KATIE E. BRISTOL

Department of Earth, Atmospheric, and Planetary Sciences
Purdue University, West Lafayette, IN 47907
kebristo@purdue.edu ◇ https://katiebristol.github.io

EDUCATION

Ph.D. in Geological Sciences 2024
University of Florida, Gainesville, FL
Advisor: Dr. Courtney Sprain

M.S. in Geophysics 2020
Michigan Technological University, Houghton, MI
Advisor: Dr. Aleksey Smirnov

B.S. in Applied Geophysics *w/ minor in Geological Engineering* 2018
Michigan Technological University, Houghton, MI
Field Courses: University of Canterbury, New Zealand

RESEARCH EXPERIENCE

Postdoctoral Research Scientist, *PMag Lab, Purdue University* 2025 - present
Research Assistant, *Neil Opdyke Paleomagnetic Lab, University of Florida* 2020 - 2024
Magnetic Microscopy Fellow, *Institute of Rock Magnetism, University of Minnesota* 2022
Lab Manager, *Earth Magnetism Lab, Michigan Tech. University* 2017 - 2020
Research Assistant, *Earth Magnetism Lab, Michigan Tech. University* 2015 - 2020
NASA Michigan Space Grant Fellow, *Michigan Tech. University* 2018 - 2019
Summer Undergraduate Research Fellow, *Michigan Tech. University* 2016 - 2017
NSF Summer REU Intern, *Michigan Tech. University* 2015

PEER-REVIEWED PUBLICATIONS

In print:

1. **Bristol, K. E.**, Sprain, C. J., Meert, J. G., Yasar, I. D., Pandit, M. K., Sinha, A. K., & Dann, A. B. (2025). Absolute Paleointensity Estimates from Precambrian India and the Long-Term Thermal Evolution of the Earth. Geophysical Journal International, ggaf038. doi: 10.1093/gji/ggaf038.

2. Mijjum, M., **Bristol, K. E.**, Bono, R. K., Sprain, C. J., Lifton, N., & Tremblay, M. M. (2025). A Model Framework for Scaling Pre-Quaternary Cosmogenic Nuclide Production Rates. Geochemistry, Geophysics, Geosystems, 26(1), e2024GC012020. doi: 10.1029/2024GC012020.

3. Engbers, Y. A., Bono, R. K., Thallner, D., Sprain, C. J., Murray, M.J., **Bristol, K. E.**, Handford, B., Torsvik, T., & Biggin, A. J. (2024). A global palaeosecular variation database for the Palaeogene: stationary secular variation behaviour since the Triassic?. Geochemistry, Geophysics, Geosystems, 25, e2023GC011203. doi: 10.1029/2023GC011203.

4. **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.

5. 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.

In review:

1. **Bristol, K. E.** & Sprain, C. J. Geomagnetic variability in a post-superchron geodynamo: Insights from the Deccan Traps. In review at Journal of Geophysical Research: Solid Earth.

ABSTRACTS AND PRESENTATIONS

For a complete list, see my Google Scholar page.

Scientific Talks: *** = presenting author**

1. **Bristol*, K. E.**, Borlina, C. S., & Feinberg, J. M. (2025). Magnetized in Brines: Evidence for Robust Magnetic Carriers from Bennu's Returned Samples. In Bennu and Ryugu: Samples from the Early Solar System Abstracts (#2045). Lunar and Planetary Institute, Houston, TX.

2. Borlina*, C. S., **Bristol, K. E.**, Doctor, R. & Feinberg, J. M. (2025). Potential Evidence of a Solar Nebula Magnetic Field in Samples Returned from Bennu. In Bennu and Ryugu: Samples from the Early Solar System Abstracts (#2020). Lunar and Planetary Institute, Houston, TX.

3. **Bristol*, K. E.**, Sprain, C. J, Griffis, A., Mittal, T., Fendley, I., Duraiswami, R. A., Monteiro, A., Mijjum, 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)**

4. Sprain*, C. J., Mittal, T., **Bristol, K. E.**, Duraiswami, R. A., Tremblay, M. M., Mijjum, 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)**

5. **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.

6. Mijjum*, 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

7. **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. **Bristol*, K. E.**, Borlina, C. S., & Feinberg, J. M. (2025). Magnetic Characterization of Chondrites and their Suitability for Paleomagnetic Analysis of Refractory Inclusions. In 14th IRM Conference on Rock Magnetism Abstracts. Minneapolis, MN.

2. **Bristol*, K. E.**, Sprain, C. J., Mittal, T., Monteiro, A., Duraiswami, R. A., Tremblay, M. M., & Mijjum, M. (2024). Mantle Plumes and Geomagnetic Intensity Variations: Insights from the Deccan Traps. In American Geophysical Union Fall Meeting Abstracts (GP41C-3549). Washington, D.C.

3. Sprain*, C. J., Hurst, E., Paterson, G. A., Bono, R. K., **Bristol, K. E.**, & Biggin, A. J. (2021). Constraining the Behavior of ϵ-Fe2O3 During Paleointensity Experimentation. In American Geophysical Union Fall Meeting Abstracts (GP42A-04). New Orleans, LA.

4. **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

5. 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.

6. **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.

7. 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.

8. 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.

9. 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.

10. **Bristol*, K.E.** (2017) "Rock magnetic investigation of the carbonaceous chondrules from the Allende meteorite," In Michigan Technological University Pavlis Honors College Undergraduate Research Symposium. Houghton, MI.

PEER REVIEW AND SERVICE

- Geochemistry, Geophysics, Geosystems, Reviewer
- Geological Society of America Bulletin, Reviewer
- NASA Solar System Workings, Executive Secretary
- Journal of African Earth Sciences, Reviewer

HONORS AND AWARDS

I've been involved in grants/fellowships/awards totaling **$397,280** 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.
- **Mich. Tech Summer Youth Scholars Award** – $13,500 2014

Fellowships:

- **NSF Astronomy & Astrophysics Postdoc Fellowship** – $330,000 2025
- **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

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

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

- **Physics Inside Out**, Purdue University 2025
  Instructor, (∼ 24 EM students annually)
- **Girls Do Science**, Florida Museum of Natural History 2023 - 2024
  Exhibitor, (∼1000 Children + EM/HS students attend annually)
- **Scientist in Every Florida School**, Thompson Earth Systems Institute 2022 - 2024
  Visiting Scientist, Collier County Public Schools (∼240 EM students)
- **Can You Dig It?**, Florida Museum of Natural History 2022 - 2024
  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 - 2024
  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

- **"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

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

FIELD EXPERIENCE

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