

Ben G. Kopec

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Appointments

- 2024-present Assistant Research Scientist – Great Lakes Research Center, Michigan Technological University, Houghton, MI, USA
- 2023-2024 Affiliate Research Assistant Professor – Environment and Natural Resources Institute, University of Alaska Anchorage, Anchorage, Alaska, USA
- 2023-2024 Postdoctoral Researcher – Ecology and Genetics Research Unit, University of Oulu, Oulu, Finland
- 2019-2023 Postdoctoral Fellow – Biological Sciences, University of Alaska Anchorage, Anchorage, AK, USA
- 2019 Visiting Assistant Professor – Geology, Gustavus Adolphus College, St. Peter, MN, USA
- 2017-2018 Visiting Assistant Professor – Environmental Studies, St. Olaf College, Northfield, MN, USA
- 2017 Research Assistant – Earth Sciences, Dartmouth College, Hanover, NH, USA
- 2010-2016 National Science Foundation Integrative Graduate Education and Research Traineeship (IGERT) Fellow, Dartmouth College, Hanover, NH, USA
- 2010-2016 Graduate Teaching Assistant – Earth Sciences, Dartmouth College, Hanover, NH, USA

Education

- Ph.D., 2016 Earth Sciences, Dartmouth College, Hanover, NH, USA
Thesis: Investigations of the hydrologic cycle in the Arctic climate system using water isotopes
Advisors: Xiahong Feng and Eric Posmentier
- B.S., 2010 Earth and Environmental Sciences, Susquehanna University, Selinsgrove, PA, USA

Peer-Reviewed Publications

Puleo, P. J. K., Akers, P. D., **Kopec, B. G.**, Welker, J. M., Bailey, H., Osburn, M. R., Riis, T., Axford, Y. (*accepted*). Aquatic moss $\delta^{18}\text{O}$ as a proxy for seasonal lake water $\delta^{18}\text{O}$, Northwest Greenland. *Quaternary Science Reviews*.

Freitas., G., **Kopec, B. G.**, Adachi, K., Krejci, R., Heslin-Rees, Yttri, K. E., Hubbard, A., Welker, J., Ebell, K., & Zeiger, P. (*in press*). Contribution of bioaerosols to low-level Arctic cloud nuclei. *Atmospheric Chemistry and Physics*.

Kopec, B. G., Feng, X., Osterberg, E. C., & Posmentier, E. S. (2022). Climatological significance of δD - $\delta^{18}\text{O}$ line slopes from precipitation, snow pits, and ice cores at Summit, Greenland. *Journal of Geophysical Research: Atmospheres*, 127, e2022JD037037. <https://doi.org/10.1029/2022JD037037>.

Ala-aho, P., Welker, J. M., Bailey, H., Højlund Pedersen, S., **Kopec, B. G.**, Klein, E. S., Mellat, M., Mustonen, K. R., Noor, K., & Marttila, H. (2021). Arctic Snow Isotope Hydrology: A Comparative Snow-Water Vapor Study. *Atmosphere*, 12, 150. <https://doi.org/10.3390/atmos12020150>.

Akers, P. D., **Kopec, B. G.**, Mattingly, K. S., Klein, E. S., Causey, D. & Welker, J. M. (2020). Baffin Bay sea ice extent and synoptic moisture transport drive water vapor isotope ($\delta^{18}\text{O}$, δD , d-excess) variability in coastal northwest Greenland. *Atmospheric Chemistry and Physics*, 20(22), 13929–13955. <https://doi.org/10.5194/acp-20-13929-2020>.

Kopec, B. G., Feng, X., Posmentier, E. S., & Sonder, L. J. (2019). Seasonal isotopic variations of precipitation at Summit, Greenland and their climatological significance. *Journal of Geophysical Research: Atmospheres*, 124(1), 72-91. <https://doi.org/10.1029/2018JD028750>.

Kopec, B. G., Feng, X., Posmentier, E. S., Chipman, J. W., & Virginia, R. A. (2018). Use of principal component analysis to extract environmental information from lake water isotopic compositions. *Limnology and Oceanography*, 1939-5590. <https://doi.org/10.1002/lno.10776>.

Kopec, B. G., Feng, X., Michel, F. A., & Posmentier, E. S. (2016). Influence of sea ice on Arctic precipitation. *Proceedings of the National Academy of Sciences*, 113(1), 46-51. <https://doi.org/10.1073/pnas.1504633113>.

Feng, X., Lauder, A. M., Posmentier, E. S., **Kopec, B. G.**, & Virginia, R. A. (2016). Evaporation and transport of water isotopologues from Greenland lakes: The lake size effect. *Quaternary Science Reviews*, 131, 302-315. <https://doi.org/10.1016/j.quascirev.2015.07.029>.

Osterberg, E. C., Hawley, R. L., Wong, G., **Kopec, B. G.**, Ferris, D., & Howley, J. (2015). Coastal ice-core record of recent northwest Greenland temperature and sea-ice concentration. *Journal of Glaciology*, 61(230), 1137-1146. <https://doi.org/10.3189/2015JoG15J054>.

Kopec, B. G., Lauder, A. M., Posmentier, E. S., & Feng, X. (2014). The diel cycle of water vapor in west Greenland. *Journal of Geophysical Research: Atmospheres*, 119(15), 9386-9399. <https://doi.org/10.1002/2014JD021859>.

Manuscripts in Review

Kopec, B. G., Klein, E. S., Feldman, G. C., Pedron, S., Bailey, H., Causey, D. Hubbard, A. L., Marttila, H., & Welker, J. M. Arctic freshwater sources and ocean mixing relationships revealed with seawater isotopic tracing. In review at *Journal of Geophysical Research: Oceans*.

Kopec, B. G., Werner, M., Mattingly, K. S., Klein, E. S., Noone, D., Akers, P. D., Bailey, H., K., Bonne, J. L., Brunello, C. F., Mustonen, K. R., Hubbard, A. L., Klove, B., & Welker, J. M. Sea ice controls on the Arctic hydrologic cycle: Discoveries from MOSAiC's Arctic Water Isotope Network. In review at *Journal of Geophysical Research: Atmospheres*.

Akers, P. D., **Kopec, B. G.**, Bailey, H., & Welker, J. M. Evaporation and water sourcing dominate lake and stream isotopic variability across time and space in a High Arctic periglacial landscape. In review at *Water Resources Research*.

Croghan, D., Pedron, S. A., Redman, Z. C., **Kopec, B. G.**, Klein, E. S., Hubbard, A., Tomco, P. L., Feldman, G. C., Czimczik, C., & Welker, J. M. Western Greenland ice-land-ocean interactions: near-shore dissolved organic carbon ^{14}C ages and composition in eastern Baffin Bay. In review at *Environmental Research Letters*.

Huang, J., Pickart, R. S., Bahr, F., McRaven, L., Tremblay, J.-E., Michel, C., Jeansson, E., **Kopec, B. G.**, Welker, J. M., & Ólafsdóttir, S. R. Water mass structure and general circulation of Baffin Bay: observations from two shipboard surveys in 2021. In review at *Progress in Oceanography*.

Manuscripts in Preparation

Kopec, B. G., Akers, P. D., Klein, E. S., & Welker, J. M. Water vapor isotopic ($\delta^{18}\text{O}$, δD , d-excess) measurements reveal significant contribution to hydrologic cycle from Greenland Ice Sheet vapor fluxes. To be resubmitted to *The Cryosphere* in Summer 2024.

Kopec, B. G., Klein, E. S., Feng, X., Hyöky, V., & Welker, J. M. Surface temperature gradients drive Arctic marine boundary layer deuterium excess. Planned submission in Summer 2024.

Awarded Research Grants

2021-2022 NSF Arctic Research Opportunities, OPP-2133156. *RAPID: Fingerprinting new water-carbon interactions in the Arctic: Isotopic measurements through the Northwest Passage and in Baffin Bay*. J. M. Welker (Lead PI, UAA), D. Causey (Co-PI, UAA), E. S. Klein (Co-PI, UAA), **B. G. Kopec** (Co-PI, UAA). **\$200,000**.

Proposals in Preparation

Office of Naval Research: *Origin of the East Greenland Current*. R. Pickart (Lead PI, Woods Hole Oceanographic Institute). Subcontract to MTU - **B. G. Kopec** (Co-PI, MTU). Planning letter submitted.

NSF Arctic Observing Network: *Monitoring the New Arctic Water Cycle with a Pan Arctic isotope forensics network*. J. M. Welker (Lead PI, UAA), D. Causey (Co-PI, UAA), E. S. Klein (Co-PI, UAA), **B. G. Kopec** (PI, MTU), R. J. Bochenek (Axiom Data Sciences).

Teaching Experience

Visiting Assistant Professor, Gustavus Adolphus College (2019):

Spring 2019 GEO 111: Our Planet: Introduction to Earth Science (lab instructor; two sections)
GEO 212: Evolution of the Earth (co-instructor and lab instructor)
ENV 103: Interpreting the Spring Landscape (two sections)

Visiting Assistant Professor, St. Olaf College (2017 – 2018):

Fall 2018 ENVST 237: Integration and Application in Environmental Studies (Academic Civic Engagement course)
ENVST 399: Senior Capstone in Environmental Studies
2017-18 ENVST 123: Geophysics
ENVST 137: Introduction to Environmental Studies
ENVST 234: Global Climate Change
ENVST 281: Integration and Application in Environmental Studies (Academic Civic Engagement course)
ENVST 294: Academic Internship
ENVST 298: Independent Study

Teaching Assistant, Dartmouth College (2011 – 2016):

2016-17 EARS 1: How the Earth Works (class and lab)
EARS 6: Environmental Change
2015-16 EARS 18: Environmental Geology (class and lab)
EARS 118: Advanced Analysis of Environmental Data
2014-15 EARS 45, 46, 47: Stretch Field Methods course
2013-14 EARS 14: Meteorology (class and lab)
EARS 45, 46, 47: Stretch Field Methods course
2011-12 EARS 3: Elementary Oceanography
EARS 45, 46, 47: Stretch Field Methods course

Awards and Honors

- 2018-19 Academic Civic Engagement (ACE) Community of Practice – selected to participate in community of practice to examine participation in ACE courses across demographics and disciplines, and use this information to inform and strengthen ACE courses
- 2016 Best Student Publication – Dartmouth College – best publication by a graduate student
- 2015 Earle S. Lenker '56 Graduate Award – Dartmouth College – outstanding academic achievement
- 2010-16 National Science Foundation Integrative Graduate Education and Research Traineeship (IGERT) fellowship recipient
- 2010 The W. A. Tarr Award - Susquehanna University – outstanding contributions to the department through community service, leadership and research

Field Experience

- Spring 2023 Field season on the Icebreaker Oden for ARTofMELT (*planning/analysis only*)
- The ARTofMELT expedition (Atmospheric rivers and the onset of sea ice melt) to study the ice-ocean-atmosphere interactions during warm air intrusion events and their influence on inducing seasonal sea ice melt.
 - Cruise track is centered in the Fram Strait region and will transit to intercept any warm air intrusion events during the cruise (May-June 2023).
 - Install and operate two Picarro isotope analyzers to measure coupled seawater and water vapor isotopic composition on-board the Oden to continuously monitor and fingerprint water cycle processes at the ocean surface, including identifying freshwater influxes, delineating water masses, and examine ice-ocean-atmosphere interactions.
 - Install and operate a third Picarro water vapor isotope analyzer on a HELiPOD to collect vertical profiles and additional measurements over the sea ice away from the ship.
 - Collect discrete water samples from CTD casts, sea ice cores, seawater underway system, and precipitation events for water isotope analyses.
- Fall 2022 Led field season on cruise on the Research Vessel Sikuliaq (SKQ2022-15s)
- Cruise performed transects of Beaufort and Chukchi Seas during the sea ice freeze-up period (31 October to 03 December).
 - Installed and operated two Picarro isotope analyzers to continuously measure coupled surface seawater and water vapor isotopic composition on-board the Sikuliaq to monitor and fingerprint water cycle processes at the ocean surface, including to identify freshwater influxes, delineate water masses, and examine ice-ocean-atmosphere interactions.
 - Collected ~800 discrete water samples from CTD casts, seawater underway system, sea ice, and precipitation events for water isotope analyses.
- Fall 2021 Led field season on 2021 USCGC Healy cruise (HLY21TD, HYL2101)
- Cruise began in Seward, AK, sailed north around Alaska, transited the Northwest Passage, conducted multiple traverses of Baffin Bay and coastal Greenland, and returned to port in Boston, MA; I was on-board the HYL2101 segment (five weeks).
 - Installed and operated three Picarro isotope analyzers (water isotopes in vapor and seawater; carbon isotopes in atmospheric CO₂ and CH₄) on-board the Healy to continuously monitor and fingerprint water and carbon cycle processes at the ocean surface in the rapidly changing Arctic.

- Collected ~1000 discrete water samples from CTD casts, seawater underway system, and precipitation events for water isotope analyses.
- Summer 2019 Led field season in Thule, Greenland
- Installed new calibration system to a continuously operating water vapor isotope analyzer that is part of an Arctic-wide network operational during the Multidisciplinary drifting Observatory for the Study of Arctic Climate (MOSAIC) Expedition.
 - Collected over 200 samples for water isotope analysis from regional lakes, rivers, glacial ice, and meltwater.
 - Examined regional glacial geomorphology and hydrologic systems to investigate connectedness of waters above and below the surface to better understand changing biogeochemical cycles.
- Fall 2011, 2013, 2014 Assisted in coordinating logistics for and co-led groups of 12-20 students on term-long geologic tours across western North America for Dartmouth College's Department of Earth Sciences off-campus field program (The Stretch)
- Led students through a variety of exercises including mapping and interpreting geologic structures and landscape features, collecting and analyzing geochemical and geophysical data, and integrating remote sensing observations with measurements on the ground to study geologic processes on larger spatial scales.
- Summer 2011, 2012 Led field seasons in West Greenland
- Collected water samples from regional lakes, rivers, and glacial ice
 - Installed and operated a water vapor isotope analyzer in a laboratory setting and in a mobile setting on board a small boat and a truck.
 - Examined regional glacial geomorphology and hydrologic systems to investigate regional water balances.
- Summer 2011 Led field season to Summit Station on the Greenland Ice Sheet
- Developed and installed multi-height precipitation collection system designed to perform in windy conditions on ice sheet.
 - Excavated snow pits for water isotope and density measurements to relate to precipitation analysis.

Undergraduate Student Mentoring

Dartmouth College

- 2020-2022 **Liam Kirkpatrick** – Co-advisor with Erich Osterberg for B. A. Senior Thesis – Denali Record of Winter Aleutian Low Intensity and North Pacific Temperature
- 2016-17 **Connor Clark** – Co-advisor with Carl Renshaw for B. A. Senior Thesis – Determining maximum suspended particle size in a linear flow
- 2012-13 **Ivy Ddamba** – Co-advisor with Xiahong Feng for B. A. Senior Thesis – Interannual variations in water isotopes of West Greenland lakes
- 2011 **Sarah Errafay** – Co-advisor with Xiahong Feng for Women in Science Project (WISP) student – Effects of evaporation on lakes in Greenland using stable isotope hydrology

St. Olaf College

- 2018 **Peter Gus Reynolds** – Advisor for Independent Study – Climate through a visual lens
- 2018 **Jeremy Bird** – Faculty Supervisor for Academic Internship – Education Naturalist Internship at the Minnesota Zoo

Professional ServiceWorkshop and Working Group Participation

- 2024-present ARTofMELT Science Workshop
- Presentation: “Tracing ice-ocean-atmosphere interactions with coupled seawater and water vapor isotopic observations”
- 2024 ARTofMELT Aerosol-Cloud Data Workshop
- Presentation: “ARTofMELT water vapor isotopic observations”
- 2021-present MOSAiC-Atmosphere working group
- Presentation in February 2022 meeting: “Water isotope monitoring reveals the nuances of Arctic Water Cycle Processes”
- 2021-2023 Planning workshops for Icebreaker Oden expedition - ARTofMELT 2023
- 2021 Water Isotopes: From Weather to Climate Workshop, University of Bergen, Norway
International Arctic Science Committee (IASC) Svalbard/MOSAiC workshop on snow, sea ice and aerosol interactions in the Arctic
- 2019 NEON Surface Atmosphere Exchange Workshop – 2019 AGU Fall Meeting
- Presentation on NEON data product applications: “Understanding the changing Arctic hydrologic cycle through water vapor isotope measurements”
2019 US Climate Variability and Predictability Program: Water Isotopes and Climate Workshop
- Presentation: “Greenland Ice Sheet surface melt captured by high frequency water vapor isotopes measurements at Thule”

Conference Organization and Participation

- 2022 Participant and presenter at American Meteorological Society Conference on Polar Meteorology and Oceanography
- 2019-present Participant and presenter at European Geophysical Union Fall Meeting
- 2019 Participant in 2019 Midwest Campus Compact Conference: Dispatches from the Midwest: Community, Collaboration, and Critical Perspectives
- Co-convener session “Promoting Student Equity and Inclusion within Community-Engaged Pedagogy”
- 2018 Participant in Town Hall Panel Discussion – 2018 AGU Fall Meeting: TH45H: The Adventures, Opportunities, and Challenges of Being a Geoscience Faculty Member at a Primarily Undergraduate Institution
- 2017 Conference Session Convener – 2017 AGU Fall Meeting: Co-convener session “Water isotope systematics: Improving modern and paleoclimate interpretations”
- 2011-present Participant and presenter at American Geophysical Union Fall Meeting
- 2011 Organizer for student run meeting – Understanding Rapid Environmental and Social Change in the Arctic: Bridging Traditional Knowledge and Interdisciplinary Science across IGERTs
- Convener for discussion group: Water resources in a changing climate system

Professional Group Membership

- 2022 Member of the American Meteorological Society (AMS)
- 2022-present Member of the International Association of Cryospheric Sciences (IACS)
- 2022-present Member of the Arctic Research Consortium of the United States (ARCUS)
- 2020-present Member of the Interagency Arctic Research Policy Committee (IARPC); participant in the Atmosphere, Sea Ice, and Glaciers & Sea Level collaboration teams

2019-2022 Member of the European Geophysical Union
2011-present Member of the American Geophysical Union

Other Professional Service Activities

2018-2019 Participant in St. Olaf Academic Civic Engagement (ACE) Community of Practice
2017-2018 Regular attendee of Faculty Conversations at the Center for Innovation in the Liberal Arts (CILA)
2015-present Manuscript Reviewer:
- Arctic, Antarctic, and Alpine Research
- EOS – Earth and Space Science News
- Geophysical Research Letters
- Hydrology and Earth System Sciences
- Journal of Geophysical Research – Atmospheres
- Journal of Glaciology
- Nature Geosciences
- Science Advances
- Scientific Online Letters on the Atmosphere
- Water Resources Research

Community Engagement

Activities and Presentations

Nov 2022 Outreach activities from Research Vessel Sikuliaq cruise – we connected with students at three schools from around the US (including with the indigenous community in Sitaisaq, Alaska) to share the research we are conducting at sea; activities included weekly video meetings, short presentations on research work, instrumentation tours from the ship, among other activities
Jun 2022 Presentation and panel participant for Susquehanna University alumni webinar: *The Arctic, Climate Change, and How to Get Involved*
Mar 2020-Apr 2021 Participant in City of Northfield’s Climate Action Plan Urban Forest group – focusing on implementation and outreach strategies
Feb 2020 Community presentation at COWS (Conversations On the Wonders of Science Event: A Northfield Science Café): *The Arctic - Earth's Air Conditioner: How Does it Work and Is it Broken?*
Sep 2018-Dec 2018 Participant in City of Northfield’s Climate Action Plan Advisory Board meetings and sub-committee meetings
Sep 2018-Nov 2018 Worked with the City of Northfield’s Climate Action Plan Advisory Board to organize St. Olaf College students to administer surveys to Northfield, MN residents to foster community participation and engagement with Climate Action Plan development. Contributed to survey data analysis to inform plan development.
Feb 2018 Downstream Film Festival – provided logistical support for the Cannon River Watershed Partnership to run film festival in Northfield, MN.
Jan 2018-May 2019 Developed partnerships and Academic Civic Engagement projects with community environmental organizations, including the Cannon River Watershed Partnership, the City of Northfield’s Climate Action Plan Advisory Board, and Greenvale Elementary School. Projects in development with the Main Street Project.

Jul 2017	School of Ice Workshop – presented methods of ice core processing and analyzing at Dartmouth College, Hanover, NH.
May 2016	Presented various outreach activities associated with ice core science at Montshire Museum, Norwich, VT.
Nov 2015-May 2016	Provided logistic support for Science Pub at Salt Hill Pub, Lebanon, NH.
Apr 2014	Co-organized and presented outreach activities at our <i>Polar Detectives Apply Here</i> exhibit at 2014 USA Science & Engineering Festival in Washington, D.C.
Apr 2014	Co-organized and presented outreach activities at our <i>Polar Detectives Apply Here</i> exhibit at Montshire Unleashed at the Montshire Museum, Norwich, VT.
Apr 2013, 2014	Hosted various activities and demonstrations for local students at GWISE Science Day at Dartmouth College, Hanover, NH.
Aug 2011	Participated in series of research talks to general audience in Nuuk, Greenland - Lake water changes in West Greenland in a shifting climate system.
Sep 2010-Oct 2012	Blog contributor to Polar Field Services, Dartmouth IGERT, and iisPACS

Selected Media Coverage and Contributions

Jan 2022	Susquehanna University newsletter – An Arctic Encounter. Story of two alums (myself and Robert Pickart, WHOI) meeting on the 2021 Healy cruise.
Aug 2019	Arctic Today – As Greenland’s ice melts, its rivers dump more carbon into the Arctic Ocean. Contributed photos to article.
Jan 2016	Nature Climate Change: Research Highlights – Arctic precipitation. <i>Nature Climate Change</i> , 6, 127. doi:10.1038/nclimate2931 Eos: Earth and Space Science News – Vanishing sea ice could trigger more Arctic precipitation. doi:10.1029/2016EO042877.
Dec 2015	The Washington Post – Freakish weather from the North Pole to South America Huffington Post – Here’s yet another alarming effect of melting Arctic sea ice <i>Stories on Influence of sea ice on Arctic precipitation</i> - Associated Press story by Dan Joling (run in 50+ media outlets, including the New York Times and the Washington Post) – Researchers say less Arctic sea ice means more precipitation - Christian Science Monitor – Arctic ice is melting. Rainy days ahead? - The Weather Channel – Melting sea ice may fall as rain, exacerbating Arctic warming

Published Datasets

- Freitas., G., Krejci, R., Heslin-Rees, D., **Kopec, B. G.**, Hubbard, A., Welker, J., & Zeiger, P. (2023). Fluorescent primary biological aerosol particle concentrations in low-level Arctic cloud residuals in Svalbard 2019–2021. Dataset version 1. *Bolin Centre Database*. <https://doi.org/10.17043/zeppelin-freitas-2023-bioclouds-1>.
- Akers, P. D., **Kopec, B. G.**, Klein, E. S., & Welker, J. M. (2023). Pituffik 2018–2019 surface water stable isotope data and analyses (v1.1). *Zenodo*. <https://doi.org/10.5281/zenodo.8262360>.
- Akers, P. D., **Kopec, B. G.**, Klein, E. S., & Welker, J. M. (2023). Pituffik, Greenland, hydrological geopackage (v1.0.1). *Zenodo*. <https://doi.org/10.5281/zenodo.8256757>.
- Kopec, B. G.**, Klein, E., & Welker, J. (2023). Continuous water vapor isotopic ($\delta^{18}\text{O}$, δD , and d-excess) observations from 2021 Arctic cruise on United States Coast Guard Cutter Healy. *Arctic Data Center*. <https://doi.org/10.18739/A21N7XP2S>.

Kopec, B. G., Klein, E., Akers, P., Hyöky, V., Mustonen, K., & Welker, J. (2023). Arctic Water Isotope Network (AWIN) long-term water vapor observations, 2017-2022. *Arctic Data Center*. <https://doi.org/10.18739/A2XW47X8W>.

Kopec, B. G., Feng, X., Osterberg, E., Adolph, A., & Posmentier, E. (2022). Near surface snow isotopic observations from 2013 and 2015 snow pits at Summit, Greenland. *Arctic Data Center*. <https://doi.org/10.18739/A24J09Z82>.

Kopec, B. G., Klein, E., & Welker, J. (2022). Continuous seawater isotopic ($\delta^{18}\text{O}$, δD , and d-excess) observations from 2021 Arctic cruise on United States Coast Guard Cutter Healy. *Arctic Data Center*. <https://doi.org/10.18739/A2862BC9W>.

Kopec, B. G., Werner, M., Mattingly, K., Klein, E., Akers, P., Bailey, H., Bonne, J., Brunello, C., Mustonen, K., & Welker, J. (2022). Arctic Water Isotope Network observations, vapor transport, and storm track site connections for September-November 2019. *Arctic Data Center*. <https://doi.org/10.18739/A2JS9H884>.

Akers, P. D., Welker, J. M., & **Kopec, B. G.** (2020). Thule, Greenland, water vapor isotopes ($\delta^{18}\text{O}$, $\delta^2\text{H}$, d-excess) and meteorological data, August 2017 - August 2019. *Arctic Data Center*. <https://doi.org/10.18739/A20000151>.

Kopec, B. G., Feng, X., Osterberg, E., & Posmentier, E. (2019). Hydrogen and oxygen isotope ratio measurements for 15 meter Owen Ice Core, Summit, Greenland, 1977-2010. *Arctic Data Center*. <https://doi.org/10.18739/A21J9774C>.

Conference Abstracts

Welker, J. M., **Kopec, B. G.**, Klein, E., Muchowski, J., Vihma, T., Zieger, P., Paetzold, F., Lampert, A., Vlahos, P., Prytherch, J., Hyöky, V., Karlsen, T. (2024). Water isotope measurements contribute to the understanding of atmospheric, sea ice, ocean interactions during the ARTofMELT expedition, Fram Strait, spring 2023. *EGU General Assembly*.

Freitas., G., **Kopec, B. G.**, Adachi, K., Krejci, R., Heslin-Rees, Yttri, K. E., Hubbard, A., Welker, J., Ebell, K., & Zeiger, P. (2024). Determining the influence of fluorescent primary biological aerosol particles on low-level Arctic clouds. *EGU General Assembly*.

Kopec, B. G., Klein, E. S., Feldman, G. C., Pedron, S., Bailey, H., Causey, D. Hubbard, A. L., Marttila, H., & Welker, J. M. (2024). Arctic freshwater sources and ocean mixing relationships revealed with seawater isotopic tracing. *Ocean Sciences Meeting 2024*.

Huang, J., Pickart, R. S., Bahr, F., McRaven, L., Tremblay, J.-E., Michel, C., Jeansson, E., **Kopec, B. G.**, Welker, J. M., & Olafsdottir, S. Water mass structure and general circulation of Baffin Bay: observations from two shipboard surveys in 2021. *Ocean Sciences Meeting 2024*.

Kopec, B. G. (invited), Klein, E. S., Feng, X., Hyöky, V., & Welker, J. M. (2023). Tracing Arctic ice-ocean-atmosphere interactions through cruise-based water vapor isotopic observations. *AGU Fall Meeting*.

Puleo, P., Osburn, M. R., Tucillo, M., Akers, P. D., **Kopec, B. G.**, Welker, J. M., & Axford, Y. (2023). Developing a Proxy for Seasonality of Arctic Climate: $\delta^{18}\text{O}$ of Seasonal Aquatic Moss Growth. *AGU Fall Meeting*.

Brunello, C., Gebhardt, F., Rinke, A., Meyer, H., Mellat, M., **Kopec, B. G.**, Welker, J., & Werner, M. (2023). Stable water vapour isotopes as integrated tracers of moisture sources, transport and deposition during warm air intrusions in the Arctic. *EGU General Assembly*.

Kopec, B. G., Klein, E. S., Feldman, G. C., Pedron, S., Bailey, H., Causey, D., Hubbard, A. L., Marttila, H., & Welker, J. M. (2022). Tracing the drivers and impacts of amplified Arctic water cycle with coupled water vapor and seawater isotopic measurements. *AGU Fall Meeting*.

Dar, S. S., **Kopec, B. G.**, Vachon, R., Causey, D., Klein, E. S., Bailey, H., & Welker, J. M. (2022). Interacting climate oscillations modulate the long-term spatiotemporal variability of precipitation isotopes (^{18}O , 2H , d-excess) across the USA. *AGU Fall Meeting*.

Pedron, S. A., Redman, Z. C., **Kopec, B. G.**, Klein, E. S., Feldman, G. C., Czimeczik, C. I., & Welker, J. M. (2022). Western Greenland ice-land-ocean interactions: near-shore DOC ^{14}C ages and DOM composition along eastern Baffin Bay. *AGU Fall Meeting*.

Kirkpatrick, L., Osterberg, E., Winski, D., Kreutz, K., Introne, D., Ferris, D., Wake, C., **Kopec, B. G.**, Markle, B. (2022). Does the Mt. Hunter (Alaska) water isotope record preserve changes to storm tracks and Aleutian Low intensity over the past millennium? *International Partnerships in Ice Core Sciences 3rd Open Science Conference*.

Kopec, B. G., Klein, E., & Welker, J. (2022). Monitoring changing ice-ocean-atmosphere interactions and their impacts from a 2021 Arctic cruise. *AMS Conference on Polar Meteorology and Oceanography*.

Kopec, B. G., Klein, E., Pedron, S., Bailey, H., Causey, D., Hubbard, A., Martilla, H., Noor, K., & Welker, J. (2022). Seawater isotopic measurements ($\delta^{18}\text{O}$ and δD) reveal significant freshwater influxes into the Arctic seas. *EGU General Assembly*.

Kirkpatrick, L., Osterberg, E., Winski, D., Kreutz, K., Introne, D., Ferris, D., Wake, C., **Kopec, B. G.**, Markle, B. (2022). Does the Mt. Hunter (Alaska) water isotope record preserve changes to storm tracks and Aleutian Low intensity over the past millennium? *US Ice Core Open Science Meeting*.

Kopec, B. G., Werner, M., Mattingly, K., Klein, E., Noone, D., Akers, P., Bailey, H., Bonne, J., Brunello, C., Mustonen, K., Hubbard, A., Klove, B., & Welker, J. (2021). Sea ice controls on the Arctic hydrological cycle: Observational evidence from MOSAiC's Arctic Water Isotope Network (AWIN). *AGU Fall Meeting*.

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