

Lab Session: Friday 8 am

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### **Exercise 1: Using the ERDAS Imagine 2010 interface (Geog 362, Fall 2010)**

This lab is to familiarize you with the ERDAS Imagine program/tool set. Please try to understand what you are looking at and not simply answer the questions for that sake.

#### 1. Launch ERDAS Imagine 2010

Start → all programs → ERDAS 2010 → ERDAS Imagine 2010 → ERDAS Imagine 2010 Classic Interface

Select Viewer → Choose Geospatial Light Table → Click OK

#### 2. Accessing the data

Copy the Landsat scenes over Greenland off of the G drive onto your My Documents folder (B10, B20, B30) → 08 July 2007

(i.e. L71009011\_01120070708\_B10.img)

In the Viewer window → File → Open → 3 Layer Arrangement (This will take a bit to load so be patient. If it asks to make pyramid layers, simply click 'no.' (Note: Clicking yes, may take up to 3-4 minutes per image).

#### ANALYSIS

1. This image is in Greenland. Using online mapping resources (Google Maps/Google Earth), find the place that this image represents.

a. What are the names of any towns within the image?

The First town seen from a distance on google maps is Ilulissat, upon zooming in further there are other towns such as Rodebay to the North and Claushavn to the South.

b. What is the name of the most prominent glacier (Wikipedia)?

One of the larger glaciers of Greenland in this image is the Jakobshavn glacier.

2. Find some statistics for the various Bands:

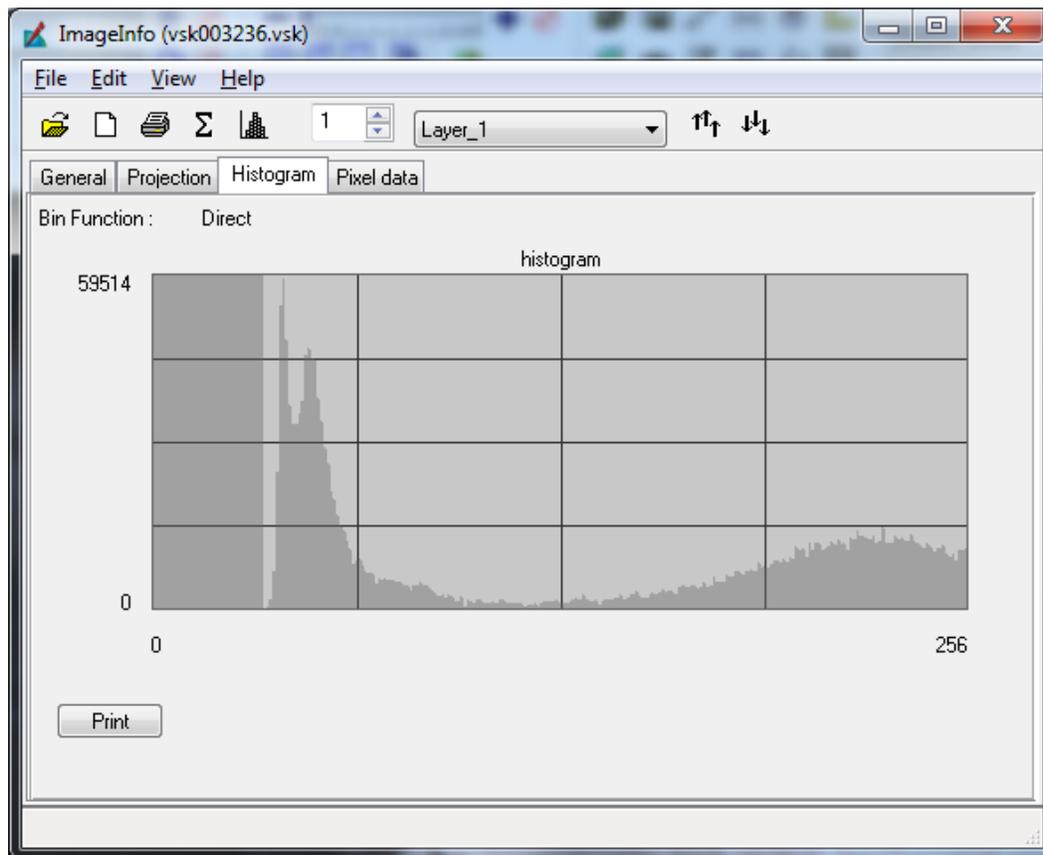
(For this, you will want to click on the information icon at the top-left) if the tools section.

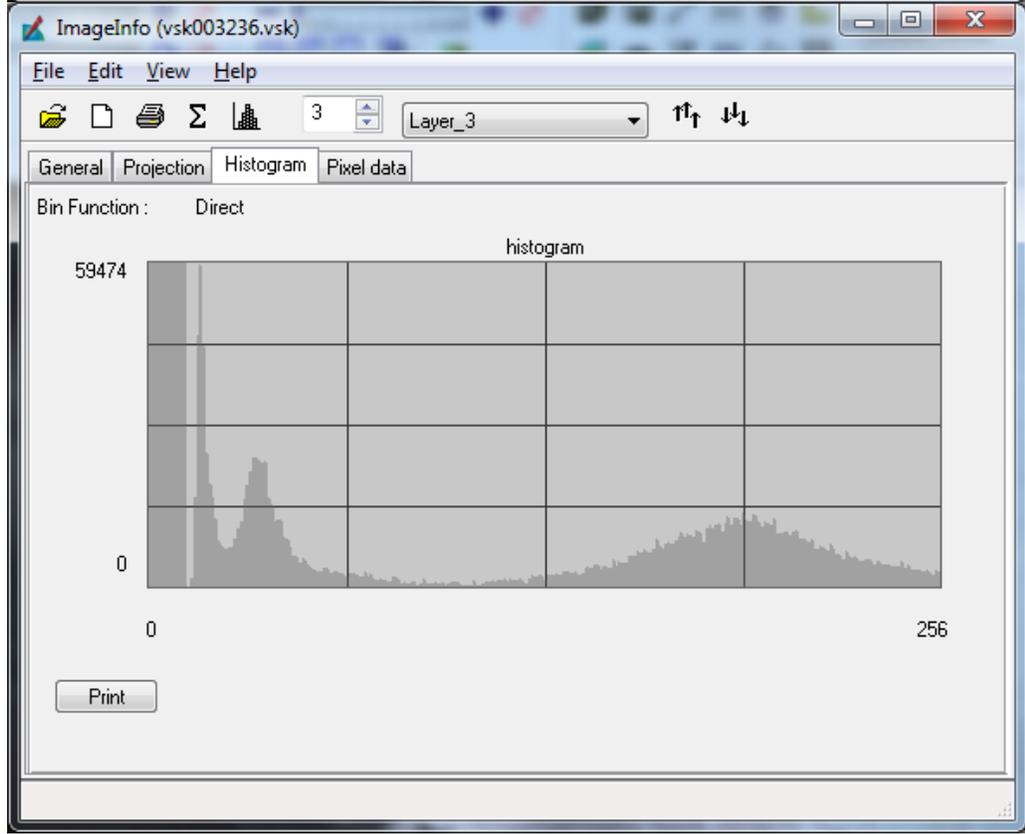
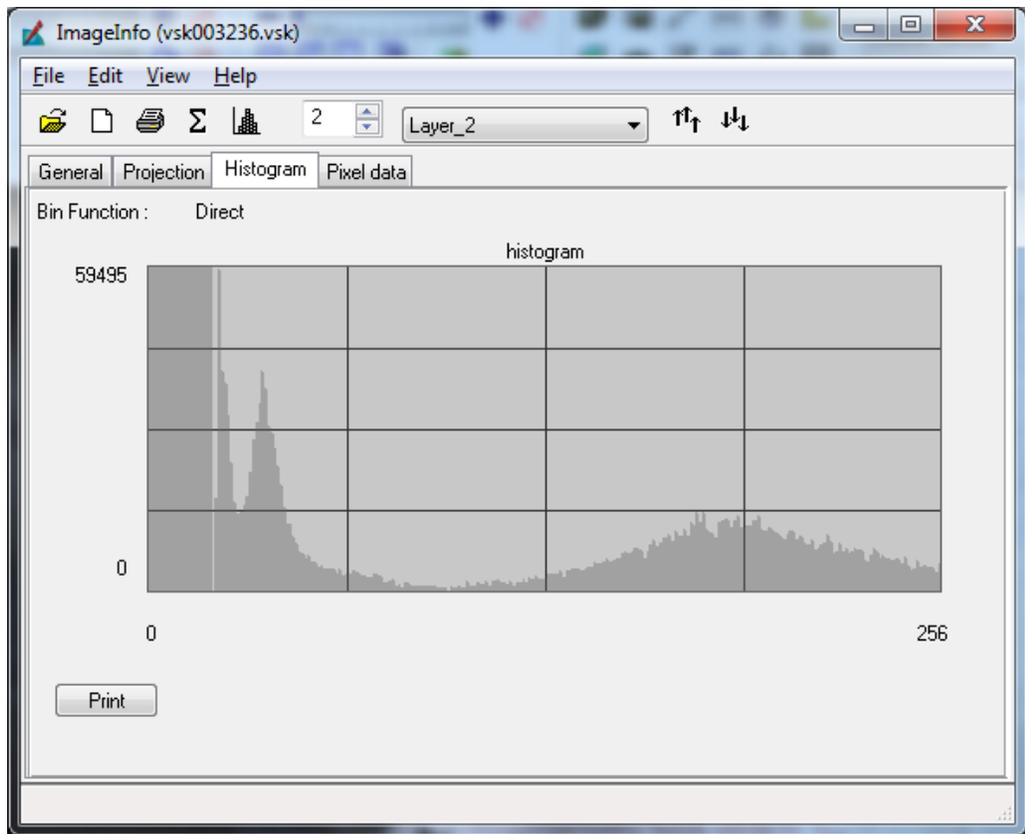
a. What are the number of rows, columns and pixels and what is the spatial resolution of these images?

There are 9941 rows (height) and 10821 columns (width) totaling 107571561 pixels. The spatial resolution of the images is 25 meters per pixel side.

b. What does a histogram reveal about the values of the three images (Print screen the 3 histograms)? Please give a description of differences you notice between the three histograms. Keep in mind that the DN value is on the x-axis and the count is on the y-axis.

The histogram shows 256 different bins meaning these images are an 8 bit resolution. The counts are how many pixels fall into each bin. Each solid white pixel for example would fall into bin 0. The graph doesn't appear to start until after the dark grey box on the left at values around 30 or so. The spikes on the left represent the majority of the white pixels as seen in the images and the hump on the right represent the dark greys. Between the 3 layers the whites become whiter (begin at a lower bin number) and the dark greys turn from a rounded hill to becoming more centralized around a point.





c. What is the projection of the image?

The images use UTM zone 22 projection (WGS84 North).

d. What are the Mean, Median, Mode and Standard deviation values for Band 1, Band 2, and Band 3?

	Band 1	Band 2	Band 3
Mean	42.281	44.763	43.419
Median	0	0	0
Mode	0	0	0
Std Dev	76.592	76.164	75.798

e. Under the 'Pixel Data' tab, go to Row #3030 and Column #5800 for each band and write down their values.

Band 1: 254

Band 2: 214

Band 3: 212

f. Where would you assume that NADIR is on these images?

NADIR would fall in the middle of each swath, along the entire length of it.

g. Notice the missing scan lines (broken scanner from 2003). What characteristics of the scan lines do you notice? (Hint: If you know where NADIR is then this should give some idea)

The scan lines become larger and result in a greater gap towards the left and right sides of the image.

h. From the previous homework assignment and lecture, you have learned what radiometric resolution is. Knowing the range of values in these images, what bit-system would you say these images are?

These values range up to 256, therefore leading me to believe it is an 8 bit system. ( $2^8 = 256$  bins/values)

i. There is an iceberg centered at points (548103.58, 7677633.76) . UTM Coordinates. Estimate the diameter and the area of this iceberg. What makes making these measurements difficult? (Keep in mind, this is a rough estimate).

The iceberg is about 400 meters in width and somewhat of a circle so its area is about 500,000 m<sup>2</sup>. It is hard to know what the boundary of the iceberg is exactly as its surroundings are similarly represented.

j. In a couple of sentences, how would you be able to discern between the bedrock (to the west of the ice sheet) and the supra-glacial lakes (on the ice sheet) based on your knowledge of remote sensing?

The most evident indicator of distinguishing the bedrock from the lakes is the contrast within the dark areas. The bedrock has various shades of dark grey caused by varying reflectance of the bedrock material, while the lakes appear to be smooth and almost uniform reflectance towards the center of these dark areas, much like that of water.