

**AOSC 433/633 & CHEM 433/633 Atmospheric Chemistry and Climate  
Admission Ticket, Lecture 13**

**Due: Tuesday, 14 March 2013 (at start of class)**

**15 points**

**Your name:**

1. In Lecture 5, we showed that rising levels of atmospheric  $\text{CO}_2$  leads to ocean acidification. However, precipitation in the Eastern U.S. is considerably more acidic than can be explained by  $\text{CO}_2$ .

a) (4 points) What compounds are responsible for the increased acidity of precipitation in the Eastern U.S., relative to that which can be explained by equilibrium with  $\text{CO}_2$ ?

b) (6 points) If you have answered part a) correctly, the compounds should not contain hydrogen. Explain how these compounds lead to increased acidification of precipitation, using either a handful of chemical reactions and/or a few sentences.

c) (5 points) In the United States around year 2003, what human activity was primarily responsible for the atmospheric burden of sulfur dioxide ( $\text{SO}_2$ ): transportation or combustion?

If transportation, state what type of transportation was responsible.

If combustion, state what type of combustion was responsible.