

Oceans

Chapter 10





OCEANS

Main Ideas



Lesson 2: Ocean Currents

Ocean Currents help distribute heat around Earth.

Lesson 3: The Ocean Shore

The shore is shaped by the movement of water and sand.



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SO WHAT?

Oceans are a major feature of Earth.

THINK:

How do oceans affect your life?

Ocean Currents

Chapter 10, Lesson 2

What You'll Learn:

- **Explain** how ocean currents are formed.
- **Explain** how ocean currents distribute thermal energy around Earth.
- **Describe** the major global ocean currents and gyres.

So What?

Ocean currents transfer heat and influence weather and climate.



Vocabulary

Use your book to locate the definitions for the Review Vocabulary, New Vocabulary, and Academic Vocabulary words on page 109 of your Science Notebook.

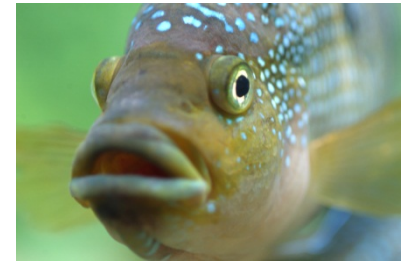
Ocean Currents

Identify 6 things that are moved from place to place by ocean currents.

1. water



4. animals



2. heat



5. plants



3. nutrients



6. ships





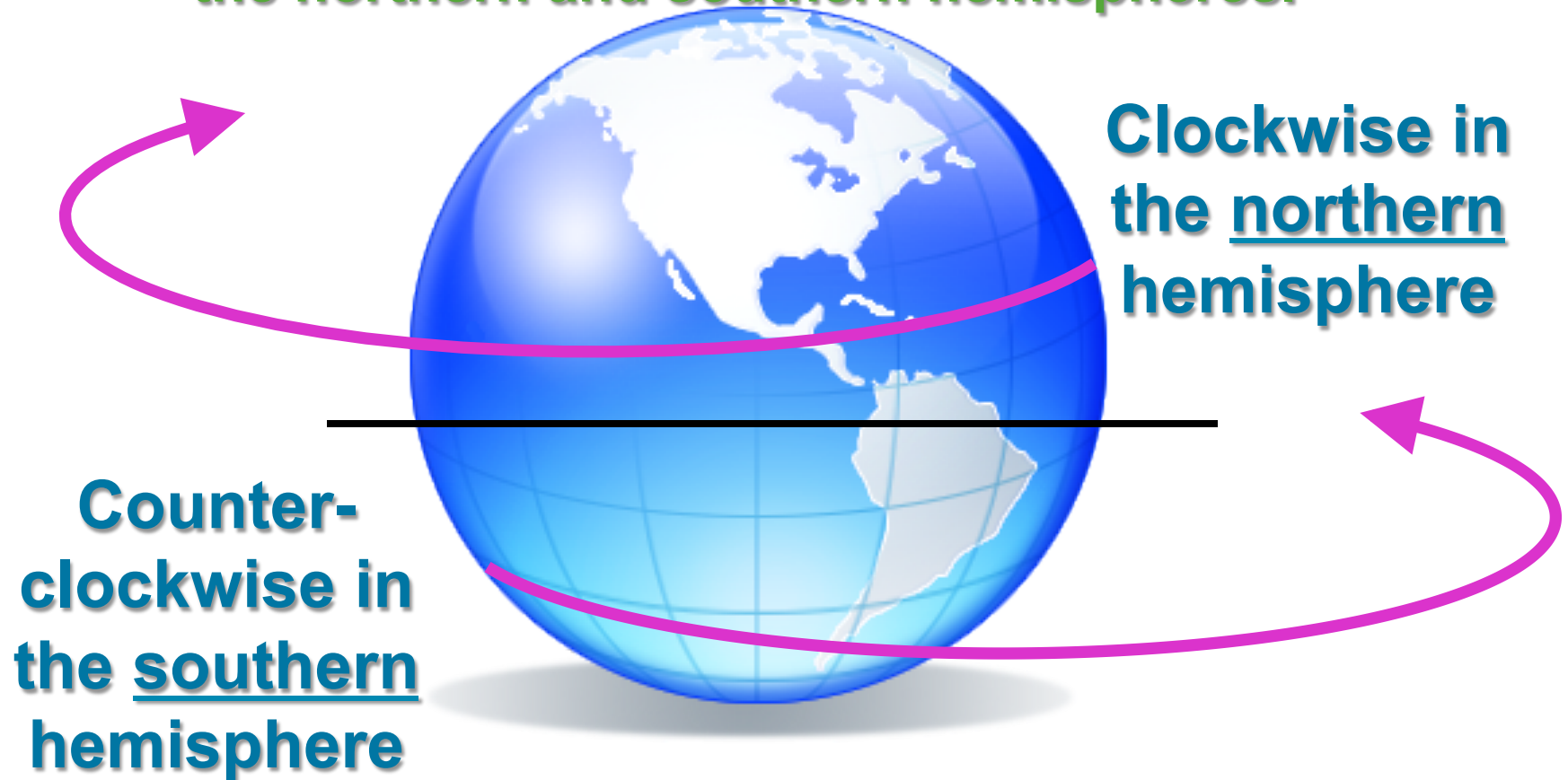
Ocean Currents

Summarize how the oceans help equalize the amount of heat throughout the planet.

The oceans absorb heat energy in the tropics. Ocean Currents carry the heat to the poles.

Ocean Currents

Model how the Coriolis effect deflects ocean currents in the northern and southern hemispheres.





Summarize It!

**Summarize two main ideas of
the above sections in two
bullet points.**

Ocean Currents

Complete the flow chart to describe the process that forms deep ocean currents in Antarctica.

Surface
water is
cooled by
air.



Salinity
increases
as some
water
freezes.



Surface
water
becomes
denser
and sinks.

Ocean Currents

Model the currents that make up the North Pacific Gyre using labeled arrows.

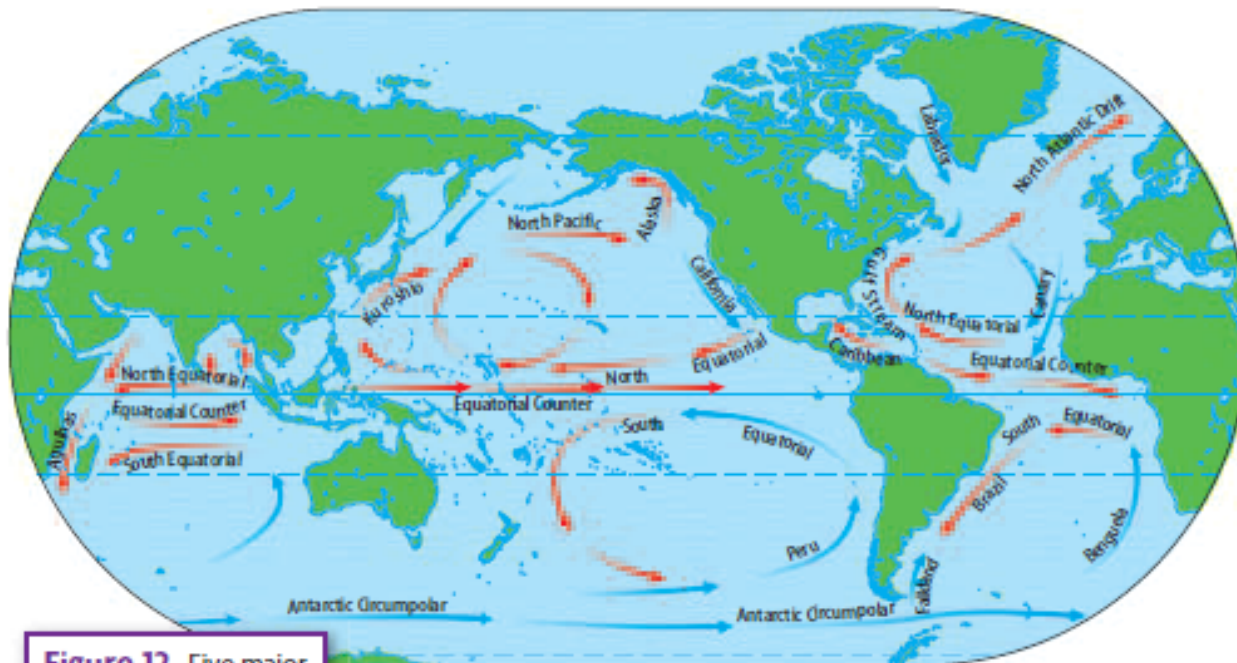


Figure 12 Five major gyres circulate in Earth's oceans.

Identify the currents in the southern Atlantic Ocean and describe how the gyre circulates.

Ocean Currents

Analyze the cause and effects of El Niño and La Niña.

Event	Cause	Effect
El Niño	Trade winds stop driving flow of water across the Pacific.	Above-normal amounts of rainfall in California.
La Niña	Trade winds resume with great strength.	Unusually cold conditions occur along the coast of South America.




Summarize It!

Summarize the main ideas of the above sections in your own words.

The Ocean Shore

Chapter 10, Lesson 3



What You'll Learn:

- **Understand** how waves shape the shore.
- **Distinguish** between different types of sand.

So What?

**Beaches are always
changing shape.**



Vocabulary

Use your book to locate the definitions for the Review Vocabulary, New Vocabulary, and Academic Vocabulary words on page 112 of your Science Notebook.

Shoreline Processes

Summarize forces that erode the shoreline.

Erosion by Wind and Waves

Forces	Effects
Wind	Picks up grit and smashes it against rocks
Waves	Force air and water into cracks in rocks, causing them to split; erode larger rocks into smaller pieces.
Water	Can dissolve minerals in rocks.

Shoreline Processes

Distinguish two facts that affect the rate of shoreline erosion.

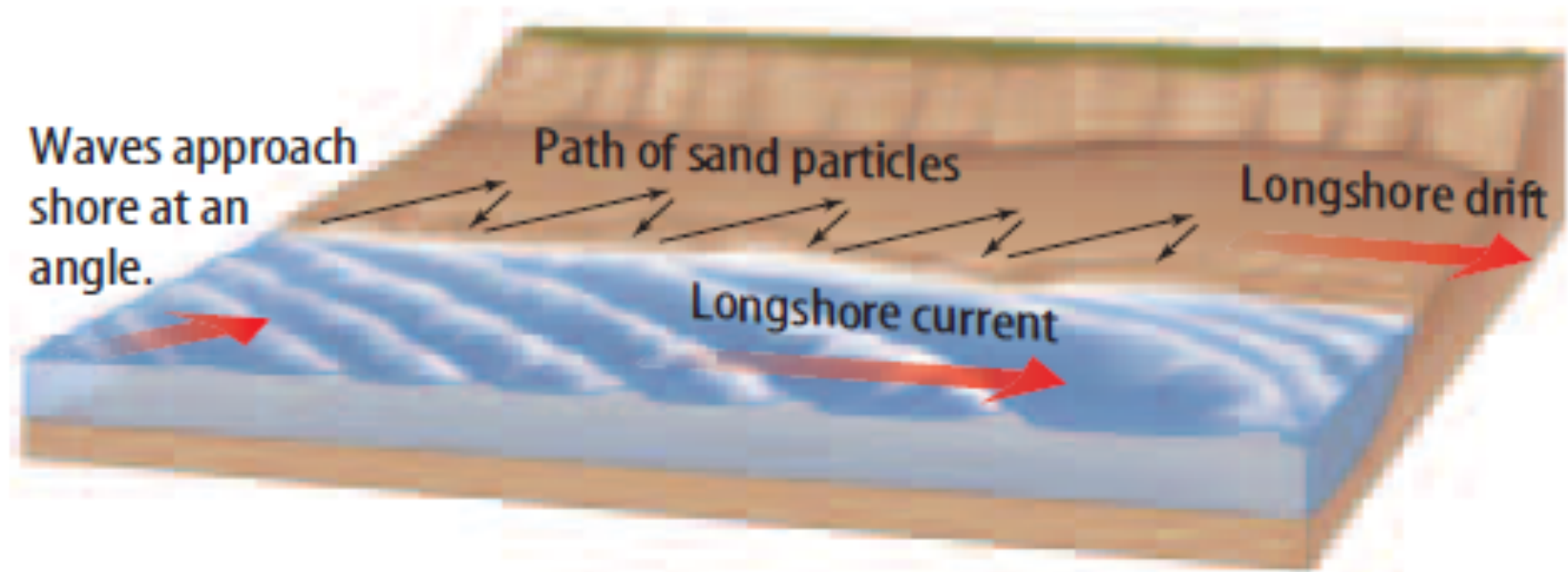
1. Hardness of rock

2. Intensity of wind and waves



Shoreline Processes

Draw longshore current and longshore drift.



- * Waves should be shown as approaching the beach at an angle. Movement of sediment should be shown as traveling parallel to the beach.**



Summarize It!

**Summarize the main ideas of
the above sections.**

Shoreline Processes

Analyze how rip currents form.

When many waves hit the shore at once and retain water, the longshore current cannot carry it away fast enough. Water breaks through the surf and rushes back out.

Shoreline Processes

Summarize two unintended results caused by structures built by humans.

Jetties, groins, and breakwaters:

Can trap sand carried by the longshore drift, causing beaches farther down to be smaller.

Seawalls:

Can cause erosion by deflecting wave energy to either side or below them.

Shoreline Processes

Order the following sediment sizes from largest to smallest.

Largest



Smallest

BOULDER

COBBLE

GRAVEL

SAND

SILT

CLAY

Shoreline Processes

Sequence the steps that form sand.

Weathering
Breaks boulders
into smaller
rocks.



Rivers Break
rocks into smaller
pieces **and** Transport
them to the ocean



Currents
Deposit broken rock
as sand on beaches



Summarize It!

Weathering breaks large boulders into smaller rocks. Rain then washes small rocks into rivers. Rivers transport these rocks to the ocean. Along the way, rocks are continually weathered and broken down into smaller and smaller pieces. These small pieces are then transported along the shoreline.