

Matthew B. Osman

Personal information

Website <https://mattosman.github.io/>
Address 1040 E. 4th Street, Tucson, AZ 85721, USA
Contact mattosman@arizona.edu • +1 (217) 416-8859
ORCID ID: [0000-0002-5636-698X](https://orcid.org/0000-0002-5636-698X)

Professional appointments

Oct. 2019 – **Postdoctoral Research Associate**, *Climate Systems Center, University of Arizona, USA*
Research foci: paleoclimate data assimilation, computational climatology, climate dynamics

Education

Sep. 2014–Jul. 2019 **Ph.D. in Climate Science**, *Massachusetts Institute of Technology / Woods Hole Oceanographic Institution (MIT/WHOI) Joint Program, USA*
Thesis: Greenlandic ice archives of North Atlantic Common Era climate
Research foci: Arctic/midlatitude climatology, climate proxy development, climate data analysis and statistics, inverse methods

Sep. 2010–May 2014 **BA in Geology with Distinction**, *Augustana College, USA*
Minors: *Mathematics and Environmental Studies*
Graduated summa cum laude (top 5% of graduating class)
Study abroad: East-Asia term (Japan, Taiwan, Hong Kong, & China; 4 months)

Publications

* all first-author manuscripts listed are available upon request

In preparation:

~ **Osman, M.B.** (antic. May 2021 submission) “Rapid Greenland climate changes foreshadow collapse of Norse settlements”, *in prep for Geology*.

In review/revision:

~ **Osman, M.B.**, B.E. Smith, L.D. Trusel, S.B. Das, J.R. McConnell, N. Chellman, M. Arienzo, and H. Sodemann, “Enhanced sensitivity of west Greenland ice caps to last millennium climate change”, *accepted “in principle” at Nature Geoscience*.

~ **Osman, M.B.**, S. Coats, J.R. McConnell, N. Chellman, S.B. Das, “A thirteen-century context for North Atlantic jet stream projections”, *in revision at PNAS*.

~ **Osman, M.B.**, J.E. Tierney, J. Zhu, R. Tardif, J. King, G.J. Hakim and C.J. Poulsen, “Globally resolved surface temperatures since the Last Glacial Maximum”, *in review at Nature*.

*Non-peer reviewed pre-print available at EarthArXiv:
<https://doi.org/10.31223/X5S31Z>*

~ Criscitiello, A.S., T. Geldsetzer, R. Rhodes, M. Arienzo, J.R. McConnell, N. Chellman, **M.B. Osman**, J.J. Yackel, and S. Marshall, “Marine aerosol records of Arctic sea-ice and polynya variability from new Ellesmere and Devon Island firn cores, Nunavut, Canada”, *in revision at JGR Atmospheres*.

Published (peer-reviewed):

May 2019 **Osman, M.B.**, Das, S.B., Trusel, L.D., Evans, M., Fischer, H., Grieman, M., Kipfstuhl, S., McConnell, J.R., Saltzman, E. “Industrial-era decline of subarctic Atlantic productivity”, *Nature*, **569**, 551-555, 2019.

Dec. 2018 Trusel, L.D., Das, S.B., ***Osman, M. B.**, et al. “Nonlinear rise in Greenland runoff in response to post-industrial Arctic Warming”, *Nature*, **564**, 104–108, 2018.

Nov. 2017 **Osman, M.B.**, Das, S.B., Marchal, O., and Evans, M.J, ‘Methanesulfonic acid (MSA) migration in polar ice: Data synthesis and theory’, *The Cryosphere*, **11**, 2439-2462, 2017.

Study selected as a 2017 Research Highlight article in The Cryosphere (top 5% of articles at Editor’s discretion)

Nov. 2017 **Osman, M.**, Zawadowicz, M. A., Das, S. B., and Cziczo, D. J., “Real time analysis of insoluble particles in glacial ice using single particle mass spectrometry”, *Atmos. Meas. Tech.*, **10**, 4459-4477, 2017.

Selected abstracts and invited talks

* denotes abstract selected as a talk, ** denotes invited talk

June 2021 ** **Osman, M.B.**, “Assimilation of models and proxies from the Last Glacial Maximum to present,” *COSIM Climate Seminar*, Los Alamos National Laboratory.

Mar. 2021 ** **Osman, M.B.**, “Global climate variability since the Last Glacial Maximum,” *Udden Geology Seminar*, Department of Geology, Augustana College.

Dec. 2020 * **Osman, M.B.**, J.E. Tierney, Tardif, R., J. Zhu, J. King, G.J. Hakim, and C. Poulsen “Reanalysis of global temperature variability during the last 24,000 years,” *American Geophysical Union Fall Meeting*, San Francisco, CA, USA.

Nov. 2020 * **Osman, M.B.**, J.E. Tierney, “Globally resolved temperature variability since the Last Glacial Maximum,” *PAGES-PMIP Working Group Meeting on Quaternary Interglacials*, remote.

Selected as 1 of 3 plenary talks.

Dec. 2019 * **Osman, M.B.**, S. Coats, J.R. McConnell, N. Chellman, and S.B. Das, “Enhanced North Atlantic jet-stream variability coeval with Arctic warming during the last millennium,” *American Geophysical Union Fall Meeting*, Abstract PP42B-06, San Francisco, CA, USA.

- Dec. 2018 * **Osman, M.B**, Smith, B. E., Das, S. B., McConnell, J. R., Trusel, L. D., Sodemann, H., “Ice core evidence of enhanced multi-decadal to centennial-scale climate variability in west Greenland during the last millennium”, Abstract PP42A-07, *American Geophysical Union Fall Meeting*, Washington, D.C.
- Mar. 2018 ** **Osman, M.B**, Das, S., Trusel, L., Evans, M., McConnell, J., Saltzman, E., Fischer, H., Grieman, M., and Kipfstuhl, S. “Recent reversal of a multicentury subarctic Atlantic productivity decline”, GFI/BCCR Department Seminar, Bjerknes Institute, University of Bergen and the Institute of Marine Research.
- Jan. 2018 ** **Osman, M.B**, Das, S., Trusel, L., McConnell, J., Evans, M., Smith, B.: Ice core records of Common Era maritime climate from West Greenland ice caps, Neils Bohr Institute Department Seminar, University of Copenhagen.
- Apr. 2017 **Osman, M.B**, Das, S., Marchal, O., Evans, M.: Post-depositional migration and signal reconstruction of methanesulfonic acid (MSA) in polar ice cores, European Geophysical Union (EGU) meeting, Vienna, Austria, Abstract 2017-11437-5.
- Mar. 2016 **Osman, M.B**, Das, S., Evans, M., Frey, K., Trusel, L., Hatch, M., Smock, F., Smith, B., York, A.: Coastal firn core records of west Greenlandic sea-surface variability, International Partnerships in Ice Core Sciences (IPICS) meeting, Hobart, Australia.
- Dec. 2015 * **Osman, M.B**, Marchal, O., Guo, W., Das, S., Evans, M. “Postdepositional migration and preservation of methanesulfonic acid (MSA) in polar ice cores”, Abstract C13C-0839, *American Geophysical Union Fall Meeting*, San Francisco, CA.
- Dec. 2013 **Osman, M.B**, Varner, R. K., Palace, M. W.; Wik, M.; Crill, P. M.; Lang, A., “Employing passive acoustics as a temporally precise monologue for constraining ebullitive methane fluxes in warming subarctic lakes”, Abstract B53B-0458, *American Geophysical Union Fall Meeting*, San Francisco, CA.
- May. 2012 **Osman, M.B**, and Markle, B. “Understanding $\delta^{18}\text{O}$ and δD fractionation controls in surface snow across the Matthes-Llewellyn Divide, Juneau Icefield, Alaska and British Columbia”, *Geological Society of America Abstracts with Programs*. Vol. 45, No. 4, p. 60. Kalamazoo, MI.

Selected honors and awards

- Aug. 2015–Aug. 2019 **National Defense Science and Engineering Graduate (NDSEG) fellowship**
U.S. Department of Defense-funded (top 5% of STEM applicants nationwide)
- Jan. 2018–Jun. 2018 **Ocean Outlook Research Fellowship**
5-month research fellowship, Bjerknes Centre for Climate Research, Norway
- Sep. 2014–Aug. 2015 **Fulbright Research Fellowship to Sweden (offer declined)**
U.S. Department of State-funded research fellowship to University of Stockholm (<5% acceptance; first recipient from Augustana College in over two decades)
- May 2014 **Dr. C. Leland Horberg Scholarship in Geology**
Awarded to top graduating Augustana College Geology senior
- Apr. 2014 **Phi Beta Kappa Zeta Chapter of Illinois**
Designated to top members (~5%) of graduating class, Augustana College faculty-nominated

- Aug. 2013–May 2014 **Omicron Delta Kappa National Leadership Honor Society**
President, Augustana College
- Aug. 2013–May 2014 **Sigma Gamma Epsilon National Earth Science Honor Society**
President, Augustana College
- Mar. 2013 **Glenn T. Seaborg Science Award *finalist***
Augustana College’s sole nominee (1/2600 students)
- June 2012 **NASA Earth System Field Research Award**
Juneau Ice Field Research Program award fellowship

Teaching experience

- July 2020–Aug. 2020 Juneau Icefield Research Program (JIRP) faculty (*deferred to Summer 2022 due to COVID-19*)
Lecturing on climate/ice (33%) and advising of student-led research (67%)
- Feb. 2019–Jun. 2019 Course co-designer and leader for MIT 12.752 (“North Atlantic Climate and Civilization”)
Organized and facilitated seminars/discussion, presented colloquia, organized/led field component (Newfoundland, Canada), designed student projects
- Mar. 2017, 2019 Reoccurring guest lecturer for MIT 12.708 (“History of Earth’s Climate”)
- Jan. 2012–May 2014 Geology Department teaching assistant and tutor
Department of Geology, Augustana College

Academic Service

- Jul. 2017–2019 WHOI’s “I’m an Ocean Scientist, Ask Me Anything” participant
- Jan. 2017–May. 2019 MIT Program in Atmospheres, Oceans, and Planets (PAOC) Colloquium steering-committee member, *Paleoclimate Chair*
- May 2017–Nov. 2019 Graduate Climate Conference (GCC) steering-committee member
Paleoclimate Session Chair
- Mar. 2012–May 2014 “Let’s Rock” after-school educational program instructor
Denkmann Elementary, Rock Island, IL

Relevant Field Experience

- Feb. 2016 – AIARE Avalanche 1 Certification
- Mar. 2013 – National Outdoor Leadership School (NOLS) Wilderness First Responder
- Antic.* May–Jun 2021 Helheim catchment, eastern Greenland Ice Sheet (field season in preparation)
Exploratory ice core retrieval & analysis
- Jul. 2018 Jakobshavn terminus, western Greenland
Meltwater runoff & aqueous sampling methods; managed transport/food logistics
- Apr. 2015–Jun. 2015 Disko Bay vicinity, western Greenland
Exploratory ice core retrieval & analysis; managed food/ice transport logistics

- Jul. 2013-Aug. 2013 Stordalen Mire, Lappland, Sweden
CH₄ flux quantitation from permafrost thaw lakes; passive acoustic design
- May 2012-Aug. 2012 Juneau Icefield, Alaska-British Columbia
Glacial mass balance, isotope geochemistry, GPR, and geologic mapping

Workshops and intensive courses

* denotes attendance under merit-based scholarship

- Sept. 2018 Advanced Climate Dynamics Course (ACDC); Topic: “Dynamics of the Seasonal Cycle”; *Rondane National Park, Norway*
- Aug. 2018 * Community Earth System Model (CESM) Polar Modeling Workshop, National Center for Atmospheric Research (NCAR); *Boulder, CO, USA*
- Nov. 2016 Ice Core Analysis Techniques (ICAT) course, *Univ. of Copenhagen, Denmark*
- Jun. 2016 * International Summer School in Glaciology (ISSG), *AK, USA*
- Jun. 2012–Aug. 2012 * Juneau Icefield Research Program (JIRP), *AK, USA*

Work experience

- Sep. 2014–Jul. 2019 Research assistant, Dept. of Earth, Atmosphere, and Planetary Sciences (EAPS), Massachusetts Institute of Technology, Cambridge, MA, USA
- Jun. 2013–Aug. 2013 Research fellowship, Northern Ecosystems Research for Undergraduates (NERU); University of New Hampshire, NH, USA and Abisko Scientific Research Station, Sweden
National Science Foundation-funded Research Experience for Undergrads
- May. 2011–Aug. 2011 Hydro-engineering intern, Hoelscher Engineering, P.C., *Springfield, IL, USA*

Skills

Primary Tools Most-to-least proficient: MATLAB, R, Python, Bash

Languages English (native), Swedish (basic), Norwegian (learning)

Last updated: Apr. 2021