

1. Most of the Earth's surface ocean currents are caused by

- A) stream flow from continents
- B) differences in ocean water density
- C) the revolution of the Earth
- D) the prevailing winds

2. Waste produced by people in Delaware has been dumped into the Atlantic Ocean, where it is distributed by surface ocean currents. Which coastal area is most likely to become polluted by this waste?

- A) western coast of Europe
- B) southern coast of South America
- C) western coast of Mexico
- D) eastern coast of Africa

3. Which two ocean currents are both warm currents that primarily flow away from the equator?

- A) Guinea Current and Labrador Current
- B) Brazil Current and Agulhas Current
- C) Alaska Current and Falkland Current
- D) Canaries Current and Gulf Stream Current

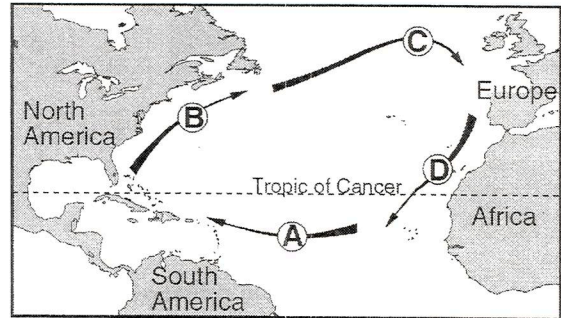
4. Surface ocean currents located at 40° south latitude, 90° west longitude generally flow toward the

- A) northeast
- B) southeast
- C) southwest
- D) west

5. Which statement best summarizes the general effects of ocean currents at 20° S latitude on coastal regions of South America?

- A) The east coast and west coast are both warmed.
- B) The east coast and west coast are both cooled.
- C) The east coast is warmed and the west coast is cooled.
- D) The east coast is cooled and the west coast is warmed.

6. The arrows labeled A through D on the map below show the general paths of abandoned boats that have floated across the Atlantic Ocean.



Which sequence of ocean currents was responsible for the movement of these boats?

- A) South Equatorial → Gulf Stream → Labrador → Benguela
- B) South Equatorial → Australia → West Wind Drift → Peru
- C) North Equatorial → Kuroshio → North Pacific → California
- D) North Equatorial → Gulf Stream → North Atlantic → Canaries

7. The Florida and Gulf Stream ocean currents along the east coast of North America are both

- A) warm currents that flow northeastward
- B) warm currents that flow southwestward
- C) cool currents that flow northeastward
- D) cool currents that flow southwestward

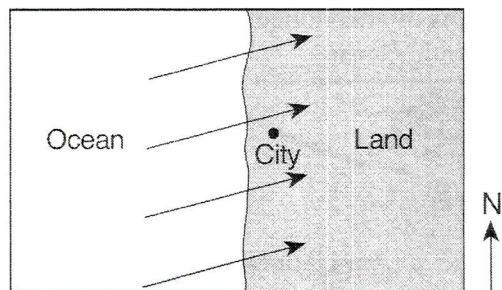
8. Ocean currents exhibit the Coriolis effect as a result of the

- A) rotation of the Earth
- B) revolution of the Earth
- C) unequal heating of the Earth
- D) variations in salinity of the Earth's oceans

9. Which coastal location experiences a cooler summer climate due to ocean currents?

- A) southeast coast of North America
- B) northeast coast of Australia
- C) southwest coast of South America
- D) northwest coast of Europe

10. The arrows on the map below show the prevailing winds at a midlatitude coastal city.



This city most likely has a climate that is

- A) arid, with a small difference between the highest and lowest yearly temperatures
 - B) arid, with a large difference between the highest and lowest yearly temperatures
 - C) humid, with a small difference between the highest and lowest yearly temperatures
 - D) humid, with a large difference between the highest and lowest yearly temperatures
11. Which ocean current warms the climate of northwestern Europe?
- A) North Atlantic Current
 - B) Canary Current
 - C) North Equatorial Current
 - D) Labrador Current
12. The table below shows the average January air temperature from 1901 to 2006 in two different cities in New York State.

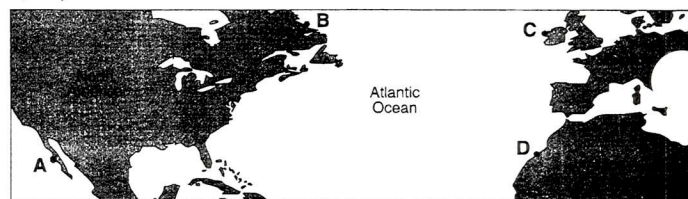
Data Table

City	Average January Air Temperature (°F)
Albany	21.4
New York City	29.7

The most likely cause of this air temperature difference is that New York City is located

- A) in a different prevailing wind belt
- B) at a higher latitude
- C) near a large body of water
- D) at a higher elevation

13. The map below shows four coastal locations labeled *A*, *B*, *C*, and *D*.



The climate of which location is warmed by a nearby major ocean current?

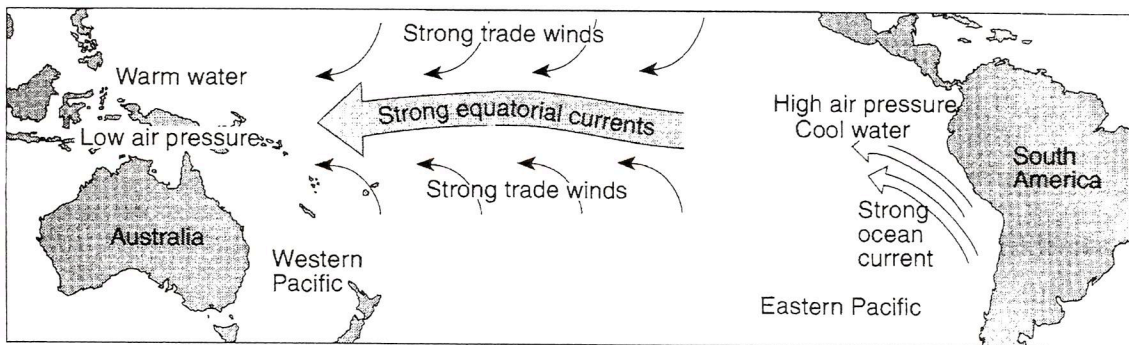
- A) *A*
- B) *B*
- C) *C*
- D) *D*

14. Base your answer to the following question on the maps and the passage below. The maps show differences in trade wind strength, ocean current direction, and water temperature associated with air-pressure changes from normal climate conditions to El Niño conditions.

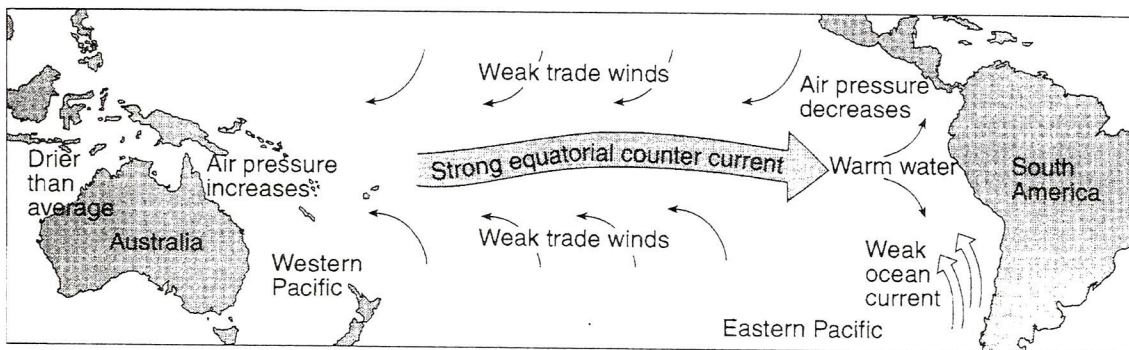
El Niño Conditions

El Niño conditions occur with a buildup of warm water in the equatorial Pacific Ocean off the coast of South America. The immediate cause of this buildup is a change in air pressure that weakens the southern trade winds. These are the planetary winds that move air from 30° S to the equator. Normally, these strong, steady winds, with the help of their counterparts in the Northern Hemisphere, push equatorial water westward away from South America. But, at intervals of two to seven years, these winds weaken, causing the westward water flow to reverse. This results in an accumulation of unusually warm water on the east side of the equatorial Pacific Ocean. This warm water not only changes the characteristics of the air above it, but also is thought to be the cause of weather changes around the world. El Niño conditions may last only a few months, but often last a year or two.

Normal Climate Conditions



El Niño Conditions



Under normal climate conditions, what are the characteristics of the surface ocean current that flows along most of the west coast of South America?

- A) cool water moving toward the equator B) cool water moving away from the equator
C) warm water moving toward the equator D) warm water moving away from the equator

15. Which cold ocean current affects the climate of the northeastern coast of North America?

- A) Gulf Stream B) Canaries
- C) Labrador D) North Atlantic

16. The data table below compares the climates of two United States cities located at approximately 43° north latitude. The data are based on a 30-year period.

Data Table

Location	Maximum Temperature (°F)	Minimum Temperature (°F)	Mean Annual Precipitation (in)	Mean Annual Snowfall (in)
city A	110	-36	23.8	31.9
city B	98	-19	38.2	92.9

Which statement best explains the climate variation between these two cities?

- A) City A and city B are located at the same longitude.
- B) City A is located at a high elevation, and city B is located at sea level.
- C) City A is located far inland, and city B is located near a large body of water.
- D) City A is located on the east coast, and city B is located on the west coast.

17. Which ocean current carries cool water toward Earth's equator?

- A) Alaska Current
- B) East Australia Current
- C) Peru Current
- D) North Atlantic Current

18. Which ocean current transports warm water away from Earth's equatorial region?

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19. Most of the Gulf Stream Ocean Current is

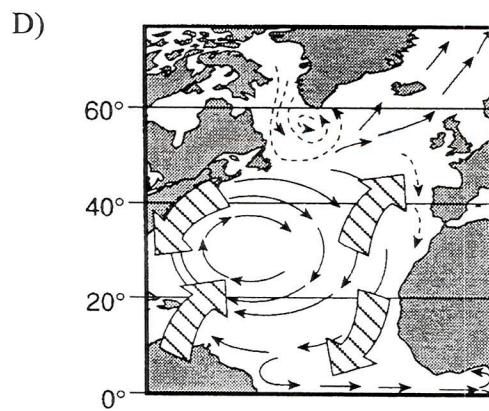
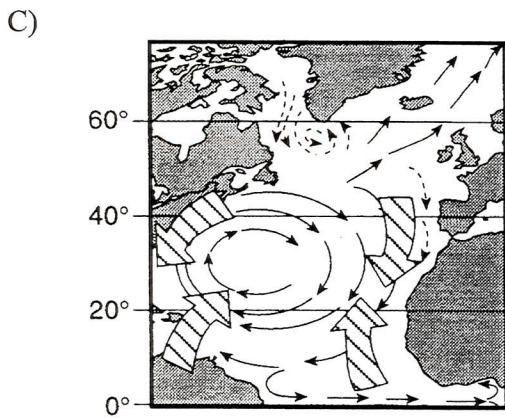
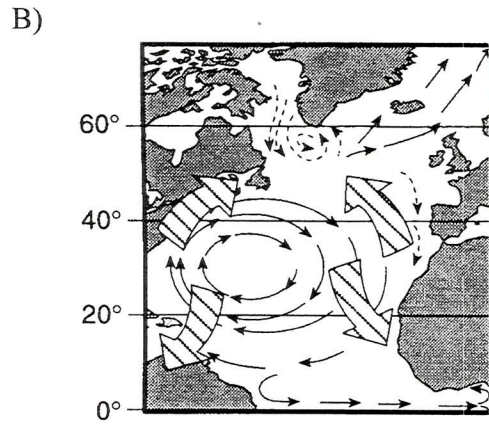
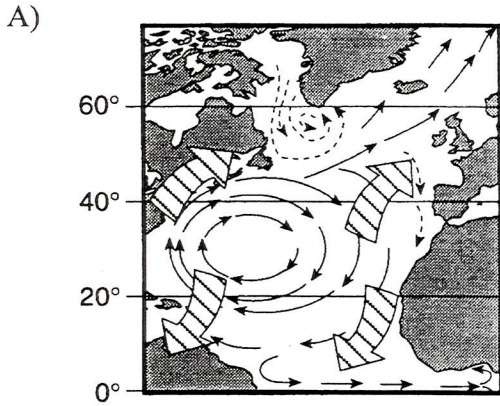
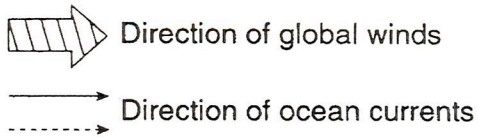
- A) warm water that flows southwestward
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20. Which interaction between the atmosphere and the hydrosphere causes most surface ocean currents?

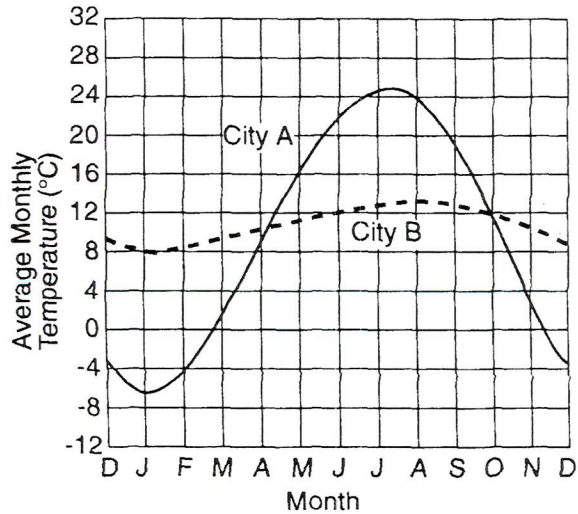
- A) cooling of rising air above the ocean surface
- B) evaporation of water from the ocean surface
- C) friction from planetary winds on the ocean surface
- D) seismic waves on the ocean surface

21. Which map best represents the global prevailing surface wind patterns responsible for generating Atlantic Ocean currents?

Key



22. The graph below shows the average monthly temperatures for two cities, *A* and *B*, which are both located at 41° north latitude.



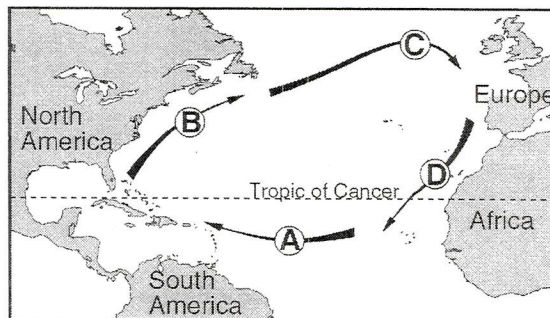
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- A) City *B* is located in a different planetary wind belt.
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- Waste produced by people in Delaware has been dumped into the Atlantic Ocean, where it is distributed by surface ocean currents. Which coastal area is most likely to become polluted by this waste?
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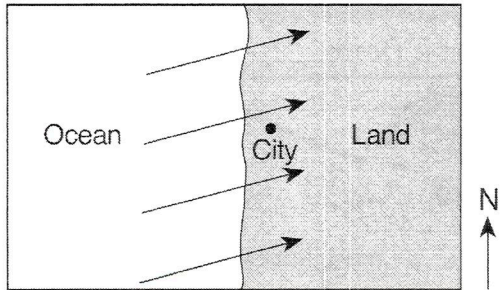
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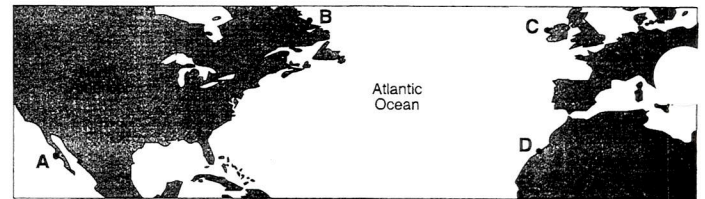
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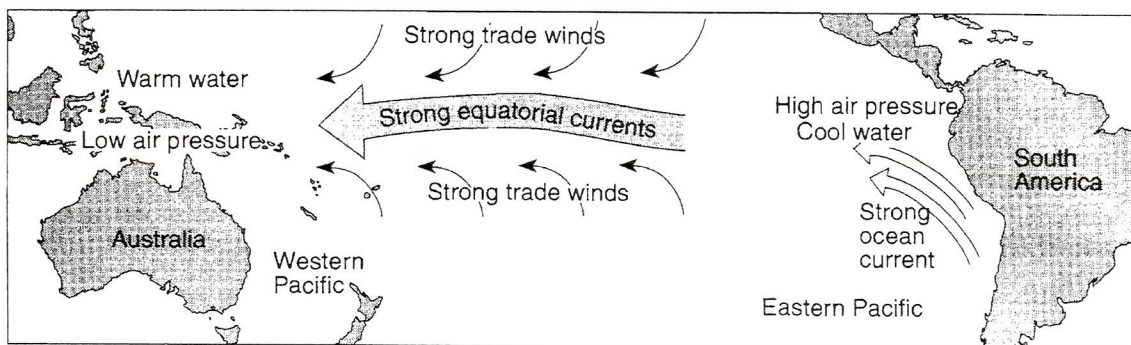
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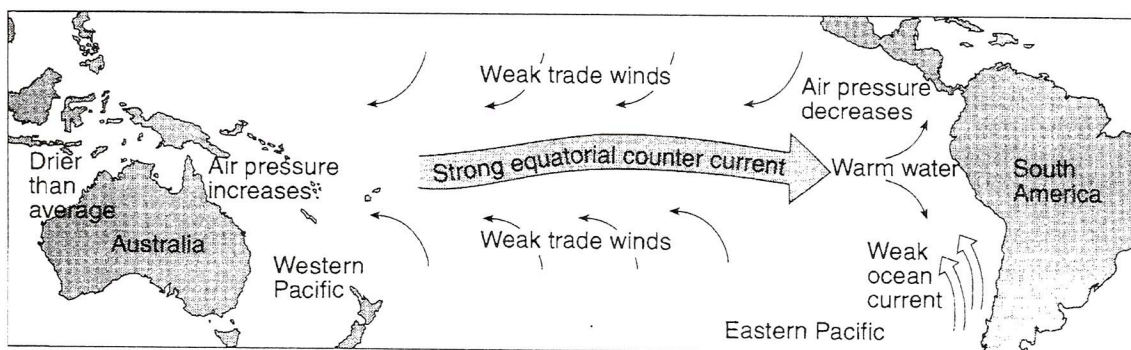
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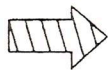
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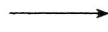

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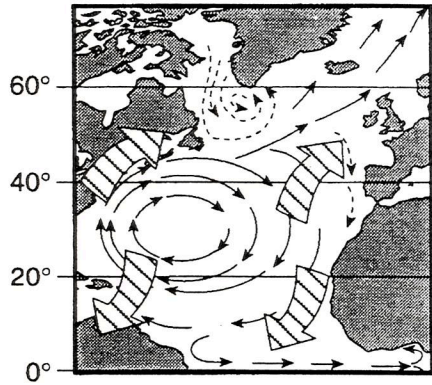
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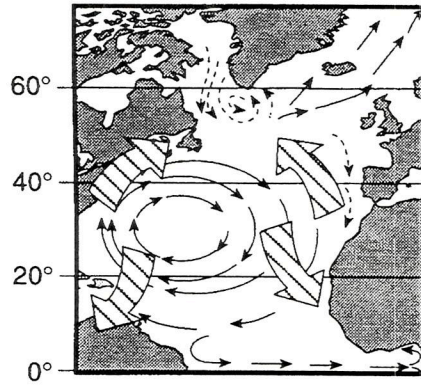
 Direction of global winds

 Direction of ocean currents


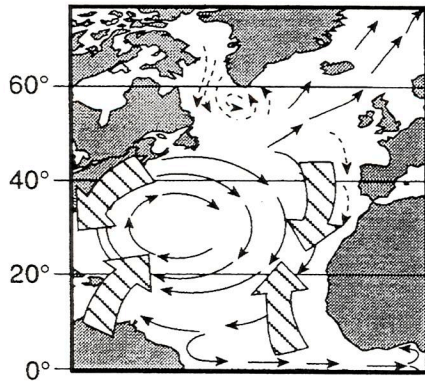
A)



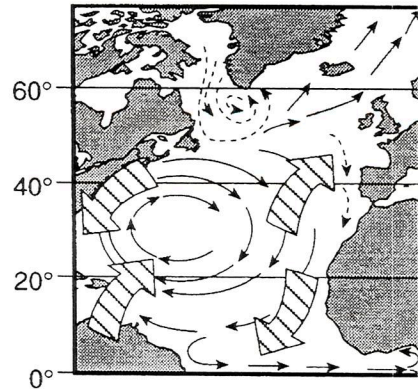
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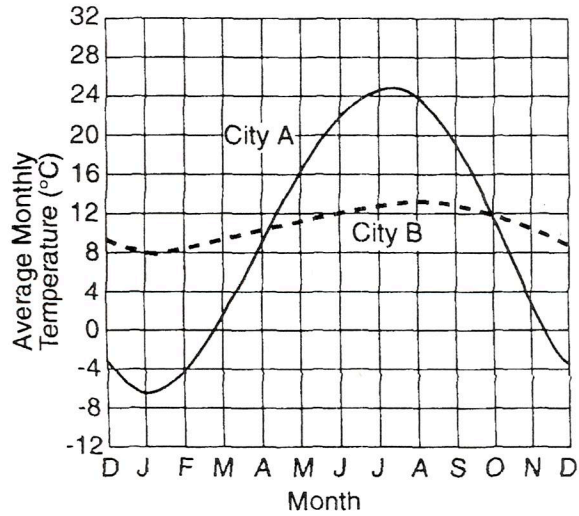
C)



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