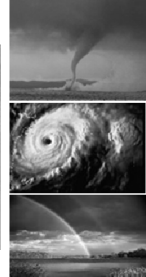
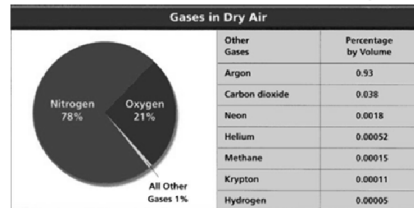


# The Atmosphere

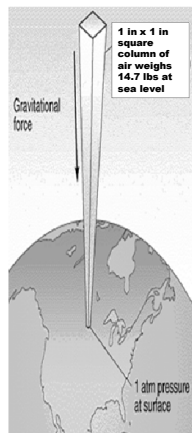
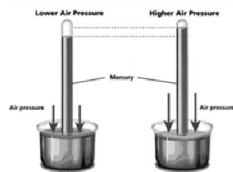
## The Air Around You

- Earth's atmosphere is the envelope of gases that surrounds the planet.
  - made up of nitrogen, oxygen, carbon dioxide, water vapor, and many other gases, as well as particles of liquids and solids
- Weather is the condition of Earth's atmosphere



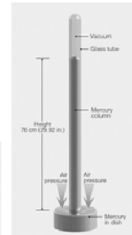
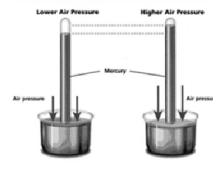
## Air Pressure

- Air pressure is the result of the weight of a column of air pushing down on an area.
  - 14.7 **lbs/inch<sup>2</sup>**
  - 1013.25 **millibars**
  - 1013.25 **hPa (hecto Pascals)**
  - 29.92 **inches of Hg**



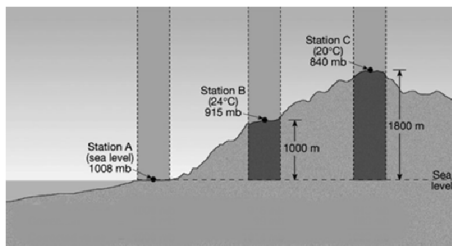
## Measuring Air Pressure

- **barometer** is an instrument that is used to measure air pressure.
  - **mercury barometer** consists of a glass tube open at the bottom end and partially filled with mercury
  - **aneroid barometer** has an airtight metal chamber



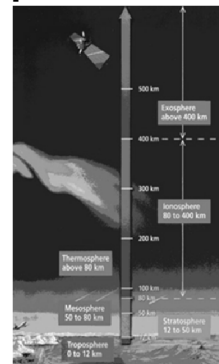
## Air Pressure & Altitude

- Elevation – the distance above sea level.
- As altitude increases → Air pressure decreases
- As air pressure decreases, so does density.



## Layers of the Atmosphere

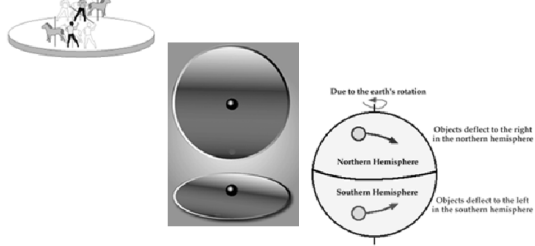
- Scientists divide Earth's atmosphere into four main layers classified according to changes in temperature.
  - **Troposphere** – sea level to 12 km
    - All weather occurs here
  - **Stratosphere** – from 12 to 50 km
    - Ozone layer, protects from UV, sets fly here
  - **Mesosphere** – from 50 to 80 km
    - Dense enough to burn meteoroids
  - **Thermosphere** – above 80 km, made up of 2 layers
    - **Ionosphere** – 80 km to 400 km
      - Gas particles electrically charged
      - Radio waves reflect back to Earth from here
      - Aurora borealis occur here
    - **Exosphere** – above 400 km
      - Satellites orbit here





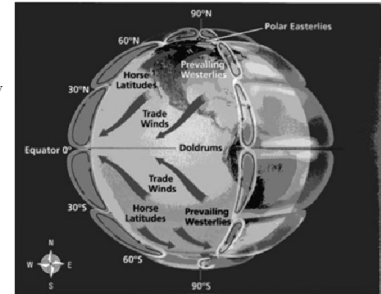
## Coriolis Effect

- Because Earth is rotating, global winds do not follow a straight path. The way Earth's rotation makes winds curve is called the Coriolis effect. In the Northern Hemisphere, global winds curve to the right. In the Southern Hemisphere, global winds curve to the left.



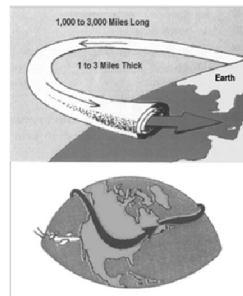
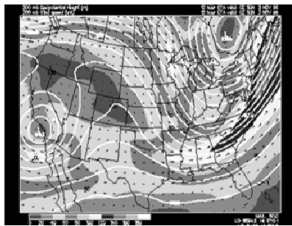
## Global Winds occur over a large area & are affected by the Coriolis Effect (caused by the rotation of the Earth)

- The Winds
  - Trade winds blow from the NE between Equator & 30°N
  - Prevailing Westerlies blow from the SW between 30°N & 60°N
  - Polar Easterlies 60°N to 90°
- Calm areas:
  - Doldrums along the equator
  - The Horse Latitudes around 30°N & S

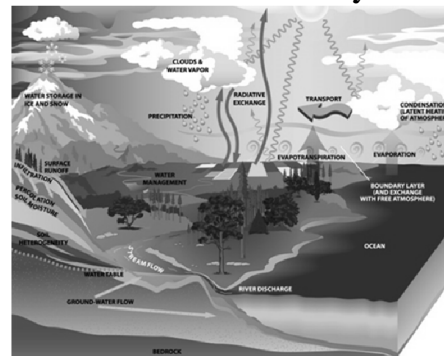


## Jet Stream

- High speed wind currents about 150 mph that are 10-15 km above the surface



## The Water Cycle



Evaporation  
Condensation  
Precipitation  
Runoff