

Homework #10 **Solution**
Geology 4113 (Remote Sensing)
Assigned April 6, 2018
Due Friday April 13, 2018

1. Hewson et al. 2005 Atmospheric Transmission Effects (10 points) In the paper by Hewson et al. (2005) Remote Sensing of Environment 99: 159-172, they discuss which ASTER bands are most affected by atmospheric transmission effects due to variable water vapor and aerosol scattering.

a) Which two ASTER bands are most affected by water vapor?

The SWIR bands #9, and to a lesser extent #8, are the two most affected bands.

b) They show image mosaics produced by two different band RATIOS, using data obtained on a variety of dates. Which two band ratios are these?

In Fig. 3 they show b4/b7 and b7/b9 band ratio images from a variety of dates.

c) Based on the fact that the mosaics from one band ratio show “seams” between the different images but the other does not, they come to two conclusions related to how badly their data is affected by variable water vapor and by aerosols. Summarize those conclusions in a few sentences.

The b7/b9 band ratio mosaic shows very evident seams between the different images, presumably because of varying water vapor, which badly affects band 9. On the other hand the b4/b7 mosaic shows only minor seams, leading them to conclude that that aerosol scattering (which would be the primary effect in these bands) is relatively minor.