GEOG432/632: Fall 2015   Lab Quiz (10%) - due Nov 17 (5pm)

Email me a word/libre/pdf with answers and question numbers; no need to repeat the questions.
Feel free to ask/email if you are not sure what any question is asking for
*The lab quiz will use your copy of the Landsat 8 OLI McBride scene subset **mcbride2014.pix***

1a. In a normal RGB colour composite (Red, Green, Blue bands), the Fraser River appears blue-green; explain why this is so in terms of spectral reflection and wavelengths.

1b. Similarly why do the sand/gravel bars on meander bends appear in a shade of off-white ?

2 In an 'OLI' 654 colour composite, the rivers now display dark blue- black.
a.. Why is this so in terms of the wavelengths represented ?
b. Why do those gravel bars now display in a pink shade ?

3a. Glaciers display as white in a normal colour composite; why is this ?
3b. If you display a 765 RGB colour composite, the glaciers show as solid blue – why is this ?

4. What are the median and standard deviation values for the two mid-IR bands (bands 6 and 7)

5a. What is the correlation coefficient between these two mid-IR bands ?
b. Why does the Near-IR band have higher correlation with Band 6 than with Band 7 ?

6a. Create a (32 bit) normalized snow difference index layer (NDSI).
a. What minimum threshold value might you recommend to identify snow / ice ?
b. what range of minimum values would you consider as possible options?

7. Create a threshold bitmap (task THR) and briefly list / describe the main types of mis-identified 'problem' areas which you can see are likely not snow/ice – and also any types of ice/snow areas that are not captured by your threshold value.

8a. What is the minimum NDSI value in this image ?
b. Which types of geographic features generally appear to have the very lowest values ?

9a. In Lab 5, you ran PCA - Principal Component Analysis. The Eigenvalues show even higher % variance explained by PC1-3 compared to the Prince George 2011 image ... I asked 'why' and everyone left in good time, so I'm glad you all know why .... what is the answer ?

9b. Which PCA component channel best corresponds to 'greenness' and why is it that one ?

10. Which of the OLI bands (1-7) is most closely correlated with each of these channels below ?
a. PCA channel 1
b. PCA channel 2