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IZENBURUA	The Science of Earthquakes	MAILA	DBH 2. maila
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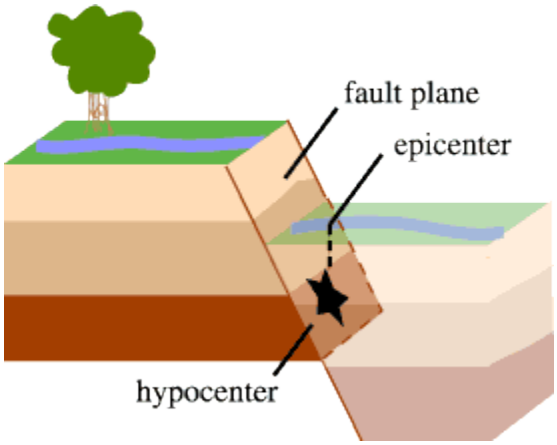
The Science of Earthquakes

Originally written by Lisa Wald for "The Green Frog News"

What is an earthquake?



An *earthquake* is what happens when two blocks of the earth suddenly slip past one another. The surface where they slip is called the *fault* or *fault plane*. The location below the earth's surface where the earthquake starts is called the *hypocenter*, and the location directly above it on the surface of the earth is called the *epicenter*.

Sometimes an earthquake has *foreshocks*. These are smaller earthquakes that happen in the same place as the larger earthquake that follows. Scientists can't tell that an earthquake is a foreshock until the larger earthquake happens. The largest, main earthquake is called the *mainshock*. Mainshocks always have *aftershocks* that follow. These are smaller earthquakes that occur afterwards in the same place as the mainshock. Depending on the size of the mainshock, aftershocks can continue for weeks, months, and even years after the mainshock!

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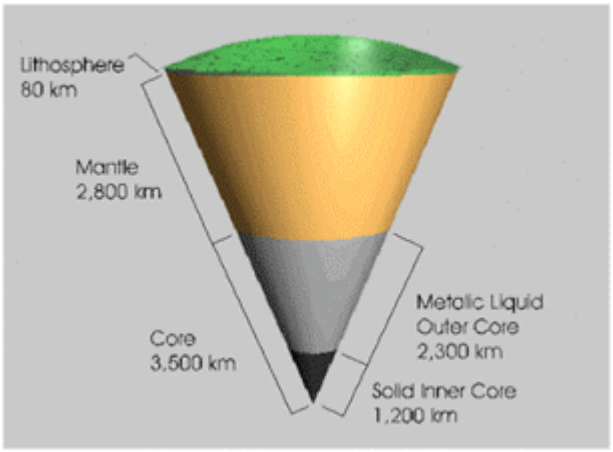
What causes earthquakes and where do they happen?



The earth has four major layers: the *inner core, outer core, mantle* and *crust*. (figure 2) The crust and the top of the mantle make up a thin skin on the surface of our planet. But this skin is not all in one piece – it is made up of many pieces like a puzzle covering the surface of the earth. (figure 3) Not only that, but these puzzle pieces keep slowly moving around, sliding past one another and bumping into each other. We call these puzzle pieces *tectonic plates*, and the edges of the plates are called the *plate boundaries*. The plate boundaries are made up of many faults, and most of the earthquakes around the world occur on these faults. Since the edges of the plates are rough, they get stuck while the rest of the plate keeps moving. Finally, when the plate has moved far enough, the edges unstick on one of the faults and there is an earthquake.

Why does the earth shake when there is an earthquake?

While the edges of faults are stuck together, and the rest of the block is moving, the energy that would normally cause the blocks to slide past one another is being stored up. When the force of the moving blocks finally overcomes the *friction* of the jagged edges of the fault and it unsticks, all that stored up energy is released. The energy radiates outward from the fault in all directions in the form of *seismic waves* like ripples on a pond. The seismic waves shake the earth as they move through it, and when the waves reach the earth's surface, they shake the ground and anything on it, like our houses and us! (see P&S Wave inset)

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JATORRIA	
EGILEA	USGS: US Geological Survey
IZENBURUA	The Science of Earthquakes
ARGITALETXEA/Webgunea	http://earthquake.usgs.gov/learn/kids/eqscience.php
URTEA	2009ko urrian eguneratua
ORRIALDEA (K)	
ISBN	
TESTU-MOTA	
OINARRIA	INPRIMAKIA
FORMATOA	MISTOA
MOTA	13 AZALPENEZKOA
ERABILERA	HEZKUNTZAKOA/PRIBATUA

JARDUERAK

1. INFORMAZIOA BILATU EDO BERRESKURATU

1.1 Galdera

What is the name of the place below the earth's surface where the earthquake starts?

- Epicenter
- Hypocenter
- Hypercenter

1.1 Erantzuna

- Hypocenter

1.2 Galdera

What is the earthquakes definition in the text?

1.2 Erantzuna

"An earthquake is a natural phenomenon that happens when two blocks of the earth suddenly slip/slide past one another."

2. ULERMEN OROKORRA

2.1 Galdera

a. The following 3 sentences sum up the contents of the 3 parts of the text. Match/connect the statements with the parts:

1.-What is an earthquake?

2.- What causes earthquakes and where do they happen?

3.-Why does the earth shake when there is an earthquake?

a) Location and reasons why earthquakes happen - (2)

b) Consequence(s) of earthquakes on the earth - (3)

c) Earthquakes: what they are, moments in an earthquake - (1)

2.1 Erantzuna

a-2

b-3

c-1

2.2 Galdera

b. The purpose/goal/objective of the text is:

- To <u>warn</u> readers about the dangers of earthquakes
- To <u>inform</u> readers about the measures to be taken in case of earthquakes.
- To inform readers about what earthquakes are, what causes them and what their consequence(s) on earth are.

2.2 Erantzuna

To inform readers about what earthquakes are, what causes them and what their consequence(s) on earth are.

3. INTERPRETAZIOA- INFERENTZIAK

3.1 Galdera

Could you name some of the countries/ regions/ areas in the world where earthquakes are most frequent? Give a reason for your answer.

3.1 Erantzuna

The areas where boundaries of plates are, for instance the Himalayan Mountain Range, Japan, Indian Ocean, because earthquakes mostly occur when two plates slip past one another or bump into each other.
3.2 Galdera
What happens when the hypocenter and epicentre of the earthquake are found below the ocean?
3.2 Erantzuna
A tsunami (gigantic wave) is produced. The energy of the earthquake radiates outwards through the water, thus displacing the bulge of water. Large waves begin moving through the ocean, away from the epicentre. When these waves reach the coast they are gigantic and have inmense power.
4. EDUKIAREN GAINEKO HAUSNARKETA EDOTA BALORAZIOA
4.1 Galdera
If you look at the map showing the tectonic plates you will see a plate boundary right between Africa and the Iberian Peninsula. Do you think the probability of suffering an earthquake in Iruñea and its outskirts is high?
4.1 Erantzuna
It is, in fact small shocks/earthquakes are frequent in the area.
4.2 Galdera
The author of the text: • Thinks earthquakes are a dangerous phenomenon. • Tells people how beautiful earthquakes are. • Is neutral about earthquakes, just explains the natural phenomenon.
4.2 Erantzuna
Is neutral about earthquakes, just explains the natural phenomeno
5. FORMAREN GAINEKO HAUSNARKETA EDOTA EBALUAZIOA
5.1 Galdera
The text uses some metaphors and analogies to explain why earthquakes occur. Find 2 of them; what do they refer to?
5.1 Erantzuna
- “ a thin skin”, “puzzle”: crust

- "like a ripple on a pond": to show the effect that energy from earthquakes produce on the earth.

- "pieces of a puzzle": tectonic plates

5.2 Galdera

Why are the headings of each paragraph, questions?

5.2 Erantzuna

To show more clearly that what comes in the text is the answer to the question.