

## Nicholas L. Swanson-Hysell

### Curriculum Vitae

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### Academic Appointments

- Assistant Professor, Department of Earth & Planetary Science  
*University of California, Berkeley* 2013 – present
- NSF Earth Sciences Postdoctoral Fellow, Institute for Rock Magnetism  
*University of Minnesota* 2012 – 2013
- Visiting Assistant Professor, Geology Department  
*Carleton College* 2011

### Education

- Ph.D., Geosciences, Princeton University 2011
- B.A., Geology, Carleton College, *magna cum laude* 2005

### Honors and Awards

- 2020 Noyce Prize for Excellence in Undergraduate Teaching
- 2019 NSF CAREER Award
- 2016 Geological Society of America Exceptional Reviewer for Lithosphere
- 2015 Hellman Fellow
- 2014 William Gilbert Award (Geomagnetism and Paleomagnetism Section, American Geophysical Union)
- 2014 American Geophysical Union Editors' Citation for Excellence in Refereeing for Geophysical Research Letters
- 2010 Harold W. Dodds Honorific Fellowship (Princeton University)
- 2009 Arnold Guyot Teaching Award (Princeton University)

### Publications in peer-reviewed journals and books (\* indicates mentored student or post-doc)

PDFs of these papers are available here: [http://tiny.cc/Swanson-Hysell\\_pubs](http://tiny.cc/Swanson-Hysell_pubs)

44. **Swanson-Hysell, N.L.** (in revision), The Paleogeography of Laurentia for book: *Ancient Supercontinents and the Paleogeography of the Earth*.
43. Park, Y.\*, **Swanson-Hysell, N.L.**, Macdonald, F.M., and Lisiecki, L. (accepted; in press), Evaluating the relationship between the area and latitude of large igneous provinces and Earth's long-term climate state *AGU Book: Environmental Change and Large Igneous Provinces*. Preprint available on EarthArXiv: 10.31223/osf.io/p9ndf.
42. Slotznick, S.P.\*, Sperling, E.A., Tosca, N.J., Miller, A.J., Clayton, K., van Helmond, N.A.G.M., Slomps, C.P., and **Swanson-Hysell, N.L.** (2020), Unraveling the mineralogical complexity of sediment iron speciation using sequential extractions *Geochemistry, Geophysics, Geosystems*, 10.1029/2019GC008666.

41. Park, Y.\*, **Swanson-Hysell, N.L.**, MacLennan, S.\*, Maloof, A., Schoene, B., Tremblay, M.\*, Antilla, E.\*, Gebreslassie, M., Tesema, T., Alene, M. and Haileab, B. (2020), The onset of the Sturtian Snowball Earth: Neoproterozoic chemostratigraphy time-calibrated by the Tambien Group of Ethiopia *Geological Society of America Bulletin*, 10.1130/B35178.1.
40. Hodgskiss, M.S.W.\*, Dagnaud, O.M.J., Frost, J.L., Halverson, G.P., Schmitz, M.D. **Swanson-Hysell, N.L.**, Sperling, E.A. (2019), New insights on the Orosirian carbon cycle, early cyanobacteria, and the assembly of Laurentia from the Paleoproterozoic Belcher Group, *EPSL*, 10.1016/j.epsl.2019.05.023.
39. **Swanson-Hysell, N.L.**, Fairchild, L.M.\*, and Slotznick, S.\*, (2019), Primary and secondary red bed magnetization constrained by fluvial intraclasts, *Journal of Geophysical Research: Solid Earth*, doi:10.1029/2018JB017067.
38. Macdonald, F.M., **Swanson-Hysell, N.L.**, Park, Y.\*, Lisiecki, L., and Jagoutz, O. (2019), Arc-continent collisions in the tropics set Earth's climate state *Science*, doi:10.1126/science.aav5300.
37. Crockford, P.W., Kunzmann M., Bekker A., Hayles J., Bao, H., Halverson G.P., Peng, Y., Bui T.H., Cox, G.M., Gibson T.M., Wrndle S., Rainbird, R., Lepland, A., **Swanson-Hysell, N.L.**, Master S., Sreenivas, B., Kuznetsov, A., Krupenik, W., and Wing B.A. (2019), Clay-pool continued: extending the isotopic record of sedimentary sulfate. *Chemical Geology*, doi:10.1016/j.chemgeo.2019.02.030.
36. **Swanson-Hysell, N.L.**, Ramenzani, J., Fairchild, L.M.\* and Rose, I.\* (2019), Failed rifting and fast drifting: Midcontinent Rift development, Laurentia's rapid motion and the driver of Grenvillian orogenesis, *Geological Society of America Bulletin*, doi:10.1130/B31944.1.
35. Lepaulard, C. Gattacceca, J., **Swanson-Hysell, N.L.**, Quesnel, Y., Osinski, G. and Demory, F. (2019), A Paleozoic age for the Tunnunik impact structure, *Meteoritics and Planetary Science*, doi:10.1111/maps.13239.
34. Keller, C.B. Husson, J.M., Mitchell, R.N., Bottke, W.F., Gernon, T.M., Boehnke, P., Bell, E.A. **Swanson-Hysell, N.L.** and Peters, S.E. (2019), Neoproterozoic glacial origin of the Great Unconformity, *Proceedings of the National Academy of Sciences*, doi:10.1073/pnas.1804350116.
33. Slotznick, S.\*, **Swanson-Hysell, N.L.**, and Sperling, E. (2018), Oxygenated Mesoproterozoic lake revealed through magnetic mineralogy, *PNAS*, doi:10.1073/pnas.1813493115.
32. MacLennan, S.\*, Park, Y.\*, **Swanson-Hysell, N.L.**, Maloof, A., Schoene, B., Gebreslassie, M., Antilla, E.\*, Tesema, T., Alene, M. and Haileab, B. (2018), The arc of the Snowball: U-Pb dates constrain the Islay anomaly and the initiation of the Sturtian glaciation *Geology*, doi:10.1130/G40171.1.
31. Sprain, C.\*, **Swanson-Hysell, N.L.**, Fairchild, L.M.\* and Gaastra, K.\* (2018), A field like today?: the strength of the geomagnetic field 1.1 billion years ago, *Geophysical Journal International*, 213, doi:10.1093/gji/ggy074.
29. **Swanson-Hysell, N.L.** and Macdonald, F.M. (2017), Tropical weathering of the Taconic orogeny as a driver for Ordovician cooling, *Geology*, doi:10.1130/G38985.1 30. Reply to Comment on "Tropical weathering of the Taconic orogeny as a driver for Ordovician cooling" (2018), *Geology*, doi:10.1130/G40038Y.1.

28. 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.
27. 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 effects of 10 to >160 GPa shock on the magnetic properties of basalt and diabase, *Geochemistry Geophysics Geosystems*, 17, 4753-4771, doi:10.1002/2016GC006583.
26. Kilian, T.M.\*, **Swanson-Hysell, N.L.**, Macdonald, F.A., Bold, U. and Crowley, J. (2016), Paleomagnetism of the Teel basalts from the Zavkhan Terrane: Implications for Paleozoic paleogeography of Mongolia and the growth of continental crust, *Lithosphere*, 8, 699-715, doi:10.1130/L552.1.
25. 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*, 44, 723-726, doi:10.1130/G37927.1.
24. Tauxe, L., Shaar, R., Jonestrask, L., **Swanson-Hysell, N.L.**, Jarboe, N., Minnett, R., Koppers, A.A.P., Constable, C.G., Gaastra, K.\*, and Fairchild, L.\* (2016), PmagPy: Software package for paleomagnetic data analysis and a bridge to the Magnetics Information Consortium (MagIC) Database, *Geochemistry Geophysics Geosystems*, 17, 24502463, doi:10.1002/2016GC006307.
23. **Swanson-Hysell, N.L.**, Kilian, T.M.\*, and Hanson, R.H. (2015), A new grand mean paleomagnetic pole for the Umkondo Large Igneous Province with implications for paleogeography and the geomagnetic field, *Geophysical Journal International*, 203, 2237-2247, doi:10.1093/gji/ggv402.
21. Weiss, B.P., Maloof, A.C., Tailby, N., Ramezani, J., Fu, R.R., Hanus, V., Trail, D., Watson, B., Harrison, T.M., Bowring, S.A., Kirschvink, J.L., **Swanson-Hysell, N.L.**, Coe, R.S. (2015), Pervasive Remagnetization of Detrital Zircon Host Rocks in the Jack Hills, Western Australia and Implications for Records of the Early Geodynamo, *Earth and Planetary Science Letters*, 430, 115-128, 10.1016/j.epsl.2015.07.067. 22. Reply to Comment on "Pervasive remagnetization of detrital zircon host rocks in the Jack Hills, Western Australia and implications for records of the early geodynamo" (2016), *Earth and Planetary Science Letters*, 450, 409-412, doi:10.1016/j.epsl.2016.07.001.
20. Tikoo, S.M.\*, Gattacceca J., **Swanson-Hysell, N.L.**, Weiss, B.P., Suavet, C., and Cournède, C. (2015), Preservation and detectability of shock-induced magnetization, *Journal of Geophysical Research: Planets*, 120, 1461-1475, doi:10.1002/2015JE004840.
19. **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*, 43, 323-326, doi:10.1130/G36347.1.
18. Feinberg, J.M., Solheid, P.A., **Swanson-Hysell, N.L.**, Jackson, M., and Bowles, J.A. (2015), Full vector low-temperature magnetic measurements of geologic materials, *Geochemistry Geophysics Geosystems*, 16, 301-314, doi:10.1002/2014GC005591.
17. **Swanson-Hysell, N.L.**, Vaughan, A.A.\*, Mustain, M.R.\*, and Asp, K.E.\* (2014), Confirmation of progressive plate motion during the Midcontinent Rift's early magmatic stage, *Geochemistry Geophysics Geosystems*, 15, 2039-2047, doi:10.1002/2013GC005180.

16. **Swanson-Hysell, N.L.**, Burgess, S.D., Maloof, A.C., and Bowring, S.A. (2014), Magmatic activity and plate motion during the latent stage of Midcontinent Rift development, *Geology*, 42, 475-478, doi:10.1130/G35271.1.
15. **Swanson-Hysell, N.L.**, Maloof, A.C., Kirschvink, J.L., Halverson, G.P., and Hurtgen, M.T. (2012), Constraints on Neoproterozoic paleogeography and Paleozoic orogenesis from paleomagnetic records of the Bitter Springs Formation, Amadeus Basin, central Australia, *American Journal of Science*, 312, 817-884, doi:10.2475/08.2012.01.
14. Jackson, M. and **Swanson-Hysell, N.L.** (2012), Rock Magnetism of Remagnetized Carbonate Rocks: Another Look, In: Elmore, R. D., Muxworthy, A. R., Aldana, M. M. and Mena, M., eds., Remagnetization and Chemical Alteration of Sedimentary Rocks, *Geological Society of London Special Publication*, 371, doi:10.1144/SP371.3.
13. Hoffman, P.F., Halverson, G.P., Domack, E.W., Maloof, A.C., **Swanson-Hysell, N.L.**, and Cox, G.M. (2012), Cryogenian glaciations on the southern tropical paleomargin of Laurentia (NE Svalbard and East Greenland), and a primary origin for the upper Russøya (Islay) carbon isotope excursion, *Precambrian Research*, 206, 137-158, doi:10.1016/j.precamres.2012.02.018.
12. Rose, C.V., **Swanson-Hysell, N.L.**, Husson, J.L., Poppick, L.N., Cottle, J.M., Schoene, B. and Maloof, A.C. (2012), Constraints on the origin and relative timing of the Trezona  $\delta^{13}\text{C}$  anomaly below the end-Cryogenian glaciation, *Earth and Planetary Science Letters*, 319-320, 241-250, doi:10.1016/j.epsl.2011.12.027.
11. **Swanson-Hysell, N.L.**, Feinberg, J.M., Berquó, T.S., and Maloof, A.C. (2011), A self-reversed remanence held by martite in basalt flows from the 1.1-billion-year-old Keweenawan rift, Canada, *Earth and Planetary Science Letters*, 305, 171-184, doi:10.1016/j.epsl.2011.02.053.
10. **Swanson-Hysell, N.L.**, Rose, C.V., Calmet, C.C., Halverson, G.P., Hurtgen, M.T. and Maloof, A.C. (2010), Cryogenian Glaciation and the Onset of Carbon-Isotope Decoupling, *Science*, 328, 608-611, doi:10.1126/science.1184508.
9. Weiss, B.P., Pedersen, S. Garrick-Bethell, I., Stewart, S.T., Louzada, K.L., Maloof, A.C., and **Swanson-Hysell, N.L.** (2010), Paleomagnetism of impact spherules from Lonar crater, India as a test for impact-generated fields, *Earth and Planetary Science Letters*, 298, 66-76, doi:10.1016/j.epsl.2010.07.028.
8. Maloof, A.C., Stewart, S.T., Weiss, B.P., Soule S.A., **Swanson-Hysell, N.L.**, Louzada, K.L., Garrick-Bethell, I., and Poussart, P.M. (2010), Geology of Lonar Crater, India. *Geological Society of America Bulletin*, 122, 109-126, doi:10.1130/B26474.1.
7. Kopp, R.E., Schumann, D., Raub, T.D., Powars, D.S., Godfrey, L.V., **Swanson-Hysell, N.L.**, Maloof, A.C., Vali, H. and Weiss, B.P. (2009), An Appalachian Amazon?: Magnetofossil evidence for the development of a tropical river-like system in the mid-Atlantic U.S. during the Paleocene-Eocene Thermal Maximum, *Paleoceanography*, 24, doi:10.1029/2009PA001783.
6. Barbeau Jr., D.L., Gombosi, D.J., Zahid, K., Bizimis, M., **Swanson-Hysell, N.L.**, Valencia, V. and Gehrels, G.E. (2009), U/Pb zircon constraints on the age and provenance of the Rocas Verdes basin-fill, Tierra del Fuego, Argentina, *Geochemistry Geophysics Geosystems*, 10, doi:10.1029/2009GC002749.

5. **Swanson-Hysell, N.L.**, Maloof, A.C., Evans, D.A.D. and Weiss, B.P. (2009), No asymmetry in geomagnetic reversals recorded by 1.1-billion-year-old Keweenaw basalts, *Nature Geoscience*, 2, 713-717, doi:10.1038/ngeo622.
4. Barbeau Jr., D.L., Olivero, E.B., **Swanson-Hysell, N.L.**, Zahid, K., Murray, K.E. and Gehrels, G.E. (2009), Detrital-zircon geochronology of the eastern Magallanes foreland basin: Implications for Eocene kinematics of the northern Scotia Arc and Drake Passage, *Earth and Planetary Science Letters*, 284, 489-503, doi:10.1016/j.epsl.2009.05.014.
3. Louzada, K.L., Weiss, B.P., Maloof A.C., Stewart, S.T., **Swanson-Hysell, N.L.** and Soule, S.A. (2008), Paleomagnetism of Lonar impact crater, India, *Earth and Planetary Science Letters*, 275, 308-319, doi:10.1016/j.epsl.2008.08.025.
1. **Swanson-Hysell, N.L.** and Barbeau Jr., D.L. (2007), The diachroneity of alluvial-fan lithostratigraphy? A test case from southeastern Ebro basin magnetostratigraphy, *Earth and Planetary Science Letters*, 262, 343-362, doi:10.1016/j.epsl.2007.07.003. 2. Reply to Garcés et al. comment on The diachroneity of alluvial-fan lithostratigraphy? A test case from southeastern Ebro Basin magnetostratigraphy. *Earth and Planetary Science Letters* (2008), 275, 187-192, doi:10.1016/j.epsl.2008.07.018

### Original Geological Field Work

Midcontinent Rift, Lake Superior Region [29 weeks] 2007, 2008, 2011, 2012, 2014, 2015  
2016, 2018, 2019

*Reconstructing the behavior of the Mesoproterozoic geomagnetic field, continental motion during supercontinent assembly and the nature of ancient environments through detailed stratigraphic studies of lava flows and sediments of the ~1.1 billion-year-old Midcontinent Rift.*

East Central Minnesota Batholith [3 weeks] 2018, 2019

*Investigations of this Paleoproterozoic batholith (with a focus on comagmatic diabase dikes) are focused on: the paleogeographic position of Laurentia just following initial amalgamation, the strength of Earth's geomagnetic field and the long-term exhumation history leading up to the Cambrian unconformity.*

Tambien Group, northern Ethiopia [20 weeks] 2010, 2013, 2015, 2017, 2018

*Developing a stratigraphic framework for a rich archive of early Neoproterozoic sediments deposited in a back-arc basin of the proto-Arabian-Nubian shield in order to constrain global change leading up to the Sturtian glaciation.*

Arbuckle and Simpson Groups, Oklahoma [2 weeks] 2018

*Using a thick succession of shallow-water carbonate-dominated Ordovician sedimentary rocks to evaluate the timing and tempo of Ordovician cooling.*

Zavkhan Terrane, Mongolia [7 weeks] 2014, 2017

*Stratigraphic study and paleomagnetic sampling of Neoproterozoic and Ordovician volcanics and sediments with the goal of testing regional and global paleogeographic hypotheses.*

Banxi Group, South China [3 weeks] 2016

*Studying the stratigraphy and paleomagnetism of a thick succession of early Neoproterozoic sedimentary rocks to test hypotheses about the paleogeographic position of South China and rates of true polar wander.*

Slate Islands Impact Structure, Ontario Canada [4 weeks] 2013, 2014

*Developing novel constraints from impact breccia dikes on crater formation and testing the hypothesis of shock remanent magnetization within the exposed central uplift of this mid-size impact structure.*

Umkondo Large Igneous Province, Botswana [5 weeks] 2012

*Sampling and contextualizing sills of the late Mesoproterozoic Umkondo province to provide new constraints on late Mesoproterozoic paleogeography and the strength of the late Mesoproterozoic geomagnetic field.*

Amadeus Basin, Central Australia [21 weeks] 2006, 2007, 2008, 2009  
*Testing hypotheses for early Neoproterozoic global change through physical/chemical/magnetic-stratigraphy of the Bitter Springs Formation.*

Adelaide Rift Complex, South Australia [7 weeks] 2007  
*Testing hypotheses for the causes and consequences of Neoproterozoic glaciation through study of pre-, syn- and post-glacial sediments of the Marinoan glacial event.*

Lonar, India [2 weeks] 2006  
*Bolide impact in basalt as an analog for planetary surface processes and magnetization.*

Southernmost Andes, Argentina and James Ross Basin, Antarctica [8 weeks] 2005, 2009  
*Furthering understanding of oroclinal development and Drake Passage opening through a sedimentological and detrital zircon study of the Magallanes foreland basin and the James Ross basin.*

Ebro Basin, Spain [2 weeks] 2004  
*Subject of undergraduate thesis: magnetic polarity stratigraphy as a tool to constrain foreland basin development and to evaluate models of alluvial-fan stratigraphy.*

Kharkhira Mountains, Mongolian Altai [2 weeks] 2004  
*Geomorphology of a periglacial sheet of aufeis.*

### Funding (since 2011)

NSF EAR-1847277, Tectonics Program CAREER Award Grant 2019-2024  
*CAREER: Developing the next generation of Proterozoic paleogeographic models through integrated data development, synthesis and education (\$699,790)*

NSF EAR-1925990, Frontier Research in Earth Science Program Grant 2019-2023  
*Collaborative Research: Do Arc-Continent Collisions in the Tropics Set the Earth's Climate State? (\$744,932 awarded to Swanson-Hysell and co-PI John Chiang for Berkeley part of project)*

NSF EAR-1547434, Geophysics Program Grant 2016-2019  
*Collaborative Research: Testing proposed rapid true polar wander in the Neoproterozoic Zavkhan Volcanics of Mongolia and the Banxi Group of South China (\$286,309)*

NSF EAR-1419894, Tectonics Program Grant 2014-2016  
*Collaborative Research: Quantifying Laurentia's motion, advancing paleogeography and constraining rifting with new paired dates and paleomagnetic data from the Midcontinent Rift (\$170,311)*

NSF EAR-1325230, Sedimentary Geology Program Grant 2014-2016  
*Collaborative Research: Quantifying rates of Neoproterozoic global change, Ethiopia (\$152,425)*

NSF EAR-1316395, Geophysics Program Grant 2013-2015  
*Collaborative Research: Testing the shock remanent magnetization hypothesis in the Slate Island impact structure (\$163,198)*

Institute for Rock Magnetism Visiting Fellowships 2014, 2018  
*The rock magnetic effects of experimental spherical shock waves on Midcontinent Rift basalts (2014; \$4,000); Probing primary and secondary red bed magnetization revealed by fluvial intraclasts (2018; \$4,000)*

NSF Earth Sciences Postdoctoral Fellowship 2011-2014

*Geomagnetic paleointensity from time-equivalent high and low latitude magmatic events in the late Mesoproterozoic (\$170,000)*

### Invited Talks

Scripps Institution of Oceanography <i>Earth Division Seminar Series</i>	02/10/20
American Geophysical Union Fall Meeting <i>The tectonics and geodynamics of supercontinents</i>	12/12/19
Magnetic imaging pre-AGU workshop	12/08/19
University of California, Berkeley <i>EPS Department Seminar Series</i>	09/12/19
Gordon Research Conference on Geochronology	08/05/19
EGU Annual Meeting Union Symposia <i>Past and future tipping points and large climate transitions in Earth history</i>	04/05/19
Observatoire Midi-Pyrénées <i>Géosciences Environnement Toulouse (GET) Seminar</i>	06/20/18
Harvard University <i>Earth and Planetary Science Department Colloquium</i>	11/06/17
Geological Society of America Annual Meeting <i>T252: Cratonic Assembly: Forming the Core of Modern and Ancient Landmasses</i>	10/23/17
Nordic Paleogeography Workshop, <i>Iceland</i>	10/03/17
Rice University <i>Earth Science Seminar</i>	04/20/17
San Francisco State University <i>Department of Earth and Climate Sciences Distinguished Speakers Series</i>	02/07/17
Magnetics Information Consortium (MagIC) <i>Science and Database Workshop: Earth's Magnetic Field from the Beginning</i>	01/27/17
San Jose State University <i>Geology Club Speaker Series</i>	10/17/16
U.S. Geological Survey, Menlo Park <i>Pacific Region Colloquium</i>	10/03/16
University of Michigan <i>The evolving Earth from top to base: Rob van der Voo Retirement Symposium</i>	08/26/15
University of California, Davis <i>Earth and Planetary Sciences Department Seminar</i>	02/11/15
Stanford University <i>Geological and Environmental Sciences Department Seminar</i>	11/11/14
Nordic Supercontinent Workshop, <i>Haraldvangen, Norway</i>	10/17/14
Magnetics Information Consortium (MagIC) <i>Science and Database Workshop</i>	05/13/14
University of California, Berkeley <i>Physics Department Compass Lecture Series</i>	04/29/14
University of California, Berkeley <i>Integrative Biology Fossil Coffee Talk</i>	03/11/14
Magnetics Information Consortium (MagIC) <i>Global Seminar Series</i>	02/04/14
Scripps Institution of Oceanography, UCSD <i>Earth Division Seminar Series</i>	01/12/14
California Institute of Technology <i>Geological and Planetary Sciences Seminar Series</i>	12/02/13
University of California, Santa Cruz <i>Whole Earth Seminar Series</i>	11/05/13
University of Wisconsin, River Falls <i>Department of Earth Sciences Seminar</i>	04/25/13



Addis Ababa University <i>Department of Earth Sciences Seminar</i>	02/06/13
American Geophysical Union Fall Meeting <i>Initiation and Evolution of Rift Systems</i>	12/07/12
University of California, Berkeley <i>EPS Department Seminar Series</i>	04/19/12
McGill University <i>Geobiology Symposium</i>	03/24/12
Massachusetts Institute of Technology <i>EAPS Department Lecture Series</i>	03/09/12
University of Minnesota <i>Earth Sciences Seminar Series</i>	03/01/12
Rutgers—New Brunswick <i>Earth and Planetary Sciences Colloquium</i>	11/30/11
Geological Society of America Annual Meeting <i>T112: Geology of the Midcontinent Rift</i>	10/24/11
Rutgers—Newark <i>Geophysical Society Seminar</i>	03/30/11
Massachusetts Institute of Technology <i>EAPS Department Lecture Series</i>	12/01/10
Lamont-Doherty Earth Observatory, Columbia University <i>Geochemistry Division Seminar</i>	11/17/10
Princeton University <i>Geoscience Department Seminar Series</i>	04/27/10
University of Texas <i>UT Institute for Geophysics Seminar Series</i>	04/02/10
Amherst College <i>Department Seminar</i>	02/25/10
Harvard University <i>A world in transition: Geobiology of the Neoproterozoic-Cambrian Symposium</i>	04/25/08

## Service

Contributing developer to the open source PmagPy software project and the associated documentation ‘cookbook’ (<http://earthref.org/PmagPy/cookbook>). Developed the ipmag.py module for the project that enables open and reproducible data analysis within the Jupyter notebook environment. This module is being used within the problem sets of the leading paleomagnetism textbook: Essentials of Paleomagnetism (<http://earthref.org/MAGIC/books/Tauxe/Essentials/>). Coordinated development of the Demag GUI part of the software that enables principal component analysis of paleomagnetic data and readily interfaces with the Magnetics Information Consortium (MagIC) database.

Co-convener of 2021 Magnetics Information Consortium (MagIC) workshop; Convener of session “Tectonic Applications of Paleomagnetism.”

Co-convener of session on Midcontinent Rift intrusions at the 2020 North-Central Geological Society of America meeting

Co-convener of 2020 Magnetics Information Consortium (MagIC) workshop (canceled due to COVID-19); ran remote tutorial on PmagPy and the MagIC database in lieu of in-person meeting.

Primary convener of session “The impact of tectonics and paleogeography on climate evolution” at the 2019 AGU Fall Meeting.

Member of Section Advisory Panel for the AGU publication EOS (2019 → )



Working session coordinator for “Processing Procedures and Protocols: Pitfalls, Progress and Promise” at the 2019 IRM Santa Fe Conference on Rock Magnetism.

Session chair at the 2019 Institute on Lake Superior Geology Annual Meeting.

Primary convener of session “Evolution of the Midcontinent Rift: A Window into Proterozoic Environments, a Repository of Minerals, and a Lesson in Rifting” at the 2018 Geological Society of America Meeting.

Co-convener of session “Progress and opportunities in determining geomagnetic field behavior from terrestrial and extraterrestrial materials” at the 2017 International Conference on Rock Magnetism

Member of scientific committee for the 2017 International Conference on Rock Magnetism

Co-convener of 2017 MagIC Workshop: Earth’s Magnetic Field from the Beginning; led tutorial and workshop on reproducible scientific computing using PmagPy

Co-convener of 2016 AGU Fall Meeting session “The dynamics and evolution of the interacting core and mantle: insights from paleomagnetic data, simulations and experiments”

Led Earth Science outreach activities for fourth graders at a public school in East Oakland pertaining to California’s science standards (Spring 2014, Fall 2014, Fall 2015). Organized and led field trip for these students to the Earth and Planetary Science Department at Berkeley and the Lawrence Hall of Science (Spring 2015).

Member of NSF Geophysics Panel

Facilitator for the Paleoenvironments Group of the 2015 IGCP 648 (Supercontinent Cycles and Global Geodynamics) Symposium

Rapporteur for the Continents Group of the 2014 NASA/NSF/Smithsonian Workshop “Beyond Habitability: Life and the Early Earth”

Instructor for 2013 Summer School for Rock Magnetism held for graduate students from across the world at the Institute for Rock Magnetism.

Organized and led tours and hands-on lab experience at the Institute for Rock Magnetism for undergraduate geophysics classes from Carleton College (Spring 2012) and Macalester College (Fall 2012).

Co-organizer (w/ Catherine V. Rose) of 2009 symposium at Princeton entitled *A World in Transition III: Neoproterozoic Earth History*

Reviewer for the following journals and funding agencies:

*American Chemical Society*

*Earth and Planetary Science Letters*

*European Research Council*

*French Polar Institute (IPEV)*

*Frontiers in Earth Science*

*Geochemistry Geophysics Geosystems*

*Geological Society of America Bulletin*

*Geological Society of London Special Publications*

*Geology*

*Geophysical Journal International*

*Geophysical Research Letters (awarded 2014 AGU Citation for Excellence in Refereeing)*

*German Research Foundation*

*Israel Science Foundation*

*Journal of Geophysical Research–Solid Earth*

*Journal of the Geological Society*  
*Lewis and Clark Fund of the American Philosophical Society*  
*Lithosphere (awarded Geological Society of America Exceptional Reviewer in 2016)*  
*NASA Exobiology Program*  
*NASA Future Investigators in Earth and Space Science and Technology program*  
*National Geographic Society*  
*National Research Foundation of South Africa*  
*NSF Instrumentation and Facilities Program*  
*NSF Geophysics Program*  
*NSF Sedimentary Geology and Paleobiology Program*  
*NSF Tectonics Program*  
*Palaeogeography Palaeoclimatology Palaeoecology*  
*Palaeontological Association Research Grant Program*  
*Precambrian Research*  
*PNAS*  
*Science Advances*  
*Scientific Drilling*  
*Scientific Reports*  
*Sedimentary Geology*  
*Springer Books–Planetary Magnetic Fields*  
*Supercontinents and the Paleogeography of the Earth (book)*

External PhD thesis examiner for the following institutions:

*Curtin University (Australia)*  
*Stanford University*  
*University of Johannesburg (South Africa)*

## University Service

Undergraduate advisor for the Geology Track of the Earth and Planetary Science major (2019 → )

Member of the EPS Department Faculty search committee (2019 → )

Developed and implemented new exhibits/displays in McCone Hall related to California geology, historical mineralogy at Berkeley and modern research in Earth and Planetary Science. These displays enhance opportunities for formal and informal education to students and visitors. (2018 → )

Member of the EPS Department technical staff search committee (2018)

Faculty interviewer for the Fiat Lux scholarship program (2018)

Senior Fellow, Berkeley Institute for Data Science (2016 → )

Engaged in educational activities through the Berkeley Institute for Data Science including presentations to the *Practical Statistics* (2018) and *The Hacker Within* (2016) groups.

Member of the EPS Department strategic planning committee (2016 – 2017)

Faculty lead for the Earth and Planetary Science Department Website (2016 → )

Member of the UC Berkeley Ramsden Fund Committee for the supporting undergraduate education and research within the Earth and Planetary Science Department (2016 – 2019)

Member, Earth Sciences and Map Library Planning Group (2016 – 2017)

Member of the UC Berkeley Larsen Fund Committee (2016, 2018)

Member of the UC Berkeley Faculty Library Committee for the Engineering and Physical Sciences Libraries (2015 – 2018)

Faculty mentor at Berkeley Residential Life Major advisement dinners (2014, 2015, 2016)

Member of the board of directors for the George D. Louderback fund supporting students in Earth Science at UC Berkeley (2014 → )

## Mentoring

### Postdoctoral Researchers

2020 → Tadesse Berhanu  
 2019 → Pierre Maffre  
 2017 → Margaret Avery  
 2016 - 2019 Sarah Slotznick (*now Assistant Professor at Dartmouth College*)  
 2014 – 2016 Taylor Kilian (*now Data Scientist at KoBold Metals*)  
 2013 – 2015 Sonia Tikoo (*now Assistant Professor at Stanford University*)

### Graduate Students (primary research advisor)

2019 → Yiming Zhang  
 2015 → Yuem Park  
 2015 → 2018 Luke Fairchild

### Graduate Students (secondary project advisor and/or committee member)

2019 William Davis (*chair of qualifying exam committee*)  
 2018 → Joshua Zimmt (*Integrative Biology PhD student; member of qualifying exam committee; member of dissertation committee*)  
 2018 → Malcolm Hodgkiss (*Stanford PhD student; member of qualifying exam committee; member of dissertation committee*)  
 2017 Runze Maio (*member of qualifying exam committee*)  
 2016 → 2017 Allison Sharrar (*member of qualifying exam committee*)  
 2016 Ian Rose (*member of dissertation committee*)  
 2015 → Alexander Bryk (*member of dissertation committee*)  
 2015 – 2019 Jesse Hahm (*advisor on secondary research project; chair of qualifying exam committee; member of dissertation committee*)  
 2015 Michael Antonelli (*advisor on secondary research project; member of qualifying exam committee*)  
 2014 Jake Seeley (*chair of qualifying exam committee*)  
 2014 – 2018 Dori Contreras (*Integrative Biology PhD student; member of qualifying exam committee, member of dissertation committee*)  
 2013 – 2017 Courtney Sprain (*advisor on secondary research project; member of qualifying exam committee*)  
 2013 – 2017 Marissa Tremblay (*advisor on secondary research project; member of qualifying exam committee*)

### Post-Undergraduate Research Assistants

2019 Ryan Casper ('19 UC Berkeley)  
 2015 Gunnar Speth ('14 UC Berkeley)  
 2012 – 2013 Kris Asp ('12 Carleton College)

### Undergraduate Students

- 2019 → Cy David ('20 UC Berkeley; undergraduate science communication specialist)
- 2018 → Erika Hathaway ('21 UC Berkeley; undergraduate research apprentice)
- 2017 → Frances Meyer ('20 UC Berkeley; undergraduate researcher; Summer Undergraduate Research Fellow; Senior thesis advisor)
- 2017 - 2018 Abby Jackson-Gain ('20 UC Berkeley; undergraduate science communication specialist)
- 2017 - 2019 Robert Sherwood ('19 UC Berkeley; undergraduate researcher)
- 2017 - 2018 Sydney Holgado ('20 UC Berkeley; undergraduate researcher)
- 2015 - 2016 Eliel Anttila ('16 UC Berkeley; Summer Undergraduate Research Fellow; Senior thesis advisor)
- 2014 - 2016 Kevin Gaastra ('16 UC Berkeley; research assistant)
- 2014 Gunnar Speth ('14 UC Berkeley; research assistant)
- 2013 - 2015 Luke Fairchild ('15 Carleton College; Senior thesis advisor; Thesis title: High temperature emplacement of clastic breccia dikes and implications for the development and magnetization of impact craters)
- 2013 Sara Beroff ('14 UC Berkeley; New Experiences for Research & Diversity in Science summer research scholar)
- 2012 Monica Mustain ('14 Illinois State University; NSF REU research intern)
- 2011 - 2012 Angus Vaughan ('12 Carleton College; NSF REU research intern; Senior thesis advisor; Thesis title: Paleomagnetic data from Osler Group basalt flows on Simpson Island, Ontario: Evidence for fast plate motion)

## Teaching

### Undergraduate Courses

**EPS 39: Earth Science in the Field** (Spring 2017, Fall 2019) *This first-year and sophomore seminar is designed to give students the opportunity to learn about the Earth through direct field observation. Lectures and discussions lead to the development of basic fluency in Earth science fundamentals prior to an immersive four-day field trip along the California coast. Moving back and forth between the North America and Pacific plates, the students explore the tectonic and environmental evolution of coastal California. From the first field activity to the last, the emphasis is on students being empowered to make their own detailed observations and to use these observations to guide their interpretations of Earth processes.*

**EPS 50: The Planet Earth** (Spring 2017) *This large introductory course provides a comprehensive and rigorous introduction to the physical and chemical processes that have shaped the earth through time and space. The theory of plate tectonics and the interaction of geologic processes and human society are concentrated on throughout the course. Instruction is comprised of lecture, laboratory exercises and local field trips that provide hands-on experience with concepts and materials dealt with in the classroom. The course places an emphasis on interactions between the solid-Earth, hydrosphere, atmosphere, and biosphere that are essential for understanding processes related to mountain-building, weathering and erosion, resource geology and climate change.*

**EPS 88: A Python Introduction to Earth Science** (Fall 2019) *This course is designed such that students gain understanding of fundamental Earth science processes as a result of engaging with data. Students develop the ability to draw useful conclusions from data using computational tools centered around the Jupyter notebook environment and the Scipy computational libraries. Students use the rich geophysical data sets that underlie plate tectonic theory to comprehend the nature of plate boundaries. In subsequent modules, students develop a better understanding of past and current climate change through analyzing relevant data sets. The journey from novice to expert involves*

*acquiring the tools to interact with data in tandem with learning the conceptual context and principles within which to astutely interpret data. EPS88 seeks to be a formative step in such a journey.*

**EPS 101: Field Geology and Digital Mapping** (Spring 2014, Fall 2014, Fall 2015, Fall 2016, Fall 2017, Spring 2019) *This course, required for students in the Geology Track of the Earth and Planetary Science major, provides a rigorous introduction to field work and geological mapping. The Berkeley and Oakland Hills are utilized as a natural laboratory in which students use field observations, mapping, and synthesis to interpret geological processes and history. An emphasis of the course is pushing forward with the latest mapping technology possible such that the students are using state-of-the-art research-grade digital mapping platforms. With more than 6 hours in the field for every week of the semester, students experience rapid progressive growth as they gain field skills and develop the ability to work independently on important field problems. The course is designed so that the students continually are challenged to improve their ability to contextualize their interpretations of the local stratigraphy, structure and volcanic record within the broader tectonic history of California using readings from the primary literature. This emphasis gives students the confidence to rely on their own observations to develop interpretation of geologic process while utilizing, and critically evaluating, information they glean from the scientific literature.*

**EPS 115: Stratigraphy and Earth History** (Spring 2015, Spring 2016, Spring 2018) *This course is focused on students learning how to examine and interpret features of sedimentary rocks, understanding how to assess temporal and spatial patterns in sequences of sedimentary rocks, and applying these tools to expand their understanding of Earth history. As part of achieving these learning objectives, students gain experience collecting, analyzing, and presenting stratigraphic data during substantive field study over a week-long Spring Break field trip. The students pursue research projects in small groups that give experience: 1) formulating research questions about how the Earth works that can be tested with field and laboratory data; 2) making informed observations of the natural world during fieldwork; 3) applying computational methods to analyze data and extract information to evaluate hypotheses and 4) communicating research results and discoveries using the same tools applied by those publishing research in the discipline.*

#### Additional teaching

EPS 290: Graduate seminar <i>focused on Essentials of Paleomagnetism</i>	Spring 2020, Fall 2016
EPS 290: Graduate seminar <i>focused on Earth history and geobiology</i>	Spring 2020, Spring 2018, Spring 2017, Fall 2017
EPS 290: Graduate seminar <i>focused on micron-scale magnetic imaging techniques</i>	Fall 2019
EPS 290: Graduate seminar <i>focused on silicate weathering</i>	Spring 2019
EPS 290: Graduate seminar <i>focused on long-term evolution of the geomagnetic field</i>	Spring 2018
EPS 290: Graduate seminar <i>focused on environmental magnetism</i>	Fall 2017
EPS 290: Graduate seminar <i>focused on reproducible scientific data analysis with Python</i>	Fall 2015
Sedimentology and Stratigraphy (Carleton College)	Fall 2011

#### Teaching related awards, service and professional development

- Digital Pedagogy Fellow, UC Berkeley Center for Teaching and Learning (2019)
- Panelist for the teaching dialogue *Extending Learning Beyond the Classroom Walls* at UC Berkeley's Academic Innovation Studio (April 2018)
- Participant in Berkeley's faculty short course on Data Science Pedagogy and Practice (2017)

Awarded Berkeley Collegium Grant for “Narrowing the Gap Between Teaching and Research” (2015-2016)

Participant in Berkeley’s Teaching Excellence Colloquium (2013-2014)

Participant in the National Association of Geoscience Teachers “Early Career Geoscience Faculty: Teaching, Research, and Managing Your Career” workshop (2013)

Participant in Princeton University’s Teaching Transcript Program and associated pedagogical workshops (2008-2010)