

The Cat Tunnel: a “Big Squeeze” Model for Ground Movement Patterns from Compressive

This physical model mirrors the concept demonstrated in the “Pacific Northwest and the Big Squeeze” activity. The cat tunnel acts like a big, visible “spring” that you can compress to represent the overriding North American Plate being pushed and squeezed while the plates are locked at the Cascadia subduction zone. In the real Earth, scientists measure deformation using GPS stations which show that movement is greatest near the source of compressive forces.

Learning Objective:

- Students will be able to describe how movement of tectonic plates at a convergent boundary can cause crustal deformation.

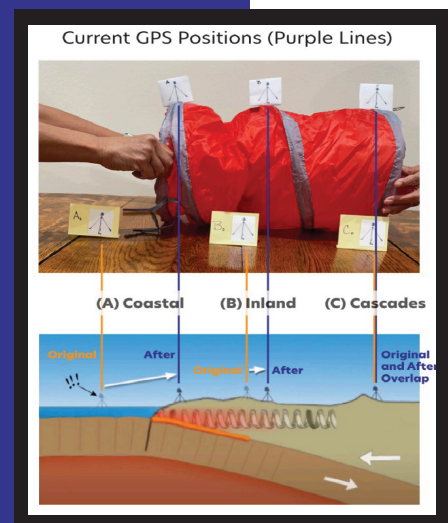
Steps

Step 1: **Start expanded:** Hold the tunnel open/extended and tell students this represents the region before significant strain builds. (GPS stations on top of the tunnel are aligned with those on the table.)

Step 2: **Compress slowly:** Push the tunnel inward from one side, to show strain building as plates remain locked. “Energy is storing up in the system.”

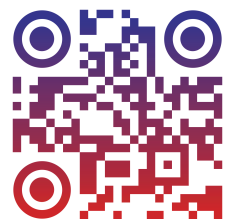
Step 3: **Point out “most motion” is near the coast:** While compressed, emphasize that coastal areas are more “crumpled” than inland areas.

Step 4: **Release (controlled):** Let it spring back to represent rebound during an earthquake and connect to why this matters for hazard and preparedness discussions.



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- Extend this idea by refer to the vector map in the activity. Point out the differences in arrow lengths at the coast compared to inland areas coinciding with ground motion differences.
- NGSS: MS-ESS2-2, HS-ESS1-5, Developing and Using Models, Stability and Change.

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