



Education Outreach

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- **Pollinator Attraction Citizen Science program**
- **Research Experience for Teachers**
- **Professional development Workshops-Teachers**
- **GLOBE Seasons and Biomes Project**
- **Permafrost/Active Layer Monitoring Project**
- **One Tree & BAKLAP projects**
- **Science Integration with Arts and Humanities**



Workshops/Courses for Teachers

A professional development workshop model for teachers has been developed, tested and being used.

- June and July 2012
- GLOBE Annual Meeting, July 2012
- Salmon Project Workshop, Aug 2012



GLOBE Seasons & Biomes

More than 1400 teachers and trainers from 50 countries have been trained and close to 21,000 students have participated.

Alaska Native Plant Research Tree Phenology

Matanuska-Susitna
Career and Technical
High School





Matanuska-Susitna Career and Technical High School Tree Phenology Project

- *To teach high school students how to conduct a field based research project as a way to monitor climate change.*
- *To increase their interest in a science career.*

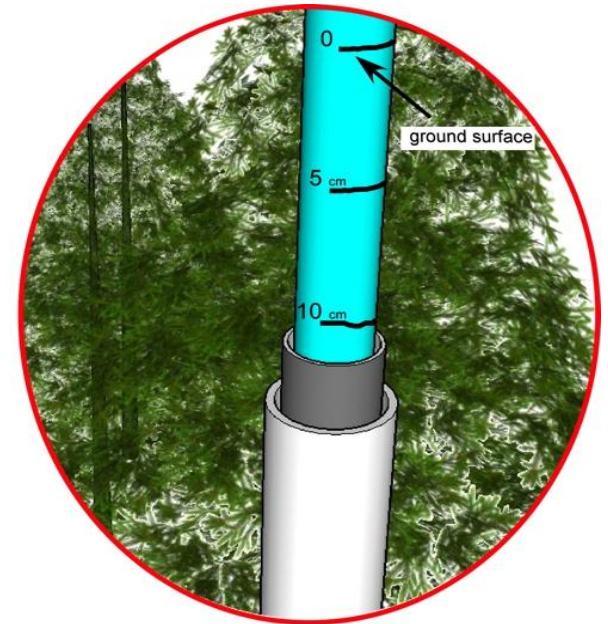
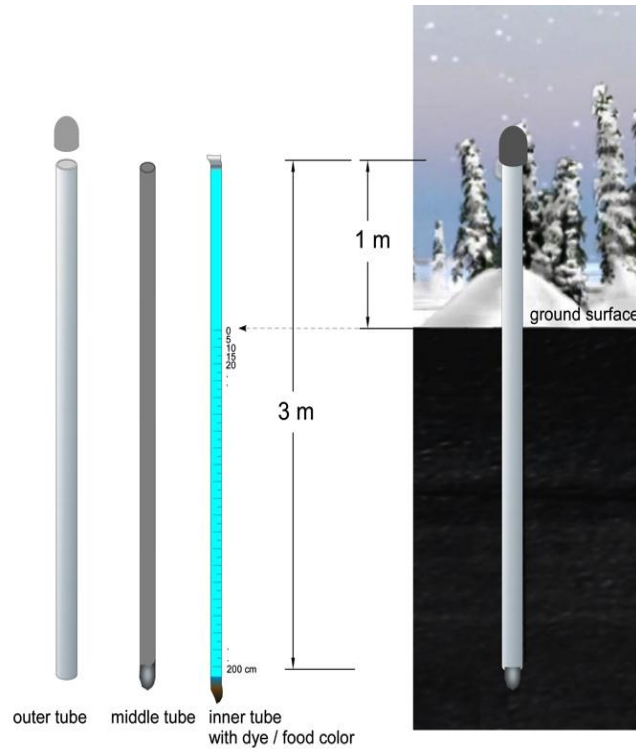


Permafrost /Active Layer Monitoring (PALM)

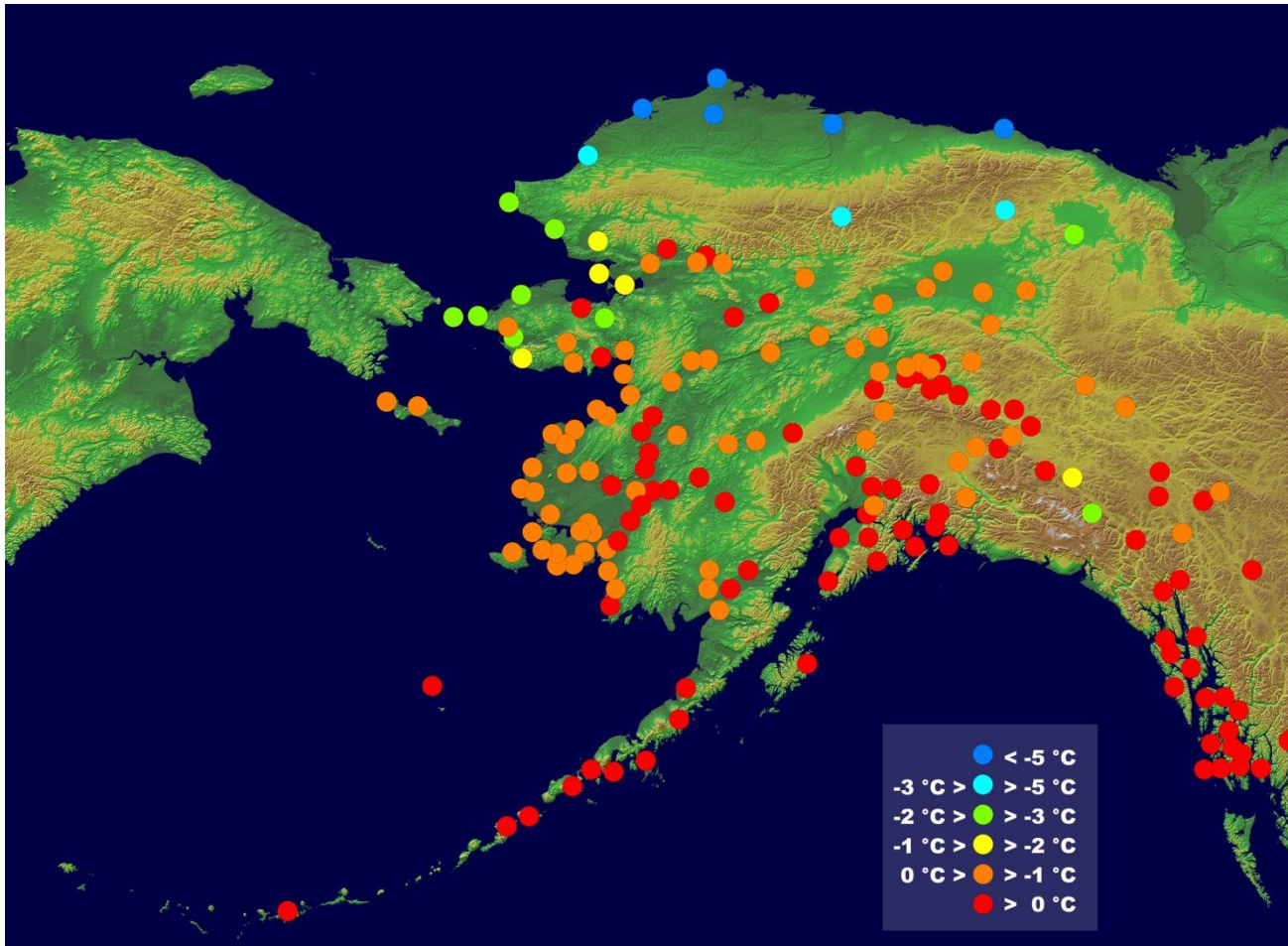


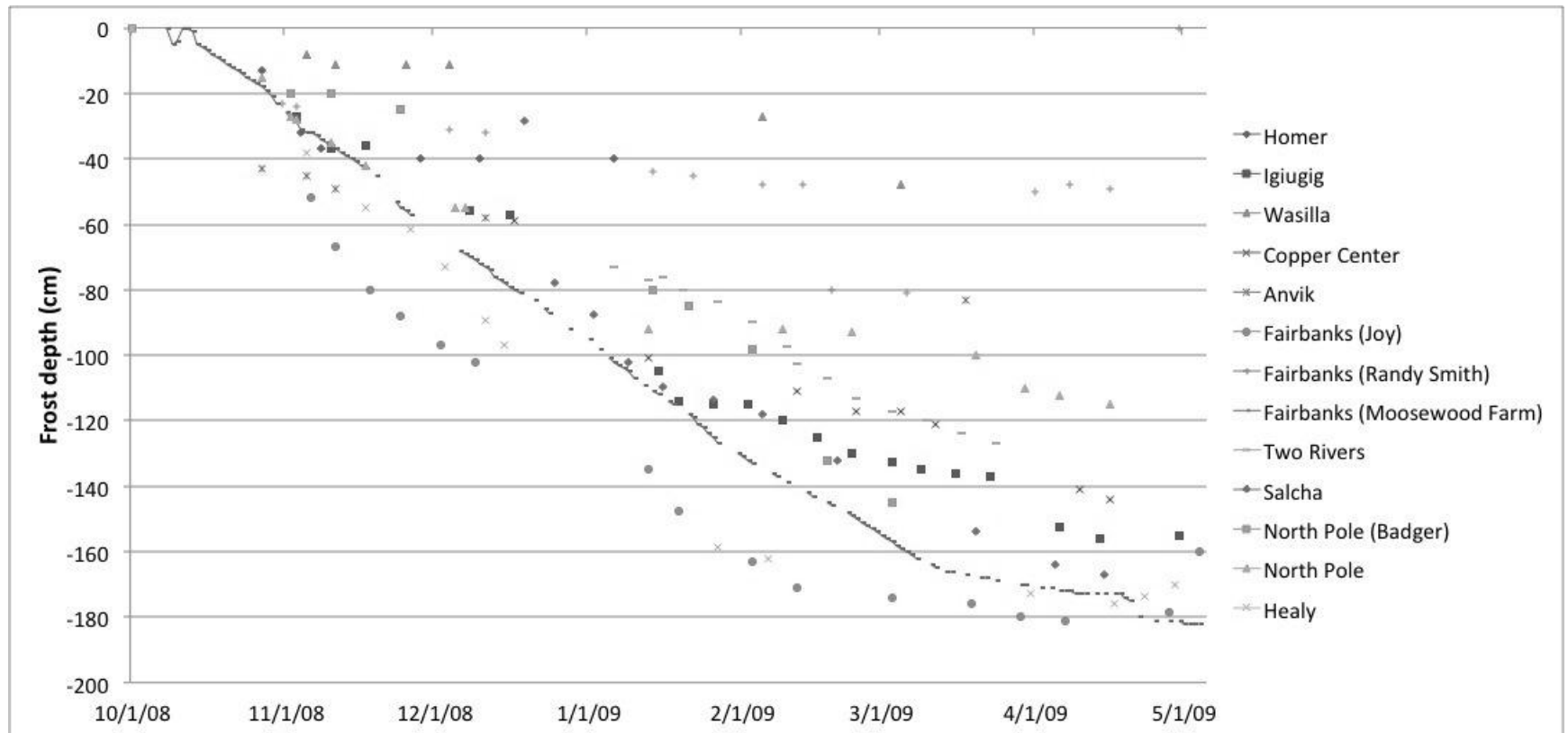
Figure 2. Typical permafrost monitoring station apparatus and configuration. **(a)** The larger PVC pipe houses the ground temperature sensors and data loggers. The thinner PVC pipe houses an air temperature sensor mounted at 1 m above the ground surface. **(b)** Four-channel Onset data loggers store hourly temperature measurements for up to 15 months.

Frost Tube

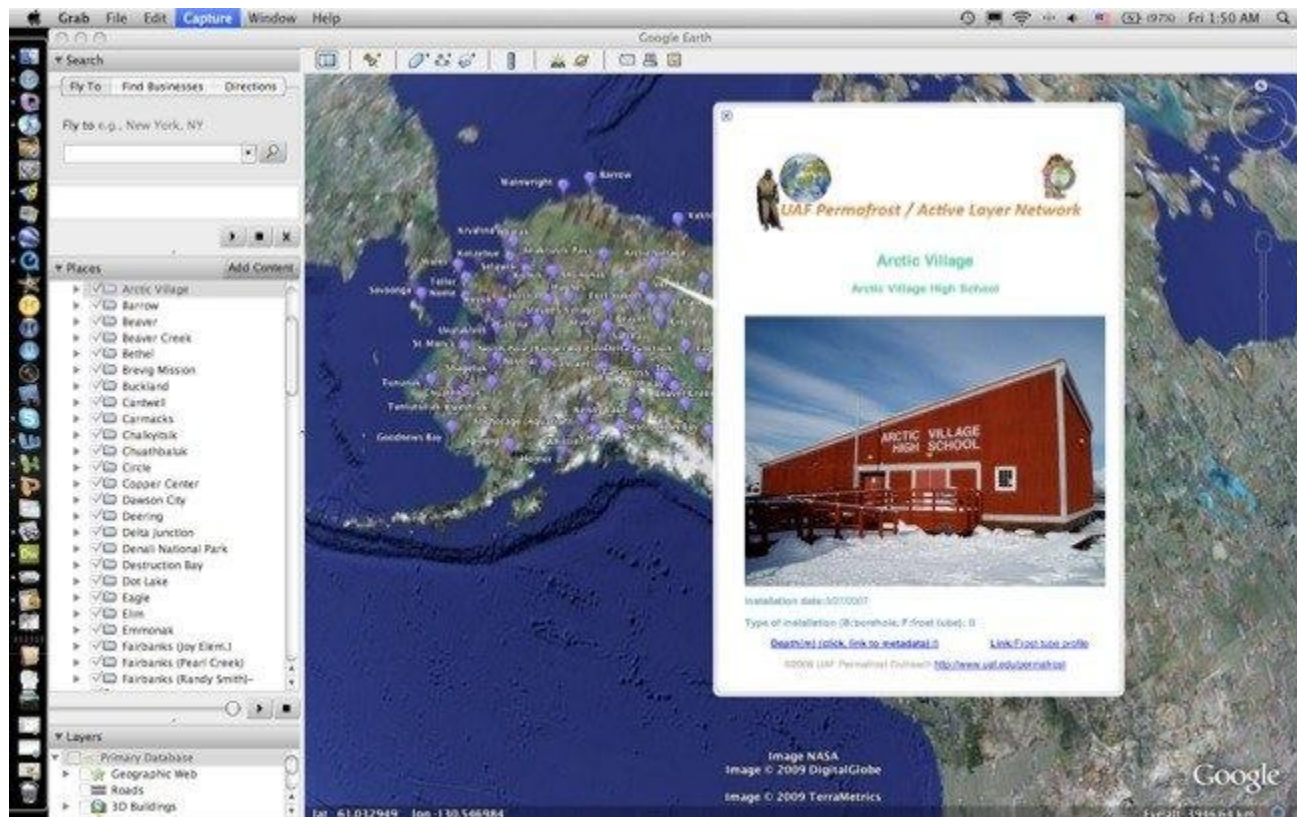


Monitoring sites and ground temperature distributions in Alaska





Frost depth measurements in some urban and rural Alaskan communities



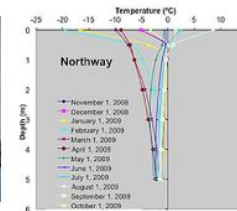


UAF Permafrost / Active Layer Network



Northway

Northway School



Installation date: 10/24/2007

Elevation: 521 m

Type of Installation (B:borehole, F:frost tube, C: ice cellar, P:surface only): BF

Period: 11/1/2008-10/31/2009

Borehole depth: 5 m, Mean surface temperature: -4.78 °C

Mean annual ground temperature: -1.63 °C at -5 m depth

Meta file: [soil profile & Metadata](#)

Download: [Monthly Data](#) or [Hourly Data](#)

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PALM Countries



Russia



Japan

Canada
China
Finland
Greenland
Mongolia
Norway
United States



One Tree – A STEAM Project

Boreal Alaska -- Learning, Adaptation and Production (BAKLAP) project



**Partnership between the School of Natural Resources and Agricultural Sciences,
Alaska Department of Natural Resources and the Fairbanks North Star Borough School District**



Science Integration with Arts and Humanities



BNZ scientists Terry Chapin and Teresa Hollingsworth field questions from artists and scientists at CPRW
(Photo by Mary Beth Leigh)



"Spruce Smoke",
fiber art by Ree Nancarrow

Alaska Fire Science Consortium

A JFSP Knowledge Exchange Consortium



IN A TIME OF CHANGE:
The ART of FIRE



A MULTIDISCIPLINARY PROJECT INTEGRATING ART, FIRE SCIENCE AND MANAGEMENT IN ALASKA

AUG. 3 - SEPT. 3, 2012

PROFESSIONAL ART EXHIBIT
BEAR GALLERY, ALASKA CENTENNIAL
CENTER FOR THE ARTS, PIONEER PARK
Featuring original works by Alaskan artists:
SARAH DeGENNARO • AMANDA ELLIS
JESSIE HEDDEN • YASUNARI IZAKI
ERINN KATHRYN • PHIL MARSHALL
JENNIFER MOSS • REE NANCARROW
HANNA STEVENSON
Curated by KARIN FRANZEN

COMMUNITY ART SHOW
ALASKA PUBLIC LANDS
INFORMATION CENTER OFFICE,
MORRIS THOMPSON
CULTURAL CENTER
Featuring works by the fire management
community and the public

**LECTURES/DISCUSSIONS WITH ARTISTS,
FIRE SCIENTISTS AND FIRE MANAGERS**
MORRIS THOMPSON
CULTURAL CENTER
WEDNESDAYS, AUG. 8, 15 AND 22, 7 P.M.

STUDIO TOUR
POLHAVN WOODFABRIK SHOP
AUG. 4, 12-4 P.M., 1300 SKYLINE DRIVE

FIRST FRIDAY RECEPTIONS:
AUG. 3, 5-7 P.M. (BOTH VENUES)

www.frames.gov/afsc/artoffire



Mary Beth Leigh
and Sarah Trainor
Jennifer Northway
Karin Franzen



Bringing BNZ Research to Faith Based Groups

- One People, One Earth - Faith and Stewardship Conference in Fairbanks— Terry Chapin
- Glenn Juday – lecturer at the Oxford Catholic Chaplaincy, in the 'God and the Lab' series, chaired discussion with leading UK conservation biologists and St. Benet's theologians on the same subject



Bringing BNZ Research to Faith Based Groups

- Juday opened the King's College Sustainability Series for Lent term, addressing a fixed group of scholars interested in sustainability issues, hosted by the Provost of King's College
- Juday- invited speaker for the Climate Histories Network , & discussion leader on the state of knowledge about boreal environmental processes, challenges in communication, and implications for practical application, Centre for Research in the Arts, Social Sciences and Humanities and faculty in sustainable engineering.



Thank you

