berkeley**
  EPS 115: Stratigraphy and Earth History, Prof. Nicholas Swanson-Hysell — *Spring 2018*
- **Graduate Student Instructor** — **University of California, Berkeley**
  EPS 50: The Planet Earth, Prof. Michael Manga — *Fall 2017*
- **Teaching Assistant** — **Carleton College**
  Petrology, Prof. Cameron Davidson — *Spring 2015*

Field Work

- **Zavkhan Basin** — **Mongolia**
  4 weeks — *2017*
- **Midcontinent Rift** — **Upper Midwestern U.S.A. & Ontario, Canada**
  14 weeks — *2014, 2015, 2016 & 2017*
- **Slate Islands Impact Structure** — **Ontario, Canada**
  5 weeks — *2013, 2014 & 2015*
- **Carleton Geology Field Camp** — **New Zealand**
  10 weeks — *2013*
- **Cannon River Watershed** — **Rice County, Minnesota**
  5 weeks — *2013*

Other

- **Laboratory Safety Coordinator** — **University of California, Berkeley**
  Swanson-Hysell Group, Dept. of Earth and Planetary Science — *2017–present*

Awards

GSA Graduate Student Research Grant **2017**
Geological Society of America
Paleomagnetism of the Freda Sandstone

EarthScope Award for Geochronology Student Research **2016**
Earthscope AGeS Program
Constraining rapid paleogeographic change in the Mesoproterozoic as recorded by the North American Midcontinent Rift

Chancellor's Fellowship **2015**
University of California, Graduate Division

Class of 1963 Fellowship **2014**
Carleton College

Kolenkow-Reitz Fellowship **2013**
Carleton College

Publications

9. **Fairchild, L.M.** and Buffett, B.A., 2018, *A stochastic coupling of geomagnetic intensity and reversal frequency*: Nature Geoscience. (in preparation)

8. Tikoo, S.M., Swanson-Hysell, N.L., **Fairchild, L.M.**, and Gaastra, K.M., 2018, *A thermal origin for the impact-induced magnetization of the Slate Islands Impact Structure*: Nature Geoscience. (in preparation)

7. Swanson-Hysell, N.L., **Fairchild, L.M.**, and Slotznick, S.P., 2018, *Primary red bed magnetization revealed by fluvial intraclasts*: Geology. (in review)

6. Swanson-Hysell, N.L., Ramezani, J., **Fairchild, L.M.**, and Bowring, S.A., 2017, *Failed rifting and fast drifting: Midcontinent Rift development, Laurentia's rapid motion and the driver of Grenvillian orogenesis*: GSA Bulletin. (in review)

5. Sprain, C.J., Swanson-Hysell, N.L., **Fairchild, L.M.**, and Gaastra, K., 2017, *A field like today's? The geomagnetic field 1.1 billion years ago*: Geophysical Journal International, doi: 10.1093/gji/ggy074.

4. **Fairchild, L.M.**, Swanson-Hysell, N.L., Ramezani, J., Sprain, C.J., and Bowring, S.A., 2017, *The end of Midcontinent Rift magmatism and the paleogeography of Laurentia*: Lithosphere, doi: 10.1130/L580.1.

3. **Fairchild, L.M.**, Swanson-Hysell, N.L., and Tikoo, S.M., 2016, *A matter of minutes: Breccia dike paleomagnetism provides evidence for rapid crater modification*: Geology, doi: 10.1130/G37927.1.

2. Bezaeva, N.S., Swanson Hysell, N.L., Tikoo, S.M., Badyukov, D.D., Kars, M., Egli, R., Chareev, D.A., **Fairchild, L.M.**, Khakhalova, E., Strauss, B.E., and Lindquist, A.K., 2016, *The effect of 10 to >160 GPa spherically convergent shock waves on the magnetic properties of basalt of diabase*: Geochemistry, Geophysics, Geosystems, doi: 10.1002/2016GC006583.

1. Tauxe, L., Shaar, R., Jonestrask, L., Swanson-Hysell, N.L., Minnett, R., Koppers, A.A.P., Constable, C.G., Jarboe, N., Gaastra, K., **Fairchild, L.M.**, 2016, *PmagPy: Software package for paleomagnetic data analysis and a bridge to the Magnetics Information Consortium (MagIC) Database*: Geochemistry, Geophysics, Geosystems, doi: 10.1002/2016GC006307.

Conference Abstracts

- Kulakov, E.V., Smirnov, A.V., Biggin, A.J., Sprain, C.J., Hawkins, L., Patterson, G., **Fairchild, L.M.**, 2018, *The long-term history of the Mesozoic-Jurassic geodynamo: A paleointensity perspective*, European Geosciences Union General Assembly, Vienna, Austria.
- **Fairchild, L.M.**, Buffett, B., Biggin, A., 2017, *Stochastic models and the absolute paleointensity (PINT) database: a new look at geomagnetic reversal rates*, 2017 Nordic Paleomagnetism Workshop, Leirubakki, Iceland.
- **Fairchild, L.M.**, Swanson-Hysell, N.L., Ramenzani, J., Sprain, C., Gaastra, K., Bowring, S., 2017, *The end of Midcontinent Rift magmatism and the paleogeography of Laurentia*, 2017 Magnetics Information Consortium (MagIC) Workshop, La Jolla, California.
- **Fairchild, L.M.**, Swanson-Hysell, N.L., Ramenzani, J., Sprain, C., Gaastra, K., Bowring, S., 2016, *The end of Midcontinent Rift magmatism and the paleogeography of Laurentia*, Abstract 283146, GSA Annual Meeting.
- Swanson-Hysell, N.L., Ramenzani, J., **Fairchild, L.M.**, Rose, I., 2016, *New geochronologic and paleomagnetic constraints on Midcontinent Rift development*, Abstract 284544, GSA Annual Meeting.
- Sprain, C.J., Swanson-Hysell, N.L., **Fairchild, L.M.**, Gaastra, K., 2016, *The strength of the Mesoproterozoic geomagnetic field: new absolute paleointensity estimates from ∼1.1 billion-year-old Midcontinent Rift volcanics*, Abstract 154089, AGU Fall Meeting.
- Bezaeva, N.S., Swanson-Hysell, N.L., Tikoo, S.M., Kars, M., Egli, R., Badyukov, D.D., Chareev, D.A., Fairchild L.M., 2016, *Discrimination of Thermal versus Mechanical Effects of Shock on Rock Magnetic Properties of Spherically Shocked up to ∼10–160 GPa Basalt and Diabase*, Abstract GP31A-1282, AGU Fall Meeting.
- Bezaeva, N.S., Swanson-Hysell, N.L., Tikoo, S.M., Kars, M., Egli, R., Badyukov, D.D., Chareev, D.A., **Fairchild, L.M.**, 2016, *How to discriminate between thermal and mechanical effects of shock on the rock magnetic properties of basalt and diabase spherically shocked up to ∼10–160 GPa.* Book of Abstracts of the 11th International Conference and School "Problems of Geocosmos", October 3–7, 2016, St Petersburg, Petrodvorets, Russia, 126–127.
- **Fairchild, L.M.**, Swanson-Hysell, N.L., Ramenzani, J., Sprain, C., Gaastra, K., Bowring, S., 2015, *When did Midcontinent Rift volcanism end and where was Laurentia at that time?* Abstract GP31A-1364, AGU Fall Meeting.
- Bezaeva, N.S., Swanson-Hysell, N.L., Tikoo, S.M., Badyukov, D., Kars, M., Egli, R., Chareev, D., **Fairchild, L.M.**, Khakhalova, E., Strauss, B., and Lindquist, A., 2015, *Rock magnetic effects induced in terrestrial basalt and diabase by >20 GPa experimental spherical shock waves.* Abstract GP43A-1233, AGU Fall Meeting.
- Tikoo, S.M., Swanson-Hysell, N.L., **Fairchild, L.M.**, Renne, P.R., and Schuster, D.L., 2015, *Origins of impact-related magnetization at the Slate Islands impact structure, Canada.* Abstract 2474, 46th Lunar and Planetary Science Conference.
- **Fairchild, L.M.**, Swanson-Hysell, N.L., Tikoo, S.M., 2014, *High temperature emplacement of clastic breccia dikes and implications for the development and magnetization of impact craters.* Abstract 19163, AGU Fall Meeting.
- Tikoo, S.M., Swanson-Hysell, N.L., **Fairchild, L.M.**, Renne, P.R., and Schuster, D.L., 2014, *Testing the shock remanent magnetization hypothesis at the Slate Islands impact structure, Canada.* Abstract 23778, AGU Fall Meeting.

Memberships

International Geoscience Programme (IGCP) 648 **2015**
Supercontinent Cycles & Global Geodynamics

Geological Society of America **since 2016**

American Geophysical Union **since 2013**

Sigma Xi Research Society **since 2015**

Technical and Personal skills

- **Programming Languages:** Proficient in Python, LaTeX, Jupyter notebooks, HTML; some experience with Matlab, Javascript, C, C++
- **Industry Software Skills:** GIS, Adobe Illustrator, Adobe Photoshop, MS Office products
- **Field Skills:** Geologic mapping, rock core drilling/orienting, structural analysis