

JACLYN S. BAUGHMAN – Curriculum vitae

Assistant Professor of Geology
Humboldt State University
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PROFESSIONAL POSITIONS

- Humboldt State University**, Arcata, CA August 2021 – Present
Assistant Professor
Department Geology
- Bowdoin College**, Brunswick, ME July 2018 – July 2021
Visiting Assistant Professor, Solid Earth
Department of Earth and Oceanographic Science

EDUCATION

- University of Colorado Boulder**, Boulder, CO 2013 – June 2018
Ph.D, Geological Sciences
Thesis: *Bridging high and low temperature thermal histories across the Kaapvaal craton, Southern Africa from advances in titanite and zircon (U-Th)/He thermochronology*
Advisor: Dr. Rebecca Flowers
- Colgate University**, Hamilton, NY 2009 – 2013
A.B., Geology, summa cum laude
Senior Honors Thesis: *Petrographic, EBSD and thermochronologic evidence for two-stage deformation within the Harcuvar mountains: Implications for core complex development*
Advisor: Dr. Martin Wong

Peer-Reviewed PUBLICATIONS

- *Basler, L.C., **Baughman, J.S.**, Fame, M.L., and Haproff, P.J. (2021) Spatially variable syn- and post-Alleghanian exhumation of the central Appalachian Mountains from zircon (U-Th)/He thermochronology. *Geosphere* 17 (4), 1151-1169.
<https://doi.org/10.1130/GES02368.1>
- *Donnelly, M., *Nebuwa, A., **Baughman, J.S.** and Doore, S.A. (2021) Virtual Field Trips to Increase Geoscience Accessibility and Student Engagement. *7th International*

Conference of the Immersive Learning Research Network (iLRN), pp. 1-3, doi:
[10.23919/iLRN52045.2021.9459329](https://doi.org/10.23919/iLRN52045.2021.9459329).

Baughman, J.S. and Flowers, R.M. (2020) Mesoproterozoic burial of the Kaapvaal craton, southern Africa during Rodinia supercontinent assembly from (U-Th)/He thermochronology. *Earth and Planetary Science Letters*, 13p.

<https://doi.org/10.1016/j.epsl.2019.115930>

Baughman, J.S. and Flowers, R.M. (2018) Deciphering a 2 Gyr-long thermal history from a multichronometer (U-Th)/He study of the Phalaborwa carbonatite, Kaapvaal craton, South Africa. *Geochemistry, Geophysics, Geosystems* 19(5), 1581-1594.

<https://doi.org/10.1029/2017GC007198>

Baughman, J.S., Flowers, R. M., Metcalf, J.R., and Dhansey, T. (2017) Influence of radiation damage on titanite He diffusion kinetics. *Geochimica et Cosmochimica Acta* 205, 50-64. <https://doi.org/10.1016/j.gca.2017.01.049>

*Denotes undergraduate student advisee

PUBLICATIONS in review, revision, or prep

Baughman, J.S. and Flowers, R.M. (in prep) The far-reaching thermal effects of Pan-African tectonism on the Kaapvaal craton margin.

HONORS, GRANTS and AWARDS

Total Funding: \$63,600

2021 Bowdoin Faculty Development Research Grant: Project entitled *Spatially variable syn- and post-Alleghanian exhumation of the central Appalachian Mountains from zircon (U-Th)/He thermochronology* (\$1,650)

2020 Bowdoin Fletcher Family Research Award: Project entitled *Fingerprinting ancient tectonic events and landscape evolution with thermochronology in southeast New England?* (\$4,000)

2020 Bowdoin Gibbons Fellowship: Project entitled *Increasing Accessibility and Spatial Reasoning in the Earth Sciences using Virtual Reality* (\$3,600)

2019 Bowdoin Faculty Research Development Grant: Project entitled *Is Northern Appalachian mountain uplift driven by hot, buoyant mantle?* (\$4,000)

2019 Bowdoin Gibbons Fellowship: Project entitled *Leveraging Python and MATLAB to enhance quantitative reasoning and conceptual understanding in the earth sciences* (\$4,500)

2018 Bowdoin Faculty Research Development Grant: Project entitled *When and why the Adirondack Mountains of New York got high* (\$4,000)

2017 United Government of Graduate Students CU Boulder Travel Grant (\$800)

2017 CU Boulder Dept. of Geological Sciences Travel Grant (\$800)
2016 NSF professional development grant, Baughman lead author and in support of Baughman's career development, awarded as a supplement to R.M. Flowers to EAR-0951518 (\$35,000)
2016 GSA-IGC Travel grant (\$3,250)
2015 NSF GRFP Honorable Mention
2014-2016 CU Boulder Undergraduate Student Mentorship grant (\$2,000)
2013 Phi Beta Kappa, Colgate University
2012 USGS/NAGT Cooperative Field Training Program

Pending Funding

Research Award Opportunity (ROA) Supplement to A.K. Ault NSF CAREER EAR-1654628: Thermochronometry and textural signatures of fault damage zones and stimulating middle school student interest in earthquake science. ROA supports a new collaboration between Drs. Jaclyn Baughman and Alexis Ault. If funded, supplement will be awarded to A.K. Ault (\$46,789)

INVITED TALKS

Humboldt State University, California, April 2021
Fort Lewis College, Colorado, March 2021
University of Montana, Montana, June 2020
Colby College, Maine, February 2020
Westminster College, Utah, February 2020
Sacramento State, California, February 2020
Wellesley College, Massachusetts, December 2019
Bates College, Maine, February 2019
Bowdoin College, Maine, February 2018

ABSTRACTS and PRESENTATIONS

*Donnelly, M., *Nebuwa, A., **Baughman, J.S.**, and Doore, S. (2021) Work-in-Progress – Virtual Field Trips to Increase Geoscience Accessibility and Student Engagement. *Immersive Learning Research Network*, 2021.

Baughman, J.S. and Flowers, R.M. (2020) Reconstructing Deep-Time Burial and Erosion Histories using (U-Th)/He Data Patterns, Geologic Constraints, and Thermal History Modeling: an Example from the Kaapvaal Craton, Southern Africa. *AGU Fall meeting 2020*, abs# 685525 (oral, invited).

- Baughman, J.S.**, *Carrillo, T., Doore, S. (2020) Increasing Accessibility and Spatial Reasoning in the Earth Sciences using Virtual Reality: A Virtual Coastal Maine Field Experience. *GSA Annual Meeting 2020*, abs# 154-3 (oral).
- *Saga, R., *Basler, L., **Baughman, J.S.**, and Fame, M. (2020) Mid-Cretaceous Exhumation of the Northern Appalachian Mountains, Vermont, from Apatite (U-Th)/He Thermochronology. *GSA Annual Meeting 2020*, abs# 7-13 (poster).
- *Basler, L., **Baughman, J.S.**, Fame, M., Haproff, P. (2020) Spatially Variable Alleghanian Exhumation of the Central Appalachian Mountains from Zircon (U-Th)/He Thermochronology. *GSA Annual Meeting 2020*, abs# 133-10 (oral).
- Baughman, J.S.**, Fame, M., *Basler, L., Haproff, P. (2020) Spatially Variable Burial and Exhumation History of the Central Appalachian Mountains from Zircon (U-Th)/He Thermochronology. *NE/SE GSA Regional Meeting 2020*, abs# 52-2(oral). – Cancelled due to Covid-19
- *Basler, L., *Ortiz, S., **Baughman, J.S.** (2019) Constraining the mid to low temperature exhumation history of the Central Appalachian Mountains using zircon (U-Th)/He thermochronology. *AGU Annual Meeting 2019*, (poster).
- Baughman, J.S.**, Fame, M., Haproff, P., *Basler, L., *Ortiz, S. (2019) Exploring the extent of Cenozoic Central Appalachian exhumation using targeted low-temperature apatite (U-Th)/He thermochronology. *GSA Annual Meeting 2019*, abs# 63-5(oral).
- Baughman, J.S.** and Flowers, R.M. (2018) Substantial Proterozoic Burial and Exhumation of the Kaapvaal Craton from (U-Th)/He Thermochronology and Implications for Cratonic Stability. *AGU Fall meeting 2018*, abs# 426204
- Baughman, J.S.** and Flowers, R.M. (2017) Deciphering the post-cratonization history of the Kaapvaal craton, South Africa from titanite and zircon (U-Th)/He thermochronology. *AGU Fall meeting 2017*, abs# 225484 (poster).
- Flowers, R.M, **Baughman, J.S.**, Johnson, J.E. and Metcalf, J.R (2017) The expanding temperature sensitivity range of (U-Th)/He thermochronology from improved understanding of the “Big Three” (apatite, zircon and titanite): Approaches and examples. *GSA Annual Meeting 2017*, abs# 352-6 (poster, invited).
- Baughman, J.S.** and Flowers, R.M. (2017) Deciphering the post-cratonization history of the Kaapvaal craton, South Africa from titanite and zircon (U-Th)/He thermochronology. *AGU Fall meeting 2017*, abs# 225484 (poster).
- Baughman, J.S.** and Flowers, R.M. (2016) Multichronometer (U-Th)/He study of the Phalaborwa carbonatite complex, South Africa to decipher mineral closure temperatures and Kaapvaal craton thermal evolution. *GSA Annual Meeting 2016*, abs# 27-12 (oral).
- *Stoner, R.K., **Baughman, J.S.**, Flowers, R.M., Kelley, N.M. and Metcalf, J.R. (2016) Coupling Raman spectroscopy and zircon (U-Th)/He dating to improve interpretation of thermal histories and crustal processes. *GSA Annual Meeting 2016*, abs# 27-10 (oral).

- Metcalf, J.R., **Baughman, J.S.** and Flowers, R.M. (2016) Evaluating a new, rapid zircon and titanite dissolution method for (U-Th)/He thermochronology. *GSA Annual Meeting 2016*, abs# 324-9 (poster).
- Baughman, J.S.** and Flowers, R.M. (2016) Temperature sensitivities of non-traditional (U-Th)/He thermochronometers and thermal evolution of the Phalaborwa carbonatite complex, Kaapvaal craton, South Africa. *35th IGC*, Cape Town, South Africa, abs# 3298 (oral).
- Tappe, S., *Marokane, M.M., **Baughman, J.S.**, Flowers, R.M, Smart, K.A., Eglinton, B., Frei, D., Joy, S., (2016). India's fast Mesozoic drift linked to continental mantle lithosphere delamination: New insights from (U-Th)/He thermochronology of Dharwar craton kimberlites, *35th IGC*, Cape Town, South Africa, abs 3924 (oral).
- Baughman, J.S.**, Flowers, R.M., Dhansay, T., Metcalf, J.R. and *Stoner, R. (2015) Influence of radiation damage on titanite (U-Th)/He dates from the Kaapvaal Craton, southern Africa. *GSA Annual Meeting 2015*, abs# 144-6 (poster).
- Flowers, R.M., **Baughman, J.S.**, Johnson, J.E., Landman, R.L., Stanley, J.R., Weisberg, W.R. and Metcalf, J.R. (2015) Expanding the temperature sensitivity range and applicability of the (U-Th)/He system: some examples. *GSA Annual Meeting 2015*, abs# 104-1 (oral, invited).
- *Marokane, M., Tappe, S, **Baughman, J.S.**, Flowers, R.M., Smart, K.A. and Joy, S. (2015) (U-Th)/He thermochronology of Dharwar craton kimberlites, Penninsular India: Toward a better understanding of coupled deep Earth-surface processes. *Igneous Metamorphic Petrology Study Group Annual meeting 2015*, Pretoria, South Africa.
- Baughman, J.S.**, Flowers, R.M. and Dhansay, T, (2014) Proterozoic stability of the Kaapvaal craton from titanite (U-Th)/He thermochronology and the strong influence of radiation damage on this underutilized thermochronometer, *AGU Fall meeting 2014*, abs# V42B-03 (oral).
- Wong, M.S., Singleton, J., **Baughman, J.S.** and Bunting K.C. (2013) Evidence for Miocene reactivation of a Late Cretaceous to Early Tertiary shear zone in the Harcuvar and Buckskin-Rawhide metamorphic core complexes, Arizona. *GSA Annual Meeting 2013*, abs# 217-9 (oral).
- MacNamee, A., **Baughman, J.S.** and Selleck, B.W. (2011) Chemistry and mineralogy of Devonian strata: A preliminary study to determine possible beneficial use of well cuttings. *GSA Northeastern and North-Central Joint Meeting 2011*, abs# 13-31 (poster).

*Denotes undergraduate student advisee

EXPERIENCE

Present Research:

Bowdoin College: Visiting Assistant Professor (2018 – 2021)

- Timing, extent, and rate of post-orogenic Appalachian burial and exhumation using (U-Th)/He thermochronology
- Paleozoic-Cenozoic evolution of the Limpopo Belt and Basin, South Africa
- Using Virtual Reality to enhance physical accessibility and spatial reasoning in the Earth Sciences

Previous Research Experience:

University of Colorado Boulder: Ph.D. (2013 – 2018)

- Characterization of titanite (U-Th)/He thermochronology
- Temperature sensitivity of non-traditional (baddeleyite, rutile) (U-Th)/He thermochronometers
- Mesoproterozoic burial of the Kaapvaal craton, southern Africa during Rodinia supercontinent assembly from (U-Th)/He thermochronology

Colgate University: Undergraduate Student Researcher (2010 – 2013)

- Metamorphic core complex development: Harcuvar mountains, Arizona
- Marcellus gas shale: Illite crystallinity and sulfide content
- Marcellus gas shale: Beneficial use determination of well-cuttings

United States Geological Survey: Geologist, Menlo Park, CA (2012)

- Uranium contamination and groundwater migration

University of Wollongong: Researcher, Wollongong, Australia (2012)

- Mt Gibraltar anorogenic microsyenite, NSW Australia: Carbonate isotope analysis and pegmatite formation

Teaching Experience:

Assistant Professor, Humboldt State University

General Geology (Fall 2021)

Field Methods I (Fall 2021)

Being a STEM Professional in the 21st Century (Fall 2021)

Visiting Assistant Professor, Bowdoin College

Field Studies in Structural Geology (Fall 2018)

Geomechanics and Numerical Modeling (Spring 2019, Spring 2020)

Isotope Geochemistry (Spring 2019, Spring 2020)

Investigating Earth – Introductory Physical Geology (Fall 2019, Fall 2020, Spring 2021)

Tectonics and Climate (Spring 2021)

Instructor of Record, University of Colorado Boulder

Introduction to Geology (130 students, Spring 2018)

Teaching Assistant, University of Colorado Boulder

Structural Geology (Fall 2017)

Introduction to Field Geology (Fall 2013, Spring 2014, Summer 2015)

Teaching Assistant, Colgate University

Techniques in Field Geology (Summer 2013) Logistical and academic support for 6-week field program

Mentorship Experience:

Director of Bowdoin College Emerging Technologies Lab

Student Employees

- Thais Carrillo '23
- Cobra Curtis '23
- Matthew Donnelly '22
- Ya'Kuana Davis '21

Undergraduate Honors Thesis Supervisor

- Luke Basler '20 – Bowdoin College
- Ryan Stoner '16 – University of Colorado Boulder, now a PhD student at UCSB.

Undergraduate Research Supervisor

- Holden Turner '21 – Bowdoin College - 2021
- Matthew Donnelly '22 – Bowdoin College - 2021
- Luke Basler '20 – Bowdoin College – 2019, 2020
- Cameron Markovsky '21– Bowdoin College – 2019, 2020
- Thais Carrillo '23 – Bowdoin College - 2020
- Rose Saga '22 – Bowdoin College - 2020
- Shona Ortiz '21 – Bowdoin College - 2019
- Ryan Stoner '16 – University of Colorado Boulder – 2015, 2016
- Maggie Marokane – University of the Witwatersrand – 2014

Outreach and Inclusion Experience:

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| 2021 | URGE (Unlearning Racism in Geoscience) pod member |
| 2020 | Geoscience Career Lecture Series, Bowdoin College, Brunswick, ME |
| 2019 | Investigating Earth – Engaging Middle School Audiences, Brunswick, ME
Community Outreach – coordinated college student presentations and demonstrations to (~80) Middle School Students in the Brunswick and Harpswell, ME areas |
| 2017 | UNAVCO Professional Development Coordinator, UNAVCO, Boulder, CO
Instructor for two internship programs housed at the NSF geodetic facility UNAVCO, including RESESS (Research Experiences in Solid Earth Sciences for Students) and GeoLaunchpad, which pair underrepresented minority students and community college students, respectively, with intensive earth science research projects. |
| 2016 – 2017 | Science Communication Symposium Creator and Coordinator, CU Boulder, Boulder, CO |

- 2016 RECESS Graduate Assistant, UNAVCO, Boulder, CO
Support of underrepresented groups in geosciences to promote scientific diversity
- 2014 – 2017 Fieldtrip Coordinator and Guide, UNAVCO and CU Boulder, Boulder, CO
Planned and led weekend long geo-focused fieldtrip for undergraduate students and interns
- 2013 – 2015 Undergraduate Poster Evaluator, UNAVCO, Boulder, CO

Fieldwork Experience:

- Green Mountains, Vermont (2019)
Central Appalachians, Valley and Ridge, West Virginia (2019)
Kaapvaal Craton, South Africa and Swaziland (summer 2016) – fieldwork and sampling of Barberton region, Limpopo region and central Kaapvaal craton for (U-Th)/He thermochronometry.
Kaapvaal Craton, South Africa (summer 2014) – fieldwork and sampling of Archean basement rock, and alkaline and carbonatite igneous complexes on craton for (U-Th)/He thermochronometry.
Harcuvar metamorphic core complex (January 2013) – mapping, field relationships and sample collection for petrographic, EBSD and thermochronologic analysis.
Naturita, CO, former uranium mine site (July 2012) - water and soil sample collection, tracer tests.
Mt. Gibraltar, NSW, Australia (February 2012) – pegmatite field relationships and carbonate sample collection
CO, UT, ID, WY (June-July 2011) – mapping, structural and geologic development, Colgate University field camp.
Ecuador (March 2010) - volcanic research, hazard mapping, deposit identification and history.

Laboratory Experience:

- Mineral separation, ASI Alphachron for He extraction and measurement, ICP-MS, SEM, EDS, EBSD, Raman spectroscopy, XRD, XRF

SERVICE

National Service:

- Convener of technical session “Topographic and Lithospheric Evolution of Elevated Continental Passive Margins” at GSA Annual Meeting 2020
Reviewer for – National Science Foundation, Geochimica Cosmochimica Acta, Journal of African Earth Sciences, American Chemical Society, Geosphere, Geochemistry, Geoscience Communication

Student representative for Geological Society of America Structural Geology and Tectonics Division (2017-2018).

Primary convener of technical session “Applications of Thermochronology to Understand Crustal Systems” at AGU Fall Meeting 2017.

University Service:

Faculty Director, Bowdoin College Emerging Technologies Lab

Head Tutor for University of Colorado Boulder Dept. of Geological Sciences tutor room (2017-2018)

Geological Sciences graduate student lecture series organizer (2015-2017)

PROFESSIONAL ORGANIZATIONS

International Association for Geoscience Diversity (IAGD)

Geological Society of America (GSA)

American Geophysical Union (AGU)

American Association for the Advancement of Science (AAAS)