







Definitions

What is the difference between weather and climate?

- ✓ Weather the state of the atmosphere at one point in time. The 4 elements of weather are <u>TEMPERATURE</u>, <u>AIR PRESSURE</u>, <u>WIND</u> and <u>MOISTURE</u>.
 →Each of the four is dependent on the others.
- ✓ Climate the average of all weather over a very long period (more than 50 yrs) of time.



Temperature

Temperature varies with:

- Latitude: energy received (changes +/-1°F for each degree of latitude).
- Altitude (changes +/-1°F for each 300 ft of elevation).
- **Bodies of water** (water is slow to heat up and slow to cool down).

Temperature affects air pressure which in turn creates wind.

WIND = Air moving from areas of high pressure to areas of low pressure.























Climate Controls

The development of a climate is influenced by the following factors:

- 1. Latitude amount of solar energy received
- 2. Land vs. Water heat exchange differences
- 3. Ocean Currents temperature; flow direction
- 4. Wind direction; characteristics
- 5. Topographic Barriers orientation; height
- 6. Elevation lapse rate, vertical zonation
- 7. Air Masses source region; characteristics













Vertical Zonation of Climate



- Temperature changes by 3½° per 1000 ft of elevation (lapse rate).
- The greatest number of zones is found in the tropics and only one zone exists in the polar region.

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Microclimates

Microclimates develop locally due to changes in an area's physical characteristics.

- <u>Rural areas</u> local conditions change as an area goes from forest to large farmstead to suburb
- Urban areas artificial conditions
- Concrete and asphalt surfaces (warmer)
- Limited soil and vegetation (less humid)
- Tall buildings (shadows and wind channels)

Temperature inversions

- Frequently occurs in valleys (esp. the N-S valleys)
- Warm air rises until it meets air of equal temperature
- Warm air "cap" prevents the exchange of air and keeps the air (along with any pollutants) within the valley



Growing season is a

significant determinant

to the geography of crops and the location

of agriculture.

Growing Season

- The average number of days between the last killing frost of the spring and the first killing frost of the autumn.
- It has a direct impact on plant, animal and insect life.
- Its length is very important in agriculture because different crops require different amounts of time to grow to maturity (ripen).

Global Warming

As the earth warms, an area's **equivalent latitude** position will move toward the equator.

- ✓ Growing seasons will lengthen.
- ✓ "Southern" flora/fauna of the US will migrate into the northern states; northern states' biomes will exist in Canada.
- ✓ Warm-climate diseases and insects will spread northward, especially if winter temperatures do not drop below freezing for extended periods of time.

Global Warming (cont'd)

- · Global warming will melt the glaciers.
- As ice melts, sea level rises and areas along the coast will be under water.
- Coastal areas will see greater erosion from waves.
- Winter storms will increase in number and intensity.
- There will be an increase in snow storms.