

Claire A. Mondro

cmondro@caltech.edu • www.clairemondro.com

EDUCATION

<i>Ph.D.</i>	Earth and Planetary Sciences, <i>The University of Tennessee-Knoxville</i> Dissertation: Fan and Fracture Formation: Morphologic and Sedimentologic Characteristics of Alluvial Fans on Earth and Mars, and Fracture Population Distributions on Europa Advisor: Dr. Jeff Moersch	2022
<i>M.Sc.</i>	Geosciences, <i>The Pennsylvania State University</i> Thesis: Deformation history of the Taiwan orogen from syntectonic pressure shadows Advisor: Dr. Don Fisher	2013
<i>B.S.</i>	Geological Sciences, <i>The Ohio State University</i> Honors Thesis: Transport of organic carbon from the tropical island of Dominica Advisor: Dr. Anne Carey <i>cum laude</i> with Honors and Research Distinction	2010
<i>B.A.</i>	English, <i>The Ohio State University</i> Concentration: creative nonfiction writing <i>cum laude</i> with Honors	2010

PROFESSIONAL EXPERIENCE

Associate Research Scientist <i>Planetary Science Institute</i>	2024-present
Postdoctoral Scholar Research Associate in Geology <i>Caltech Division of Geological and Planetary Sciences</i> Advisor: Dr. John Grotzinger	2022-present
Graduate Student Research and Teaching Assistantship <i>The University of Tennessee</i>	2017-2022
Exploration Geologist <i>Chevron Corporation</i> High-Potential Early Career Pre-Management Tract Project Manager: East China Sea Gravity/Magnetics Study Kurdistan Region of Iraq Exploration Team: Regional depositional environment mapping, fold-thrust belt kinematics, basin analysis, carbonate-clastic sequence stratigraphy, GIS Subject Matter Expert Sub-Sahara Africa New Ventures Team: Offshore sedimentary rift-basin analysis, regional paleogeography, volumetric hydrocarbon reserves modeling	2013-2017
Graduate Student Teaching Assistantship <i>The Pennsylvania State University</i>	2010-2012
Graduate Student Intern <i>Exxon Mobile</i> Fold-Thrust Belt Thematic Group: Regional geologic interpretation and structural reconstruction of Pakistan fold-thrust belts from surface and subsurface data for frontier exploration	2011

PUBLICATIONS & PRESENTATIONS

PEER-REVIEWED PUBLICATIONS

- Mondro, C.A.**, J.E. Moersch, C. Hardgrove, (2024). Assessing surface grain size of alluvial fans on Mars from thermal inertia, as an indicator of depositional style. *Icarus*.
<https://doi.org/10.1016/j.icarus.2024.115971>.
- Seaton, K.M., S. Gyalay, G. Stucky de Quay, E.R. Burnett, C.A. Denton, B. Doerr, K. Ebadi, S. Eckert, I.T.W. Flynn, C.I. Honniball, S. Hume, C.L. Kling, J.C. Marohnic, J. Milton, **C.A. Mondro**, R.G. Nuno, C.M. Rooney, B.E. Strauss, A. Nash, J.E.C. Scully, (2023). Astrobiology eXploration at Enceladus (AXE): A New Frontiers Mission Concept Study. *The Planetary Science Journal*, 4(6), 116. doi: 10.3847/PSJ/acd119.

Warren-Rhodes, K., N.A. Cabrol, M. Phillips, C. Tebes-Cayo, F. Kalaitzis, D. Ayma, C. Demergasso, G. Chong-Diaz, K. Lee, N. Hinman, K.L. Rhodes, L.N. Boyle, J.L. Bishop, M.H. Hofmann, N. Hutchinson, C. Javiera, J. Moersch, **C.A. Mondro**, N. Noffke, V. Parro, C. Rodriguez, P. Sobron, P. Sarrazzin, D. Wettergreen, K. Zacny, the SETI Institute NAI Team, (2023). Orbit to Ground Framework to Decode and Predict Biosignature Patterns from Terrestrial Analogues. *Nature Astronomy*. <https://doi.org/10.1038/s41550-022-01882-x>

Mondro, C.A., J.E. Moersch, J. Emery, W.M. Dunne, (2023). Regional variations in observed fracture abundance and associated predictions for smaller fractures on Europa with implications for regional plume origins. *Earth and Planetary Science Letters* 602C, 117928. <https://doi.org/10.1016/j.epsl.2022.117928>

Mondro, C.A., J.E. Moersch, C.M. Fedo, (2023). An updated global survey of alluvial fans on Mars: Distinguishing alluvial fans from other fan-shaped features through morphologic characterization. *Icarus*, 398C. <https://doi.org/10.1016/j.icarus.2022.115238>

Mondro, C.A., D.M. Fisher, E-C. Yeh, (2017). Strain histories from the eastern Central Range of Taiwan: A record of advection through a collisional orogen. *Tectonophysics* 705, 1-11. <https://doi.org/10.1016/j.tecto.2017.03.007>

MANUSCRIPTS UNDER REVIEW

Kite, E., P. Gasda, C.J. Tino, C. Weitz, L. Thompson, B.M. Tutolo, **C.A. Mondro**, W.H. Farrand, S. Gupta, J. Schieber, W.E. Dietrich, N. Mangold, K.W. Lewis, (under review) Hypotheses for the water and metal fluxes to the rippled Amapari Marker Band, Gale Crater, Mars. *Earth and Planetary Science Letters*.

Roberts, A.L., S. Gupta, S.G. Banham, A. Cowart, L.A. Edgar, W. Rapin, W.E. Dietrich, E.S. Kite, J.M. Davis, G. Caravaca, **C.A. Mondro**, T. Kubaki, N. Moore, P. Gasda, J.R. Johnson, S. Le Mouelic, D.M. Fey, A.B. Bryk, E.R.A. Harris, A. Fraeman, A. Vasavada, (under review) Paleo-scours within the layered sulfate-bearing unit at Gale crater, Mars: evidence for intense wind erosion. *Journal of Geophysical Research: Planets*.

Mondro, C.A., J.P. Grotzinger, C.M. Fedo, M.P. Lamb, S. Gupta, W.E. Dietrich, S. Banham, C. Weitz, P. Gasda, D. Rubin, L. Thompson, A. Cowart, K. Lewis, A. Roberts, A.B. Bryk, R.M.E. Williams, W. Rapin, C. Seeger, E. Kite, J. Davis, G. Caravaca, J. Schieber, A. Vasavada (under review) Depositional environment of the Amapari Marker Band: rising water levels formed kilometer-scale lake in Gale crater, Mars. *Journal of Geophysical Research: Planets*.

Mondro, C.A., C.M. Fedo, J.P. Grotzinger, M.P. Lamb, S. Gupta, W.E. Dietrich, S. Banham, C.M. Weitz, P. Gasda, L.A. Edgar, D. Rubin, A.B. Bryk, E.S. Kite, G. Caravaca, J. Schieber, A.R. Vasavada (under review) Wave ripples formed in ancient, ice-free lakes in Gale Crater, Mars. *Science Advances*.

Mondro, C.A., J. Benner, B. Thomson, N. Lang, (under review). Utilization of an augmented reality sandbox as a topographic map teaching tool in 100-level geology classes led to an increase in student learning and classroom engagement. *Journal of Geoscience Education*.

CONFERENCE PRESENTATIONS *invited; [†]oral presentation

Banham, S.G., J.W. Cosgrove, G. Paar, M. Hughes, J.A. Grant, **C.A. Mondro**, R. Barnes, S. Gupta, A. Fraeman (2024) The burial and exhumation of Mount Sharp, as recorded by the fracture sets at Maria Gordon Notch, Gale crater, Mars. *Geofutures Planetary Geoscience Conference*. (submitted)

Roberts, A.L., S. Gupta, A. Cowart, L.A. Edgar, W.E. Dietrich, W. Rapin, E. Kite, S.G. Banham, J.M. Davis, **C.A. Mondro**, B. Farrand, A.B. Bryk, T. Kubacki, N. Moore, R. Sheppard, L. Kah, G. Caravaca, A. Fraeman, A. Vasavada (2024) What depositional processes and paleoenvironments formed the layered sulfate unit in Gale crater, Mars? Insights from Marker Band Valley. *Geofutures Planetary Geoscience Conference*. (submitted)

Mondro, C.A., J. Grotzinger, C.M. Fedo, G. Paar, S. Banham (2024) Fracture mapping and associated stress fields represented by veins (filled fractures) in the Mont Mercou outcrop, Gale Crater. *10th International Conference on Mars*.

- Banham, S.G., J.W. Cosgrove, G. Paar, M. Hughes, J.A. Grant, **C.A. Mondro**, R. Barnes, S. Gupta, A. Fraeman (2024) Analysis of fractures at Maria Gordon Notch (Gale crater, Mars): Implications for fluid migration history and present-day cliff stability. *10th International Conference on Mars*.
- Roberts, A.L., S. Gupta, A. Cowart, L.A. Edgar, W.E. Dietrich, W. Rapin, E. Kite, S.G. Banham, J.M. Davis, **C.A. Mondro**, B. Farrand, A.B. Bryk, T. Kubacki, N. Moore, G. Caravaca, A. Fraeman, A. Vasavada (2024) Depositional processes and environments of the Layered Sulfate unit, Gale crater, Mars. *10th International Conference on Mars*.
- Gasda, P.J., E.S. Kite, L.M. Thompson, **C.A. Mondro**, W. E. Dietrich, et al. (2024) The Amapari Marker Band, Gale Crater: Metal enrichments and potential mechanisms of formation. *10th International Conference on Mars*.
- Roberts, A.L., S. Gupta, A. Cowart, L.A. Edgar, W.E. Dietrich, W. Rapin, E. Kite, S.G. Banham, J.M. Davis, **C.A. Mondro**, A.B. Bryk, T. Kubacki, N. Moore, P.J. Gasda, J.R. Johnson, G. Caravaca, A. Fraeman, A. Vasavada (2024) What Depositional Processes and Paleoenvironments Formed the Layered Sulphate Unit in Gale Crater, Mars?: Insights from Marker Band Valley. *British Planetary Science Conference*.
- Davis, J.M., W.E. Dietrich, **C.A. Mondro**, S.A. Wilson, G. Caravaca, R.M.E. Williams, L. Thomson, O. Gasnault, G. Paar, E.S. Kite, A.S. Bryk, S.G. Banham, S. Gupta, A.L. Roberts, J.P. Grotzinger. The Upper Gediz Vallis Ridge at Gale Crater: Sedimentary Rock Clasts Transported by a Late-Stage Debris Flow on Mars? *EGU General Assembly 2024*. (submitted)
- Gupta, S., W.E. Dietrich, L. Edgar, K.W. Lewis, E.S. Kite, **C.A. Mondro**, C. Weitz, A. Bryk, G. Caravaca, J. Schieber, C. Fedo, D. Rubin, R. Williams, W. Rapin, A. Roberts, T. Seeger, J. Grotzinger, M.P. Lamb, A. Cowart, J. Davis, S. Banham, J. Grant, S. Le Mouélic, R.A. Yingst, M. Minitti, N. Mangold, L. Kah, D. Fey, T. Kubacki, O. Gasnault, R. Wiens, A. Vasavada, A. Fraeman. Rippled to bits: tales of transient lakes in a martian desert. *AGU Annual Meeting 2023*.
- Kite, E.S., P. J. Gasda, L.M. Thompson, C.M. Weitz, N. Lanza, W. E. Dietrich, K.W. Lewis, **C.A. Mondro**, C.D. O'Connell-Cooper, A. Cowart, D. Rubin, S. Gupta, W. Rapin, A. Roberts, J. Berger, H. Newsom, A. Bryk, M.P. Lamb, J. Davis, S. VanBommel, J. Schieber, W. Goetz, S. P. Schwenzer, A. Bryk, W.W. Fischer, C. House, J. Johnson, E. Dehouck, A. Essunfeld, J. Lasue, O. Gasnault, S. Clegg, J. Frydenvang, D. Delapp, R.M.E. Williams, G. Caravaca, A. Vasavada. Metal enrichment of wave-rippled sediments on ancient Mars. *AGU Annual Meeting 2023*.
- *[†] **Mondro, C.A.**, J.E. Moersch, C.M. Fedo. Morphology of alluvial fans and fan-like features on Mars as an indicator of depositional environments. *GSA Connects 2023*.
- [†] **Mondro, C.A.**, J. Grotzinger, C.M. Fedo, G. Paar. Fracture patterns in Mont Mercou record changing stress fields during burial and exhumation of Mount Sharp, Gale Crater, Mars. *GSA Connects 2023*.
- Gupta, S., W. E. Dietrich, L. Edgar, K.W. Lewis, E.S. Kite, **C.A. Mondro**, C. Weitz, A. Bryk, G. Caravaca, J. Schieber, C. Fedo, D. Rubin, R. Williams, W. Rapin, A. Roberts, T. Seeger, J. Grotzinger, M.P. Lamb, A. Cowart, J. Davis, S. Banham, J. Grant, S. Le Mouélic, R.A. Yingst, M. Minitti, N. Mangold, L. Kah, D. Fey, T. Kubacki, O. Gasnault, R. Wiens, A. Vasavada, A. Fraeman. Aeolian-fluvial-lacustrine interactions recorded in the stratigraphy of Aeolis Mons, Gale crater. *ESA Fluvial Aeolian Interactions on Planetary Surfaces (FAIRPLAY) Workshop 2023*.
- [†] **Mondro, C.A.**, J. Grotzinger. High thermal conductivity of water-saturated pore space in Mount Sharp stratigraphy reduces burial temperatures during sediment accumulation. *Lunar and Planetary Science Conference 2023*, 1323.
- Dietrich, W.E., A.B. Bryk, E.S. Kite, K.W. Lewis, S. Gupta, C.M. Weitz, T. Parker, J. Schieber, P. Gasda, O. Gasnault, A. Fau, S. Le Mouélic, L.M. Thompson, A.L. Roberts, R.M.E. Williams, H. Newsom, **C.A. Mondro**, J.P. Grotzinger, W. Rapin, J.M. Davis, G. Caravaca. Implication of the local topography of the Marker Band contact, Gale Crater. *Lunar and Planetary Science Conference 2023*, 1421.
- Gasda, P.J., N. Lanza, W. Rapin, J. Frydenvang, W. Goetz, S.P. Schwenzer, W.E. Dietrich, C. Weitz, A. Bryk, E. Kite, K. Lewis, J. Schieber, W.W. Fischer, **C.A. Mondro**, J. Johnson, E. Dehouck, H.E. Newsom, A. Essun-

- feld, J. Lasue, O. Gasnault, S. Clegg, D. Delapp. Chemcam observations of the Marker Band, Gale Crater, Mars. *Lunar and Planetary Science Conference 2023*, 2023.
- Gupta, S., W.E. Dietrich, K.W. Lewis, E.S. Kite, **C.A. Mondro**, J. Schieber, C. Weitz, A. Bryk, L. Edgar, C. Fedo, D. Rubin, R. Williams, W. Rapin, G. Caravaca, A. Roberts, T. Seeger, J. Grotzinger, M.P. Lamb, A. Cowart, J. Davis, S. Banham, J. Grant, R.A. Yingst, M. Minitti, D. Fey, T. Kubacki, A. Vasavada, A. Fraeman. 'High' but not so dry on Aeolis Mons: Transient lake systems in Hesperian deserts in Gale Crater. *Lunar and Planetary Science Conference 2023*, 2707.
- Weitz, C.M., K.W. Lewis, E.S. Kite, W.E. Dietrich, L.M. Thompson, C.D. O'Connell-Cooper, J. Schieber, D. Rubin, P. Gasda, **C.A. Mondro**, C. Seeger, W. Rapin, S. Gupta, A. Roberts, J. Frydenvang, J. Berger, H. Newsom, A. Bryk, M.P. Lamb, J. Grotzinger, W.W. Fischer, A. Cowart, J. Davis, J. Grant, A. Yingst, W. Farrand, T. Parker, A. Vasavada, A. Fraeman, R. Milliken, R. Sheppard, M. Minitti, D. Ming, S. Simpson, E. Rampe, S. McLennan, D. Fey, T. Kubacki, R.M.E. Williams, R. Arvidson, G. Caravaca. The Marker Band in Gale Crater; A synthesis of orbital and ground observations. *Lunar and Planetary Science Conference 2023*, 1560.
- Mondro, C.A.**, C.M. Fedo, J.E. Moersch. A morphologic approach to distinguishing alluvial fans from other depositional features on Mars. *Lunar and Planetary Sciences Conference 2022*, 2348.
- Seaton, K.M., E.R. Burnett, C.A. Denton, B. Doerr, K. Ebadi, S. Eckert, I.T.W. Flynn, S. Gyalay, C.I. Honniball, S. Hume, C.L. Kling, J.C. Marohnic, J. Milton, **C.A. Mondro**, R.G. Nuno, C.M. Rooney, B.E. Strauss, G. Stucky de Quay, A. Nash, J. Scully. Science Objectives for a Mission Concept to Enceladus: The Astrobiology eXploration at Enceladus (AXE). *Lunar and Planetary Sciences Conference 2022*, 2152.
- Seaton, K.M., E.R. Burnett, C.A. Denton, B. Doerr, K. Ebadi, S. Eckert, I.T.W. Flynn, S. Gyalay, C.I. Honniball, S. Hume, C.L. Kling, J.C. Marohnic, J. Milton, **C.A. Mondro**, R.G. Nuno, C.M. Rooney, B.E. Strauss, G. Stucky de Quay, A. Nash, J. Scully. Mission Implementation for a New Frontiers Mission Concept: The Astrobiology eXploration at Enceladus (AXE). *Lunar and Planetary Sciences Conference 2022*, 2168.
- Engel, A., **C.A. Mondro**, T.A. Grambling, N.L. Grambling, A.T. Paterson, J.S. Benner, the EPS URGE Pod. Efforts to Unlearn Racism in Geoscience (URGE) at the University of Tennessee-Knoxville uncovered programmatic inequality and gatekeeping. *AGU Fall Meeting 2021*.
- [†]**Mondro, C.A.**, C.M. Fedo, J.E. Moersch. Depositional styles of alluvial fans sourced from primarily basaltic catchments. *GSA Connects 2021*.
- Mondro, C.A.**, J. Emery, J.E. Moersch. Modeling fracture populations in Europa's brittle ice shell and implications of fracture-added porosity. *Lunar and Planetary Sciences Conference 2021*, 2357.
- [†]**Mondro, C.A.**, B.J. Thomson, J.S. Benner. Augmented reality (AR) sandboxes as interactive visualization tools for investigating planetary morphology in the classroom. *GSA Annual Meeting 2020*.
- Mondro, C.A.**, and J.E. Moersch. Sedimentary characteristics of Martian alluvial fans from thermal inertia. *Lunar and Planetary Science Conference 2020*, 2546.
- Moersch, J.E., **C.A. Mondro**, C.J. Leight, M.S. Phillips. A new community resource for terrestrial analog field research: A visible to shortwave infrared (400-2500 nm) drone- and ground-based hyperspectral imager for high resolution compositional mapping. *Lunar and Planetary Science Conference 2020*, 1865.
- [†]**Mondro, C.A.**, and J.E. Moersch. A new field method for determining relative grain size from aerial thermal images: Comparison of rate of morning heating and ΔT_{max} methodologies for measuring relative thermal inertia and sediment grain sizes. *GSA Annual Meeting 2019*.
- [†]**Mondro, C.A.**, J.A. Benner, B.J. Thomson. Augmented Reality Sandboxes as a topographic map teaching tool in 100-level geology classes: Measuring the impact on student learning and classroom engagement. *GSA Annual Meeting 2019*.
- Mondro, C.A.**, C.M. Fedo, J.E. Moersch. Identification and morphologic characterization of small and medium alluvial fans on Mars using the CTX global mosaic. *Lunar and Planetary Science Conference 2019*, 2739.
- Banerjee, S., J. Phelps, and **C. Mondro**. Along-trend variation of shortening and timing in the Zagros Fold-Thrust Belt, Kurdistan Region of Iraq (KRI). *AAPG International Conference Exhibition 2017*.

Phelps, J., S. Banerjee, **C. Mondro**. Unraveling the Qara Dagh Anticline, Zagros Mountains, Southeastern Kurdistan Region of Iraq. *AAPG International Conference Exhibition 2017*.

Mondro, C.A. and D.M. Fisher. Incremental strain history of the Taiwan orogenic belt, measured from syntectonic pressure shadows. *AGU Fall Meeting 2012*.

Trierweiler, A.M., **C.A. Mondro**, C. Restrepo, A.E. Carey. Landslide disturbance and scale in watershed studies of fluvial carbon and nutrient yields. *GSA Annual Meeting 2010*.

Mondro, C.A., S.T. Goldsmith, A.M. Trierweiler, B.M. Johnson, S.A. Welch, A.E. Carey. Organic carbon transport in small mountainous rivers on Dominica, Lesser Antilles. *Goldschmidt Annual Meeting 2010*.

Trierweiler, A.M., **C.A. Mondro**, S.A. Welch, C. Restrepo, A.E. Carey. Carbon and nutrient export dynamics in small mountainous watersheds prone to landsliding in Guatemala. *Goldschmidt Annual Meeting 2010*.

Von Bargaen, J.M., S.T. Goldsmith, K.M. Deuerling, **C.A. Mondro**, J.E. Stutz, S.A. Welch, A.E. Carey. Impact of anthropogenic bioturbation on nutrient chemistry of a small urban pond. *Goldschmidt Annual Meeting 2010*.

Mondro, C.A., S.T. Goldsmith, A.E. Carey, A.M. Trierweiler, B.M. Johnson, S.A. Welch. Transport of dissolved organic carbon in mountainous rivers of Dominica, Lesser Antilles. *GSA Annual Meeting 2009*.

Von Bargaen, J.M., S.T. Goldsmith, A.E. Carey, S.-J. Kao, S.A. Welch, **C.A. Mondro**. Controls on soil development and carbon storage on the high-standing island of Taiwan. *GSA Annual Meeting 2009*.

Goldsmith, S.T., S.A. Welch, A.M. Trierweiler, J.M. Von Bargaen, **C.A. Mondro**, J.E. Stutz, A.E. Carey. Periodic anthropogenic bioturbation of a small urban pond. *GSA Annual Meeting 2009*.

INVITED LECTURES

Alluvial fan formation on Earth and Mars. *Caltech GeoClub Seminar* (Oct 2022)

A global perspective on Martian alluvial fans. *East Tennessee Geological Society public seminar* (May 2019)

OTHER CONTRIBUTIONS

Mondro, C.A., J. Studlick, D. Zilkoski, S. Judge, D. Caccamise II (2024) The Future of Geoscience Careers: Strategic Vision of the Evolving Workforce [White paper]. Ohio State School of Earth Sciences Alumni and Friends Advisory Board. In prep.

Christopherson, R. and G. Birkeland (2020) *Geosystems: At Introduction to Physical Geography*, 10th edition eText. Subject-Matter Expert contributions by **C.A. Mondro**, Pearson.
(created technical and visual content for new online interactive Mastering platform)

NASA MISSION EXPERIENCE

<i>Mars Science Laboratory (MSL) Curiosity Rover Science Team</i>	2022-present
Role: Postdoc Collaborator, Sestrat working group facilitator	
<i>JPL Planetary Science Summer School</i>	2021
Team development of Astrobiology eXploration at Enceladus (AXE) mission concept	
Role: Astrobiology Science Group Lead	
<i>Mars Odyssey Thermal Emission Imaging System (THEMIS) Science Team</i>	2018-2022
Role: Graduate student researcher	
<i>Mars Exploration Rover (MER) Opportunity Science Team</i>	2018-2019
Role: Science Operations Working Group Documentarian (SOWG-Doc)	

GRANTS, FELLOWSHIPS, & PROJECT FUNDING

ACTIVE

<i>Caltech Division of Geological and Planetary Sciences Postdoctoral Fellowship</i> "Long-term sedimentary and tectonic evolution of Gale Crater, Mars"	2022-2024
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COMPLETED

<i>University of Tennessee Yates Dissertation Fellowship</i>	2020-2021
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Extended support for: “Fan and Fracture Formation: Morphologic and Sedimentologic Characteristics of Alluvial Fans on Earth and Mars, and Fracture Population Distributions on Europa”

<i>University of Tennessee Student/Faculty Research Award</i>	2019-2021
“Geologic and remote sensing analysis of alluvial fans in southern Nevada as an analog for identifying climate indicators in Martian alluvial fans”	
<i>University of Tennessee University Chancellor’s Fellowship</i>	2017-2021
“Remote sensing of Mars surface sedimentary processes and stratigraphic record”	
<i>Geological Society of America Graduate Student Research Grant</i>	2012
“Investigation of tectonic history of Taiwan orogen through analysis of small-scale strain indicators”	
<i>Shell Geosciences Energy Research Facilities Award</i>	2011
“A revised tectonic model for the island of Taiwan: the influence of continental margin subduction”	
<i>Ohio State Undergraduate Student Government Academic Enrichment Grant</i>	2009
“Organic carbon transport in mountainous rivers”	
<i>Shell Undergraduate Research Experience Award</i>	2009
“Carbon fluxes in the rivers of Dominica”	

ACADEMIC AWARDS & SCHOLARSHIPS

<i>University of Tennessee, Department of Earth and Planetary Sciences</i>	
UTK EPS Alumni Advisory Board Scholarship	2021
Graduate School Academic Recovery Grant	2021
Virginia & James Bibee Colloquium Presentation Award	2019
Planetary Science Education and Outreach Award, Planetary Geosciences Institute	2018
<i>Pennsylvania State University, Department of Geosciences</i>	
Chesapeake Energy Scholarship in Geosciences	2012
Paul D. Krynine Scholarship	2011
<i>The Ohio State University, School of Earth Sciences</i>	
Excellence in Academic Achievement Award	2010
School of Earth Sciences Undergraduate Book Award	2009
Math and Physical Sciences Undergrad Research Forum Best Poster	2009
Cargill Corporation National Merit Scholarship	2006
University Distinguished Scholar Scholarship	2006

DIVERSITY, EQUITY, & INCLUSION ACTIVITIES

Unlearning Racism in the Geosciences (URGE) University of Tennessee pod member	2021
Hosted UTK GeoClub Unconscious Bias Workshop lead by Office of Multicultural Student Life	2019

WORKSHOPS & TRAINING ATTENDED

How to Support First Generation Students Caltech CPET Discussion Group	2023
Change Leadership for Inclusive Teaching and Learning CIRTl short course	2023
Inclusive Teaching Certificate UTK Teaching and Learning Initiative	2021
SafeZone Certified UTK Pride Center	2021
Bystander Intervention Training UTK Office of Title IX	2019

TEACHING

WORKSHOPS, TRAINING, & CERTIFICATION

Teaching Institute Johns Hopkins University	2024
Course Design: Forward, Central, Backward, and Beyond Caltech CTLO workshop	2024
Transforming Your Research into Teaching Caltech CTLO short course	2023

Practitioner Certification Center for the Integration of Research, Teaching, and Learning (CIRTL)	2019
Fostering Undergraduate Evidence-Based Learning in STEM CIRTL workshop	2018

COURSE CONTENT DEVELOPMENT

University of Tennessee, Department of Earth and Planetary Sciences

Earth Sedimentary Processes Geol 340	Spring 2020
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Produced new digital lab assignments and materials for mid-semester transition to fully online format

Topographic Map Lab Knowledge Study: The Dynamic Earth Geol 101	2018-2019
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IRB-approved study on effectiveness of new lab design on student knowledge retention

Planetary Geology Geol 380	Spring 2019
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Created lab materials for orbital dynamics, surface processes, mission planning, and remote sensing

The Dynamic Earth Geol 101	Fall 2018
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Team undertaking to re-write, test, and implement new lab assignments focused on science literacy

Pennsylvania State University, Earth and Space Science Partnership

The Ocean Around Us Geosc 040	Fall 2012
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Redesigned course structure and materials to center data-driven hypothesis testing and science literacy

GUEST LECTURES

University of Tennessee, Department of Earth and Planetary Science

Planetary Tectonics and Structure Geol 370 Earth Structure and Geophysics	Fall 2021
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Geology and Geopolitics of Petroleum Exploration and Production in the Kurdistan Region of Iraq Geol 490 Petroleum Geology	Fall 2019
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Grand Tour of the Solar System Geol 380 Planetary Geology	Spring 2018
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TEACHING ASSISTANT

(primary lab instructor responsible for lectures, demonstrations, instruction, and grading for lab sections)

University of Tennessee, Department of Earth and Planetary Sciences

Planetary Science Geol 580	Spring 2022
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Geologic Applications of Remote Sensing Geol 539 (online synchronous)	Spring 2021
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The Dynamic Earth Geol 101 (online synchronous)	Fall 2020
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Sedimentology and Stratigraphy Geol 340 (hybrid)	Spring 2020
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Planetary Geology Geol 380	Spring 2018 & 2019
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The Dynamic Earth Geol 101	Fall 2017
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Pennsylvania State University, Department of Geosciences

Field Camp (Northern Basin and Range) Geosc 472a/b Head TA	Summer 2011 & 2012
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The Ocean Around Us Geosc 040	Fall 2010 & Spring 2012
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Structural Geology Geosc 465	Spring 2011
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The Ohio State University, School of Earth Sciences

Field Camp (Utah Basin and Range) EarthSci 581/582 Head TA	Summer 2010
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STUDENT MENTORING

University of Tennessee Department of Earth and Planetary Sciences

Colby Sain Undergraduate researcher	2021-2022
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Research Project: Morphology of Mars alluvial fans

Pennsylvania State University Department of Geosciences

Andrew Pollack Undergraduate Senior Thesis research	2012
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Senior Thesis: Comparing Kinematic Models of Orogenic Growth in Taiwan

FIELD WORK

*research; [†] course taught; [§] course taken

University of Tennessee, Department of Earth and Planetary Sciences

*Amargosa Valley, CA Sedimentology and depositional processes of alluvial fans	2021
*Amargosa Valley, CA drone visual and infrared remote sensing of alluvial fans	2020
*Ivanpah Playa, CA drone visual and thermal remote sensing of playa sedimentology	2019
*Pajonales, Altiplano, Chile Changing Planetary Environments and the Fingerprints of Life, SETI	2019

Chevron Corporation

[§] Southern Nevada Fractured carbonates and naturally fractured reservoir analogs	2017
[§] Guadalupe Mountains, NM Carbonate depositional environments and reservoir analogs	2016
[§] Southern California Turbidite outcrops, seismic stratigraphy, and geomorphology	2014

Pennsylvania State University, Department of Geosciences

[§] Guadalupe Mountains, NM Field Stratigraphy	2012
[§] Panamint and Owens Valleys, CA Tectonic geomorphology of Quaternary terrain	2012
[†] Northern Basin and Range Field Camp Teaching Assistant	2011 & 2012
*Taiwan Structural fabric measurement and sample collection for Masters thesis research	2011
[§] Wallops Island, VA Sediment transport processes of barrier island systems	2010

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[†] Central Utah Field Camp Teaching Assistant	2010
*Sierra de las Minas, Guatemala Analysis of organic carbon flux in small mountain streams	2009
*Mirror Lake, Ohio State campus, OH water sampling and analysis	2008 & 2009
[§] Central Utah Field Camp	2008

SERVICE & OUTREACH

Alumni Advisory Board member Ohio State School of Earth Sciences	2022-present
VP of Communications Ohio State Crew Team Alumni Association	2021-present
Review panelist NASAS ROSES program	2023
Session Chair LPSC, "Martian Wind, Rock, and Fire: Surface and Interior Processes"	2023
Student-Faculty Liaison University of Tennessee GeoClub	2020-2022
Alumni Mentor Ohio State Arts & Sciences Alumni Match Mentoring Program	2020-2021
Mars Exploration Panelist Mars 2020 virtual launch viewing party	2020
Mars Rover Exploration Exhibitor Student Spaceflight Experiment Showcase, Bearden HS, TN	2019
Brown Bag Lunch coordinator University of Tennessee Earth & Planetary Science Department	2019-2020
Student Docent McClung Museum, Knoxville TN	2018-2020
Science Pen Pal Letters to a Pre-Scientist	2018-2019
Organizer & Host InSight Mission Landing Department Viewing Party	2018
Space Science Activity Leader McClung Museum Family Fun Day, Tennessee Space Grant	2018
Session Co-Lead Rock Stars geology camp, Girl Scouts of San Jacinto Council	2017
Event Committee Chair Penn State Department of Geosciences	2012
Vice President Sigma Gamma Epsilon Honorary, Ohio State School of Earth Sciences	2008-2010

MEDIA APPEARANCES

WETR FM92.4 Hubert Smith Radio Show: NASA Opportunity End-of-Mission, (Feb 16, 2019)
WBIR Knoxville Local News 10: NASA Opportunity End-of-Mission, (Feb 15, 2019)
WATE Knoxville Local News: NASA InSight landing, (Nov 26, 2018). https://www.wate.com/news/local-news/ut-students-witness-nasa-s-insight-lander-mission-from-blast-off-to-landing/1620387911
Columbus Dispatch: Mirror Lake Project, (Nov 2009). http://www.dispatch.com/content/stories/local/2009/11/19/mirror-lake-jump-urine.html