

Chapter

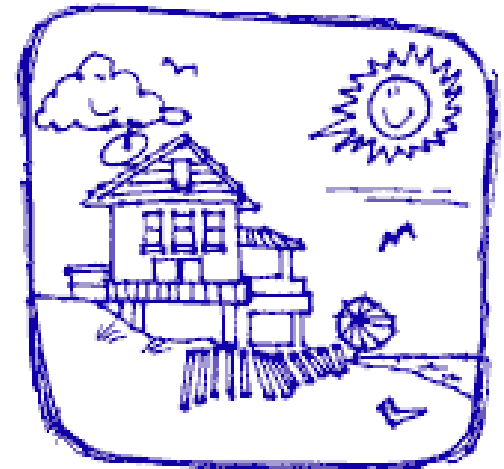
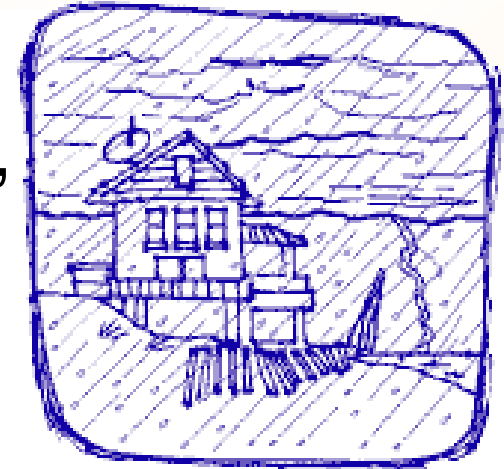
17.1

Atmosphere Characteristics

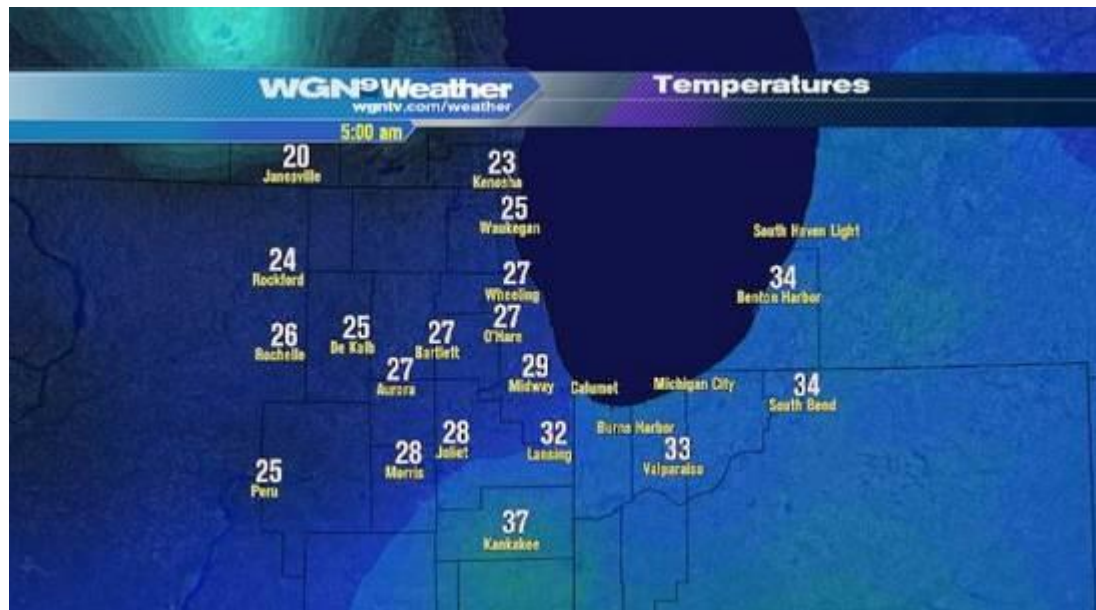
- *Compare and contrast weather and climate.*
- *List the major gases in the atmosphere*

17.1 Climate vs. Weather

- ◆ **Weather** is constantly changing, and it refers to the state of the atmosphere at any given time and place.

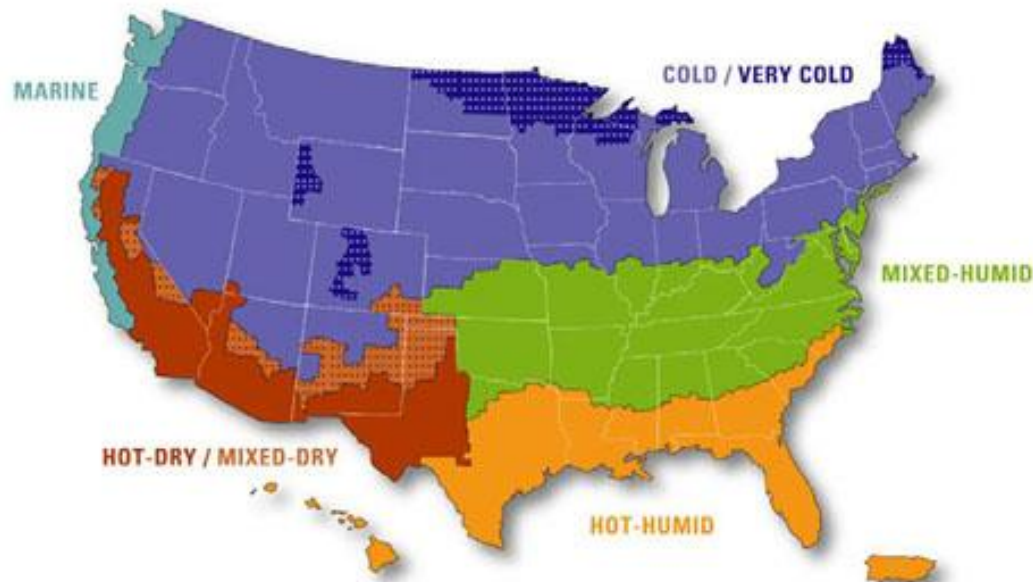


The weather can change very quickly from rain to sunshine.



17.1 Climate vs. Weather

- ◆ **Climate**, however, is based on observations of weather that have been collected over many years. Climate helps describe a place or region.



17.1 Climate vs. Weather

DETERMINE IF THE STATEMENTS REFER TO WEATHER OR CLIMATE.

1. The Baseball game was rained out today.
2. January is Peoria's coldest month.
3. North Africa is a desert.
4. The high this afternoon was 45°F.
5. The wind blew over the patio table this afternoon.

17.1 Composition of the Atmosphere

◆ Major Components

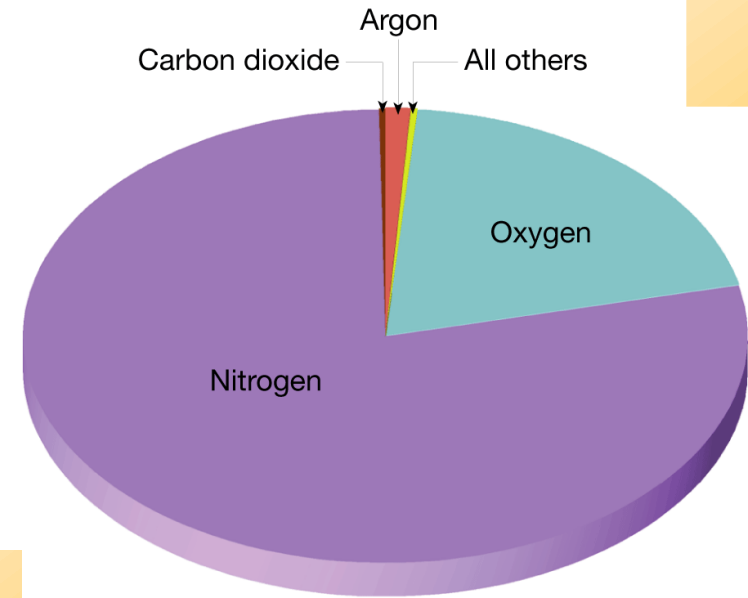
- Air is a mixture of different gases and particles, each with its own physical properties.

❖ The most abundant gases in Earth's atmosphere are:

Nitrogen (N_2) 78%

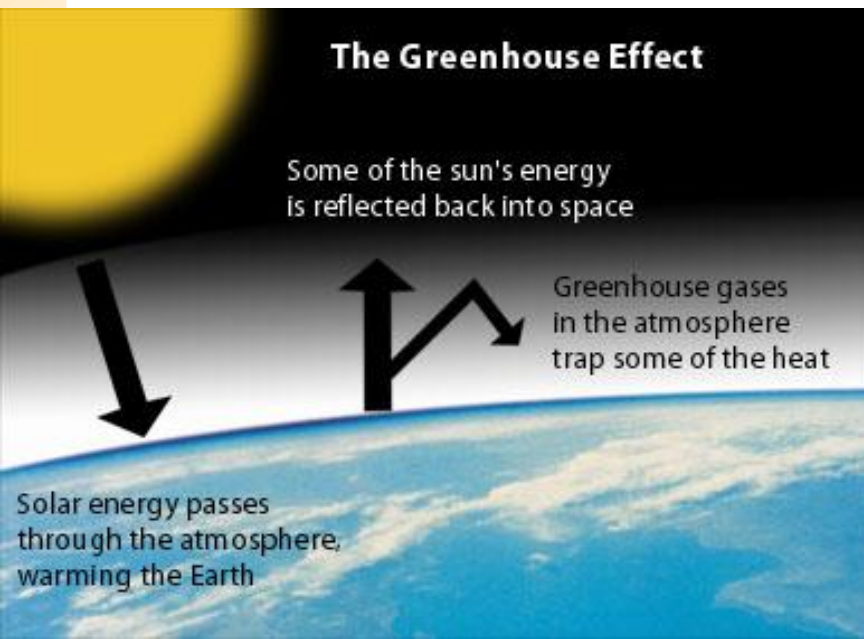
Oxygen (O_2) 21%

Argon, CO_2 , and others 1%

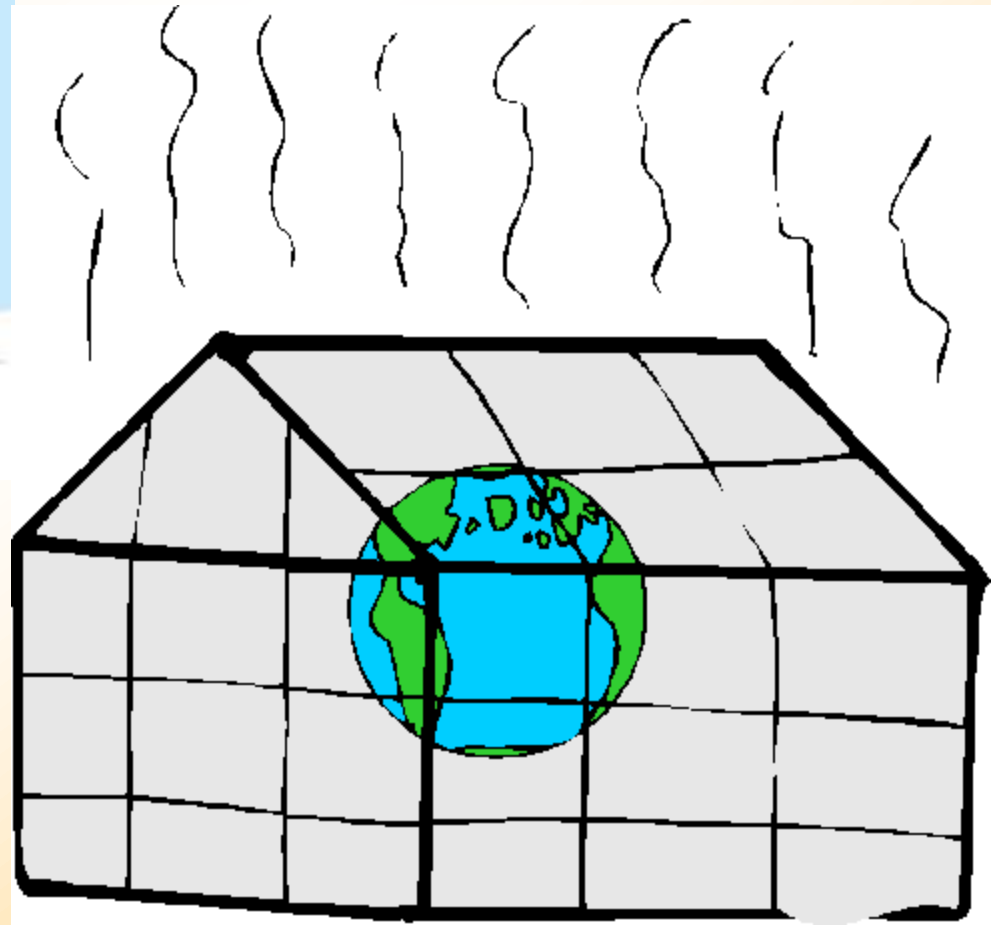
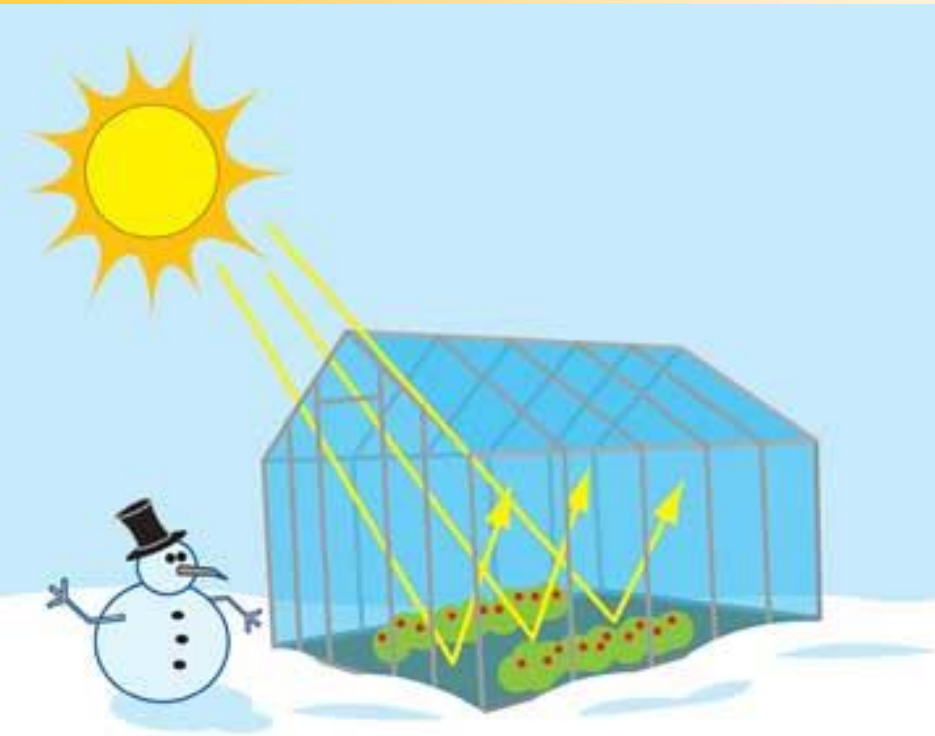


17.1 Composition of the Atmosphere

- **Water vapor** is the source of all clouds and precipitation.
- **Carbon dioxide & water vapor** absorbs heat given off by Earth. (greenhouse gases)

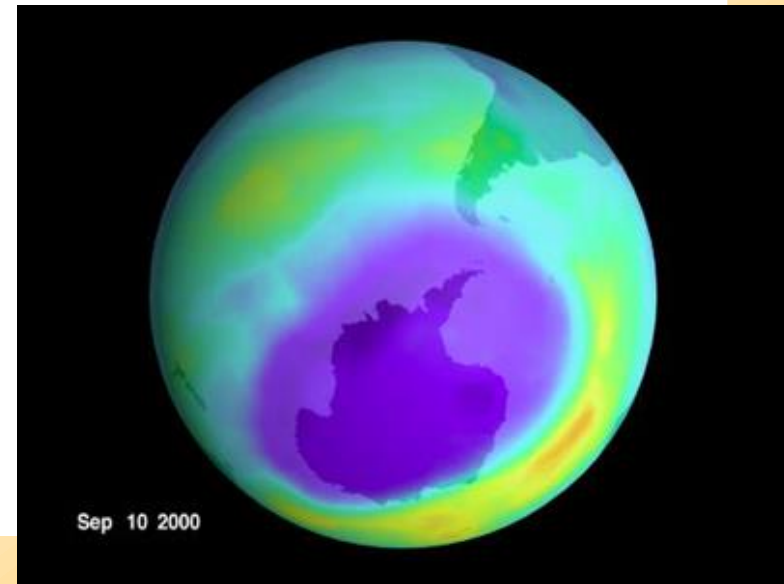
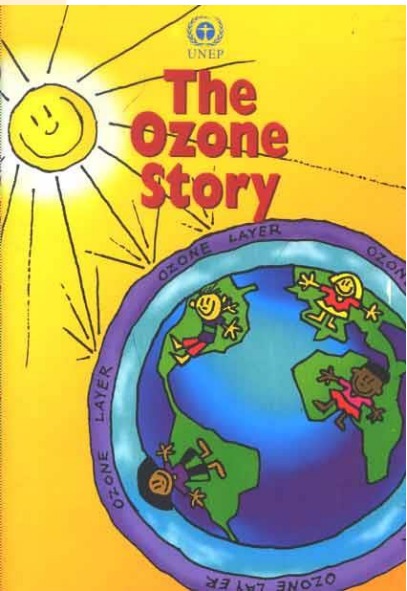


Greenhouse Effect



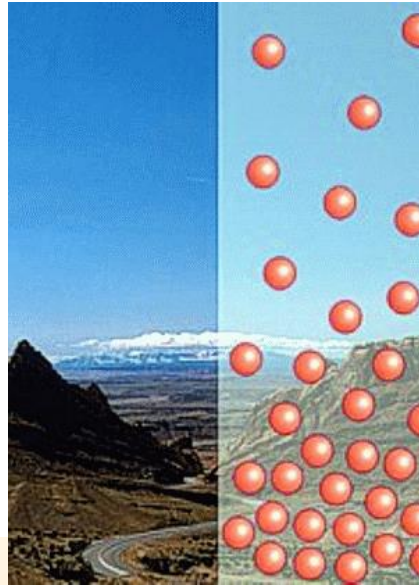
17.1 Composition of the Atmosphere

- **Ozone** is three oxygen atoms combined (O_3).
 - protects us from the harmful rays of the sun.
 - *If ozone did not filter most UV radiation and all of the sun's UV rays reached the surface of Earth, our planet would be uninhabitable for many living organisms.*



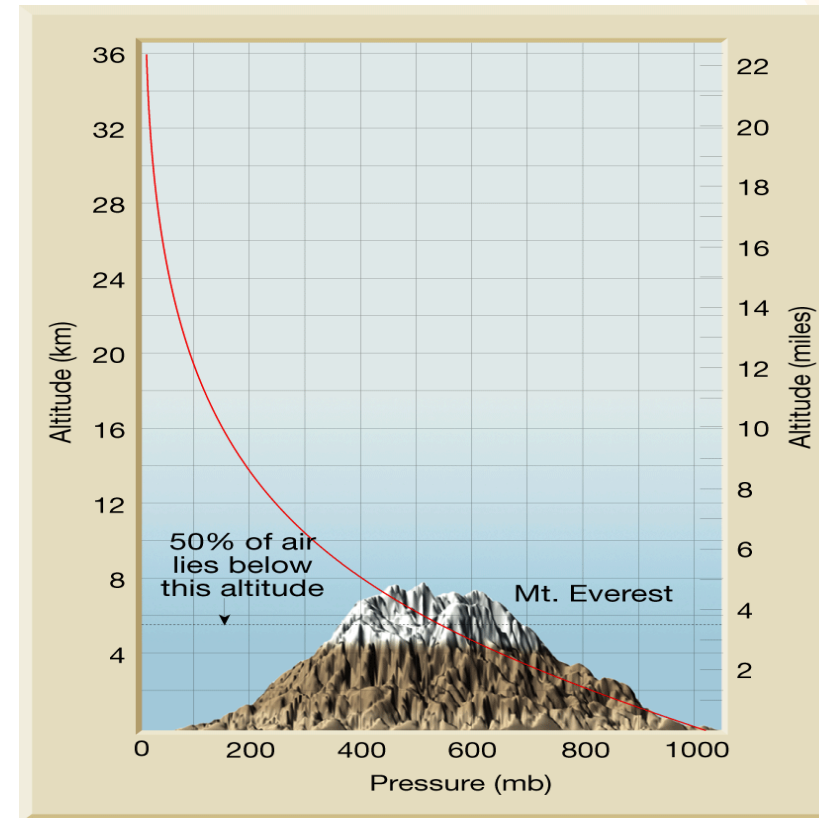
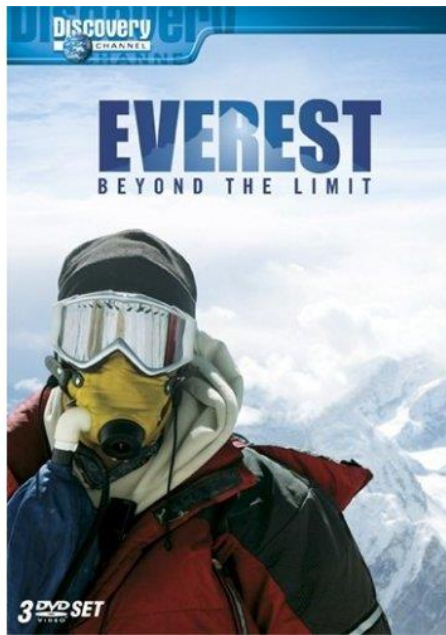
17.1 Height and structure of the atmosphere

- ◆ The atmosphere rapidly thins as you travel away from Earth.
 - Gravity pulls the gases towards earth's surface.
- ◆ Pressure Changes
 - Atmospheric pressure is simply the weight of the air above.



Atmospheric Pressure vs. Altitude

- Air pressure is the greatest at sea level (bottom).
- As altitude increases air pressure decreases.



Chapter

17.1

Atmosphere Characteristics

- *Compare and contrast weather and climate.*
- *List the major gases in the atmosphere*



Ch. 17.1

The Layers Of The Atmosphere

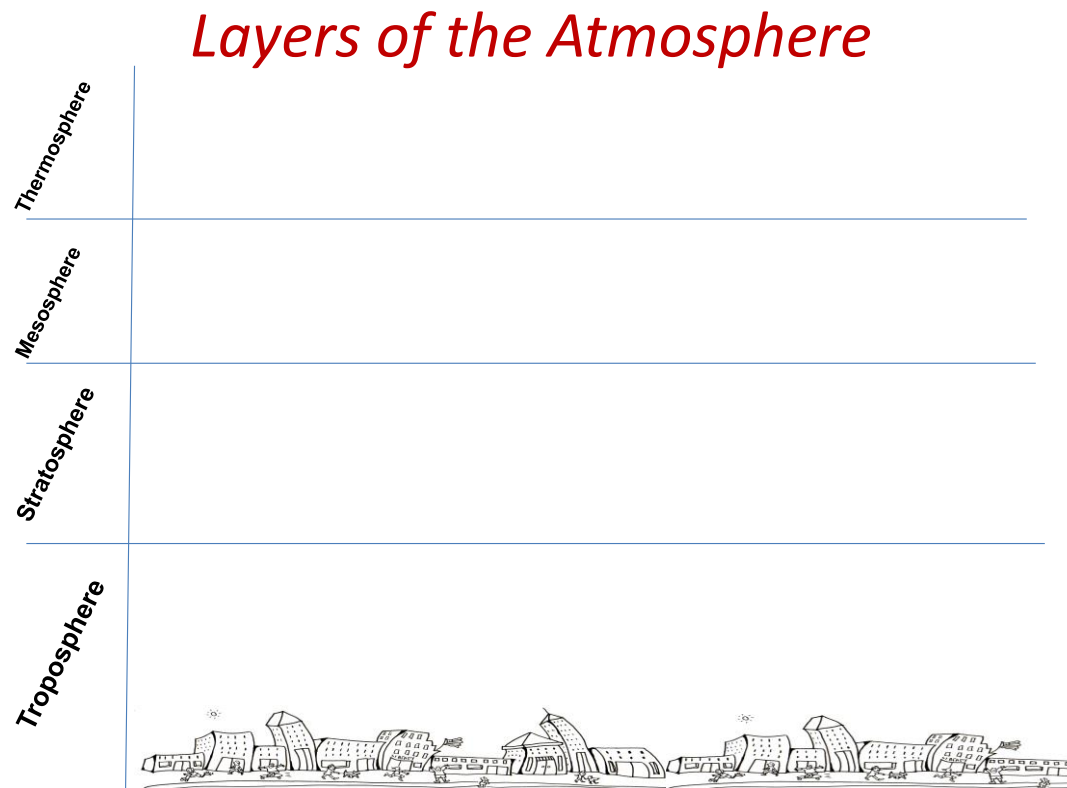
Atmosphere

Objective: You should be able to describe the structure of the atmosphere.

17.1 Layers of the Atmosphere

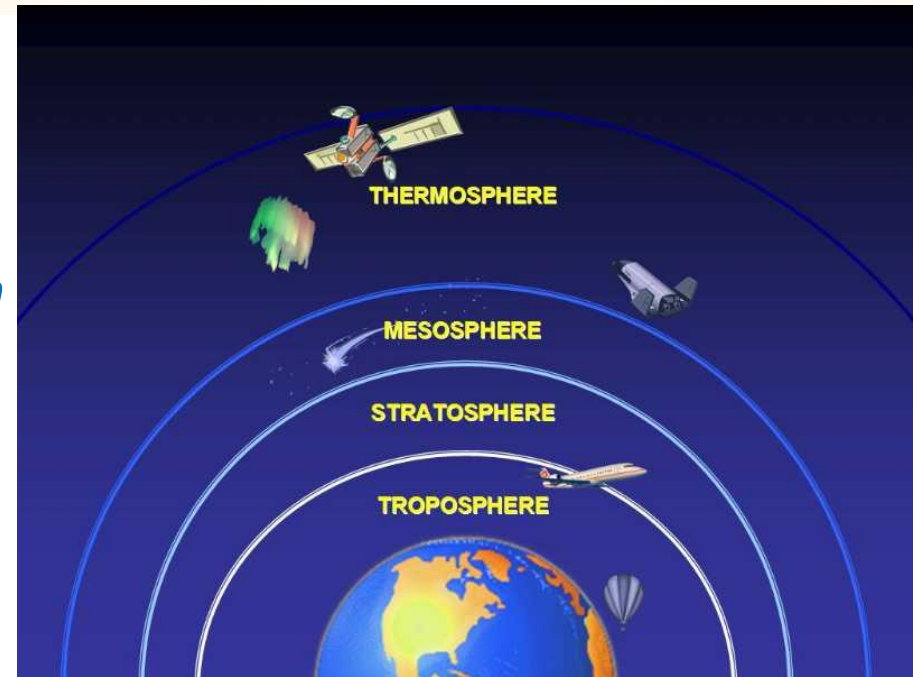
◆ Temperature Changes

- The atmosphere can be divided vertically into four layers based on temperature.



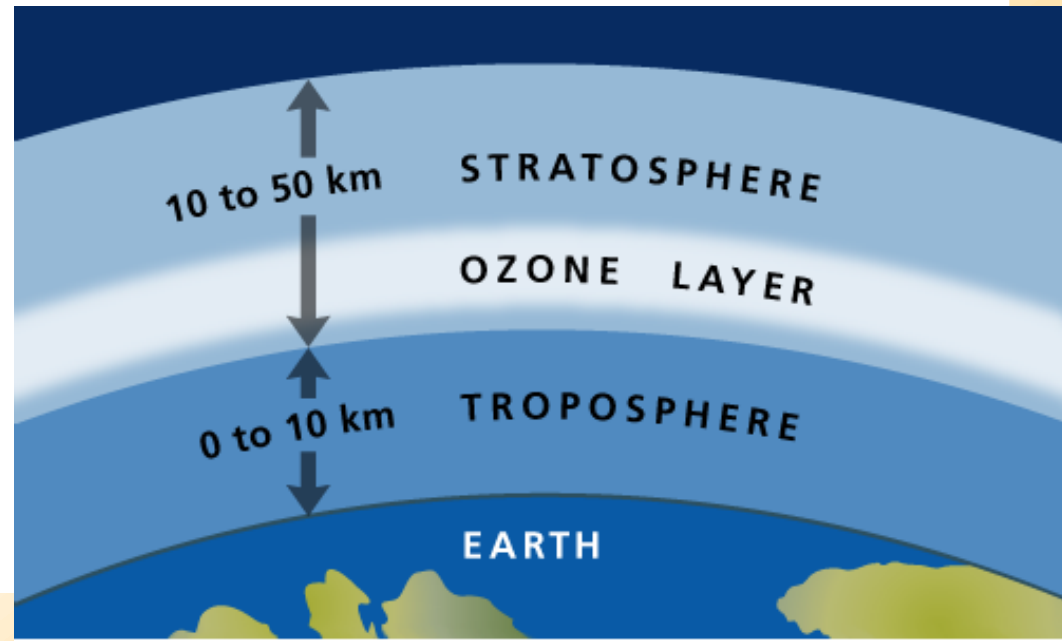
Troposphere (0 - 10km or 7.5 miles)

- Almost all weather occurs here.
- Temperatures decrease with height
- *Rising air cools from expansion by the lower pressure at higher altitudes*



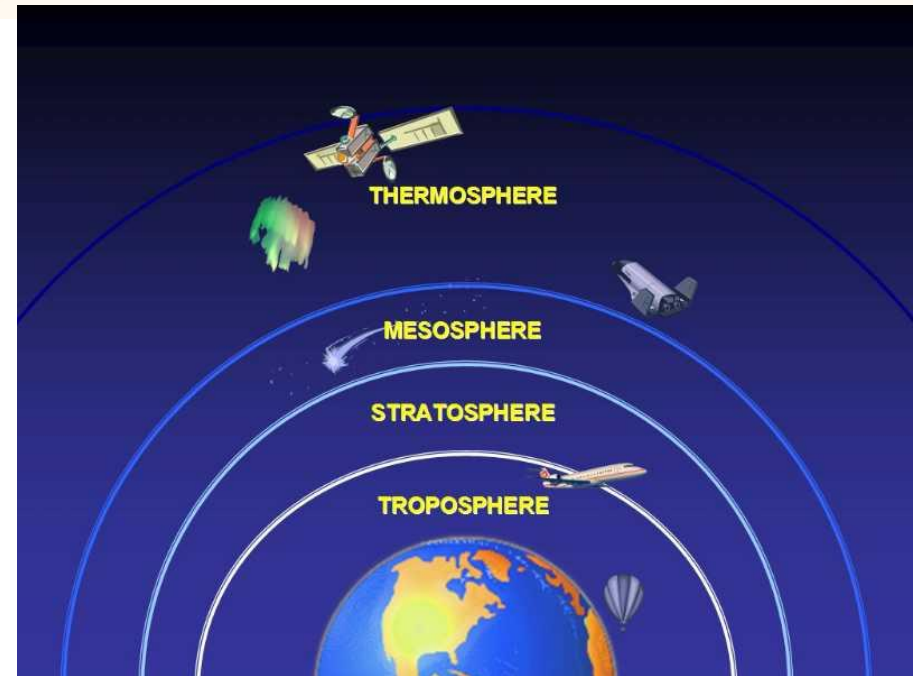
Stratosphere

- Temperatures begin to increase with height
- Ozone (O₃) is located in this layer
 - Reason for temperatures warming
 - Protects us



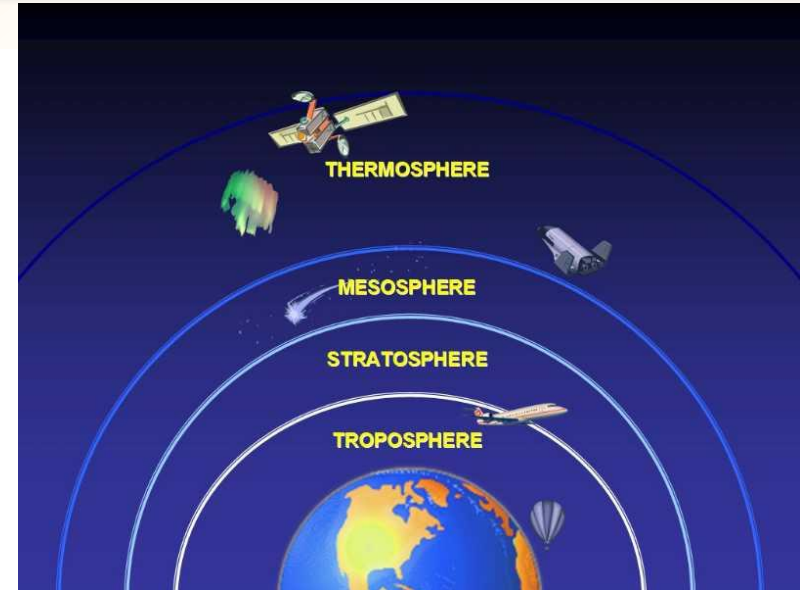
Mesosphere

- Temperatures decrease with height
- **Coldest temperatures anywhere in the atmosphere (-130°F)**

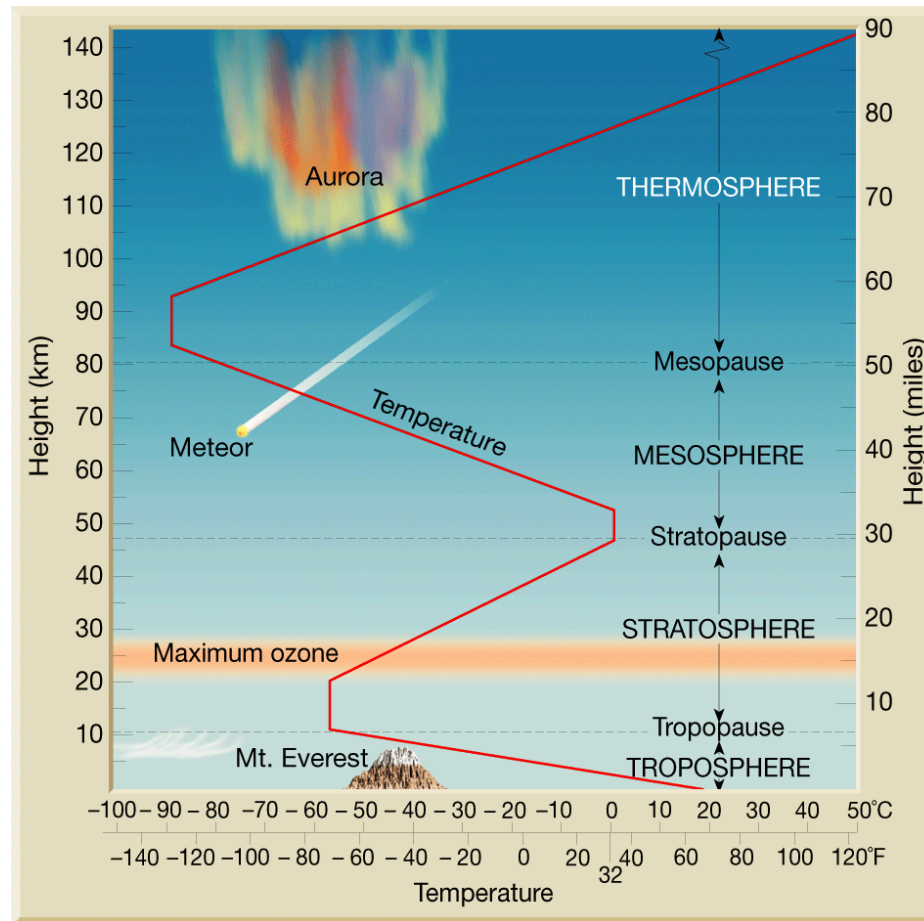


Thermosphere

- Temperature increases with height (*1800°F, temperature is the avg. speed at which molecules move*)
- The thermosphere slowly turns into outer space, it just doesn't end and outer space begins.



Thermal Structure of the Atmosphere





Ch. 17.1

The Layers Of The Atmosphere

Atmosphere

Objective: You should be able to describe the structure of the atmosphere.