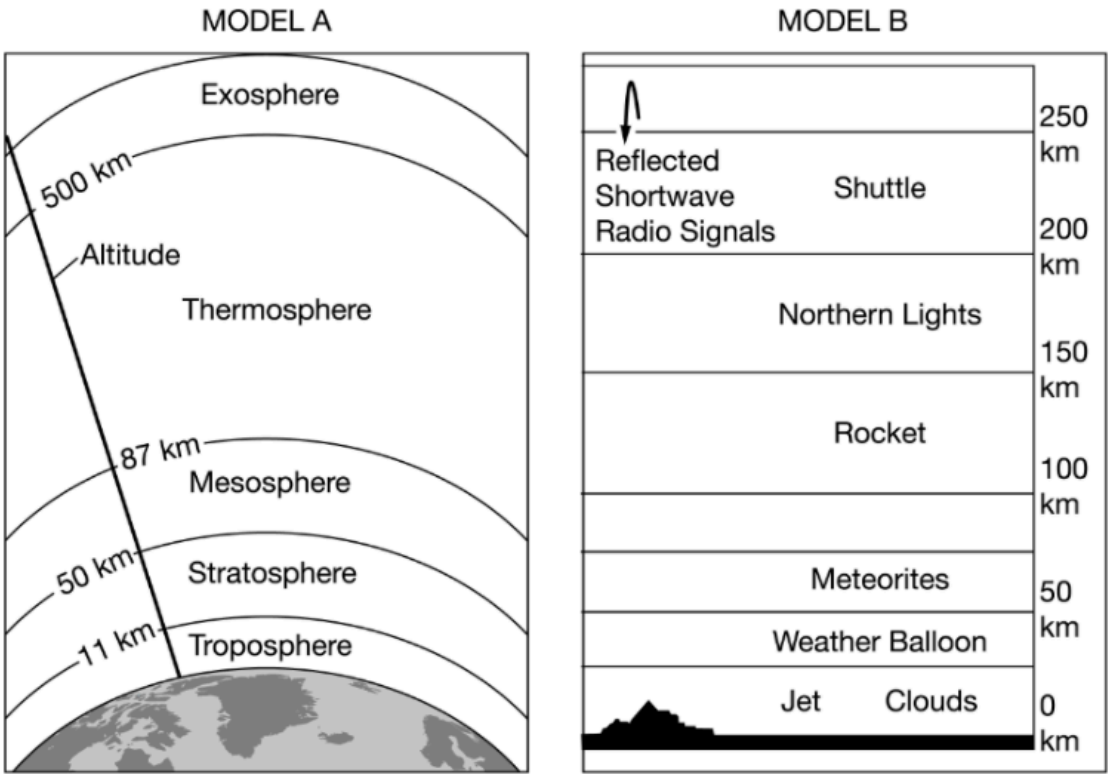
Chapter 4: Module 9, 10, 11 Stations

1.



Based on the data in the diagrams, in which layer of the atmosphere would short wave radio signals be reflected?

2. Unequal Heating of Earth

· Explain how each of the following factors creates unequal heating of Earth's surfaces:

a. Angle of sun to surface:

b. Solar rays per unit area:

c. Albedo:

· How will the melting of polar ice from global warming alter Earth's albedo?

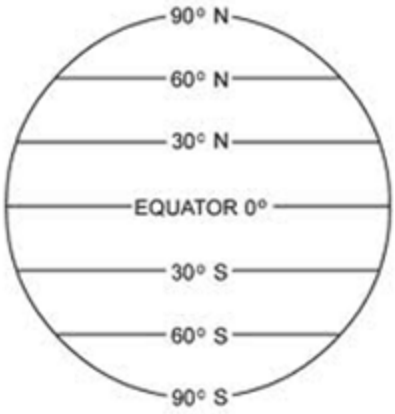
· Generally speaking, the _____ regions of Earth receive the most light/heat in a year and the _____ regions receive the least light/heat in a year.

3. Atmospheric Convection Currents

- Explain why warm air rises and cool air sinks.
- Why is rising air associated with precipitation?
- What types of atmospheric conditions are found where air sinks back to the surface?
- Draw each of the following on the diagram below:

  Earth's atmospheric convection cells, with direction of air movement

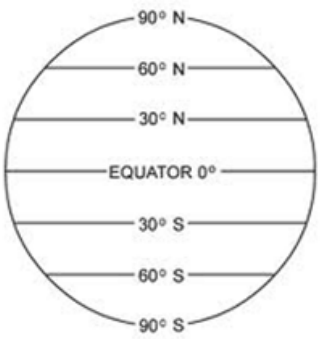
  The general level of precipitation found at each latitude belt: 0/30/60/90)



- Why does the ITCZ move throughout the year in a regular pattern?

4. Earth's Rotation and the Coriolis Effect

- The Coriolis Effect deflects moving objects (such as wind) in a _____ direction in the northern hemisphere and a _____ direction in the southern hemisphere
- Draw arrows indicating the general direction of wind movement between latitudes :



5. Earth's Tilt and Seasons

· In Los Angeles, the longest day of the year occurs in the month of _____ because _____

· Why does the northern hemisphere's summer come during the southern hemisphere's winter, and vice versa?

6. Rain Shadows

What is the difference between the windward and leeward sides of a mountain range? Can you draw it.

7.

The shaded area in New York State, Pennsylvania, and Ohio in the northeast United States is referred to as a snowbelt. On average, this region receives much more snowfall than surrounding areas.

Which of the following best explains why the shaded area receives more snowfall than the other parts of New York, Pennsylvania, and Ohio?

(A) Moisture-laden storms from the Gulf of Mexico release precipitation here because of the cool temperatures in the region.

(B) Air pollutants from power plants and industrial emissions in the Midwest increase snowfall rates.

(C) Moisture picked up from the warmer water in the Great Lakes is deposited as snow downwind.

(D) Sea spray from the Atlantic Ocean is carried westward by prevailing winds.

8. Ocean Currents

· What are gyres, and how are they created?

· Explain how oceanic gyres and atmospheric convection currents redistribute heat around Earth.

· Upwelling is a process in which _____ water is brought to the surface along a coast. It is caused by _____ and is important to humans because _____.

· Describe what thermohaline circulation is, and how it transports heat.

· The ENSO is a disruption to _____ in which warm water and increased precipitation build up in the region of _____ while drought and cold water occur in the region of _____

9. The annual anchovy catch and average SST off the coast of Peru from 1995-2001.

Year	Anchovy Catch (10^6 metric tons)	Sea Surface Temperature (°C)
1995	8.6	18.9
1996	8.9	15.5
1997	7.7	15.6
1998	1.7	26.2
1999	8.7	15.4
2000	11.2	15.5
2001	7.2	16.9

The low anchovy catch in 1998 was most likely the result of

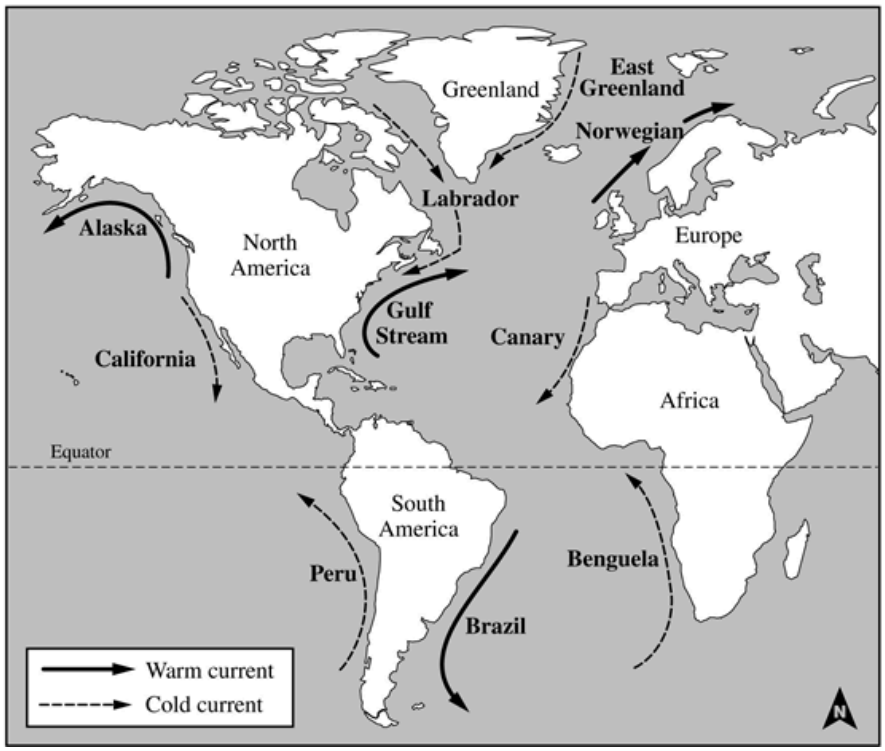
a. An increase in the number of hurricanes
b. An increases in the population of anchovy predators
c. Reduced ocean upwelling along the coast
d. Reduced surface runoff due to drought

The high sea surface temperature in 1998 was likely due to

a. Climate change
b. El nino
c. Eutrophication
d. Salinization

10.

WARM AND COLD SURFACE CURRENTS IN THE ATLANTIC AND PACIFIC OCEANS



1. Based on the diagram, which of the following statements best explains why the climate of the West Coast of Africa is drier than that of the East Coast of the United States, even though they are located at similar northern latitudes?

   (A) The warm ocean currents off the United States flow east, making the atmospheric temperatures warmer in Africa.

   (B) Africa is closer to the equator, which makes the temperatures warmer than those of the United States.

   (C) The cold ocean currents off Africa absorb heat from land and therefore cool the atmosphere.

   (D) The cold ocean currents evaporate more easily, releasing latent heat into the atmosphere.

2. Based on the diagram, which of the following changes are most likely to occur in the central and eastern tropical Pacific during El Niño?

   (A) The Californian current reverses direction and flows northward.

   (B) The Californian current flows southward with increased speed.

   (C) The Peruvian current strengthens, leading to cooler-than-average sea-surface temperatures.

   (D) The Peruvian current weakens, leading to warmer-than-average sea-surface temperatures.

3. Based on the diagram, which of the following describes the most likely effect that glaciers melting in Greenland and the Arctic would have on the surface currents of the North Atlantic?

   (A) The East Greenland current will reverse directions as sea levels rise.

   (B) The Labrador current will be deflected by icebergs that break off from the glaciers.

   (C) The warm surface currents will become cooler, and the cool oceanic currents will become warmer.

   (D) The Norwegian current will become cooler and less salty.