

# Alexander B. Thames, PhD

📍 Philadelphia, PA, USA    ✉ alexander.b.thames@gmail.com    in alexander-b-thames    🌐 xthames

## Summary

Geoscientist and climate scientist with doctoral experience in developing tools and methodologies to support assessments of deep uncertainty, particularly for geophysical models and climate change impact analyses on natural-human systems like agriculture. Expertise in large ensemble exploratory modeling in the context of understanding novel system interactions, informing decision-making and risk, high-performance computing, and data science/analytics.

## Education

- |            |   |                     |
|------------|---|---------------------|
| <b>PhD</b> | THE PENNSYLVANIA STATE UNIVERSITY, Geosciences w/ Climate Science Dual-Title  | Aug 2019 – May 2026 |
|            | <ul style="list-style-type: none"> <li>• <i>Dissertation</i>: Exploratory Modeling: An Interdisciplinary Tool for Tackling Deep Uncertainty Across Earth System Science</li> <li>• <i>Advisors</i>: Dr. Bradford Foley, Dr. Antonia Hadjimichael</li> </ul> |                     |
| <b>BSc</b> | THE PENNSYLVANIA STATE UNIVERSITY, Physics w/ Mathematics Minor   | Aug 2011 – May 2015 |

## Experience

- |  |   |  |
|--|---|--|
| <b>PhD Research</b>                                | <ul style="list-style-type: none"> <li>• Developed a stochastic weather generator in Python for statistically generating new realizations of precipitation and temperature from historical observations and regional CMIP6 downscaled projections</li> <li>• Integrated weather generator into a regional hydrologic/agricultural consumptive use model to explore plausible agricultural risks and sensitivities of users and crops to climate in an institutionally complex river basin in the American west</li> <li>• Constructed an exploratory geophysical model in MATLAB for investigating how Earth's internal and external water reservoirs affect its thermal history and confine the Earth's total water budget through the non-classical feedback of variable regassing efficiency</li> <li>• Optimized, parallelized, validated, and visualized experiment design for high dimensional climate models to improve and inform agricultural decision-making, and geophysical models to understand how new feedbacks in coupled mantle temperature-water models impact Earth's thermal evolution</li> </ul> | Aug 2019 - Dec 2025                            |
| <b>Atmospheric Chemistry Researcher, Full-Time</b> | <ul style="list-style-type: none"> <li>• Led fieldwork as primary operator of Airborne Tropospheric Hydrogen Oxides Sensor and OH reactivity instrument across one international intercomparison study (SAPHIR OHR Intercomparison) and two NASA-led airborne research campaigns (KORUS-AQ and ATom)</li> <li>• Collected, processed, and analyzed <i>in situ</i> measurements using bespoke MATLAB software for over 600+ flight-research hours across all seven continents</li> </ul>   | Jun 2015 - Aug 2019                            |
| <b>Skills</b>                                      | Python, MATLAB, Linux/Unix, HPC (SLURM), GDScript, GLSL, C#, SQL<br>LaTeX, Git, Illustrator, Markdown, Microsoft Office Suite, Blender, QGIS<br>English (fluent), Spanish (A2)  | Programming<br>Software and Tools<br>Languages |

## Publications

---

### ACTIVE MANUSCRIPTS

- Thames, A.B.**, Hadjimichael, A., and Quinn, J.D.: `swxg`: A Python Library for Generalized Multivariate, Multisite, Copula-Based Stochastic Weather Generation. *Journal of Open Research Software*. IN REVIEW. 2026
- Thames, A.B.** and Foley, B.: Reconciling Coupled Thermal-Water Evolution Models of Earth with Observations through Variable Regassing Efficiency. *Journal of Geophysical Research: Solid Earth*. IN REVIEW. 2026  
10.22541/essoar.176703295.50952019/v1 [↗](#)
- Thames, A.B.**, Hadjimichael, A., and Quinn, J.D.: Climate Sensitivity of Agricultural Water Demand Depends on Control Over Growing Season: Implications for Producers in the Upper Colorado River Basin. *Water Resources Research*. IN REVIEW. 2026  
10.22541/essoar.176840902.22785610/v1 [↗](#)

### PUBLISHED MANUSCRIPTS

- Baublitz, C.B., Fiore, A.M., Ludwig, S.M., Nicely, J.M., Wolfe, G.M., Murray, L.T., Commane, R., Prather, M.J., Anderson, D.C., Correa, G., Duncan, B.N., Follette-Cook, M., Westervelt, D.M., Bourgeois, I., Brune, W.H., Bui, T.P., DiGangi, J.P., Diskin, G.S., Hall, S.R., McKain, K., Miller, D.O., Peischl, J., **Thames, A.B.**, Thompson, C.R., Ullmann, K., and Wofsy, S.C.: An observation-based, reduced-form model for oxidation in the remote marine troposphere. *Proceedings of the National Academy of Sciences*, 120(34), e2209735120. 2023  
10.1073/pnas.2209735120 [↗](#)
- Thompson, C.R., Wofsy, S.C., Prather, M.J., Newman, P.A., Hanisco, T.F., Ryerson, T.B., Fahey, D.W., Apel, E.C., Brock, C.A., Brune, W.H., Froyd, K., Katich, J.M., Nicely, J.M., Peischl, J., Ray, E., Veres, P.R., Wang, S., Allen, H.M., Asher, E., Bian, H., Blake, D., Bourgeois, I., Budney, J., Bui, T.P., Butler, A., Campuzano-Jost, P., Chang, C., Chin, M., Commane, R., Correa, G., Crounse, J.D., Daube, B., Dibb, J.E., DiGangi, J.P., Diskin, G.S., Dollner, M., Elkins, J.W., Fiore, A.M., Flynn, C.M., Guo, H., Hall, S.R., Hannun, R.A., Hills, A., Hintsa, E.J., Hodzic, A., Hornbrook, R.S., Huey, L.G., Jimenez, J.L., Keeling, R.F., Kim, M.J., Kupc, A., Lacey, F., Lait, L.R., Lamarque, J.-F., Liu, J., McKain, K., Meinardi, S., Miller, D.O., Montzka, S.A., Moore, F.L., Morgan, E.J., Murphy, D.M., Murray, L.T., Nault, B.A., Neuman, J.A., Nguyen, L., Gonzalez, Y., Rollins, A.W., Rosenlof, K., Sargent, M., Schill, G.P., Schwarz, J.P., St Clair, J.M., Steenrod, S.D., Stephens, B.B., Strahan, S.E., Strode, S.A., Sweeney, C., **Thames, A.B.**, Ullmann, K., Wagner, N., Weber, R., Weinzierl, B., Wennberg, P.O., Williamson, C.J., Wolfe, G.M., and Zeng, L.: The NASA Atmospheric Tomography (ATom) mission: Imaging the chemistry of the global atmosphere. *Bulletin of the American Meteorological Society*, 103(3), E761-E790. 2022  
10.1175/BAMS-D-20-0315.1 [↗](#)
- Brune, W.H., Miller, D.O., **Thames, A.B.**, Brosius, A.L., Barletta, B., Blake, D.R., Blake, N.J., Chen, G., Choi, Y., Crawford, J.H., DiGangi, J.P., Diskin, G., Fried, A., Hall, S.R., Hanisco, T.F., Huey, G.L., Hughes, S.C., Kim, M., Meinardi, S., Montzka, D.D., Pusede, S.E., Schroeder, J.R., Teng, A., Tanner, D.J., Ullmann, K., Walega, J., Weinheimer, A., Wisthaler, A., and Wennberg, P.O.: Observations of atmospheric oxidation and ozone production in South Korea. *Atmospheric Environment*, 269, 118854. 2022  
10.1016/j.atmosenv.2021.118854 [↗](#)
- Kim, S., Seco, R., Gu, D., Sanchez, D., Jeong, D., Guenther, A.B., Lee, Y., Mak, J.E., Su, L., Kim, D.B., Lee, Y., Ahn, J.-Y., McGee, T., Sullivan, J., Long, R., Brune, W.H., **Thames, A.B.**, Wisthaler, A., Müller, M., Mikoviny, T., Weinheimer, A., Yang, M., Woo, J.-H., Kim, S., and Park, H.: The role of a suburban forest in controlling vertical trace gas and OH reactivity distributions—a case study for the Seoul metropolitan area. *Faraday discussions*, 226, 537-550. 2021  
10.1039/D0FD00081G [↗](#)

- Kupc, A., Williamson, C.J., Hodshire, A.L., Kazil, J., Ray, E., Bui, T.P., Dollner, M., Froyd, K.D., McKain, K., Rollins, A., Schill, G.P., **Thames, A.B.**, Weinzierl, B.B., Pierce, J.R., and Brock, C.A.: The potential role of organics in new particle formation and initial growth in the remote tropical upper troposphere. *Atmospheric Chemistry and Physics*, 20(23), 15037-15060.  
10.5194/acp-20-15037-2020 [↗](#)
- Wang, S., Apel, E.C., Schwantes, R.H., Bates, K.H., Jacob, D.J., Fischer, E.V., Hornbrook, R.S., Hills, A.J., Emmons, L.K., Pan, L.L., Honomichl, S., Tilmes, S., Lamarque, J.-F., Yang, M., Marandino, C.A., Saltzman, E.S., de Bruyn, W., Kameyama, S., Tanimoto, H., Omori, Y., Hall, S.R., Ullmann, K., Ryerson, T.B., Thompson, C.R., Peischl, J., Daube, B.C., Commane, R., McKain, K., Sweeney, C., **Thames, A.B.**, Miller, D.O., Brune, W.H., Diskin, G.S., DiGangi, J.P., and Wofsy, S.C.: Global atmospheric budget of acetone: Air-sea exchange and the contribution to hydroxyl radicals. *Journal of Geophysical Research: Atmospheres*, 125(15), e2020JD032553.  
10.1029/2020JD032553 [↗](#)
- Travis, K.R., Heald, C.L., Allen, H.M., Apel, E.C., Arnold, S.R., Blake, D.R., Brune, W.H., Chen, X., Commane, R., Crounse, J.D., Daube, B.C., Diskin, G.S., Elkins, J.W., Evans, M.J., Hall, S.R., Hints, E.J., Hornbrook, R.S., Kasibhatla, P.S., Kim, M.J., Luo, G., McKain, K., Millet, D.B., Moore, F.L., Peischl, J., Ryerson, T.B., Sherwen, T., **Thames, A.B.**, Ullmann, K., Wang, X., Wennberg, P.O., Wolfe, G.M., and Yu, F.: Constraining remote oxidation capacity with ATom observations. *Atmospheric Chemistry and Physics*, 20(13), 7753-7781.  
10.5194/acp-20-7753-2020 [↗](#)
- Thames, A.B.**, Brune, W.H., Miller, D.O., Allen, H.M., Apel, E.C., Blake, D.R., Bui, T.P., Commane, R., Crounse, J.D., Daube, B.C., Diskin, G.S., DiGangi, J.P., Elkins, J.W., Hall, S.R., Hanisco, T.F., Hannun, R.A., Hints, E., Hornbrook, R.S., Kim, M.J., McKain, K., Moore, F.L., Nicely, J.M., Peischl, J., Ryerson, T.B., St. Clair, J.M., Sweeney, C., Teng, A., Thompson, C.R., Ullmann, K., Wennberg, P.O., and Wolfe, G.M.: Missing OH reactivity in the global marine boundary layer. *Atmospheric Chemistry and Physics*, 20(6), 4013-4029.  
10.5194/acp-20-4013-2020 [↗](#)
- Veres, P.R., Neuman, J.A., Bertram, T.H., Assaf, E., Wolfe, G.M., Williamson, C.J., Weinzierl, B., Tilmes, S., Thompson, C.R., **Thames, A.B.**, Schroder, J.C., Saiz-Lopez, A., Rollins, A.W., Roberts, J.M., Price, D., Peischl, J., Nault, B.A., Møller, K.H., Miller, D.O., Meinardi, S., Li, Q., Lamarque, J.-F., Kupc, A., Kjaergaard, H.G., Kinnison, D., Jimenez, J.L., Jernigan, C.M., Hornbrook, R.S., Hills, A., Dollner, M., Day, D.A., Cuevas, C.A., Campuzano-Jost, P., Burkholder, J., Bui, T.P., Brune, W.H., Brown, S.S., Brock, C.A., Bourgeois, I., Blake, D.R., Apel, E.C., and Ryerson, T.B.: Global airborne sampling reveals a previously unobserved dimethyl sulfide oxidation mechanism in the marine atmosphere. *Proceedings of the National Academy of Sciences*, 117(9), 4505-4510.  
10.1073/pnas.1919344117 [↗](#)
- Brune, W.H., Miller, D.O., **Thames, A.B.**, Allen, H.M., Apel, E.C., Blake, D.R., Bui, T.P., Commane, R., Crounse, J.D., Daube, B.C., DiGangi, J.P., Diskin, G.S., Elkins, J.W., Hall, S.R., Hanisco, T.F., Hannun, R.A., Hints, E.J., Hornbrook, R.S., Kim, M.J., McKain, K., Moore, F.L., Neuman, J.A., Nicely, J.M., Peischl, J., Ryerson, T.B., St. Clair, J.M., Sweeney, C., Teng, A.P., Thompson, C., Ullmann, K., Veres, P.R., Wennberg, P.O., and Wolfe, G.M. Exploring oxidation in the remote free troposphere: Insights from Atmospheric Tomography (ATom). *Journal of Geophysical Research: Atmospheres*, 125(1), e2019JD031685.  
10.1029/2019JD031685 [↗](#)
- Wolfe, G.M., Abad, G.G., Brune, W.B., Bui, P., Chang, C., Crounse, J.D., Dean-Day, J., Diskin, G., Hall, S.R., Hanisco, T.F., Kim, M., Liao, J., McKain, K., Miller, D., Nicely, J.M., Oman, L.D., Peischl, J., Ryerson, T.B., Sweeney, C., St. Clair, J.M., **Thames, A.B.**, Thompson, C.R., Ullmann, K., and Wennberg, P.O.: Mapping hydroxyl variability throughout the global remote troposphere via synthesis of airborne and satellite formaldehyde observations. *Proceedings of the National Academy of Sciences*, 116(23), 11171-11180.  
10.1073/pnas.1821661116 [↗](#)

- Romer P.S., Wooldridge P.J., Crounse J.D., Kim M.J., Wennberg P.O., Dibb J.E., Scheuer E., Blake D.R., Meinardi S., Brosius A.L., **Thames A.B.**, Miller D.O., Brune W.H., Hall S.R., Ryerson T.B., and Cohen R.C.: Constraints on Aerosol Nitrate Photolysis as a Potential Source of HONO and NO<sub>x</sub>. *Environ Sci Technol*, 52(23):13738-13746. 10.1021/acs.est.8b03861 [↗](#) 2018
- Fuchs, H., Novelli, A., Rolletter, M., Hofzumahaus, A., Pfannerstill, E.Y., Kessel, S., Edtbauer, A., Williams, J., Michoud, V., Dusanter, S., Locoge, N., Zannoni, N., Gros, V., Truong, F., Sarda-Esteve, R., Cryer, D.R., Brumby, C.A., Whalley, L.K., Stone, D., Seakins, P.W., Heard, D.E., Schoemaeker, C., Blocquet, M., Coudert, S., Batut, S., Fittschen, C., **Thames, A.B.**, Brune, W.H., Ernest, C., Harder, H., Muller, J.B. A., Elste, T., Kubistin, D., Andres, S., Bohn, B., Hohaus, T., Holland, F., Li, X., Rohrer, F., Kiendler-Scharr, A., Tillmann, R., Wegener, R., Yu, Z., Zou, Q., and Wahner, A.: Comparison of OH reactivity measurements in the atmospheric simulation chamber SAPHIR. *Atmos. Meas. Tech.*, 10, 4023–4053. 10.5194/amt-10-4023-2017 [↗](#) 2017
- DATASETS**
- Thames, A.B.** Output Data for Thames et al. – Climate Sensitivity of Agricultural Water Demand (1.0.1) [Dataset]. Zenodo. 10.5281/zenodo.18148466 [↗](#) 2026
- Thames, A.B.** Input Data for Thames et al. – Climate Sensitivity of Agricultural Water Demand (1.0.0) [Dataset]. Zenodo. 10.5281/zenodo.18071209 [↗](#) 2025
- Thames, A.B.** Output Data for Thames & Foley – Reconciling Coupled Thermal-Water Evolution Models (1.0.0) [Dataset]. Zenodo. 10.5281/zenodo.17903920 [↗](#) 2025
- Brune, W.H., Miller, D.O., and **Thames, A.B.**: ATom: L2 Measurements from Airborne Tropospheric Hydrogen Oxides Sensor (ATHOS). ORNL DAAC, Oak Ridge, Tennessee, USA. 10.3334/ORNLDAAC/1709 [↗](#) 2019
- Wolfe, G.M., Abad, G.G., Brune, W.H., Bui, T.P., Chang, C.S., Crounse, J.D., Dean-Day, J.M., Diskin, G.S., Hall, S.R., Hanisco, T.F., Kim, M.J., Liao, J., McCain, K., Miller, D.O., Nicely, J.M., Oman, L., Peischl, J., Ryerson, T.B., Sweeney, C., St.Clair, J.M., **Thames, A.B.**, Ullmann, K., Wennberg, P.: ATom: Column-Integrated Densities of Hydroxyl and Formaldehyde in Remote Troposphere. ORNL DAAC, Oak Ridge, Tennessee, USA. 10.3334/ORNLDAAC/1669 [↗](#) 2019
- Wofsy, S.C., Afshar, S., Allen, H.M., Apel, E.C., Asher, E.C., Barletta, B., Bent, J., Bian, H., Biggs, B.C., Blake, D.R., Blake, N., Bourgeois, I., Brock, C.A., Brune, W.H., Budney, J.W., Bui, T.P., Butler, A., Campuzano-Jost, P., Chang, C.S., Chin, M., Commane, R., Correa, G., Crounse, J.D., Cullis, P.D., Daube, B.C., Day, D.A., Dean-Day, J.M., Dibb, J.E., DiGangi, J.P., Diskin, G.S., Dollner, M., Elkins, J.W., Erdesz, F., Fiore, A.M., Flynn, C.M., Froyd, K.D., Gesler, D.W., Hall, S.R., Hanisco, T.F., Hannun, R.A., Hills, A.J., Hintsa, E.J., Hoffman, A., Hornbrook, R.S., Huey, L.G., Hughes, S., Jimenez, J.L., Johnson, B.J., Katich, J.M., Keeling, R.F., Kim, M.J., Kupc, A., Lait, L.R., Lamarque, J.-F., Liu, J., McKain, K., McLaughlin, R.J., Meinardi, S., Miller, D.O., Montzka, S.A., Moore, F.L., Morgan, E.J., Murphy, D.M., Murray, L.T., Nault, B.A., Neuman, J.A., Newman, P.A., Nicely, J.M., Pan, X., Paplawsky, W., Peischl, J., Prather, M.J., Price, D.J., Ray, E.A., Reeves, J.M., Richardson, M., Rollins, A.W., Rosenlof, K.H., Ryerson, T.B., Scheuer, E., Schill, G.P., Schroder, J.C., Schwarz, J.P., St.Clair, J.M., Steenrod, S.D., Stephens, B.B., Strode, S.A., Sweeney, C., Tanner, D., Teng, A.P., **Thames, A.B.**, Thompson, C.R., Ullmann, K., Veres, P.R., Vieznor, N., Wagner, N.L., Watt, A., Weber, R., Weinzierl, B., Wennberg, P.O., Williamson, C.J., Wilson, J.C., Wolfe, G.M., Woods, C.T., Zeng, L.H.: ATom: Merged Atmospheric Chemistry, Trace Gases, and Aerosols. ORNL DAAC, Oak Ridge, Tennessee, USA. 10.3334/ORNLDAAC/1581 [↗](#) 2018

## SOFTWARE

**Thames, A.B.** swxg: A Python Library for Generalized Multivariate, Multisite, Copula-Based Stochastic Weather Generation (0.4.0). Zenodo. 2025  
10.5281/zenodo.17592197 [🔗](https://zenodo.org/record/17592197)

## Grants, Awards, and Certificates

---

**Paul D. Krynine Scholarship** 2020 - 2022, 2024 - 2025  
The Pennsylvania State University

**2<sup>nd</sup> Place, Oral Presentations** 2025  
Penn State Interdisciplinary Environmental Research Symposium

**Alley Family Graduate Scholarship** 2024  
The Pennsylvania State University

**NASA ARSET: Drought Monitoring, Prediction, and Projection** 2024  
National Aeronautics and Space Administration

**Pottorf Endowment for Graduate Excellence** 2024  
The Pennsylvania State University

**Michael Loudin Family Graduate Scholarship** 2023  
The Pennsylvania State University

**Earle S. Lenker Award** 2022 - 2023  
The Pennsylvania State University

**NASA Group Achievement Award | Atmospheric Tomography (ATom)** 2019  
The Pennsylvania State University

**NASA Group Achievement Award | Korea-US Air Quality Mission (KORUS-AQ)** 2016  
The Pennsylvania State University

## Presentations and Conferences

---

**Thames, A.B.**, Hadjimichael, A., and Quinn, J.D.: Climate Sensitivity of Agricultural Water Demand Depends on Control Over Growing Season. *American Geophysical Union*, Poster Presentation. New Orleans, LA 2025

**Thames, A.B.**, Hadjimichael, A., and Quinn, J.D.: Assessing Compound Climate Impacts to Agriculture in the Upper Colorado River Basin Using a Multisite Weather Generator. *Penn State Climate Solutions Symposium*, Poster Presentation. State College, PA 2025

**Thames, A.B.** and Hadjimichael, A.: Assessing Compound Climate Impacts on Agricultural Water Requirements in the Upper Colorado River Basin. *Penn State Department of Geosciences Graduate Colloquium*, Oral Presentation. State College, PA 2025

**Thames, A.B.** and Hadjimichael, A.: Assessing Compound Climate Impacts on Agricultural Water Requirements in the Upper Colorado River Basin. *Penn State Interdisciplinary Environmental Research Symposium*, Oral Presentation. State College, PA 2025

**Thames, A.B.** and Hadjimichael, A.: Assessing Compound Climate Impacts on Agricultural Water Requirements in the Upper Colorado River Basin. *Penn State Association of Water Students*, Oral Presentation. State College, PA 2025

**Thames, A.B.**, Hadjimichael, A., and Quinn J.D.: Understanding Compound Climate Impacts to Agriculture Using a Multisite Weather Generator in the Upper Colorado River Basin. *American Geophysical Union*, Poster Presentation. Washington, D.C. 2024

*Climate Intelligence Summer School*  
Attendee Lake Como, Italy 2024

<b>Thames, A.B.</b> , Hadjimichael, A., Kukal M.S., and Raj, C.: Assessing the Compound Impacts of Precipitation and Temperature on Agriculture in the Upper Colorado River Basin. <i>American Geophysical Union</i> , Poster Presentation.	San Francisco, CA 2023
<b>Thames, A.B.</b> and Foley, B.J.: Producing Feasible Water and Thermal Evolutions for Earth's Mantle Using Monte Carlo Analysis. <i>American Geophysical Union</i> , Poster Presentation.	Online 2021
<b>Thames, A.B.</b> and Foley, B.J.: Using Monte Carlo Analysis and Present-Day Constraints on Earth's Water Budget to Produce Feasible Water and Thermal Histories via Reverse-Time Integration. <i>American Geophysical Union</i> , Poster Presentation.	Online 2020
<b>Thames, A.B.</b> , Brune, W.B., and Miller, D.O.: Global OH Reactivity in the Remote Marine Boundary Layer and the Potential of Missing Reactivity. <i>American Geophysical Union</i> , NASA ATom Science Team, Poster Presentation.	Washington, D.C. 2018
<b>Thames, A.B.</b> , Brune, W.B., and Miller, D.O.: Research Update #2. <i>Atmospheric Tomography Mission Science Team Meeting II</i> , Oral Presentation.	Boulder, CO 2018
<b>Thames, A.B.</b> , Brune, W.B., and Miller, D.O.: Research Update #2. <i>Korea-US Air Quality Mission Science Team Meeting II</i> , Oral Presentation.	Irvine, CA 2018
<b>Thames, A.B.</b> , Brune, W.B., and Miller, D.O.: Measured OH Reactivity in ATom1 and ATom2. <i>American Meteorological Society</i> , Poster Presentation.	Austin, TX 2018
<b>Thames, A.B.</b> , Brune, W.B., and Miller, D.O.: Research Update #1. <i>Atmospheric Tomography Mission Science Team Meeting I</i> , Poster Presentation.	Boulder, CO 2017
<b>Thames, A.B.</b> , Brune, W.B., Miller, D.O., and Brosius, A.L.: Research Update #1. <i>Korea-US Air Quality Mission Science Team Meeting I</i> , Oral Presentation.	Jeju Island, South Korea 2017
<b>Thames, A.B.</b> , Brune, W.B., Miller, D.O., and Brosius, A.L.: Research Update #1. <i>OH Reactivity Intercomparison Science Team Meeting</i> , Oral Presentation.	Jülich, Germany 2016

## Graduate Teaching Assistant Experience

---

<b>GEOSC 497: Data Visualization</b> The Pennsylvania State University	Spring 2023
<b>GEOSC 203: Physical Processes in Geology</b> The Pennsylvania State University	Spring 2021, 2022
<b>EARTH 002: Earth System and Global Change</b> The Pennsylvania State University	Fall 2020
<b>EARTH 101: Natural Disasters, Hollywood vs. Reality</b> The Pennsylvania State University	Fall 2019