

## Great shakes: what is happening here?

### Objectives:

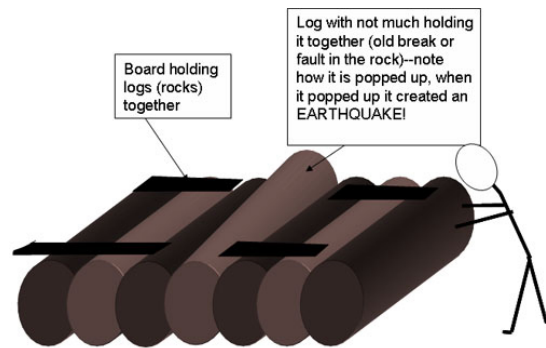
- Understand why there are earthquakes in South Carolina, specifically Charleston, SC

### Standards:

- Science (5-8/9-12):
  - Science as Inquiry: Abilities necessary to do scientific inquiry
  - Physical Science: Transfer of energy and interactions in energy and matter
  - Earth and Space Science: Changes in the Earth; energy in the earth system
  - Science in Personal and Social Perspectives: Natural hazards

### Background:

Unlike California, South Carolina lies on what is known in geology as a 'passive margin'. This means that we are in the middle of a tectonic plate rather than on the edge of one where two plates are grinding past each other. Most of South Carolina's earthquakes occur in the Coastal Plain where the rocks underneath are very broken up from the break-up of Pangaea (when Africa and North America were one continent!). These cracks in the deep rocks mean that this area of the plate is weak, so if you push on the edge of the plate, some of these faults/breaks will allow the rocks to move. This is similar to a log raft where some of the logs are loose and when you push on the edge of the raft, the logs that are loose move. When the logs move they slide past each other and since they are smooth they can break off little pieces where they are sliding past and this causes earthquakes.



### Classroom Activity:

Using several pencils (more than 5), tape the pencils along the ends together tightly with scotch tape. Leave one pencil untapped in the center. Tie all of the pencils (including the one untapped) together using string (much like the log raft above). Push the raft against a hard surface and the pencil that is untapped will pop up in the center, simulating a passive margin earthquake as here in Charleston.

### Possible questions/inquiry for learners:

Compare and contrast plate movements along active margins and passive margins.

Where might other earthquakes occur in SC and why?

What happened during the 1886 earthquake in Summerville, SC?