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Professional Preparation:

University of Puget Sound, Tacoma WA Environmental Economics B.A. 1976
University of Colorado, Boulder, CO Geological Sciences M.Sc. 1994

Appointments:

Research Associate and INSTAAR Fellow, 2019 to present
Manager, INSTAAR Stable Isotope Lab, University of Colorado, 1994 to present
Graduate Research Assistant, INSTAAR, University of Colorado, 1990 to 1994
Professional Research Assistant, INSTAAR, University of Colorado, 1989 to 1990
Physical Scientist, Glaciology Project, U.S.G.S., Washington 1983 to 1989
Danes Research Associates & Geophysical, Tacoma Washington 1979-1983

Field Experience:

Over 15 polar field seasons in Greenland and Antarctica. Extensive field work in equatorial Pacific, Alaska, Ecuador, Cascades and Rocky Mountains.

Service:

INSTAAR Executive Committee; INSTAAR Honors and Recognition Committee; University UAS Committee advisory to Assoc. Vice Chancellor. Field Leader/Chief Scientist for West Antarctic Ice Sheet (WAIS) Divide Deep Ice Core Project (2 yrs); Current member, Experts Panel on Isotopic Measurements on Trace Gases in the Atmosphere; International Atomic Energy Agency (IAEA). Past member Ice Core Working Group NSF Advisory Committee; Co-chair NSF panel on Science at Summit Greenland; Executive Committee member for Biogeosphere Atmosphere, Stable Isotope Network (BASIN); Member, American Geophysical Union.

Recent Projects:

PI on NSF award # 1833165, Closing the Water Vapor Exchange Budget between the Ice Sheets and Free Atmosphere, (\$442K), 7/2018-7/2022.

CoPI on NSF proposal, Collaborative Research: NNA Track 1: Global impacts and social implications of changing thermokarst lake environments near Yukon River Watershed communities. (\$2.1M), 2020-2024.

Senior personnel on NSF award # 1804098, J.W.C. White PI, Collaborative Research: The Fingerprint of Abrupt Temperature Events Throughout Greenland During the Last Glacial Period. (\$229.2K). 8/2018- 7/2021.

PI on sub-award (\$363.7K) on NSF Sustainability Network award #1240584: Routes to Sustainability for Natural Gas Development and Water and Air Resources in the Rocky Mountain Region. (\$12.3M) 11/2013- 9/2019.

Senior personnel on NSF award # 1043167, J.W.C. White PI, Collaborative research with West Antarctic Ice Sheet Divide Project. Providing two seasons of deep field management and subsequent laboratory analysis for high resolution stable isotopes on 3,400 m ice core. (\$453.6K), 6/2011-5/2016.

Senior personnel on NSF award # 1443328, J.W.C. White, PI, Collaborative Research: Record of the Triple-oxygen Isotope and Hydrogen Isotope Composition of Ice from an Ice Core at South Pole (\$260K), 6/2015-5/2018.

Senior personnel on NSF award # 1304109, J.W.C. White PI, Collaborative Research: Refining Long-term Climate Records from the Renland Ice Cap. (\$474.9K), 11/2013-10/2017.

Collaborator and PI with NOAA Global Monitoring Division, Earth Systems Research Lab. Providing isotopic analysis of atmospheric trace gases collected bi-weekly from 55 global sites, for over 12,000 samples per year. (~\$5M). Ongoing multi-year contract since 1990.

Patents:

Patent No: US 8,181,544 B2, May 2012; Liquid sample evaporator for vapor analysis, Crosson, E., Richman B.A., Vaughn, B.H. and White, J.W.C.

Refereed Publications: 57 [Google Scholar H-Index = 36, i10 Index = 55]

Rozmiarek, K., Vaughn, B.H. Jones, T.R., Morris, V.A. 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, 2021.
<https://doi.org/10.5194/amt-14-7045-2021>

Steig, E. J., Tyler Jones, Schauer, A. J., Kahle, E. C., Valerie Morris, Bruce H. Vaughn, Davidge, L., James W. C. White **2021**: Continuous-flow analysis of delta17O, delta18O, and deltaD of H2O on an ice core from the South Pole. *Frontiers in Earth Science*, accepted. DOI: 10.3389/feart.2021.640292

Lan, X., Basu, S., Schwietzke, S., Bruhwiler, L. M. P., Dlugokencky, E. J., Sylvia Englund Michel (she/her), Sherwood, O. A., Tans, P. P., Thoning, K., Etiope, G., Zhuang, Q., Liu, L., Oh, Y., Miller, J., Pétron, G., Bruce H. Vaughn, Crippa, M. **2021**: Improved constraints on global methane emissions and sinks using $\delta^{13}\text{C}\text{-CH}_4$. *Global Biogeochemical Cycles*, accepted. DOI: 10.1029/2021GB007000

Capron, E., Rasmussen, S. O., Popp, T. J., Erhardt, T., Fischer, H., Landais, A., Pedro, J. B., Vettoretti, G., Grinsted, A., Gkinis, V., Bruce H. Vaughn, Svensson, A., Vinther, B. M., James W. C. White **2021**: The anatomy of past abrupt warmings recorded in Greenland ice. *Nature Communications* 12: 2106. DOI: 10.1038/s41467-021-22241-w

Abigail Thayer, Hughes, A. G., Tyler Jones, Vinther, B. M., Gkinis, V., Stevens, M., Valerie Morris, Bruce H. Vaughn, Holme, C., Bradley Markle, James W. C. White **2020**: High-frequency climate variability in the Holocene from a coastal-dome

- ice core in east-central Greenland. *Climate of the Past*, 16: 1369-1386. DOI: 10.5194/cp-16-1369-2020
- Petron, G., Miller B., Bruce H. Vaughn, Thorley, E., Kofler, J., Mielke-Maday, I., Sherwood, O., Dlugokencky, E., Hall, B., Schwietzke, S., Conley, S., Peischl, J., Lang, P., Moglia, E., Crotwell, M., Crotwell, A., Sweeney, C., Newberger, T., Wolter, S., Kitzis, D., Bianco, L., King, C., Coleman, T., White, A., Rhodes, M., Tans, P., Schnell, R. **2020**: Investigating large methane enhancements in the U.S. San Juan Basin. *Elementa: Science of the Anthropocene*, 8(1): 038. DOI: 10.1525/elementa.038
- Kahle, E. C., Steig, E. J., Tyler Jones, Fudge, T. J., Koutnik, M. R., Valerie Morris, Bruce H. Vaughn, Schauer, A. J., Stevens, M. C., Conway, H., Waddington, E. D., Buizert, C., Epifanio, J., James W. C. White **2020**: 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*, preprint. DOI: 10.1002/essoar.10503447.1
- Havranek, R. E., Snell, K. E., Davidheiser-Kroll, B., Bowen, G. J., Bruce H. Vaughn **2020**: The Soil Water Isotope Storage System (SWISS): An integrated soil water vapor sampling and multiport storage system for stable isotope geochemistry. *Rapid Communications in Mass Spectrometry*, 34(12): e8783. DOI: 10.1002/rcm.8783
- Vimont, I. J., Turnbull, J. C., Petrenko, V. V., Place, P. F., Sweeney, C., Miles, N., Richardson, S., Vaughn, B. H., and White, J. W. C. **2019** An improved estimate for the $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ signatures of carbon monoxide produced from atmospheric oxidation of volatile organic compounds, *Atmos. Chem. Phys.*, 19, 8547-8562, <https://doi.org/10.5194/acp-19-8547-2019>
- Hu, L., Andrews, A. E., Thoning, K. W., Sweeney, C., Miller, J. B., Michalak, A. M., Dlugokencky, E., Tans, P. P., Shiga, Y. P., Mountain, M., Nehrkorn, T., Montzka, S. A., McKain, K., Kofler, J., Trudeau, M., Sylvia Englund Michel, Biraud, S. C., Fischer, M. L., Worthy, D. E. J., Bruce H. Vaughn, James W. C. White, Yadav, V., Basu, S., van der Velde, I. R. **2019**: Enhanced North American carbon uptake associated with El Niño. *Science Advances*, 5(6): eaaw0076. DOI: 10.1126/sciadv.aaw0076
- M. V. Madsen H. C. Steen-Larsen M. Hörhold J. Box S. M. P. Berben E. Capron A.-K. Faber A. Hubbard M. F. Jensen T. R. Jones S. Kipfstuhl I. Koldtoft H. R. Pillar B. H. Vaughn D. Vladimirova D. Dahl-Jensen **2019**. Evidence of isotopic fractionation during vapor exchange between the atmosphere and the snow surface in Greenland. *Journal of Geophysical Research: Atmospheres*, 124. <https://doi.org/10.1029/2018JD029619>
- Holmes, C., Gkinis, V., Lanzky, M., Valerie Morris, Olesen, M., Abigail Thayer, Bruce H. Vaughn, Vinther, B. M. **2019**: Varying regional delta O-18-temperature relationship in high-resolution stable water isotopes from east Greenland. *Climate of the Past*, 15(3): 893-912. DOI: 10.5194/cp-15-893-2019
- Nisbet, E.G., M.R.Manning, E.J.Dlugokencky, R.E.Fisher, D. Lowry, S.E. Michel, C.LundMyhre, S.M. Platt, G. Allen, P. Bousquet, R.Brownlow, M. Cain,J.L. France,O.Hermansen, R. Hossaini, A.E. Jones, I. Levin, A.C.Manning, G.Myhre,

- J.A.Pyle, B.Vaughn, N.J.Warwick, J.W.C.White, **2019**, Very strong atmospheric methane growth in the four years 2014 - 2017: Implications for the Paris Agreement. *Global Biogeochemical Cycles*, <https://doi.org/10.1029/2018GB006009>.
- Peters, W., Van der Velde, I., Van Schaik, E., Miller, J., Ciais, P., Duarte, H., van der Laan-Luijkx, I., Van der Molen, M., Scholze, M., Schaefer, K., Vidale, P. L., Verhoef, A., Warlind, D., Zhu, D., Tans, P., Vaughn, B. and White, J. **2018**: Increased water-use efficiency and reduced CO₂ uptake by plants during droughts at a continental-scale. *Nature Geoscience*. DOI .org/10.1038/s41561-018-0212-7
- Umezawa, T., Brenninkmeijer, C. A. M., Röckmann, T., van der Veen, C., Tyler, S. C., Fujita, R., Morimoto, S., Aoki, S., Sowers, T., Schmitt, J., Bock, M., Beck, J., Fischer, H., Sylvia Englund Michel, Bruce H. Vaughn, Miller, J. B., James W. C. White, Brailsford, G., Schaefer, H., Sperlich, P., Brand, W. A., Rothe, M., Blunier, T., Lowry, D., Fisher, R. E., Nisbet, E. G., Rice, A. L., Bergamaschi, P., Veidt, C., Levin, I. **2018**: Interlaboratory comparison of $\delta^{13}\text{C}$ and δD measurements of atmospheric CH₄ for combined use of data sets from different laboratories. *Atmospheric Measurement Techniques*, 11(2): 1207-1231. DOI: 10.5194/amt-11-1207-2018
- van der Velde, I. R., Miller, J. B., van der Velen, M. K., Tans, P. P., Bruce H. Vaughn, James W. C. White, Schaefer, K., Peters, W. **2018**: The CarbonTracker Data Assimilation System for CO₂ and $\delta^{13}\text{C}$ (CTDAS-C13 v1.0): Retrieving information on land-atmosphere exchange processes. *Geoscientific Model Development*, 11(1): 283-304. DOI: 10.5194/gmd-11-283-2018
- Isaac Vimont, Turnbull, J. C., Petrenko, V. V., Place, P. F., Karion, A. , Miles, N. L., Richardson, S. J., Gurney, K., Patarasuk, R., Sweeney, C., Bruce H. Vaughn, James W. C. White **2017**: Carbon monoxide isotopic measurements in Indianapolis constrain urban source isotopic signatures and support mobile fossil fuel emissions as the dominant wintertime CO source. *Elementa: Science of the Anthropocene*, 5: article 63. DOI: 10.1525/elementa.136
- Graven, H., Allison, C.E., Etheridge, D.M., Hammer, S. , Keeling, R.F. , Levin, I. , Meijer, H.A.J., Rubino, M. , Tans, P. , Trudinger, C.M. , Bruce H. Vaughn, James W. C. White **2017**: Compiled records of carbon isotopes in atmospheric CO₂ for historical simulations in CMIP6. *Geosci. Model Dev.*, 10, 4405-4417 DOI: 10.5194/gmd-10-4405-2017
- Koenig, L., Bruce H. Vaughn, Dibb, J. 2017: Envisioning and sustaining science at Summit Station, Greenland. *Eos*, 98, 18 September **2017** DOI: 10.1029/2017EO082095
- Tyler Jones, James W. C. White, Steig, E. J., Bruce H. Vaughn, Valerie Morris, Gkinis, V. , Markle, B. R. , Schoenemann, S. W. **2017**: Improved methodologies for continuous-flow analysis of stable water isotopes in ice cores. *Atmospheric Measurement Techniques*, 10: 617-632. DOI: 10.5194/amt-10-617-2017
- Schaefer, H., Fletcher, S. E. M., Veidt, C., Lassey, K. R., Brailsford, G. W., Bromley, T. M., Dlugokencky, E. J., Sylvia Englund Michel, Miller, J. B., Levin, I., Lowe, D. C., Martin, R. J., Bruce H. Vaughn, James W. C. White, **2016**: A 21st-century shift from fossil-fuel to biogenic methane emissions indicated by ^{13}C CH₄. *Science*, 352(6281): 80-84. DOI: 10.1126/science.aad2705

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- Liu, L., Zhou, L., Bruce H. Vaughn, Miller, J. B., Brand, W. A., Rothe, M., Xia, L., **2014**: Background variations of atmospheric CO₂ and carbon-stable isotopes at Waliguan and Shangdianzi stations in China. *Journal of Geophysical Research—Atmospheres*, 119(9): 5602-5612. DOI: 10.1002/2013JD019605
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- Steig, E. J., Ding, Q., James W. C. White, Kuettel, M., Rupper, S. B., Neumann, T. A., Neff, P. D., Gallant, A. J. E., Mayewski, P. A., Taylor, K. C., Hoffmann, G., Dixon, D. A., Schoenemann, S. W., Markle, B. R., Fudge, T. J., Schneider, D. P., Schauer, A. J., Teel, R. P., Bruce H. Vaughn, Burgener, L., Williams, J., Korotkikh, E., **2013**: Recent climate and ice-sheet changes in West Antarctica compared with the past 2,000 years. *Nature Geoscience*, 6(5): 372-375. DOI: 10.1038/NGEO1778
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- Bowen, G.J., West, J.B., Vaughn, B.H., Dawson, T.E., Ehleringer, J.R., Fogel, M.L, Hobson, K., Hoogewerff, J., Kendall, C., Lai, C.-T. ,. Miller, C.C., Noone, D., Schwarcz, H., Still, C.J. **2009**: Isoscapes to Address Large-Scale Earth Science Challenges. *Eos, Vol. 90, No. 13, 31 March 2009, p.109–110.*
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Fountain, A. G. and Vaughn, B.H., **1984**. Yukon River Ice: Freeze-up Data (1883-1975). U.S. Geological Survey. *Open File Report* 84-601: 51.