Education Outreach Program

Elena B. Sparrow, Katie Spellman, Christa Mulder, Dave Verbyla, Kenji Yoshikawa, Javier Fochesato, Cindy Fabbri

BNZ Education Outreach Program

- Arctic and Earth SIGNs (GLOBE)
- Arctic Harvest: Public Participation in Scientific Investigations
- Santa Ana Community College Mesa Research Immersion
- Fostering Science Camp

In a culturally responsive learning framework?

An intergenerational, hybrid citizen science model

Learn from elders, long-term residents, and scientists about signs and impacts of climate change.

SHARE

SHARE

Discover what youth and adults know

Identify key climate change issue for community

Brainstorm investigation and stewardship ideas

EXPLORE

Do culturally responsive activities to establish knowledge base

Talk with a NASA scientist

Select inquiry question

Identify aligning larger scale cit sci efforts (GLOBE, etc)

EXPERIMENT

Collaborate with a scientist & community to develop and implement investigation

EXPLAIN

Make sense of research by analyzing data and reviewing information from local experts, NASA data, and existing research

APPLY

Design and implement stewardship project to help community address the climate change issue

Spellman et al. In Revision. *Connected STEM Learning* (figure modified from Stephens 2003 and OLCG 2002)

Arctic & Earth SIGNs

Audience: Educators, community members, elders, and youth in rural and indigenous communities

Key activities:

- "Climate Change and My Community" course for community teams
- Culturally responsive learning supports
- Live conversations with NASA and Arctic scientists (online or in-person)
- Community project designed to investigate and address a pressing climate issue in their community

Arctic and Earth SIGNs Big Idea:

We can make a difference on climate change issues by listening, inquiring, observing, and then acting.

Kwethluk example

Team: Ket'acik & Aapalluk Memorial School students, teacher Whitney Spiehler, elder and teacher Pauline Morris.

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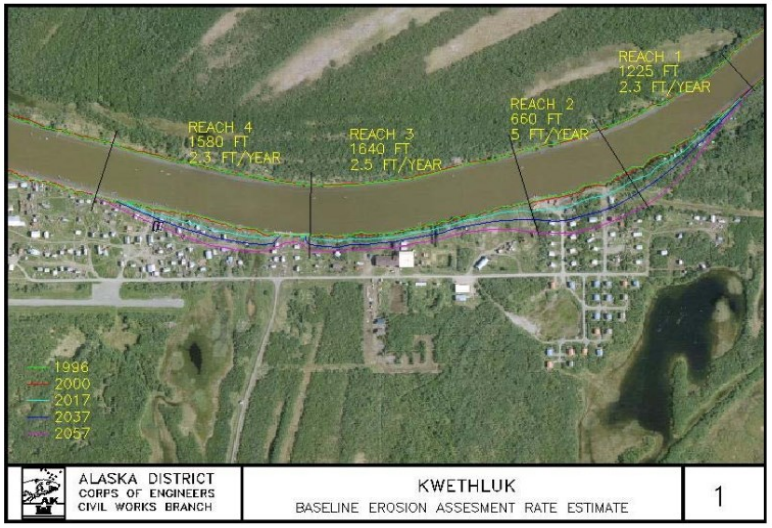
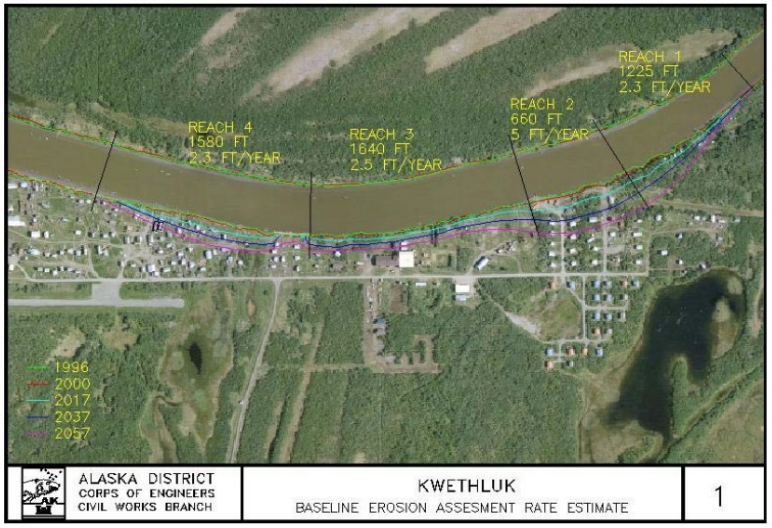


Community concern: Thawing permafrost and changing hydrology is causing people to lose their homes into the river.

Kwethluk example



Team: Ket'acik & Aapalluk Memorial School students, teacher Whitney Spiehler, elder and teacher Pauline Morris.

Local Investigation: What is the rate of erosion occurring and what soil and disturbance factors influence the rate?

Community concern: Thawing permafrost and changing hydrology is causing people to lose their homes into the river.

Project match: GLOBE soils and UCAR National Water Model (INCLUDES)


AUTHENTIC
Columbia

Stewardship Action

- Petitioned village council for no-wake zone
- Designing alternative anchoring system design

The Arctic and Earth SIGNs inquiry model

Kwethluk Project

Youth, teacher, elder, and community members determine focal issue:

Thawing permafrost and changing hydrology is causing people to lose their homes into the river.

EXPLORE

Learning about river flow, soils, permafrost, and climate change

Selected inquiry question: What is the rate of erosion occurring and what soil and disturbance factors influence the rate?

Matched with UCAR INCLUDES citizen science effort

EXPERIMENT

Collaborate with Dr. Sparrow & community to develop and implement GLOBE soils investigation

EXPLAIN

Synthesize local knowledge and analyze data to answer question

GLOBE data entry, National Water Model validation data

APPLY

Letter writing to village council for no-wake zone

Alternative anchoring system design

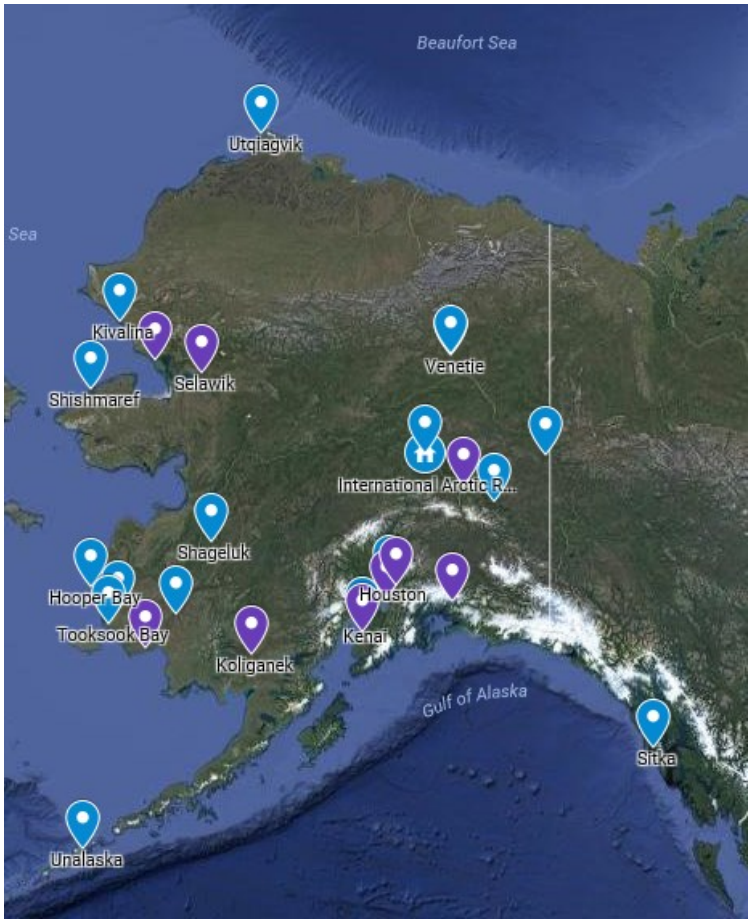
SHARE

Elder and community members shared stories of river and soil changes and the problem of losing homes to the river.

SHARE

Arctic and Earth Community Projects

- 17 projects for 2017-18 cohort
- Topics include:
  - fish habitat
  - weather changes
  - water quality
  - berry conditions
  - soil moisture and erosion
  - soil active layer monitoring



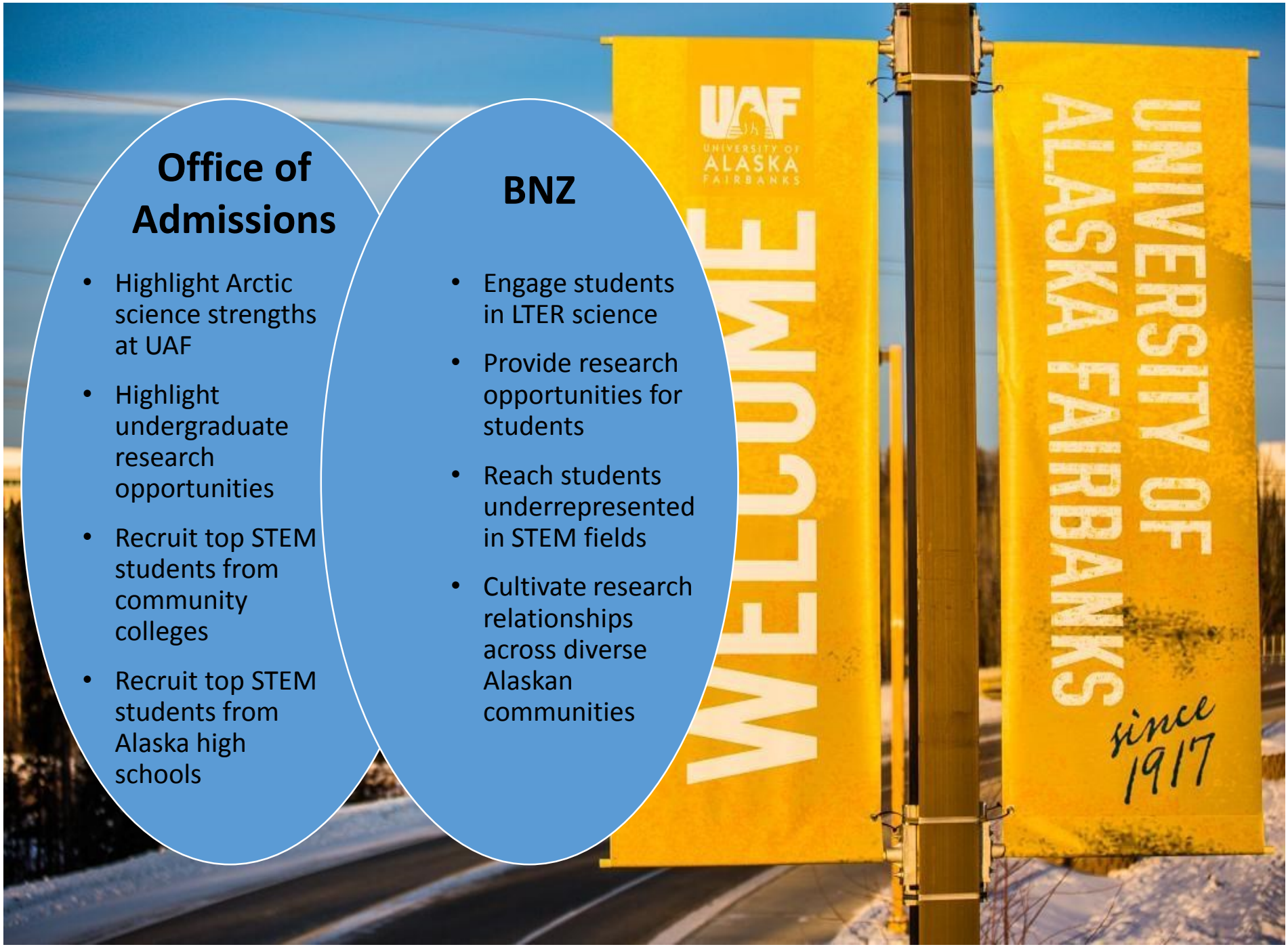
Community project locations

Pre-service teachers trained

Educator and community member workshops by the numbers 2017

ARCTIC & EARTH
STEM INTEGRATING GLOBE & NASA

Santa Ana Community College MESA Research Immersion



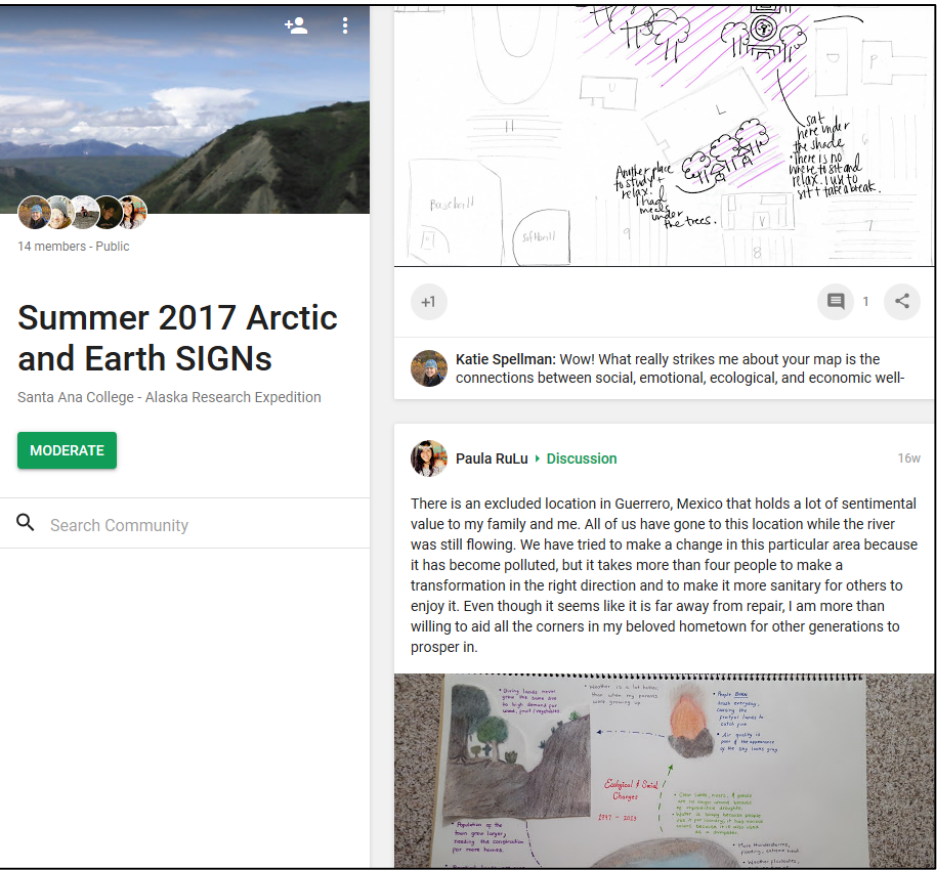
Office of Admissions

- Highlight Arctic science strengths at UAF
- Highlight undergraduate research opportunities
- Recruit top STEM students from community colleges
- Recruit top STEM students from Alaska high schools

BNZ

- Engage students in LTER science
- Provide research opportunities for students
- Reach students underrepresented in STEM fields
- Cultivate research relationships across diverse Alaskan communities

Climate Change
Personal and Arctic connections



Permafrost Tunnel with Santosh Panda

Exploring geothermal energy with Bernie Karl

Field methods and research design training on UAF campus

Research Mentors from IARC, GI, SNRE, INE

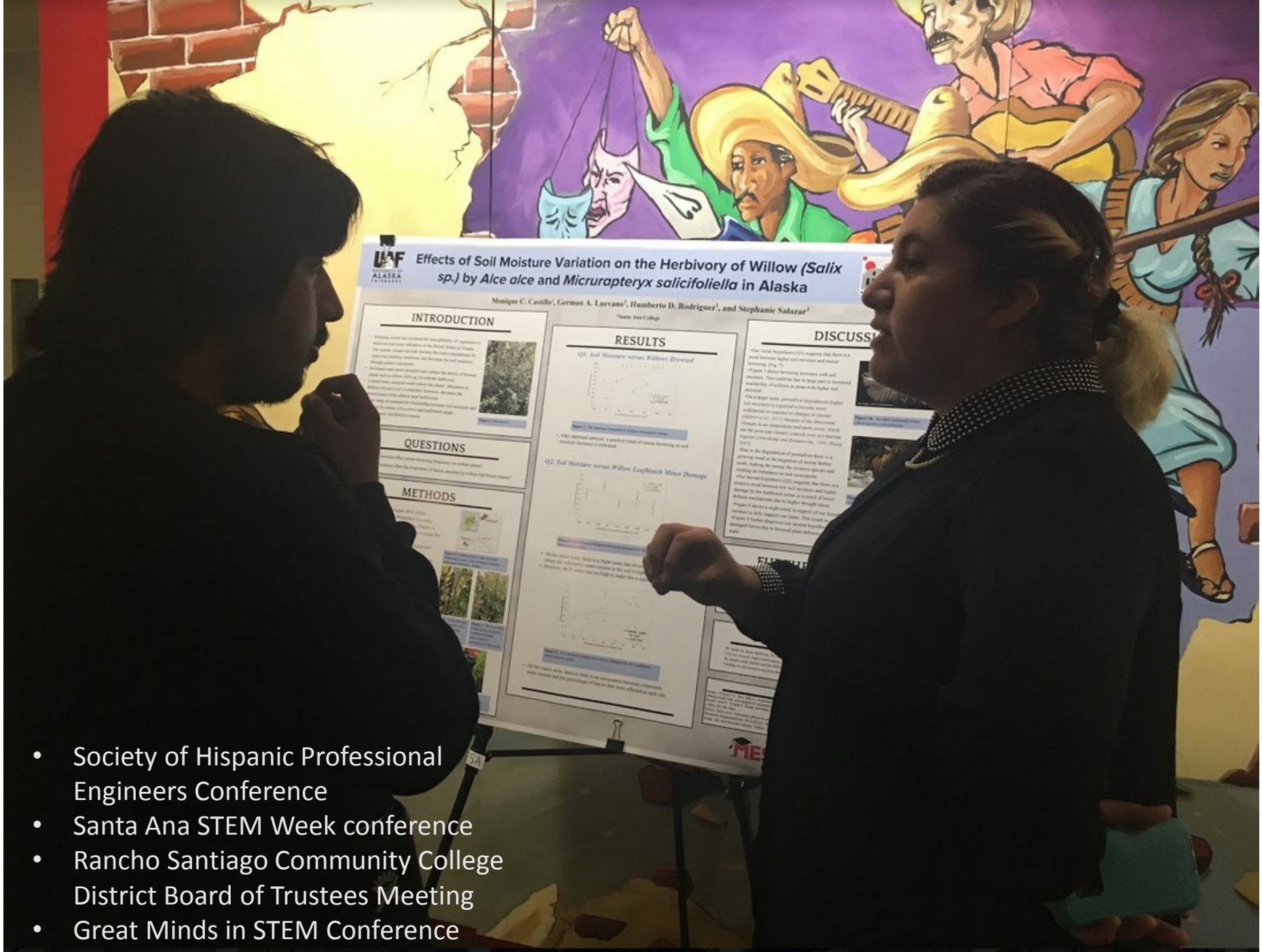
Field research at Caribou Poker Creek Research Watershed (BNZ LTER)

Soil sampling

Data analysis crash course with Katie

Meet and greet with Deans Layer and Goering and students

Project presentations



- Society of Hispanic Professional Engineers Conference
- Santa Ana STEM Week conference
- Rancho Santiago Community College District Board of Trustees Meeting
- Great Minds in STEM Conference

Amazing relationships

Fostering Science

- https://sites.google.com/alaska.edu/fosteringscience/2018-camp