Glaciation (Ice Erosion) - Student Homework

If you were standing where Mingenew is located in the Central Midlands of Western Australia between 280 and 320 million years you would be under an ice cap five kilometres thick. We know this because there are exotic “drop rocks”, found in local fields many kilometres from their outcrop, that were deposited when the glacier melted.

Glaciers are rivers of ice that move slowly downhill plucking rocks from the surrounding landscape grinding them into flour. Glaciers flow because pressure from overlying ice melts the ice at the bottom. Rivers flow at the bottom of glaciers.

Glaciers presently cover ten per cent of the Earth’s surface. In the distant past however it is suggested that almost the entire planet was covered in ice during the late Proterozoic. This was one of the earliest mass extinctions and is known as “Snowball Earth”.

Glaciers freeze around rock debris and employ these to grind their way over the land leaving characteristic U shaped valleys. Scratches or striations are left in country (existing) rock indicating the direction of movement. These scratches have been used as evidence to support the theory that the continents of Australia, South Africa, South America, India and Antarctica were once part of a supercontinent called Gondwana. Striations cut into rock in all these continents can be traced back to movement out from a common ice sheet.

Materials per student or group

- Plastic or paper cup
- Cling wrap or equivalent
- Water
- Gravel or road metal
- Access to a freezer
- Soft wooden boards, pine offcuts or pallet wood (cardboard will suffice but becomes soggy very quickly).
- Camera or sketch pad

1. Half fill the cup with water and add the gravel
2. Tightly cover and seal the cup with cling wrap
3. Up-end the cup onto a saucer or plate and place in the freezer
4. Next day remove the plastic wrap and drag your glacier over the soft wood surface. Remember to only move it in one direction.
5. Take a photograph or sketch what has changed.
6. Bring your findings to share with your fellow students