

# ARE WE PREPARED FOR THE "BIG ONE" ?

*Small Earthquake Felt. Dozens Injured After Earthquake Hits. Earthquake Strikes.* It is not uncommon to read or hear these words in the news on a regular basis. What is going on?

## A Bump in the Night

One reason is that on December 29, 2015, a 4.7 magnitude earthquake struck off the British Columbia's South Coast. The tremors woke some people from their sleep!

In Victoria, Natural Resources Canada seismologist<sup>1</sup> John Cassidy said he felt strong shaking for about 10 seconds. "You could hear things moving around, pictures on the wall. It was the strongest in quite some time here." He went on to say, "We have experienced larger earthquakes in the past and we will experience larger earthquakes in the future."

## The Pacific Ring of Fire

British Columbia is in an active earthquake zone known as the Pacific Ring of Fire. The Ring of Fire runs along the edges of the Pacific Ocean. It is 40 000 kilometres long and shaped like a horseshoe. About 75 percent of earthquakes and 90 percent of volcanoes happen along the Ring of Fire.



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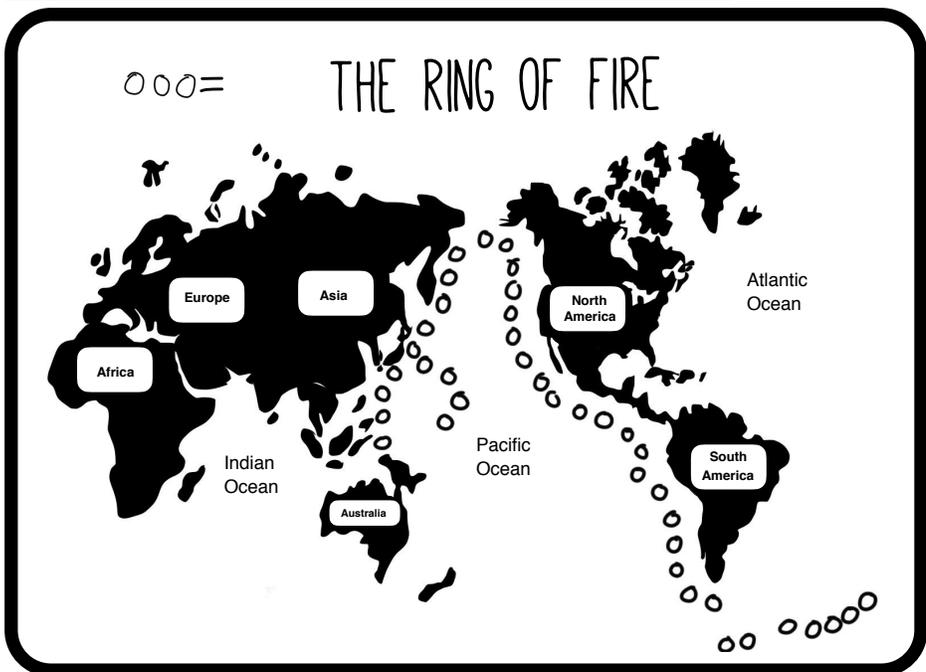
THAT WAS DEFINITELY AN #EARTHQUAKE. #Vancouver  
11:41 PM - 29 DEC 2015  
👍 16 ❤️ 38

 Ty Smith  
@tydawg Follow

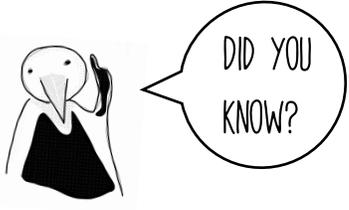
I've been here almost 10 years and it's the 1st one I've ever felt. For the record, our dog didn't even flinch.  
11:52PM - 29 DEC 2015  
👍 14 ❤️ 47

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@vicvongut Follow

Yes. I think so. Felt it in Victoria. #earthquake  
11:42 PM - 29 DEC 2015 - Saanich, British Columbia, Canada  
👍 3 ❤️ 4



The largest earthquake in history took place in Chile on May 22, 1960 and recorded a magnitude of 9.5 on the Richter scale.



<sup>1</sup> seismologist - a scientist who studies earthquakes and the internal structure of the Earth.

## Plates Colliding

Earthquakes are created in the earth's outermost layer or tectonic plates. Tectonic plates constantly shift, slide, and collide with one another, causing movements. Since these plates are massive in size, 80 to 400 kilometres thick, their force builds up a lot of pressure, causing the fault lines or weak areas to break apart. When the plates break apart, seismic waves are spread and an earthquake is formed. Many times those movements cannot even be felt by humans.

Earthquakes can be very minor, ranging from a slight rumble to a much more devastating force, causing major damage. Sometimes powerful megathrust earthquakes occur when a piece of the earth's crust is forced underneath another plate.

The impact of an earthquake is measured using two different scales. The magnitude of an earthquake is measured using a seismograph while the Richter Scale compares the severity of earthquakes with one another.

# THE RICHTER SCALE

Richter scale #	Number of earthquakes per year	Typical effects of this magnitude
< 3.4	800000	Detected only by seismometers
3.5 - 4.2	30000	Just about noticeable indoors
4.3 - 4.8	4800	Most people notice them, windows rattle
4.9 - 5.4	1400	Everyone notices them, dishes may break, open doors swing
5.5 - 6.1	500	Slight damage to buildings, plaster cracks, bricks fall
6.2 - 6.9	100	Much damage to buildings: chimneys fall, houses move on foundations
7.0 - 7.3	15	Serious damage: bridges twist, walls fracture, buildings may collapse
7.4 - 7.9	4	Great damage, most buildings collapse
> 8.0	Every 5 to 10 years	Total damage, surface waves seen, objects thrown in the air

<http://www.matter.org.uk/schools/content/seismology/richterscale.html>

## The Big One

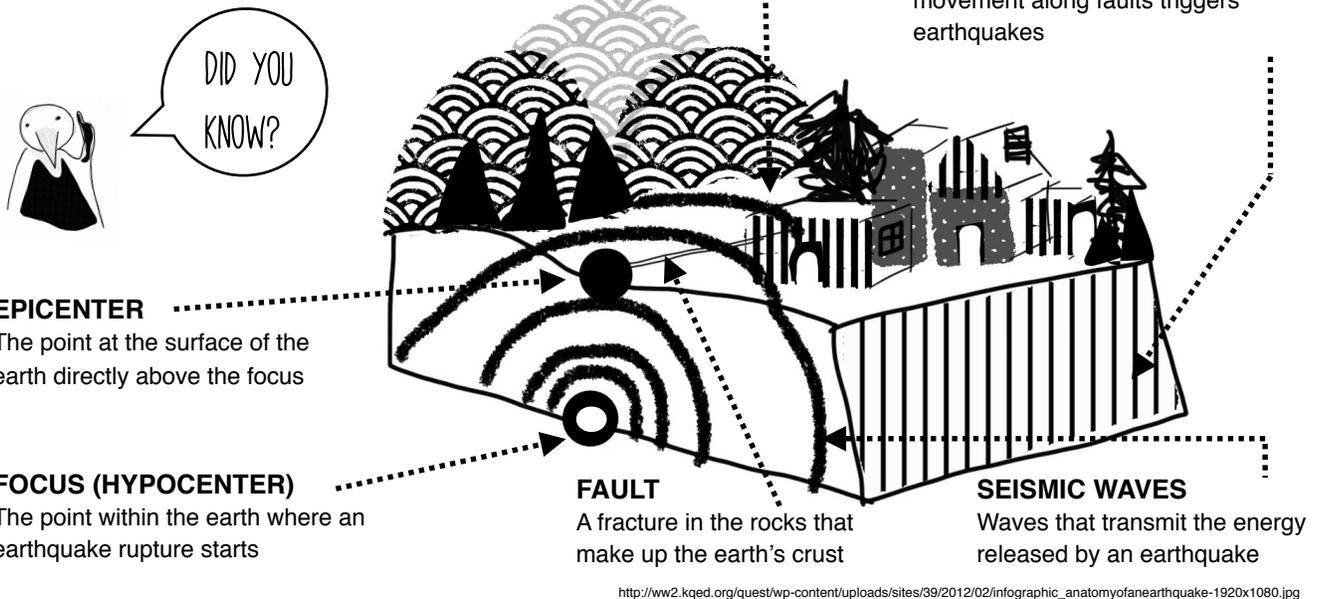
Sometimes people talk about a “Big One” hitting B.C.’s West Coast. Such an earthquake would be like the one that shook Japan on March 11, 2011. It had a magnitude of 9.0. Occurring under the ocean, this megathrust earthquake caused a destructive tsunami.

Records show B.C. has experienced megathrust earthquakes at least 13 times in the last 6,000 years. Scientists believe the last big one was a 9.0 earthquake off Vancouver Island’s west coast about 300 years ago. First Nations oral traditions suggest

a tsunami<sup>2</sup> followed it and destroyed whole villages. Stories were passed on about Aboriginal Peoples who suddenly disappeared and canoes that were found hanging from trees. Detailed Japanese records confirm this earthquake happened, describing monster waves - as high as a four-storey building today - along the Japanese coast on January 26, 1700.

Scientists think B.C. is due for another big earthquake, likely in the next 200 years. Some people say there is a one in ten chance that it will happen in our lifetime.

## ANATOMY OF AN EARTHQUAKE



## Be Prepared

Actions can be taken to keep people safe. To begin, it is necessary for people to learn more about earthquakes. They must be made aware of the active areas and the potential fault lines. In addition, before building permits are given, municipalities can ensure that building occurs in safe zones. In areas where there is a higher threat of an earthquake, builders can build earthquake-proof buildings. It is also possible to strengthen existing buildings.

Currently, B.C. schools closer to the ocean are being earthquake-proofed so they can better withstand shaking. Even though the B.C. Interior is unlikely to have a big earthquake, many schools practise earthquake drills such as The Great British Columbia ShakeOut. At 10:20 on October 20<sup>th</sup> each year, students from across B.C. join together to “Drop, Cover, and Hold On” for sixty seconds.

Scientists have not yet figured out how to predict exactly when an earthquake will occur, but we can be prepared.

<sup>2</sup> tsunami - a long high sea wave caused by an earthquake, submarine, landslide, or other disturbance.



# NONFICTION READING ASSESSMENT GRADES 4-9

## Are We Prepared for the Big One?

Fall Assessment: Grade 6

Text Type: Information Report

Word Count: 667

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