Composition and Structure of the Atmosphere

Supplementary Slides

Ozone

- Annual September Southern Hemisphere Ozone Distribution:
- 2012 Daily Ozone Southern Hemisphere Ozone Distribution:
  - http://ozonewatch.gsfc.nasa.gov/ozone/space/space/september/2012/07/14/201207140000_GPH06_720X1280MMERRA_GPH06.gif

Air density

- Ideal gas law: $PV = nRT$
  - $P$ = pressure
  - $V$ = volume
  - $n$ = amount of gas (number of moles)
  - $R$ = universal gas constant
  - $T$ = temperature
- Alternative forms of ideal gas law:
  - $P = \frac{mMRT}{M}$, where $m$ = mass, $M$ = molecular weight
  - $\rho = \frac{m}{V}$ = $\frac{PM}{RT}$
- Air density:
  - Greater with higher pressure
  - Greater with higher molecular mass
  - Greater with lower temperature
- Humidity effect:
  - $M_{18} = 18$
  - $M_{29} = 29$
  - Dry air denser than humid air

Ozone

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