

Module F

Unit 1

Lesson 1

Exp 1

**Identifying
Effects of
Weathering**

Objective:

- Explain how weathering erosion and deposition have shaped Earth's history
- Explain what factors caused the geologic changes at Port Campbell National Park

Do Now:

- Student Ebook
Module F Unit 1 opener

Do Now:

- Student Ebook
Module F Unit 1 Lesson 1
Lesson starter activity

Weathering

- is the process by which rock materials are broken down by the action of physical and chemical processes.
- Weathering changes rocks by breaking them into smaller and smaller pieces, or by dissolving and removing some chemicals within the rock.
- Fragments of weathered rock, called sediment

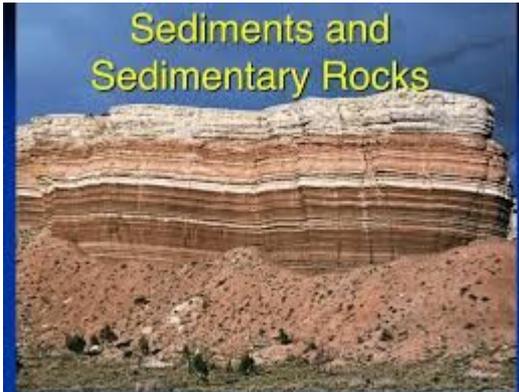


And it's ice in a cold December
But water when it becomes warm
And rocks broken they're expanding
And seeps in fissures and the holes that freezes on now



Sediments

- are an important part of soil.
- Sediment can build up in layers on Earth's surface to form rock formations, sand dunes, and other features.



Weathering of Rock



- Some rocks are more resistant to weathering than other rocks.
- Resistance to weathering is affected by
 - Composition (what they are made of)
 - Chemicals that make up, the rock.

Surface Area

- Area of an object that is exposed to its surroundings
- Surface area also affects a rock's tendency to weather.
 - A large block of rock will weather more slowly than smaller broken pieces of the same rock will.
- Because the smaller pieces have more surface area that are exposed to agents of physical and chemical weathering.

Agents/Types of Weathering

- Two main types
 - Physical Weathering
 - Chemical weathering



Physical Weathering

- Mechanical breakdown of rocks into smaller pieces involves only physical changes.
- Rocks can be physically weathered by
 - temperature changes
 - pressure changes
 - interactions with plants, animals, water, wind, ice, and gravity.







Activity

Complete Ebook activity for Weathering
and Physical weathering

Chemical Weathering

- The breakdown and decomposition of rocks as a result of chemical reactions and processes.
- It weakens or dissolves rock over time.
- Agents of chemical weathering include air, water, and plants.
- For example, groundwater, which is water that flows through rock below Earth's surface, can contain natural acids that dissolve rocks. Underground caves form in this way.



**Material + Water +
Oxygen =**

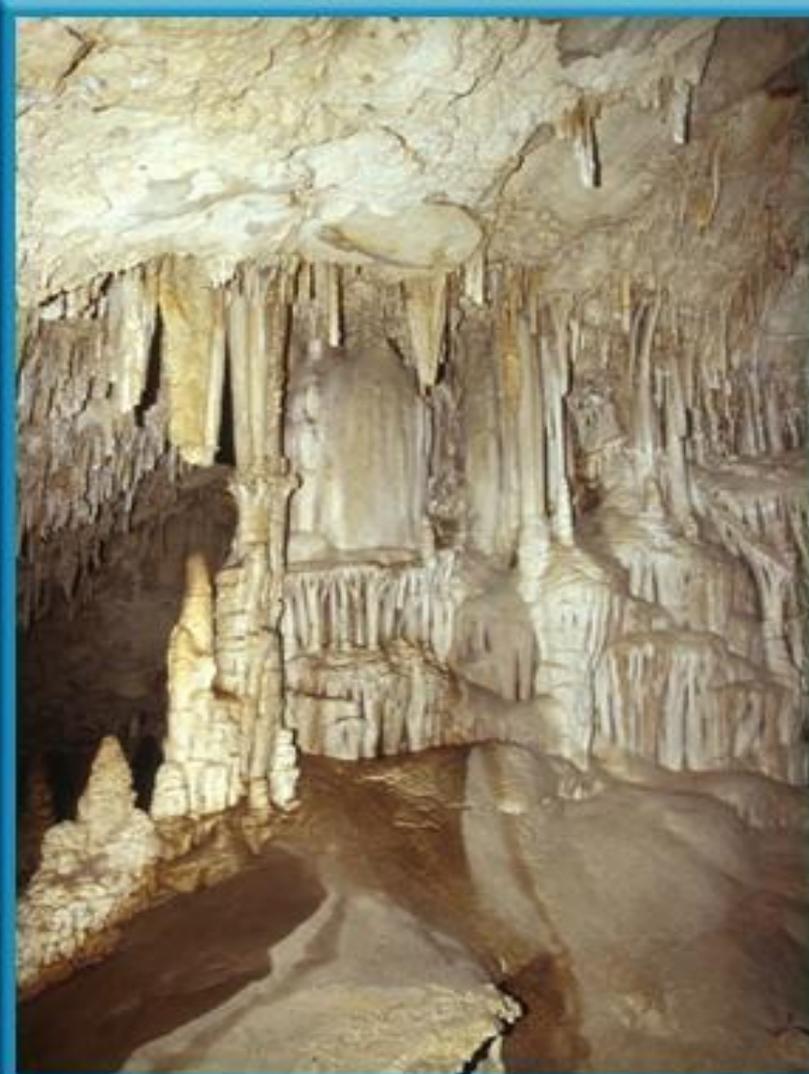
~~Oxidation~~

**Rust is caused by
~~oxidation~~ when the
material exposed to
water and oxygen
contains iron.**



**Carbon dioxide + Water
= Carbonic acid**

**Carbonic acid reacts
with minerals such as
calcite, which is the
main mineral that
makes up limestone.**



Activity

Complete Ebook activity for Chemical weathering

Additional Factors that affect Rates of Weathering

- Location
 - Rocks on steep slopes are more likely to be displaced by gravity
- Climate
 - Rocks in cold climates are more likely to experience physical weathering caused by cycles of freezing and thawing. In contrast
 - chemical weathering occurs more rapidly in warm, wet climates, because warm temperatures increase rates of chemical processes.
 - Both types of weathering tend to happen more slowly in dry climates

Activity

Using the picture of Port Campbell National Park, at the beginning of lesson 1, Create a left side page to answer the following question

Does the collapsed rock formation in Australia show signs of weathering? If so, identify the type of weathering that could have occurred. Record your evidence.

Activity

Complete Ebook activity Language Smarts
at the end of Exploration 1

Activity

With a group of 2 or 3
Complete Ebook activity
Analyze the effects of weather
at the end of Exploration 1