Curriculum Vitae

Tyler R. Jones
Institute of Arctic and Alpine Research
University of Colorado at Boulder
E-mail: tyler.jones@colorado.edu
Web: colorado.edu/instaar/tyler-jones

Blue text corresponds to items that occurred since prior promotion to Assistant Research Professor on Oct. 25, 2021.

Education

Ph.D. Environmental Studies, Biogeochemistry, University of Colorado at Boulder, 2015.
M.Sc. Environmental Studies, Environmental Science, University of Colorado at Boulder, 2010.
B.Sc. Civil Engineering, Hydrology, University of Colorado at Boulder, 2006.

Professional Experience

Assistant Research Professor, Institute of Arctic and Alpine Research, University of Colorado at Boulder, 2021-present.

Fellow, Institute of Arctic and Alpine Research, University of Colorado at Boulder, 2021-present.

Visiting Scientist, Geophysical Department, University of Bergen, Norway, 2022.

Research Associate, Institute of Arctic and Alpine Research, University of Colorado at Boulder, 2017-2021.

Postdoctoral Researcher, Institute of Arctic and Alpine Research, University of Colorado at Boulder, 2015-2017.

Graduate Student Researcher, Institute of Arctic and Alpine Research, University of Colorado at Boulder, 2007-2015.

Permit and Compliance Consultant, Petros Environmental, Littleton, Colorado, 2006-2007.

Funded Proposals
($3.25M to Jones as PI at INSTAAR, CU Boulder; $3.15M since promotion was awarded in October 2021)
Light blue italic font indicates press

Jones, T. R. (PI) and Markle, B. R. (co-PI), 2023-2026: Beyond Mean Climate: Quantifying climate variability and extremes under varying boundary conditions, NSF Paleo Perspectives on Present and Projected Climate (P4CLIMATE), $1,464,190 total award ($1,464,190 to Jones and Markle at INSTAAR).
INSTAAR: Old core, new data: Students unlock knowledge about past Arctic climates

Jones, T. R. (PI), Rieker, G. (co-PI), Vaughn, B. H. (co-PI), Alden, C. (co-PI), Curry, T. (co-PI), and Walter-Anthony, K. (co-PI). 2020-2025: Collaborative Research: NNA Track 1: Global impacts and social implications of changing thermokarst lake environments near Yukon River Watershed communities, NSF Navigating the New Arctic (NNA), $2,091,062 total original award + $254,099 supplement ($1,520,746 to Jones at INSTAAR).
Wired: The Arctic's Permafrost-Obsessed Methane Detectives

Jones, T. R. (PI), 2021-2024: Linking Permafrost Models to Biological Fingerprinting for Improved Understanding of Arctic Greenhouse Gas Emissions, Sandia National Labs, $168,000 total award ($168,000 to Jones at INSTAAR).

Vaughn, B. H. (PI) and Jones T. R. (co-PI), 2018-2024: Closing the Water Vapor Exchange Budget between the Ice Sheets and Free Atmosphere, NSF Arctic Observing Network (AON) EAGER, $298,268.00 total original award + $143,562.00 supplement in FY 2021 ($441,830 to Vaughn and Jones at INSTAAR).

Vaughn, B. H. (PI) and Jones T. R. (senior personnel), 2018-2024: Collaborative Research: The fingerprint of abrupt temperature events throughout Greenland during the last glacial period, NSF Arctic Natural Sciences (ANS), $260,000 total award ($260,000 to Vaughn and Jones at INSTAAR).

EOS – Cores Libraries Store a Treasure Trove of Data About the Planet's Past. What will it take to sustain their future?

Jones T. R. (PI) and Garland J. (co-PI), 2018-2020: Targeted resampling of deep polar ice cores using information theory, NSF Antarctic Glaciology (ANT), $94,505 to Jones at INSTAAR.

Pending Proposals

Jones, T. R. (PI), Schneider, D. P. (co-PI), Markle, B. R. (co-PI), 2025-2028: Developing a High-Resolution Antarctic Perspective on the Sensitivity of Climate Variability to Shifts in Planetary Boundary Conditions, NSF Paleo Perspectives on Present and Projected Climate (P4CLIMATE), $2,337,065 total award ($1,962,218 to Jones and Markle at INSTAAR).

Jones, T. R. (PI), Cassano, J. J. (co-PI), Markle, B. R. (co-PI), 2025-2028: Informing the next generation of Arctic hydrologic modeling: Drone-based atmospheric observations of water-isotopes and meteorology from the Greenland Ice Sheet divide, NSF Arctic Sciences (ARC), $2,497,223 total award ($2,362,939 to Jones and Markle at INSTAAR).

In-Prep Proposals

Jones, T. R. (PI), Cassano, J. J. (co-PI). 2027-2030: Constraining the Hercules Dome Water-Isotope Criterion for West Antarctic Ice Sheet Collapse in the Eemian, NSF Office of Polar Programs.

Jones, T. R. (PI), Jianghanyang, L. (co-PI), Markle, B. R. (co-PI), 2026-2029: Seasonal Variations of Nitrate Isotopes Recorded in Ice Cores, NSF Paleo Perspectives on Present and Projected Climate (P4CLIMATE).

Declined Proposals

Town, M. (PI), Jones, T. R. (co-PI, CU Institutional PI), Fudge, T. J. (co-PI), Stevens, M. (co-PI), Steig, E. J. (co-PI), Markle, B. R. (co-PI), 2024-2027: Collaborative Research: Beyond temperature - Recasting climate to water-isotope relationships in polar snow and ice cores, NSF Antarctic Sciences (ANT), requested $767,745 to Jones and Markle at INSTAAR.

Jones, T. R. (PI), Dee, S. (co-PI), Markle, B. R. (co-PI), 2024-2029: Collaborative Research: Sea to Summit Station (S2SS): Water-isotope observation stations to inform the next generation of Arctic hydrologic modeling, NSF Arctic Observing Network (AON), requested $5,051,277 total award ($4,899,864 to Jones and Markle at INSTAAR).

Jones, T. R. (PI), White, J. W. C. (co-PI), Bradley, E. (co-PI), 2017-2020: Improved paleoclimate interpretations through a better understanding of water isotope diffusion in ice cores, NSF Antarctic Glaciology (ANT), requested $460,075 to Jones and White at INSTAAR.

Steig, E. J. (PI), Jones, T. R. (co-PI, CU Institutional PI), White, J. W. C. (co-PI), 2018-2021: Collaborative Research: High-resolution triple-isotope-ratio measurements on the WAIS Divide ice core, NSF Antarctic Glaciology (ANT), requested $179,490 to Jones and White at INSTAAR.

Jones, T. R. (PI), White, J. W. C. (co-PI), 2017-2020: Towards improved understanding of water isotope diffusion in ice cores and how that can improve paleoclimate interpretations, NSF Antarctic Glaciology (ANT), requested $446,249 to Jones and White at INSTAAR.

Refereed Publications

** Red star indicates student author in Jones group*
Light blue italic font indicates press
Role on project given in italics

In Prep

*Rozmiarek, K., Town, M, Vaughn, B. H., Morris, V., *Chase, B., Jasper-Léon, R., Nunn, R., Wainright, S., & Jones T. R. (2024 in prep). Multidecadal storage effects on the water-isotopic composition of ice cores.

In Review

*Rozmiarek, K., Dietrick, L. J., Vaughn, B. H., Town, M., Markle, B. R., Morris, V., Steen-Larsen, H. C., Fettweis, X., *Brashear, C. A., Bennet, H., & **Jones, T. R.** (2024 in review). Atmosphere to surface profiles of water-vapor isotopes and meteorological conditions over the northeast Greenland ice sheet. *Journal of Geophysical Research Atmospheres. [preprint available at: DOI: 10.22541/essoar.172939009.94950236/v1]*

Role: Co-Advised Rozmiarek, helped design the study, flew drones for one season at the EGRIP field camp in Greenland, contributed to the interpretation of the analyses, helped write paper.

In Revision

Jones, T. R., Cuffey, K. M., Steig, E. J., Markle, B. R. (2024 in review). Uncertainty in Reconstructing Millennial-Scale Seasonal Temperature Trends from Ice Cores. *Nature, Matters Arising.*

Role: designed the study, performed quantitative analyses, led the writing of the paper.

*Brashear, C. A., **Jones, T. R.,** Morris, V., Vaughn, B. H., Roberts, W. H. G., *Skorski, W. B., *Hughes, A. G., Nunn, R., Rasmussen, S. O., Cuffey, K. M., Vinther, B. M., Sowers, T., Buizert, C., Gkinis, V., Holme, C., Jensen, M. F., Kjellman, S. E., Langebroek, P. M., Mekhaldi, F., *Rozmiarek, K. S., Rheinlænder, J. W., Simon, M., Sinnl, G., Smith-Johnsen, S., & White, J. W. C. (2024, in review). Shifts in Greenland interannual climate variability lead Dansgaard-Oeschger abrupt warming by hundreds of years, *EGUsphere [preprint]*, https://doi.org/10.5194/egusphere-2024-1003

Role: Co-Advised Brashear, designed the study, measured the high-resolution EGRIP water isotope data at the field camp in Greenland for two seasons, developed the spectral techniques for diffusion correction.

In Print

Buizert, C., Sowers, T. A., Niezgoda, K., Blunier, T., Gkinis, V., Harlan, M., He, C., **Jones, T. R.,** Kjaer, H. A., Liisberg, J. B., Menking, J. A., Morris, V., Noone, D., Rasmussen, S. O., Sime, L. C., Steffensen, J. P., Svensson, A., Vaughn, B. H., Vinther, B. M., & White, J. W. C. (2024). The Greenland spatial fingerprint of Dansgaard-Oeschger events in observations and models. *Proceedings of the National Academy of Sciences of the United States of America*, *121*(44), e2402637121.

Role: performed research.

Town, M. S., Steen-Larsen, H. C., Wahl, S., Faber, A. K., Behrens, M., **Jones, T. R.**, & Sveinbjornsdottir, A. (2024). Post-depositional modification on seasonal-to-interannual timescales alters the deuterium-excess signals in summer snow layers in Greenland. *The Cryosphere*, *18*(8), 3653-3683.

Role: contributed to the interpretation of the analyses.

Gorham, K., Abernethy, S., **Jones, T. R.,** Hess, P., Mahowald, N. M., Meidan, D., Johnson, M. S., van Herpen, M. M. J. W., Xu, Y., Saiz-Lopez, A., Röckmann, T., *Brashear, C. A., Reinhardt, E., and Mann, D. (2023). Exploring potential atmospheric methane removal approaches: an example research roadmap for chlorine radical enhancement. ESS Open Archive.

Role: contributed to, reviewed, and edited the paper.

Dietrich, L. J., Steen-Larsen, H. C., Wahl, S., **Jones, T. R.,** Town, M. S., & Werner, M. (2023). Snow-Atmosphere Humidity Exchange at the Ice Sheet Surface Alters Annual Mean Climate Signals in Ice Core Records. *Geophysical Research Letters*, *50*(20), e2023GL104249.

Role: contributed to the interpretation of the analyses.

Jones, T. R., Cuffey, K. M., Roberts, W. H. G., Markle, B. R., Steig, E. J., Stevens, C. M., Valdes, P. J., Fudge, T. J., Sigl, M., *Hughes, A. G., Morris, V., Vaughn, B. H., Garland, J., Vinther, B. M., *Rozmiarek, K. S., *Brashear, C. A., & White, J. W. C. (2023). Seasonal temperatures in West Antarctica during the Holocene. *Nature*, 613(7943), 292-297.

Role: designed the project, led the writing of the paper, contributed high-resolution water-isotope measurements, analyzed water isotopes, conducted Community Firn Model simulations, developed the diffusion-correction calculations, developed the methodology for the selection of extrema (summer and winter) in the diffusion-corrected water-isotope data, developed the methodology for quantifying the effect of seasonal accumulation on water-isotope diffusion using the CFM and impurity data, determined the methodology for the uncertainty of seasonal temperature reconstruction, helped with the methodology for the uncertainty of multimillennial temperature trends.

CU Boulder Today: Study offers most detailed glimpse yet of planet's past 11,000 summers and winters

Goddard, P. B., Tabor, C. R., & **Jones, T. R.** (2021). Utilizing Ice Core and Climate Model Data to Understand Seasonal West Antarctic Variability. *Journal of Climate*, *34*(24), 10007-10026, doi.org/10.1175/JCLI-D-20-0822.1

Role: *provided raw and diffusion corrected isotope data.*

*Rozmiarek, K. S., Vaughn, B. H., **Jones, T. R.,** Morris, V., *Skorski, W. B., *Hughes, A. G., Elston, J., Wahl, S., Faber, A. K., & Steen-Larsen, H. C. (2021). An Unmanned Aerial Vehicle Sampling Platform for Atmospheric Water Vapor Isotopes in Polar Environments. *Atmos. Meas. Tech.*, 14, 7045–7067, doi.org/10.5194/amt-14-7045-2021

Role: *developed the initial idea, rationale, and experimental setup; prepared the original draft; performed drone flights and field water isotope analysis in Greenland; developed boundary layer prediction algorithms; prepared figures, co-advisor of Rozmiarek.*

*Hughes, A. G., Wahl, S., **Jones, T. R.,** Zuhr, A., Hörhold, M., White, J. W., and Steen-Larsen, H. C. (2021). The role of sublimation as a driver of climate signals in the water isotope content of surface snow: Laboratory and field experimental results. *The Cryosphere,* 15(10), 4949-4974, doi.org/10.5194/tc-15-4949-2021

Role: *contributed to article writing, co-adviser of Hughes.*

Buizert, C., Fudge, T. J., Roberts, W. H. G., Steig, E. J., SherriffTadano, S., Ritz, C., Lefebvre, E., Edwards, J., Kawamura, K., Oyabu, I., Motoyama, H., Kahle, E. C., **Jones, T. R.,** Abe-Ouchi, A., Obase, T., Martin, C., Corr, H., Severinghaus, J. P., Beaudette, R., Epifanio, J. A., Brook, E. J., Martin, K., Chappellaz, J., Aoki, S., Nakazawa, T., Sowers, T. A., Alley, R. B., Ahn, J., Sigl, M., Severi, M., Dunbar, N. W., Svensson, A., Fegyveresi, J. M., He, C., Liu, Z., Zhu, J., Otto-Bliesner, B. L., Lipenkov, V. Y., Kageyama, M., & Schwander, J. (2021). Antarctic surface temperature and elevation during the Last Glacial Maximum. Science. 372(6546), 1097-1101.

Role: *provided isotope data.*

Steig, E. J., **Jones, T. R.,** Schauer, A. J., Kahle, E. C., Morris, V. R., Vaughn, B. H., Davidge, L., and White, J. W. C. (2021). Continuous-flow analysis of $\delta^{17}O$, $\delta^{18}O$, and δD of H^2O on an ice core from the South Pole. *Frontiers in Earth Science*, 9, 72, doi.org/10.3389/feart.2021.640292

Role: *measured the ice core samples and processed the raw data, contributed to manuscript.*

Kahle, E. C., Steig, E. J., **Jones, T. R.,** Fudge, T. J., Koutnik, M. R., Morris, V. A., Vaughn, B. H., Schauer, A. J., Stevens, C. M., Conway, H., Waddington, E. D., Buizert, C., Epifanio, J., and White, J. W. C. (2021). Reconstruction of temperature, accumulation rate, and layer thinning from an ice core at South Pole, using a statistical inverse method. *Journal of Geophysical Research: Atmospheres*, *126*(13), e2020JD033300, doi.org/10.1029/2020JD033300

Role: *provided isotope data, contributed to the interpretation of the analyses, contributed to article writing.*

Winski, D. A., Osterberg, E. C., Kreutz, K. J., Ferris, D. G., Cole-Dai, J., Thundercloud, Z., Huang, J., Alexander, B., Jaeglé, L., Kennedy, J. A., Larrick, C., Kahle, E. C., Steig, E. J., and **Jones, T. R.** (2021). Seasonally Resolved Holocene Sea Ice Variability Inferred From South Pole Ice Core Chemistry. *Geophysical Research Letters*, *48*(8), e2020GL091602, doi.org/10.1029/2020GL091602

*Hughes, A. G., **Jones, T. R.**, Vinther, B. M., Gkinis, V., Stevens, C. M., Morris, V., Vaughn, B. H., Holme, C., Markle, B. R. and White, J. W. C. (2020). High-frequency climate variability in the Holocene from a coastal-dome ice core in east-central Greenland. *Clim. Past*, *16*(4), pp.1369-1386, doi.org/10.5194/cp-16-1369-2020

Role: *contributed to all aspects of the paper, contributed to processing of the RECAP ice core data, adapted diffusion correction code, developed and implemented analysis techniques, developed the extrema (summer, winter) picking algorithm, contributed to writing of paper, co-adviser of Hughes.*

Winski, D. A., Fudge, T. J., Ferris, D. G., Osterberg, E. C., Fegyveresi, J. M., Cole-Dai, J., Thundercloud, Z., Cox, T. S., Kreutz, K. J., Ortman, N., Buizert, C., Epifanio, J., Brook, E. J., Beaudette, R., Severinghaus, J., Sowers, T., Steig, E. J., Kahle, E. C., **Jones, T. R.,** Morris, V., Aydin, M., Nicewonger, M. R., Casey, K. A., Alley, R. B., Waddington, E. D., Iverson, N. A., Dunbar, N. W., Bay, R. C., Souney, J. M., Sigl, M., & McConnell, J. R. (2019). The SP19 chronology for the South Pole Ice Core – Part 1: volcanic matching and annual layer counting, *Clim. Past,* 15, 1793–1808, doi.org/10.5194/cp-15-1793-2019.

Role: *made isotope measurements, contributed to writing of paper.*

Madsen, M. V., Steen-Larsen, H. C., Hörhold, M., Box, J., Berben, S. M. P., Capron, E., Faber, A.-K., Hubbard, A., Jensen, M. F., **Jones, T. R.,** Kipfstuhl, S., Koldtoft, I., Pillar, H. R., Vaughn, B. H., Vladimirova, R, & Dahl-Jensen, D. (2019). Evidence of isotopic fractionation during vapor exchange between the atmosphere and the snow surface in Greenland. *J. Geophys. Res. Atm.*, 124(6), 2932-2945, doi.org/10.1029/2018JD029619

Role: contributed to writing of paper.

Garland, J., **Jones, T. R.,** Neuder, M., White, J. W., & Bradley, E. (2019). An information-theoretic approach to extracting climate signals from deep polar ice cores. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 29(10), 101105, doi.org/10.1063/1.5127211

Role: co-PI on project, provided isotope data.

Kahle, E. C., Holme, C., **Jones, T. R.,** Gkinis, V., & Steig, E. J. (2018). A Generalized Approach to Estimating Diffusion Length of Stable Water Isotopes From Ice-Core Data. *J. Geophys. Res. Earth Surf.*, 123(10), 2377-2391, doi.org/10.1029/2018JF004764

Role: provided isotope data, contributed to the interpretation of the analyses, contributed to article writing.

Jones, T. R., Roberts, W. H. G., Steig, E. J., Cuffey, K. M., Markle, B. R., & White, J. W. C. (2018). Southern Hemisphere climate variability forced by Northern Hemisphere ice-sheet topography. *Nature*, *554*(7692), 351-355. doi.org/10.1038/nature24669

Role: designed the project, led the writing of the paper, contributed water-isotope measurements, developed the diffusion-correction calculations.

Featured on the cover of Nature, Feb. 2018.

CU Boulder Today: North American ice sheet decay changed Antarctic climate

Garland, J., **Jones, T. R.,** Neuder, M., Morris, V., White, J. W., & Bradley, E. (2018). Anomaly detection in paleoclimate records using permutation entropy. *Entropy*, 20(12), 931, doi.org/10.3390/e20120931

Role: co-PI on project, provided isotope data.

Markle, B. R., Steig, E. J., Buizert, C., Schoenemann, S. W., Bitz, C. M., Fudge, T. J., Pedro, J. B., Ding, Q., **Jones, T. R.,** White, J. W. C., & Sowers, T. (2017). Global atmospheric teleconnections during Dansgaard–Oeschger events. *Nature Geoscience*, 10(1), 36-40, doi.org/10.1038/ngeo2848

Role: produced water isotope data.

Jones, T. R., White, J. W., Steig, E. J., Vaughn, B. H., Morris, V., Gkinis, V., Markle, B. R., & Schoenemann, S. W. (2017). Improved methodologies for continuous-flow analysis of stable water isotopes in ice cores. *Atmos. Meas. Tech*. 10(2), 617-632, doi.org/10.5194/amt-10-617-2017

Role: co-designed the project, performed statistical analyses.

Jones, T. R., Cuffey, K. M., White, J. W. C., Steig, E. J., Buizert, C., Markle, B. R., McConnell, J. R., & Sigl, M. (2017). Water isotope diffusion in the WAIS Divide ice core during the Holocene and last glacial. *J. Geophys. Res. Earth Surf.*, 122(1), 290-309, doi.org/10.1002/2016JF003938

Role: co-designed the project, performed ice-sheet firn modeling, calculated diffusion lengths.

Garland J., **Jones T. R.,** Bradley E., James R. G., & White J. W. C. (2016) A First Step Toward Quantifying the Climate's Information Production over the Last 68,000 Years. In: Boström H., Knobbe A., Soares C., Papapetrou P. (eds) Advances in Intelligent Data Analysis XV. IDA 2016. Lecture Notes in Computer Science, vol 9897. *Springer, Cham.* doi.org/10.1007/978-3-319-46349-0_30

Role: co-PI on project, provided isotope data.

WAIS Divide Project Members. (2015). Precise interpolar phasing of abrupt climate change during the last ice age. *Nature*, 520(7549), 661-665, doi.org/10.1038/nature14401

Role: helped produce water isotope data.

Jones, T. R., White, J. W. C., & Popp, T. (2014). Siple Dome shallow ice cores: a study in coastal dome microclimatology. *Clim. Past*, 10(3), 1253. doi.org/10.5194/cp-10-1253-2014

Role: publication of my M.Sc. thesis.

NEEM community members. (2013). Eemian interglacial reconstructed from a Greenland folded ice core. *Nature*, 493(7433), 489-494, doi.org/10.1038/nature11789

Role: helped produce water isotope data, spent two seasons at the ice core field camp in Greenland.

Colorado Arts and Sciences Magazine: Deep ice cores show past Greenland warm period may serve as 'road map' for continued warming of planet

Published Datasets

Vaughn, B. H., Morris, V., Nunn, R., **Jones, T. R.** et al. (2022). *EGRIP water isotope data 21.5 m (meters) to 2120.7 m depth at 5 cm resolution, from continuous flow analysis (CFA)*. Arctic Data Center. doi:10.18739/A2H41JP05.

Role: *spent two field seasons on the Greenland Ice Sheet at the EGRIP ice core camp producing data, contributed to post-processing of data*

Gkinis, V., Vinther, B. M., Popp, T. J., Quistgaard, T., Faber, A. K., Holme, C. T., Jensen, C. M., Lanzky, M., Lütt, A. M., Mandrakis, V., Ørum, N. O., Pedersen, A. S., Vaxevani, N., Weng, Y., Capron, E., Dahl-Jensen, D., Hörhold, M, **Jones, T. R.,** Jouzel, J., Landais, A., Masson-Delmotte, V., Oerter, H., Rasmussen, S. O., Steen-Larsen, H. C., Steffensen, J. P., Sveinbjörnsdóttir, A. E., Svensson, A., Vaughn, B. H., and White, J. W. C. (2021). A 120,000-year long climate record from a NW-Greenland deep ice core at ultra-high resolution. *Sci Data* 8, 141, https://doi.org/10.1038/s41597-021-00916-9

Role: *spent two field seasons on the Greenland Ice Sheet at the NEEM ice core camp contributing to ice-core processing.*

Steig, E. J., **Jones, T. R.**, et al. (2020) "South Pole high resolution ice core water stable isotope record for dD, d18O". U.S. Antarctic Program (USAP) Data Center. doi: https://doi.org/10.15784/601239.

Role: *assisted with measurement and analysis of this record during my postdoc.*

Jones, T. R. et al. (2020). "Mid-Holocene high-resolution water isotope time series for the WAIS Divide ice core". U.S. Antarctic Program (USAP) Data Center. doi: https://doi.org/10.15784/601326.

Role: *project PI, processed ice core, contributed to analysis of ice for water isotopes, contributed to data post processing.*

White, J. W. C., Bradley, E., Garland, J., **Jones, T. R.**, et al. (2019). "Stable Isotopes of Ice in the Transition and Glacial Sections of the WAIS Divide Deep Ice Core" U.S. Antarctic Program (USAP) Data Center. doi: https://doi.org/10.15784/601274.

Role: *measured this record for my PhD.*

Field Research Experience

Field Lead, Goldstream Valley, Alaska. 2022-2023. Drone methane measurements over permafrost.

Field Team, EGRIP ice core camp, northeast Greenland. 2018-2019. Drilling ice cores and measuring water isotopes. Drone flights to measure atmospheric water vapor.

Artist Resident, Svalbard, Norway aboard Barquentine Tall Ship. 2015. Arctic Circle Education and Outreach Program.

Field Team, NEEM ice core camp, northwest Greenland. 2011-2012. Drilling ice cores and measuring water isotopes.

Teaching Experience

Training

Teaching Certification, The National Association of Geoscience Teachers (NAGT) workshop on Preparing for an Academic Career in the Geosciences. 2015.

College-Level Pedagogy Course: Teaching an interdisciplinary, problem-oriented course. 2015.

Certificate in College Teaching, University of Colorado. 2015.

Courses Taught, CU Boulder

ASEN-5018-805: Graduate Projects I. (Fall 2024).

Exposes MS and PhD students to project management and systems engineering disciplines while working a complex aerospace engineering project as part of a project team. The project team may perform some or all of the following project activities: requirements, definition, design and design review, build, test, and verification.

ENVS 4100-002: Environmental Monitoring in an Era of Global Change. (Spring 2014).

Through various in class lectures and exercises, students explored some of U.S. histories most controversial policy topics, how those policies have affected the environment, and why scientific research is necessary to quantify environmental change. To understand the interplay between science and policy, students analyzed storylines related to land loss in the Mississippi River Delta, the famous powder skiing snowpack of the San Juan Mountains, the isolation of Pika habitat on sky islands, the truth about "fighting" wildland fires, recent flood events in Colorado, the decline of the honeybee, dwindling food supplies, and more. By the end of class, students were able to think critically about policy decisions, understand why varying stakeholders have different opinions about

controversial policies, present meaningful scientific data, and communicate an opinion about current policy to the public.

ATLAS 3519/EBIO 4460: *Climate Change: Science and Expression through Video-Production and Presentation* (Fall 2013).

Students were given the opportunity to think critically and emotionally about a pressing environmental, political, and social issue. Climate change is part of a larger discussion related to sustainability and is a pressing and pervasive issue from economic, political, and environmental perspectives. Students became conversant about their views on this issue. Where did they stand? What should be done? The task was interdisciplinary and thus we used the tools of storytelling, filmmaking, effective communication, and art in various forms. Student's own personal experience was critical and something they learned to incorporate into their narrative: what was the starting point in their journey? What defined their views? What did they want to communicate with others? Who was their target audience and why? Students defined and answered these questions through in class discussion, including bringing in world class leaders in the science of climate change, science writing, and the performance arts, as well as one-on-one dialog through weekly journal assignments.

Graduate students advised, CU Boulder

Kevin Rozmiarek, Ph.D. in progress, Department of Geological Sciences
Brooke Chase, Ph.D. in progress, Environmental Studies Department
Abigail Hughes, Ph.D. 2021, Department of Geological Sciences
Chloe Brashear, M.Sc. 2021, Department of Geological Sciences
William Skorski, M.Sc. 2019, Department of Geological Sciences

Graduate student committees, member, CU Boulder

Paloma Siegel, Ph.D. in progress, Department of Geological Sciences
Laurel Bayless, Ph.D. in progress, Department of Geological Sciences
Rhys Jasper-Léon, Ph.D. in progress, Department of Geological Sciences

Undergraduate students advised, CU Boulder

Adira Lunken, Honors Undergraduate Thesis in progress, Department of Chemistry
Wyatt Hansen, Honors Undergraduate Thesis 2019, Department of Geological Sciences
Rebecca McGehee, Carleton College summer internship 2015

High School science fair students advised, Boulder County

Lauren Egaas, Monarch High School, 2021
Madeline Fox, Monarch High School, 2021
Annalie Haralson, Monarch High School, 2021
Jack McConnell, Fairview High School, 2019
Laurel Butterworth, Boulder High School, 2018

Academic Service

Science community

Invited speaker, Bjerknes Centre for Climate Research, Bergen, Norway. 2022.
Invited speaker, Meteorology Group, University of Bergen, Norway. 2022.
Guest teacher, DEEPICE Winter School on Snow Science, Finse, Norway. 2022
Lead author, invited white paper for the Ice Core Work Group, 2020.

Jones, T. R., et al. (2020). IDP Ice Core Working Group (IDP-ICWG): Paleoclimate Ice Core Research Priorities in Antarctica. Ice Drilling Program Ice Core Working Group Community Meeting, April 2, 2020, Virtual Meeting, 1-12.

Invited speaker, Woods Hole Oceanographic Institution, Boston, Massachusetts. 2020.
Invited Subject Matter Expert, NASA's Jet Propulsion Laboratory. 2019.

Mars Exploration Program Analysis Group for the Ice and Climate Evolution Science Analysis Group, feasibility of ice coring on Mars.

NSF Reviewer, Antarctic Glaciology Section. 2018.

University and Institute

Lead organizer, INSTAAR Open House. 2024.

A hands-on STEAM activity day for underrepresented middle school students in the Boulder and Denver area.

Member, INSTAAR JEDI Taskforce. 2022-2023.

Community

Film Director, *Nord Is, 2020.*

Official Selection of the Polar Film Fest 2020 at the Explorer's Club in New York City. The film follows a female polar bear guide in Svalbard as she contrasts her current reality in the face of climate change to Arctic explorers of the past.

Member, Climate Action Task Force, Longmont, Colorado. 2019.

Member, Congressman Neguse's (CO 2nd District) Environmental Policy Board, Boulder, Colorado. 2018-2019.

Art Exhibit Creator, The Story of Climate, 2018-2019.

Featured at the Dairy Center for the Performing Arts and Re/Call at the Rocky Mountain Land Library. The exhibit contrasted imagery, video, and sounds from Spitsbergen, Svalbard, a land of ice interspersed with relics from past coal mining.

Lecturer, National Geographic Climate Summer School, Boulder, Colorado. 2013-2017.

High school students from around the United States visited Boulder, Colorado for varying lessons on climate change. I was the instructor for the ice core lesson at the Stable Isotope Lab, INSTAAR.