

## **Tyler Robert Jones, Ph.D.**

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### **Assistant Research Professor**

Institute of Arctic and Alpine Research

University of Colorado, Boulder

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### EDUCATION

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- 2015 **Ph.D.**, Environmental Studies Department, Biogeochemistry, CU Boulder  
2010 **M.Sc.**, Environmental Studies Department, Environmental Science, CU Boulder  
2006 **B.Sc.**, Civil Engineering, CU Boulder (Dean's List)

### APPOINTMENTS

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- 2021 - current **Asst. Research Professor** – Institute of Arctic and Alpine Research, CU Boulder  
2022 - current **JEDI taskforce** – Institute of Arctic and Alpine Research, CU Boulder  
Feb-Jul 2022 **Visiting Scientist** – Geophysical Department, University of Bergen, Norway  
2021 - current **INSTAAR Fellow** – Institute of Arctic and Alpine Research, CU Boulder  
2017 - 2021 **Research Associate** – Institute of Arctic and Alpine Research, CU Boulder  
2015 - 2017 **Postdoctoral Researcher**- Light Stable Isotope Lab - Institute of Arctic and Alpine Research, CU Boulder (PI: James White)  
2007 - 2015 **Research Assistant** - Light Stable Isotope Lab - Institute of Arctic and Alpine Research, CU Boulder (PI: James White)  
2006 - 2007 **Permit and Compliance Consultant** – Petros Environmental

### SCHOLARSHIPS, AWARDS, FELLOWSHIPS

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- 2023 - 2026 **NSF Beyond Mean Climate: Quantifying climate variability and extremes under varying boundary conditions; (PI - Tyler R. Jones)**  
2020 - 2024 **NSF Navigating the New Arctic - Global impacts and social implications of changing thermokarst lake environments near Yukon River Watershed communities; (PI - Tyler R. Jones)**  
2018 - 2024 **NSF Division of Polar Programs - Closing the Water Vapor Exchange Budget between the Ice Sheets and Free Atmosphere; (PI: Bruce H. Vaughn, co-PI: Tyler R. Jones)**  
2018 – 2024 **NSF Arctic Natural Sciences - The fingerprint of abrupt temperature events throughout Greenland during the last glacial period; (PI: James W. C. White, Senior Personnel: Tyler R. Jones)**  
2018 – 2020 **NSF Antarctic Glaciology - Targeted resampling of deep polar ice cores using information theory; (PI: Joshua Garland, co-PI: Tyler R. Jones)**

### SYNERGISTIC ACTIVITIES

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- 2023 **Field Work – Permafrost** – Drone and methane team – central Alaska  
**Invited Speaker** – Hercules Dome Ice Core Meeting, Seattle, Washington  
2022 **Field Work – Permafrost** – Drone and methane team – central Alaska  
**Invited Speaker** – Bjerknes Centre for Climate Research  
**Invited Speaker** – Meteorology Group, University of Bergen  
Teacher – IceFinse Winter School, Arctic climate research and fieldwork  
2020 **Invited White Paper - Tyler R Jones**, Sarah Aarons, Edward Brook, Christo Buizert, Jihong Cole-Dai, TJ Fudge, John Higgins, Kaitlin Keegan, Andrei Kurbatov, Peter D Neff, Erich Osterberg, Vasilii Petrenko, Jeffrey P Severinghaus, Eric J Steig (2020) White Paper: 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,

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	Virtual Meeting, 1-12.
2020	<b>Invited Speaker</b> – Woods Hole Oceanographic Institution
2019	<b>Invited Subject Matter Expert Speaker</b> - NASA's Jet Propulsion Laboratory (Mars Exploration Program Analysis Group for the Ice and Climate Evolution Science Analysis Group)
2019	<b>Policy Development</b> - Member of the Longmont Climate Action Task Force
2018 - 2020	<b>Policy Development</b> - Member of Congressman Neguse's (CO 2nd District) Environmental Policy Board
2018 - 2019	<b>Field Work</b> - <i>EGRIP Ice Core Camp</i> – Water Isotope Team – NE Greenland
2018	<b>NSF Reviewer</b> - Antarctic Glaciology Section
2015 - 2017	<b>Lab Work</b> - <i>South Pole Ice Core</i> - NSF-Ice Core Facility - Golden, Colorado
2016	<b>Peer Reviewer</b> - Climate of the Past Journal
2015	<b>Teaching Certification</b> - The National Association of Geoscience Teachers (NAGT) workshop on <i>Preparing for an Academic Career in the Geosciences</i> - College-Level Pedagogy Course: <i>Teaching an interdisciplinary, problem-oriented course</i>
2014	<b>Invited Speaker</b> - PAGES (Past Global Changes) Project
2013	<b>Speaker</b> - Communicating Science Workshop (ComSciCon) - Harvard University
2012 - 2015	<b>Sponsored Graduate Student</b> - International Collaboration and Education in Ice Core Science (ICEICS) meetings
2012	<b>Field Work</b> - <i>NEEM Ice Core Camp</i> - Put-In Crew - NW Greenland
2011	<b>Field Work</b> - <i>NEEM Ice Core Camp</i> - Field Assistant - NW Greenland
2010	<b>Field Work</b> - <i>Radio Echo Sounding</i> - Bed profile and internal structure of the Lower Root Glacier - McCarthy, Alaska
2008 - 2009	<b>Lab Work</b> - <i>WAIS Divide Ice Core</i> - NSF-Ice Core Facility - Golden, Colorado
2009	<b>Field Work</b> - <i>Lake Chemistry</i> - Field Assistant - Wind River Range, Wyoming
2009	<b>Field Work</b> - <i>Lake Sediment Core</i> - Trip Co-Lead - Niwot Ridge, Colorado

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#### TEACHING APPOINTMENTS

2013 - 2017	<b>Graduate Student Instructor</b> – CU Boulder National Geographic Climate Summer School (4 summers)
2014	<b>Instructor</b> - University of Colorado, Boulder <i>Environmental Monitoring in an Era of Global Change</i> (1 semester)
2013	<b>Instructor</b> - University of Colorado, Boulder <i>Climate Change: Science Expression through Film Production</i> (1 semester)

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#### ADVISING

2018 - current	<b>Ph.D. Students:</b> Abigail Hughes; Kevin Rozmiarek; Brooke Chase <b>M.Sc. Students:</b> Chloe Brashear; William Skorski <b>Undergraduate Students:</b> Wyatt Hansen, Rebecca McGehee <b>High School Students:</b> Laurel Butterworth; Lauren Egaas; Madeline Fox; Annalie Haralson; Jack McConnell
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#### MEDIA & OUTREACH

2023	<b>Wired – The Arctic’s Permafrost-Obsessed Methane Detectives</b> “We know the future of the Arctic is all about warming,” says Tyler R. Jones, a geochemist at the University of Colorado, Boulder. “To be prepared, we want to understand permafrost environments better—to model them better. We want to know what’s possible.”
2023	<b>EOS – Ice Cores Record Long-Ago Seasons in Antarctica</b> Researchers used ice core data to reconstruct seasonal temperatures throughout the Holocene. The results link especially hot summers with

	patterns in Earth's orbit. ... "[This] is the first record of its kind," said Tyler Jones, a polar climatologist at the University of Colorado ... and lead author.
2021	<b>EOS – Cores Libraries Store a Treasure Trove of Data About the Planet's Past. What will it take to sustain their future?</b> In September 2013, a major storm dumped a year's worth of rain on the city of Boulder, Colo., in just 2 days.... Instead of trying to escape the flood, Tyler Jones, a biogeochemist at the Institute of Arctic and Alpine Research (INSTAAR) in Boulder, drove directly toward it. His motive? Mere meters from the overflowing creek, a large freezer housed the lab's collection of precious ice cores.
2020	<b>Film Director – Nord Is</b> - Official Selection of the Polar Film Fest 2020 at the Explorer's Club in New York City.
2018 - 2019	<b>Art Exhibit – The Story of Climate</b> - Featured at: Dairy Center for the Performing Arts & Re/Call at the Rocky Mountain Land Library
2015	<b>Artist Resident</b> – Arctic Circle Education and Outreach Program - Svalbard, Norway

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#### PUBLICATIONS

- \*\* not listed here - 2 papers in prep; 1 led by prior M.Sc. student, 1 by current Ph.D. student
- Gorham, K., Abernethy, S., **Jones, T. R.**, et al. Exploring potential atmospheric methane removal approaches: an example research roadmap for chlorine radical enhancement. *ESS Open Archive*. October 17, 2023.
- Town, M., Steen-Larsen, H. C., Wahl, S., Faber, A.-K., Behrens, M., **Jones, T. R.**, & Steinbjornsdottir, A. (2024). Post-depositional modification on seasonal-to-interannual timescales alters the deuterium excess signals in summer snow layers in Greenland, EGUsphere [preprint], <https://doi.org/10.5194/egusphere-2023-2462>.
- 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
- 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. Brashears, C. A., & White, J. W. C. (2023). Seasonal temperatures in West Antarctica during the Holocene. *Nature*, 613(7943), 292-297.
- Bruce Vaughn, Valerie Morris, Richard Nunn, **Tyler Jones**, Chloe Brashears, Kevin Rozmiarek, Abigail Hughes, William Skorski, Andreas Born, Christo Buizert, Dorthe Dahl-Jensen, Vasileios Gkinis, Christian Holme, Silje Johnsen, Mari Jensen, Sofia Kjellman, Petra Langebroek Langebroek, Florian Mekhaldi, Kerim Hestnes Nisancioglu, Thea Quistgaard, Jonathan Rheinländer, Sune Olander Rasmussen, Margit Simon, Giulia Sinnl, Todd Sowers, Hans Christian Steen-Larsen, Jørgen Peder Steffensen, Will Skorski, Bo Vinther, Ji Wong, & James White. (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](https://doi.org/10.18739/A2H41JP05).
- 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
- 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

- Hughes, A. G., Wahl, S., **Jones, T. R.**, Zuer, 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
- Buizert, C., Fudge, T. J., Roberts, W. H., Steig, E. J., Sherriff-Tadano, 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., Epifano, 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-Bleisner, B. L., Lipenkov, V. Y., Kageyama, M., and Schwander, J. (2021). Antarctic surface temperature and elevation during the Last Glacial Maximum. *Science*, 372(6546), 1097-1101, doi.org/10.1126/science.abd289
- 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  $\delta^{17}\text{O}$ ,  $\delta^{18}\text{O}$ , and  $\delta\text{D}$  of  $\text{H}_2\text{O}$  on an ice core from the South Pole. *Frontiers in Earth Science*, 9, 72, doi.org/10.3389/feart.2021.640292
- 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., Epifano, 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
- 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., Lerrick, 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
- 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
- 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
- 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., Epifano, 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
- 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
- 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
- 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
- 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  
**--- Featured on the cover of Nature, Feb. 2018**
- 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
- Markle, B. R., Steig, E. J., Buzert, 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
- 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
- Jones, T. R.**, Cuffey, K. M., White, J. W. C., Steig, E. J., Buzert, 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
- 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
- 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
- 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
- NEEM community members. (2013). Eemian interglacial reconstructed from a Greenland folded ice core. *Nature*, 493(7433), 489-494, doi.org/10.1038/nature11789