

# GPS Velocity Viewer

This interactive tool allows users to see GPS/GNSS-measured crustal motions around the globe in a wide range of reference frames. The default view shows horizontal motions in the North American reference frame but users can choose to add vertical motions, earthquakes' epicenters, plate boundaries, volcanic centers, or other reference frames.

## Learning Objective:

- Students will use the Velocity Viewer to analyze real geodetic data, identify patterns in plate motion, and use evidence to explain surface deformation at plate boundaries.

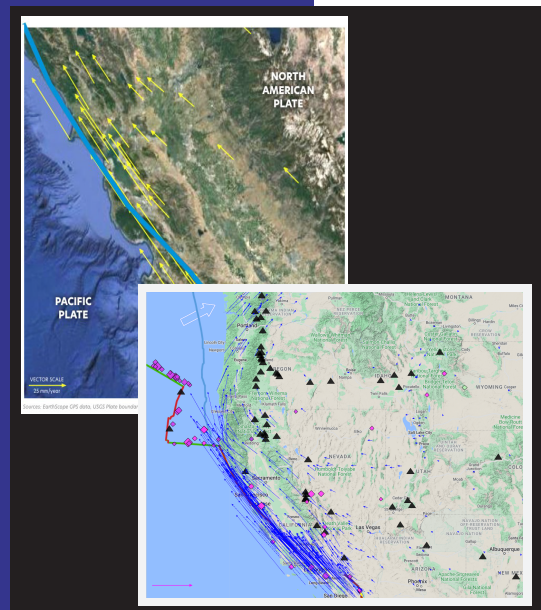
## Steps

Step 1: **Load a dataset:** Choose a GNSS velocity dataset (North America is a good start.) Point out that arrows show direction and rate of motion.

Step 2: **Scale vectors:** Use the Vector length controls to make patterns easier to see.

Step 3: **Layer in context:** Toggle options like plate boundaries and ask "How does motion change across this boundary?"

Step 4: **Student task:** Look for patterns for each volcanoes and earthquakes toggled on.



Also featured in an activity



- Use the built-in "How to use" video as a teacher prep or a student station rotation.
- Emphasize: "Vectors can show both plate motion and deformation within a plate."
- Use 'Discover Plate Boundaries Through Ground Motion and Deformation' at [earthscope.org/education](https://earthscope.org/education) as a starting place.
- NGSS: MS-ESS2-2, MS-ESS2-3, HS-ESS2-1, HS-ESS2-2, Analyzing and Interpreting Data, Patterns, Cause and Effect



Find more at [earthscope.org](https://earthscope.org)!

