**Science Expo 2020: Brief Activity Descriptions**

**Earth Systems & Geology Activities**

Just around the Riverbend: Students observe landforms taking shape as water flows through a streambed model.

Modeling Convection, Quakes, and Plates: Students are given a demonstration on mantle convection currents. Then, using sandpaper and rubber banded blocks, students learn how these mantle convection currents are the source of earthquakes, as currents drive the build-up and release of tension in tectonic plates.

Shaky Sediments:Students learn about the process of liquefaction during earthquakes and how this impacts objects such as buildings as well as objects that may be buried below the earth’s surface.

Shake and Break Down: Students explore physical weathering by shaking a container of rocks to observe how they break down.  Then students look at examples of different rock sizes and examples while learning about chemical weathering and how this impacts rocks.

Rock Detective: Students act as a detective to “discover” what rock they have by using various tests.

Fossil Discovery and Formation: Students mimic paleontologists and dig through diatomaceous Earth to learn how fossils are formed and understand the "story" of sedimentary layers and then recreate the process of fossilization using bread, gummy candies, and lots of pressure.

Volcano Loco: Students discover how volcanic structure affects its eruptions by building paper cones over dry ice.

Exploring Magnetic Field Lines: Students learn about different aspects of magnets and their force fields through a demonstration before using a compass to map invisible magnetic force fields.

TINS Migration on Earth: Students learn about and explore how animals navigate while migrating using magnetism.

**Weather & Climate Activities**

Air is everywhere: Students observe a candle lifted up by rising water due to a change in air pressure.

Stubborn Balloon: Students learn how to manipulate air pressure in order to move a water balloon in and out of a bottle.

Cartesian Divers: Students learn about Cartesian Divers in order to understand air pressure and density.

Cloud in a Bottle: Students observe clouds being formed using a liter bottle, foot pump, and rubbing alcohol.

Kissing Balloons: Students learn how low and high pressure systems create weather patterns.

Thermal Spirals: Students visually prove that heat rises and create convection currents.

Updrafts in Action: Students learn how updrafts (wind) supports hail and rain in clouds during storms.

Rumbling Road/Lightning Room: Students will learn to approximate the distance of lightning and witness the energy of lightning.

Freak out! Is Tahoe weirding?: Students track the frequency of severe weather events over the last 40 years to investigate how the climate is changing in Lake Tahoe.

Mini Greenhouse Effect: Two model atmospheres are exposed to light energy from a lamp to show that greenhouse gases absorb and hold heat.

Rising Seas: Students observe how sea level is change by mapping island topography.

Investigating Albedo: Student learn how global temperatures can change based on different colors ability to reflect or absorb light.

**Space Science Activities**

The Fabric of Space-Time: A spandex model of the solar system shows how gravity keeps the “planets” (marbles) in orbit

How Big is the Moon?: Students build playdoh models to compare the sizes of the moon and earth, and learn how to the moon is able to eclipse the Sun.

Pocket Solar System: Students create a scaled model of the solar system to understand how vast our solar system is.

Cooking up Comets: Students make “comets” with ammonia, sand, dry ice, and corn syrup to learn the composition of comets.

Meteor Impact: Students drop different sized “meteors” at various angles, distance, and speed into a pan of cocoa and observe the craters formed

Jumping on Jupiter: Students calculate how much they would weight on other planets and learn how gravity differs planet to planet.

Moon Dance: Students use a light source and a white ball in a dark room to understand how the moon phases change.

Time of the Seasons: Students learn that the Earth tilts on its axis to create different seasons in different places.

Exercise like an Astronaut: Students learn that objects weigh more on Earth than on the Moon.

Working in Space: Students wear space gloves to show how difficult it can be for astronauts to work in space.