Matthew B. Osman

Personal information

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Professional appointments

Oct. 2019 – **Postdoctoral Research Associate**, *Climate Systems Center, University of Arizona*, USA

Research foci: 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. Dec. 2021 submission) "The deglacial evolution of Northern Hemisphere jet stream changes", *in prep for Journal of Geophysical Research.*

~ **Osman, M.B.** and S.B. Das (antic. Oct. 2021 submission) "Rapid Greenland climate changes foreshadow collapse of Norse settlements", *in prep for Geophysical Research Letters.*

~ Hakim, G. et al. (antic. Dec. 2021 submission) "Tropical hydroclimate changes and atmospheric dynamics since the Last Glacial Maximum", *in prep for Geophysical Research Letters.*

In press:

~ **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", *accepted at Nature*.

Non-peer reviewed pre-print available at EarthArXiV: https://doi.org/10.31223/X5S31Z

~ **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 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", *accepted at PNAS.*

~ 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", *accepted 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*

Ant. Dec. 2021 **Osman, M.B.**, "Global temperature changes since the Last Glacial Maximum: new insights from models and proxies," *American Geophysical Union Fall Meeting*, New Orleans, LA, USA.

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

Jul. 2021 ** **Osman, M.B.**, "North Atlantic and Global Climatic Change: separating the [paleo]signal from the [paleo]noise," *Earth Science Department Seminar,* Durham University, UK.

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, 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 δ18O 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, Bjerkes 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
	CH_4 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: Aug 2021