Resource from animation found at: <http://www.iris.edu/hq/inclass/search>

**Narration from the animation:**

**GPS Measures Deformation in Subduction Zones:   
Ocean/continent**

**How Does Land Jump in an Earthquake?**

In a subduction zone the overlying continental plate is locked to the underlying oceanic plate by immense friction along the shallow portion of a vast sloping fault surface.

Recent GPS data from the Pacific Northwest show that the land above the subduction zone is indeed being pushed backward deforming in response to the stress.

Arrows mark the original locations of the leading edge of the overlying plate and the GPS unit.

The plates can lock together until they overcome the frictional stress in a process called elastic rebound. This produces M8 to M9 great earthquakes.

And if the ground is displaced beneath the ocean as it does in this simplified animation, it causes a tsunami.

This cycle of locking and building stress followed by catastrophic release repeats every few hundred years.