Download and Use of the GIS JMARS

Guide
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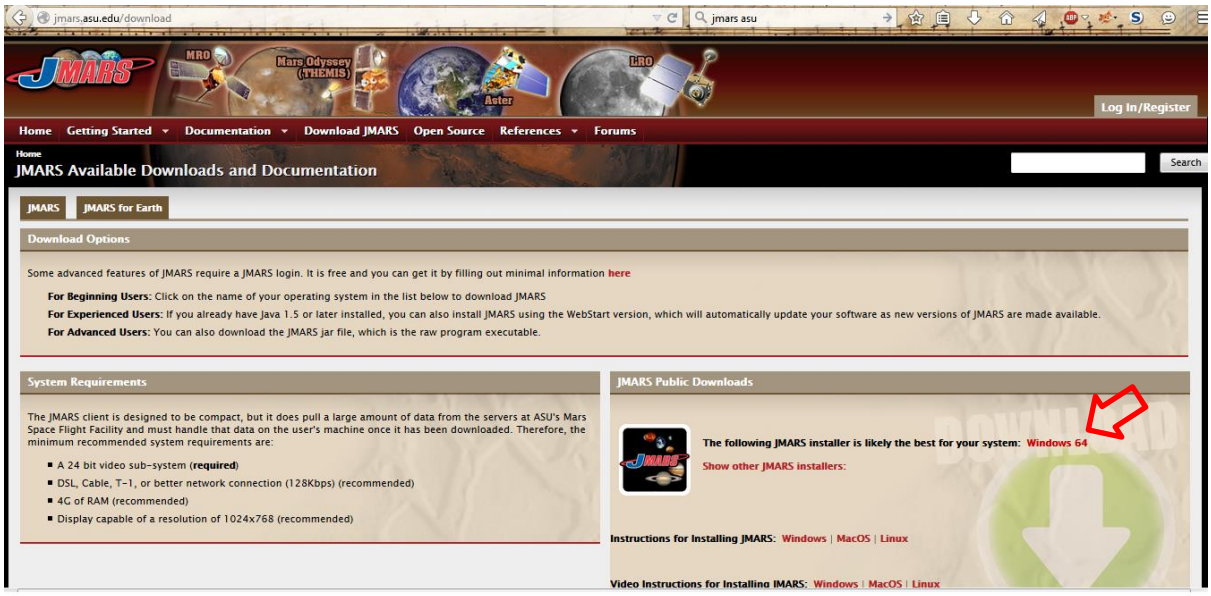
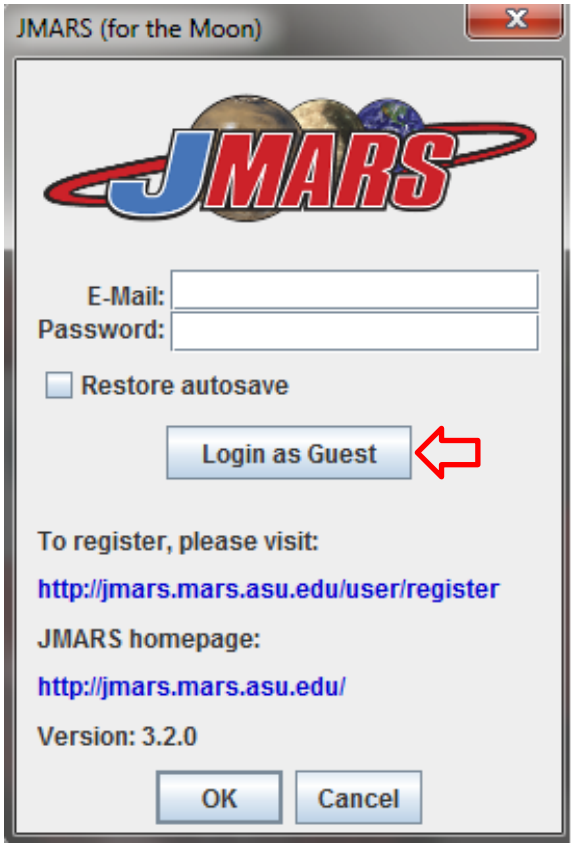
JMARS is an acronym and stands for Java Mission- planning and Analysis for Remote Sensing. It was developed by the Mars Space Flight Facility at the Arizona State University (ASU). Despite the name data sets of various planetary bodies can be found within JMARS. The software can be downloaded here: http://jmars.asu.edu/download

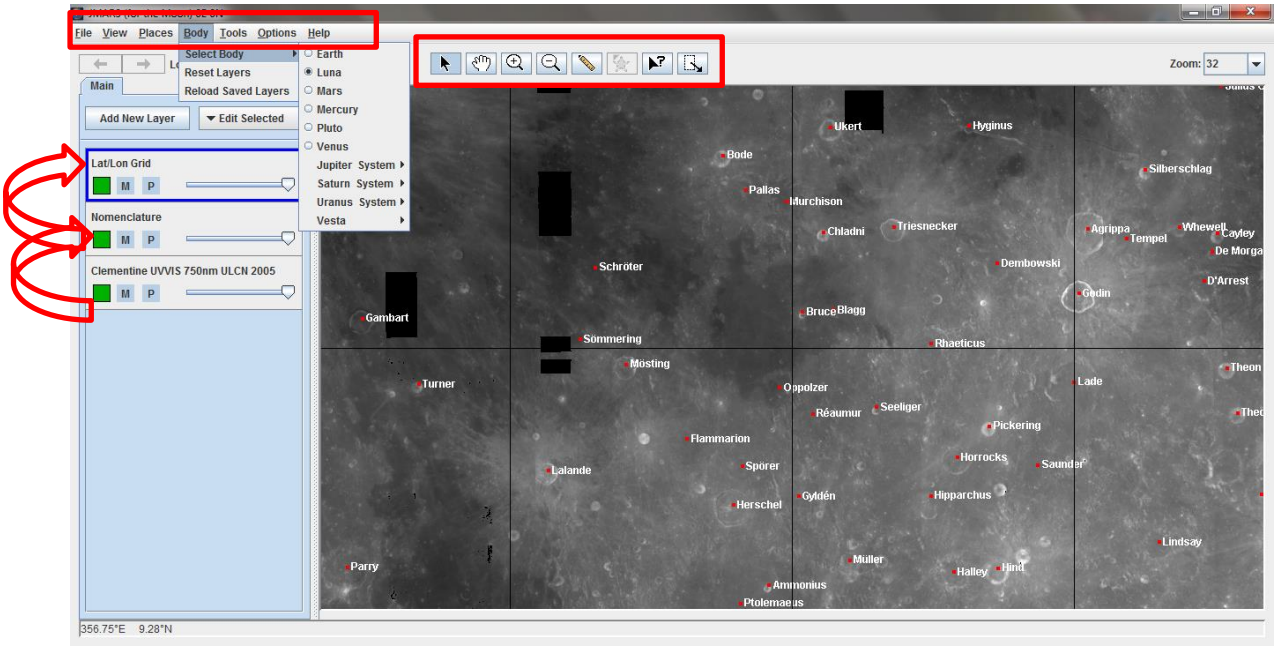




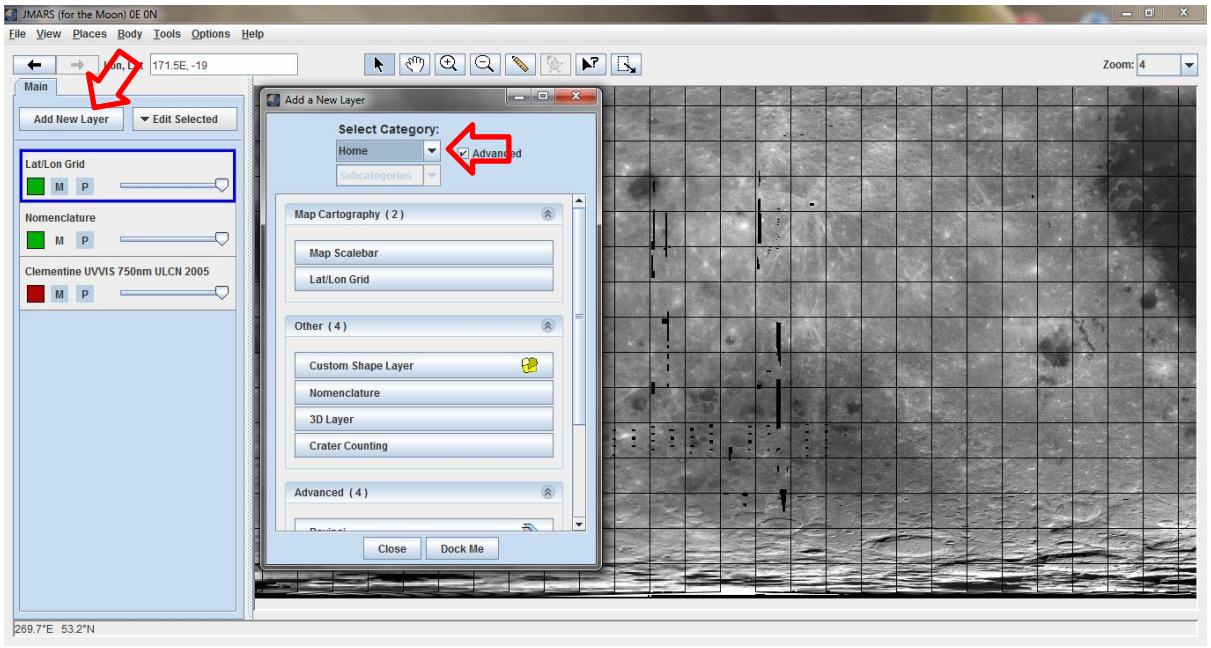
After downloading the software you open the program. The login does not require an account, you can simply login as a guest.

The GIS window opens. On top you see the menu bar, which provides you with basic commands. If you want to change the planetary body you can click *Body → Select body → Luna*

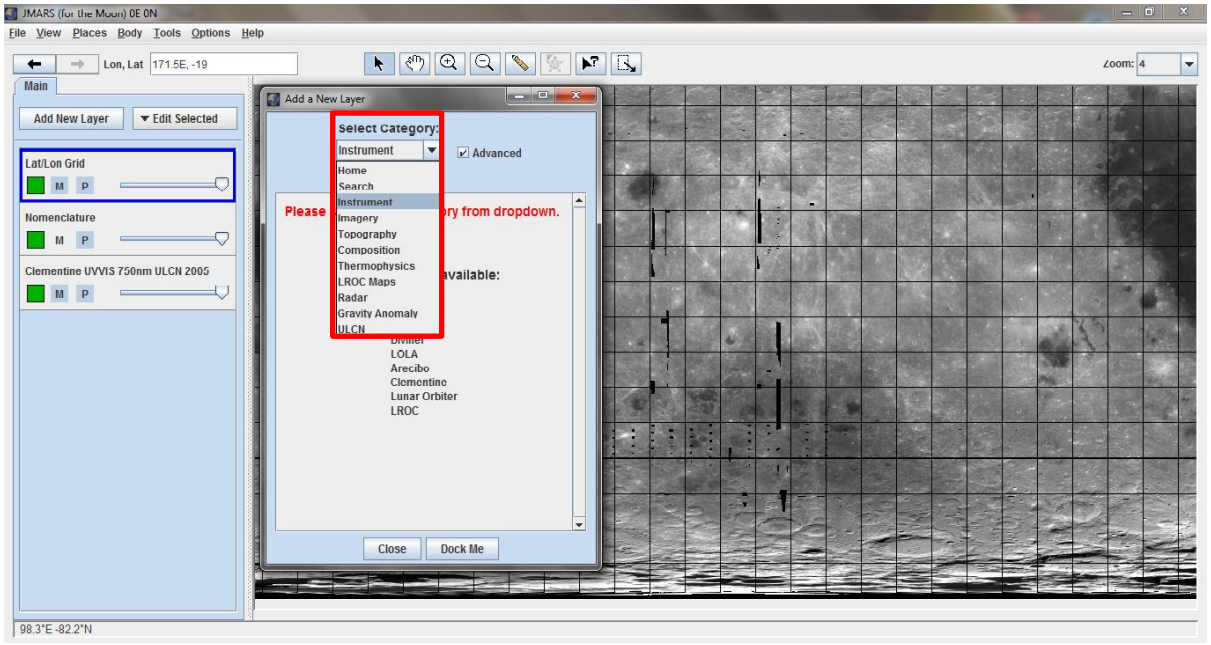
A lunar map is loaded afterwards and visible in the map overview on the right. Left you see the data sets (called shapefiles) and they store the data sets. Defaults are three shapefiles: *Lat Lon grid* for orientation, *Nomenclature* for names (you can also search for features and locations in that layer), and a *topographic base map* (in case of Moon: Clementine). These shapefiles can be moved up or down in the list. The shapefile on top will be displayed above all other.



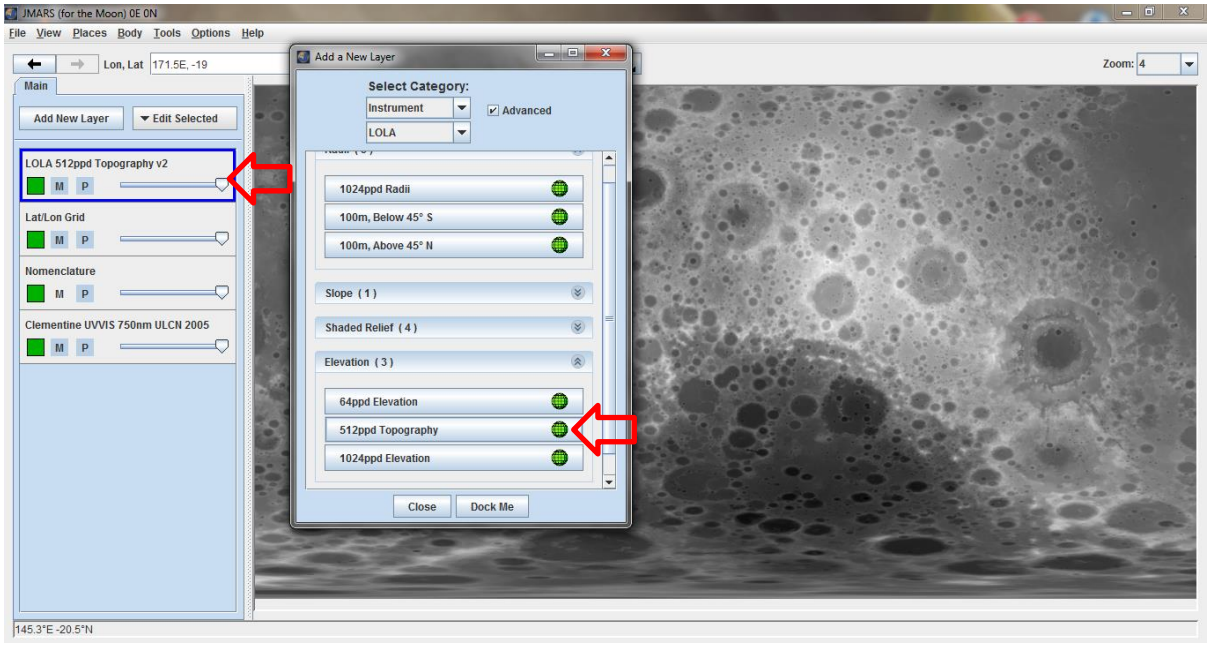
By clicking on *Add New Layer* the following options are visible. In the *Category Home* various layers can be selected and added to your shapefile list on the left. The layers can not only be moved on top or below each other, they also can be hid and changed in transparency.



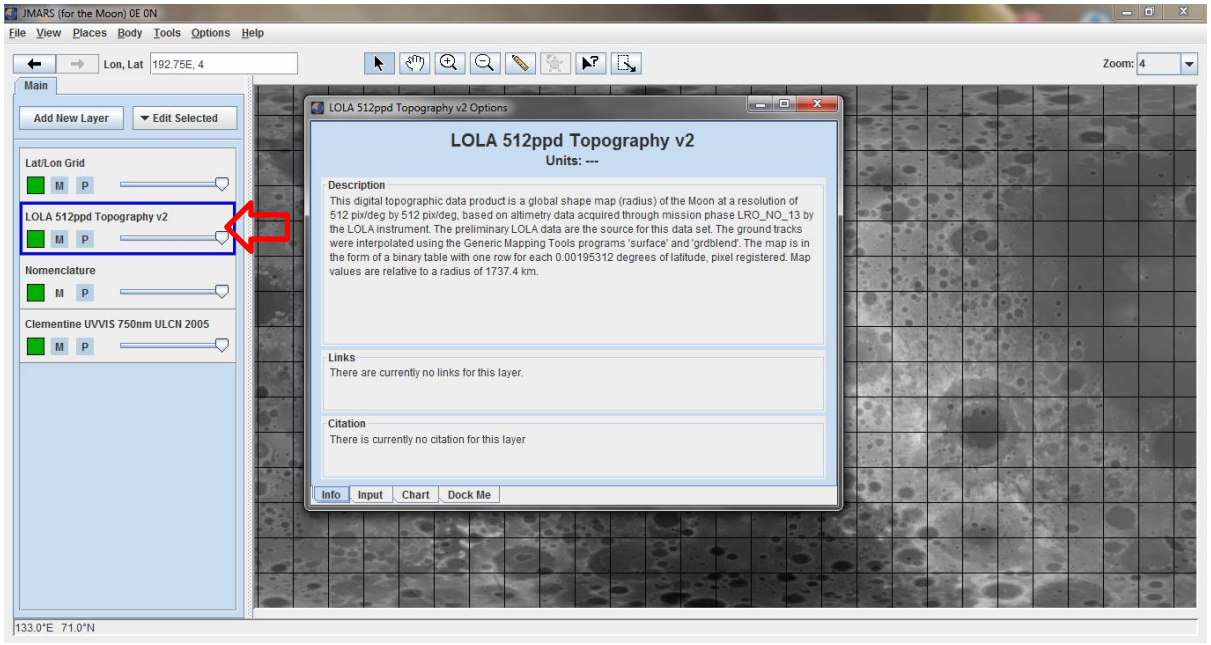
Several *categories* can be selected. You can search for data sets and order them by instrument or map type.



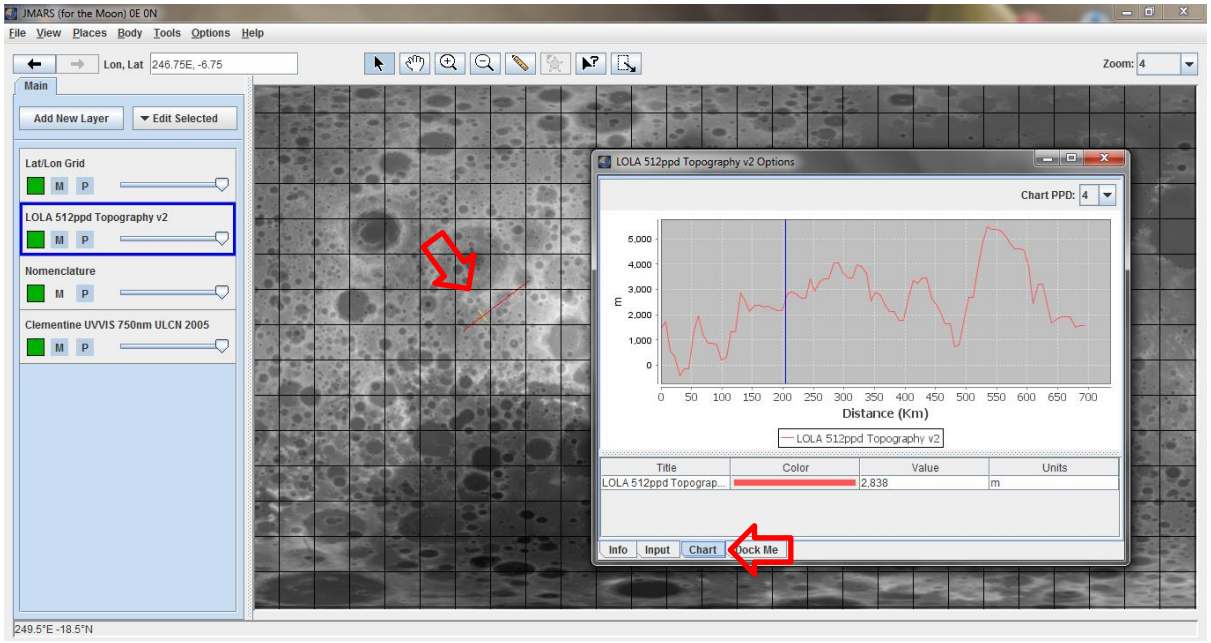
As an example we want to add a LOLA topographic map. We chose *Instrument → LOLA → 512 ppd (pixel per degree) Topography* (please note that there a several maps available, but we want to select the elevation map to see the lunar terrain). After selecting the map it appears in the layer section on the left. While loading the color is red, as soon as loading is completed the color will turn green and the elevation map is visible in the map view. The Lat Lon grid is not visible anymore, because the new layer lies on top of the grid shapefile.



To see the grid on your new map, just move the *Lat Lon Grid* upwards in the list. By clicking on the new layer you will get more information about it. Description, Links, and Citations are presented here.

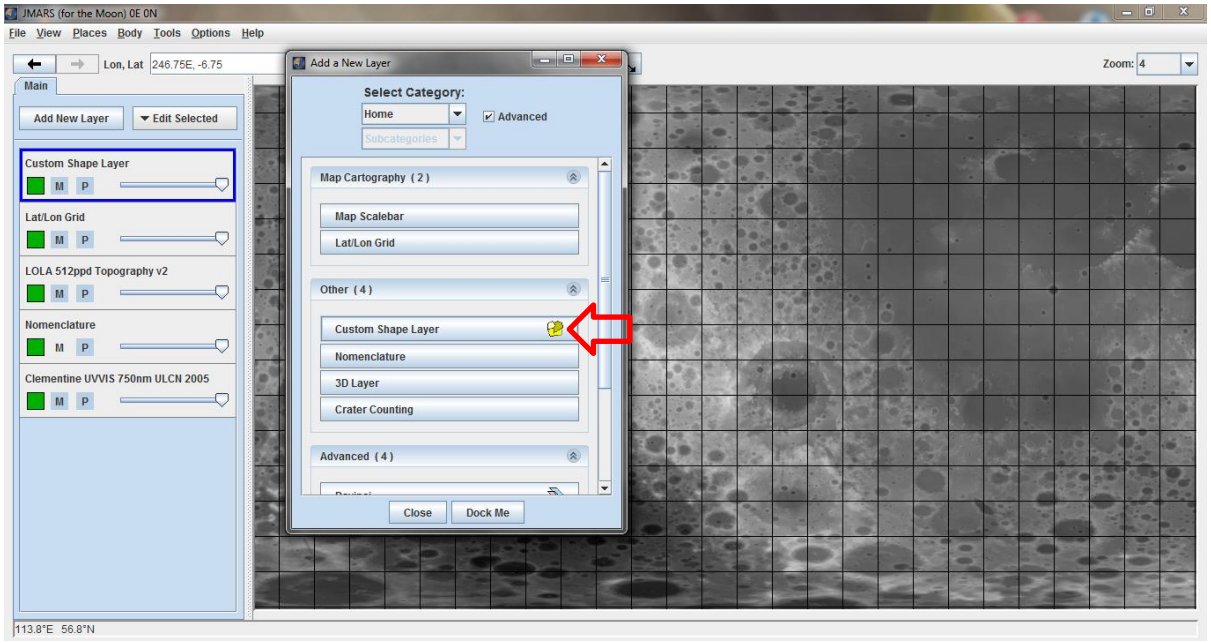


If you select *Chart* you also have the ability to draw profile lines on the map. This feature is only available in maps with elevation data and it looks like this:

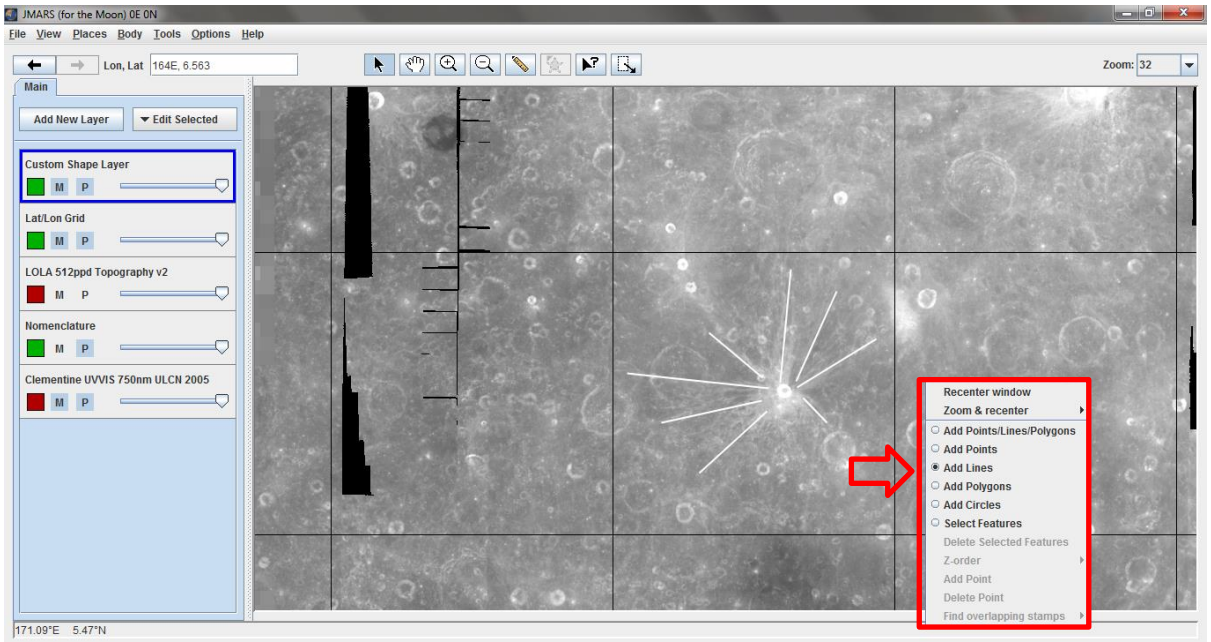


The red line in the map is the profile line. In the *Chart* window you see the elevation of the surface along this line.

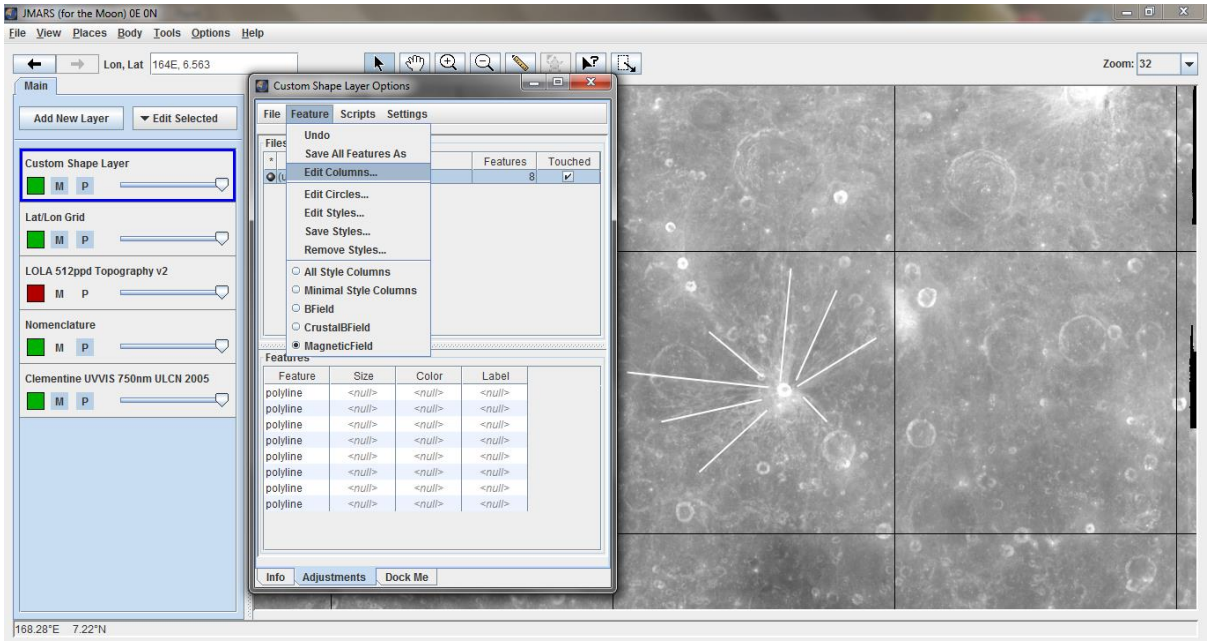
You can try this also with other maps and data. All the data that are included in JMARS will give you information about the instrument and resolution. It is also possible to add a new layer that is empty. That is important for your own projects (e.g. mappings or databases). *Add New Layer → Home → Custom Shape Layer.*



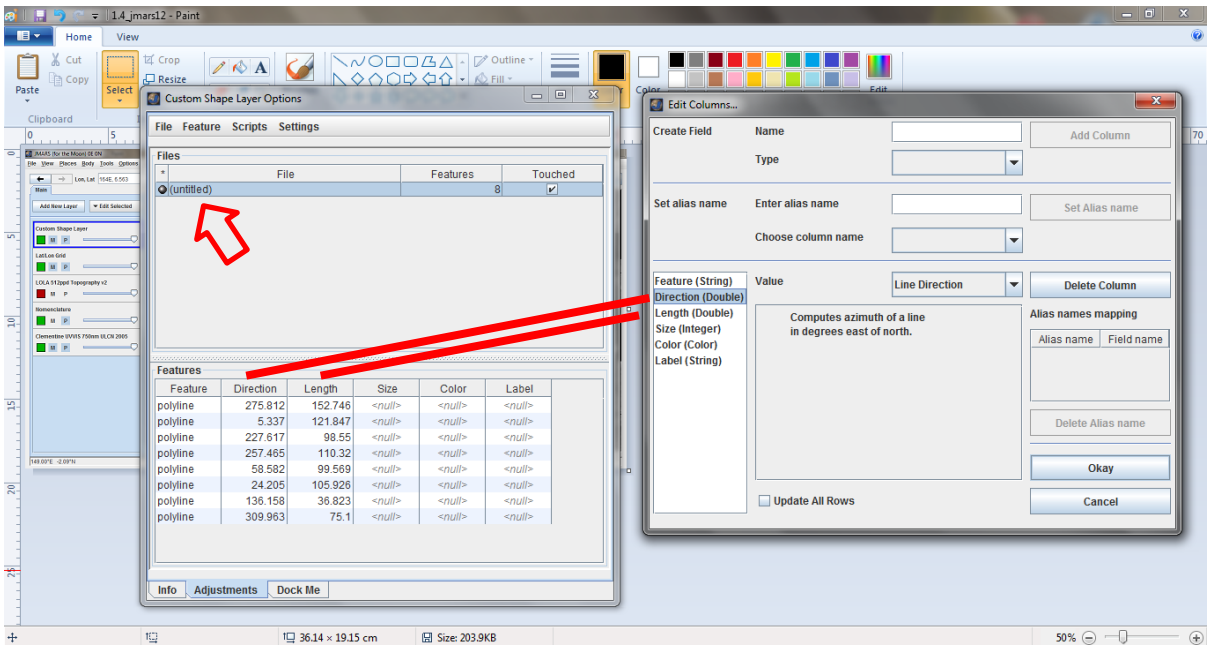
You can click on the new *Custom Shape Layer*. No information is stored in the layer, yet. By selecting the layer (blue borders) and clicking into the map you get the option to add various shapes. *Add Polygons* gives you the option to add any shape you want, whereby *Add points* will only add point features and *Add Lines* only linear features. Here we wanted to map the rays of a fresh impact crater on the Moon and decided to *Add Lines.*



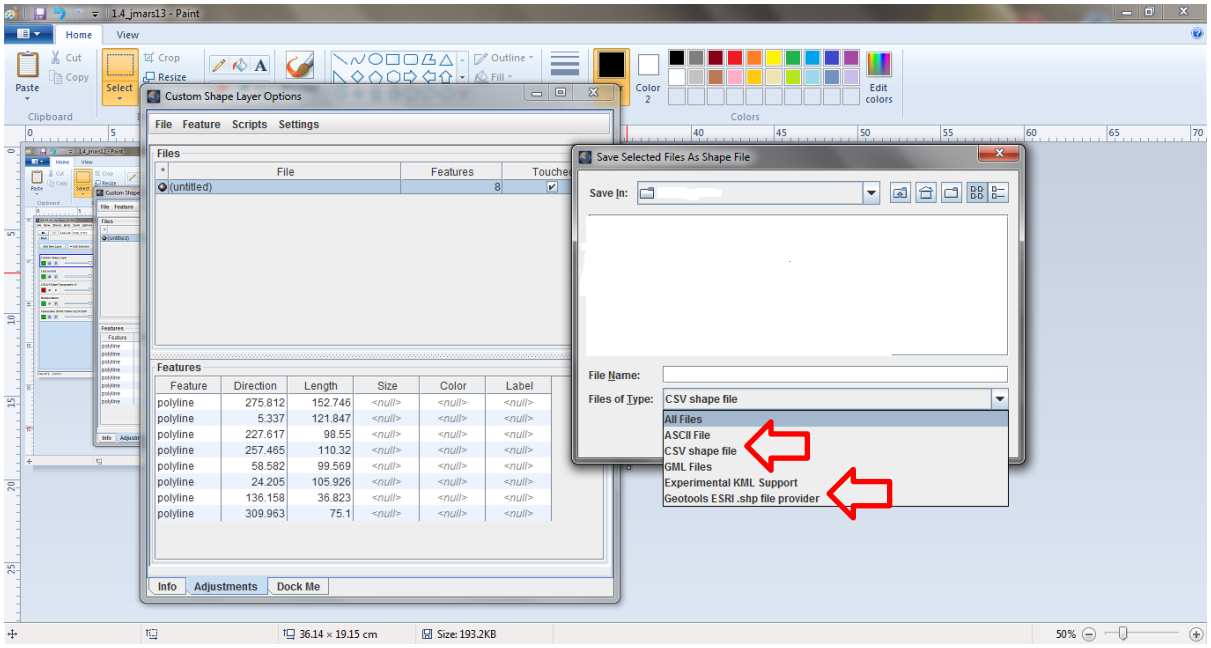
When all lines are added, we can open the *Custom Shape Layer* with a double click and we will see the *Features* listed in the bottom part. Unfortunately, there is no information to the lines so far. By clicking on *Features* → *Edit Columns* we can add more information to the table.



Information can be added by *Create Field → Type Name → Select Type → Add Column.* The new column will appear on the left hand site. Select it and choose a *Value* from the dropdown menu. Hit *Okay.* You can easily add columns like *Length, Direction, Coordinates, Circumference,…* Your table will be updated and the new columns and values presented in the table.



By clicking on the (here untitled) dataset, you can save your data in various file formats. We recommend either the *ESRI shapefile (.shp)* or *CSV shape file*.



Tutorials can be found at: http://jmars.asu.edu/jmars-tutorials
Further documentation is also available on their webpage!