

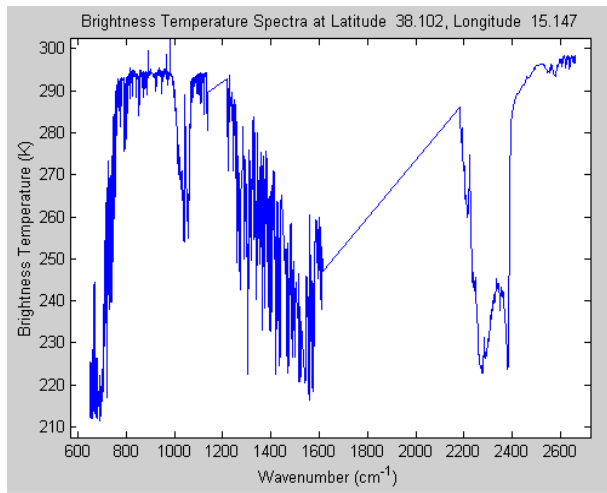
Bertinoro Remote Sensing School
Menzel / Antonelli
23 Aug – 2 Sep 2004
Quiz 2 (15 minutes)

Name: _____

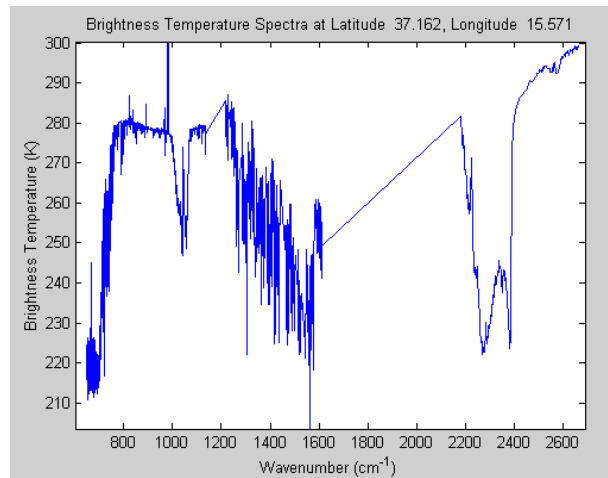
1. Associate the cloud test on the left with the appropriate description on the right.

- | | |
|---|---|
| <input type="checkbox"/> $r_{1.38} > \text{threshold}$ | (a) indicates high clouds in the tropics |
| <input type="checkbox"/> $r_{.87} / r_{.66}$ between .9 and 1.1 | (b) assures clear skies in temperature inversions |
| <input type="checkbox"/> $BT_{3.9} - BT_{11} > 3 \text{ C}$ | (c) finds high thin cirrus |
| <input type="checkbox"/> $BT_{11} < BT_{6.7}$ | (d) indicates clouds in vegetated areas |
| <input type="checkbox"/> $BT_{11} - BT_{12} < 2$ | (e) tests for broken clouds |

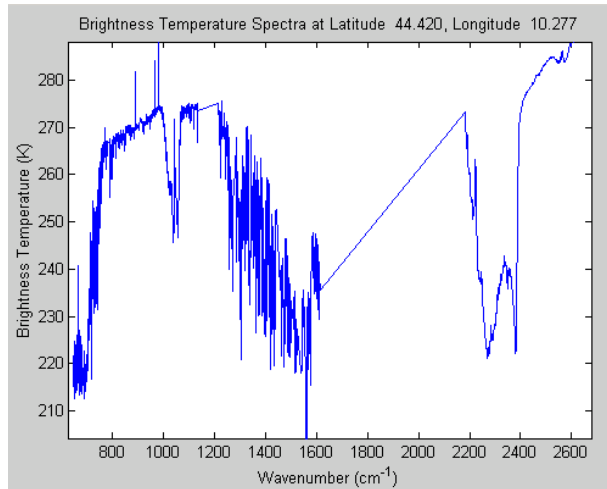
2. There is a low layer of mist at 290 K obscuring ocean at 300 K. A radiometer in the microwave window is being used to measure sea surface temperature (SST). Assume that the emissivity of sea water ϵ_s is 0.5, the optical thickness of the mist σ_m is 0.02. (a) Draw a diagram including the contributions to the radiometer from the surface, the mist, and the surface reflection. (b) Write the radiative transfer equation indicating all the contributions to the measured radiance. (c) Using $\sigma_m = \epsilon_m = 1 - \tau_m$, estimate the error that the mist introduces to the SST?



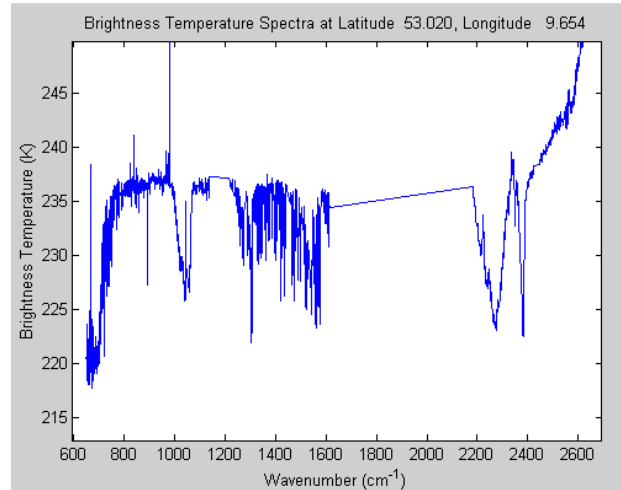
A↑



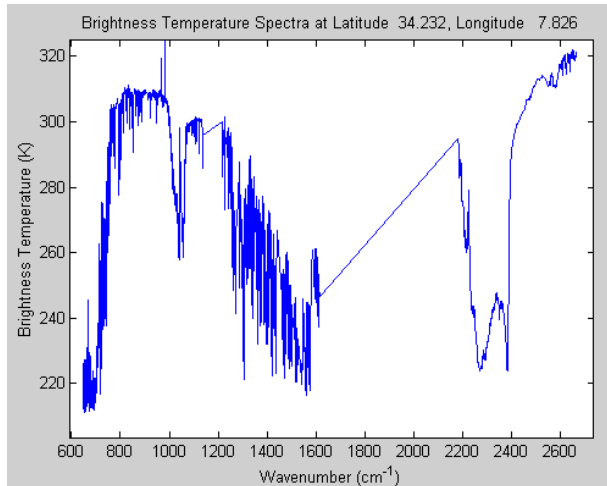
D↑



B↑



E↑



C↑

3. Identify the spectra with the scene

volcanic ash plume

ice cloud

barren land

thick cloud

ocean