

ESS 306, Spring 2012

Lab 1 – JMARS and PDS Datasets

3/29/12

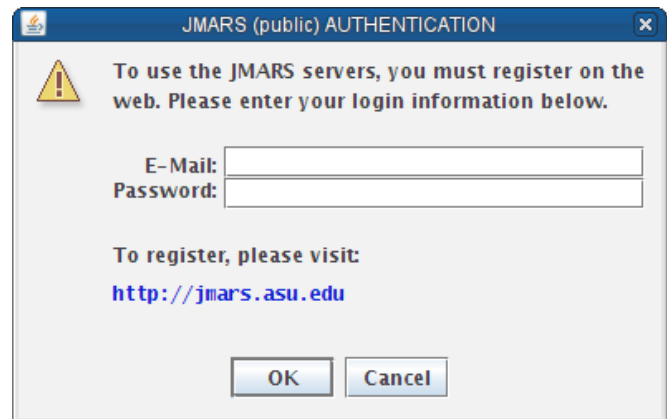
Part 1 – JMARS

Step 1 – Goto the JMars website at <http://jmars.asu.edu/>

Step 2 - Register for JMARS by clicking on the “LogIn/Register” link in the upper right. You will need to provide an e-mail, but they won't do anything evil with it.

Step 2 – Click on the “Documentation” link (upper-left) and read through the brief intro pages. This will provide you with a basic idea of the JMARS interface.

Step 3 – Launch JMARS by clicking on the “Cross-platform WebStart Installer” link under the “Download JMARS” section. Java should start and a dialog box should open asking you for your user name and password.



Use of the Basic Interface:

Pull down the “Add new layer” menu on the “Main” tab within the layer manager go to “Maps by Instrument” then “MOLA” then “MOLA Shaded Relief / Colorized Elevation” then select “View Graphic Data”

A colorized elevation map should now be shown. Go to the “Main” tab within the Layer Manager. Click on the Lat/Lon and MOLA layers and drag them in different positions on top of one another. Try clicking on the “M” and “P” boxes to turn the layers off and on in the map and pan windows. Pull the slider bars next to each layer name back and forth to change each layer's transparency.

Zoom in to an interesting part of the planet at 128ppd using the mouse right click. Delete the MOLA Shaded Relief (NE) layer and add the THEMIS Day IR Global Mosaic v11 layer. Pull down the “View” menu and select “Re-center projection”.

How to find a place on Mars by name:

Method #1:

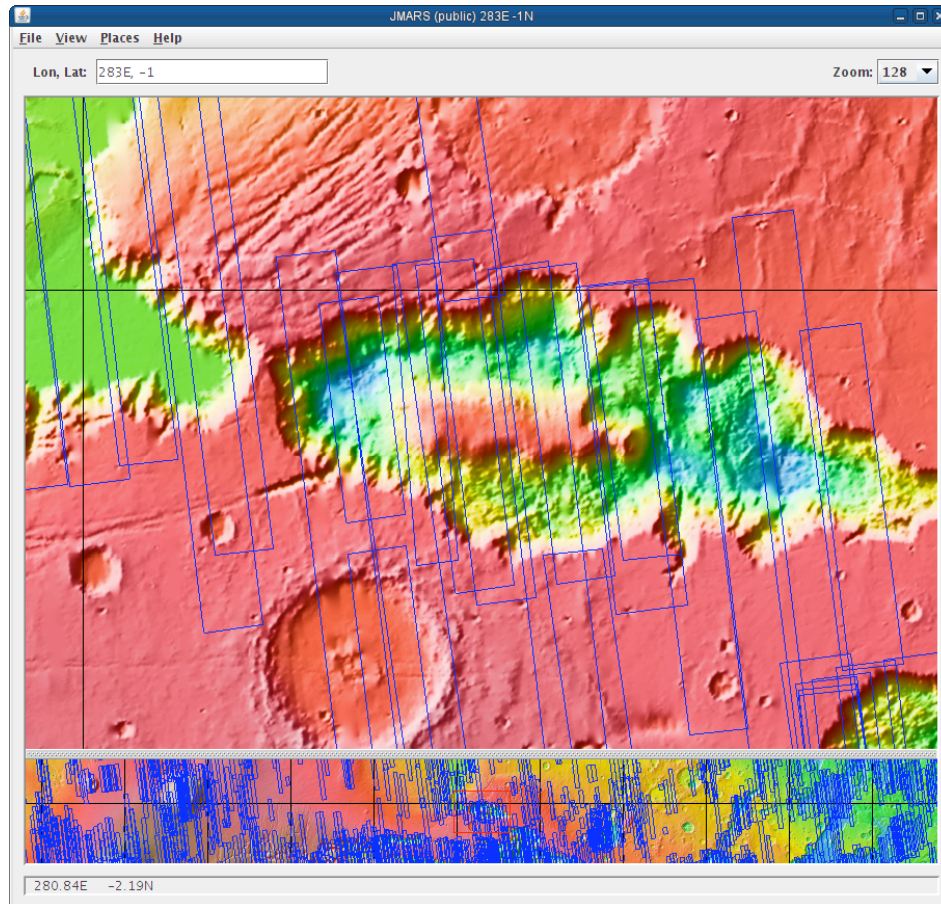
- Add new layer => Nomenclature, click on Nomenclature tab
- Select type of feature (crater, mons=volcano, vallis=valley, etc.)
- Select a landmark of that type from the pull-down menu, click “Go To”

Method #2:

- Open Google Mars in web browser (<http://www.google.com/mars>)
- Use the search tools there to find what you want, note the corresponding Latitude and Longitude
- Type those coordinates in the main Jmars window (upper left). (Note you must enter the longitude first, and is OK to use West Longitude but for that be sure to type the letter “W” after the number. Latitude is assumed to be North for positive numbers and South for negative numbers)

Finding Imaging Datasets:

Click on “Add new layer” then “Stamps” then “Projected CTX stamps”. The “Add Projected CTX stamp layer” window should appear. Define a region of interest using min/max latitude and longitude values to constrain the number of stamps it finds (e.g. -5 E to 5 E and -5 N to 5N). Blue outlines should appear on your screen.



Right click on one of the stamp outlines and select “View CTX stamps” then select one of the specific stamps the select “Render CTX”. A grayscale image should appear coincident with the stamp outline. Zoom in by right clicking over the rendered image and select “Zoom & recenter” then “2048 pix/deg”.

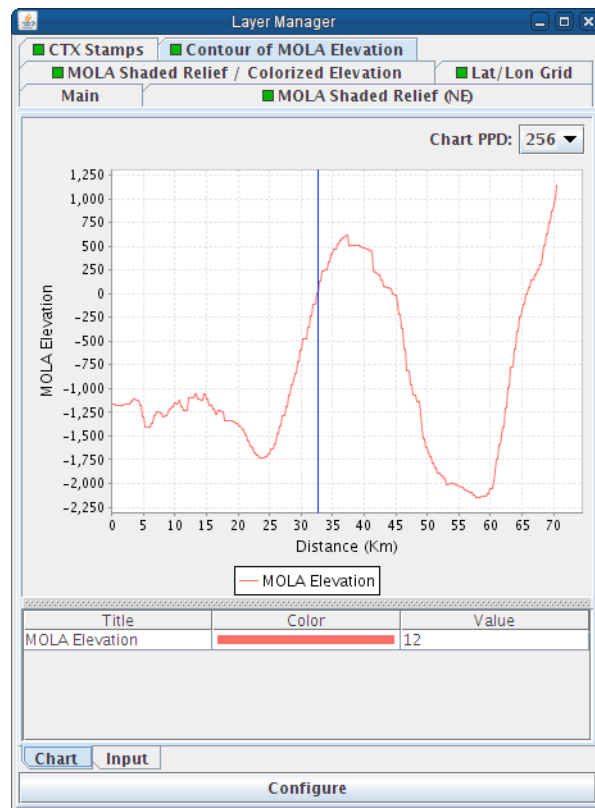
Right click over the same image and select “Web browse”.

Displaying and Plotting Numeric Data:

Zoom back out to 512 pixels per degree. Add the MOLA Contour numeric data layer (Maps by Instrument -> MOLA -> 128ppd Elevation -> Contour Numeric Data). Make sure the “Contour of MOLA Elevation” layer is selected within the list of layers in the “Main” tab of the Layer Manager window. Now click on the “Contour of MOLA Elevation” tab and select the “Chart” tab at the bottom of the screen.

To create a topographic transect, single click at the start point and double click at the end point. This should create a red line and a chart should show up in the layer manager window. If you mouse over

the line, elevation values should be displayed. If you right click on the chart, you should be given a list of options.



Questions:

What is the highest elevation of Olympus Mons? What is its height above the surrounding plains?

What is the greatest elevation difference between the top and bottom of Valles Marineris?

What is the typical spatial resolution of CTX images? THEMIS visible Images? THEMIS infrared images? HiRISE Images?

Which set of images has the most coverage? What would explain the difference in coverage between the different cameras?

Make a mini-Mosaic:

Find three adjacent CTX images over an area you find interesting and render them to create a larger contiguous image. You may have to adjust the contrast of the images to make them match one another (the contrast can be adjusted by a slider on the “Rendered” tab at the bottom of the “CTX Stamps” tab. Show your final product to Steve.