

Extreme Earth

Learning Objective:

To find out about earthquakes and what causes them.

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How many types of natural disaster can you think of that are caused by the weather?



Discuss your ideas.

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It is not only extreme weather, such as tornadoes, hurricanes and blizzards that can cause natural disasters on Earth. Earthquakes are also responsible for devastation.



Do you know what an earthquake is?

Do you know what causes earthquakes?

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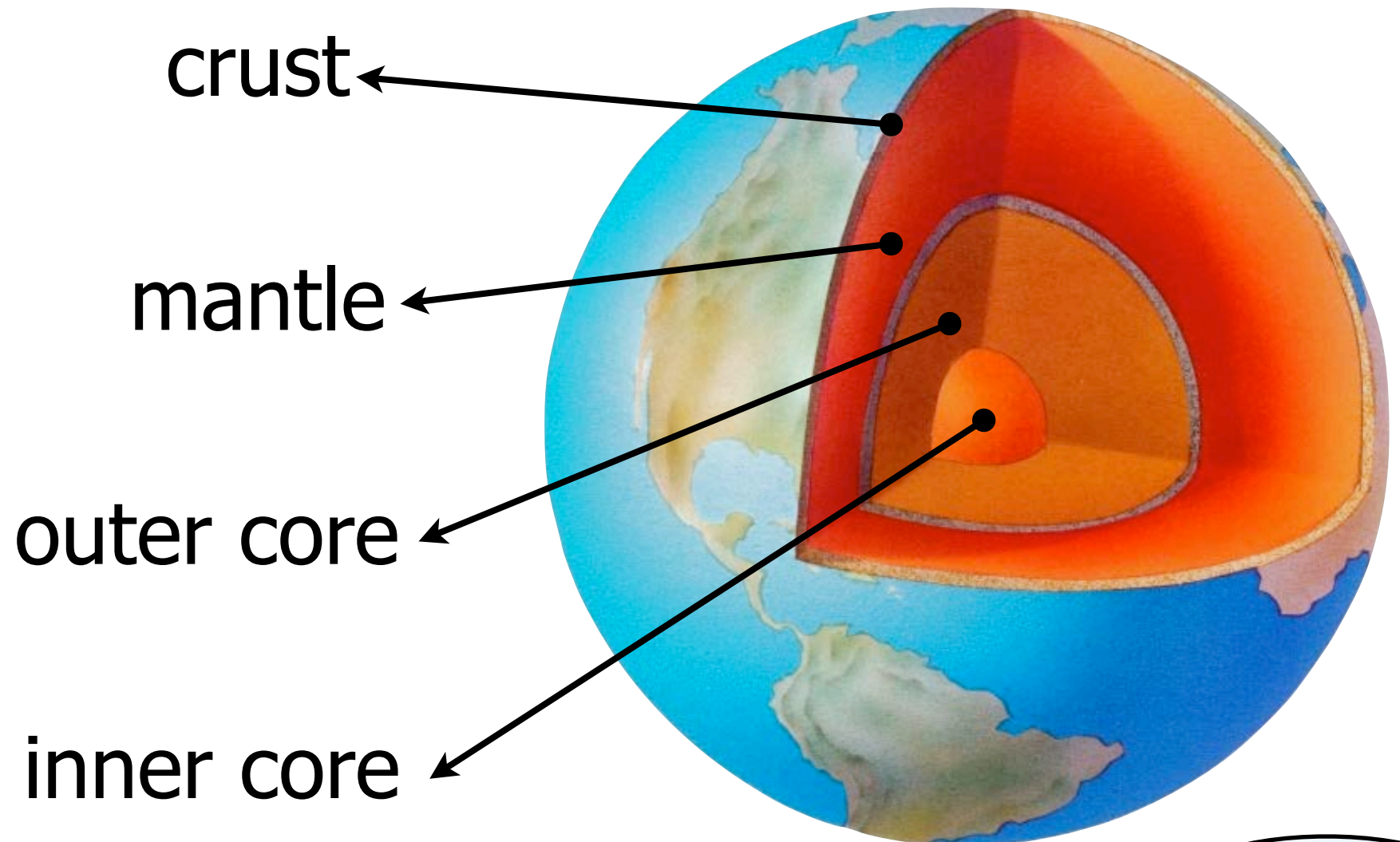
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The Earth is made up of several different layers. The inner core is the hottest part of the Earth and is solid. The outer core is a hot liquid layer. The mantle is made up of semi-molten rock. The crust is the outer layer of the Earth. It is made up of plates of rock that fit together like a jigsaw.

The Earth's plates are known as **tectonic** plates.



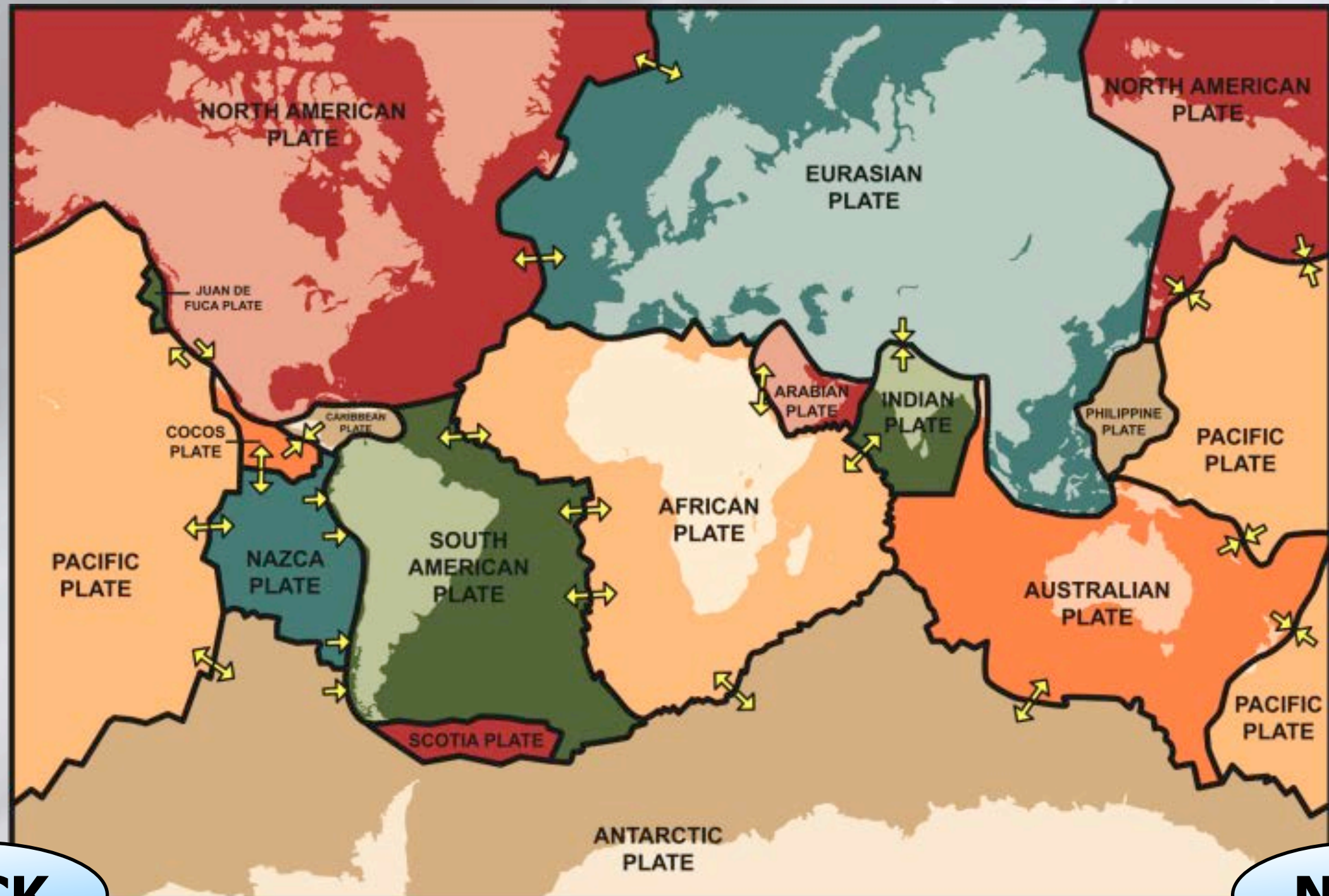
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This map shows the plates of the Earth's crust. **Can you see the outline of countries underneath?**



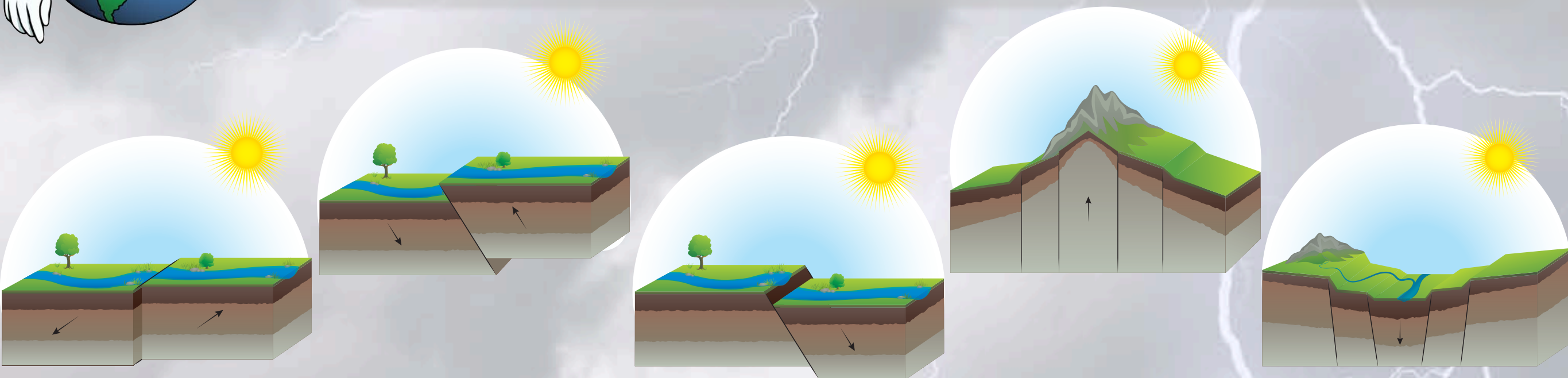
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The Earth's plates are constantly moving. They move a few centimetres every year. This might not sound like much but when the tectonic plates meet, they sometimes get jammed together. The forces pushing the rocks together then build up until the rocks distort. They judder past each other then fall back to their original shapes. This releases stored energy in seismic waves. It is these waves that cause earthquakes.



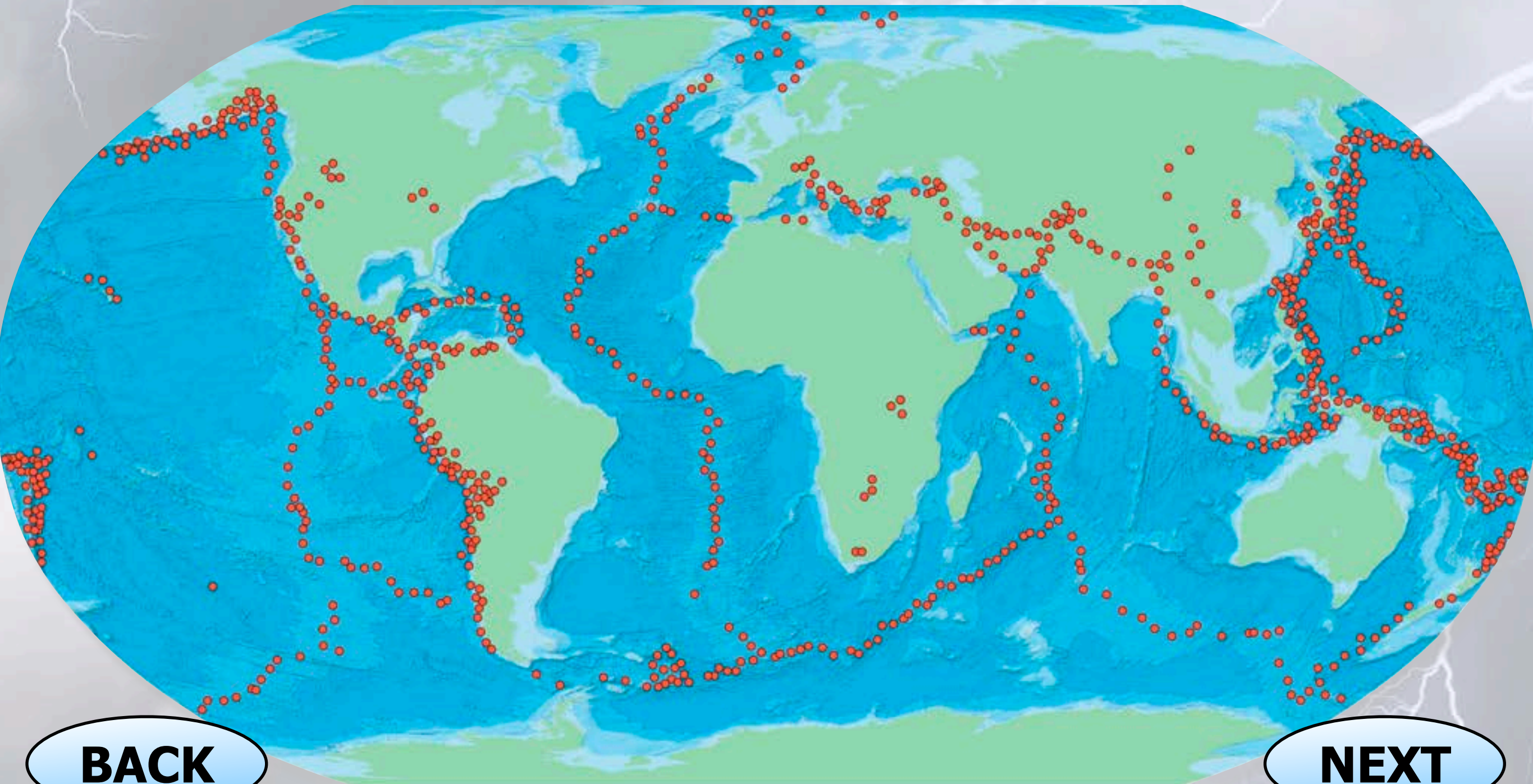
These diagrams show some of the ways earthquakes can cause the ground to move.



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Earthquakes can be felt anywhere in the world but most earthquakes happen along **faults** where tectonic plates meet. This map shows where earthquakes are most likely to happen.



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Can you see the fault in this picture?

The land has ruptured due to the movement of plates.



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What effect do
you think earthquakes
have on landscape and
people?



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This photo shows the aftermath of an earthquake in China. **What can you see?**



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What has happened to the road in this picture?

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How do you think you would have felt if you had been in one of these buildings when the earthquake struck? What would you have done?



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As we have seen, earthquakes can completely devastate a community. Houses and other buildings can be levelled, with the people inside them in danger of being crushed or injured by falling debris. People can lose their homes and all their possessions.



This picture shows schoolchildren queuing up for food after an earthquake in Haiti has left them displaced.

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However, not all earthquakes are deadly. Some are so gentle they can barely be felt. The strength of an earthquake is measured by a system called the **Richter scale**. There is no upper limit to the Richter scale but no earthquake has ever measured more than 10.



Did you know that there are several million earthquakes every year? Only around 500,000 of these are detected, 100,000 can be felt and 100 cause damage.

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The Richter Scale

Magnitude	Earthquake effects
Under 2.0	Micro-earthquakes, not felt
2.0 to 2.9	Generally not felt but recorded by a seismograph
3.0 to 3.9	Often felt but rarely causes damage
4.0 to 4.9	Noticeable shaking of indoor items, rattling noises, windows may break. Significant damage unlikely.
5.0 to 5.9	Furniture moves, chunks of plaster fall from the walls. Damage to poorly constructed buildings.
6.0 to 6.9	Major damage to poorly constructed buildings. Some damage to well-designed buildings.
7.0 to 7.9	Buildings displaced from foundations, cracks in the ground, underground pipes burst.
8.0 or greater	Near total destruction. Waves moving through Earth visible with the naked eye.

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