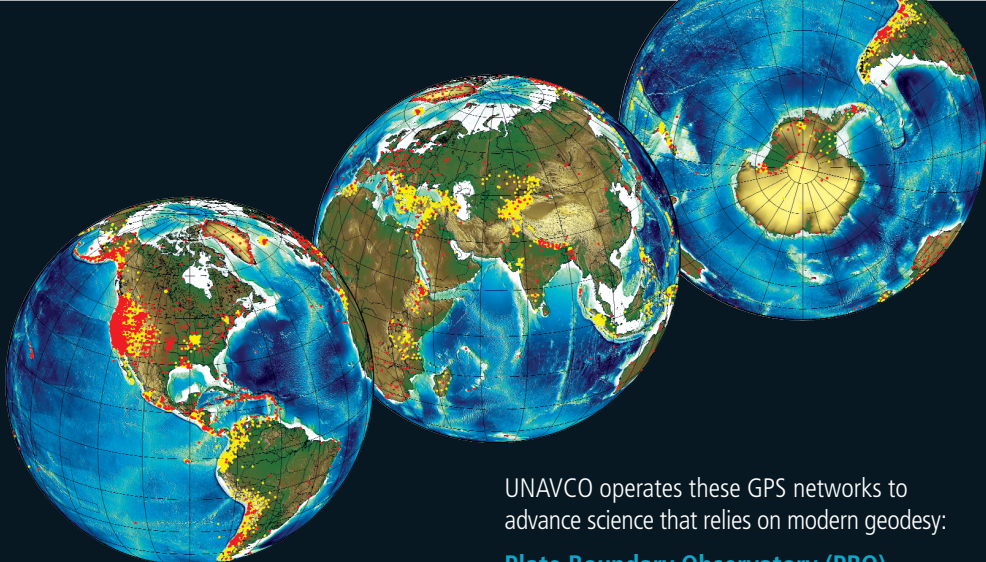




**UNAVCO** 



## Advancing Geodesy

UNAVCO, a non-profit university-governed consortium, facilitates geoscience research and education using geodesy by operating the National Science Foundation's Earth Science Geodetic Facility.

Geodesy is the study of Earth's shape, gravity field, and rotation to understand hazards and changing environments with benefits for resiliency, adaptation, natural resource management, communications, and navigation.

More than 2,300 continuous GPS stations are archived in the UNAVCO database. Red circles are continuously operating and yellow circles are episodically occupied stations.

*Topography courtesy of USGS.*

UNAVCO operates these GPS networks to advance science that relies on modern geodesy:

**Plate Boundary Observatory (PBO)**  
from Alaska to Mexico.

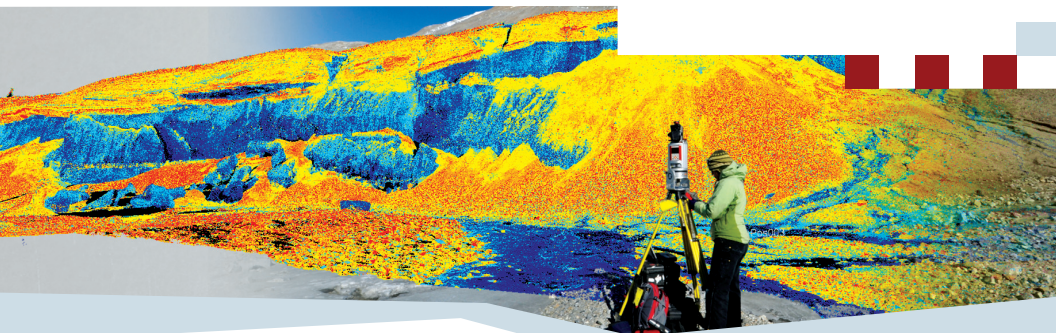
**Continuously Operating Caribbean GPS Observational Network (COCONET)**  
in the Caribbean and Americas.

**Polar Earth Observing Network (POLENET)**  
in Greenland and Antarctica.

**Africa Array:** A backbone across Africa and Madagascar.

**The Global Geodetic Network (GGN),** part of the global network used to define the International Terrestrial Reference Frame (ITRF), upon which most global studies and satellite missions rely.





## Observing Services

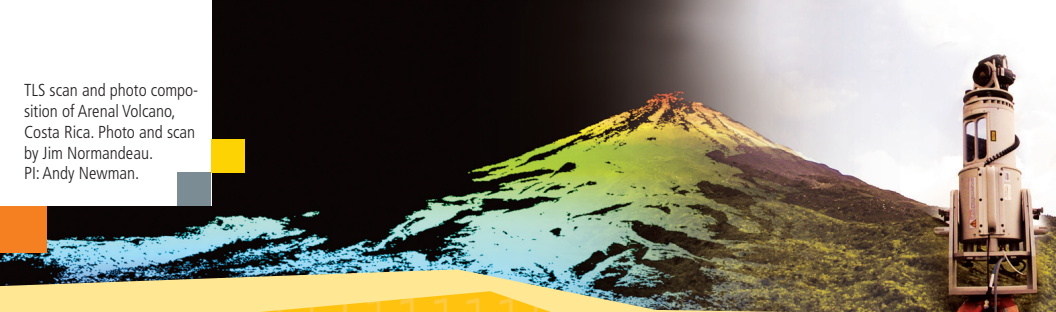
UNAVCO provides engineering expertise and equipment resources to investigators in support of their geoscience projects. This may include:

- ❖ GPS instruments for projects
- ❖ Terrestrial laser scanning (TLS) instruments for projects
- ❖ Continuous GPS station installations, operation, and maintenance
- ❖ Borehole instrument installations, operation, and maintenance
- ❖ Communications and power system supplies
- ❖ Proposal planning, project logistics, and support letters
- ❖ Field engineering support
- ❖ Data acquisition, quality control, transfer, management, and archiving
- ❖ Training and advice for instrumentation and data



Supporting the Malawi Rifting project. Songea, Tanzania.  
Photo by Emily Seider.

TLS scan and photo composition of Arenal Volcano, Costa Rica. Photo and scan by Jim Normandeau. Pl: Andy Newman.



## Data Services

UNAVCO provides services for the long-term stewardship of unique data sets. These services organize, manage, and archive data, and develop tools for data access and interpretation. Services are provided for:

### GPS/GNSS Data

GPS/GNSS data enable millimeter-scale surface motion measurements at discrete points. UNAVCO provides quality-controlled data measurements, position time series, and velocities.

### Imaging Data

Data from geodetic imaging instruments can be used to map topography and delineate deformation with high spatial resolution. InSAR (Interferometric Synthetic Aperture Radar) and Terrestrial LiDAR imaging data services are provided, including archiving, access, visualization, and basic processing capabilities.

### Strain and Seismic Data

Data from borehole strainmeters, seismometers, thermometers, pore pressure transducers, tiltmeters, and rock samples from drilling; plus surface-based tiltmeters and laser strainmeters.

### Meteorological Data

Data from surface measurements of atmospheric conditions at stations, such as temperature, relative humidity and atmospheric pressure. Troposphere parameters are generated during daily GPS post-processing managed by UNAVCO, and are accessible through data access services.



TLS image of Harry's Dream, a fumarole on Mt. Erebus, Antarctica.  
Scan by Marianne Okal.



# Education and Community Services

UNAVCO provides services to communicate the scientific results of the geodetic community, foster education across a broad range of learners, and grow workforce development and international partnerships:

## Science Communication

- ❖ Web publication of community science results
- ❖ Biennial UNAVCO Science Workshops
- ❖ Showcase results from community-driven responses to natural hazard events

## Science Education

- ❖ Workshops and Short Courses for researchers and educators
- ❖ Professional development in geosciences for K-12 faculty
- ❖ Educational materials for high school and undergraduate level courses
- ❖ Educational materials for the public
- ❖ Online access to learning materials

## International Partnerships & Workforce Development

- ❖ International professional development and training workshops
- ❖ Facilitate international engagement in geodetic science
- ❖ Support for graduate mentoring in the community
- ❖ Undergraduate research internship program to enhance diversity in geodesy and expand the geodetic workforce (RECESS)

RESEARCH EXPERIENCES IN SOLID EARTH SCIENCE FOR STUDENTS





**UNAVCO** is a 501(c)(3) governed by a consortium of more than 100 Academic Members and more than 75 Associate Members.

Join us in advancing our understanding of the changing Earth by enabling the integration of innovative technologies, open geodetic observations, and research, from pole to pole.

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40.06098° N  
105.20556° W  
1593.329m



### **UNAVCO Membership**

Members are educational or nonprofit institutions chartered in the United States or its Territories who are willing to make a clear and continuing commitment to active participation in the activities of the organization. Non-U.S. educational or research institutions that share UNAVCO's purpose are eligible for status as Associate Members.

#### **Benefits of Membership include:**

- ❖ A direct role in policy setting and prioritization for the UNAVCO community and facilities
- ❖ A vote in the election of members of the UNAVCO Board of Directors
- ❖ Participation in annual meetings and specialized workshops
- ❖ Access to special pricing on equipment based on UNAVCO discounts and group purchases

#### **Benefits of Associate Membership include:**

- ❖ Partial support for participation in UNAVCO meetings and specialized workshops
- ❖ Access to special pricing on equipment based on UNAVCO vendor agreements when these are extended to purchases within North America or abroad; further leverage in negotiating pricing abroad.

To apply for membership, go to [www.unavco.org](http://www.unavco.org) and click on Community, then Membership, or contact us directly at **303-381-7500**.