Climate Change workshop #7

How is the concentration of Carbon in the atmosphere changing?

Dr. E.J. Zita, TESC, with
Dr. Richard Gammon, UW Seattle

Anthropogenic global annual carbon emissions are over 7.2 Gigatonnes/year (IPCC SPM1 p.2 2007).

How many moles is that?

$$\frac{7.2\times10^{9}\ tons/yr \left| \frac{10^{6}\ grams}{ton} \right|}{12\ g/mole} = \_\_\times10^{14}\ moles/yr$$

Number of moles of C in the atmosphere ~ 2 x 10^{20} moles (Gammon, 2006).

Annual increase of atmospheric CO_2 =

$$\frac{moles\ CO_2 / yr}{moles\ atmosphere} = \frac{\_\_\times10^{14}\ moles/yr}{2\times10^{20}\ moles} \sim \_\_\_\times10^{-6}/yr = \_\_\_ \text{ ppm/yr}$$

The oceans and forests absorb approximately half of our carbon emissions, but their absorption rate decreases as they become more saturated.