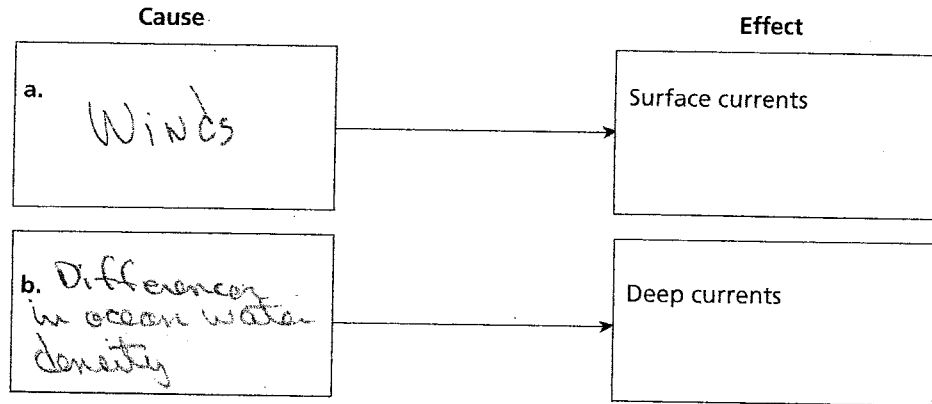


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**Currents and Climate** (pp. 116–121)

*This section describes surface and deep ocean currents and explains how they affect climate.*

**Use Target Reading Skills**



**Introduction** (p. 116)

1. A large stream of moving water that flows through the oceans is a(n) current.
2. Is the following sentence true or false? Currents carry water from one place to another. true

**Surface Currents** (pp. 117–119)

3. Circle the letter of each sentence that is true about surface currents.
  - a. They affect water down to 1 kilometer.
  - b. They are driven mainly by winds.
  - c. They move in circular patterns.
  - d. They occur only in the Pacific Ocean.

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4. The effect of Earth's rotation on the direction of winds and currents is called the Coriolis effect.
5. Is the following sentence true or false? In the Northern Hemisphere, surface currents curve to the left. False
6. The largest and most powerful surface current in the North Atlantic Ocean is the Gulf Stream.
7. Circle the letter of the sentence that is true about the Gulf Stream.
  - a. It is caused by strong winds from the north.
  - b. It carries more water than the Mississippi River.
  - c. It is a cold-water current.
  - d. It curves westward due to the Coriolis effect.
8. Is the following sentence true or false? In the Southern Hemisphere, surface currents curve to the left. True
9. The pattern of temperature and precipitation typical of an area over a long period of time is called climate.
10. An abnormal climate event that occurs every 2 to 7 years in the Pacific Ocean is called El Niño.
11. How does El Niño begin?  
El Niño begins when an unusual pattern of winds over the western Pacific Ocean causes a vast sheet of warm water to move eastward toward the South American coast
12. Circle the letter of each sentence that is true about El Niño.
  - a. It can prevent upwelling.
  - b. It can affect weather worldwide.
  - c. It is fully understood.
  - d. Its impact can be reduced.

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**Currents and Climate** *(continued)*

**Deep Currents** (p. 120)

13. How does the Gulf Stream influence the climate along the western coast of Norway?

The warm waters of the Gulf stream bring the the western coast of Norway a fairly mild climate for its northern location

14. How do cold-water currents affect weather on land near a coast?

They bring cool, dry weather to land near the coast

15. Deep currents are caused by differences in density.

16. The density of water depends on its temperature and its salinity.

17. Why does water get denser as it moves toward the poles?

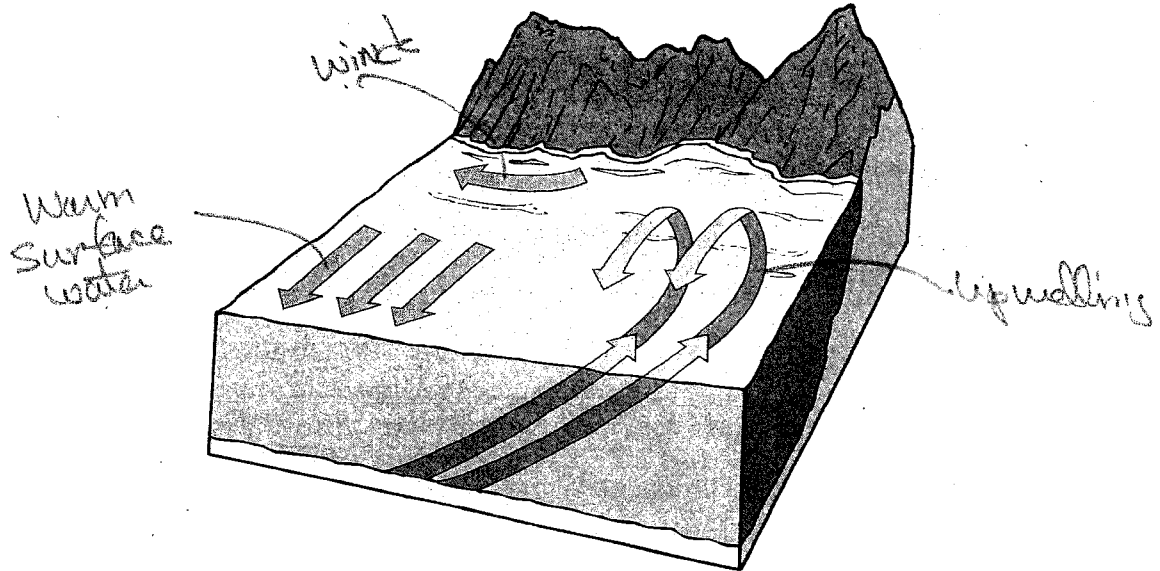
It gets denser because its salinity increases

18. Is the following sentence true or false? Deep ocean currents move and mix water around the world. true

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**Upwelling** (pp. 120–121)

- 19. The movement of cold water upward from the deep ocean is referred to as upwelling.
- 20. Is the following sentence true or false? Upwelling is caused by tides.  
false
- 21. Label the wind, warm surface water, and the area of upwelling in the diagram below.



- 22. Why are upwelling zones usually home to enormous schools of fish?  
Upwelling zones have so many fish because upwelling brings up nutrients from deep layers of the water

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