

# KATIE E. BRISTOL

Department of Geological Sciences

University of Florida, Gainesville, FL 32611

[katiebristol@ufl.edu](mailto:katiebristol@ufl.edu) ♦ <https://katiebristol.github.io>

## EDUCATION

<b>Ph.D. in Geological Sciences</b>	Expected 2024
University of Florida, Gainesville, FL	
Advisor: Dr. Courtney Sprain	
<b>M.S. in Geophysics</b>	2018 - 2020
Michigan Technological University, Houghton, MI	
Advisor: Dr. Aleksey Smirnov	
<b>B.S. in Applied Geophysics</b> <i>w/ minor in Geological Engineering</i>	2014 - 2018
Michigan Technological University, Houghton, MI	
Field Courses: University of Canterbury, New Zealand	

## RESEARCH EXPERIENCE

<b>Research Assistant</b> , Neil Opdyke Paleomagnetic Lab, University of Florida	2020 - present
<b>Magnetic Microscopy Fellow</b> , Institute of Rock Magnetism, University of Minnesota	2022
<b>Lab Manager</b> , Earth Magnetism Lab, Michigan Tech. University	2017 - 2020
<b>Research Assistant</b> , Earth Magnetism Lab, Michigan Tech. University	2015 - 2020
<b>NASA Michigan Space Grant Fellow</b> , Michigan Tech. University	2018 - 2019
<b>Summer Undergraduate Research Fellow</b> , Michigan Tech. University	2016 - 2017
<b>NSF Summer REU Intern</b> , Michigan Tech. University	2015

## PEER-REVIEWED PUBLICATIONS

### In print:

- Engbers, Y. A., Bono, R. K., Thallner, D., Sprain, C. J., Murray, M.J., **Bristol, K. E.**, Handford, B., Torsvik, T., & Biggin, A. J. "A global palaeosecular variation database for the Palaeogene: stationary secular variation behaviour since the Triassic?," *Geochemistry, Geophysics, Geosystems*, 25, e2023GC011203. <https://doi.org/10.1029/2023GC011203>.
- Bristol, K. E.**, Smirnov, A. V., Piispa, E. J., Navas, M. R. R., Kosterov, A., & Kulakov, E. V. (2023). Magnetic characterization of the Daule chondrite (Ecuador's first meteorite fall): The case of elusive tetrataenite? *Icarus*, 404. [doi:10.1016/j.icarus.2023.115684](https://doi.org/10.1016/j.icarus.2023.115684).
- Smirnov, A. V., Kulakov, E. V., Foucher, M. S., & **Bristol, K. E.** (2017). Intrinsic paleointensity bias and the long-term history of the geodynamo. *Science Advances*, 3(2), e1602306. [doi:10.1126/sciadv.1602306](https://doi.org/10.1126/sciadv.1602306).

### In review:

- Mijjium, M., **Bristol, K. E.**, Bono, R. K., Sprain, C. J., & Tremblay, M. M. "A model framework for scaling pre-Quaternary cosmogenic nuclide production rates," under review at G-Cubed.

### In preparation:

- Bristol, K. E.**, Sprain, C. J., Meert, J. G., & Dann, A.B. "New absolute paleointensity estimates from mafic dikes of Precambrian India," in preparation.

2. **Bristol, K. E.**, Sprain, C. J., Mittal, T., Fendley, I. M., Duraiswami, R. A., & Monteiro, A. "Constraining the tempo of the Deccan Traps Large Igneous Province using quantitative paleosecular variation analysis," in preparation.

## ABSTRACTS AND PRESENTATIONS

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### Scientific Talks:

1. **Bristol, K. E.**, Sprain, C. J., Griffis, A., Mittal, T., Fendley, I., Duraiswami, R. A., Monteiro, A., Mijjium, M., & Tremblay, M. M. (2023). Assessing Eruptive Hiatus Durations of the Deccan Traps Large Igneous Province Using Quantitative Paleosecular Variation Analysis. In American Geophysical Union Fall Meeting Abstracts (GP33A-01). San Francisco, CA. (**Outstanding Student Presentation Award**)
2. Sprain, C. J., Mittal, T., **Bristol, K. E.**, Duraiswami, R. A., Tremblay, M. M., Mijjium, M., & Monteiro, A. (2022). Quantitative Paleosecular Variation Analysis: A New Tool for Assessing Time Using Paleomagnetism. In American Geophysical Union Fall Meeting Abstracts (GP46A-01). Chicago, IL. (**Invited**)
3. **Bristol, K. E.**, Sprain, C. J., Piispa, E. J., Smirnov, A. V., Meert, J. G., & Dann, A. (2022). New Absolute Paleointensity Estimates from Mafic Dikes of India and the Variability of the Precambrian Geomagnetic Field. In American Geophysical Union Fall Meeting Abstracts (GP26A-02.). Chicago, IL.
4. Mijjium, M., **Bristol, K. E.**, Tremblay, M. M., & Sprain, C. J. (2021). A model framework for cosmogenic nuclide production rates through deep time. In Geological Society of America Abstracts with Programs (Vol. 53). Portland, OR. <https://doi.org/10.1130/abs/2021AM-364512>
5. **Bristol, K. E.**, Piispa, E. J., & Smirnov, A. V. (2020). Thermomagnetic behavior of extraterrestrial minerals: An overview. In American Geophysical Union Fall Meeting Abstracts (GP004-05). Online Everywhere. (**Invited**)

### Posters and Presentations:

\* = presenting author

1. Sprain\*, C. J., Hurst, E., Paterson, G. A., Bono, R. K., **Bristol, K. E.**, & Biggin, A. J. (2021). Constraining the Behavior of  $\epsilon$ -Fe<sub>2</sub>O<sub>3</sub> During Paleointensity Experimentation. In American Geophysical Union Fall Meeting Abstracts (GP42A-04). New Orleans, LA.
2. **Bristol\***, K. E., Sprain, C. J., & Meert, J. G. (2021). Absolute paleointensity for Precambrian-aged dikes from India. In Geological Society of America Abstracts with Programs. Portland, OR. <https://doi.org/10.1130/abs/2021AM-366752>
3. Sanmartin\*, K., Piispa, E. J., Mandon, C., Roverato, M., **Bristol, K. E.**, Smirnov, A. V., & Trindade, R. I. (2020). Rock Magnetism, Paleomagnetism and Paleointensity of Imbabura Volcano (Ecuador) - Implications for the Spatiotemporal Growth Model. In American Geophysical Union Fall Meeting Abstracts (GP003-09). Online Everywhere.
4. **Bristol\***, K. E., Smirnov, A. V., Piispa, E. J., Kosterov, A., Kulakov, E. V., & Ramirez Navas, M. R. (2019). Rock Magnetic Investigation of the Daule Ordinary Chondrite. In American Geophysical Union Fall Meeting Abstracts (GP43B-0797). San Francisco, CA.
5. Piispa\*, E. J., Larrea, P., Choez, K., **Bristol, K. E.**, Roverato, M., Smirnov, A. V., & Mandon, C. (2019). Paleo- and rock-magnetic record of the Imbabura volcanic units: Implications for the tectonomagmatic evolution of the volcano and for the Earth's magnetic field at equatorial latitudes. In 8th International Symposium on Andean Geodynamics Abstracts. Quito, Ecuador.

6. Foucher, M. S., **Bristol\***, **K.E.**, Piispa, E. J., & Smirnov, A. V. (2018). Absolute geomagnetic paleointensity from the 1.1 Ga Baraga-Marquette dike swarm (Michigan, USA) obtained using the Shaw and pseudo-Thellier methods. In American Geophysical Union Fall Meeting Abstracts (GP21A-0633). Washington DC.
7. Foucher\*, M.S, Engel, E., **Bristol, K.E.**, & Smirnov, A.V (2018) "Evolution of large lava flows in rift setting: Paleomagnetic and rock magnetic insights into the Greenstone Flow," In IAVCEI Scientific Assembly Abstracts. Portland, OR.
8. **Bristol\*, K.E.** (2017) "Rock magnetic investigation of the carbonaceous chondrules from the Al-lende meteorite," In Michigan Technological University Pavlis Honors College Undergraduate Research Symposium. Houghton, MI.

## HONORS AND AWARDS

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I've been involved in grants/fellowships/awards totaling **\$67,280** as the principal recipient.

### Awards:

- **Outstanding Student Presentation Award (OSPA)** – \$400 2023  
*Given for the most exceptional presentations during the annual 2023 AGU meeting.*
- **Dr. Nancy Scofield Pioneering Research Award** – \$2,000 2019  
*Given to a graduate student whose work expands the boundaries of research in the GMES Dept. at Michigan Tech. University. I was the first undergraduate to receive this honor.*
- **Field Geophysics Award** – \$50 2019  
*Given for exceptional performance in the field course Field Geophysics (GE3900) at MTU.*
- **Departmental Scholar** – \$200 2017  
*Given to a student that best represents scholarship in the GMES Dept. at MTU.*
- **Mich. Tech Presidential Scholars Award** – \$20,250 2014  
*Given to academically talented first-year undergraduates.*
- **Summer Youth Scholars Award** – \$13,500 2014

### Fellowships:

- **UF CLAS Dissertation Fellowship** – \$12,780 2024
- **UMN Institute of Rock Magnetism Visiting Fellowship Award** – \$4,750 2022
- **NASA Michigan Space Grant Fellowship** – \$2,500 2018
- **MTU Summer Undergraduate Research Fellowship** – \$4,000 2016

### Grants:

- **AGU Student Travel Grant** – \$1,000 2023
- **UF Geological Sciences Dept. Travel Grants** – \$2,000 2021, 2022, 2023
- **UF CLAS Grad Student Travel Grants** – \$600 2021, 2022
- **GSA Grad Student Research + Travel Grant** – \$3,000 2022
- **MTU Grad Student Gov. Travel Grant** – \$250 2019

## TEACHING EXPERIENCE

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### University of Florida

**GLY 3603C Paleontology:** TA, 60 students

Spring 2024

**GLY 3163 Geology of American National Parks:** TA, 150 students

Spring 2023

### Michigan Technological University

**GE 3040 Fundamentals of Geophysics:** TA, 11 students

Spring 2020

**GE 4530 & GE 5430 Planetary Geology/Geophysics:** Instructor, 8 students

Fall 2019

## OUTREACH AND MENTORING

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Outreach Events/Visits:      **EM = Elementary/Middle School, HS = High School, UG = Undergraduate**

- **Girls Do Science**, Florida Museum of Natural History      2023 - present  
Exhibitor, (~1000 Children + EM/HS students attend annually)
- **Scientist in Every Florida School**, Thompson Earth Systems Institute      2022 - present  
Visiting Scientist, Collier County Public Schools (~240 EM students)
- **Can You Dig It?**, Florida Museum of Natural History      2022 - present  
Exhibitor, (~1500-2000 EM+/HS students attend annually)
- **Summer Youth Programs**, Michigan Tech. University      2015 - 2019  
Instructor, curriculum developer, and field trip advisor for:
  - Geological Engineering Exploration Program (~150 EM + HS students)
  - Women in Engineering Program (~450 EM + HS students)
  - Engineering Scholars Program (~420 EM + HS students)

### Mentor:

- **Assistant Research Mentor**, University of Florida      2020 - present  
5 UG students
- **Assistant Research Mentor**, Michigan Tech. University      2015 - 2020  
1 HS, 2 UG students, & 2 HS STEM teachers (NSF K-12 Outreach)

## PRESS RELEASES AND NEWS

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- **"Old Rocks, Biased Data: Overcoming Challenges Studying the Geodynamo"**      2017  
Published by [Michigan Tech News](#)  
Picked up by [NSF](#), [Science Daily](#), [Phys](#), [Newswise](#), and more.
- **"Lab Tour: Earth Magnetism Laboratory"**      2017  
Published by [Michigan Tech Unscripted Research Blog](#)

## SKILLS

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<b>General</b>	Research, Technical Writing, Data Analysis, Public Speaking Science Communication, Curriculum Development, Grant Writing, and Laboratory Management
<b>Programming &amp; Software</b>	Python, R, MATLAB, LaTeX, Mathematica, ArcGIS, SQL, Git, Software Development, and Machine Learning
<b>Instrumentation</b>	Magnetometry, Paleomagnetic Furnaces, Cryogenics, Mineral Separators, Scanning Electron Microscopy, and Quantum Diamond Microscopy

**FIELD EXPERIENCE**

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<b>Deccan Traps, Maharashtra, India</b> – Sample collection	3 weeks, 2022
<b>Custer National Forest, Montana, USA</b> – Sample collection	1 week, 2021
<b>Hell Creek Region, Montana, USA</b> – Sample collection	1 week, 2021
<b>Calumet, Michigan, USA</b> – Geophysical surveying for an <a href="#">archaeological excavation</a>	2 days, 2018
<b>Keweenaw Peninsula, Michigan, USA</b> – Geophysical surveying	5 weeks, 2018
<b>Midcontinent Rift, Michigan, USA</b> – Sample collection	Various dates, 2015 - 2018
<b>North and South Islands, New Zealand</b> – Sample collection/mapping	6 weeks, 2017