Name: _____ Date: _____

Layers of the Earth

Science Literacy Article

The Earth is made up of four different layers. These layers consist of different elements and have different densities and temperatures. As you move down toward the center of the Earth, each layer increases in temperature and pressure. Let's start with the surface and move down:

1. The **crust** is the outermost and thinnest layer of the Earth. It is also the solid layer where all life exists. The main elements that make up Earth's crust are *oxygen, silicon, aluminum, and small percentages of other elements*. Sometimes the crust is referred to as the **lithosphere**. However, the lithosphere is actually a term for the crust and upper portion of the mantle. There are actually two types of crust:
    a) **Continental crust** is the part of Earth's crust that makes up the landmasses and is composed mostly of granite.
    b) **Oceanic crust** is the part of Earth's crust that makes up the seafloor and is composed mostly of basalt.
2. The **mantle** is located directly below the crust and it is the thickest layer of the Earth. It is made up of *semi-solid, molten rock* that is composed of an abundance of elements including *iron*, *magnesium*, *aluminum*, and *silicon*. This layer contains the asthenosphere. The **asthenosphere** is the upper portion of Earth's mantle where convection currents occur due to the heating and cooling of magma. Scientists believe that these convection currents of magma in the asthenosphere are what causes the *plates to slowly move over time*.
3. The **outer core** is located directly below the mantle and it surrounds the inner core. The outer core is extremely hot. Temperatures in the outer core can range from *4,000 to 5,000 degrees Celsius*. In fact, the outer core is so hot that the *iron* and *nickel* metals that it is primarily composed of are in liquid form.
4. The **inner core** is the innermost layer of the Earth. The inner core is also the hottest layer of the Earth. Temperatures within the inner core can reach *nearly 6,000 degrees Celsius*. That's about the same as the surface of the Sun! Even though the inner core is the hottest layer, it is actually primarily composed of *solid iron due to extreme pressure*. Earth's **magnetic field** is actually caused by the heat from the inner core causing the liquid metal in the outer core to swirl. These continuous convection currents, along with the spinning of the Earth, maintain Earth's strong magnetic field. Pretty cool!

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