

Lecture Questions: The Atmosphere

Please read ch 1 and ch 2.1-2.5 and answer the following questions. Submit your answers on blackboard and bring a copy to class.

1. What are the *criteria pollutants*? List them, and explain the role of the criteria pollutants in regulating air quality.
2. What are the five most abundant components in air at sea level? List them and their approximate concentrations.
3. List the current average concentration of carbon dioxide, CO₂, in air in units of (a) % and (b) ppm. Your estimate should be as current as possible; please cite your source.
4. List the major regions/layers of the atmosphere, along with the typical altitudes (in km) for each region. Why do these layers form?
5. (a) What is the mathematical relationship between wavelength, frequency, and the speed of light?
(b) Describe the relationship between photon energy and (i) wavelength and (ii) frequency of light.
6. List the regions of the electromagnetic spectrum between 1 nm and 100 μm. Be sure to list the different types of ultraviolet radiation.
7. What fraction of sunlight is in the UV, visible, and infrared regions of the spectrum?