Lab 1:

GigaPan Imagery from K10

Data Description

You will work with GigaPan imagery obtained by the K10 robotic rover at Haughton Crater, Devon Island, Canada. There are papers on WebCT/Blackboard about this analog site.

GigaPan imagery (www.gigapan.org) is obtained using a robotic camera mount that takes a rectangular array of overlapping digital photographs (using an off-the-shelf camera). These photographs are then stitched together into a panorama that has both large spatial extent but also very high resolution. The images can be explored using an online tool.

Science Scenario

Imagine you are on the science team for a planetary rover exploring Devon Island. All you have to work with is preliminary data from the GigaPan camera, and nothing else. What can you learn about the site in order to plan further investigation with humans (or a more capable rover)? What hypotheses concerning the geomorphology, geologic history, etc. can you develop based on the images? What sort of further investigation would you want to do? What sort of trafficability and hazards do the images reveal that will be important for that future exploration of the site?

Data and Motivating Questions

Each team should pick one of the following four GigaPan images taken from Haughton Crater to interpret and discuss as a group (see original instructions for Labs 1 and 2). The link will take you to the web interface for exploring the image. To get you started, I offer the following “motivating questions”, but I expect you to go further and form your own questions and hypotheses.

http://gigapan.org/gigapans/411/

What is the high-albedo (bright) unit? Are there particular geomorphic surface features developed on it? How do they form?
http://gigapan.org/gigapans/463/

What is the nature of the rocky topography? Where do the large clasts in the fore-to mid-ground come from?

http://gigapan.org/gigapans/491/

What geologic units might be present here? What is responsible for the topography, and particularly, the escarpment seen in the middle of the image?

http://gigapan.org/gigapans/493/

What is the nature of the slope in the foreground? The flat area in the center? The rocky topography to the left?