GEOG 362 Introduction to Remote Sensing
Problem Set # 2, Fall 2011

1. Given the following particle sizes at the specified wavelengths, what type of scattering would dominate?

Particle Size (diameter)	Wavelength	Type of Scattering
0.05μm	0.46μm	d<<y Rayleigh / Molecular
3μm	0.23μm	d>>y Non selective
0.3μm	0.32μm	D~y MIE / non molecular

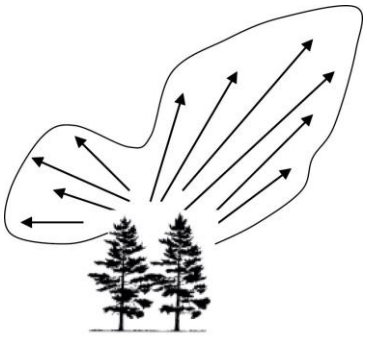
2. There were total 2000 Watts incident flux to a surface, 900 Watts of which was reflected, 700 Watts of which was transmitted, please give the amount of flux that was absorbed by this surface. (Assume there is no scattering)

P + t + a = 1 2000/2000=(900/2000)+(700/2000)+(a/2000) 1 = .45 +.35 + a
a = (1-.45-.35)*2000 = 0.2 * 2000 = 400 Watts

3. Given the area of a surface is 5 m^2 and the total radiant flux to this surface was 60 Joules per second, please give the flux density of the radiance.

Radiant flux = 60 Joules/second = 60 Watts
flux density = watts/m^2 = 60W/5 m^2 = 12 Watts/m^2

Given the distribution of reflected energy from a stand of trees (depicted below), could we assume that this surface behaves as a lambertian radiator?



No, a lambertian radiator will have equal radiation in all directions. These trees appear to be giving of various amounts of radiation indicated by the length of the arrows.