



Measuring Earth with GPS, Unit 2: Earthquakes

Activity 2 Student Exercise: Animation Questions

Karen M. Kortz (Community College of Rhode Island) and Jessica J. Smay (San Jose City College)

In this activity, you will watch an animation that illustrates how GPS can be used to learn more about plate tectonics and earthquakes.

Part 1: Animation

Watch the animation titled, *UNAVCO GPS and Earthquakes*. Watch the entire animation first, and then watch it a second time to answer the questions below.

1. How fast do tectonic plates move?

up to 1 cm/yr (10 mm/yr) up to 10 cm/yr (100mm/yr) up to 100 cm/yr (1,000 mm/yr)

2. How are the motions of high-precision GPS networks shown on maps?

as dots as different colors as arrows

3. If we want to compare the motions of two different geographical regions, what is a useful technique?

set the motion of one of the regions to zero and see how much the other region is moving
find the scale and direction of the GPS stations for both areas and take an average

4. When we study North America, what side do we use as our reference frame?

Eastern North America Western North America

5. Using the reference frame indicated in Question 4, what direction are GPS stations on both sides of the San Andreas Fault moving?

Northwest Northeast Southwest Southeast

6. Why are there earthquakes on the San Andreas Fault?

The Pacific Plate is moving faster than the North American Plate
The plates are moving in opposite directions

7. Using the reference frame indicated in Question 4, what direction are GPS stations in the Pacific Northwest moving?

Northwest Northeast Southwest Southeast

8. When an earthquake occurs at the convergent plate boundary in the Pacific Northwest, which GPS stations will move the furthest?

GPS stations along the coast

GPS stations further inland

GPS stations east of the Cascades Mountains

9. Using the reference frame indicated in Question 4, what direction are GPS stations in the Basin and Range moving?

North South East West