

# CGC1P Unit 1: The Diversity of Canada's Natural Landscapes

## Activity 2: The Earth's Development

### Overview

Earth's development has been occurring for over 4 billion years. The processes and events that have taken place over that time have created some bizarre and spectacular landforms. This activity will focus on the forces that created these landforms and eventually wore them down.

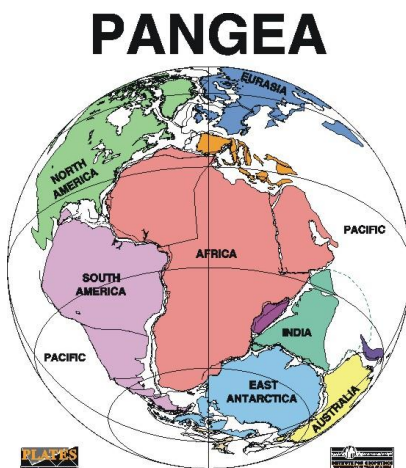
### Lesson

About 4.5 billion years ago, the earth was created. There were powerful forces on our planet, which caused the mountains and other landforms to be formed, along with the various soils, climates, and cycles.

As the earth cooled, the planet's surface cooled. The inside of the earth is like a soft-boiled egg. The yolk is the core, the runny white is the mantle, and the shell is as thin as the crust on our earth.

#### Continental Drift

Before the continents we know today were formed, there was once one super-continent called **Pangaea**. At one time, all of earth continental land masses were joined - that was the super-continent.

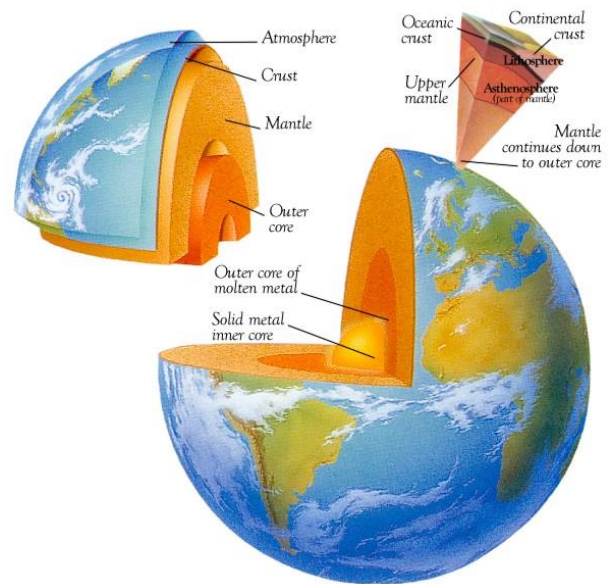


What caused them to move away from each other?

When we talk about landforms, we are talking about the crust of the earth. The tectonic plates on the surface of the earth have been moving around ever so slowly. These giant plates rest on magma (super heated molten rock).

The continents have been moving apart by approximately 2 cm more each year. The convection currents under the crust cause these movements. It's like the skin that forms on top of cooling soup.

Move the liquid underneath it and you get an idea of how the plates of the earth are moving around (sped up by a few million years). These tectonic plate movements have huge effects for our planet.



Tectonic plate movements can cause:

- **Volcanoes** – when plates move apart, the melted rock (magma and lava) underneath the earth's surface push up through the cracks and create a volcano (occurs at a divergent plate boundary)
- **Mountains** – when plates collide, they well-up and form a mountain (occurs at a convergent plate boundary)
- **Earthquakes** – when plates grind past one another, they lock and eventually slip, which causes intense reverberations through the earth's crust (occurs at a transform plate boundary).

### ***Weathering and Erosion***

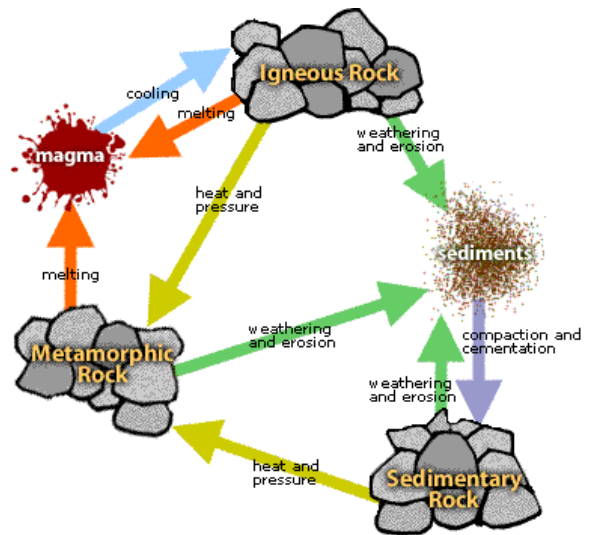
The crust of the earth is constantly changing. As mountains and islands are being built from underneath the earth's surface, the land is being changed, scared and worn away by forces of weathering and erosion.

**Weathering** refers to the physical and chemical processes that change the characteristics of rock. Weathering is what turns rocks into sand.

**Erosion** occurs when weathered material is moved by the action of wind, water, ice, or gravity (e.g. glaciers, waves, flow of water, or blowing wind). Weathering and erosion are an integral part of the process of forming soil.

### ***Natural Events***

Because of the forces of plate tectonics and weathering and erosion, Canada experiences a wide range of natural events which have a lasting effect on the landscape. These natural events include: avalanches, earthquakes, floods, forest fires, hailstorms, hurricanes, tornados, volcanic activity and tsunamis.



## **Assignment**

1. How old is the earth?
2. What are the layers of the earth? Draw and label them.
3. What is Pangaea? What causes the continents to move?
4. Explain what can occur at divergent, convergent or transform plate boundaries.
5. What is the difference between weathering and erosion? For what do they both play an integral part?