Intro to Meteorology

- Why study Meteorology?
- What if you saw this at your High School? ->

- Or this outside your house?

->

Would you know what was going on?

- Would you know what to do in this event?

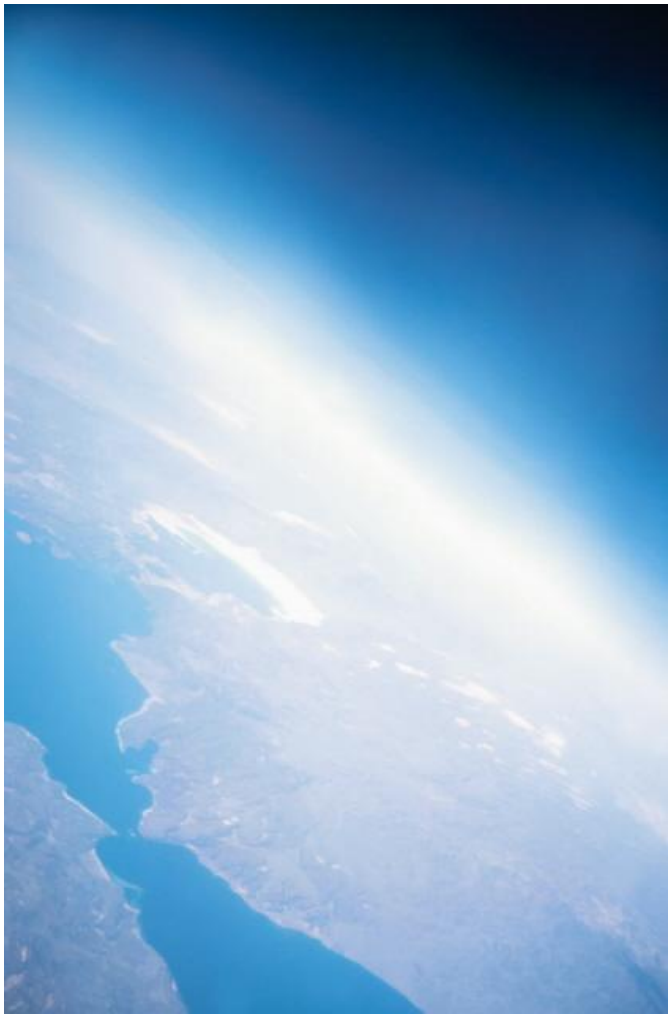
Atmosphere Basics

Why study the atmosphere?

- The atmosphere is essential to all life on Earth.

- **<u>Weather</u>- based on day-to-day observations made for a region**

- **<u>Climate</u>- based on observations made for a region over several years**



Atmosphere Beginnings

- Where did we get the gases for our atmosphere?

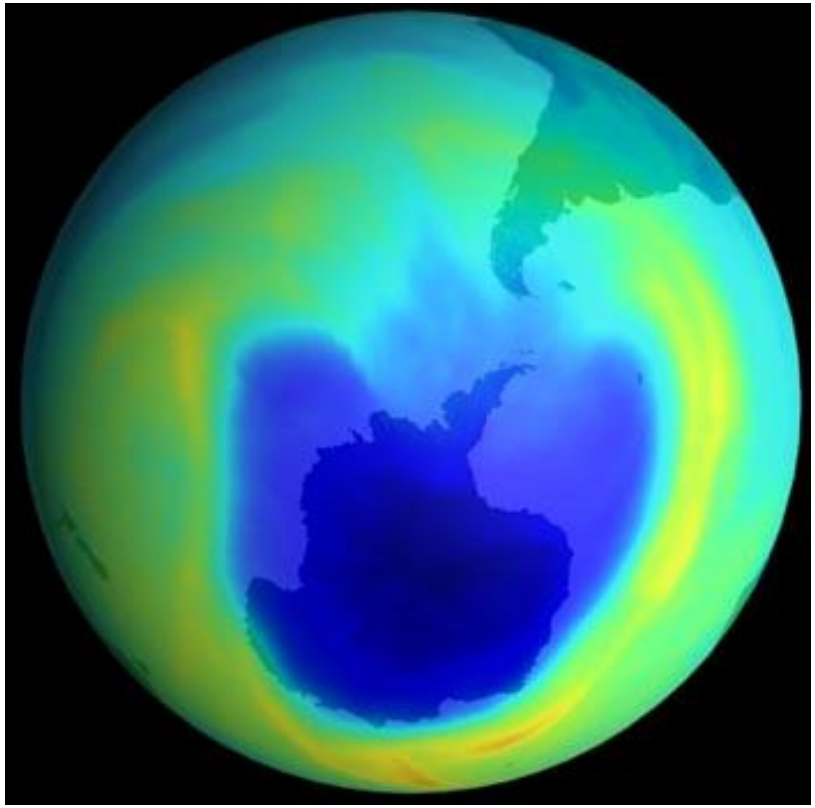
- Volcanic activity releases gases from inside Earth, heavy gases are pulled by gravity creating atmosphere

Atmosphere Components

- 99 % of atmosphere is made of 2 elements
  - **78% Nitrogen – largest component of atmosphere!**
  - 21% Oxygen
    - 1% CO_2, Argon, others
- Water Vapor - Amount of water in the atmosphere
  - Changes, depends on where air originated
    - Dry air- originated over land
    - Moist air- originated over water

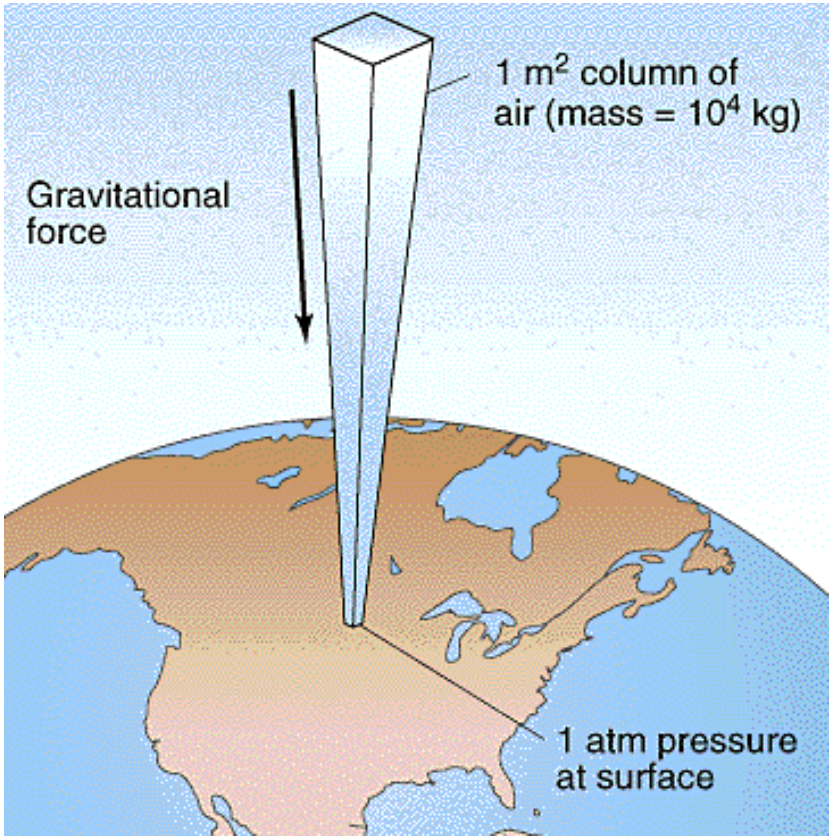
Ozone Layer

- Ozone = O_3
- **Form of oxygen that combines 3 oxygen atoms into each molecule**
- Absorbs radiation that helps block out some of the harmful UV rays emitted by sun.
  - Being damaged by CFC's



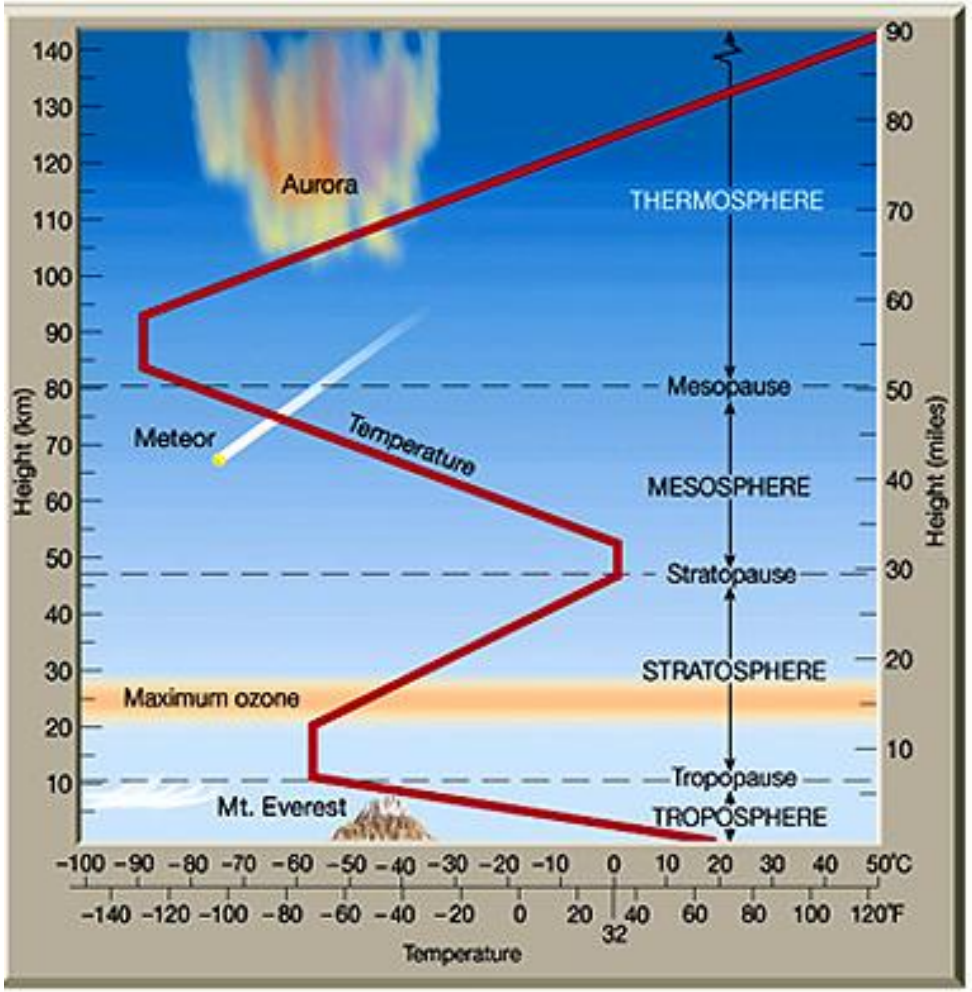
Atmospheric Pressure

- As you move through the atmosphere you will experience a gradual change in pressure
  - **Atmos. Pressure**- the weight of the air above you
  - Pressure slowly decreases the farther you go up



Atmospheric Layers

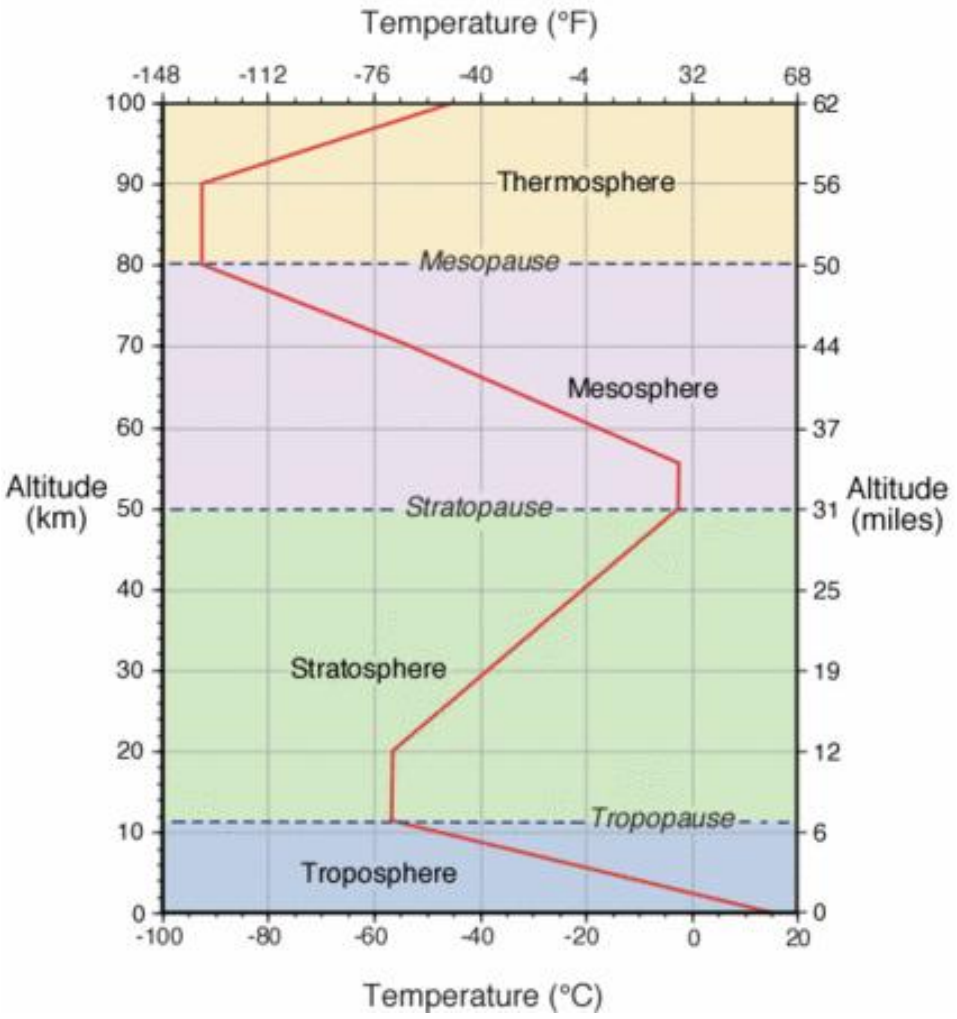
- 4 Layers
- 99% of Earth's atmosphere is within 30 km of Earth's surface.
- Changes in temperature separate the layers



Troposphere

- **Lowest layer of the atmosphere**
- Temperature decreases with increasing altitude
- **Includes all weather, clouds, and thunderstorms**

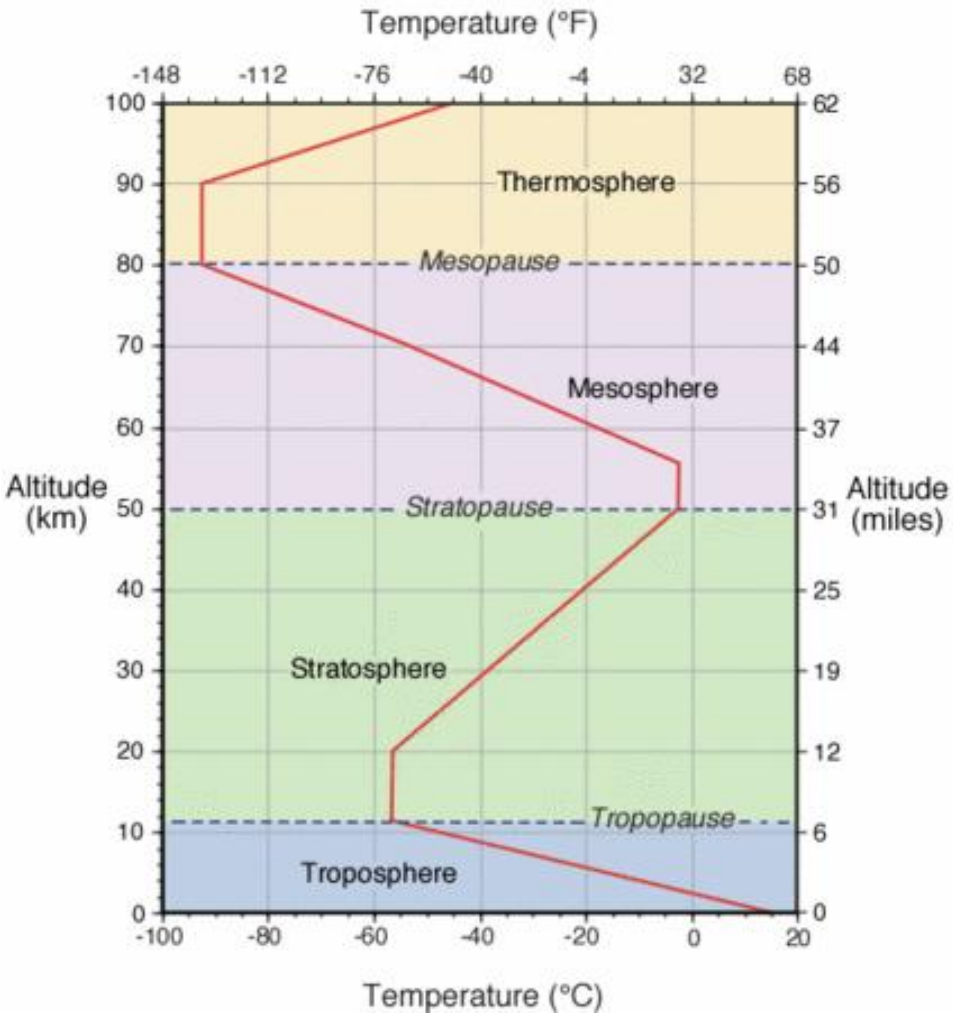
- **Tropopause - boundary between the troposphere and the stratosphere**



Stratosphere

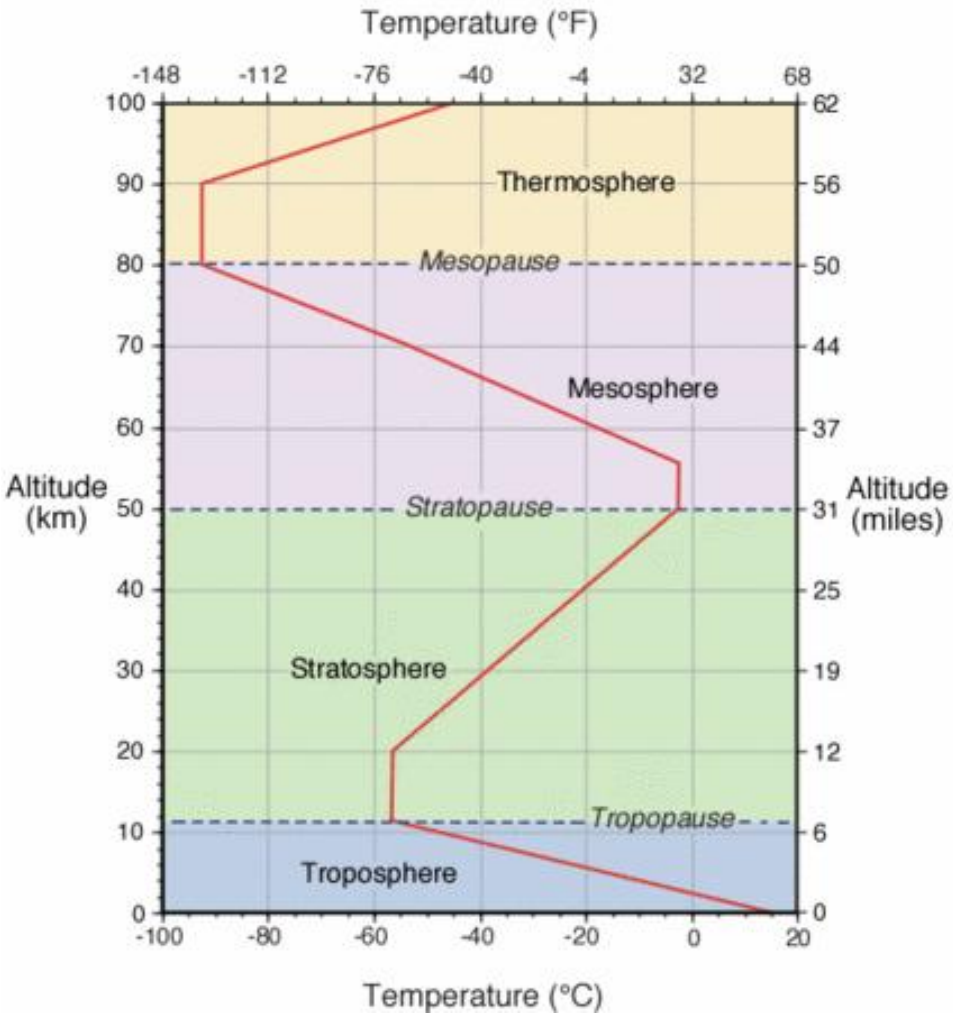
- Second layer of the atmosphere
- Temperature increases with increasing altitude
- This temperature increase is due to the ozone layer

- Stratopause – boundary between the stratosphere and the mesosphere



Mesosphere

- Third layer of the atmosphere
- Temperature decreases with increasing altitude
  - Coldest layer
- Mesopause – boundary between the mesosphere and the thermosphere



Thermosphere

- Fourth and outermost layer of the atmosphere
  - Subdivided into the exosphere and the ionosphere
- Temperature increases with increasing altitude
  - Extremely high temperatures due to solar radiation