Alaska ACE Education Programs

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Education, Outreach, Diversity & Workforce Development

- Undergrad, graduate students
- Early Career Scientists
- Outreach to Agencies
- State, National And International Reach
- Outreach to Communities

K-12 Teachers & Students
EOD Goals

- Engage Alaskan individuals, organizations & communities in conducting ACE research

- Effectively communicate the processes, results and benefits of ACE research to Alaskan citizens of all ages and levels of education and to the wider community
EOD Goals

• Encourage Alaskan students to pursue careers in STEM fields

• Strengthen the participation of members of underrepresented groups in ACE and STEM activities
Education Programs

• GLOBE Professional Development Workshops for K-12 Teachers
• Permafrost & Active Layer Monitoring Program
• Rural Alaska Honors Institute
• Alaska Rural Research Partnerships
• MapTeach program
Education Programs & Activities

• Alaska Native Engagement Grants
• Methods in Interdisciplinary Research course
• Resilience & Adaptation Program Fellowships
• Regional Outreach Workshops
• Alaska Science Fairs
• Community Science Fairs
• Educators’ Night at the Museum
# GLOBE Seasons and Biomes Professional Development

## Face-to-face Workshop Model

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<td>Science Content and Process</td>
<td>Introductio n and setting the stage</td>
<td>Atmosphere</td>
<td>Phenology - Budburst - Green Up - Green Down</td>
<td>Hydrology - Transparency - Temperature - Dissolved O₂ - Electrical conductivity - pH</td>
<td>Ice Seasonality - Freeze Up - Break Up Frost Tube</td>
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<td>GLOBE Model for Student Scientific Research</td>
<td>Observatio n</td>
<td>Asking a question</td>
<td>Data collection and preliminary analysis</td>
<td>Design and conduct an investigation – Putting it all together</td>
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<td>Best Teaching Practices in Science</td>
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<td>Earth as a system includes Human Dimension</td>
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Components of the Earth System
Basic GLOBE Measurement Protocols

- Cloud
- Temperature
- Precipitation

- Transparency
- Temperature
- pH
- Conductivity
- Salinity

- Budburst
- Green-up/green-down

- MUC
- Qualitative Land Cover Sampling
- Quantitative Land Cover Sampling
- Manual Mapping

- Field Characterization
- Bulk Density
- pH
- Temperature
- Gravimetric Moisture

www.globe.gov
Freshwater Ice Seasonality Investigation

Border ice formation – begins freeze-up  
Moat formation - begins break-up

River Ice Freeze-up, River Ice Break-Up, Lake Ice Freeze-up and Lake Ice Break-up Protocols, River Ice Glossary, Lake Ice Glossary, Field Guides, Site Definition Sheet, Data Entry Sheet
Teachers conducting an investigation.
Looking at Macroinvertebrates
Training Ground for Young Scientists in EO

Your task
- Now: postulate why they are different
- Field: compare and contrast the two main sub-Arctic ecosystem types
- Return to classroom; discuss our findings and revisit our hypotheses, and the ice cube question
Figure 2. Typical permafrost monitoring station apparatus and configuration. (a) The larger PVC pipe houses the ground temperature sensors and data loggers. The thinner PVC pipe houses an air temperature sensor mounted at 1 m above the ground surface. (b) Four-channel Onset data loggers store hourly temperature measurements for up to 15 months.
Community Based Permafrost/Active Layer Monitoring Program

200 Alaskan schools 2012
PALM Countries

Russia

Canada
China
Finland
Greenland
Mongolia
Norway
United States

Japan
Alaska Rural Research Partnership
Methods in Interdisciplinary Research

- Graduate course
- Social Science
- Physical Science
- Biological Science
MapTEACH (Mapping Technology Experiences with Alaska’s Community Heritage)

Map making and GIS studies with students
Linked with our Alaska ACE science
Improving Work-Life Satisfaction Workshop

University of Alaska, Fairbanks, Akasofu (IARC)
2013 Alaska EPSCoR Annual Meeting
October 24, 2013

Cynthia L. Simpson, M.Ed
Elena Bautista Sparrow, Ph.D.
Association for Women in Science Alaska Chapter Lunch Meeting
Collaborators

• Schoolyard Long Term Ecological Research (LTER) project at BNZ LTER
• GLOBE Program ( 112 partner countries and more than 100 GLOBE Partners within the U.S.)
• Alaska GLOBE Program
• One Tree Project
• Association for Women in Science, Alaska Chapter and National AWIS
Collaborators

- Monitoring Seasons Through Global Learning Communities (Seasons and Biomes) Project
- ARCSS Thermokarst Project
- MapTeach Program
- International Arctic Research Center Education Outreach Program
- School of Natural Resources and Agricultural Sciences Education Outreach
- Institute of Northern Engineering
Thank you.