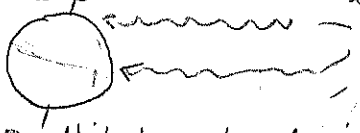
Factors Influencing Climate Name Key 2021 Per ____

HPS 2021 - Chapter 14.1, 14.3, 14.4

Objective 5: Describe natural causes/influence on global climate.

1. List and describe factors that influence climate. (page 361-363 GS book)

a. Latitude - diff. heating

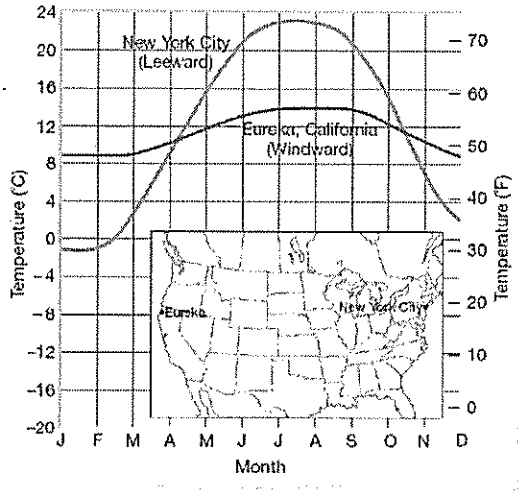


direct sunlight = ↑T
indirect sun = ↓T

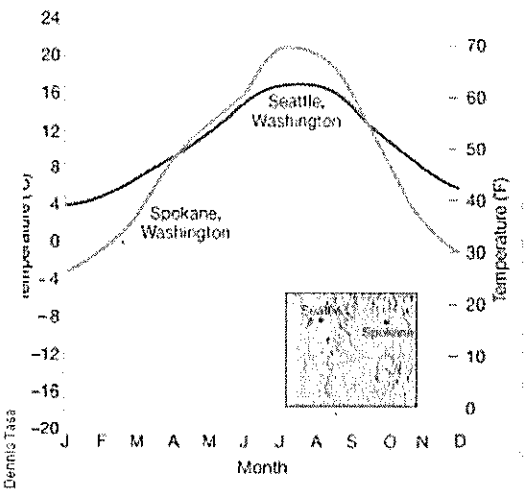
b. Topographic effects: prox to H_2O, altitude, mtns (windward vs. leeward)
(stabilize temps) (↑alt = ↓T)

c. Air masses - P, T, M, C
temp
moisture
see #2 below...

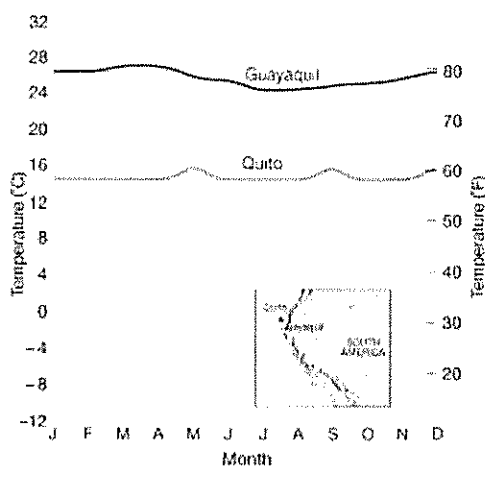
2. Under each map/graph, explain why the two cities have differing climates.



land heats up & cools down faster (↓ Sp Heat) so NYC will have more variation in temps than Eureka who will get the stabilizing effect from the ocean



Topography!
w/mtn in between, Seattle may get more rain (windward) than Spokane (leeward)
Prox to water ⇒ Seattle will have slightly more stable temps



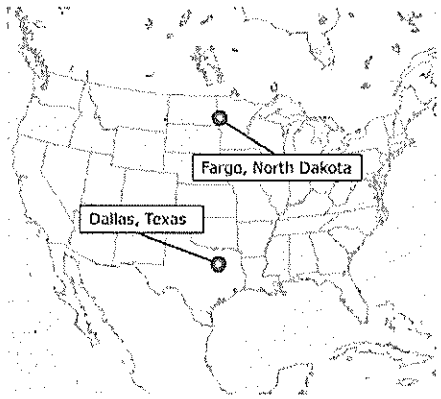
*You may research these cities.

↑ in alt = ↓ temps

Same lat, diff elev.

3. Predict the climate differences for these two cities. Explain your prediction.

lower lat receives more direct sunlight, so I predict Dallas to have warmer overall temps. ND would get cP air masses, while Dallas may be influenced by mT air masses



Briefly explain how the following influence global climate change. (pg 369-377)

1. Ice Ages period of extensive glacial coverage - avg global temp ↓ ~5°C causing existing ice sheets to advance (last ice age ~10,000 yr ago)

2. Seasons due to Earth's tilt on its axis hemisphere tilted toward Sun receives more direct sunlight ⇒ summer vs. winter

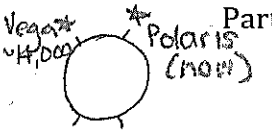
* 3. El Nino climate changes due to reversing of ocean current - causes climate to flip in many areas - reasons not fully understood (not in obj.)

* 4. Solar Activity Low sunspot act = colder climate
Inc sunspot act = warmer climate

5. Milankovitch Cycles

Part 1: Earth's orbit (changes every 100,000 yrs) (eccentricity)
more elliptical = warmer climate as Earth is closer to Sun

Part 2: Earth's tilt (every 41,000 yrs) (current tilt 23.5°)
22.1° - 24.5° less angle = seasons not as drastic (mild winter, cooler summer) * colder over all climate ↳ expanded glacial coverage



Part 3: Earth's wobble (every 26,000 yrs) (precession)
Earth will be closer to Sun during summer ↳ farther during winter, causing seasons to be more drastic

6. Volcanism sm. eruptions release CO_2 (GHG) which can trap heat, while larger eruptions release much more dust & gas that can be suspended in atm for long periods of time blocking radiation ⇒ ice age!

7. Atmospheric composition

Greenhouse Effect: natural heating of Earth's surface caused by certain gases