**Erosion Stations Lab**

**Background:**

Erosion is what moves the soil and tiny pieces of rock that weathering leaves behind. Erosion can happen because of gravity pulling soil downhill or strong weather. Weather forces such as wind and water are the most known and easily identifiable causes of erosion. However, erosion can also be caused by the plate of Earth’s crust moving around in relation to each other. The continuous movement of Earth’s plates is explained by the Theory of Plate Tectonics. When Earth’s plates come together and/or move away from one another, they break, wear, and tear the current landscape creating significant changes over long periods of time.

**Pre-Lab Questions:**

1. What is erosion?
2. What are three causes of erosion?

1. Make a prediction of which erosion force will have the most noticeable and dramatic impact upon craters.

**Data Tables**

Table A: Wind Erosion

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Crater Size | Crater Diameter Before Wind | Crater Depth Before Wind | Crater Diameter After Wind | Crater Depth After Wind |
| Small Crater |  |  |  |  |
| Large Crater |  |  |  |  |

Table B: Water Erosion

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Side of Pan | Crater Diameter Before Water | Crater Depth Before Water | Crater Diameter After Water | Crater Depth After Water |
| Dry Side |  |  |  |  |
| Wet Side |  |  |  |  |

Table C: Earth’s Plate Movement (Plate Tectonic Activity).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Crater Size | Crater Diameter Before | Crater Depth Before | Crater Diameter After Stretching | Crater Depth After Stretching | Crater Diameter Before Compression | Crater Diameter After Compression |
| Small Crater |  |  |  |  |  |  |
| Large Crater |  |  |  |  |  |  |

**Post Lab Questions:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Erosion Forces** | **How did the force change impact craters?** | **How did the effect vary depending on crater size?** | **Describe the appearance of the impact craters if the erosion force was absent.** |
| Wind |  |  |  |
| Water |  |  |  |
| Plate Tectonics  (Colliding and Separating pieces of land) |  |  |  |

Station 1: Wind Erosion

1. Make sure your tray is over half full of sand.
2. Use the ball provided or your finger to make a small impact crater.
3. Measure the diameter of the impact crater from rim to rim and record the value in Data Table A.
4. Measure the depth of the impact crater making sure to set the zero mark on the ruler at the bottom of the impact crater.
5. Now, using the straw provided at your station blow lightly and steadily for 30 seconds.
6. After the 30 seconds of wind, take your ruler and repeat steps 3-4 and record the measurements in Data Table A.
7. Use the ball provided or your fingers to make a larger impact crater.
8. Repeat steps 3-6 in Data Table A.

Station 2: Water Erosion

1. Make sure that your metal pan contains flour.
2. Carefully, prop the metal pan onto a book so that the pan and flour in the pan are at a slight angle.
3. In 2-3 minutes, carefully construct a landscape in your flour. Make sure to include different elevations, flat areas, and some impact craters.
4. Divide your pan in half using a piece of masking tape running from top to bottom.
5. Select two impact craters, one on each half of your pan, to measure diameter and depth.
6. To obtain diameter measure from rim to rim. Record the value in Data Table B.
7. Using the same selected crater, measure the depth of the impact crater. Make sure to carefully set the zero marker pf the ruler at the bottom of the impact crater.
8. Repeat steps 6-7 for the impact crater on the opposite half of your pan.
9. Once your landscape is designed, obtain your spray bottle.
10. You are going to use the spray bottle to simulate a rain event on HALF of your landscape. One of the impact craters you selected needs to be included in the sprayed side.
11. Spray water as continuously as possible on half of your landscape for a total of 30 seconds.
12. After the 30 seconds of spraying, repeat steps 6-7 for each impact crater originally measured. Record this information in Data Table B.

Station 3: Earth’s Plate Movement (Plate Tectonic Activity).

1. Obtain the playdough at your station and smooth it over the plate at your table to create a landscape.
2. When making your landscape, make sure to include two impact craters; one small and one large.
3. Measure the diameter of the **small** impact crater from rim to rim and record the value in Data Table C.
4. Measure the depth of the **small** impact crater making sure to set the zero mark on the ruler at the bottom of the impact crater. Record the value in Data Table C.
5. Repeat steps 3-4 for the large impact crater.
6. Place your hands on opposite sides of the playdough landscape and stretch the playdough gently for 15 seconds.
7. After the 15 seconds of stretching, repeat steps 3-4 for the small and large crater.
8. Once you have recorded data, place your hands on opposite sides of the playdough.
9. This time push the playdough together gently for 15 seconds.
10. After 15 seconds of compression, repeat steps 3-4 for the small and large crater.