COORDINATES: 117°W, 37°N

TWITTER TIME

8:37 AM
Still a little sore from running a half marathon last weekend. Which race should I train for next? 🏃
🥇

9:14 AM
I'll be checking out the samples today under the microscope and will be looking for Ooids and Lithoclasts. A little easier and less dusty than all of the cutting and polishing I did yesterday. I'll post pics of what I find. 😅

9:52 AM
Missing the memories made during field collection last summer. I made sure to capture every moment! #ThrowbackThursday #FieldCollection #Memories

11:33 AM
We hiked to Meiklejohn Peak to collect these samples. Fortunately, the record was preserved and not all eroded away, and I noticed that the older samples were deeper and the younger samples were shallower. # 🏞️

1:28 PM
Found out today, that another researcher already figured out the ages of the upper layer (455 million years old) and lower layer (465 million years old), saving me a lot of time. 🙏
#ScienceCommunity #TeamWork #ScienceRocks

1:46 PM
The continents haven't stayed in the same places over millions of years. Due to plate tectonics, they moved. 🌎
#PlateTectonics

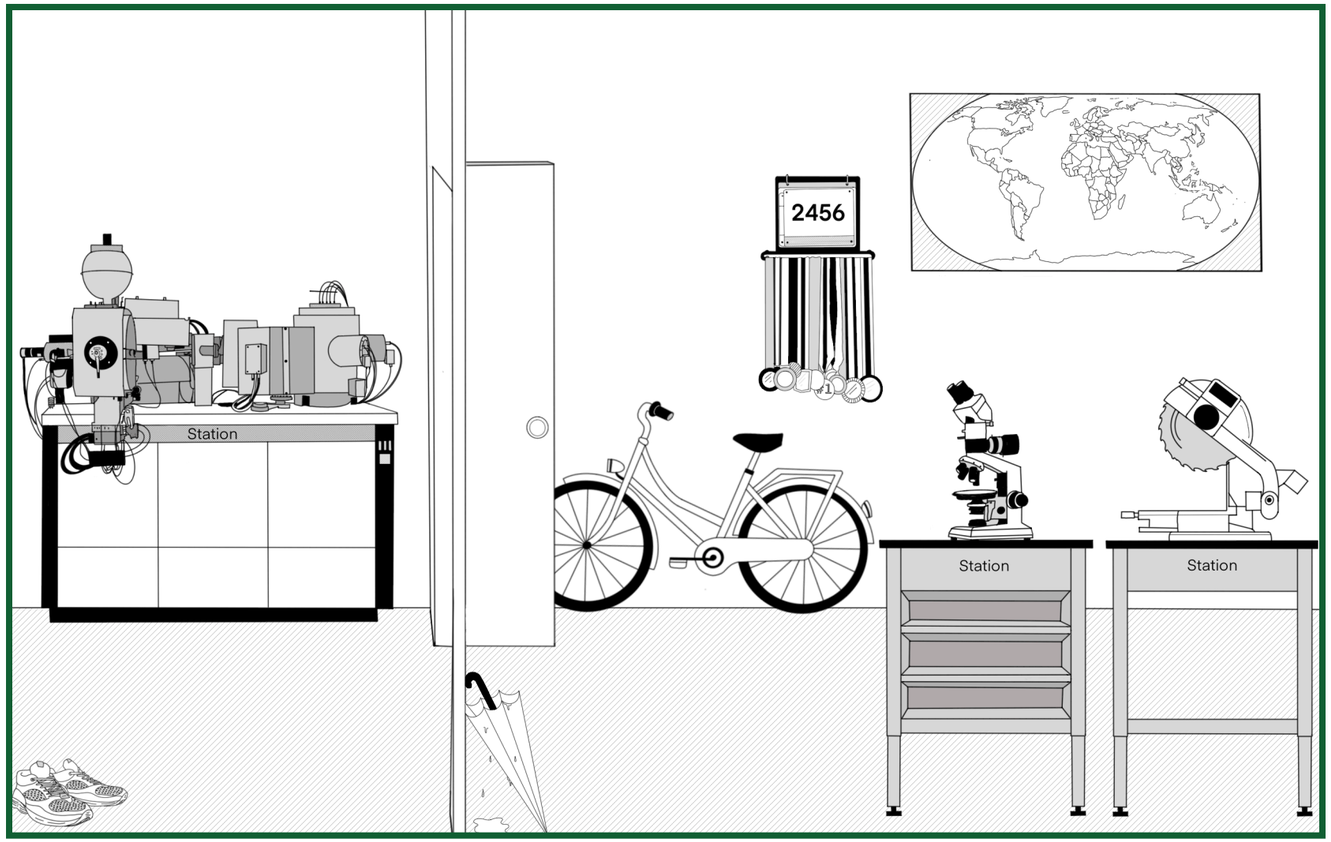
2:15 PM
So excited to pulverize my samples and use the TIMS to fine the elements that are present in both samples. This is what my lab looks like. #TIMS #MassSpec #Samples

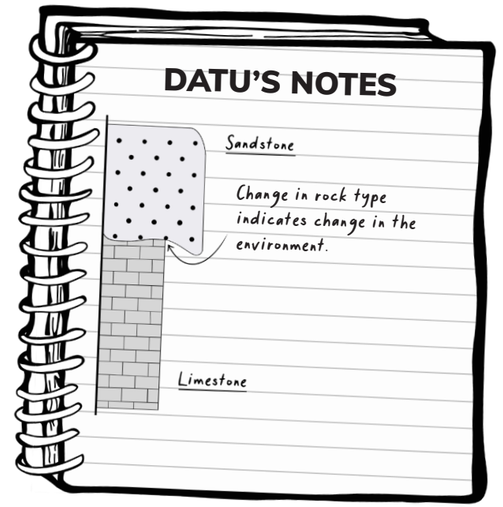
2:32 PM
~480 million years ago, most of North America was a shallow ocean but conditions changed and land plants evolved. 🌊

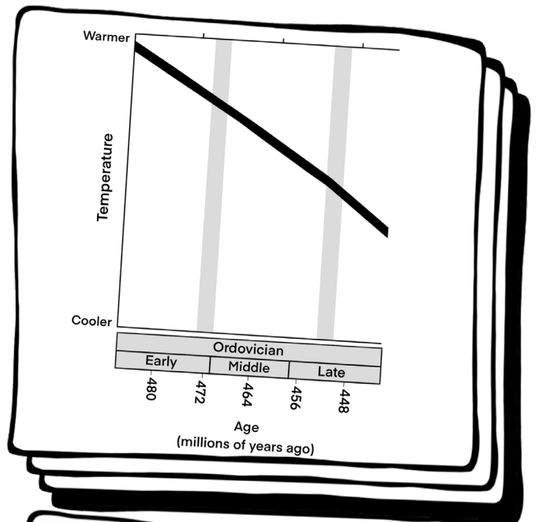
2:48 PM
The temperatures and oxygen level also changed. There was a lot more oxygen generated between those two times. Did it become warmer or cooler? 🤔🌡️

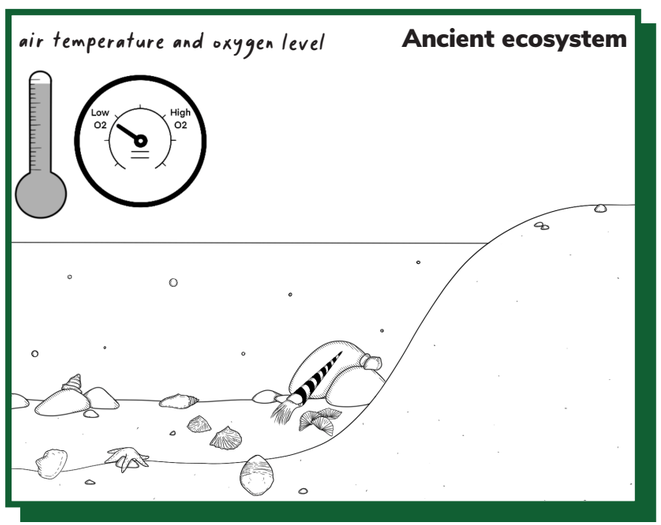
3:02 PM
With the right tools, time, and patience, I can learn so much about Earth's history from rocks.
#ToolsOfTheTrade 🧱 🪨

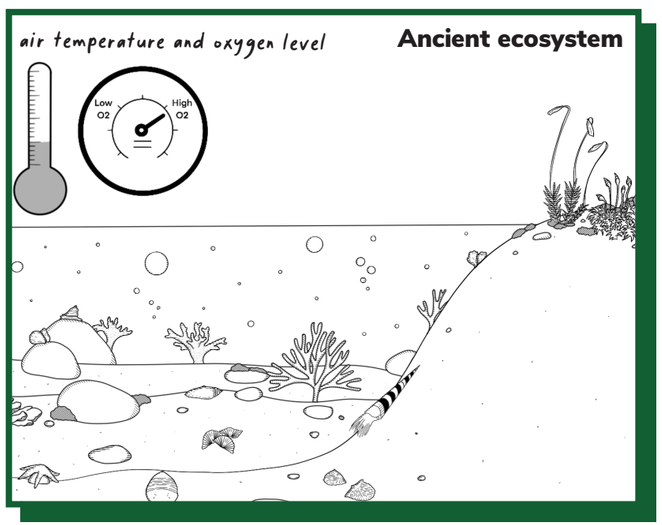
3:51 PM
I hope the weather dries up here. I would love to get a few miles of cycling in today. 🚴
#Cycling

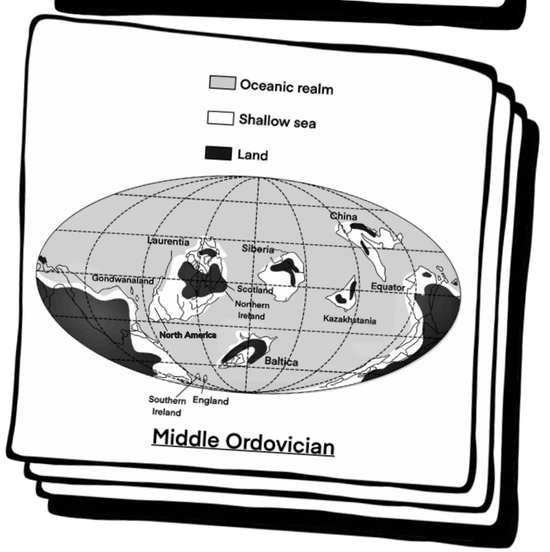












Rocking Ecosystems Past

Gathering rock samples from different places;
Allows scientists to uncover history of those spaces.

Lab tools cut, polish, magnify to get a close-up view;
Crushed samples can be chemically analyzed to learn something new.

Oceans hot or cold, sea level high or low, and changes to the life inventory;
Everything learned comes together to tell a long-term, landscape story.

Engagement Activity: Rock Out!

Activity How-To Video

Rocks are everywhere! By slowing down and observing the samples around you, you can use the rocks to understand how your environment has changed over geologic time.

Materials:

- **Sandstone** – This sedimentary rock is made up of very visible sand-sized grains. This rock feels sandy or gritty, sparkles in the sun, and the grains can be rubbed off easily. Sandstones are usually gray, white, pink, orange, or tan. Sandstones are made in fast-moving environments where there is a lot of sand, such as a beach, desert, or riverbed.
- **Limestone** – This sedimentary rock is made up of calcium carbonate, which comes from living things. Limestones are usually gray or white and can have fossils, like shells, corals, plants, or tiny spheres (ooids). The grains in limestone are smaller than sand but are still visible. Limestones are formed near coral reefs or at the bottom of shallow seas.
- **Mudstone** – This sedimentary rock is made up of very tiny grains. It is impossible to see the individual grains of the rock, and it usually feels smooth to the touch. Mudstones are often gray, brown, tan, or red. Fossils can be found in a mudstone, but are uncommon. Some mudstones are very thin and easy to break. Mudstones are formed in low-energy environments, such as the bottom of a slow-moving river, the deep ocean floor, or in a lake.
- **Coal** – This sedimentary rock is formed from plants and other living things that decompose in a swamp environment. Coal is a black or brownish-black rock that is lightweight and easy to crumble or break into smaller pieces. Coal looks similar to the burnt wood found the morning after a campfire and can leave dust on your hands when touched. The shape of coal varies from a shiny, angular cube to a dull, rounded lump.
- **Igneous Rock** – Igneous rocks come in two varieties: Extrusive igneous rocks are formed outside of volcanoes and are black and glassy, or black, dark brown, or dark red and filled with holes where air used to be. Intrusive igneous rocks are formed inside volcanoes and are more solid and have a mix of white, black, or pink crystals, like granite.
- **Metamorphic Rock** – Metamorphic rocks are rocks that have experienced so much heat and pressure that they transform. High heat and pressure usually happen during large geologic events, such as when mountains are formed. Metamorphic rocks can be many colors and often have patterns, such as stripes, squiggles, or bending. Some metamorphic rocks shimmer, like fish scales.

Directions:

1. During a walk or a hike, find six rock samples in your area.
2. When you have identified the sample, write the name of the rock on the list below. If you find a sample that does not clearly match any of the rocks below, skip it and find another rock.
3. Try to find one of each rock type, but it's fine to have a few duplicates. For example, you might only find three sandstones, two limestones, and a mudstone. If you only find one rock type, it could mean that the area had the same environment in the past.

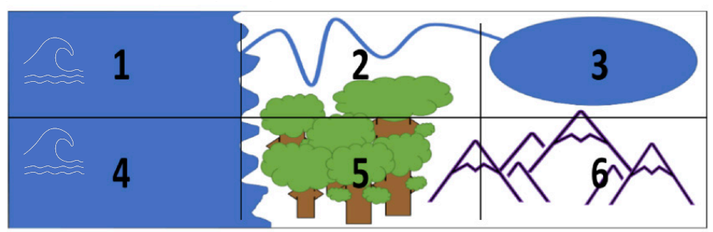
Observations:

	Description	Sample ID	Possible Conditions
Example	Gray, hard-to-see grains, fossil shell	Limestone	Ocean or reef
1			
2			
3			
4			
5			
6			

Questions:

On a separate sheet of paper, create a map using the samples you found. The map should be divided into six sections, labeled 1-6. For each section, draw an environment that matches the conditions that could have formed the rock you found. A complete map has six rocks. Note: if you only found one or two different samples (for example, only sandstone, or only igneous rocks) draw a more detailed scene on your map. What plants or animals would you expect to see in that environment?

LEGEND
Sandstone
Mudstone
Limestone
Coal
Metamorphic
Igneous



At a rock outcrop I study.

Fossil I found.

Datu Adiatma

Taking measurements!

Mesa near my Nevada field site.