Snack Break – Plate Tectonics

What causes earthquakes and volcanoes? Let's grab a snack and look at it together.

Grab an orange. Don't have an orange? You can look at these pictures, but it won't be quite as tasty.

Using your fingernails, peel the orange into large sections. Don't get fancy and try to peel it in 1 piece, but 100 little pieces is going to make this a bit more difficult.

Now, can you put the puzzle back together around the orange?

The Earth feels solid while we are walking on it, but really it is a lot like this orange. The **crust** is like this peel, pretty thin compared to what is underneath and broken into some big pieces.

The crust floats on the **mantle** – it's a bit like Jello, not solid, but not liquid either. The next layer is the **outer core** – a super hot magma. The very center of the earth – the **inner core**, is a solid ball of metal. This heat from inside the earth causes the plates to move in a process called **convection**.

****Note – you will need an adult's help for this part.****

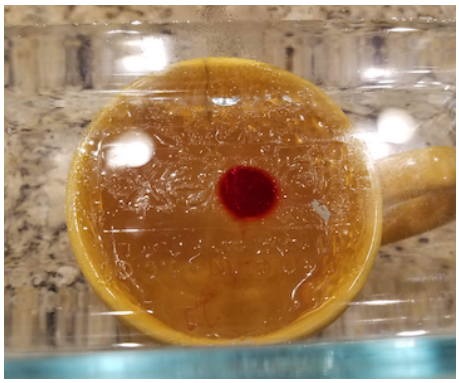
You will need:

- a coffee cup or glass bowl that can be put in the microwave
- another bowl, pie plate, or container that can sit on top of the coffee cup. It is best if it is clear, but it doesn't have to be
- water
- food coloring (optional, but fun)
- your orange peel (if you don't have an orange, a few small pieces of Styrofoam or something else that floats in water will also work

Fill a coffee cup or a glass bowl with water and microwave it for 2-3 minutes. While this is heating up, find a bowl that is a little bigger than your cup so that it can sit on top. Put about 1" if tap water in this bowl.

Very Hot! Get a hot pad and an adult to get this from the microwave!

Put the cup on a flat surface and sit the bowl on top. Convection is already starting to happen, but it is very hard to see. Add a drop of food coloring and watch as it spreads – those water molecules are on the move!



Now, carefully place a few small pieces of orange peel in the center of the bowl. What happens?

The heat from the cup starts to heat up the water in the bowl. The hot water rises and moves away from the center, carrying the orange peel away with it.

The Earth's plates move just like this, bumping into each other, sliding past each other, or moving apart from each other. All of this movement causes earthquakes and when magma comes to the surface, volcanoes.

Clean up after your experiment and eat the orange. It is tasty and good for you!