

EOSC 114 – Earthquake clicker questions

Earthquake lecture #1 follows

Clicker Question??

Have you experienced an earthquake?

- A) Nope, but I would like to!
- B) Nope, and I never want to.
- C) Yes, but I barely felt it.
- D) Yes, it was a pretty good shake.
- E) Yes, I was in a REALLY big one!

Clicker Question??

Which of the following regions has the most earthquakes?

A) Arctic Ocean

B) Atlantic Ocean

C) Indian Ocean

D) Pacific Ocean

E) Earthquakes are equally abundant in every ocean

Clicker Question??

Which of the following parts of the Earth is a liquid?

A) continental crust

B) oceanic crust

C) mantle

D) outer core

E) inner core

Clicker Question??

What effect does increasing the pressure of a rock have on its density?

- A) Increasing pressure causes rock density to increase
- B) Increasing pressure causes rock density to decrease
- C) Increasing pressure has no effect on rock density

Clicker Question??

Which of the following is ***not*** part of the lithosphere?

A) continental crust

B) oceanic crust

C) outer core

D) uppermost mantle

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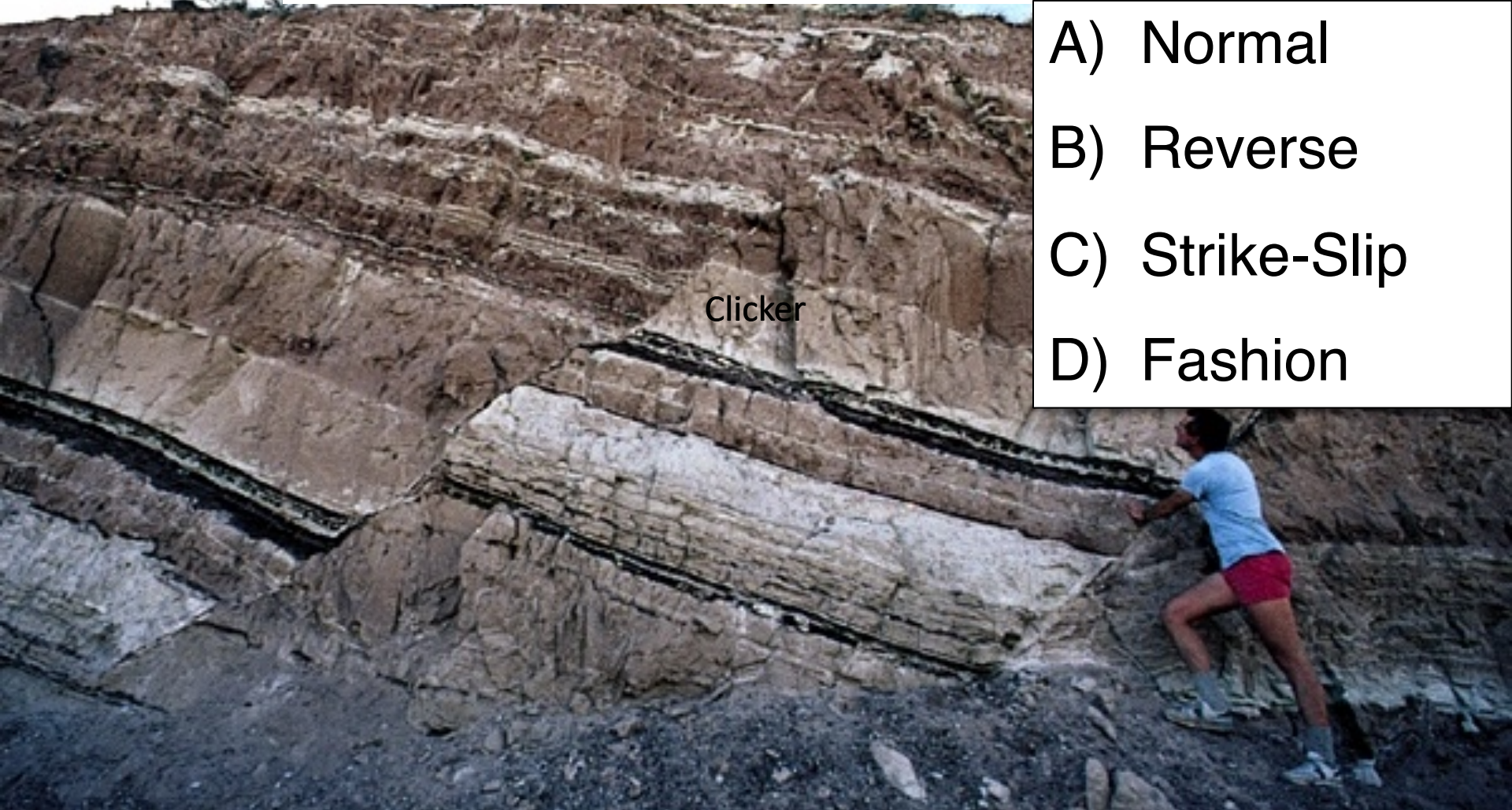
Earthquake lecture #2 follows

Clicker Question?

Up ↑

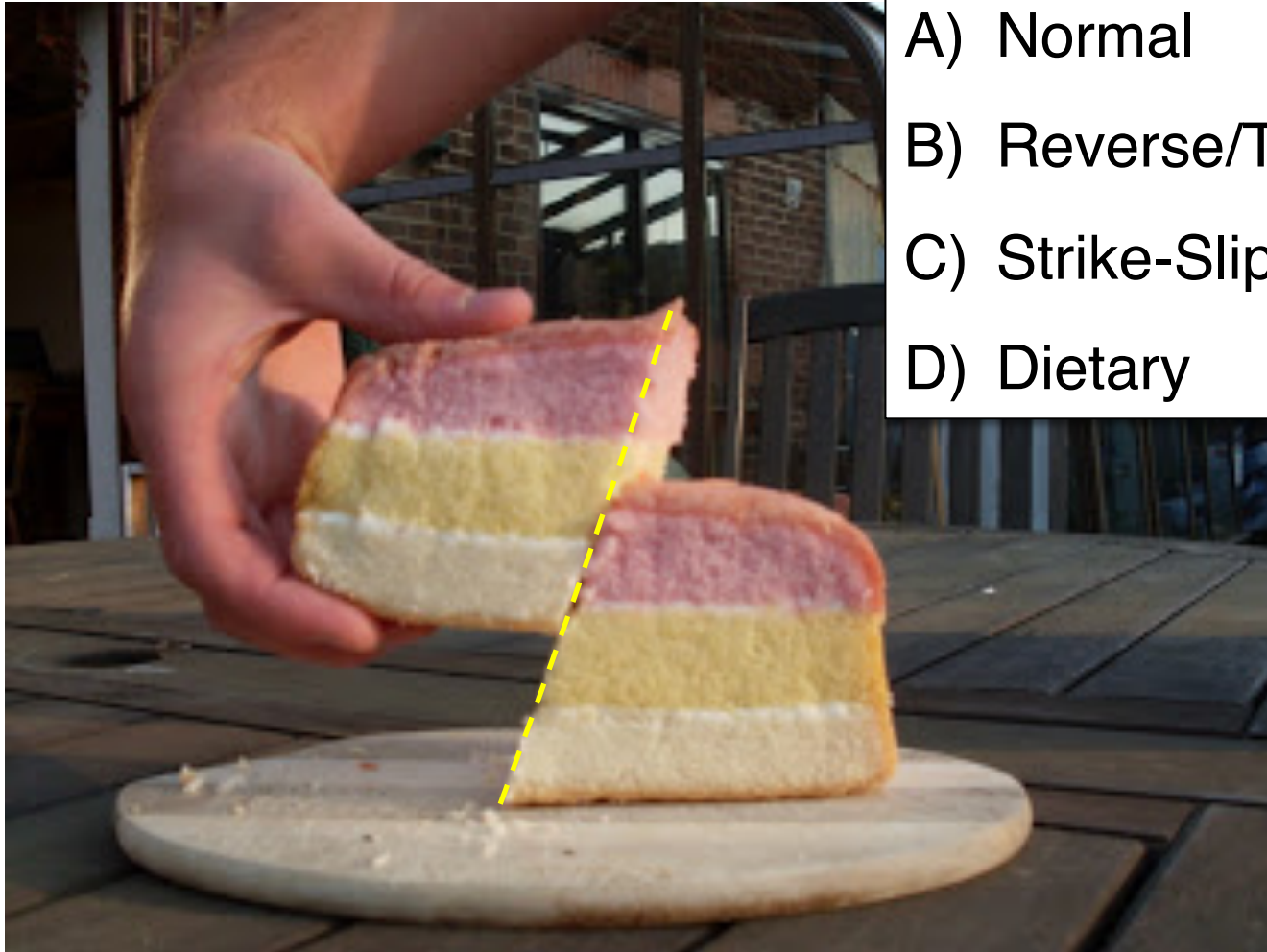
What type of fault is this?

- A) Normal
- B) Reverse
- C) Strike-Slip
- D) Fashion



Clicker Question?

What type of fault is this?

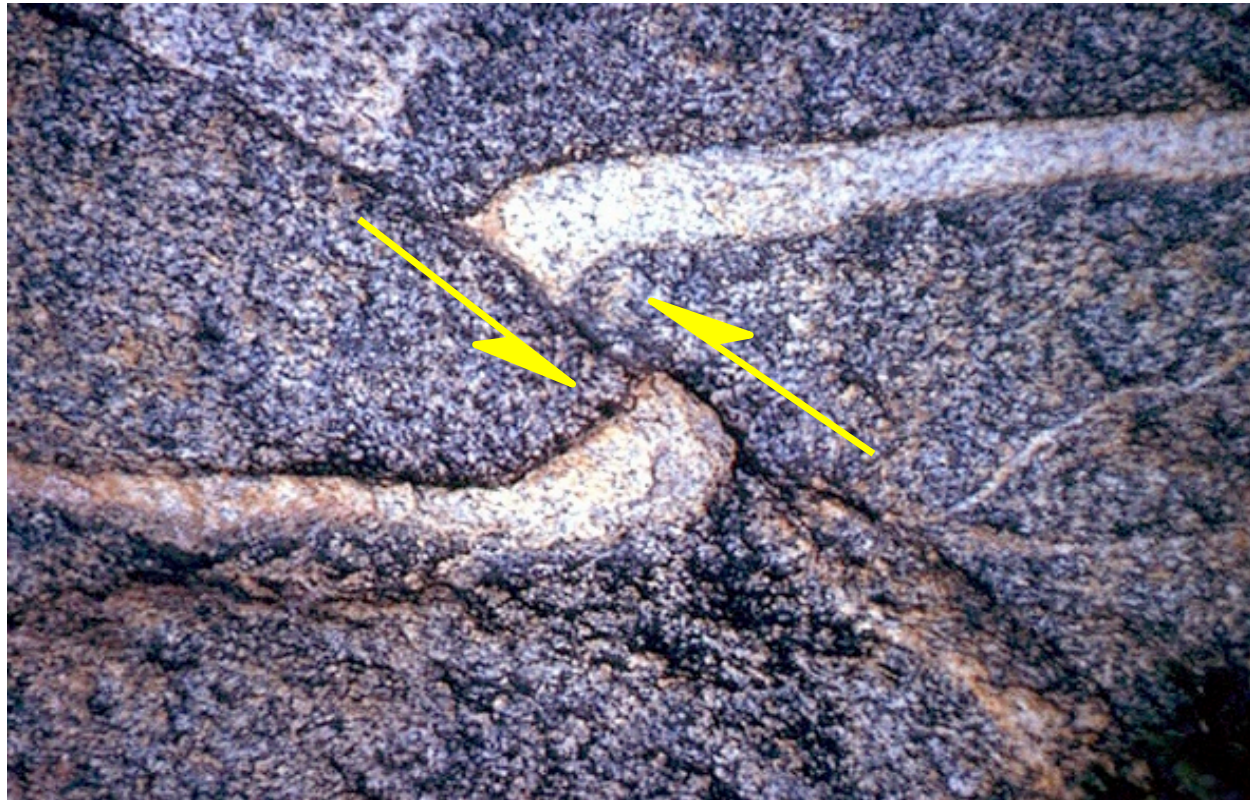


- A) Normal
- B) Reverse/Thrust
- C) Strike-Slip
- D) Dietary

Clicker Question?

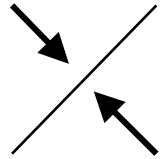
What type of strain or deformation did rock undergo?

- A) Brittle
- B) Ductile
- C) Both



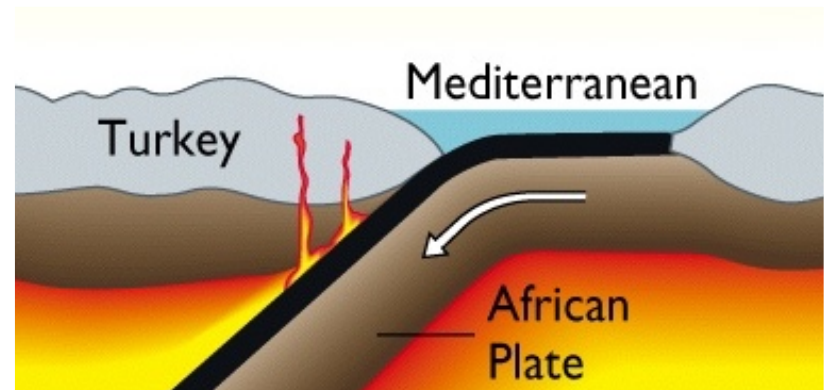
Clicker Question??

In an ocean-continent convergence zone, why is the oceanic plate always subducted and not the continental plate?



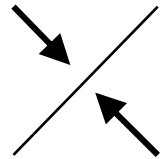
Continental crust cannot be subducted because the continental crust:

- A) is too buoyant compared to the mantle
- B) is too old and cold compared to the mantle
- C) is pushed up by volcanism

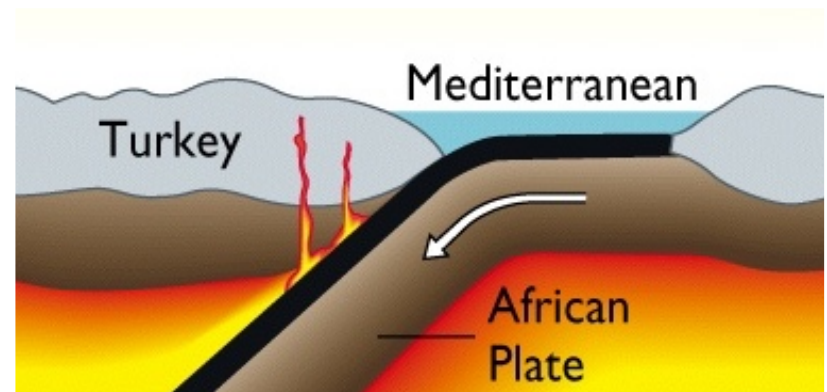


Clicker Question??

What happens when the oceanic plate is all subducted and the two continental plates collide?



- A) The older, colder continental plate is subducted
- B) The younger, hotter continental plate is subducted
- C) Neither continental plate is fully subducted and a mountain range forms
- D) Plate motion stops due to the collision



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Earthquake lecture #3 follows

Clicker Question?

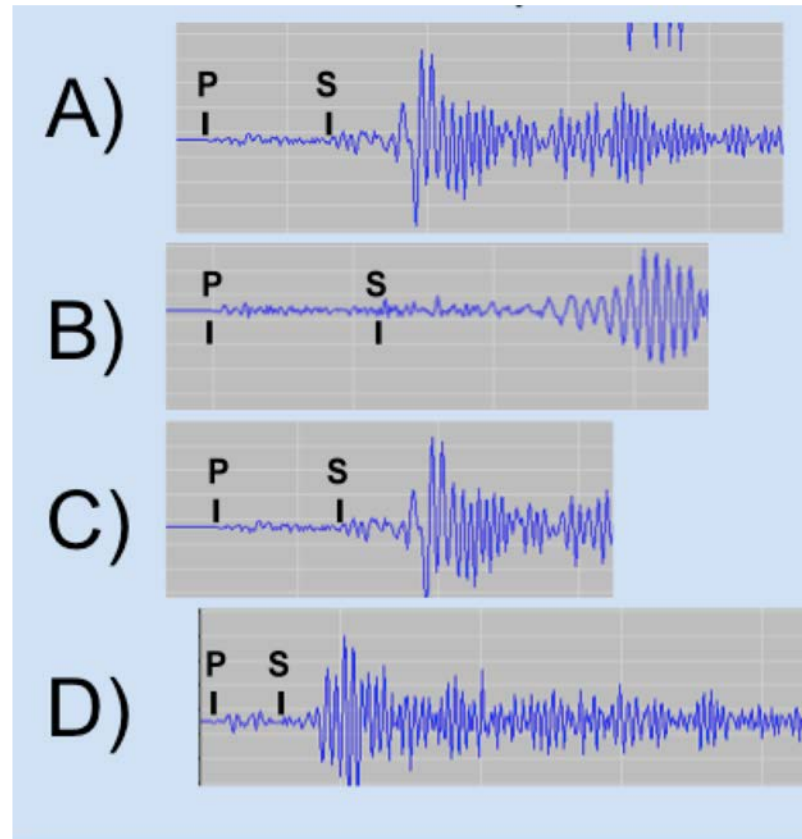
What are the dominant fault types at a convergent plate boundary?

- A) Normal faults
- B) Reverse (or thrust) faults
- C) Strike-slip faults
- D) Faulting does not occur at convergent plate margins

Clicker Question?

Seismic waves can travel through and around the entire planet. Take a look at these seismographs all recording the same earthquake.

Which of these was recorded at a location furthest from the earthquake hypocentre?



Clicker Question?

How much more ground motion (shaking side-side or up-down) does a $M_w = 9$ earthquake cause when compared to a $M_w = 7$ earthquake?

- A) 0.1 times
- B) 1 times
- C) 10 times
- D) 100 times
- E) 1000 times

Clicker Question?

A $M_w = 8$ earthquake releases approximately how much more **energy** than a $M_w = 6$ earthquake?

- A) 2 times
- B) 64 times
- C) 100 times
- D) 1000 times
- E) 10,000 times

Clicker Question?

Which of the following affects the amount of damage to buildings during an earthquake?

- A) Proximity to the earthquake hypocentre
- B) Magnitude of the earthquake
- C) Local geology
- D) Design of the buildings
- E) All of the above

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Earthquake lecture #4 follows

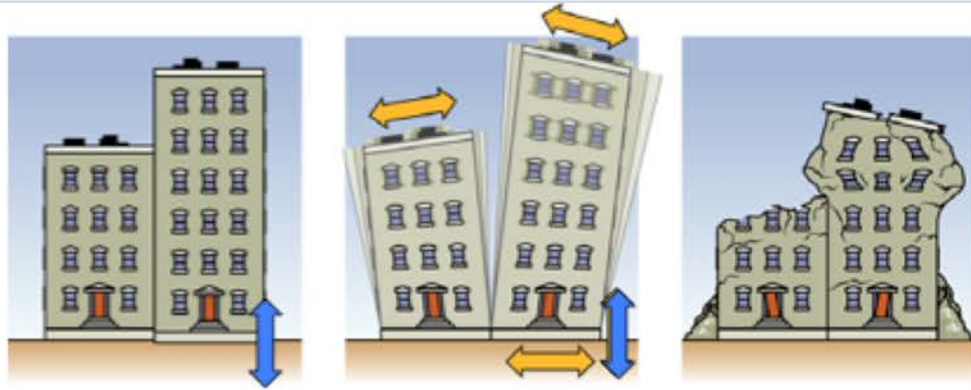
Clicker Question?

The ground shaking caused by a magnitude 7 earthquake is _____ greater than the ground shaking from a magnitude 5 earthquake.

- A) 2 times
- B) 64 times
- C) 100 times
- D) 1000 times
- E) 10,000 times

Clicker question?

Horizontal ground motions are most damaging to buildings



Seismic waves cause the ground motion.

Consider:

- where seismic waves originate
- how they travel,
- the amount of ground motion they cause:

Which type of wave would likely cause the most damage?

A. P-waves

B. S-waves

C. Surface waves

Clicker Question?

All buildings vibrate (resonate) at a characteristic frequency.

Which building will resonate at a **lower** frequency (fewer shakes per second)?



A



B

Clicker Question?

Based on the results of your analogue experiment

Which building will resonate at a **lower** frequency (fewer shakes per second)?



A



B

Clicker Question?

Liquifaction Hazard in Vancouver

In the Greater Vancouver area,
other than Richmond, where do you think
there is the highest liquifaction hazard?

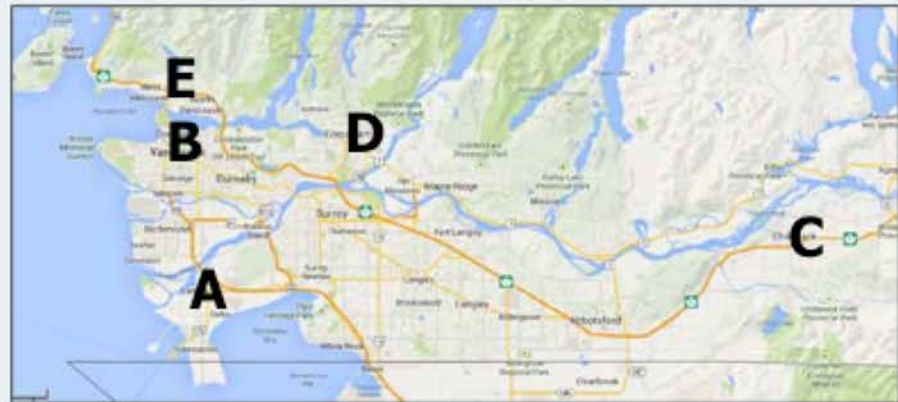
A) Delta

B) False Creek

C) Chilliwack

D) Coquitlam/Maple Ridge

E) North Vancouver



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Earthquake lecture #5 follows

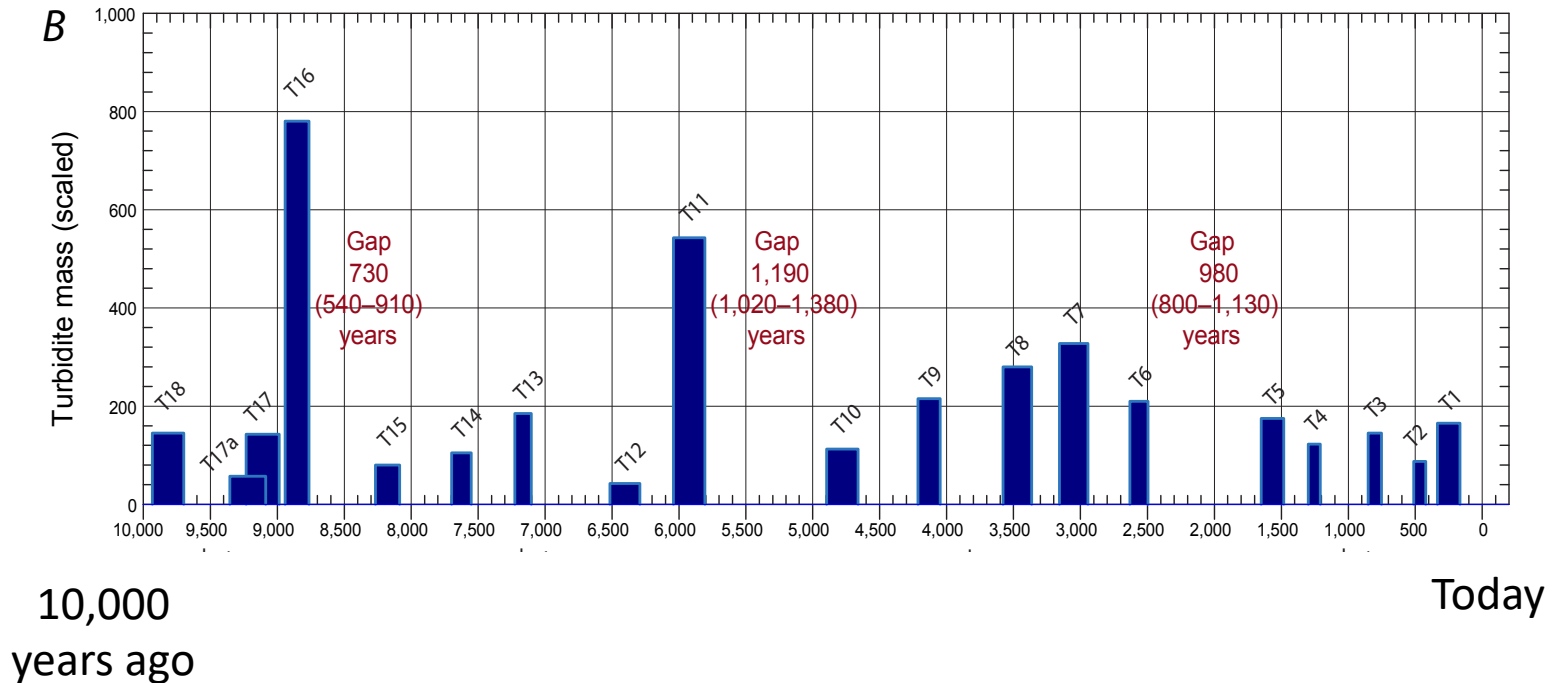
Clicker Question?

Did Prof. Simon Peacock successfully predict the 2001 Nisqually earthquake?

- A. Yes, because you know ... “Simon says”.
- B. Yes, Simon accurately predicted the earthquake!
- C. Yes and no.
- D. No, Simon did not predict the earthquake.
- E. No, I just don’t trust the guy.

Clicker Question?

A record of magnitude 9+ earthquakes in Cascadia over the last 10,000 years

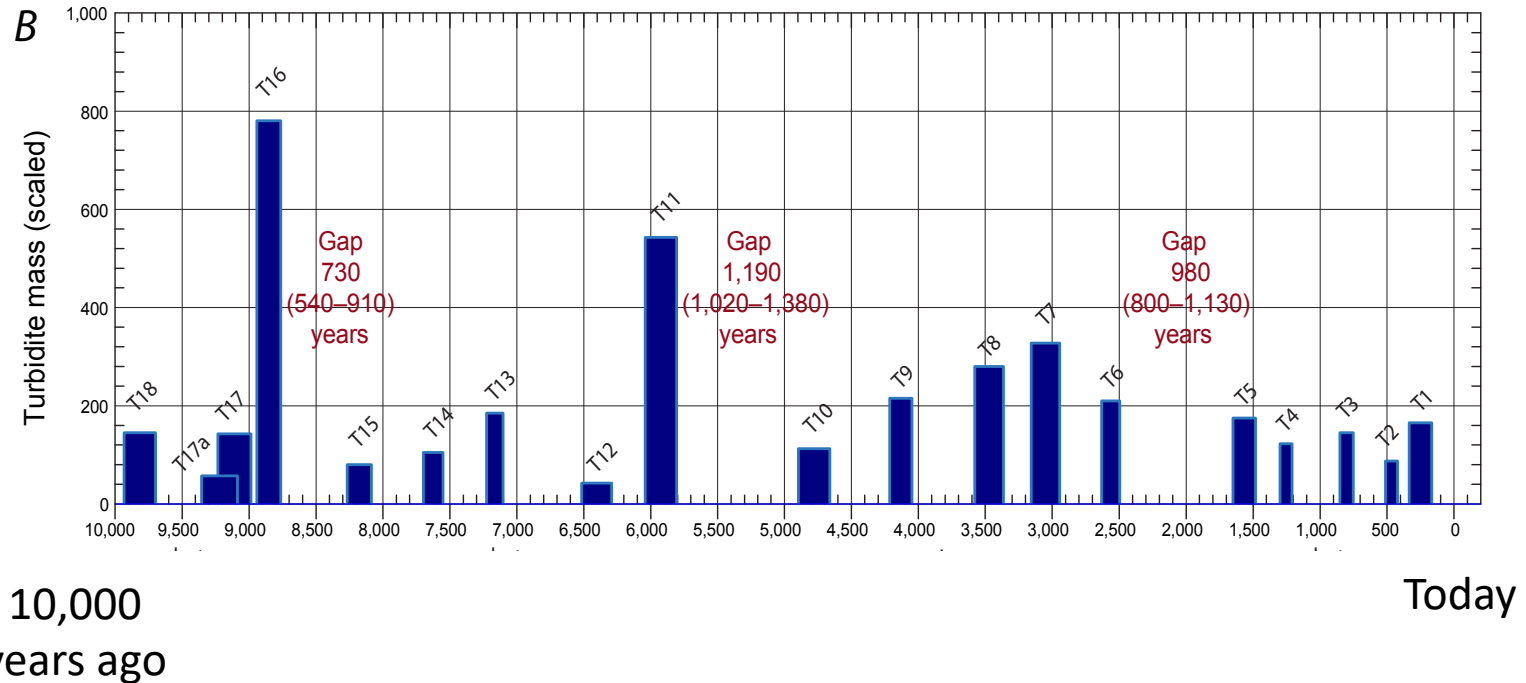


Based on the graph above, how often do Magnitude 9+ earthquakes occur?

- A. Every 100 years
- B. Every 500 years
- C. Every 1,000 years
- D. Every 5,000 years

Clicker Question?

A record of magnitude 9+ earthquakes in Cascadia over the last 10,000 years



The last Mag 9 earthquake occurred in 1700 AD (323 years ago). What are the chances that we will have a Mag 9 earthquake in the next 100 years?

- A. Unlikely (no chance)
- B. Possibly (2 in 10 chance)
- C. Even odds (5 in 10 chance)
- D. Probably (8 in 10 chance)
- E. Definitely