

Attainment's

EXPLORE

# EARTH SCIENCE

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STUDENT BOOK



Attainment's  
EXPLORE

# EARTH SCIENCE

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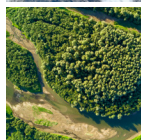


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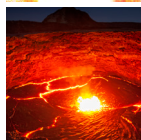


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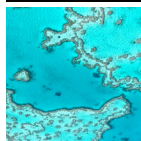


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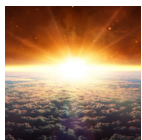


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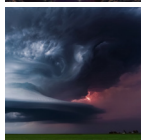


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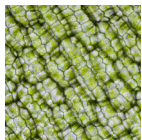


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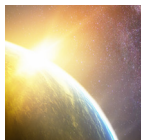


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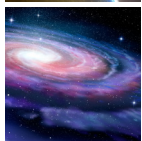


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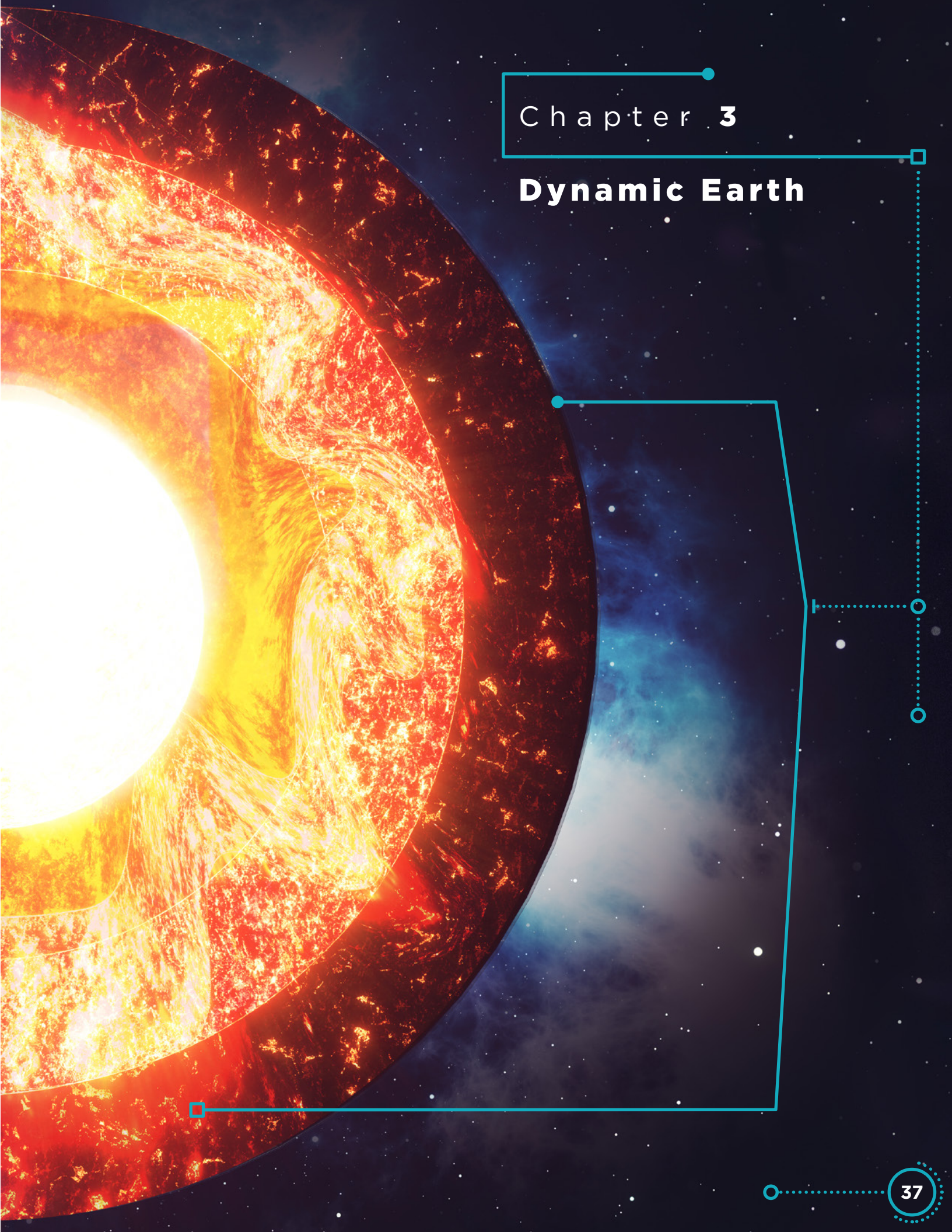
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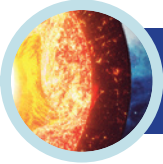




Chapter 3

**Dynamic Earth**





Earth is dynamic.

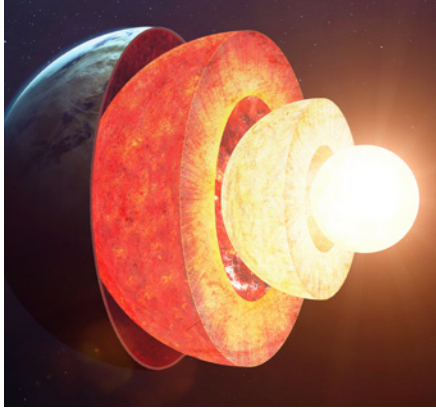
CHAPTER 3







## BIG IDEAS



**11** Earth is made up of many layers.



**12** Earth's surface is always changing.



**13** Continents move very slowly.



**14** Landforms can be caused by tectonic plate movement.



**15** Some natural disasters are caused by tectonic plate movement.

VOCABULARY



**Earth's core**

The super-hot, super-dense center of Earth



**Earth's outer core**

Earth's only liquid layer, just above the solid inner core



**Erosion**

The gradual transporting of dirt and rocks by wind or water



**Weathering**

The breaking down of rocks, often caused by water or Earth's atmosphere



**Tectonic plates**

Huge pieces of the lithosphere that move one to two inches a year



## VOCABULARY



### Asthenosphere

A part of the upper mantle layer of Earth



### Mantle

The largest part of Earth's interior between the core at the center and the crust on the surface



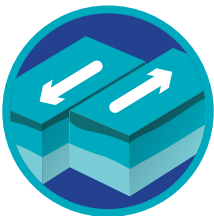
### Convection

What happens when heat from a warmer material rises and then cools and begins to sink



### Earthquake

A sudden shaking of the ground and ocean floor caused by the shifting of blocks of rocks



### Fault

A break between two blocks of rock that allows them to move



## 12 Earth's surface is always changing.



*Erosion can change what cliffs and mountains look like.*



### Erosion

The gradual transporting of dirt and rocks by wind or water



### Weathering

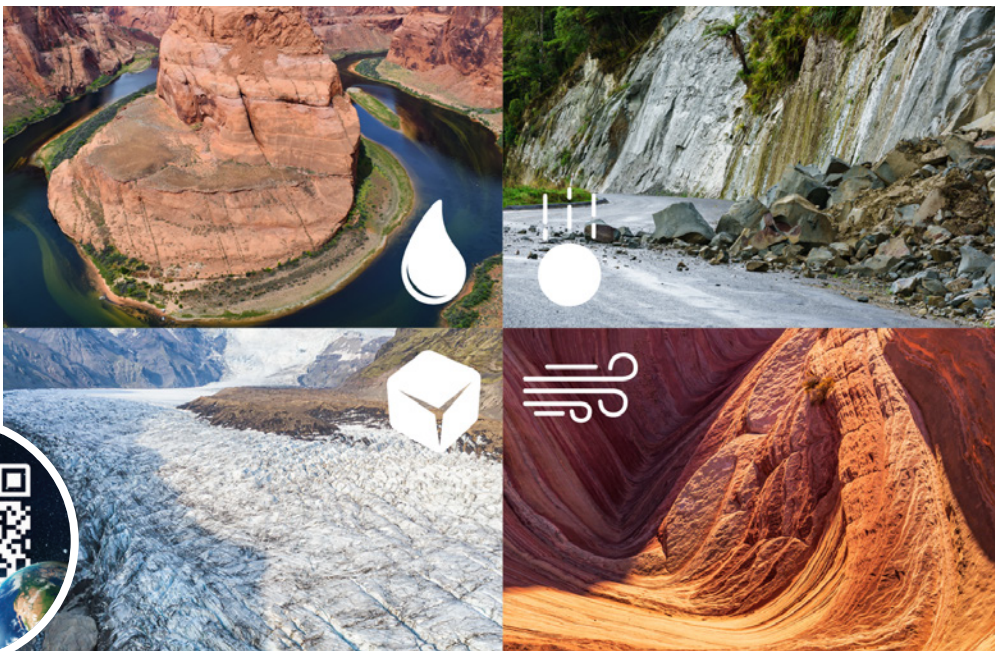
The breaking down of rocks, often caused by water or Earth's atmosphere

Earth's surface is constantly changing due to natural processes like **erosion**, **weathering**, and natural disasters. The flowing, liquid water in rivers and streams can cause erosion in rocks and stones. Human and animal activity can also cause erosion. Wind can also cause changes as it moves material, like sand, from one place to another. Erosion and weathering change Earth's surface but not its interior.



*Erosion involves the movement of rocks to a new location.*





*Earth's surface is affected by liquid water, gravity, ice, and wind.*

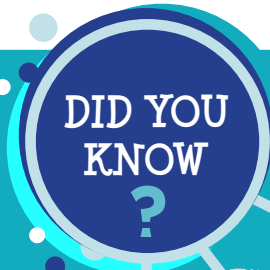
Weathering happens on Earth's surface. It causes changes in soil and rock, but unlike erosion, it does not cause them to move. Rocks may become worn down or change appearance. Erosion occurs when rocks are carried away by liquid water, gravity, ice, or wind.



CHAPTER 3



Sand dunes at the beach are caused by erosion. Wind and flowing water carry sand to the edge of the beach.



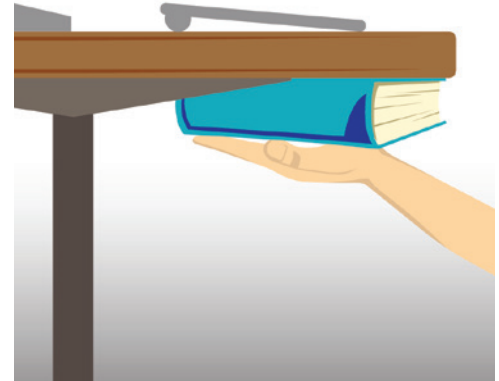
DID YOU KNOW



## DISCOVERY

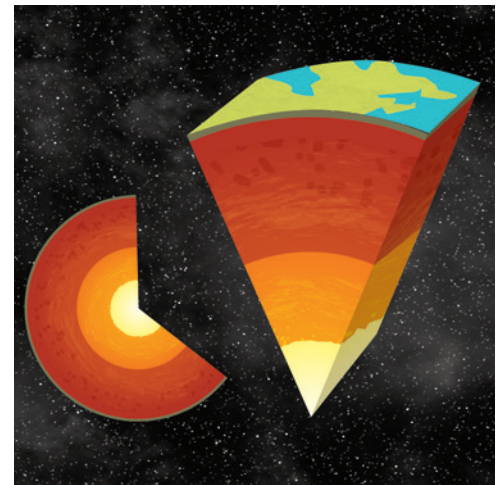
### How do scientists know about Earth's layers if they can't travel through them?

**Hold a book under your desk so that it touches the desk. Have a classmate knock once on the other side of the desk. Listen to the knock carefully. Now remove the book from under the desk. Have your classmate knock again. What difference do you hear?**



*Make sure the book is pressed against the desk.*

**You will hear quite a different sound when the book is placed under the desk. This is because of the density of the book. When the book is under the desk, the sound of the knock has more stuff to go through, so the sound of the knock changes.**



*The waves change as they pass through Earth's layers.*

### What does this have to do with measuring Earth's layers?

Earthquakes and their effects on Earth have taught scientists about Earth's layers. Earthquakes produce energy throughout Earth, which are called waves. Scientists understand how deep Earth's layers are, and if they're solid or liquid, based on how these waves act. This is just like how the sound of your friend's knock changes when you place a book under your desk. You can tell if a book is there or not based on the sound, without looking. The waves change based on the density of the object they go through.





## CHAPTER 3 QUIZ

Choose the correct answer.

- 1 Why can't humans travel to the center of Earth?**
  - (A) It is extremely cold
  - (B) Scientists don't know where it is
  - (C) The temperature and pressure are extremely high
- 2 Why does Earth's inner core remain solid, even though it's so hot?**
  - (A) It exists at a very high pressure
  - (B) It exists at a very low pressure
  - (C) It cools down
- 3 What can cause changes on Earth's surface?**
  - (A) Wind, liquid water, and ice
  - (B) The Moon's rotation
  - (C) Other planets
- 4 What causes fast changes to Earth's surface?**
  - (A) Pangaea
  - (B) Natural disasters
  - (C) Other planets
- 5 What did the continents used to look like?**
  - (A) They were all connected
  - (B) They have always looked the same
  - (C) They used to be on another planet



## CHAPTER 3 QUIZ

Choose the correct answer.

**6 Why can't you feel the continents moving?**

- (A) They don't move
- (B) They move too fast
- (C) They move very slowly

**7 What causes the movement of tectonic plates?**

- (A) Heat rising and falling inside the mantle
- (B) Extreme cold in Earth's core
- (C) Earth's rotation

**8 What causes mountains?**

- (A) Solar radiation
- (B) A collision of tectonic plates
- (C) Extreme cold in the atmosphere

**9 Why do earthquakes happen more often in certain places of the world?**

- (A) Extreme wind
- (B) Erosion
- (C) They usually happen where tectonic plates meet

**10 What causes the movement felt during earthquakes?**

- (A) Breaks in Earth's surface
- (B) Volcanic eruptions
- (C) Erosion