

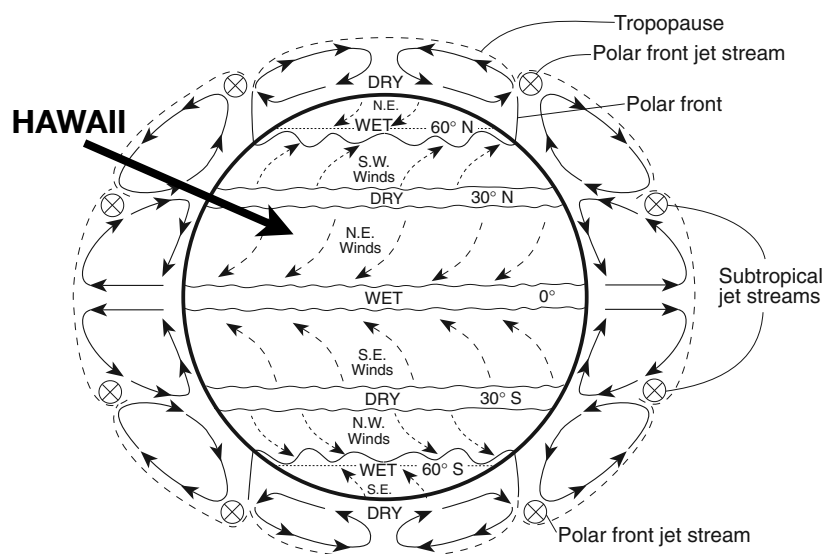
Name: _____

Date: _____ Period: _____

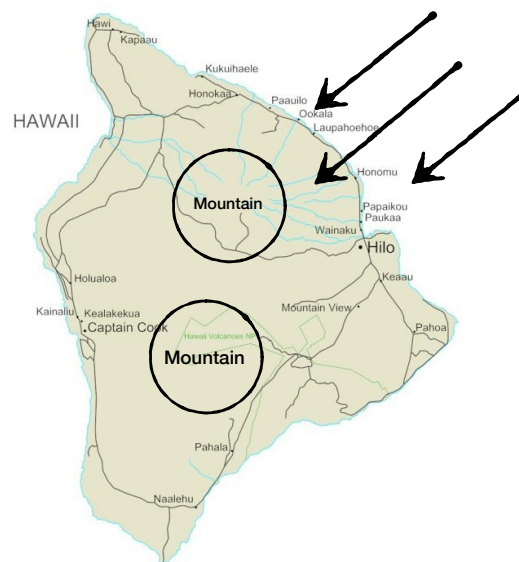
Rainfall Patterns

CLASS NOTES

- The Big Island is located between 0° and 30° N with the prevailing winds from the northeast.



- Mountains that intersect prevailing winds can modify climate patterns.



Rainfall Patterns

- Windward - _____

-
- Air _____
 - Air _____ and _____
 - Air _____ and _____
 - Lots of vegetation
 - Plenty of rain

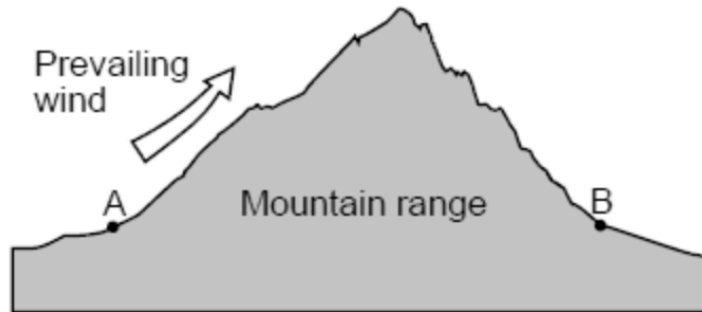
- Leeward - _____

-
- Air sinks
 - Air _____
 - Air warms
 - Minimal rain
 - Minimal _____

Rainfall Patterns

PART I QUESTIONS: MULTIPLE CHOICE

The cross section below represents a mountain range. Points *A* and *B* represent locations on Earth's surface.

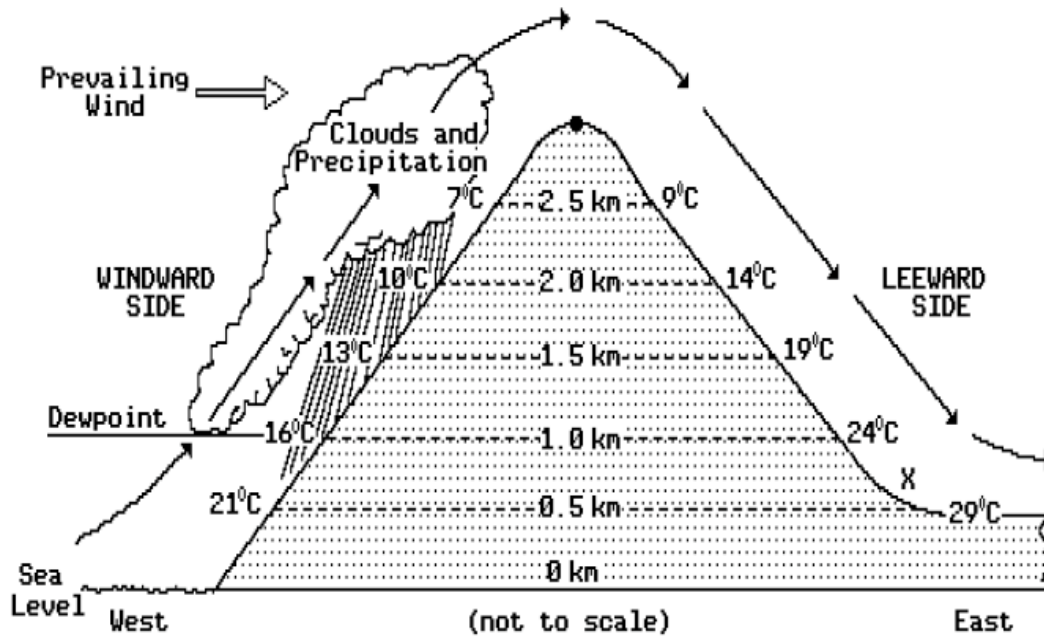


1. Compared to the climate of location *A*, the climate of location *B* is most likely
 - a. cooler and wetter
 - b. cooler and drier
 - c. warmer and wetter
 - d. warmer and drier
2. The energy gained by water during evaporation is later released by the water vapor during the
 - a. process of transpiration
 - b. process of condensation
 - c. process of convection
 - d. process of melting
3. Which process most directly results in cloud formation?
 - a. transpiration
 - b. precipitation
 - c. radiation
 - d. condensation
4. A higher concentration of water vapor is found in the atmosphere over New York State in the summer than in the winter because in the summer there is a greater
 - a. rate of evapotranspiration
 - b. concentration of air pollutants
 - c. frequency of high pressure
 - d. amount of water in ground storage
5. Clouds form on the windward side of this mountain because the air is
 - a. expanding and cooling to the dewpoint
 - b. expanding and warming to the dewpoint
 - c. compressing and cooling to the dewpoint
 - d. compressing and warming to the dewpoint

Rainfall Patterns

Questions 6 through 8 refer to the following:

The diagram below shows a mountain. The prevailing wind direction and air temperatures at different elevations on both sides of the mountain are indicated. Point X represents a location on the leeward side.



6. On which side of the mountain and at which elevation is the relative humidity probably 100%?
 - a. on the leeward side at 1.0 km
 - b. on the windward side at 1.5 km
 - c. on the leeward side at 2.5 km
 - d. on the windward side at 0.5 km
7. How does the temperature of the air change as the air rises on the windward side of the mountain between sea level and 0.5 kilometer?
 - a. The air is warming due to expansion of the air.
 - b. The air is warming due to compression of the air.
 - c. The air is cooling due to expansion of the air.
 - d. The air is cooling due to compression of the air.
8. What are the temperature and moisture conditions at location X?
 - a. cooler and wetter
 - b. cooler and drier
 - c. warmer and wetter
 - d. warmer and drier