Quiz 2—Environmental Chemistry

CENG 340–Introduction to Environmental Engineering
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Name:

Since the industrial revolution, atmospheric CO_2 concentrations have risen from approximately 320 ppm_v to 390 ppm_v. Because the concentration of CO_2 in the air is in *equilibrium* with the concentration of dissolved CO_2, this increase has led to a change in the aqueous (= dissolved) CO_2 concentration in the ocean.

Calculate this change in the aqueous concentration of CO_2 in the ocean (ignoring effects of salinity). Assume T = 25 ^{0}C; P_{air} = 1 atm; Henry's constant for CO_2, $K_H = 0.0246 \frac{\text{moles}}{\text{L}\times\text{atm}}$.

Additional information that may be useful: the ideal gas constant $R = 8.205 \times 10^{-5} \frac{\text{m}^3\times\text{atm}}{\text{mole}\times\text{K}}$, temperature in Kelvin (K) = temperature in Celsius (^{0}C) + 273.15; (2) MW_C = 12 g/mole and MW_O = 16 g/mole.