Toolik Field Station Quarterly Newsletter Summer 2023

Season Updates

Summer is underway at Toolik Field Station!

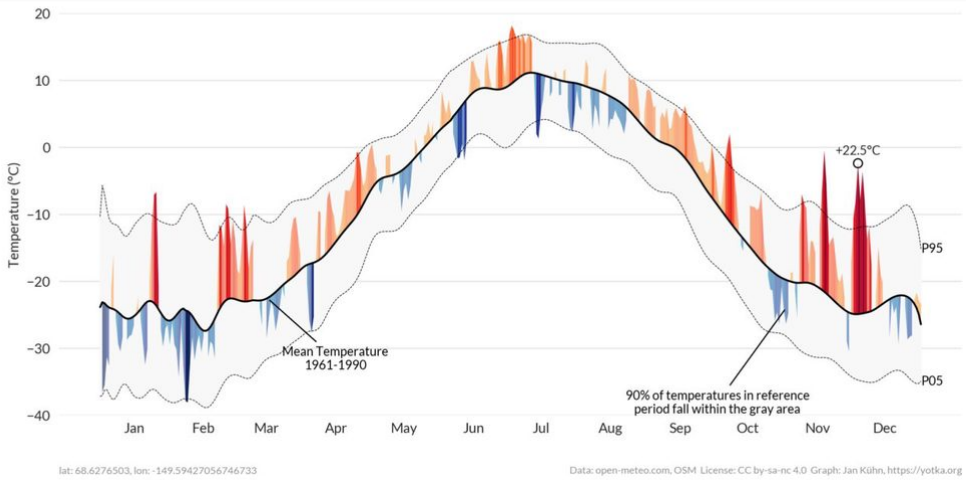
Between our naturalist Seth Beaudreault capturing both a multi-day wolverine feeding frenzy on the carcass camera and fox outfoxing a grizzly, EDC tech Mayra Meléndez witnessing a wolf chasing a caribou, and ITEX research tech Zach Ginn spotting a spider hunting on bistort, wildlife activity has been the theme of this summer so far.

Two grizzly cubs and sow feed on last year's berries in late June (left, Zach Ginn). A male Bluethroat skulking in breeding plummage (right, Seth Beaudreault/TFS).

Photo by Mayra Meléndez/TFS

A 5.7 cm rainstorm on July 8, the third largest since 1988, caused flooding on the surrounding streams and lakes, including the Toolik inlet.

Curious about how last year's temperatures compared to the historical mean? SEDC manager Amanda Young summarized 2022 temp anomalies in the graph below.



Mark your calendars for our summer User Forums

User Forums are scheduled for July 28 and August 25 at 7:30pm. Click each date below for a google calendar invite with zoom link if you'd like to attend virtually.

July 28 **August 25**

Summer construction update

Our new Washateria is open for use! Many thanks to Battelle-ARO team for their work in preparing the new building, which includes seven private shower stalls, five laundry machines, and an ADA-accessible ramp and shower.

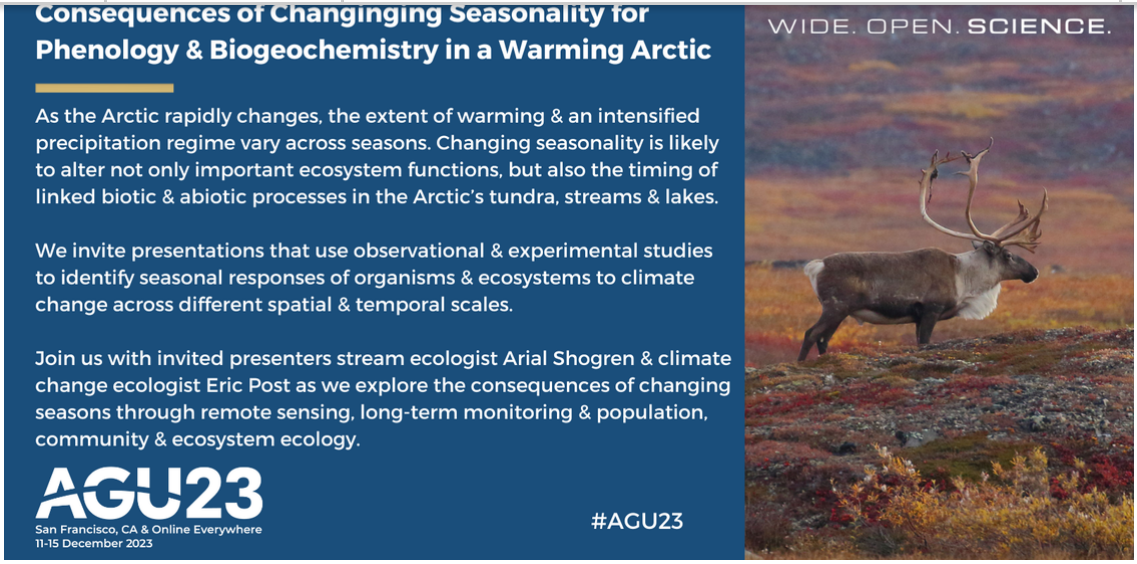
The Battelle team will return in August to complete a large project replacing our water intake system, including trenching a new intake line into Toolik Lake. If you have any questions or concerns about potential effects on your research, contact our program administrator Marin Kuizenga, mckuizenga@alaska.edu, 907-474-7641.

Read more about the upcoming construction

Toolik's Science co-Director, Syndonia Bret-Harte, and NSF program officer, Frank Rack, were on-site for the opening. Photo by Marin Kuizenga/TFS.

What's New at Toolik?

Going to the American Geophysical Union Annual Fall Meeting? Call for abstracts to our session:



We're convening a session at AGU on Consequences of changing seasonality for phenology and biogeochemical cycling in a warming arctic. We invite all within and outside of the Toolik community to submit abstracts on the seasonal responses of terrestrial or aquatic Arctic organisms and ecosystems to climate change across different spatial and temporal scales. **Submission are due by August 2 at 23:59 EDT.**
Photo by Seth Beaudreault/TFS.

Congratulations to our 2023 TUNDRA awardees!

This year, Toolik Field Station awarded three early career researchers* with our donation-based TUNDRA award, providing each project with ten days at the station and access to our suite of science support services. We are excited to welcome the 2023 TUNDRA recipients to Toolik this summer and look forward to seeing their research unfold.

Anna Eichert is a PhD student at the American Museum of Natural History, studying the evolutionary history of stoneflies and how this history can inform their potential response to climate change. This summer, Anna will collect stoneflies to assess the

Manpreet Kohli is an assistant professor at Baruch College in City University of New York and a research associate at the American Museum of Natural History. This summer, Manpreet will study the biodiversity of dragonflies and damselflies

Mingyue Yuan is a PhD student at Lund University in Sweden, studying element cycling by soil microbes. This summer, Mingyue will sample long-term fertilization plots at Toolik to compare the limiting resources for soil

physiological mechanisms they use to survive in frigid freshwater habitats.

species for a case study on the genetic consequences of climate change.

**Manpreet and Anna are completing a dual TUNDRA award project and will share the project's awarded user days.*

Toolik shares research with Alaskans and beyond through spring outreach

This spring, Toolik Field Station connected with over 1,900 people in a series of outreach events that highlighted the local and global importance of the Arctic tundra. Read about these events and learn how you can get involved on our website.

Also check out our Instagram and TikTok channels, where projects like Arctic RIOS, the Arctic LTER, Ecotypes, and Anaktuvuk Fire LTREB have done week-long takeovers of our accounts to share their research. Sign up if you're interested!

Toolik staff & friends Rowan McPherson, Kara Kornhauser, & David Watts lead a Fairbanks family through an activity on Arctic birds at the Creamer's Field Spring Migration Celebration in April. Photo by Amanda Young/Toolik Field Station.

Featured Project

Last year's TUNDRA awardees share research updates

Last summer, we welcomed our inaugural cohort of TUNDRA awardees. We reconnected with them this spring to hear their updates and learn about their preliminary findings.

Read the TUNDRA project updates

TUNDRA awardee Chelsea Smith hauls a sediment core onto the boat with help from her field assistant Kyle Smart.

BeAJEDI at Toolik: Belonging, Accessibility, Justice, Equity, Diversity, and Inclusion

Toolik resources for drafting your Plan for Safe & Inclusive Work Environments

Need inspiration for drafting your Plan for Safe and Inclusive Work Environments, a new requirement for some National Science Foundation proposals? We can help!

everyone at the station that you can incorporate into your plan. Learn about how we can support your efforts to foster a safe & harassment-free environment.

Learn more about the resources we offer

Toolik students begin new community gear closet to ease financial barriers of conducting fieldwork

This winter, Ruby An and Brandon Yokeley, who serve as grad student representatives on our Steering Committee, received a micro-grant from the Polar Science Early Career Community Office to create a Toolik Community Gear Closet. The closet, located in the Science Workshop, is growing weekly as more and more residents donate lightly used gear to supplement the new field clothing purchased with the grant. Be sure to stop in the next time you're up at Toolik!
If you'd like to donate items to the closet, contact Haley Dunleavy, hdunleavy@alaska.edu, 907-474-6407

Undergraduate research assistant Helen Brush schleps waders and rubber boots to the gear closet's new location, donated by long-time Toolik researchers Heidi Golden and Linda Deegan.

Art Corner

Welcome to our 2023 Artist in Residence!

Kristin Link, a natural history artist and scientific illustrator, will be in residence at Toolik from August 17-22. An award winning artist and instructor for the Inspiring Girls* Expeditions, Link has recently exhibited work at the Anchorage Museum, Homer's Bunnell Street Arts Center, and the Bonanza Creek LTER's In a Time of Change program.

While at Toolik, Link hopes to open new collaborations and deepen her understanding of the ecology of the Arctic as she interacts with our community. She also plans to create a collection of field sketches for an upcoming book and exhibit at the Museum of the North.

Our artist-in-residency program, a partnership with the Bureau of Land Management, is funded by donations to Toolik's general station support fund.

Toolik Community in the News

Was your Toolik-based research featured in the media? Or do you have an upcoming paper you'd like to share with the press?

Submit a media form to share an article or request a press release.

Congratulations to students Anna Eichert and Samira Umar on receiving honorable mentions for their National Science Foundation Graduate Research Fellowship applications!

- 21 February — New research findings confirm rapid warming and melting of Alaska's permafrost
- 10 March — The hope and despair of nature, through Nikki Lindt's eyes — and ears
- 13 March — Char-dcore Dolly Varden: Isolated Arctic Dwarfs (podcast)
- 17 March — Dozens descend upon Alaska to measure snow
- 21 March — Toolik launches climate education program for underserved students
- 23 April — As beavers gain foothold in Arctic Alaska, some see benefits in how they reshape the landscape
- 12 May — Arctic Research Open House to surprise and delight on May 18
- 25 May — Just Between Us Squirrels, There Might Be Trouble in the Arctic Dating Scene
- 28 May — It's cleanup time on the Dalton
- 5 June — Warming Arctic could change animal mating schedule
- 15 June — A Wolverine Feasts — on Fish?

Recent Toolik Community Research Publications

Contact us at uaf-toolik-communication@alaska.edu if you want to see your publication featured in our next newsletter. To view more community publications, go to our publication database.

- Know Before You Go: A community derived approach to planning for and preventing sexual harassment at oceanographic field sites, Ackerman et al.
- Seasonal variation in near-surface seasonally thawed active layer and permafrost soil microbial communities, Baker et al.
- Discharge, Groundwater Gradients, and Streambed Micro-Topography Control the Temporal Dynamics of Transient Storage in a Headwater Reach, Bonanno et al.
- Missing nitrogen source during ecosystem succession within retrogressive thaw slumps in Alaska, Buckeridge et al.
- Climate change is altering the physiology and phenology of an arctic hibernator, Chmura et al.
- Detecting Permafrost Active Layer Thickness Change From Nonlinear Baseflow Recession, Cooper et al.
- Insights into the tussock growth form with model–data fusion, Curasi et al.
- Acetoclastic archaea adaptation under increasing temperature in lake sediments and wetland soils from Alaska, Dellagnezze et al.
- Age matters: Older Alnus viridis ssp. fruticosa are more sensitive to summer temperatures in the Alaskan Arctic, Drew et al.
- Perspectives on environmental heterogeneity and seasonal modulation of stress response in neotropical birds, Gonzalez-Gomez et al.
- NDVI changes in the Arctic: Functional significance in the moist acidic tundra of Northern Alaska, Jesperson et al.
- Multi-Source Mapping of Peatland Types Using Sentinel-1, Sentinel-2, and Terrain Derivatives—A Comparison Between Five High-Latitude Landscapes, Karlson & Bastviken
- Plant succession on glacial moraines in the Arctic Brooks Range along a >125,000-year glacial chronosequence/toposequence, Kasanke et al.
- Snow and vegetation seasonality influence seasonal trends of leaf nitrogen and biomass in Arctic tundra, Kelsey et al.
- Understanding Strong Neutral Vertical Winds and Ionospheric Responses to the 2015 St. Patrick's Day Storm Using Data-Assimilated Aurora and Electric Fields, Lu et al.
- Microbial iron cycling is prevalent in water-logged Alaskan Arctic tundra habitats, but sensitive to disturbance, Michaud et al.

- Unrecorded Tundra Fires of the Arctic Slope, Alaska USA, Miller et al.
- Using structure to model function: incorporating canopy structure improves estimates of ecosystem carbon flux in arctic dry heath tundra, Min et al.
- Aerosol Optical Depth over the Arctic at Various Spatial and Temporal Scales, Mölders & Friberg
- Chlorpyrifos fate in the Arctic: Importance of analyte structure in interactions with Arctic dissolved organic matter, O'Connor et al.
- Distinct Growth Responses of Tundra Soil Bacteria to Short-Term and Long-Term Warming, Propster et al.
- Applying NIR and MIR spectroscopy for C and soil property prediction in northern cold-region ecosystems. Which approach works better?, Ramírez et al.
- Global estimates of surface albedo from Sentinel-3 OLCI and SLSTR data for Copernicus Climate Change Service, Sánchez-Zapero et al.
- Oxygen depletion and sediment respiration in ice-covered arctic lakes, Schwefel et al.
- Shrinking body size and climate warming: Many freshwater salmonids do not follow the rule, Solokas et al.
- GRiMeDB: the Global River Methane Database of concentrations and fluxes, Stanley et al.
- Hillslope erosional features and permafrost dynamics along infrastructure in the Arctic Foothills, Alaska, Stephani et al.
- The predictive power of phylogeny on growth rates in soil bacterial communities, Walkup et al.
- A systematic review of the trophic ecology of eight ecologically and culturally important fish species in the North American Arctic, Wight et al.
- Cardiac Rhythms and Variation in Hibernating Arctic Ground Squirrels, Zanetti et al.

To view all publications, visit our Zotero library.

Correction to the Battelle ARO helicopter town hall

"Battelle re-competed the Toolik helicopter support subcontract using expanded criteria developed in collaboration with NSF and the Department of the Interior Office of Aviation Services (DOI OAS)" should be revised to "Battelle re-competed the Toolik helicopter support contract using expanded criteria developed in collaboration with NSF, based on Department of the Interior Office of Aviation Services (DOI OAS) published standards" in order to be more accurate. This correction is intended to eliminate any potential confusion that the procurement was run through DOI OAS or that DOI OAS reviewed and evaluated proposals for the procurement.

Do you have an item to add to the quarterly newsletter? Send any additions or general suggestions/comments to Haley at hdunleavy@alaska.edu.

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Our mailing address is: