

Luke Fairchild | Curriculum Vitae

✉ lukemfairchild@gmail.com • 📄 lfairchild.github.io

🌐 lfairchild in lukefairchild

Education

- **University of Colorado, Boulder** **Boulder, CO**
Master of Science, Electrical Engineering *2020–present*
Areas of study: Power electronics, Li-ion battery technology, battery management systems
- **University of California, Berkeley** **Berkeley, CA**
Master of Science, Earth and Planetary Science *2015–2018*
Thesis The end of Midcontinent Rift magmatism and the paleogeography of Laurentia
- **Carleton College** **Northfield, MN**
Bachelor of Arts, Geology (awarded with distinction) *2011–2015*
Thesis High temperature emplacement of clastic breccia dikes and implications for the development and magnetization of impact craters

Experience

Work

- **Fairchild Electric** **Cedarburg, WI; Muncie, IN**
Electrician *2020–present*
 - EV charger installation
 - Residential service installation
 - Electrical contracting for Ball State University's new collegiate gaming facility
- **Waypoint Spine** **Stevens Point, WI**
Website and Property Management *2019–2021*
 - Website maintenance, web traffic monitoring, property maintenance
 - GIS analysis and map creation for prospective development/expansion projects

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 2017–2018

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. Sprain, C.J., Bono, R.K., Davies, C.J., Meduri, D.G., Paterson, G.A., Doubrovine, P.V., Kulakov, E.V., Hawkins, L.M.A., Pesonen, L.J., Veikkolainen, T., Smirnov, A., Piispa, E.J., Ots, S., **Fairchild, L.M.**, Biggin, A.J., 2022, *Synthesis of numerical models with paleomagnetic data supports dynamo state change in the Mesozoic*: Journal of Geophysical Research: Solid Earth (in review).
8. Kulakov, E.V., Sprain, C.J., Smirnov, A.V., Biggin, A.J., Hawkins, L., Patterson, G., **Fairchild, L.M.**, Doubrovin, P.V., 2019, *Analysis of an updated paleointensity database (QPI-PINT) for 65–200 Ma: Implications for the long-term history of dipole moment through the Mesozoic*: Journal of Geophysical Research: Solid Earth, doi:10.1029/2018JB017287.
7. Swanson-Hysell, N.L., **Fairchild, L.M.**, and Slotznick, S.P., 2019, *Primary and secondary red bed magnetization constrained by fluvial intraclasts*: Journal of Geophysical Research: Solid Earth, doi:10.1029/2018JB017067.
6. Swanson-Hysell, N.L., Ramezani, J., **Fairchild, L.M.**, and Bowring, S.A., 2019, *Failed rifting and fast drifting: Midcontinent Rift development, Laurentia's rapid motion and the driver of Grenvillian orogenesis*: GSA Bulletin, doi:10.1130/B31944.1.
5. Sprain, C.J., Swanson-Hysell, N.L., **Fairchild, L.M.**, and Gaastra, K., 2018, *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 Magnetism Information Consortium (MagIC) Database*: *Geochemistry, Geophysics, Geosystems*, doi:10.1002/2016GC006307.

Conference Abstracts

- Swanson-Hysell, N.L., **Fairchild, L.M.**, Ramenzani, J., 2018, *Chronostratigraphy of Midcontinent Rift volcanics provides new insight on rift development and the rate of rapid paleogeographic change*, Abstract 323067, GSA Annual Meeting.
- 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 Magnetism 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
<i>Supercontinent Cycles & Global Geodynamics</i>	
Geological Society of America	since 2016
American Geophysical Union	since 2013
Sigma Xi Research Society	since 2015

Technical and Personal Skills

Programming Languages.....

- **Python**
Proficient with a variety of scientific computing, data analysis, and visualization tools.
- **Bash** and other Unix command line interface (CLI) tools
- **MATLAB**
- Limited experience with C and C++ from miscellaneous projects (no formal training)
- Some experience with frontend web development (CSS, Javascript) and static site generators (Jekyll, GitHub Pages)
- Experience with SQL

Markup Languages.....

- \LaTeX
- Markdown
- HTML

Industry Software Skills.....

- **GIS**

Proficient and highly experienced. I have used GIS software, including QGIS and ArcGIS, over many years to integrate field observations and structural measurements in creating geologic maps, investigate geographic trends in laboratory data, develop spatial and temporal (paleo)geographic models, georeference raster data, and many other tasks for which GIS software is used.

- **GPlates** (paleogeographic models, global tectonic simulation/animation)
- Adobe Creative Suite software (**Illustrator, Photoshop, Lightroom**)
- **Git** version control software and online platforms for remote repositories and collaboration such as GitHub
- **LTSpice** circuit simulation

Field Skills.....

- Geologic mapping
- Rock core drilling/orienting
- Stratigraphic measurement and geologic structural analysis
- Field work logistics and planning