Investigation 5: What happens when plates move sideways past each other?

Plates move sideways past each other at transform boundaries. At these boundaries, the lithosphere is neither created nor destroyed. In this investigation, you will locate oceanic and continental transform boundaries and study their history. You will:

- 1. Investigate an oceanic transform boundary, the Charlie-Gibbs Fracture zone, using earthquake and age of the ocean floor data.
- 2. Investigate a continental transform boundary, the San Andreas Fault zone, and the seismic hazards associated with living in this area using earthquake data and historical photographs.

Read all instructions and answer each question on your investigation sheet.



- a. Open your Web browser. Go to www.ei.lehigh.edu/learners/tectonics/
- b. Click on: Investigation 5: What happens when plates move sideways past each other?
- c. The Web GIS will open to a global view with the **Plate Boundaries** layer turned on. You will see two blue investigation boxes on your map, which highlight the **Charlie-Gibbs Fracture zone** and the **San Andreas Fault zone**.

Step 2: Explore oceanic transform boundaries.

Transform boundaries are located all over the globe. In ocean basins, transform boundaries form perpendicular to divergent boundaries and offset the mid-ocean ridges. Transform faults at ridges allow for the symmetrical opening of the ocean basin.





Step 3: Explore a transform plate boundary and fracture zone to learn about seismicity.

Transform faults leave scars on the ocean floor called fracture zones. The motions of the plates can be traced by following these fracture zones.









Step 4: Locate a continental transform boundary, the San Andreas Fault Zone.

Transform boundaries are also found on land and occur between divergent boundaries. They have more impact on humans.







Step 5: Learn about seismic hazard along the San Andreas Fault Zone.

Click on the Map Layers tab in a. the toolbox menu. A b. Turn off the Earthquakes M > 4.0 (9/08-9/11) and San Andreas Area Faults layers and activate the USA Population Density. the Historic San Andreas Earthquakes, and the Volcanoes layer. 000000000 Answer Questions #12 and #13 on your investigation sheet. 0 5 (50 10 c. Compare the age of the seismic hazard along the San Andreas eli Plate Tectonics Fault zone with the Population Density. d. Click on the Map Layers tab in the toolbox menu. Turn-off the **Historic San Andreas** Earthquakes and Volcanoes layer and activate the Seismic Hazards layer by clicking on the check box. e. Click on the Swipe Tool tab in the toolbox menu. f. From the "Choose Laver to Swipe" drop down menu, select Population. eli Plate Tectonics click and drag Start Swipe Click on g. to activate the swipe tool. h. Click on Hide Tools in the upper right hand corner to hide the toolbox menu. i. Use the mouse to click and drag the divider across the map. As you drag the swipe bar to the left, the USA Population Density layer is removed, revealing the seismic hazard layer underneath. 00000000

Answer Question #14 on your investigation sheet.



