

## GSOSW STEMpalooza

### Guided STEM Activity: Exploring the Bottom of the Ocean

#### 1) PRE-ACTIVITY: Settling Jar (a.k.a. “Glitter Jar” or “Calm Bottle”)

*This pre-activity is designed to be done by the Girl Scout on her own before the STEMpalooza event. A demo will also be provided during the event.*

#### Supplies Needed:

- 1 clear, empty jar with lid (ex: plastic water bottle or glass Mason jar)
- Dish soap (2-3 drops)
- Glitter, any color (1-2 teaspoons)
- Optional: Sand, gravel or pebbles (You can collect some outside and rinse before using, or craft stores and pet stores usually have a selection. Alternatively, small beads could be used.)

**Step 1:** Fill your bottle about half full of water (tap water is fine).

**Step 2:** Add the glitter to the water and then add just 1 or 2 drops of dish soap. Put the lid on the bottle and shake well! If the glitter remains stuck at the surface of the water, add another drop of dish soap.

**Step 3:** Uncap your bottle and add the sand or pebbles. Gradually add more water until the water reaches the top of the bottle then put the lid back on- make sure it's on tight! You can tape or glue the lid on to prevent spills.



**Step 4:** Shake your bottle well then set it down and watch what happens. What do you observe? Let it settle until the water is clear and everything has settled. Try shaking again. How would you describe what you see?

## 2) GUIDED ACTIVITY: Coring with Playdough

*This activity will be done during the STEMapalooza event.*

### Supplies Needed:

- 3 or 4 different colors of playdough
- Tray or plate or piece of paper to contain any mess
- Several plastic straws. Alternatively, reusable metal or silicone straws will work, or try a straw from a kid's water bottle
- Pipe cleaner
- Optional additions: clay or modeling clay (1 color)  
flour or similar powder

**Step 1:** Create your ocean bottom! Take the piece of modeling clay (or one color of playdough if you don't have clay) and flatten it like a pancake. It can be as thin or as thick as you want it to be. This will be your bottom layer- in the ocean this would be the oldest sediment.

**Step 2:** Now take a piece of playdough and create another flat layer. Put this playdough layer on top of the first layer. Repeat with the other colors of playdough until you have several layers. Squish them all gently until the layers stick together. In the ocean this process could take thousands or even millions of years.



**Step 3:** Time to core! Push a straw through all the layers to the bottom. Gently pull up on the straw- it may help to twist the straw as you pull up. What do you observe?

**Step 4:** To see your core, you need to get the core out of the straw. If you are using a plastic straw, squeeze the straw from the top to the bottom, pushing out your playdough core. If you are using

a metal straw, put a pipe cleaner into the top of the straw and push the core out the bottom. Can you see all the layers? Which layer would be the oldest in your core?

**Step 5:** Try again at another spot in your ocean. Do the cores look the same? Why or why not? Did you encounter any problems when coring?



**Step 6:** Now sprinkle a fine layer of flour over the top of your playdough layers. This flour is like the new sediment that settles down in the ocean (think back to your glitter bottle). Take another core of your ocean bottom. After you push the core out of the straw can you see the layer of flour? Sometimes it is very difficult for marine geologists to collect all the layers of sediment and special types of corers are used to sample the top new layer. Marine geologists also try to get very long cores because the longer the core, the more of Earth's history is recorded in the core.



*A long piston core alongside the research*



*The top of a multicore*



*Mud collected inside the piston core*

### 3) EXPLORING FURTHER: Build Your Own Corer

Coring the ocean bottom is difficult, especially when the water is deep and the ship is rocking on the waves. Engineers have tried many different coring designs in an effort to collect the best cores. You can try designing your own coring device using the guided activity at the link below.

<https://pbskids.org/designsquad/build/down-core/>