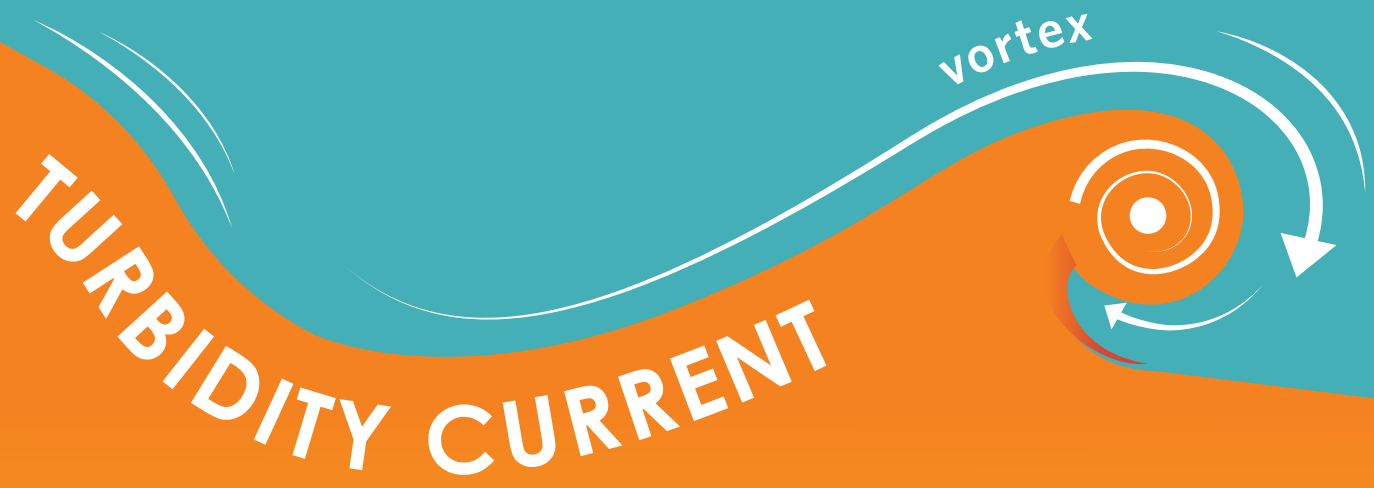
SLIDING SEDIMENTS

The Jelly Roll formed 12,000 years ago, when an underwater avalanche disturbed sedimentary deposits along the edge of a lake. These sedimentary layers are composed of tiny grains of rock eroded from nearby mountain ranges and transported via rivers to larger bodies of water. In the case of the Jelly Roll, the layers of sediment eventually became too heavy for the slope to support, but instead of breaking up and dispersing into individual grains, the entire sediment layer rolled up like a jelly roll! We call this type of landslide a turbidity current.

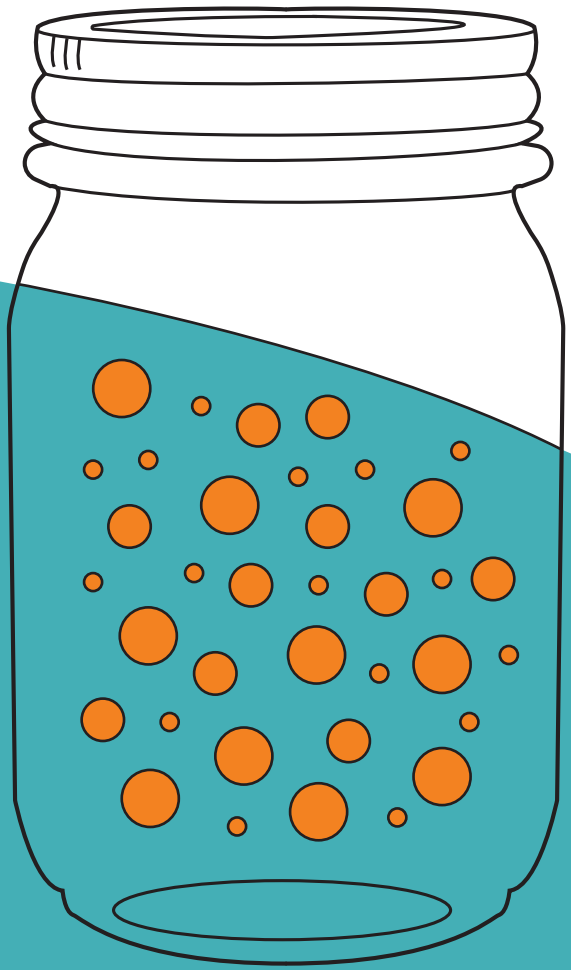
Most sedimentary rock forms underwater, where deposited sediments (tiny grains of rock) settle into layers made of sand, silt, gravel, pebbles, and occasionally fossils. After a long period of time, if left undisturbed, these layers will turn into rock. This is what happened with the Jelly Roll, which was covered by more sediment after its formation, protecting and preserving it until today.



SEDIMENTS IN A JAR

We can predict and observe the behaviour of underwater sediments at home, using a few **simple materials:**

1. Jar or clear bottle with a lid
2. Water, to fill the jar 3/4 full
3. At least 3 different sizes of sediments (e.g. mud, sand, gravel, pebbles)
4. Tablespoon
5. Stopwatch



INSTRUCTIONS

1. Before you begin, think about how the different sediment types will act in water. **Which do you think will fall the fastest? How about the slowest?**
2. Fill the jar 3/4 full with water. Using a spotwatch, record how long it takes a spoonful of each sediment to fall to the bottom of the water-filled jar.
3. Add 2 spoonfuls of each sediment to the jar. Place the lid on the jar and shake it to create a suspension (sediments floating in water). Watch as the sediments settle into layers, similar to what is found at the bottom of lakes and oceans.

QUESTIONS

1. **What is the relationship between particle size, sinking speed, and sedimentation pattern?**
2. **Based on this experiment, what type of sediments do you think turbidites like the Jelly Roll are likely to be composed of?**