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

Note-Taking Questions for Lecture Series 4

1. Why is microwave radiation able to penetrate clouds more deeply than infrared radiation?
2. Why does the brightness temperature at most microwave frequencies vary so significantly through clear skies observing a land surface compared to an ocean surface?
3. For emissions by the ocean at 37 GHz, what is the effect on emissivity as ocean temperature increases?
4. Which microwave frequency on SSMI/S experiences the most scattering? Why?
5. For what is the 55GHz oxygen absorption band used?
6. For what is the 22 GHz water vapor absorption band used?
7. How might different polarizations of microwave radiation be used to obtain information about the ocean surface?
8. What SSMI/S microwave frequency is most appropriate for observing cloud features with high spatial resolution? Why?
9. How can cloudy and cloud-free areas be unambiguously determined using a multi-frequency passive microwave sensor?
10. What is bistatic scatterometry and how does it work?
11. Why must scatterometers observe the ocean surface at an angle, specifically in the 20° to 50° range?
12. How are ambiguities in scatterometer-derived wind observations resolved?
13. Given a known orbital altitude, how does an altimeter determine the height of the ocean surface?