**MR3522: Remote Sensing of the Atmosphere and Ocean**

Note-Taking Questions for Lecture Series 1

1. How does water vapor impact radiative transfer of terrestrial radiation? Provide some examples of wavelengths that are most impacted by this process.
2. What is the atmospheric window?
3. Suppose a satellite detecting 10-micron radiation detected a radiance of 8 W/m2/sr/micron. Approximately what corresponding temperature would be reported? Why might this not necessarily be the actual temperature of whatever emitted the radiation?
4. Is scattering more a concern for extinction of radiation for shortwave or longwave radiation? Why?
5. What is optical depth? How does it relate to direct transmittance? What do these quantities describe?
6. Describe the difference between optical depth in a layer (such as a 1 km deep layer, for example) and the optical depth of the atmosphere. How do these differ from the path length optical depth?
7. What are the major benefits of placing a satellite in geostationary orbit for Earth observation? What are the pitfalls?
8. Same as #7, but for low-Earth orbiting satellites.
9. What are the Lagrange points for the Earth-Sun system? Why would we use L1 for solar observation and not L2? Why would we use L2 for space observation but not L1? Why don’t we use L3?