Pan Sharpening Lab

The goal here is to pseudo-increase the resolution of multispectral imagery using higher resolution panchromatic imagery. This is something often used when doing VISUAL analysis of imagery. It should never be done prior to actually doing calculations, as it will change the relationships between bands.

Read this article before continuing: <https://blog.mapbox.com/pansharpening-for-higher-resolution-in-landsat-live-e4717cd7c356>

For this lab, use the Landsat 8 imagery we’ve been using (from lab 3). Remember to download the imagery to your flash drive. Load both the pan and msi images.

Goto raster – pan sharpen – resolution merge

Give it an output file name (and make sure your input files are correct – I just spent 15 minutes figuring out that the default it gave was wrong). Use principal component method, nearest neighbor resampling, stretch to 8 bit, and ignore zeros. Use all the multispectral layers.

Let it run. It’ll take awhile. Have a cuppa coffee.

Then answer the following:

1. Explain why nearest neighbor was chosen (you will need to look up all 3 methods).
2. Explain why I selected “ignore zeros”
3. How many layers are in the MSI image? And which Landsat bands do they correspond to?
4. OK. Add the merged image to your view. Make sure both the merged image and the original msi image are in color IR or false color (your choice). Zoom into somewhere interesting, to the point you can see the individual pixels in the merged image.
   1. Has the pixel size changed? If so, how?
   2. Write a paragraph or so (1/2 page to 1 page) comparing and contrasting the three images (merged, pan, msti). Note, you might want to be sure you’re looking at the same bands and are using the same stretches. Look at multiple places with different landuses. Here’s a reasonable format for C/C questions: <https://study.com/articles/Step-by-Step_Guide_to_Writing_Compare_and_Contrast_Essays.html>
      1. As you’re working through this last question. Think about resolution (all kinds), where you will (and won’t) see change. Use different band combinations. Look at different areas. The biggest point to this whole lab is “what can you see in the pan sharpened lab that might be better than either the msi or pan images”