

AOSC 433/633 & CHEM 433/633 Atmospheric Chemistry and Climate

Admission Ticket, Lecture 24

Due: Tuesday, 7 May 2013 (at start of class)

16 points

Your name: _____

1. (4 points) In the Crutzen essay, he states “According to model calculations by Brasseur and Roeckner (2005) complete improvement in *Air Quality* could lead to a decadal global average surface air temperature increase by 0.8 K on most continents and 4 K in the Arctic”. What aspect of *Air Quality* could lead to these surface air temperature increases?

Hint: connect the reading to material covered in our class!

2. (2 points) Crutzen focuses on one possibility for geo-engineering of climate, the injection of sulfate into the stratosphere. What physical process enables this injection of sulfate to the stratosphere to be effective for reducing surface temperature?

3. (2 points) What is the “first” possible negative side effect discussed by Crutzen? Does he consider this to be a “show stopper”?

4. (4 points) Of the “nine ways to cool the planet” discussed in the IEEE article, which of these seems most appealing to you? *Briefly* state why this method seems appealing. There is no right or wrong answer: we are simply asking you to reflect on the various ideas in the article.

Please see reverse side for one more question ☺

5. (4 points) In the GeoTimes debate on geo-engineering, briefly state one of the “concerns” raised by Alan Robock? If this “concern” has a rebuttal by Ken Caldeira, state his rebuttal?