ATOC 3500/CHEM 3151

Spring 2018

Video Assignment 2

Answer the following questions based on the first 15 minutes of the video lecture “Atmospheric Chemistry - 1”

https://www.youtube.com/watch?v=L70wBqhxf94

1. According to Paul Monks, What will you be missing if you don’t know this stuff?
2. What is “all you need to know about tropospheric chemistry” according to Paul Monks? (list the three steps).
3. What are the end products of the atmospheric oxidation of methane, which the author describes as a “low temperature combustion system.”
4. What controls the lifetime of chemicals emitted to the atmosphere (the “beating heart”)?
5. Pop Quiz: How long does methane last in the atmosphere (in years)?
6. What is “O singlet D,” or O(1D) (also written as O\*)?
7. What is the lifetime of the OH radical?
8. How much O(1D) is there (in grams) in the entire atmosphere?
9. What happened to the temperature in the stratosphere, did it get warmer or cooler, as abundances of greenhouse gases increased in the atmosphere?
10. What are the key steps in the formation of ozone (a secondary pollutant) in the troposphere?
11. What is a key radical termination step that involves NO2, and what problem does the formation of nitric acid create?

Reading: A lot of the same concepts are discussed in the text book – Pages 32-35, 37-40, 53, and 64-66.