Mars for Earthlings

LESSON 1: Introduction
Homework 2
Intro to Mars_MFE
Exploring Gale Crater

Objective: To navigate, learn and utilize the tools offered within Google Mars.

Introduction: In order to accomplish this lab you will need to download Google Earth 6 (http://www.google.com/earth/index.html). This lab will completely utilize Mars; all answers to questions can found by using the layers provided in the program. Some questions will be straightforward; however others will require you to use your own judgment and intuition.

Intro to Google Mars
Open Google Earth. In the icon list across the top of the window, click on the planet with a single ring button with a small dropdown arrow. The dropdown menu will provide options for Sky, Mars, and Moon. Click on Mars.

Searching the Layers Bar on the left:
1. Click on the drop down arrow for Global Maps.
    a. What map is used (checked/dotted) when Google Mars loaded (consult the Global Maps Layer)?

       What do the colors refer to?

    b. View the other Global Map types. Is there another you prefer? (Why or why not?)

2. Click on the drop down arrow for Spacecraft Imagery.
    a. How many imaging devices are available?
    b. What are the image devices' names and what spacecraft are they aboard (click on each)?

    c. Which instrument/camera has the best resolution?

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3. Make sure *Rovers and Landers* are checked before you proceed.

Exploring Curiosity's Landing Site

4. Type Gale Crater into the Search Box (Curiosity's landing site on August 5th, 2012).
    a. Is any imagery available right after it zooms in? Why or why not?

    b. Who is the crater named for and what is his/her nationality?
    c. What is the documented location of the crater?
        i.   Center latitude
        ii. Center longitude
    d. What is the diameter size of the crater?

5. Zoom out (exit street view if necessary) until the MOLA colorized elevation map comes into better resolution. You should see a swath of "*i*'s" in the upper left corner of Gale Crater.
    a. Find the landing site of the Curiosity Rover. It is marked with a flag icon. What was the location of its landing site (use the Google GPS coordinates)?

    b. Click on the Flag icon. What other landing sites were considered for Curiosity?

    c. Why do you think that the majority of landing sites are crater locations?

6. Activate the HiRISE imagery in the Spacecraft Imagery Layer (red outlined rectangles should appear).
    HiRISE stands for _____
    a. Where are most of the HiRISE images taken?

    b. Why might the majority of images be in this location?

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   c. View the HiRISE image with the small *pink square box* labeled "Grand Canyon of Gale Crater" ESP_012195_1750 (located S of the landing site, where red line box appears as you hover the mouse). Can you see the canyon? To download the image:

      i. In the information pane click on *observation information page* in blue (link)

     ii. This will bring up the HiRISE webpage. Scroll down to "Image Products" purple bar

    iii. Choose JPEG→ Grayscale → Map Projected

    iv. Paste the image here as a .jpg or sketch the image. <u>Use an arrow and point to the location of the canyon</u>. Use the space below to explain why this might be of interest to scientists.

7. Go through other images and information provided by Google Mars for Gale Crater. Write a convincing argument in 3-5 sentences on why Gale Crater was chosen as the landing site for MSL Curiosity.