

YARROW AXFORD, PhD

Research Associate
Institute of Arctic & Alpine Research
University of Colorado, Boulder CO 80309 USA
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EDUCATION

- Ph.D.*, 2007 **University of Colorado, Dept. of Geological Sciences**
Advisor: Gifford Miller
Dissertation: *Interglacial temperature variability in the high-latitude North Atlantic region inferred from subfossil midges, Baffin Island (Arctic Canada) and Iceland*
- M.S.*, 2000 **Utah State University, Dept. of Geology**
Advisor: Darrell Kaufman
M.S. thesis: *Late Quaternary glacier fluctuations and vegetation change in the northwestern Ahklun Mountains, southwestern Alaska*
- B.A.*, 1997 **Mount Holyoke College, Dept. of Geology**
summa cum laude

RESEARCH INTERESTS

Paleoclimate, paleolimnology, Quaternary paleoecology; glacier fluctuations; soils and climate change; past warm periods as analogues for future warming; contemporary Arctic environmental change; science policy

PROFESSIONAL APPOINTMENTS

- Oct 2008 - present* **Postdoctoral Research Associate**
University of Colorado, Institute of Arctic and Alpine Research, Boulder CO
- May 2007- Oct 2008* **Comer Postdoctoral Fellow**
University of Iceland, Earth Science Institute, Reykjavik
- May 2007- Jan 2008* **Research Assistant Professor**
Dept. of Geology, University at Buffalo
Supervised graduate student research. Served on five graduate student committees. Lectured in geoscience courses including Intro Geology and Quaternary Paleoclimate.
- Sept 2003- July 2006* **NSF-IGERT Graduate Fellow in “Carbon, Climate and Society”**
University of Colorado
Interdisciplinary training integrated natural sciences, policy and journalism. Fellows created and taught a semester-long undergraduate course on climate change.
- Fall 2002, Spring 2003* **Teaching Assistant, Introductory Geology**
University of Colorado
- July 2001 – Aug 2002* **Science/Technical Writer**
National Snow & Ice Data Center, Boulder CO

June 2000- July 2001	Technician U.S. Geological Survey, Earth Surface Processes Team, Denver CO Investigations of soils and paleovegetation of the Colorado Plateau and Mojave desert.
Fall 1998	Teaching Assistant, Geomorphology Northern Arizona University
Fall 1997	Teaching Assistant, Physical Geology Utah State University
Spring 1995, Spring 1996	Undergraduate Teaching Assistant, Environmental Geology Mount Holyoke College

GRANTS RECEIVED

2010-2012	NSF Arctic System Science (ARCSS) Co-PI, <i>Collaborative Research: Nonlinearities in the Arctic climate system during the Holocene.</i> With G. Miller and S. Lehman, University of Colorado.	\$685,013
2009	University of Iceland Research Fund <i>Environmental change in South Iceland: the last 3000 years.</i> With Á. Geirsdóttir, University of Iceland.	\$17,000
2008-2012	NSF Paleoclimate Perspectives on Climate Change (P2C2) PI, <i>Collaborative Research: Coupled glacial and lacustrine evidence for decadal- to millennial-scale variability in the climatologic Aleutian low, southern Alaska.</i> With D. Kaufman, Northern Arizona University. Total collaborative award amount \$556,365.	\$82,204
2008-2010	NSF Geography and Regional Science Co-PI, <i>The sensitivity of the Greenland Ice Sheet to climate change: Reconstructing the response of Jakobshavn Isbrae during the Little Ice Age and Holocene Thermal Maximum.</i> With J. Briner and B. Csatho, University at Buffalo.	\$161,064
2008	University of Iceland Research Fund <i>Climate history of South Iceland inferred from subfossil midges.</i> With Á. Geirsdóttir, University of Iceland.	\$23,000
2007-2008	Comer Science & Education Foundation Postdoctoral Fellowship <i>Midge-inferred temperatures from Iceland lakes: Defining an Icelandic response to abrupt climate change and climate periodicity in the North Atlantic.</i> With Á. Geirsdóttir, University of Iceland.	\$60,000
2007	University of Iceland Postdoctoral Research Grant	\$5500
2004	NSF International Programs <i>Supplement: Climate change lessons from Iceland – An interdisciplinary study of vulnerabilities and strategies.</i> With J. White (PI), A. Haag, E. McNie, and H. Rosner, University of Colorado.	\$30,575

PUBLICATIONS

* indicates supervised student.

Articles

- Axford, Y.**, Briner, J., Cooke, C.A., Francis, D.R., Michelutti, N., Miller, G.H., Smol, J.P., *Thomas, E.K., Wilson, C.R., and Wolfe, A.P. 2009. Recent changes in a remote Arctic lake are unique within the past 200,000 years. *Proceedings of the National Academy of Sciences* 106, 18443-18446.
- Kaufman, D.S., Schneider, D.P., McKay, N.P., Ammann, C.M., Bradley, R.S., Briffa K.R., Miller, G.H., Otto-Bliesner, B.L., Overpeck, J.T., Vinther, B.M., Arctic Lakes 2k Project Members (Abbott, M., **Axford, Y.**, Bird, B., Birks, H.J.B., Bjune, A.E., Briner, J., Cook, T., Chipman, M., Francus, P., Gajewski, K., Geirsdóttir, Á., Hu, F.S., Kutchko, B., Lamoureux, S., Loso, M., MacDonald, G., Peros, M., Porinchu, D., Schiff, C., Seppä, H., Thomas, E.). 2009. Recent warming reverses long-term Arctic cooling. *Science* 325, 1236-1239.
- Geirsdóttir, Á., Miller, G.H., **Axford, Y.**, and Olafsdóttir, S. 2009. Holocene glacier and climate history of Iceland. *Quaternary Science Reviews* 28, 2107-2118.
- Axford, Y.**, Briner, J.P., Miller, G.H., and Francis, D.R. 2009. Paleocological evidence for abrupt cold reversals during peak Holocene warmth in Arctic Canada. *Quaternary Research* 71, 142-149.
- Axford, Y.**, Geirsdóttir, Á., Miller, G.H., and Langdon, P.G. 2009. Climate of the Little Ice Age and the last 2000 years in northeast Iceland inferred from chironomids and other lake sediment proxies. *Journal of Paleolimnology* 41, 7-24.
- *Thomas, E.K., **Axford, Y.**, and Briner, J.P. 2008. Rapid 20th-century environmental change on northeastern Baffin Island, Arctic Canada inferred from a multi-proxy lacustrine record. *Journal of Paleolimnology* 40, 507-517.
- Wooller, M.W., Wang, Y., and **Axford, Y.** 2008. A multiple stable isotope record of Late Quaternary limnological changes and chironomid paleoecology from northeastern Iceland. *Journal of Paleolimnology* 40, 63-77.
- Axford, Y.**, Miller, G.H., Geirsdóttir, Á., and Langdon, P.G. 2007. Holocene temperature history of northern Iceland inferred from subfossil midges. *Quaternary Science Reviews* 26, 3344-3358.
- Briner, J.P., **Axford, Y.**, Forman, S.L., Miller, G.H., and Wolfe, A.P. 2007. Multiple generations of interglacial lake sediment preserved beneath the Laurentide Ice Sheet. *Geology* 35, 887-890.
- Briner, J.P., Michelutti, N., Francis, D.R., Miller, G.H., **Axford, Y.**, Wooller, M.J., and Wolfe, A.P. 2006. A multi-proxy lacustrine record of Holocene climate change on northeastern Baffin Island. *Quaternary Research* 65, 431-442.
- Reheis, M., Reynolds, R., Goldstein, H., Roberts, H., Yount, J., **Axford, Y.**, Cummings, L.S., and Shearin, N. 2005. Late Quaternary eolian and alluvial response to paleoclimate, Canyonlands, southeast Utah. *Geological Society of America Bulletin* 7, 1051-1069.
- Axford, Y.**, and Kaufman, D.S. 2004. Late glacial and Holocene vegetation and glacier fluctuations at Little Swift Lake, southwestern Alaska. *Arctic, Antarctic, and Alpine Research* 36, 139-146.
- Reynolds, R.L., Sweetkind, D.S., and **Axford, Y.** 2001. An inexpensive magnetic mineral separator for fine-grained sediment. *USGS Open-File Report 01-281*. Denver: U.S. Geological Survey. 7 pp.

For General Readership

Axford, Y. 2002. Scientists and reporters: Tips for scientists who talk with the media. *Geotimes*, November 2002. p. 38-39.

Selected Conference Abstracts

Axford, Y., Briner, J.P., Cooke, C.A., Francis, D.R., Michelutti, N., Miller, G.H., Smol, J.P., Thomas, E.K., Wilson, C.R., and Wolfe, A.P. 2009. Arctic environmental change recorded in lake sediments from

- Baffin Island, Canada: the past century compared with the past 200,000 years. AGU Fall Meeting (San Francisco, California).
- Ballantyne, A.P., **Axford, Y.**, Csank, A.Z., Eberle, J.J., Greenwood, D., Miller, G.H., Otto-Bliesner, B.L., Rybczynski, N., Sinninghe Damsté, J.S., and White, J.W.C. 2009. Warm Arctic surface temperatures during the Pliocene: potential feedback mechanisms. AGU Fall Meeting (San Francisco, California).
- Geirsdóttir, Á., Miller, G.H., and **Axford, Y.** Non-linear response to Holocene insolation forcing recorded by high-resolution lake sediment records across Iceland. AGU Fall Meeting (San Francisco, California).
- Young, N., Briner, J.P., and **Axford, Y.** 2009. Response of Jakobshavn Isbræ, west Greenland, to Holocene climate forcing. AGU Fall Meeting (San Francisco, California).
- Axford, Y.**, Ballantyne, A.P., Miller, G.H., Otto-Bliesner, B., Rosenbloom, N., and White, J.W.C. 2009. Model investigations of Arctic feedbacks in the middle Pliocene. Workshop on Pliocene Climate (Bordeaux, France).
- Briner, J.P., Stewart, H.A., Young, N., Csatho, B., and **Axford, Y.** 2009. Middle Holocene deglaciation and Little Ice Age advance of Jakobshavn Isbrae, Greenland. EGU General Assembly (Vienna, Austria).
- Geirsdóttir, Á., Miller, G.H., Larson, D., **Axford, Y.**, and Þórdarson, Þ. 2008. Differential response times of climate proxies during the last 2000 years reconstructed from Icelandic lake systems. AGU Fall Meeting (San Francisco, California).
- Axford, Y.**, Geirsdóttir, Á., Miller, G.H., and Langdon, P.G. 2008. Climate events from the early Holocene to the Little Ice Age in North Iceland: Paleolimnological reconstructions from midges and other proxies. EGU General Assembly (Vienna, Austria).
- Axford, Y.**, Geirsdóttir, Á., Miller, G.H., and Langdon, P.G. 2007. Climate in North Iceland over the past 2000 years: Inferences from midges and other lake-sediment proxies. AGU Fall Meeting (San Francisco, California).
- Geirsdóttir, Á., Miller, G.H., Flowers, G.E., Olafsdóttir, S., Olafsdóttir, K.B., and **Axford, Y.** 2007. Warm times and cold times during the last 2000 years reconstructed from Icelandic lake and marine sediments. AGU Fall Meeting (San Francisco, California).
- *Thomas, E.K., Briner, J.P., and **Axford, Y.** 2007. Late Holocene climate change inferred from varved proglacial lake sediments on northeastern Baffin Island, Arctic Canada. AGU Fall Meeting (San Francisco, California).
- Axford, Y.**, Miller, G.H., and Geirsdóttir, Á. 2007. 1300 years of climate and environmental change in northeast Iceland: Midges and other high-resolution lake sediment proxies from Stora Viðarvatn. 37th International Arctic Workshop (Skaftafell, Iceland).
- Booth, A., Wooller, M., and **Axford, Y.** 2007. Stable isotope analyses of northern Icelandic lake sediments: implications for Holocene climatic shifts. 37th International Arctic Workshop (Skaftafell, Iceland).
- Langdon, P.G., **Axford, Y.**, Holmes, N., and Caseldine, C.J. 2007. Holocene development of the Icelandic chironomid fauna: Palaeolimnological evidence from lakes in northern Iceland. 37th International Arctic Workshop (Skaftafell, Iceland).
- *Thomas, E.K., **Axford, Y.**, Briner, J.P., and Francis, D.R. 2007. A sub-centennial temperature record inferred from subfossil midges for the past two millennia on northeastern Baffin Island, Arctic Canada. 37th International Arctic Workshop (Skaftafell, Iceland).
- Axford, Y.**, Briner, J.P., Miller, G.H., and Francis, D.R. 2006. Not just the 8.2 event: Dynamic early Holocene climate in arctic Canada. AGU Fall Meeting (San Francisco, California).
- Axford, Y.**, Briner, J.P., Francis, D.R., and Miller, G.H. 2006. High-amplitude Holocene temperature changes on northeastern Baffin Island inferred from fossil midges. 36th International Arctic Workshop (Boulder, Colorado).
- Francis, D.R., **Axford, Y.**, Walker, I., Miller, G.H., Briner, J.P., and Wolfe, A.P. 2006. 130,000 years of chironomid remains: Climate change research at Arctic sites. 16th International Chironomid Symposium (Funchal, Madeira, Portugal).
- McNie, E., **Axford, Y.**, Rosner, H., and Haag, A. 2006. Exploring climate change issues in Iceland: The perils and promise of interdisciplinary research. 36th International Arctic Workshop (Boulder, Colorado).

- *Szymanski, J., Thomas, E.K., Briner, J.P., **Axford, Y.**, and Miller, G.H. 2006. Preliminary paleoclimate proxy data from high-resolution surface sediment cores from two Baffin Island lakes: A context for the Anthropocene. 36th International Arctic Workshop (Boulder, Colorado).
- *Thomas, E.K., Briner, J.P., **Axford, Y.**, and Miller, G.H. 2006. Comparing radiocarbon ages from aquatic moss macrofossils, humic acids and chironomid head capsules in arctic lake sediments. 36th International Arctic Workshop (Boulder, Colorado).
- Briner, J.P., Miller, G.H., **Axford, Y.**, Werner, A., Kaufman, D.S., Axford, T., and Cunningham, K. 2006. A compact percussion piston corer for surface sediments. 36th International Arctic Workshop (Boulder, Colorado).
- Axford, Y.**, Briner, J.P., Francis, D.R., Baker, G., and Miller, G.H. 2005. Midge-inferred temperatures from three interglacial periods in the Eastern Canadian Arctic. AGU Fall Meeting (San Francisco, California).
- Axford, Y.**, Miller, G.H., Wooller, M.J., Francis, D., Geirsdóttir, Á., Wang, Y., and Sauer, P.E. 2004. Chironomid $\delta^{18}\text{O}$ and δD as paleoclimate proxies: Progress and puzzles. AGU Fall Meeting (San Francisco, California).
- Briner, J.P., Francis, D.R., Michelutti, N., Miller, G.H., **Axford, Y.**, Wooller, M., and Wolfe, A. 2004. Multi-proxy lacustrine records of Holocene environmental change in Arctic Canada. Geological Society of America Abstracts with Program v. 36 (Denver, Colorado).
- Francis, D. R., Walker, I.R., Wolfe, A.P., Miller, G.H., Briner, J., and **Axford, Y.** 2004. Distribution of midge remains (Diptera: Chironomidae) in Baffin Island lakes and their use in paleolimnological reconstructions. North American Benthological Society Meeting (Vancouver, British Columbia).
- Wooller, M.J., Francis, D., **Axford, Y.**, Fogel, M.L., Miller, G.H., Walker, I.R., and Wolfe, A.P. 2004. Stable oxygen isotope analyses of chironomid head capsules preserved in arctic lake sediments – paleoenvironmental implications. 4th International Conference on Applications of Stable Isotope Techniques to Ecological Studies (Wellington, New Zealand).
- Briner, J.P., Miller, G.H., Francis, D.R., and **Axford, Y.L.** 2004. The Holocene thermal maximum on northeastern Baffin Island. 34th International Arctic Workshop (Boulder, Colorado).
- Axford, Y.**, Wooller, M.J., Francis, D., Miller, G.H., and Geirsdóttir, Á. 2003. Testing a new isotopic paleothermometer in a multi-proxy context: Chironomid $\delta^{18}\text{O}$ as a proxy for Holocene temperature change in Iceland. Geological Society of America Abstracts with Program v. 34 (Seattle, Washington).
- Geirsdóttir, Á., Miller, G.H., and **Axford, Y.** 2003. Holocene climate variability in NW Iceland derived from fjord and lacustrine sediment cores. XVI INQUA Congress Program with Abstracts (Reno, Nevada).
- Reynolds, R.L., Reheis, M.C., Neff, J., Goldstein, H., Yount, J., **Axford, Y.**, Roberts, H., Miller, M., Sanford, R., and Belnap, J. 2003. Geologic, ecologic, climatic, and land-use interactions in the high desert of the central Colorado Plateau (USA)—the past 40,000 years. XVI INQUA Congress Program with Abstracts (Reno, Nevada).
- Reheis, M., Reynolds, R., Yount, J., Roberts, H., Goldstein, H., **Axford, Y.**, and Shearin, N. 2002. Late Quaternary eolian history of the Needles Area of Canyonlands National Park, Utah: Dunes and dust. ICAR5/GCTE-SEN Joint Conference (Lubbock, Texas).
- Axford, Y.**, Kaufman, D.S., and Gregory-Eaves, I. 2001. Late glacial climatic reversal at Little Swift Lake, Ahklun Mountains, southwestern Alaska. 31st International Arctic Workshop (Amherst, Massachusetts).
- Axford, Y.**, Kaufman, D.S., and Gregory-Eaves, I. 2000. Lacustrine record of deglaciation in the Ahklun Mountains, SW Alaska; ice retreat during the Younger Dryas. 30th International Arctic Workshop (Boulder, Colorado).
- *Carey, K.R., **Axford, Y.**, and Kaufman, D.S. 2000. Major-element geochemistry and sediment provenance in a glacially influenced lake, northwestern Ahklun Mountains, SW Alaska. 30th International Arctic Workshop (Boulder, Colorado).
- Axford, Y.**, Kaufman, D.S., and Briner, J.P. 1999. Glacier fluctuations and paleoenvironmental change, northwestern Ahklun Mountains, southwestern Alaska--Preliminary results. 29th International Arctic Workshop (Seattle, Washington).

PROFESSIONAL MEMBERSHIPS

American Geophysical Union, Geological Society of America, American Quaternary Association

SCIENCE POLICY & COMMUNICATION EXPERTISE

Organizer, *Mini-course for Arctic Researchers: How to Work with the News Media*, Training course at the 38th International Arctic Workshop, March 2008

Fellow, Summer Policy Colloquium, American Meteorological Society, Washington DC, June 2007

Participant, Santa Fe Science-Writing Workshop, Ghost Ranch Santa Fe, Santa Fe NM, May 2004

PROFESSIONAL SERVICE

Co-convenor of technical sessions:

AGU Meeting December 2009: *Take it From the Top: Climate Variability in the Arctic and Sub-Arctic During the Holocene*

AGU Meeting December 2007: *The Last Two Millennia in the Arctic: A Long-Term Context for Present-Day Changes*

GSA Northeastern Section Meeting March 2008: *Lakes, Climate, and Environmental Change: Paleolimnological Studies of the Holocene and "Anthropocene"*

Journal article reviewer for *Quaternary Science Reviews*; *Quaternary Research*; *Journal of Paleolimnology*; *Palaeogeography Palaeoclimatology Palaeoecology*; *Arctic Antarctic and Alpine Research*; *Jökull* (Iceland); *Holocene*; *Climate of the Past*

Ad-hoc proposal reviewer for U.S. NSF; Netherlands Organisation for Scientific Research; Canadian Foundation for Climate and Atmospheric Sciences

Outreach: Public lectures on climate change and Arctic research (5 non-technical talks in 2007-2008)

FIELD WORK

Greenland	2009
Iceland	2002, 2003, 2004, 2005, 2007
Alaska	1996, 1997, 1998, 1999, 2004, 2006
Baffin Island, Canadian Arctic	2005
Colorado Plateau and Mojave Desert	2000, 2001

SELECTED HONORS AND AWARDS

2004, 2003	Outstanding Student Research citations, Geological Society of America (GSA)
2003	J. Hoover Mackin Research Award, GSA Quaternary Geology and Geomorphology Division
1998	Arthur D. Howard Research Award, GSA Quaternary Geology and Geomorphology Division
1997	Elected to <i>Phi Beta Kappa</i> and <i>Sigma Xi</i>