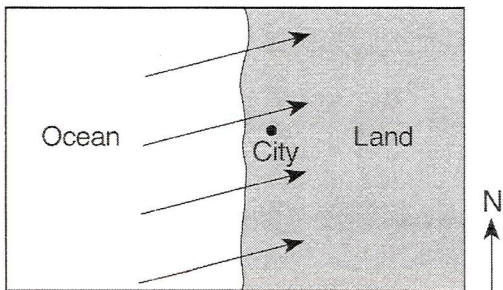


1. During an El Niño event, the South Equatorial Current reverses direction and flows over the top of northern portions of the Peru Current, causing

- A) warmer surface ocean waters along the northeast coast of South America
- B) warmer surface ocean waters along the northwest coast of South America
- C) cooler surface ocean waters along the northeast coast of South America
- D) cooler surface ocean waters along the northwest coast of South America

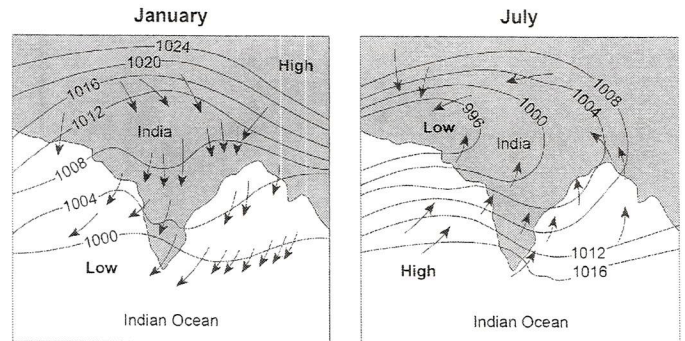
2. The arrows on the map below show the prevailing winds at a midlatitude coastal city.



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

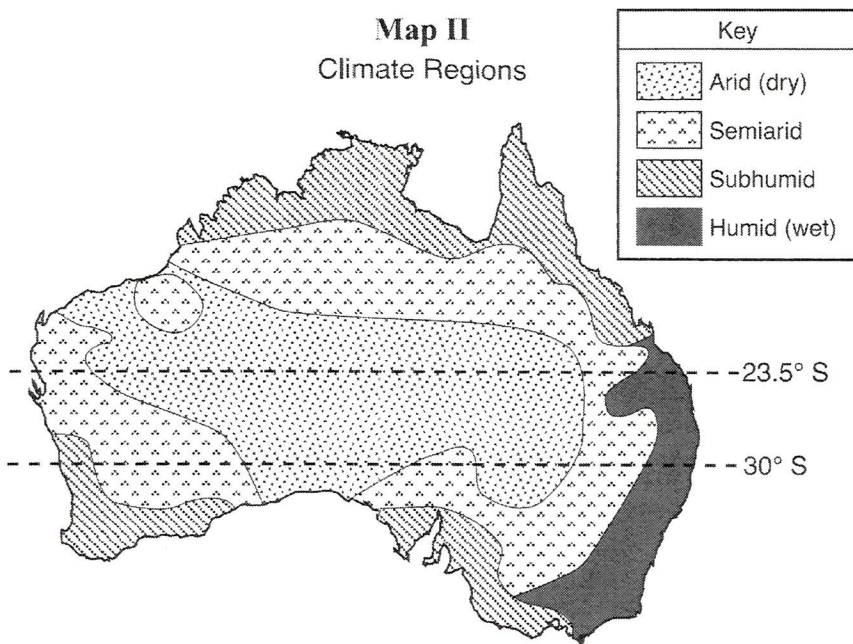
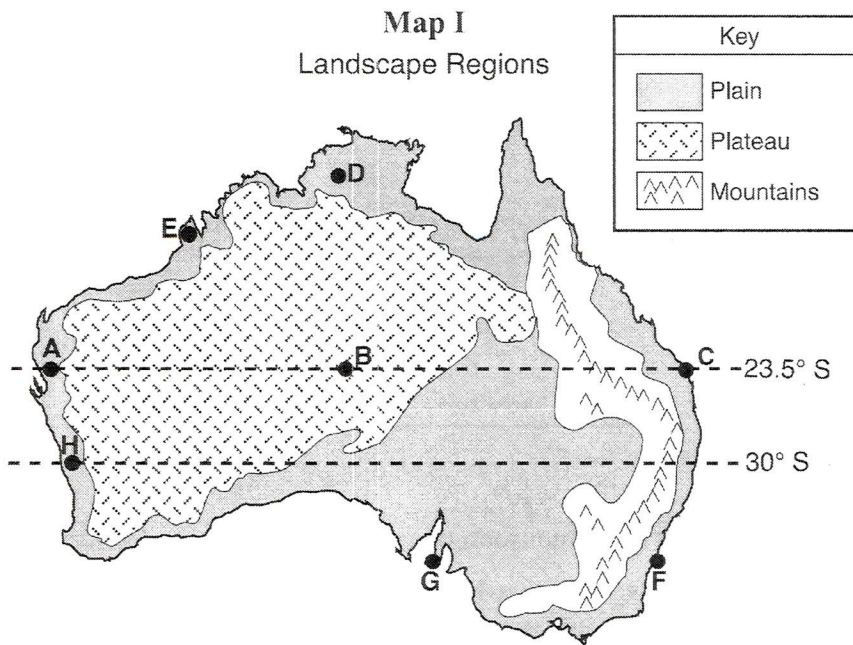
3. Arrows on the maps below show differences in the direction of winds in the region of India and the Indian Ocean during January and July. Isobar values are recorded in millibars.



Heavy monsoon rains usually occur in India during

- A) January, when winds blow from the land
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- D) July, when winds blow toward high pressure

4. Base your answer to the following question on the two maps for Australia below. Map I shows Australia's major landscape regions. Letters *A* through *H* represent locations in Australia. Map II shows Australia's general climate regions.



Which location's climate is most affected by the East Australia Current?

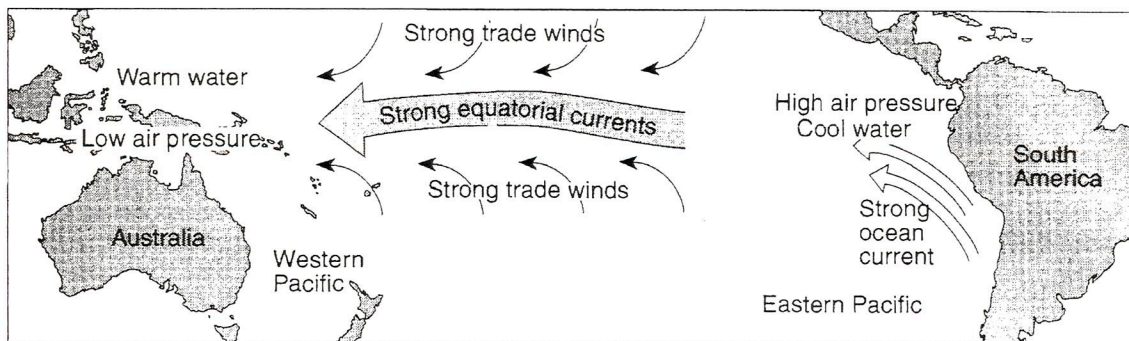
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Base your answers to questions 5 through 8 on the maps and the passage below. The maps show differences in trade wind strength, ocean current direction, and water temperature associated with air-pressure changes from normal climate conditions to El Niño conditions.

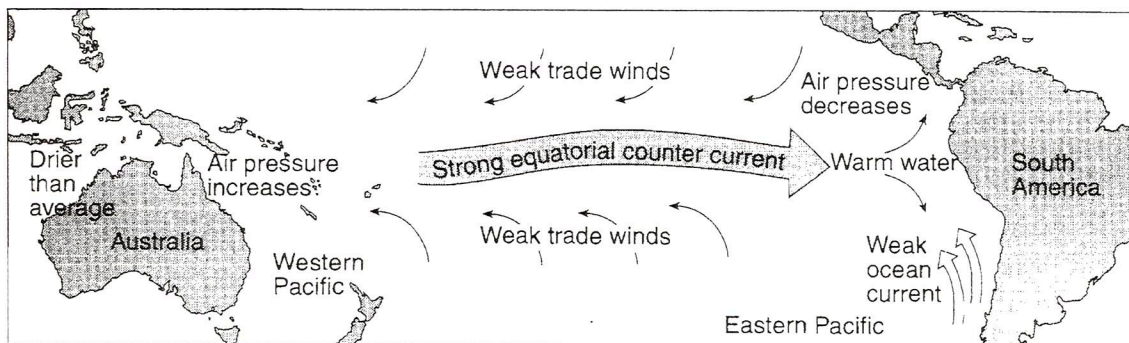
El Niño Conditions

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



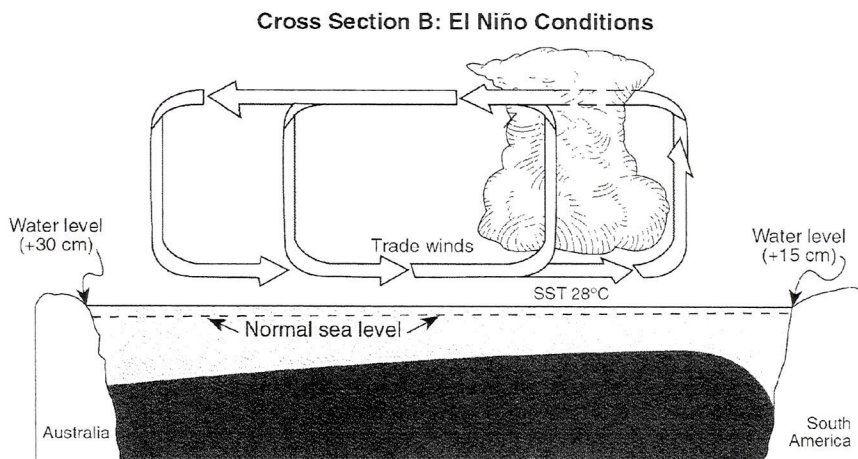
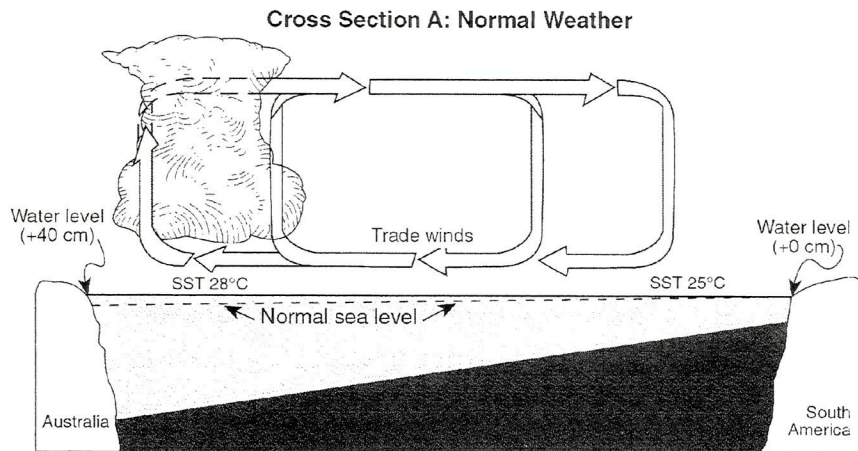
El Niño Conditions



5. Equatorial Pacific trade winds weaken during El Niño conditions when air pressure
- A) falls in the western Pacific and rises in the eastern Pacific
 - B) falls in both the western and eastern Pacific
 - C) rises in the western Pacific and falls in the eastern Pacific
 - D) rises in both the western and eastern Pacific

-
6. During El Niño conditions, air above the Pacific Ocean moving over the land on the equatorial west coast of South America is likely to be .
- A) cooler and drier than usual B) cooler and wetter than usual
C) warmer and drier than usual D) warmer and wetter than usual
7. The trade winds between 30° S and the equator usually blow from the
- A) northeast B) southeast C) northwest D) southwest
8. 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
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Base your answers to questions 9 through 13 on the two cross sections below, which represent the Pacific Ocean and the atmosphere near the Equator during normal weather (cross section A) and during El Niño conditions (cross section B). Sea surface temperatures (SST) are labeled and trade-wind directions are shown with arrows. Cloud buildup indicates regions of frequent thunderstorm activity. The change from normal sea level is shown at the side of each diagram.



9. Which statement correctly describes sea surface temperatures along the South American coast and Pacific trade winds during El Niño conditions?

- A) The sea surface temperatures are warmer than normal, and Pacific trade winds are from the west.
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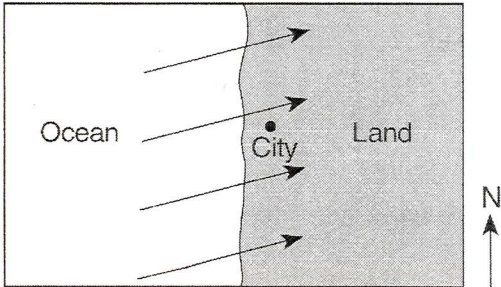
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10. Compared to normal weather conditions, the shift of the trade winds caused sea levels during El Niño conditions to
- A) decrease at both Australia and South America
 - B) decrease at Australia and increase at South America
 - C) increase at Australia and decrease at South America
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11. During El Niño conditions, thunderstorms increase in the eastern Pacific Ocean region because the warm, moist air is
- A) less dense, sinking, compressing, and warming
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 - C) more dense, sinking, compressing, and warming
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12. The development of El Niño conditions over this region of the Pacific Ocean has caused
- A) changes in worldwide precipitation patterns
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13. Earth's entire equatorial climate zone is generally a belt around Earth that has
- A) high air pressure and wet weather
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Key

1. During an El Nino event, the South Equatorial Current reverses direction and flows over the top of northern portions of the Peru Current, causing

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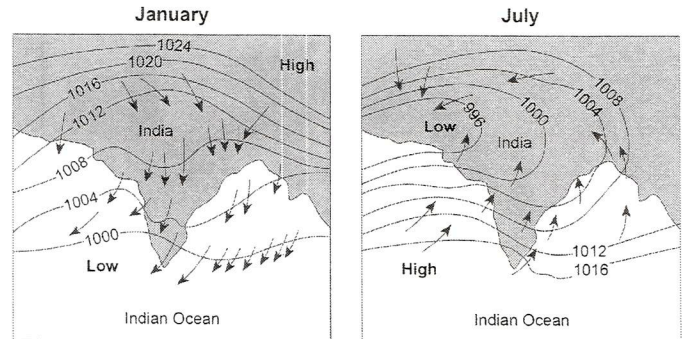
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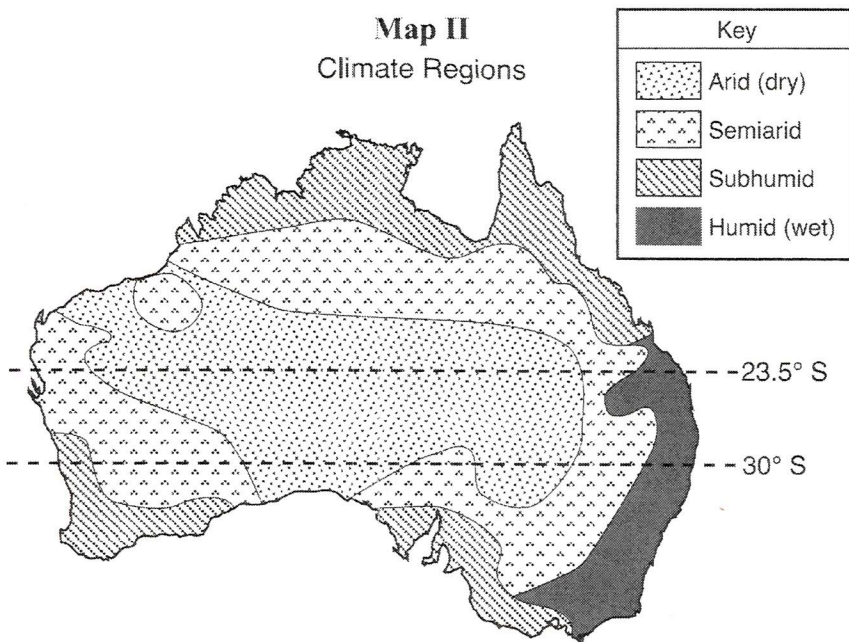
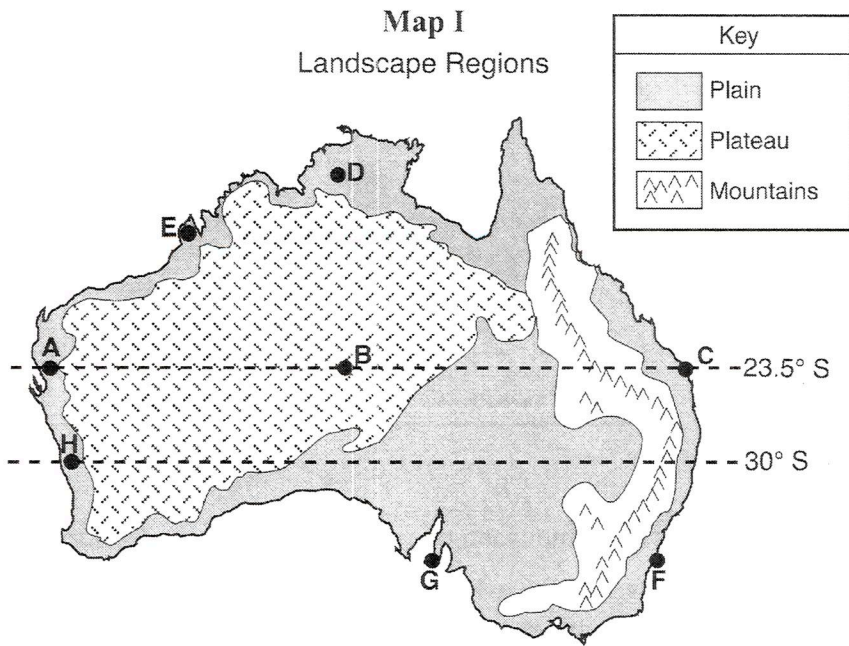
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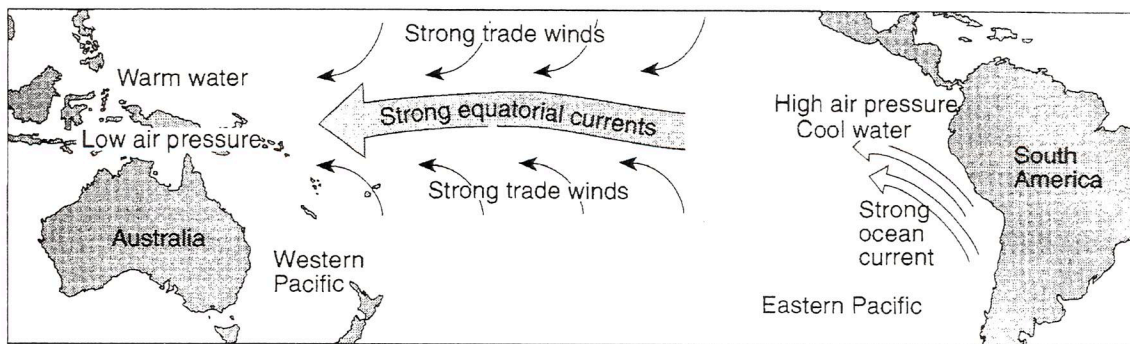
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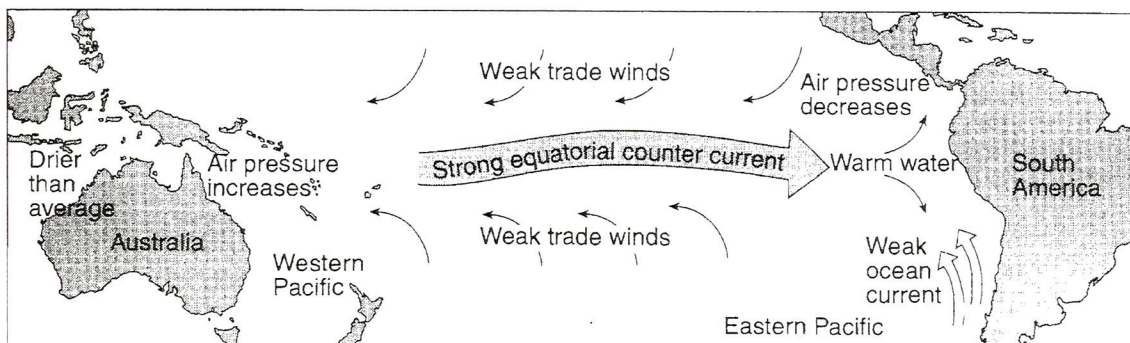
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Normal Climate Conditions



El Niño Conditions

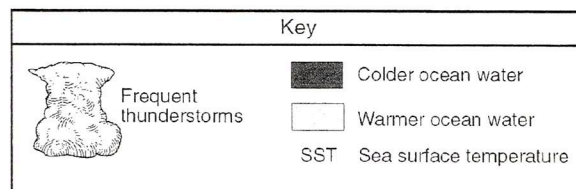
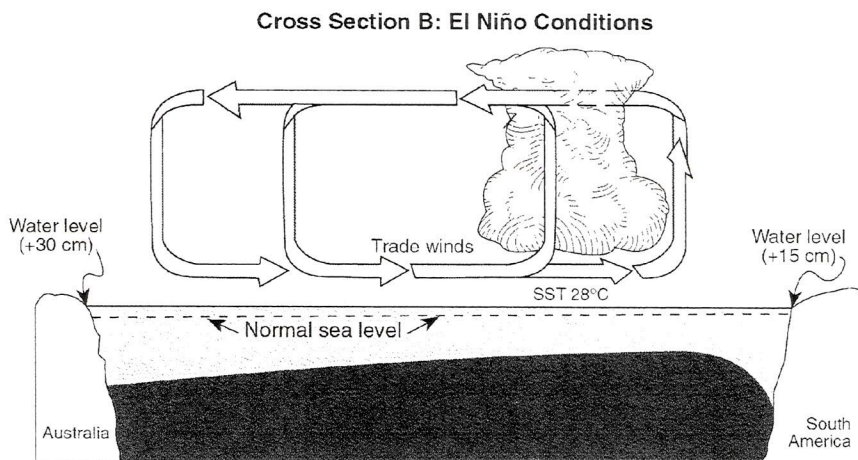
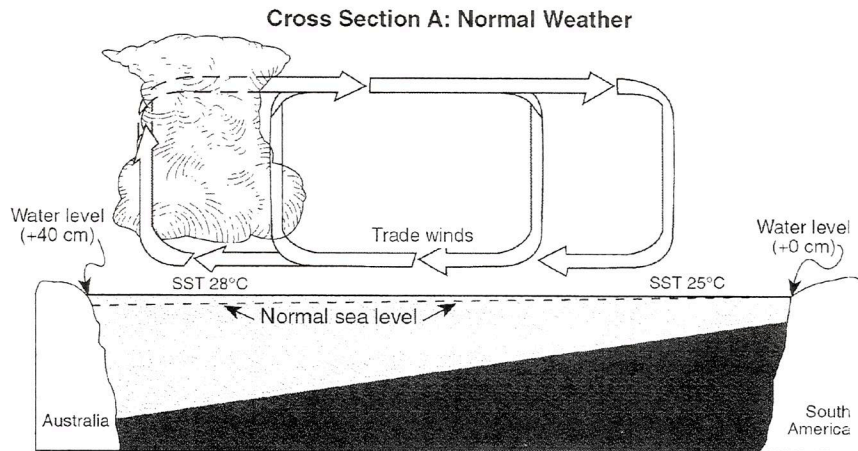


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