Bonanza Creek LTER Education & Training

Year in review and ways to collaborate

Elena Sparrow & Katie Spellman







BNZ Education seeks to:

Undergraduate research at CPCRW, Credit: Kevin Huo

- Inspire wonder and appreciation of the boreal forest and how it is studied.
- Increase access to and use of BNZ assets (e.g. personnel, sites, data) by students, teachers, and the public
- Improve inclusion and diversity of people who are receiving the benefits of BNZ assets (training opportunities, use of BNZ products, etc.)
- Prepare students for ecological and related careers

Bonanza Creek Education Programs







K12 & Schoolyard LTER

- Fostering Science
- Arctic and Earth SIGNs
- Community & Citizen
 Science Programs
- Day trips
- Public Events



Undergraduate & Graduate

- Graduate research and training
- Research Experience for Undergraduates
- Summer Climate Research Intensive
- NEW BNZ data in Undergraduate classrooms (Wagner et al. RCN-UBE Incubator)
- **NEW** _Grad Student training to work with communities in conducting Arctic research

Adults

- Arctic and Earth SIGNs
- Community & Citizen
 Science Programs
- PD Workshops for Educators
- In a Time of Change
- Public Events

BNZ Symposium • March 24, 2023 ₃

GLOBE / Arctic and Earth SIGNs



WORKSHOP

for community members, educators and youth advisors

CONNECT

with Elders, UAF & NASA scientists and educators interested in climate change

LEARN

how communities and youth can monitor conditions affecting food security

COLLABORATE

on climate change research through locally relevant science

TAKE ACTION

through a community stewardship project

APPLY by April 1 https:// arcticandearthsigns. alaska.edu/events

QUESTIONS Contact Christi Buffington cbuffington@alaska.edu

INSTRUCTORS Arctic and Earth SIGNs https://science.nasa.gov/ science-activation-team/ arctic-earth-signs

Partner

UAT is an AA/EO employer and educational institution and prohibits illegal discrimination against any individual www.alaska.edu/nondiscrimination/



CLIMATE CHANGE MY COMMUNITY THEME: FOOD SECURITY JUNE 19-23, 2023 • FAIRBANKS, ALASKA

APPLY AS a team of two or three who may include a community member, educator, knowledge holder and/or advisor to youth groups. At least one team member is required to enroll for a 3-credit 500-level course. Scholarships available.

SUCCESSFUL APPLICANTS receive travel, lodging and project planning support. Upon successful completion of the workshop, they receive GLOBE certification and monitoring supplies. Community teams will engage in Arctic and Earth STEM Integrating GLOBE and NASA (SIGNs) project (NASA Award No. NIX16AC52A). **Approach:** Use various ways of knowing and learning about the environment to help your community address climate change issues.

- Learning from elders and community
- Co-produced youth-centered projects
- Resource matchmaking (GLOBE, BNZ, NASA, etc.)
- Indigenous curricula supports
- Meet-the scientist sessions
- Community action and sharing.



GLOBE / Arctic and Earth SIGNs



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Opportunities

Support a team mid - project with a virtual visit and discussion with a group who has chosen a project related to your research

Align theme with priorities emergent from the SES Working group results and ANAC

Leverage GLOBE in proposals (it connects to almost everything!)



GLOBE Student Research Symposium







- K-12 Youth present their year-long research
- Poster review by 2 STEM professionals and student peer-review
- over 100 attendees last year from 14 communities across Alaska.
- This year, bigger and from whole NW US region.

Opportunities for BNZ:

- Be a reviewer
- Help lead an activity in your lab or building on the UAF campus



Summer Research Intensive



- 2022 was 6th year of the program
- 16 First generation college students from Santa Ana College MESA program and UAF Climate Scholars Program students
- 2 credits, 200-level

Opportunities:

- Serve as a group mentor for the week,
- hire an alum as an REU
- Create your own research intensive!

Education Research

Public Participation in Scientific Research Spectrum

Contractual

Community members identify a question and ask a scientist to design, conduct and report the research. The community assists in the interpretation of the results and leads the use of the data.

Contributory

Scientists identify a question and design the methods. Community members collect the data, and sometimes interpret and use the results. Scientists are responsible for the data analysis, use and publication.

Collaborative

Generally designed by scientists. Members of the public contribute data but also help to refine project design, analyze data, and/or disseminate findings.

Co-Created

Community members and scientists work together to design the project. At least some of the public participants are actively involved in most or all aspects of the research process.

Decreasing

LEVELS OF PUBLIC PARTICIPATION

Increasing

We tested two community & citizen science program design in two projects to determine how each design supports youth learning.





Fresh

Eyes



How do youth think the project is relevant to their communities?



Number of times code was applied

n = 49 youth



Sarah Clement, Katie Spellman, Laura Oxtoby 10

Do youth believe they can make a difference in their communities through these projects?



Do youth believe they can make a difference in their communities through these projects?



Graph: S. Clement



Co-created and contributory approaches have different outcomes.

The more agency in co-determing the questions we address with BNZ work (particularly the applied science questions) the more valuable it will be to the people who participate in or use our work.

