

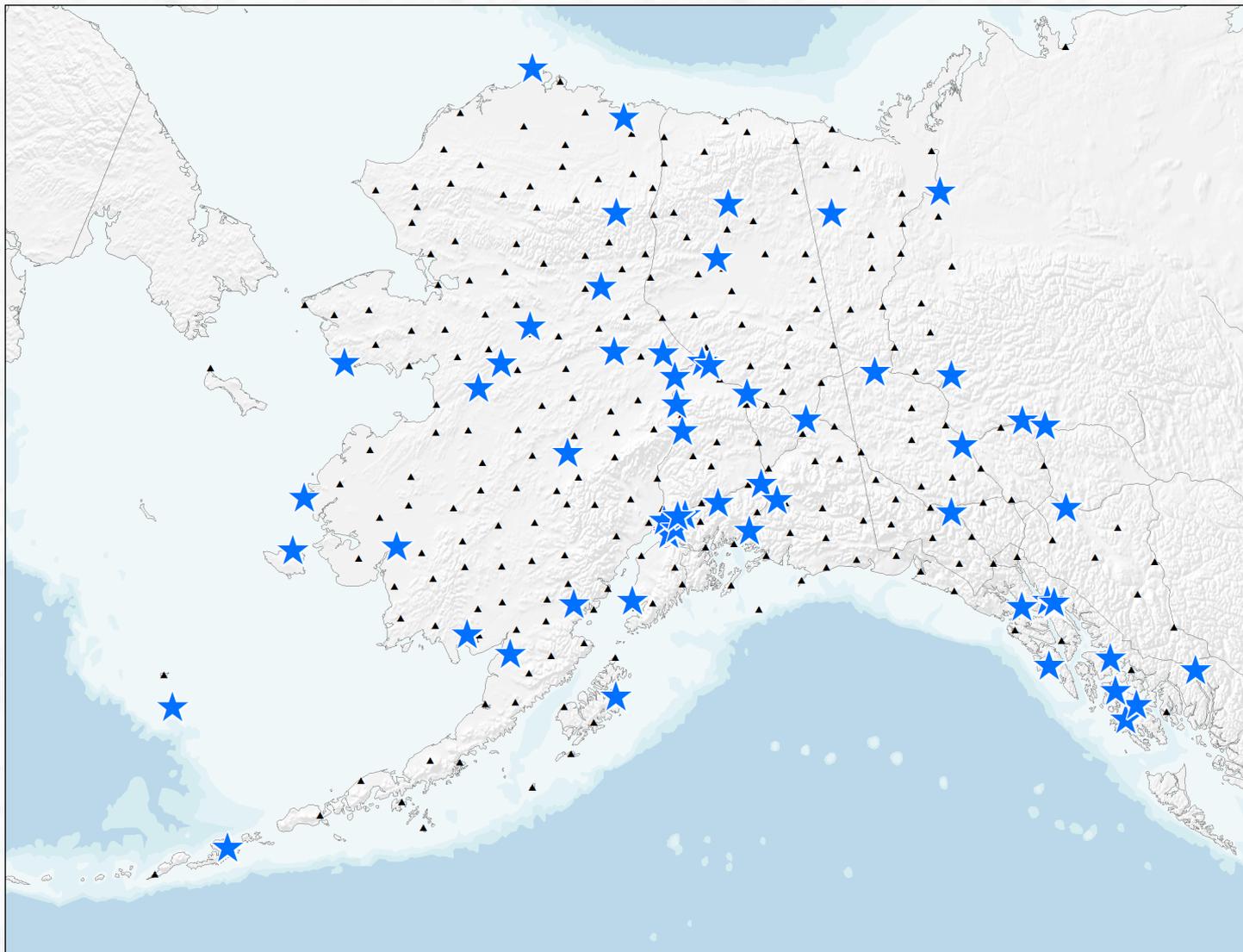
Outreach and Public Impact of TA Deployment in Alaska and Western Canada

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Alaska Earthquake Center



Communities Directly Impacted

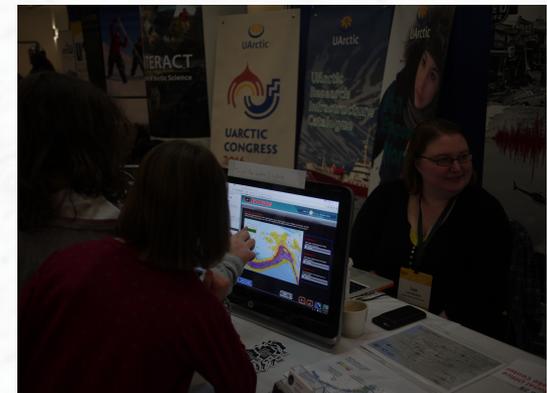


Regionalized Content

Alaska specific Active Earth content, available online and kiosks in state



Informational Brochures with 12 regional inserts



Regional Posters

EarthScope in Selkirk First Nation

What is EarthScope?

EarthScope is a community of scientists that conducts research using data from instruments that measure motions of Earth's surface and record seismic waves. The National Science Foundation provides funding for EarthScope, observing facilities like the USArray Transportable Array.



Since 2003, USArray has installed a network of more than 2,000 high-quality, portable seismic stations at temporary sites across the Lower 48 and southern Canada. The earthquake data analyzed from these sites are analyzed to produce high-resolution images of Earth's interior and to understand the origin and characteristics of earthquakes and earthquake faults.

In 2013, USArray began placing these temporary seismic sensors in approximately 200 locations in Alaska and western Canada. This process will take time to lay near to complete. A station spacing of 80 km (50 miles) will enable scientists to view new insights into the earthquake process and generate 3-D images of Earth's interior.

To view the status of the Transportable Array and to learn more about the project visit www.usarray.org/ta/ta or www.earthscope.org.



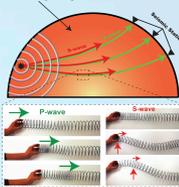
The Pelly Crossing area is characterized by rounded and rolling hills, plateaus, and broad valleys surrounded by higher mountain ranges. Convergence of tectonic plates forced land masses from the west to attach to North America as the continent merged with offshore volcanic islands.

Plates to the south began to move to the northwest along the Tintina Trench. By the time this massive shift was over, rocks once located in northeastern British Columbia had come to rest where the Pelly Mountains stand today.

Once your local station is installed, view live recordings at <http://usarray.sels.sc.edu/>
Your local station's ID is: M30M

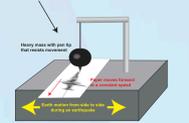
How are earthquakes measured?

Earthquakes release energy in all directions. Scientists measure this energy as waves traveling through the Earth.

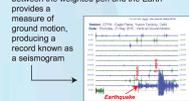


P-waves travel in a pushing motion, and are the fastest seismic waves.
S-waves travel in a shaking motion, causing them to be slower, but higher in energy.

A seismometer measures movement of the earth. Simple seismometers work by hanging a weighted pen on a spring attached to a frame that moves along with the Earth's surface.

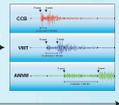


As the earth moves, the relative motion between the weighted pen and the Earth provides a measure of ground motion, producing a record known as a seismogram.



Learn More www.iris.edu/hq/inclass/animation/seismograph_vertical

Scientists know how fast these waves travel from laboratory experiments. The seismograms here show the 2 types of waves.



You can use triangulation to determine an earthquake's location using three stations.



Learn More www.iris.edu/hq/inclass/fact-sheet/how_are_earthquakes_located

How is a Transportable Array seismometer installed?



A team of field engineers will construct the borehole 1-5 meters (3-15 feet) deep.

A PVC or steel casing is placed into the hole.

A trench is then dug from the hole to the electronics enclosure.

The instrument is gently placed down into the hole and wired to electronics.

A lightweight portable drill rig was specifically developed for the remote and rugged nature of installing seismometers in Alaska and Canada.



Many locations require helicopters to sling equipment into position.

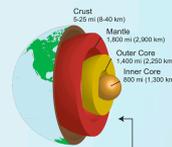
Real-time data is transmitted through radio, cellular, broadband or satellite systems to the EarthScope data center.

At remote locations a fiberglass tent fitted with solar panels is placed ~3 meters from the sensor. The enclosure houses batteries and communications electronics.

The overall footprint of the station is about 3 meters by 5 meters (10 x 15 feet).

To reduce interference from surface vibrations (cars, wind, etc) and to protect the sensor, the seismometer is placed 1 to 5 meters (2-15 feet) below the surface.

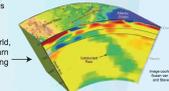
How is earthquake data used?



Tectonic plates slide past, push beneath or pull apart from each other. Earthquakes occur at these boundaries and help scientist understand what happens there.

Earth's interior is comprised of multiple layers with varying thicknesses. The outermost layer, the crust is broken into pieces known as tectonic plates.

Scientists will use earthquakes from all over the world, recorded on Transportable Array instruments, to learn more about Earth's structure using a method of imaging called tomography.



Learn More www.iris.edu/hq/program/education_and_outreach/animations/7

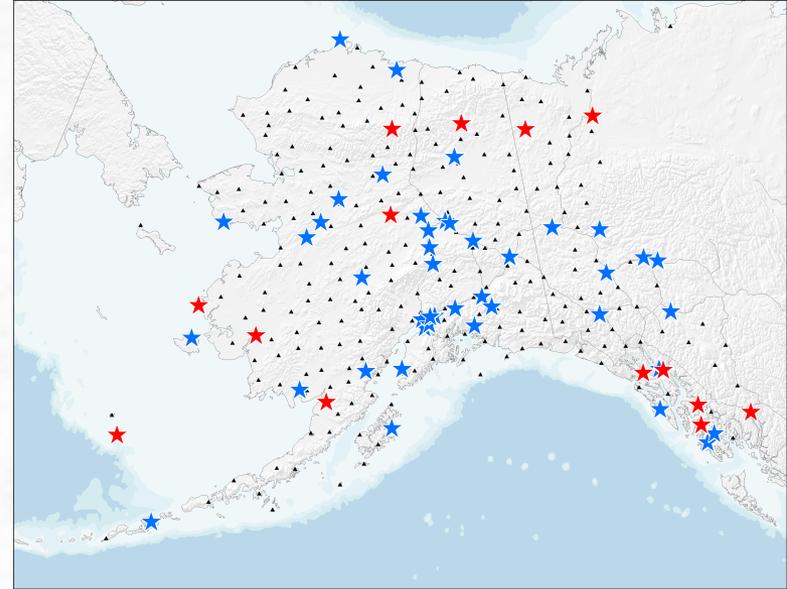
As earthquake waves travel along the surface of the Earth, they cause the ground to move. You generally don't feel these waves because the motion is only a few millimeters.

The ground motions can be captured and displayed as a movie helping scientist understand more about how earthquake energy travels across North America.

Upward ground motions are red, downward are blue.



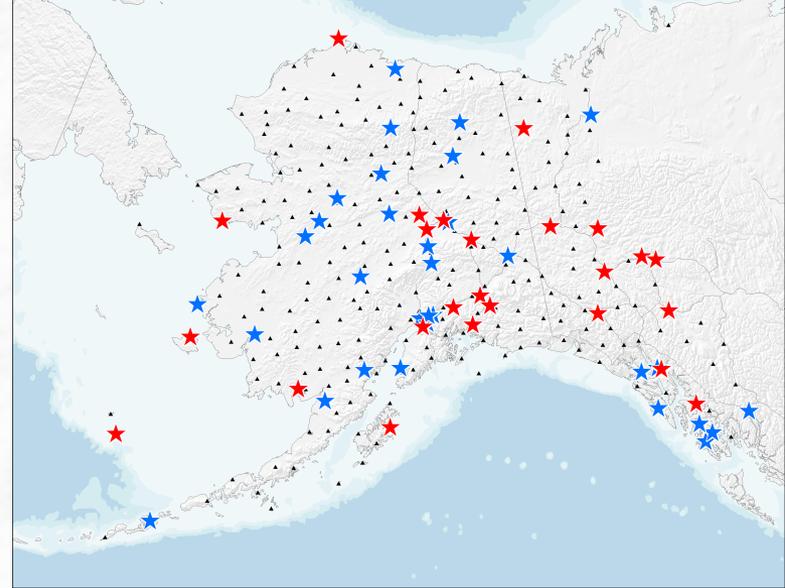
Learn More www.iris.edu/hq/program/education_and_outreach/visualizations



14 Communities in Alaska and Western Canada received posters with a content box tailored to their region.



Community Visits, Classroom and Public Lectures



← Yukon Territory

↓ Glacier View

↑ Dillingham

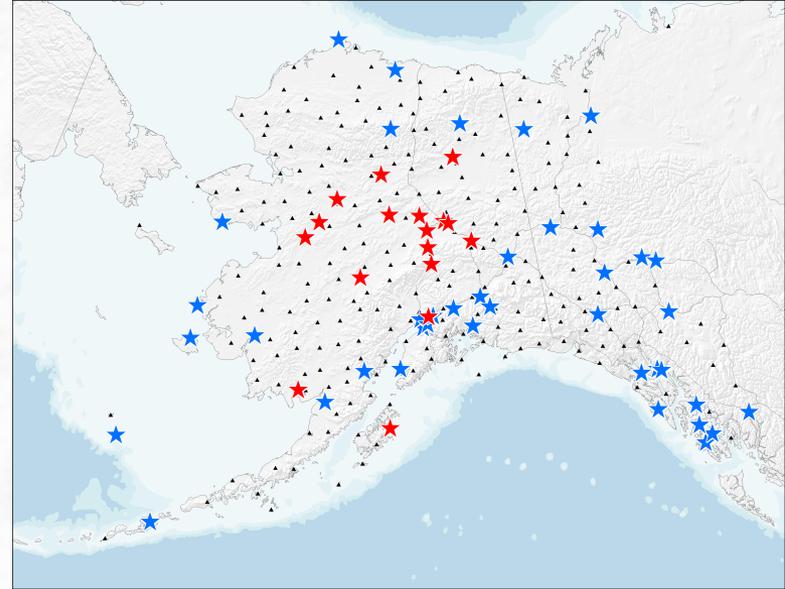
↓ Minto



Workshops, Scientific Meetings and Cultural Conferences



Alaska Federation of Natives Annual Convention ↘



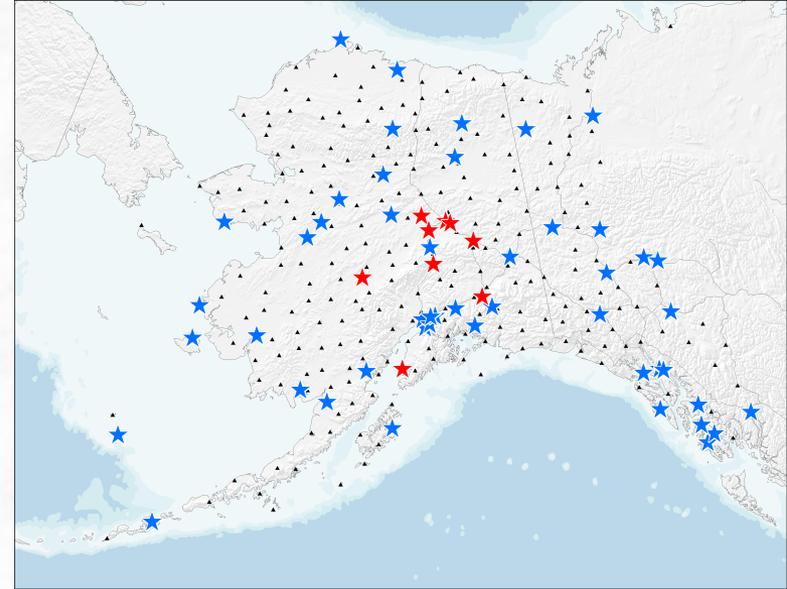
↑ Arctic Science Summit Week



Alaska Earthquake Center Seismology Lab and EarthScope National Office Tours

Nenana
Living Center
students →

Nikoleavsk
High School
basketball
team ↓



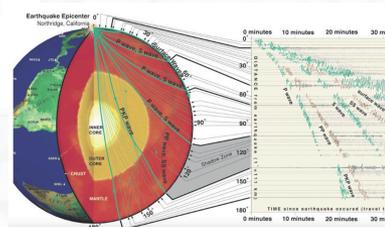
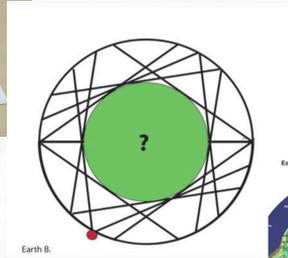
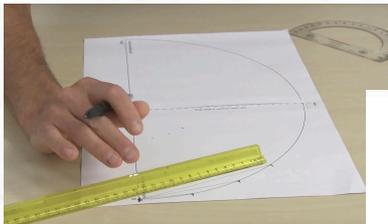
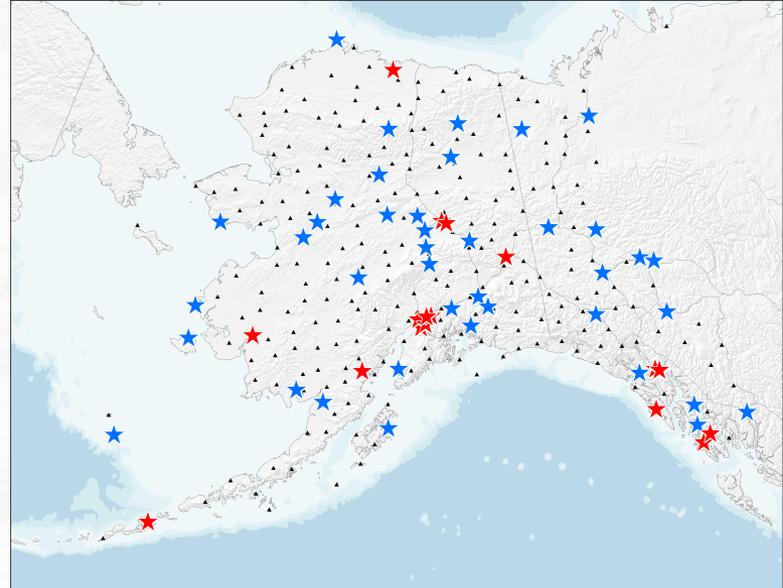
↓ North Slope GEOForce students



Professional Development Class and resources for Educators

For-credit professional development for
educators offered Spring and Fall 2017.

50 teachers have participated from 18
different communities.



300+ teacher information packets have
been distributed to teachers across Alaska
and Canada



Alaska STEM-Connect Workshop

