



TRY THIS

EARTHQUAKE FAULT MODEL



Earthquakes often begin at a fault in the Earth's crust. A fault is a place where there is a break in the Earth's crust. If rock near a fault suddenly begins to move, it creates pressure that causes an earthquake. Here's a simple way to show how it works:

What You'll Need:

Three different colours of plasticine

Plastic knife

► **Step 1:** Take the three pieces of plasticine and shape each piece into a flat rectangle.

► **Step 2:** Stack them on top of one another and

press them together. The three pieces of plasticine represent layers of the Earth's crust.

► **Step 3:** Use the knife to cut all the way through the layers so you have two halves. Put the two sections together, but don't match them up exactly as they were before you cut them apart. The cut is like a fault in the Earth's crust.

► **Step 4:** Push in on the outside edges of both sections of clay. The plasticine along the "fault" should buckle and slide. Earthquake!

WHY EARTHQUAKES OCCUR

TO understand why this natural phenomenon occurs, we have to take a look at what's under the surface of the Earth. Our Earth is divided into an inner core, outer core, the molten magma mantle and the crust, floating on top. The crust has cracks in it that fit together like a puzzle. These pieces that fit together are called tectonic plates. The moving magma causes these plates to shift in different directions. The edges where the plates meet are called plate boundaries where fault lines are found – areas of stress in the earth's surface. There are four major types of faults: dip-slip normal, dip-slip reverse, strike-slip, and oblique-slip. The plates converge (collide), diverge (move away from one

another) or shear (grind past each other). When the plates become locked together, energy builds up. This stored energy is eventually released in the form of an earthquake.

The point of the earthquake beneath the surface is called the hypocenter. An earthquake emits its power as three waves of energy. Primary waves are felt as a sudden jolt. Secondary waves arrive a few seconds later in sustained side-to-side shaking. Then surface waves radiate outwards from the epicentre – the point on the surface directly above the hypocenter. After an earthquake there are smaller quakes called aftershocks. These happen because the plates are still settling back into place.

MEASURING EARTHQUAKES

EARTHQUAKES can occur anywhere on the planet with little or no warning.

They cannot be predicted but scientists who study the earth (geologists and seismologists) can identify areas that are most at risk and express the size of the earthquake in two ways – magnitude and intensity.

The vibrations produced by earthquakes are detected, recorded and measured by instruments called seismographs. Scientists use the data produced by the seismographs (seismograms) to determine the time, the epicentre, the depth and magnitude (energy released) of the earthquake.

Magnitude describes an earthquake's size. The numerical, logarithmic scale developed by Charles Richter in the 1930s, is a range of numbers used

to compare earthquakes.

Each step in the Richter Scale represents a tenfold increase in wave motion. An earthquake of magnitude 6.0 is ten times larger than an earthquake of magnitude 5.0, a hundred times more than magnitude 4.0 and one thousand times greater than a magnitude 3.0 earthquake.

Intensity is the degree of damage or the observable effects caused by an earthquake at a particular location according to geology, population density, cultural features and distance from the epicentre. The intensity scale, the Modified Mercalli Scale, is divided into 12 degrees, each identified by a Roman numeral.

For example, an earthquake felt by a person standing nearby has an intensity of MM III.

INTERESTING FACTS

- An earthquake happens somewhere in the world every 30 seconds.
- Aftershocks can follow an earthquake for days, weeks or months.
- Most earthquakes last a minute or less.
- Many earthquakes happen on the ocean floor.

- The deadliest known quake shook central China in 1556. About 830,000 people died.
- The largest recorded quake was in Chile in 1960, measuring 9.5.
- The 1989 Newcastle earthquake (magnitude 5.6) has been Australia's most damaging.

WEEKLY CHALLENGE

- On what page can you find today's weather report? Is it always on the same page each day?
- Can you find any stories in the paper relating to natural disasters? Where did it occur and what type of natural disaster was it? What were the effects?



NEXT WEEK: IN HARMONY