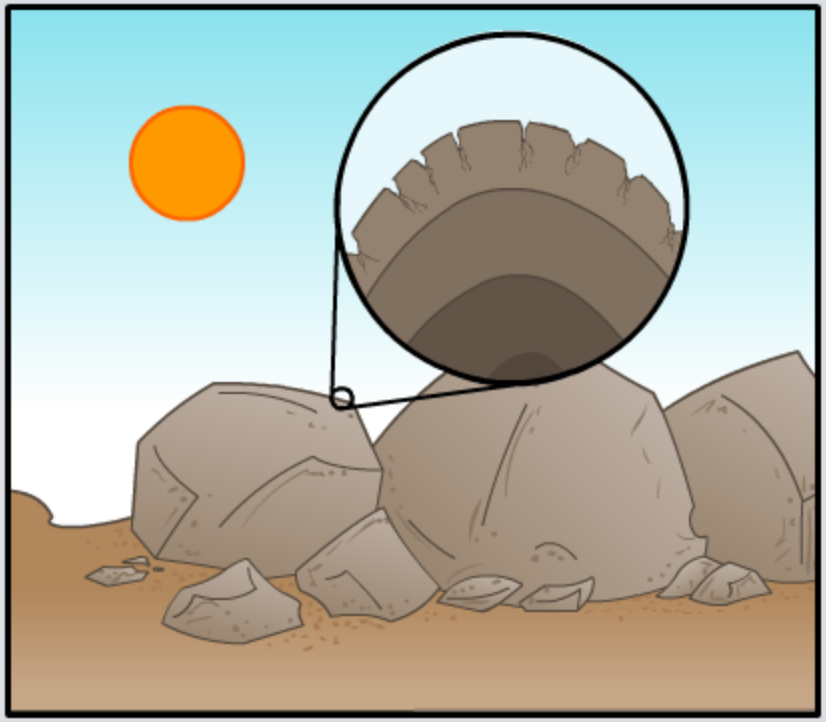
Physical Weathering



Physical weathering

Physical weathering occurs when rock is broken down into smaller pieces by the effects of temperature and water.

- **Exfoliation weathering** (or 'onion-skin' weathering) is caused by very hot weather.
- **Freeze-thaw weathering** is caused by the melting and freezing of water.

Exfoliation and freeze-thaw weathering tend to occur in very different types of landscapes.

Which type of weathering do you think will primarily occur in the desert, and which will occur in the mountains?

Exfoliation weathering

Exfoliation weathering is common in very hot and dry places like Uluru (Ayers Rock) in Australia.

In these places the daytime temperature can rise above 40 °C.

While the inner layers of the rocks stay cool, the outer layers of rocks heat up and expand in the baking heat.

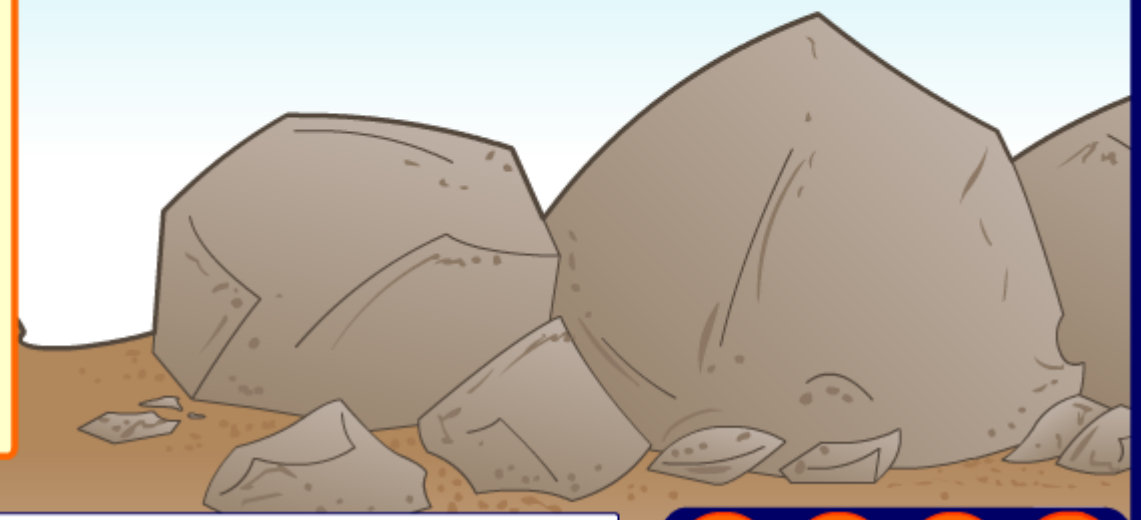
At night, when the temperature falls, the outer layers of rocks cool down again and contract. Eventually the repeated expansion and contraction of the rock causes the outer layers to peel like **an onion skin**.

Exfoliation weathering in action

What is exfoliation weathering?

Exfoliation weathering is the repeated heating and cooling of rock that causes the surface layers of the rock to flake off.

Click "**play**" to find out more.



Freeze-thaw weathering

When rain water or melted snow seeps into the cracks in a rock and freezes, it can force the crack to expand.

When the ice thaws, the rock contracts and the water moves deeper into the crack. Later when the water re-freezes the crack widens again.

Over time the crack widens until the piece of rock breaks apart.

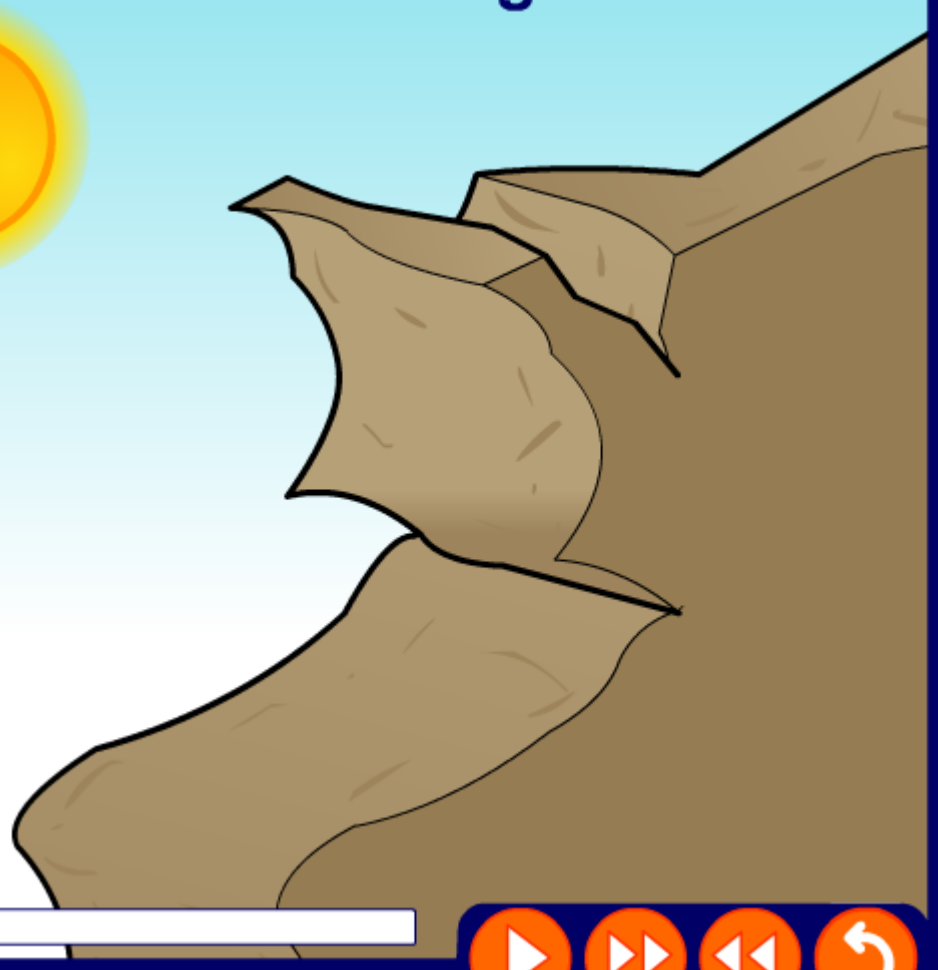
This slow cycle is called **freeze-thaw** weathering.

Freeze-thaw weathering in action

What is freeze-thaw weathering?

During the freeze-thaw process, rocks exposed to the weather undergo physical changes and break apart.

Click "**play**" to find out more.



How can freezing water cause damage?

You can see freeze-thaw weathering in action if you leave a bottle full of water in the freezer for too long.

The water inside the bottle expands as it freezes.

The ice that is formed creates huge forces on the bottle, which then cause it to break!

Because water expands as it freezes it can create immense pressure in confined spaces. Does this explain why water pipes often burst in the winter?