

AOS 580 AEROSOL, CLOUD AND CLIMATE

Homework 2 (Yi Ming)

1. The present-day volume mixing ratio of CO_2 is 350 ppm. Could you calculate the pH value of water with only CO_2 dissolved at 298 K and 1 atm? If CO_2 doubles in the future, how much impact would it have on pH?
2. What is the terminal settling speed of a spherical particle with diameter of $1 \mu\text{m}$ in air at 298 K and 1 atm? How about a particle of $100 \mu\text{m}$?
3. Consider water vapor saturated at $S = 2$ at 298 K and 1 atm. Could you compute the size of critical clusters and the homogenous nucleation rate?