Download and Use of the GIS JMARS

Guide Dr Marlene Bamberg March 2015

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: <u>http://jmars.asu.edu/download</u>



JMARS (for the Moon)									
E-Mail: Password:									
Restore autosave									
Login as Guest									
To register, please visit:									
http://jmars.mars.asu.edu/user/register									
JMARS homepage:									
http://jmars.mars.asu.edu/									
Version: 3.2.0									
OK Cancel									

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* \rightarrow *Select body* \rightarrow *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* \rightarrow *LOLA* \rightarrow *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.

File View Places Body Tools Options Help Image: Select Category: Main Main Image: Select Category: Image:	JMARS (for the Moon) 0E 0N		
Image: Constant of the second sec	<u>File View Places Body Tools Options Help</u>		
Main Add New Layer Edit Selected LOLA 512ppd Topography v2 M P LatLon Grid M P Ion, Below 45° S 100m, Above 45° N Stope (1)	← → Lon, Lat 171.5E, -19	Add a New Layer	Zoom: 4
G4ppd Elevation	Add New Layer Edit Selected Add New Layer Edit Selected LotA 512ppd Topography v2 M Clementiae M Clementine UVVIS 750nm ULCN 2005 Clementine UVVIS 7500 Clementine UVVIS 75	Select Category: Instrument V Advanced LOLA V 1024ppd Radii 100m, Below 45° S 100m, Above 45° H Slope (1) Shaded Relief (4) Elevation (3) 64ppd Elevation 512ppd Topography 1024ppd Elevation Close Dock Me	Zom: 4

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.

JMARS (for the Moon) 0E 0N			
Eile View Places Body Tools Options Help			
← → Lon, Lat 192.75E, 4	N 🖑 🗨 🔍 💊 🗽 🔽 🖳		Zoom: 4 💌
Main			
	🚺 LOLA 512ppd Topography v2 Options		
Add New Layer	LOLA 512ppd Topography v2		C Top
Lat/Lon Grid	Units:		2
MP	Description This digital topographic data product is a global shape map (radius) of the Moon at a resolution of	LASS GO	
LOLA 512ppd Topography v2	512 pix/deg by 512 pix/deg, based on altimetry data acquired through mission phase LRO_NO_13 by the LOLA instrument. The preliminary LOLA data are the source for this data set. The ground tracks		
Nomenclature	were interpolated using the Generic Mapping 1 ools programs 'suiface' and 'grdblend'. The map is in the form of a binary table with one row for each 0.00195312 degrees of latitude, pixel registered. Map unline are rached to a coding of 1732.4 km		
Clementine IIVVIS 750nm III CN 2005			
			4
	There are currently no links for this layer.		
	Citation There is currently no citation for this layer		
<u> 26-</u>			
	Info Input Chart Dock Me		
			- 620 C

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 \rightarrow Home \rightarrow Custom Shape Layer.

e View Places Body Tools Options Help																		
← → Lon, Lat 246.75E, -6.75	🚺 Add a New Layer	×														Zoor	m: 4	
Main Add New Layer Fdit Selected	Select Category: Home Advanced Subcategories		the states			1. 10		10°	id an	0.00					1			
Custom Shape Layer	Map Cartography (2)		10		*0 *		01					19.0	C					1
Lat/Lon Grid	Map Scalebar Lat/Lon Grid				-				3		-					100		
LOLA 512ppd Topography v2	Other (4)			10					0	100			•		<u>,</u> 10			1
Nomenclature	Custom Shape Layer							•										1
Clementine UVVIS 750nm ULCN 2005	3D Layer Crater Counting		100 m					1. 1. 1. 1. 1. 1.		100 P	00		5			12 6.	0.00	
	Advanced (4)				-	0.0	6	Sec.		02	2		25.5	3	000		1	6
	Close Dock Me		0			-			10/10		No.		10.4	C C			0.0	
		1 0. C	The second	0.00	1000		No. 1					0.0	A State	N RA	T N	102	0.00	

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* \rightarrow *Edit Columns* we can add more information to the table.

JMARS (for the Moon) 0E 0N		A CONTRACTOR OF THE OWNER							1	- 0	ж
ile <u>V</u> iew <u>Places</u> <u>B</u> ody <u>T</u> ools <u>O</u> ptions <u>H</u>	lelp										
← → Lon, Lat 164E, 6.563		N	Q Q 💊		5					Zoom: 32	Ŀ
Main	Custom Shap	e Layer Options		- • • × • }	Manhadra Landa	-	O PROPERTY OF		and the second second	110000	
Add New Layer	File Feature Files Undo • Save A • C Edit Co Edit Ci Edit Ci Edit Si Save S Remov • All Styl • Magne	Scripts Settings	Features	Touched			•	0) : 		The second
Clementine UVVIS 750nm ULCN 2005	Feature	Size Cold	or Label								
	polyline polyline polyline polyline polyline polyline polyline polyline	<null> <null< td=""> <null> <null< td=""> <null> <null< td=""> <null> <null></null></null></null></null></null></null></null></null></null></null></null></null></null></null></null></null></null<></null></null<></null></null<></null>	< <null> > <null> > <null> > <null> > <null> > <null> > <null></null></null></null></null></null></null></null>		. 0			0		0. 10 .	The second

Information can be added by *Create Field* \rightarrow *Type Name* \rightarrow *Select Type* \rightarrow *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.

ø	🔜 🤊 🦿 :	≂ 1.4_jm	ars12 - Paint								_		- 0	×
	Home Home	View												0
P	Cut	Select	Crop Resize	ne Layer Optio	ns	>0□C >00¢		Fill -		Calor Edit Columns			X	
	Clipboard	1	File Feature	e Scripts Se	ttings					Consta Field	Nama			
	0	5		, contro co	tungo					Create Field	Name		Add Column	70
۰.	Ble Vew Blaces Body	LON Y Tools Options	Files								Туре			
-	← → Lon, Lat	N 154E 6.563	*	File	e		Features	Touche	d					
	Hain Add New Layer	▼ Edit Selected	(untitled)	>				8 1	- 1	Set alias name	Enter alias name		Set Alias name	
5	Custom Shape Layer		6 5	Δ^{-}							Choose column name	•	•	
-	LatLon Grid													- 11
-	LOLA 512ppd Tepograp	pty v2								Feature (String)	Value	Line Direction	Delete Column	
-		~								Direction (Double)]	-
8	u p -									Length (Double)	Computes azimuth	of a line	Alias names mapping	
	Clementine UV/IIS 750m	nm ULCN 2005								Size (integer)	in degrees east of r	north.	Alias name Field name	Л
-										Label (String)				
3			Features											
-			Feature	Direction	Length	Size	Color	Label						
5			polyline	275.812	152.746	<null></null>	<null></null>	<null></null>						5
-			polyline	5.337	121.847	<null></null>	<null></null>	<null></null>					Delete Alias name	
			polyline	227.617	98.55	<nuii></nuii>	<nuii></nuii>	<nuii></nuii>						
-	149.00°E -2.09°N		polyline	207.400	00.560	<null></null>	<nuil></nuil>		1				Okay	
-		_	polyline	24 205	105.026	<null></null>	<null></null>	<null></null>					Okdy	
-50			polyline	136 158	36.823	<null></null>	<null></null>	<null></null>			Update All Rows		Cancel	
-			polyline	309,963	75.1	<null></null>	<null></null>	<null></null>					Cullect	-
25			Info Adjus	stments Do	ck Me									
4			103	tr	36 14 × 10 15	icm	C Size: 203.0	KB					50%	-

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*.

🧭 🔜 🍤 🌾 = 1.4_	jmars13 - Paint						
Home Vie	w						
Paste Cut	t Crop Resize	ape Layer Optic	ons			Outline -	2 Color
0 5	File Feature	e Scripts Se	ettings				40 45 50 55 60 65 7
O 14 mars12 Park	Files						Save Selected Files As Shape File
The second secon		Fil	e		Features	Touch	
Parte Copy Seed Custom 5	(untitled)					8	- Save in: 🗂 🔽 🗸 🖉 🐨 🖓 🖓
No. No. <th>Features Feature polyline polyline polyline</th> <th>Direction 275.812 5.337 227.617 257.465</th> <th>Length 152.746 121.847 98.55 110.32</th> <th>Size <null> <null> <null></null></null></null></th> <th>Color <null> <null> <null></null></null></null></th> <th>Label <null> <null> <null> <null></null></null></null></null></th> <th>File Mame: Files of Type: CSV shape file All Files ASCII File CSV shape file</th>	Features Feature polyline polyline polyline	Direction 275.812 5.337 227.617 257.465	Length 152.746 121.847 98.55 110.32	Size <null> <null> <null></null></null></null>	Color <null> <null> <null></null></null></null>	Label <null> <null> <null> <null></null></null></null></null>	File Mame: Files of Type: CSV shape file All Files ASCII File CSV shape file
+ 13	polyline	58.582	99.569	<null></null>	<null></null>	<null></null>	GML Files
20	polyline	24.205	105.926	<null></null>	<null></null>	<nuil></nuil>	Experimental KML Support
-	polyline	309.963	75.1	<null></null>	<null></null>	<null></null>	
4		stments Do	ock Me	- m	Cires 102	/B	

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

	MRO	rs Odyssey ((THEMIS)		ster	HIP	Log In/Register
Home Getting Started 👻	Documentation +	Dow nload JMARS	Open Source	References 👻	Forums	
Welcome to the IMAR	Tour the Interface		ALC: NO	ALL STREET	STO TORN	Search
	Tour the Layers	•	and the second	S. Marian.	1 March 1	
JMARS is an acronym that st	Release Notes	ing and Anal	ysis for Remote S	ensing. It is a ge	ospatial information sys	tem (GIS) developed by ASU's
Mars Space Flight Facility to	Tutorials	, nd data-anal	ysis tools to NAS.	A's orbiters, instr	ument team members, s	students of all ages, and the
general public.	JMARS Shortcut Keys					
JMARS Announcements	FAQ			Login		
2014/11/11 - JMARS Schedul 2014/09/19 - 3.1.6 JMARS up 2014/08/12 - JMARS 3.1.5 up	ed Downtime 11/15 odate is available odate is available			Username/Er	nail Address: * Passwo	rd: *
2014/06/20 - Bug fix, upgrad	de to JMARS 3.1.4.1			Log in		
<u> </u>	1.1.1.1.1	N	more	Create new acc	count Request new passwor	ď
Tour of the JMARS user inte	rface			JMARS Public	Downloads	
Introduction to JMARS Video Tutorial					The following JMARS ins system: Windows 64	taller is likely the best for your