



**Explore Plate Tectonics Using GPS Data**  
 NSTA Area Conference: Denver, 1-hour workshop  
 Friday, November 9, 5:00–6:00 PM  
 Colorado Convention Center, Korbel Ballroom 4E

**Agenda**

All of the links to the presentations and activities for this workshop are available at:  
<http://www.unavco.org/cws/UsingData/>

5:00 – 5:10	<p><b>Overview of GPS and UNAVCO</b></p> <p><u>Outcome:</u> To increase participants' understanding of GPS, the contributions GPS data make to plate tectonic research, current GPS research, and new discoveries</p> <p>Questions/ Answers</p>
5:10 – 5:30	<p><b>Activity: Introduction to Reading Time Series Plots</b></p> <p><u>Outcome:</u> To be able to interpret GPS Time Series Plots and explain how the data relates to plate motion</p> <p>Teaching Tips/ Sources for error</p>
5:30 – 5:55	<p><b>Activity: Exploring GPS data through Time Series Plots: Investigating Plate Motion and Deformation in California</b></p> <p><u>Outcome:</u> Create plate velocity vectors to illustrate plate motions and describe plate rebound after an earthquake</p> <p>Teaching Tips/ Sources for error</p>
5:55 – 6:00	Wrap-up + Quick exit survey

**Internet resources and references**

Overview of GPS, UNAVCO, and EarthScope

[http://www.unavco.org:8080/cws/UsingData/IntroGPS\\_TIE.ppt/file\\_view](http://www.unavco.org:8080/cws/UsingData/IntroGPS_TIE.ppt/file_view)

**Lesson: Exploring Plate Motion and Deformation Using GPS Time Series Plots**

There are two activities for this lesson:

**Activity: Introduction to Reading Time Series Plots**

<http://www.unavco.org:8080/cws/pbonucleus/draftresources/readingGPStimeseries/>

- Instructor Presentation
- Activity worksheet
- Tenths of a year to Months of a year scale

**Activity: Exploring Plate Motion and Deformation in California Using GPS Time Series Plots**

<http://www.unavco.org/cws/pbonucleus/draftresources/sanandreas>

- Instructor Presentation
- Lesson Plan

- Activity Worksheet

### **Associated Education Resources**

UNAVCO's Education and Outreach website

<http://www.unavco.org/EO>

UNAVCO's Education and Outreach Education Resources

<http://www.unavco.org/cws/pbonucleus/draftresources/>

UNAVCO Data for Educators

[http://www.unavco.org/edu\\_outreach/data.html](http://www.unavco.org/edu_outreach/data.html)

Jules Verne Voyager and EarthScope Voyager Map Tools

[http://www.unavco.org/edu\\_outreach/maptools.html](http://www.unavco.org/edu_outreach/maptools.html)

Creating Custom Map Images of Earth and Other Worlds (with Jules Verne Voyager): EET chapter:

<http://serc.carleton.edu/eet/jules/index.html>

Animation on velocity and plate evolution

<http://rock.geo.sunysb.edu/~holt/Education/>

Simulations of Finite Strain in Large Scale Continental Deformation:

<http://wellspring.ess.sunysb.edu/html/kinematics-dynamics/animations/index.html>

Cascadia- Plate Tectonics and Crustal Block Motions:

<ftp://ftpext.usgs.gov/pub/wr/ca/menlo.park/rwells/WellsEarthscope8.2.06v3.ppt>

### **Learn about Episodic Tremor and Slip**

Geological Survey of Canada website.

Episodic Tremor and Slip: [http://gsc.nrcan.gc.ca/geodyn/ets\\_e.php](http://gsc.nrcan.gc.ca/geodyn/ets_e.php)

Episodic tremor and slip on the Cascadia Subduction Zone: The chatter of silent slip:

[http://gsc.nrcan.gc.ca/geodyn/etschatter\\_e.php](http://gsc.nrcan.gc.ca/geodyn/etschatter_e.php)

Geodetic monitoring of 2006 Cascadia episodic tremor and slip: <http://www.geodesy.org/pnwdaily/>

### **More Education Resources**

DLESE Teaching Boxes:

- Living in Earthquake Country: <http://www.teachingboxes.org/earthquakes/index.jsp>
- Evidence for Plate Tectonics: <http://www.teachingboxes.org/jsp/teachingboxes/plateTectonics/index.jsp>

Concept Map for Plate Tectonics based on American Association for the Advancement of Science (AAAS) Benchmarks for Science Literacy ([AAAS Project 2061](#)) and are aligned with the National Science Education Standards (NSES)

<http://www.dlese.org/cmb>

National Science Education Standards (NSES)

Science Content Standards 5-8: <http://books.nap.edu/html/nses/6d.html>

Science Content Standards 9-12: <http://books.nap.edu/html/nses/6e.html>