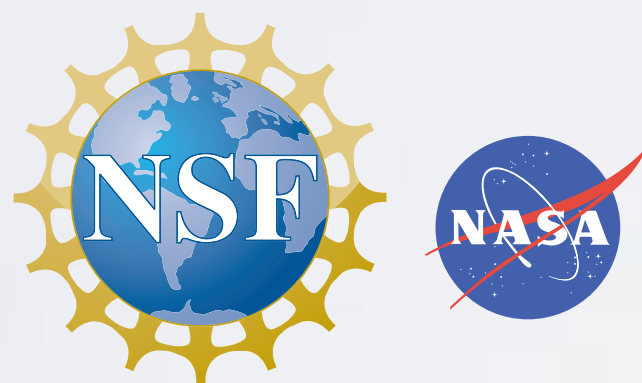




# **EARLY CAREER GEO-RESOURCES FOR YOU & YOUR TEACHING**

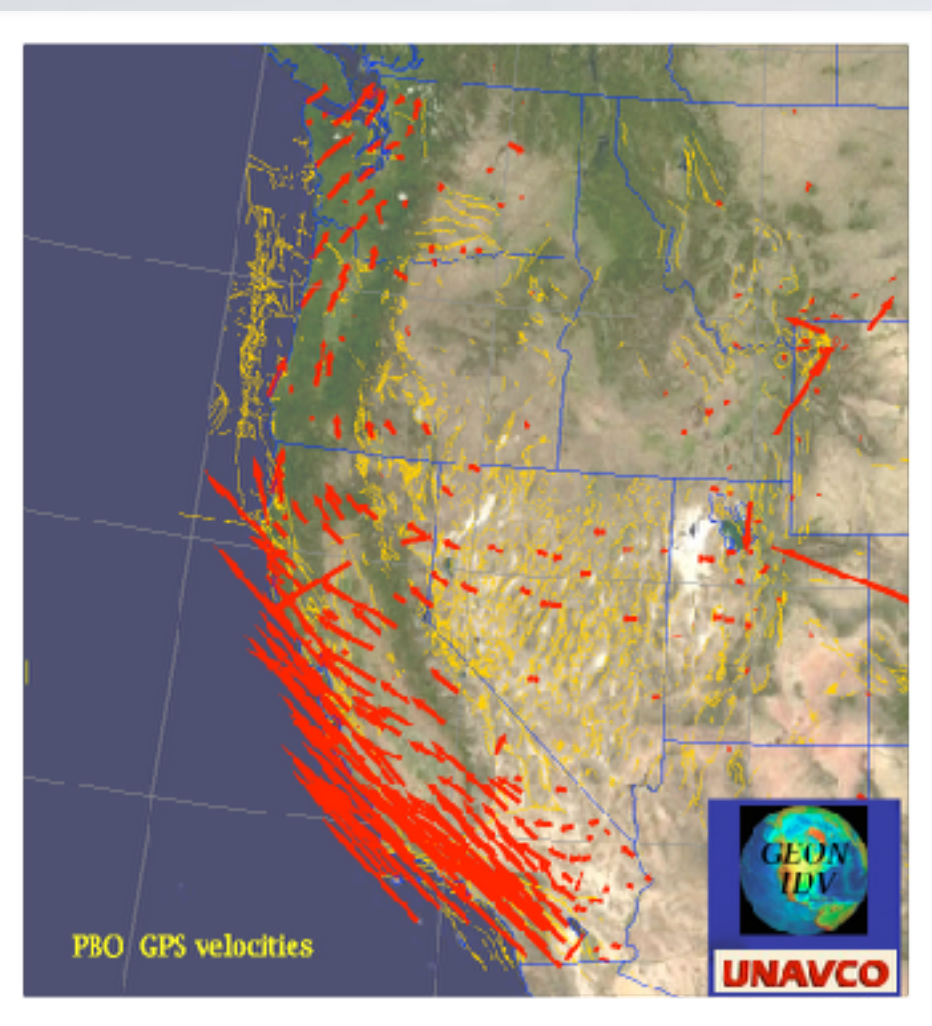


Shelley Olds, UNAVCO

March 10, 2016

A Career Development Workshop for  
NSF Geosciences Postdoctoral Researchers  
Boulder, CO



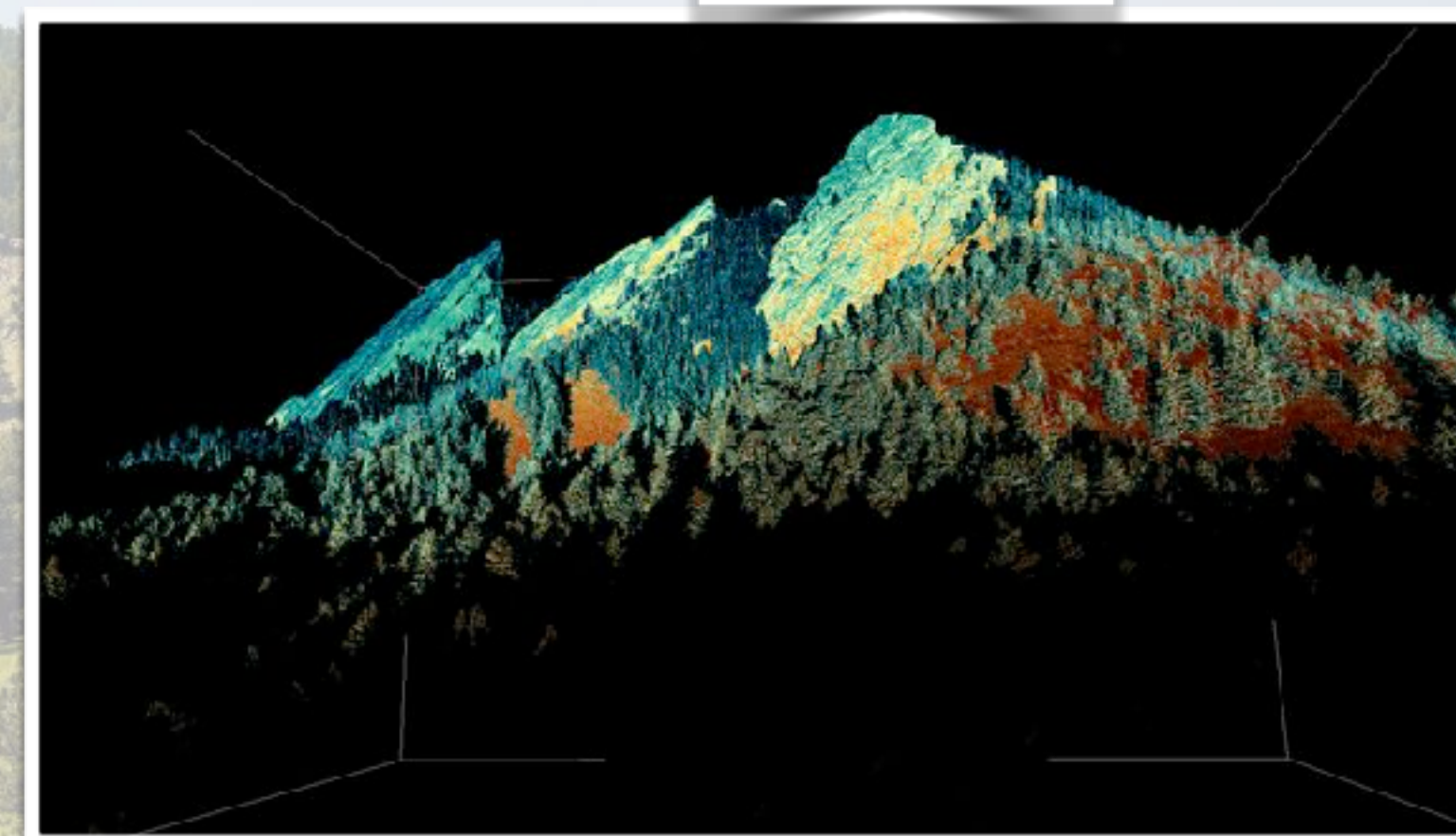


# UNAVCO

*a non-profit university-governed consortium, facilitating geoscience research and education using geodesy*

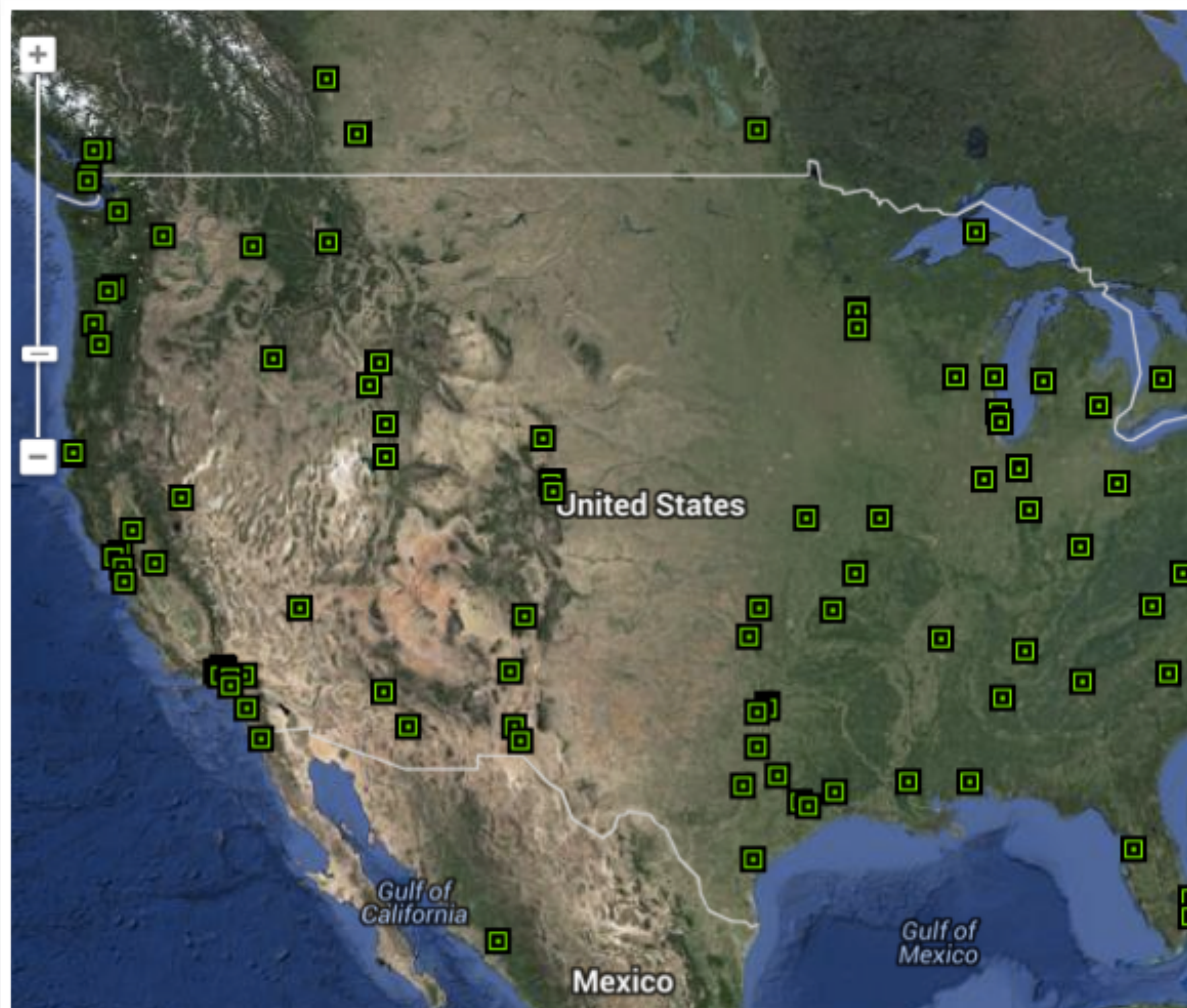


[Video »](#)





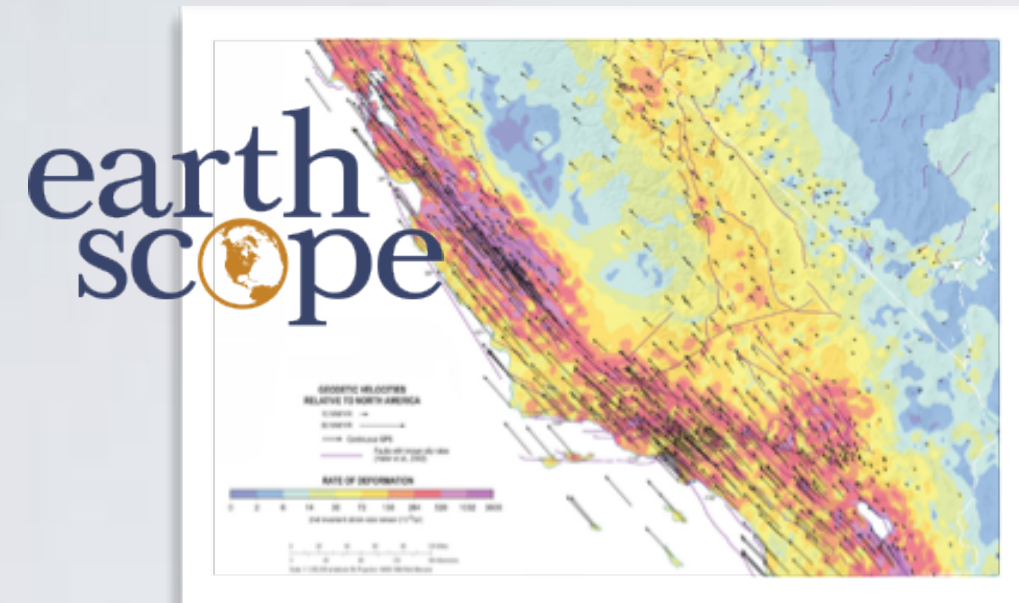
**UNAVCO = COMMUNITY + FACILITY**





# ADVANCE YOUR RESEARCH: REQUEST SUPPORT

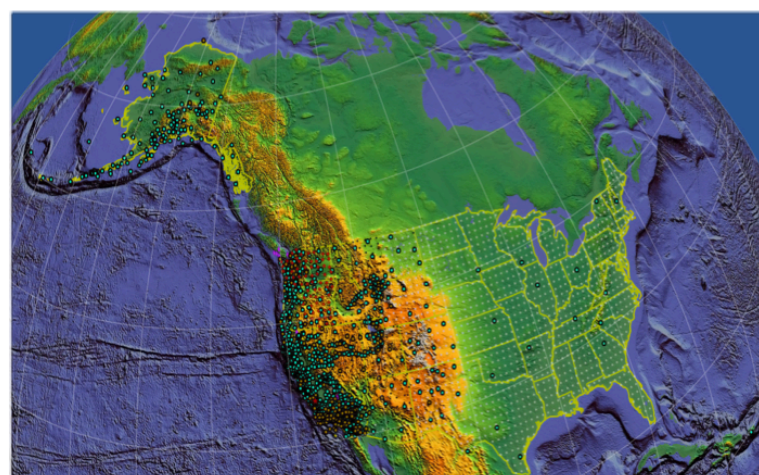
## Crustal Kinematics and Mantle Dynamics



Understanding mantle and plate motions to enhance resilience to earthquakes, tsunamis and volcanic eruptions

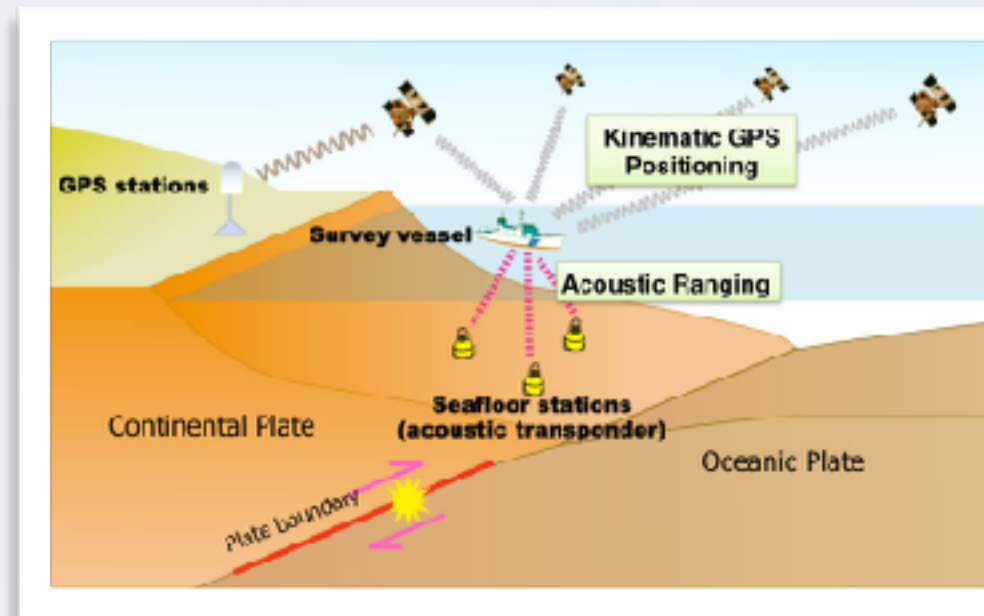
## Coseismic Deformation and GPS Seismology

Earthquake and tsunami early warning to save lives and property



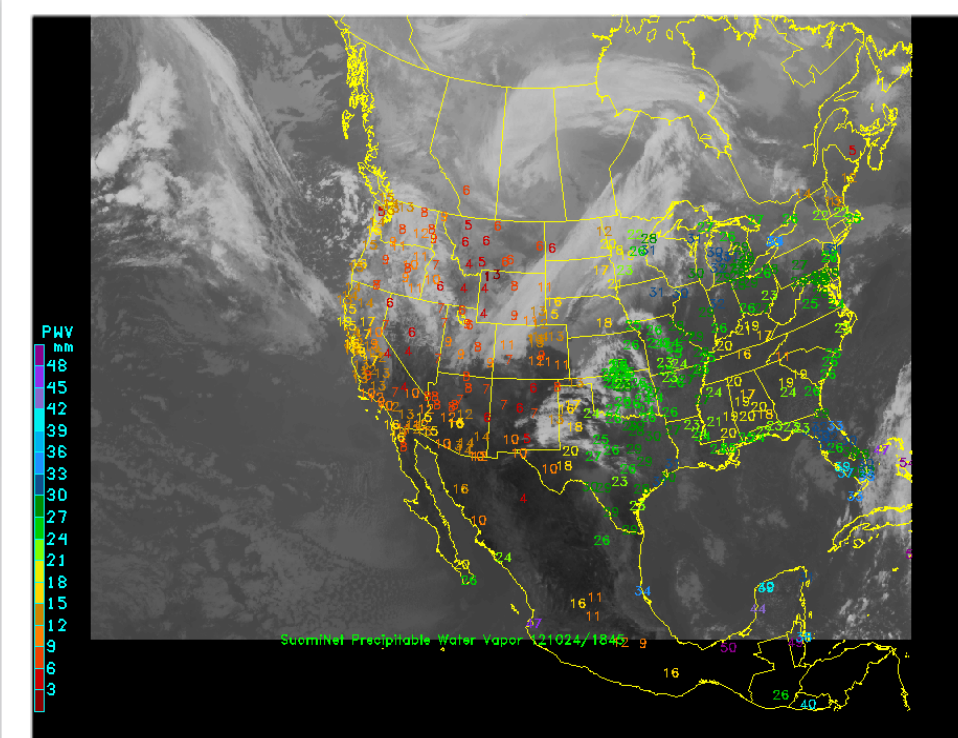
## Hydrogeodesy

Helps with planning emergency response and for engineering structures in tsunami-prone areas



## GPS Meteorology

Improve hurricane forecasting and severe storm tracking



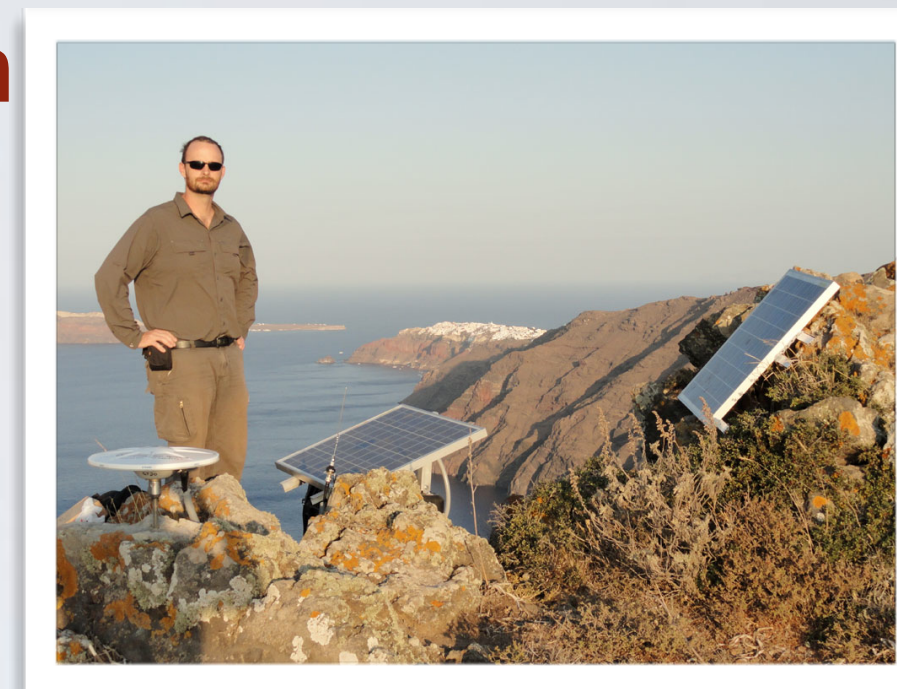
## Glaciology

Assess ice mass, forecast melting and estimate climate change effects



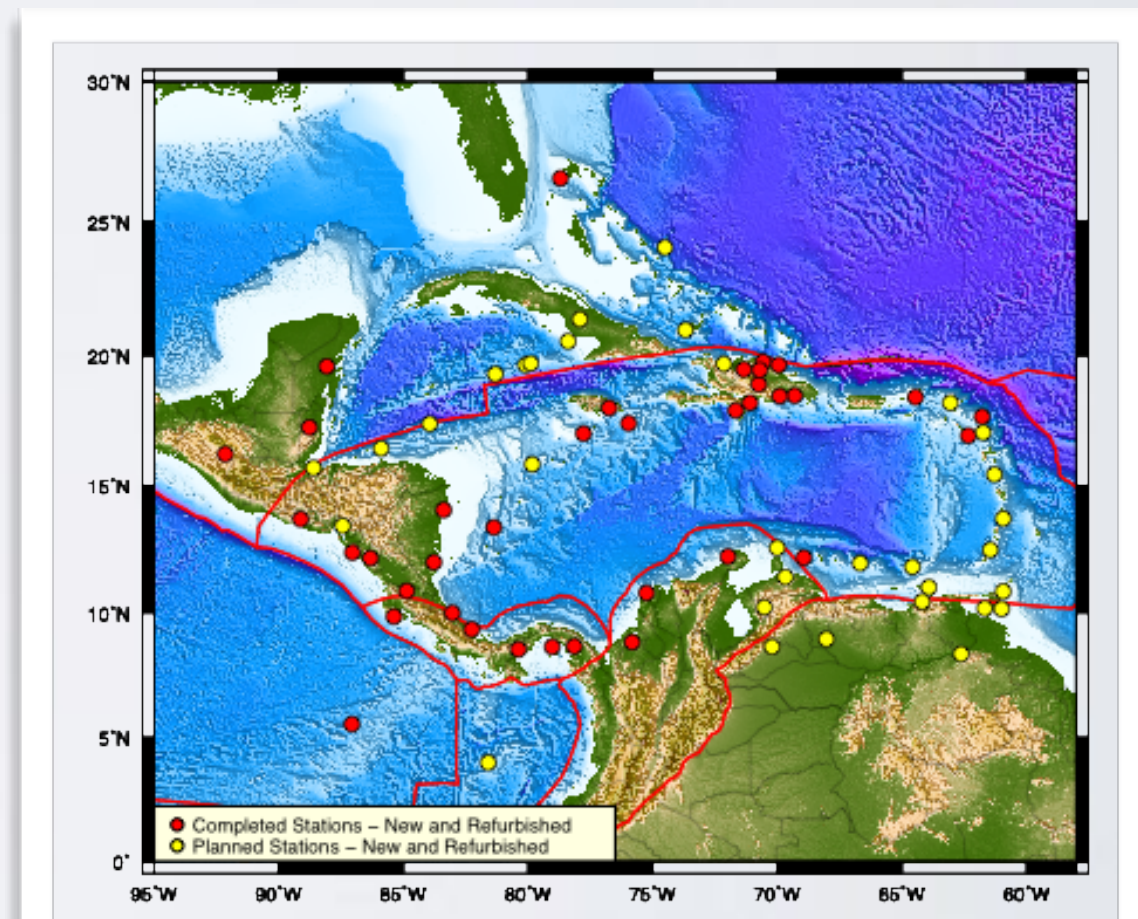
## Volcanic Deformation

Decipher surface rise or fall related to magma movement with volcano early warning benefits



## Earthquake Hazards

Assess earthquake hazard to mitigate future losses





# NETWORKING OPPORTUNITIES & EARLY CAREER SUPPORT

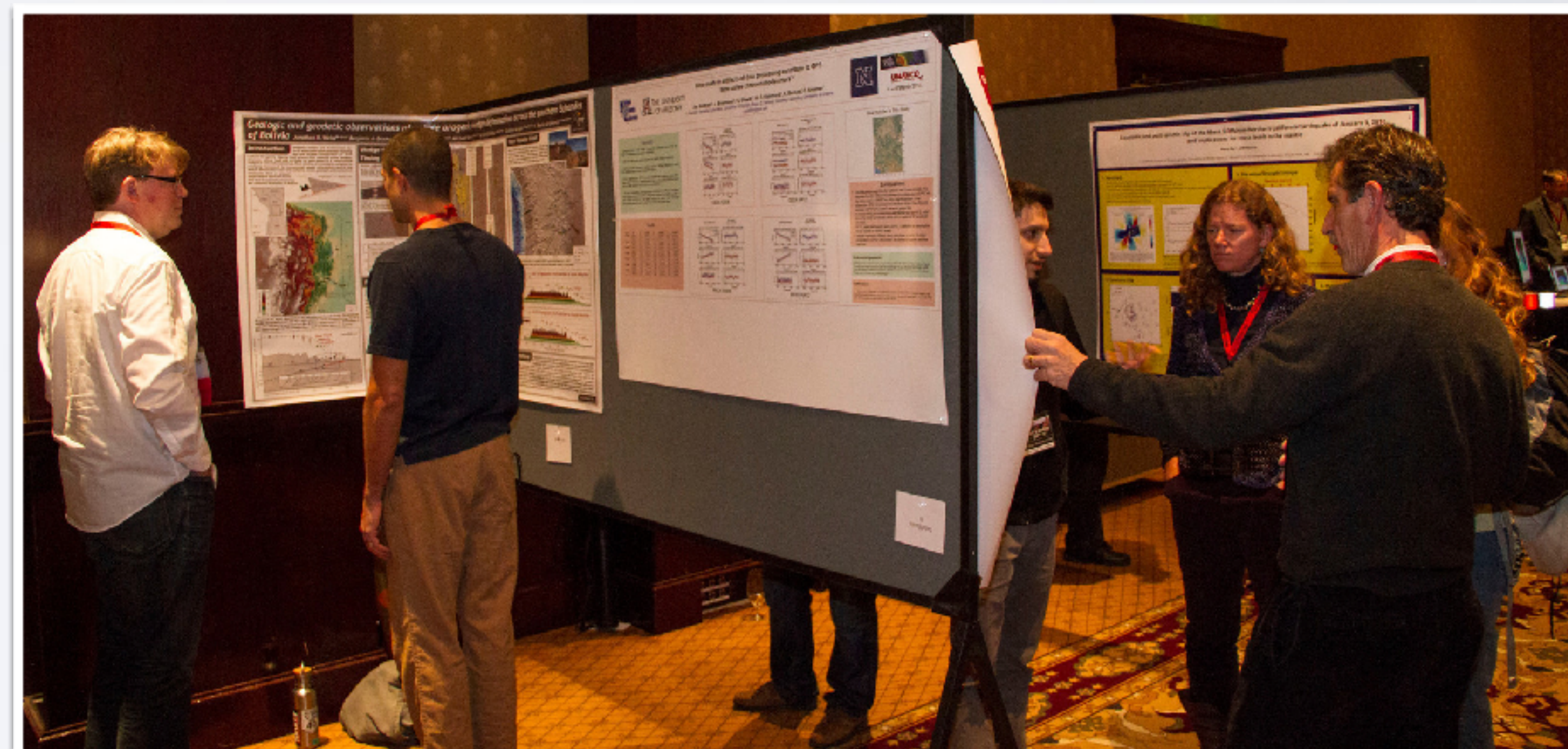
## Expanding Networks Through Mentoring (E-Net)

- Mentoring program for established UNAVCO community members to work with students and early career investigators during biennial UNAVCO Science Workshop

Poster session at the 2014 UNAVCO Science Workshop at the Omni Interlocken Hotel in Broomfield, Colorado. (Photo/ Travis Bildahl)

## AGU Early Career Investigators Networking Event

- Networking luncheon held at Fall AGU - facilitate networking for early career investigators in UNAVCO and IRIS communities





GPS Data Processing and Analysis with GAMIT/  
GLOBK/TRACK

InSAR Processing and Theory with GMSTSAR  
& Advanced InSAR Processing

Terrestrial & Airborne Laser Scanning

TLS and Structure from Motion (SfM)  
Photogrammetry  
in Undergraduate Field Education

Working with Strainmeter Data



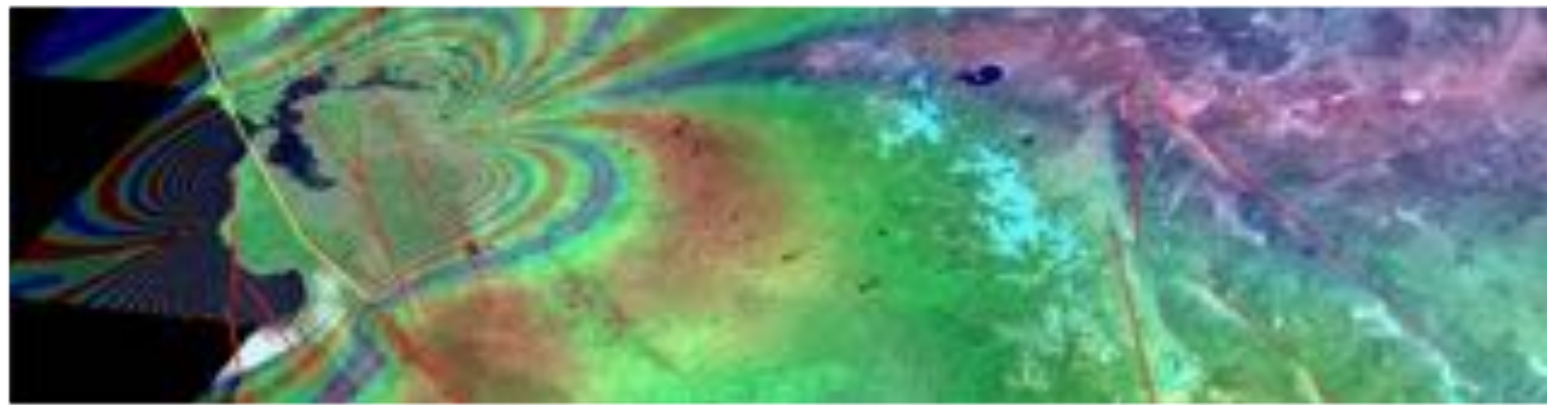


# ENHANCE YOUR TEACHING: LEARNING MODULES USING GEODESY



## **Changing Ice Mass and Sea Level** (Introductory-level)

- Geodesy data: **Sea level altimetry, InSAR, ICESat, GRACE, vertical GPS**



## **Imaging Active Tectonics** (Majors-level)

- Geodesy data: **LiDAR, InSAR**



## **GPS, Strain, and Earthquakes** (Majors-level) – beta

- Geodesy data: **GPS**



## **Using TLS & SfM in field courses** (Majors-level) – beta

- Geodesy data: **TLS, Structure from Motion**

In development

## **Measuring Water Resources** (Majors-level)

Geodesy data: **Gravity, vertical GPS, reflection GPS**

## **Surface Process Hazards** (Introductory-level)

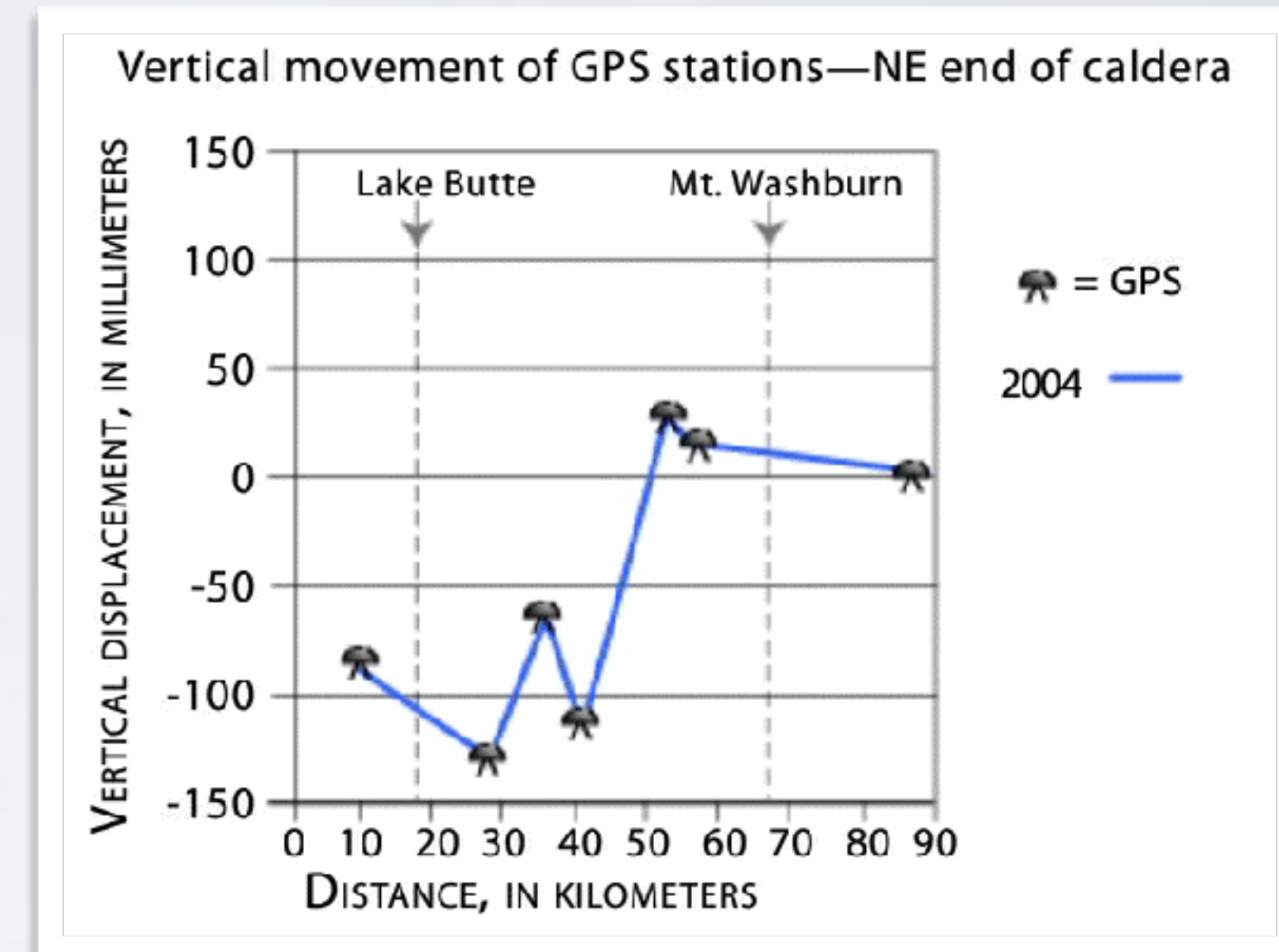
Geodesy data : **LiDAR**



# ENHANCE YOUR TEACHING: LEARNING ACTIVITIES & MATERIALS

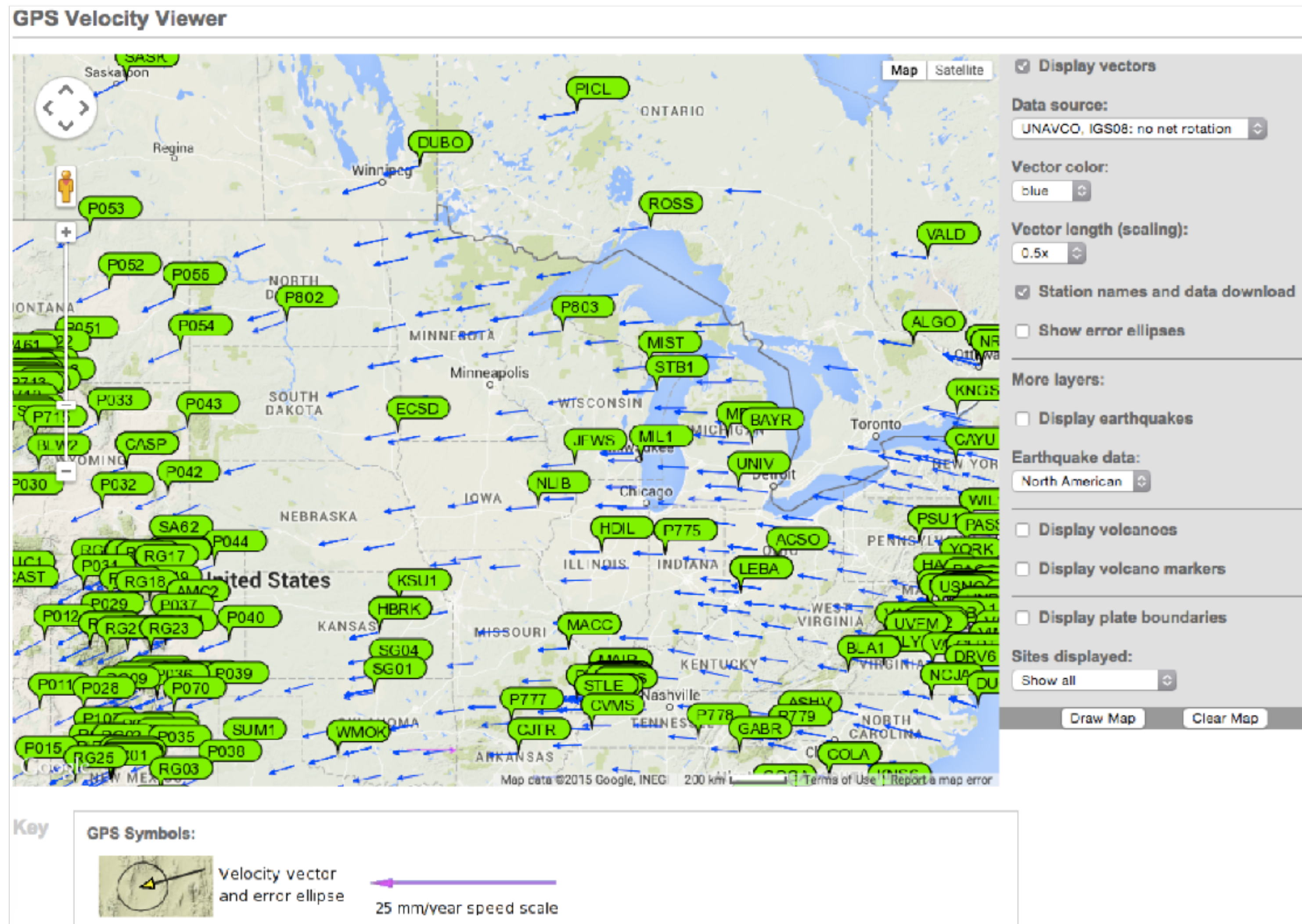
## Education Materials:

- Teaching plate tectonics with GPS: A modern approach using science, data, technology, and maps.  
- 6 lesson sequence
- Animations
- Data-focused tutorials
- Regional map handouts



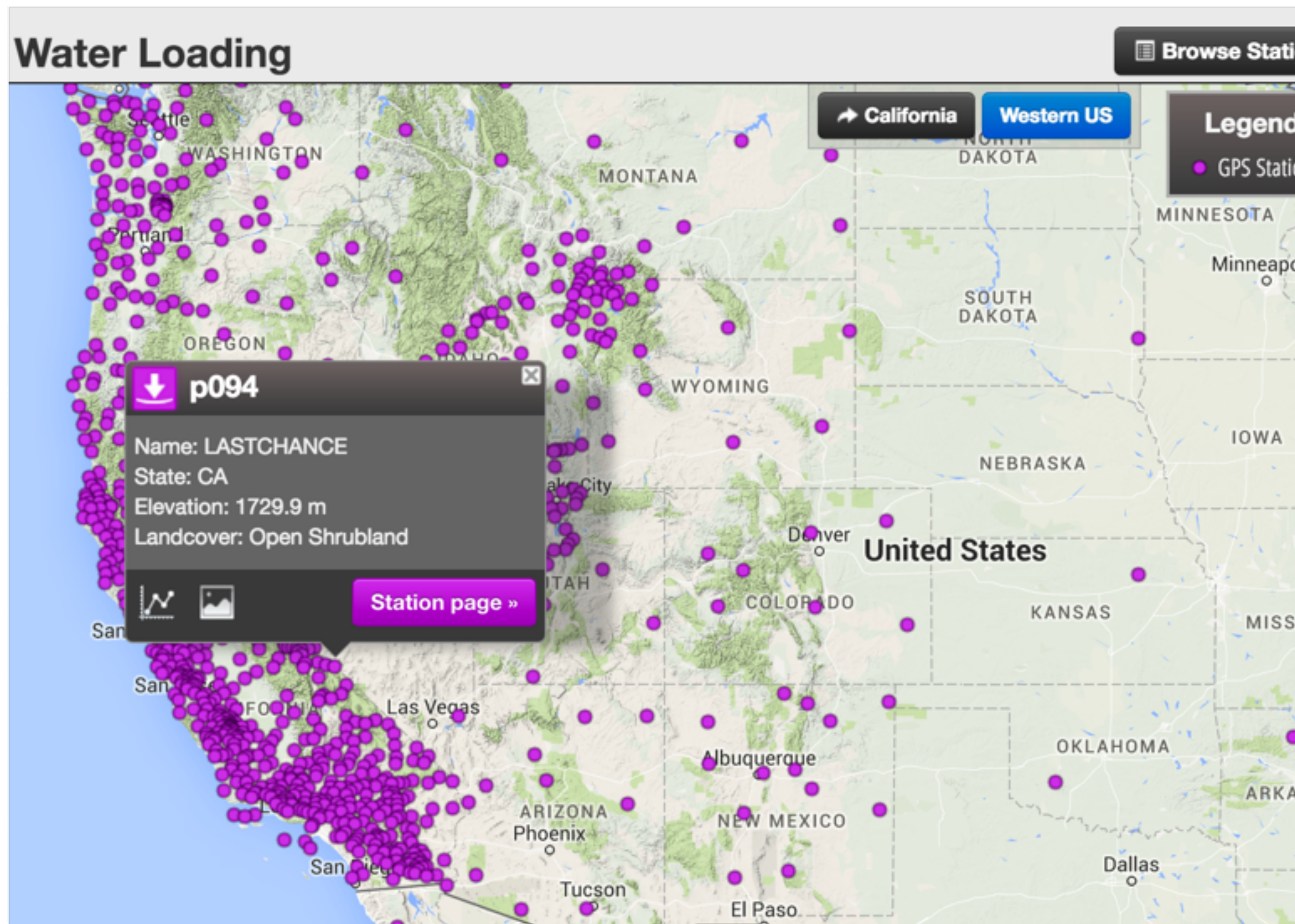


- GPS Velocity Viewer





# TOOLS YOU CAN USE IN YOUR CLASSROOM



## Tools & Data Products

- GPS Velocity Viewer
- PBO H<sub>2</sub>O



# TOOLS YOU CAN USE IN YOUR CLASSROOM

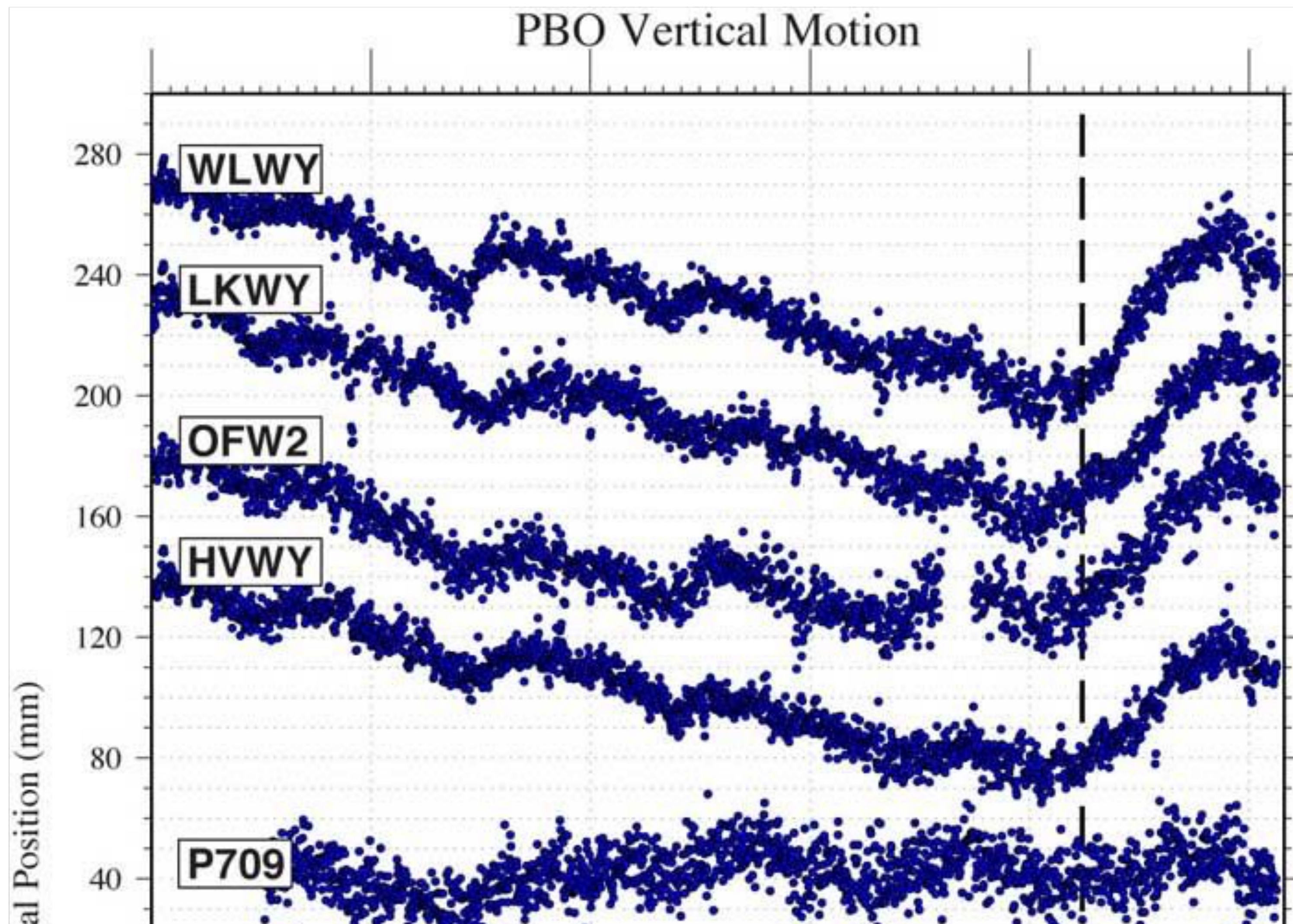


## Tools & Data Products

- GPS Velocity Viewer
- PBO H<sub>2</sub>O
- EarthScope Voyager Jr / Jules Vern Voyager Jr.



# TOOLS YOU CAN USE IN YOUR CLASSROOM



## Tools & Data Products

- GPS Velocity Viewer
- PBO H<sub>2</sub>O
- EarthScope Voyager Jr / Jules Vern Voyager Jr.
- Processed GPS data, reformatted for ease of use



## STAY CONNECTED

### Social Media

facebook.

[UNAVCO on Facebook](#)

Keep up on current events, share experiences, and learn about geodesy.

[RESESS on Facebook](#)

Find out about our summer internship program dedicated to increasing the diversity of students entering the geosciences and learn about student opportunities.

twitter

[UNAVCO on Twitter](#)

Follow us to receive news related to UNAVCO, science policy, and geodesy.

You Tube

[UNAVCO on YouTube](#)

Check out our feed for videos about UNAVCO, animations, Science Seminars presented at our Boulder facility, Ignite talks given at the UNAVCO Science Workshops, and more.

SmugMug

[UNAVCO on SmugMug](#)

See photos of staff, interns, and fellow researchers getting down with geodesy all over the world.

Instagram

[UNAVCO on Instagram](#)

See photos of the amazing places geodesy can take you. From Antarctica to southern California and beyond.

Google+

[UNAVCO GDS Technical News on Google+](#)

Keep up with the latest news about geodetic stations, technology, and data processing.

Linked in

[UNAVCO on LinkedIn](#)

Network with other scientists and find out when job opportunities are posted.

Pinterest

[UNAVCO on Pinterest](#)

Access information, interesting web data.

<http://www.unavco.org/community/connect-with-us/connect-with-us.html>



**Instrumenting Mount St. Helens**

35 YEARS LATER

Published by Beth Bartel · 1 · May 9 at 5:05pm · Edited · 0

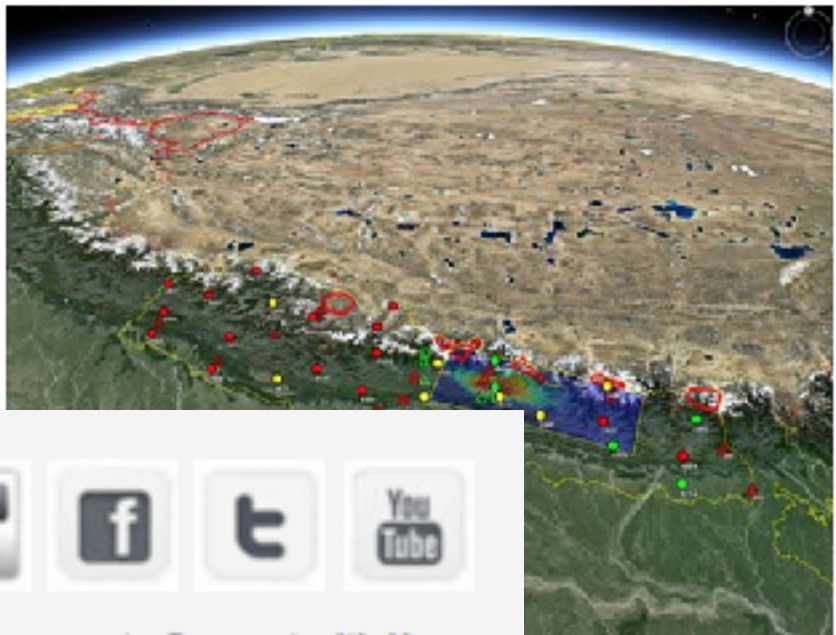
Nepal earthquake response update from John Galetzka, May 8, 2015:

The team here is amazing and I've never seen such cooperation in the geodetic community anywhere!

KKN4 is now operational as a streaming realtime reference station to support survey activities in central Nepal. Other stations such as NAST and BRN2 may start streaming as well.

As we go by helicopter to the Caltech/DMG GPS stations, we bring relief supplies donated by FNCCI (Nepal Chamber of Commerce). We NEVER go empty handed and we are prepared to evacuate injured people if required.

GPS data available via the UNAVCO Data Archive:  
<http://www.unavco.org/.../data-access-met.../doi2/app/doi2.html>




more ways to Connect with Us

CAL 2016 f t YouTube

Boost Post

Like · Comment · Share · 540 · 26



You added 4 new photos.

Published by Beth Bartel · 1 · 22 hrs · Edited · 0

Bench survey! Students of University of Houston's Geophysical Field Camp in Galveston, Texas learned about terrestrial laser scanning (TLS) last week with support from UNAVCO.

444 people reached

Like · Comment · Share

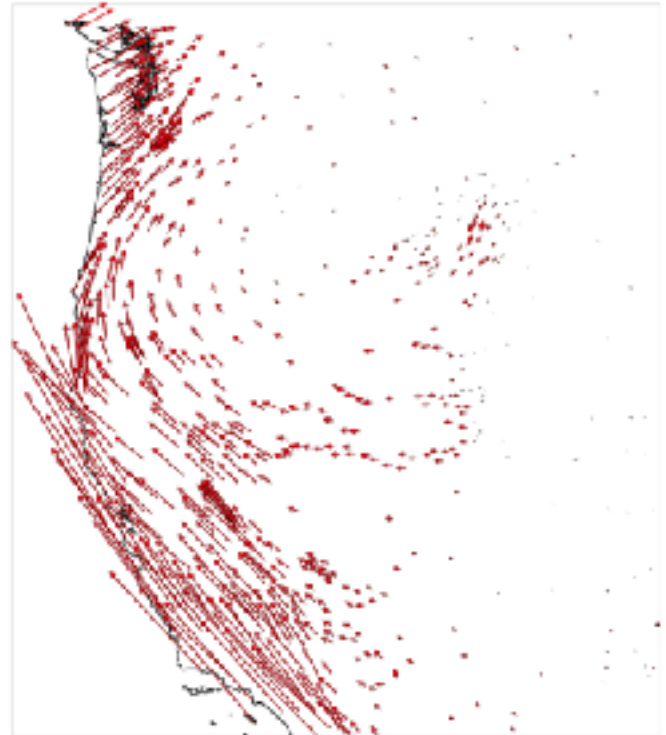
Stephen Vickers, Karl Yoevond, Jenek Penthil and 10 others like this

2 names

Stephen Vickers I haven't used Riegl, but they look and sound like you use them for this range, the workflow, or some other as how?

Like · Reply · 62 mins · Edited

Write a comment...



**UNAVCO**

Published by Beth Bartel · 7 · May 11 · Edited · 0

This is what the Western US does, according to continuous GPS data from the EarthScope Plate Boundary Observatory and other networks.

To explore more (with geographical context), check out the UNAVCO GPS Velocity Viewer:  
<http://www.unavco.org/.../GPS-Veloci.../GPS-Velocity-Viewer.html>

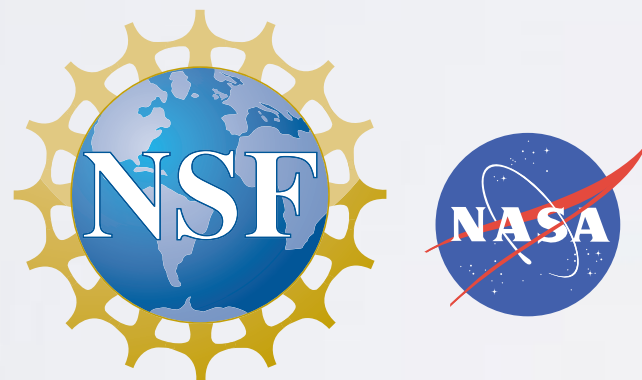
15,536 people reached

Boost Post





**THANK YOU!**



Shelley Olds  
olds -at- [unavco.org](http://unavco.org)