JOANNA YOUNG

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Research Interests

Estimating glacier mass loss in a changing climate; applied studies on impacts of glacier loss on downstream ecosystems and freshwater availability; environmental outreach; environmental identity development; STEM education.

Education

University of Alaska Fairbanks, USA — *March 2014 – May 2020*
Ph.D. candidate in Geophysics – advisor Dr. Erin Pettit
Dissertation topic – Alaska's changing glaciers: Integrated glaciological research for hydrological, ecological and environmental education applications
Fellow of the Resilience & Adaptation Program (UAF certificate program – completed)
Fellow of the Alaska Climate Adaptation Science Center
PhD Defense completed – graduated Spring 2020

University of Alaska Fairbanks, USA — *Jan. 2010 – Dec. 2013*
M.S. in Geophysics – advisor: Dr. Anthony Arendt
Thesis – Temperature index modeling of the Kahiltna Glacier: Comparison to multiple field and geodetic mass balance datasets

University of British Columbia, Vancouver, Canada — *Sept. 2003 – April 2008*
B.S. in Physics/Astronomy
B.A. in Philosophy of Science

Work Experience

University of Alaska Fairbanks – International Arctic Research Center — *Jan. 2020 - Present*

- Postdoctoral research fellow with the Alaska Climate Adaptation Science Center
- Responsibilities: glaciology research; presentation of results at scientific conferences; publication preparation

- Director – Inspiring Girls Expeditions (K-12 education programs), Alaska chapter (inspiringgirls.org; see education/outreach activities for description)
- Responsibilities: management of program coordinator (direct report); mentorship/training of all Alaska program instructors; presentation at science education workshops; risk management of field programs; collaboration with education researchers; fundraising for programming and overhead costs (through scientific, philanthropic and private grants)

University of Alaska Fairbanks – Geophysical Institute — *Jan. 2010 – Present*

- PhD research assistant with the Glaciers group – advisor: Dr. Erin Pettit

University of Alaska Fairbanks – Girls on Ice Alaska — *July 2011 – Dec. 2019*

- Co-founder and program lead for Inspiring Girls Expeditions – advisor: Dr. E. Pettit

University of Calgary (Alberta, Canada) — *June – Dec. 2008*

- Field assistant with the Climate & Cryosphere group – advisor: Dr. Shawn Marshall

- Research assistant with the Atmospheric Physics group – advisor: Dr. Ann-Lise Norman

Outreach & Climate Change Communication

- Co-founder and program lead for Girls on Ice Alaska**,** a free wilderness science K-12 program for underserved high school girls under the umbrella of Inspiring Girls Expeditions, as featured in National Geographic's Instagram. Participants learn about glaciers, ecosystems, mountaineering, art and leadership through scientific field studies on a 12-day expedition on a remote glacier. The Alaskan program (a sister program to the original Washington version) was created, developed and launched by three graduate students including myself in 2012. Responsibilities include publicity and outreach, curriculum development, expedition logistics, and ~$30,000 in grant fundraising each year. Girls on Ice Alaska hosted its eighth expedition in June, 2019.
- Director – Inspiring Girls Expeditions, Alaska chapter (inspiringgirls.org). This position includes directing the ongoing Girls on Ice Alaska mountaineering/glaciology program, Girls on Water seakayaking/marine biology program, co-hosting the Girls in Icy Fjords seakayaking/ecosystems program, and initiating the Girls in the Forest packrafting/forest ecology program (2021).
- One of 76 participants selected for the inaugural Dec. 2016 voyage of Homeward Bound, a leadership program and expedition in Antarctica for female scientists from around the world. This initiative was led by global leadership experts and included filmed faculty such as Dr. Jane Goodall and Dr. Sylvia Earle, and is the subject of a documentary film by Bunya Productions to be released in winter 2019. Homeward Bound has received significant press, with articles in Marie Claire and Forbes magazines, in which I am featured.
- Organizer and host of two-day Leadership Workshop for Early Career Women in Science at the University of Alaska Fairbanks, to pass on lessons learned from the Homeward Bound expedition to university community members. August 24-25, 2017.
- Organizer and host of two-day Mindful Leadership Workshop: Creating a Diverse and Inclusive UA, a workshop with the goal of improving work and study culture for all people at UAF. June 14-15, 2018.
- Film experience: scientist in the National Geographic IMAX documentary film Extreme Weather, now playing in museums and science centers globally. I was also a scientist filmed for Abenteuer Alaska, a German documentary which debuted in 2014 to a viewership of 8 million people. I have also been interviewed for a Canadian national news broadcast (CBC's The National) on glacier change in Alaska.
- Podcasts: I have been interviewed on my career path and Homeward Bound experience for podcasts by Expat Sandwich, which tells stories from global travellers, and My Home Planet, which highlights the work of people striving for a more sustainable future.

Awards for Academic Achievement

- Outstanding Student Presentation Award – Education division of the American Geophysical Union (AGU) Annual Fall Meeting, New Orleans, LA, USA, Dec. 2017.
- Kevin Engle Memorial Scholarship ($1000), for students with demonstrated success working with satellite data. Feb. 2016.
- Excellence in Geographic Information Systems Scholarship ($1000), for students undertaking spatial data analysis. July 2015.
- Friends of the University Women's Association Scholarship ($2000 & $1800), in recognition of service benefiting the university community. April 2015 & April 2018.
- Outstanding Student Presentation Award – Cryosphere division of the American Geophysical Union (AGU) Annual Fall Meeting, San Francisco, CA, USA, Dec. 2014.
- University of Alaska Fairbanks Geophysical Institute Outstanding Student Award. Feb. 2014.
- UAF Zelenka Award ($1,000), for dedicated graduate students in geophysics. May 2013.
- UAF Belon 2012 Scholarship ($4,455), awarded to outstanding graduate students in geophysics or physics. July 2012.

Funded Proposals

- Co-Investigator: Alaska Climate Science Center funding (**$15,000 - $25,000 per year from 2012 – 2020)** awarded to the Girls on Ice Alaska program (see Education & Outreach Activities) for STEM education for young women.
- Co-Investigator: Charlotte Martin Foundation funding (**$25,800** in 2016) awarded to Girls on Ice Alaska
- Co-Investigator: UAF College of Natural Science and Mathematics grant (**$2,500** each year), awarded to the Girls on Ice Alaska program. Feb. 2012, Feb. 2013, and April 2014.
- Co-Investigator: The North Face Explore Fund (**$2,500**), awarded to the Girls on Ice Alaska program. Nov. 2011.
- Principal Investigator: UAF Center for Global Change grant (**$6,932**), for expanding observations on an Alaska glacier to include a high-mountain network. April 2011.
- Principal Investigator: George Melendez Wright Climate Change Fellowship (**$17,240**), for a field-based study on the effects of climate change on a Denali National Park glacier. May 2010.

Peer-reviewed Publications

- **(in prep) Young, J. C.,** Arendt, A. A., Pettit, E. C., Hood, E. W., Liston, G., and Beamer, J. A changing hydrological regime: Trends in magnitude and timing of glacier ice melt and glacier runoff in a high latitude coastal watershed. *Water Resources Research.* (To be submitted Feb. 2020)
- **(in prep) Young, J. C.,** Carsten Conner, L. D., and Pettit, E. C. ``You really see it'': Environmental identity development through observing a climate change-impacted glacier landscape. Environmental Education Research. (To be submitted March 2020).
- **Young, J. C.,** Arendt, A. A., Hock, R. H., and Pettit, E. C. (2018). The challenge of monitoring glaciers with extreme altitudinal range: Mass balance reconstruction for Kahiltna Glacier, Alaska. *Journal of Glaciology*, 64(243), pp. 75-88.
- Gusmeroli, A., Arendt, A. A., Atwood, D. K., Kampes, B., Sanford, M. and **Young, J. C.** (2013). Variable penetration depth of interferometric synthetic aperture radar signals on Alaska glaciers: a cold surface layer hypothesis. *Annals of Glaciology*, 54(64), pp. 218-223.

Other Publications

- **Young, J. C.,** and Arendt, A. A. (2014). *Assessing the effects of changing climate on the Kahiltna Glacier using field, airborne, and satellite observations.* Alaska Park Science, 12(2), pp. 26-31.
- **Young, J. C.,** Arendt, A. A., and Hulth, J. (2011). *Notes on automated weather station measurements on the Kahiltna Glacier, Central Alaska Range, and a simple floating temperature stand design.* In Workshop on the Use of Automatic Measuring Systems on Glaciers: Extended Abstracts, IASC Workshop, March 2011, Pontresina, Switzerland.

Selected Recent Presentations

- *Alaska glacier mass balance: Integrated glaciological research for hydrological, ecological and environmental education applications.* USGS Annual Site Review for Alaska Climate Adaptation Science Center, at which USGS Director Dr. James Reilly was present. August 2018.
- *The Girls on Ice program: Improving perceptions of climate change and environmental stewardship by exploring a glacier landscape.* (Poster presentation; **Outstanding Student Presentation Award for Education Division**). Annual Geophysical Union (AGU) Fall Meeting, New Orleans, LA, Dec. 2017.
- *Spatially distributing a GRACE mascon solution across Gulf of Alaska glaciers.* (Oral presentation; **Outstanding Student Presentation Award for Cryosphere Division**). Annual Geophysical Union (AGU) Fall Meeting, San Francisco, CA, Dec. 2014.
- *Comparing and combining glacier mass balance methods at the basin scale in Alaska.* (Poster). AGU Fall Meeting, San Francisco, CA, Dec. 2013.
- *Temperature index modeling of the Kahiltna Glacier, and comparison to multiple field and geodetic mass balance datasets.* (Poster). Workshop on the Use of Wireless Sensor Networks, Kananaskis, AB, Canada, Aug. 2013.

- *Mass balance modeling of a large glacier with sparse ground observations, and comparison to three remote sensing techniques.* (Poster; **Award for Best Environmental Science Presentation**). National Meeting of the Experimental Program to Stimulate Competitive Research, Nashville, TN, Nov. 2013.

Glaciology & Field Experience

- *Juneau Icefield – April 2013 to Sept 2015*: Designed and led a field team in the helicopter- and snowmobile-supported deployment of a mass balance and weather station network on the Gilkey Glacier in Southeast Alaska, to help derive glacier mass loss from satellite and field data.
- *Gulkana Glacier, Eastern Alaska Range – June 2012, 2013 and 2014*: Guided a team of 9 teenaged girls on 8-day science expeditions to a remote Alaska glacier to learn about ice, climate change, mountaineering, and leadership, through the Girls on Ice Alaska program.
- *Eastern Alaska Range – April 2012*: Led the design and field deployment of a mass balance and weather station network on four glaciers in central Alaska. Project informed the feasibility of the high-profile (and now-discontinued) Susitna River hydroelectric dam project.
- *Kahiltna Glacier, Central Alaska Range – 2010/2011*: Led a field team on multiple ski-based expeditions to collect field data for quantifying recent glacier loss in Denali National Park.
- *Other (Alaska) – 2010/2011/2012:* Invited assistant for various coastal and interior glacier studies throughout Alaska (mass balance, ice thickness, and debris-cover studies).
- *Kananaskis, Alberta, Canada – 2008:* Assisted in accessing/maintaining a grid of backcountry meteorological stations monitoring climate conditions in the foothills of the Canadian Rockies.

Professional Organizations

- American Geophysical Union (since 2010)
- International Glaciological Society (since 2010)
- Association for Women in Science (since 2012)
- Earth Science Women's Network (since 2012)
- Association of Polar Early Career Scientists (since 2012)

Additional Training

- Participant on the inaugural Homeward Bound expedition to Antarctica – three-week leadership and strategic program to equip global women in science with stronger voices towards a more sustainable future. Dec. 2016.
- Selected for Northwest Climate Science Center 'Climate Boot Camp' week-long workshop for climate scientists interfacing between academia, policy, & resource management. Aug., 2015.
- EdX online course – 'Understanding Climate Change Denial.' June, 2015.
- National Science Foundation 'Science Messenger' workshops on science communication, July, 2013 and Nov., 2013. Selected to represent Alaska in 'Science Messenger Idol' competition.
- May 2012/May 2015/May 2017: Wilderness First Responder & CPR (re)certifications (Wilderness Medical Associates).
- March 2016 & March 2018: AIARE Avalanche Level I & Level II certifications.