



# EarthScope for Teachers: Exploring Geology and Geophysics through EarthScope

May 20 - 21, 2011

Austin, TX

## Agenda

URL to all workshop materials:

[http://www.unavco.org/edu\\_outreach/workshops/2011/earthscope-teachers/earthscope-teachers.html](http://www.unavco.org/edu_outreach/workshops/2011/earthscope-teachers/earthscope-teachers.html)

**This is a fun filled, action packed workshop – PLEASE ask questions as you think of them!**

Objective(s): By exploring EarthScope learning activities as they relate to the geology and geophysics of Texas and surrounding regions, you should be able to:

- 1) improve your foundation in geophysics;
- 2) describe why EarthScope is investigating the geophysics of North America, how those investigations help us understand the past, and how understanding the past can help us understand the present and future; and
- 3) implement selected EarthScope activities in your classrooms.

<b>Friday May 20, 2011</b>		
3:00pm – 3:10pm	<b>Introduction</b> of Sponsors & Instructors, Agenda Overview	<i>Kathy</i>
3:10 – 3:30	<b>Ice Breaker</b> - <i>Getting to know you</i>	<i>John</i>
3:30 – 4:15	<b>Beauty and the Beast:</b> Plate tectonics, landscape development, and geological hazards of the United States  Outcome: To increase participants' understanding of EarthScope, the physical processes being investigated and the improvement in our ability to assess hazards and understand our environment.  <b>Questions &amp; Answers</b>	<i>Bob Lillie</i>  <i>Teachers + Shelley</i>
4:15 – 5:15	<b>Exploring Earthquake, Volcano, and Plate Motion Relationships</b> Outcome: Describe how the locations of earthquakes, volcanoes, and GPS velocity vectors provide evidence for plate tectonics  <b>Teaching Tips and Learning Challenges</b>	<i>Shelley</i>  <i>Teachers + John</i>
5:15 – 5:25	<b>Short Break</b>	



5:25 – 6:10	<b>Forecasting Earthquakes Using the IRIS Earthquake Browser</b> Outcome: Teachers will determine the occurrence rates of various magnitude earthquakes within a participant-selected region of the Earth and then identify the relationship between regional tectonics and the seismic hazard. <b>Teaching Tips and Learning Challenges</b>	<i>John</i>  <i>Teachers + Shelley</i>
6:10 – 8:00	<b>Dinner, Dessert, &amp; Two Talks by Sean Gulick and Kathy Ellins</b>  <b>Questions &amp; Answers</b>	
<b>Adjourn day 1</b>		

7:30 – 8:00 AM	<b>Breakfast</b>	
8:00 – 8:15AM	<b>Summary of Day 1/ Overview for Day 2:</b> Using today to look into the past; What’s the future looking like	<i>John</i>
8:15 – 9:00	<b>Seismic Waves Basics</b> Outcome: To increase participants understanding of Earthquake waves and their propagation across USArray. <b>Teaching Tips and Learning Challenges</b>	<i>John</i>  <i>Teachers + Shelley</i>
9:00- 10:00	<b>Reading GPS Time Series Plots / Where are these Plates moving?</b> Outcome: Teachers will be able use a simple model of a GPS monument to visualize plate motion and calculate plate velocity vectors to determine regional plate motion. <b>Teaching Tips and Learning Challenges</b>	<i>Shelley</i>  <i>Teachers + John</i>
10:00 – 10:15	<b>Break</b>	
10:15 – 11:30	<b>Earthquake machine</b> Outcome: Teachers will be able to explain stick-slip fault behavior using a physical model <b>Teaching Tips and Learning Challenges</b>	<i>John</i>  <i>Teachers + Shelley</i>
11:30 – 12:30	<b>Lunch</b>	
12:30 – 1:45	<b>Investigating Plate Motion and Deformation in California using GPS Time Series Data w/ data exploration</b> <u>Outcome:</u> Teachers will calculate plate velocity vectors to determine plate motions and describe plate rebound after an earthquake. <b>Teaching Tips and Learning Challenges</b>	<i>Shelley</i>  <i>Teachers + John</i>



1:45 – 3:00	<b>Exploring Earth Structure using Occam’s Razor</b> Outcome: Teachers will be able to use simple models and seismic data to increase their understanding of Earth structure and how it is determined.  <b>Teaching Tips and Learning Challenges</b>	<i>John</i>  <i>Teachers + Shelley</i>
3:00 – 3:15	<b>Break</b>	
3:15 – 4:30	<b>Episodic Tremor and Slip in the Pacific Northwest: When is the next big earthquake?</b> Outcome: Teachers will analyze GPS & seismic data to study plate motion and crustal deformation of the Pacific Northwest.  <b>Teaching Tips and Learning Challenges</b>	<i>Shelley</i>  <i>Teachers + John</i>
4:30 – 4:40	<b>Integrating Activities into Your Teaching</b>	<i>Shelley</i>
4:40 – 5:00	<b>Summary</b>  <b>Complete Evaluation</b>	<i>John &amp; Shelley</i>

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