Analysis of Mars Color Camera (MCC) of Mars Orbiter Mission (MOM)

STRUCTURE

Introduction:

About Mars Color Camera

Part:1

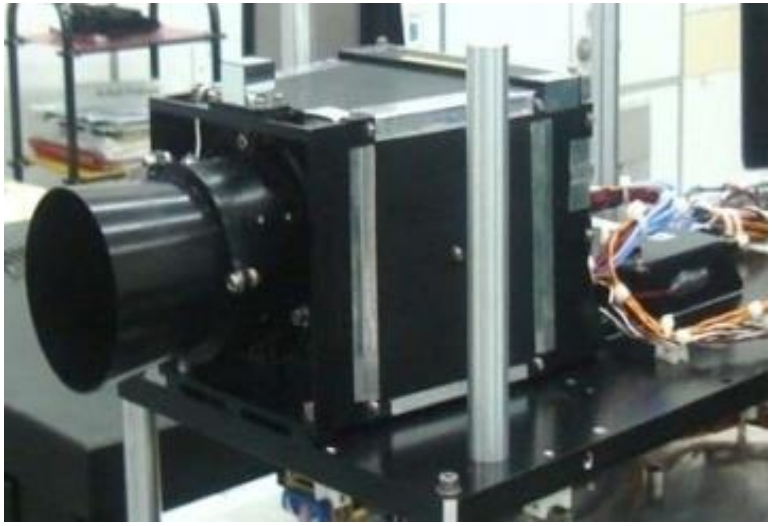
- Browsing of Mars Color Camera (MCC) data in Long Term Data Archive (LTA)
- Downloading of MCC data
- Getting meta-data information about MCC data

Part:2

- Loading MOLA global topography data as contextual information
- Loading of MCC data sets in GIS Software
- Loading of Mars Nomenclature
- Loading of other Global data sets(MDIM-2.1, MOC-WA) as contextual information
- Mapping of various morphological features

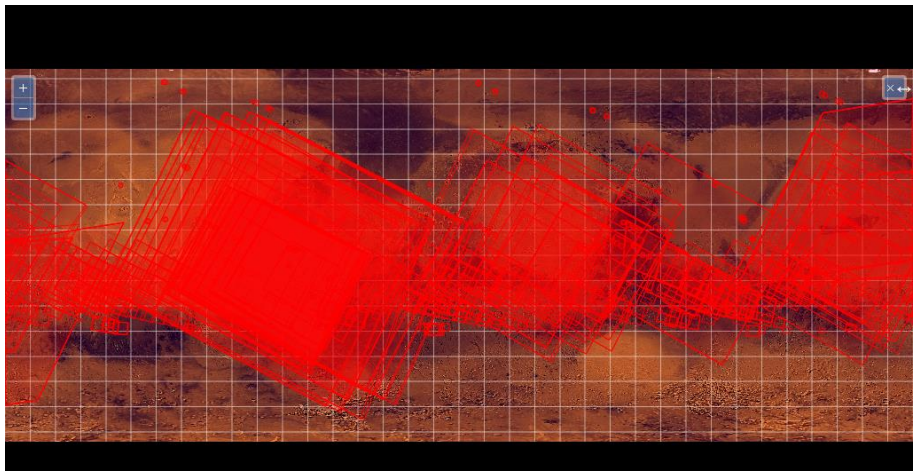
About Mars Color Camera (MCC)

Orbit of MOM: 443 x71149 km
Exposure time (ms) - Total 16 ground programmable exposures ranging from 34 ms to 490 ms
Spectral region (micrometer) = 0.4-0.7

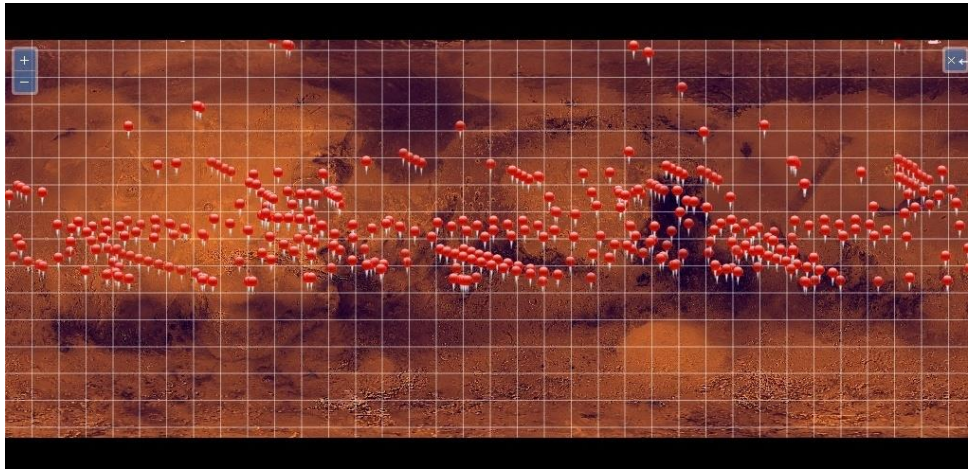


Mars Colour Camera

Coverage of MCC as on 09-05-2015

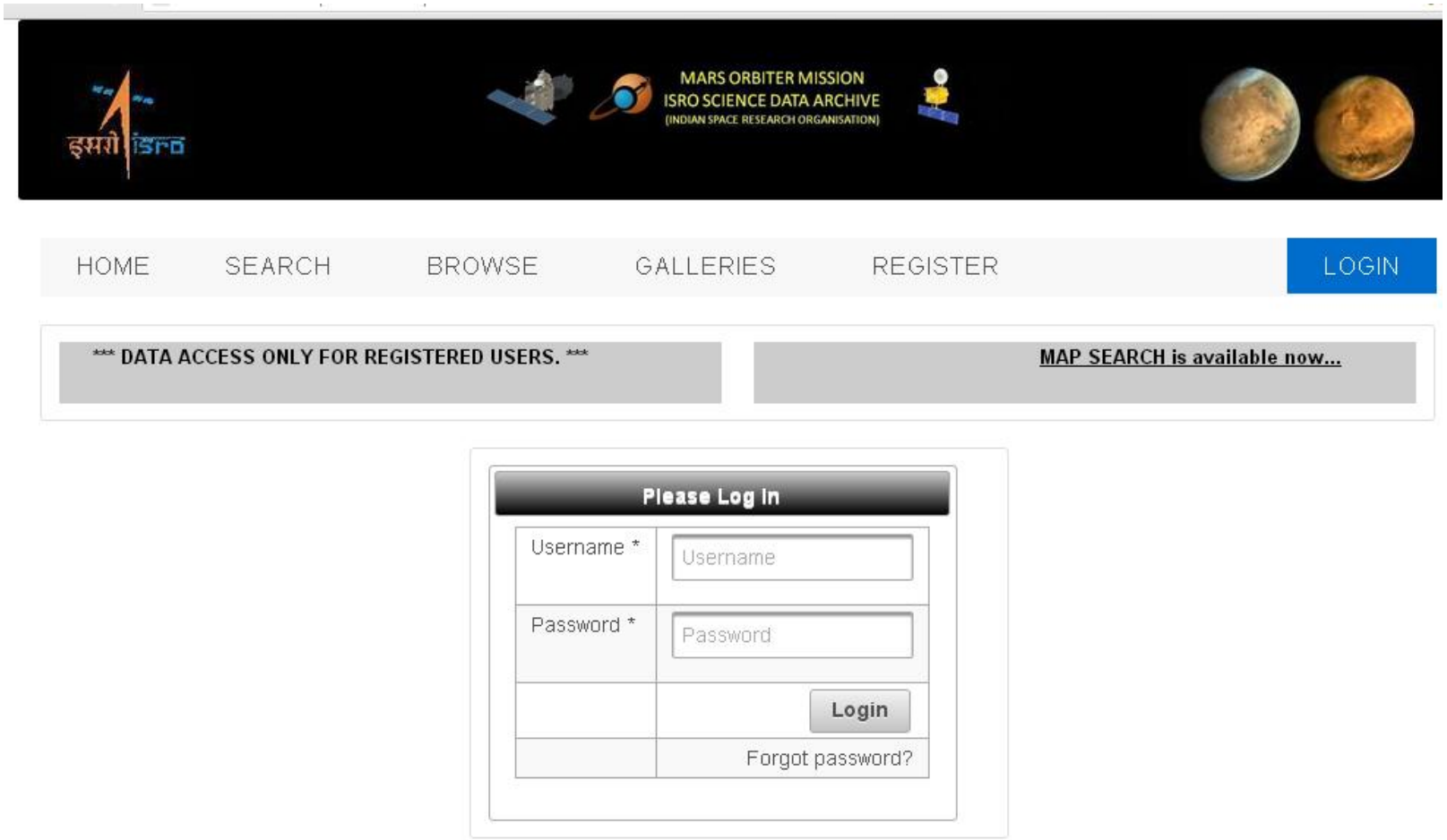


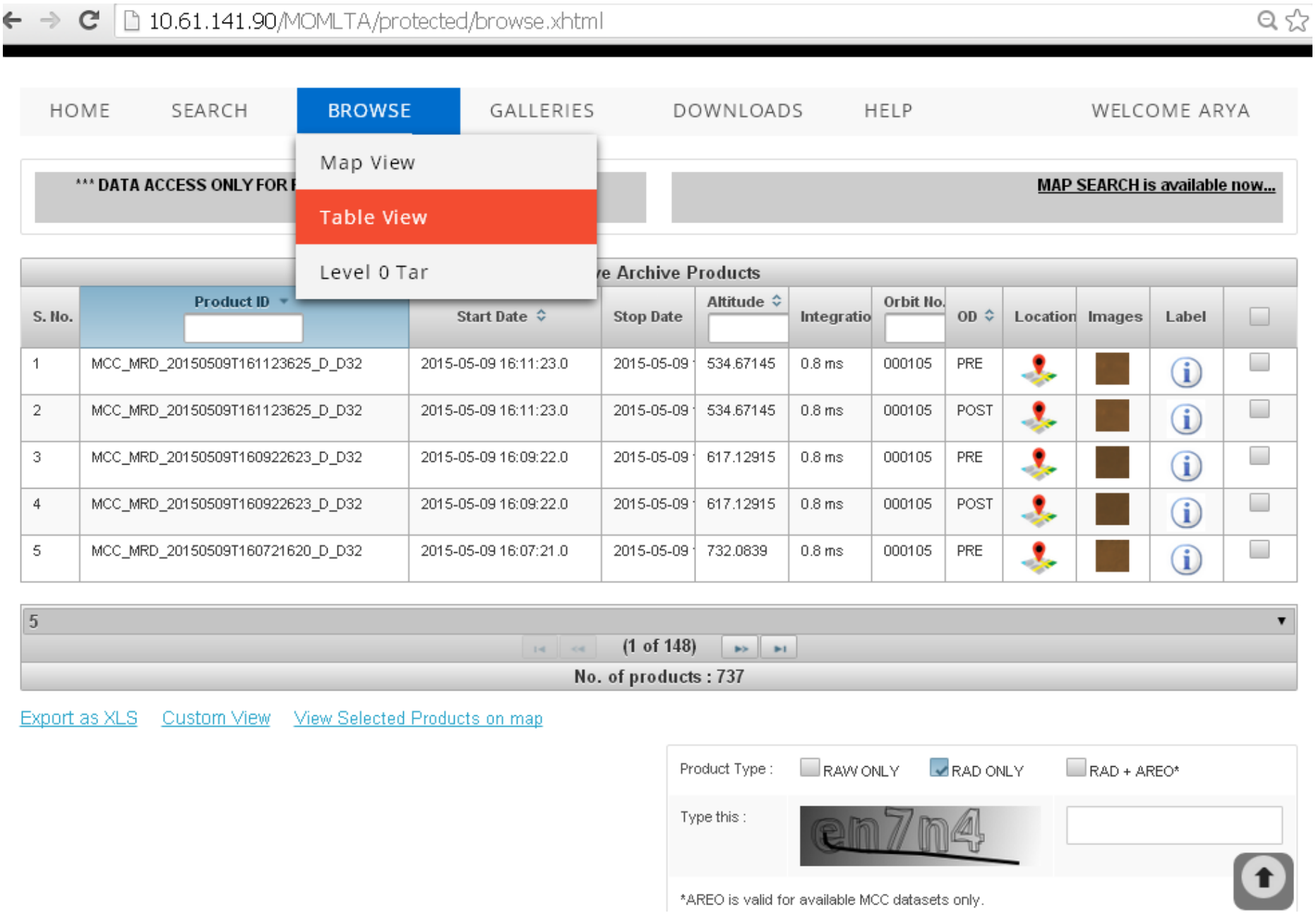
Foot prints of MCC shown as polygons



Foot prints of MCC shown as Pin/Point

Browsing MCC data in Long Term Data Archive (LTA)




10.61.141.90/MOMLTA/protected/browse.xhtml
HOME
SEARCH
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DOWNLOADS
HELP
WELCOME ARYA
Map View
Table View
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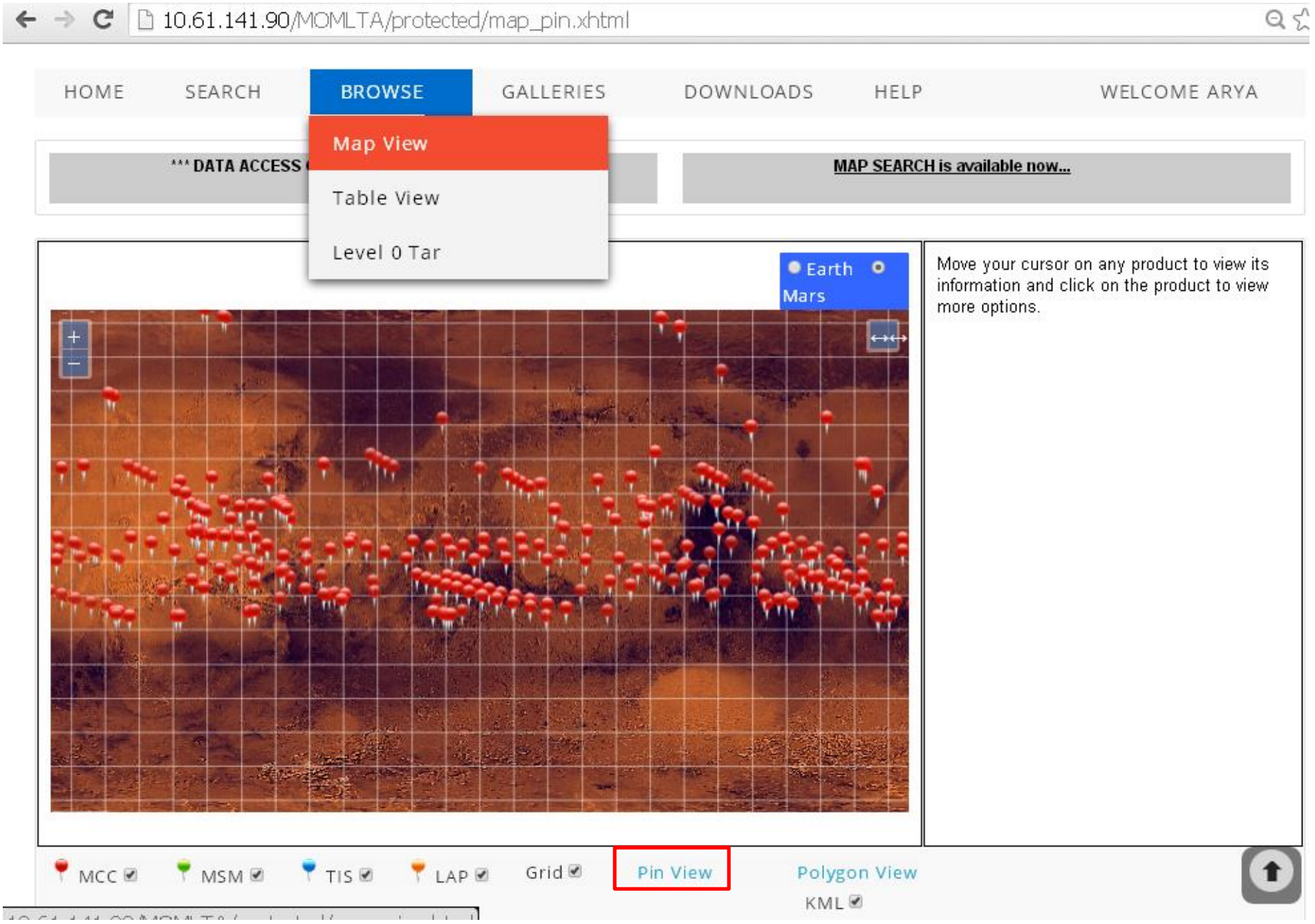
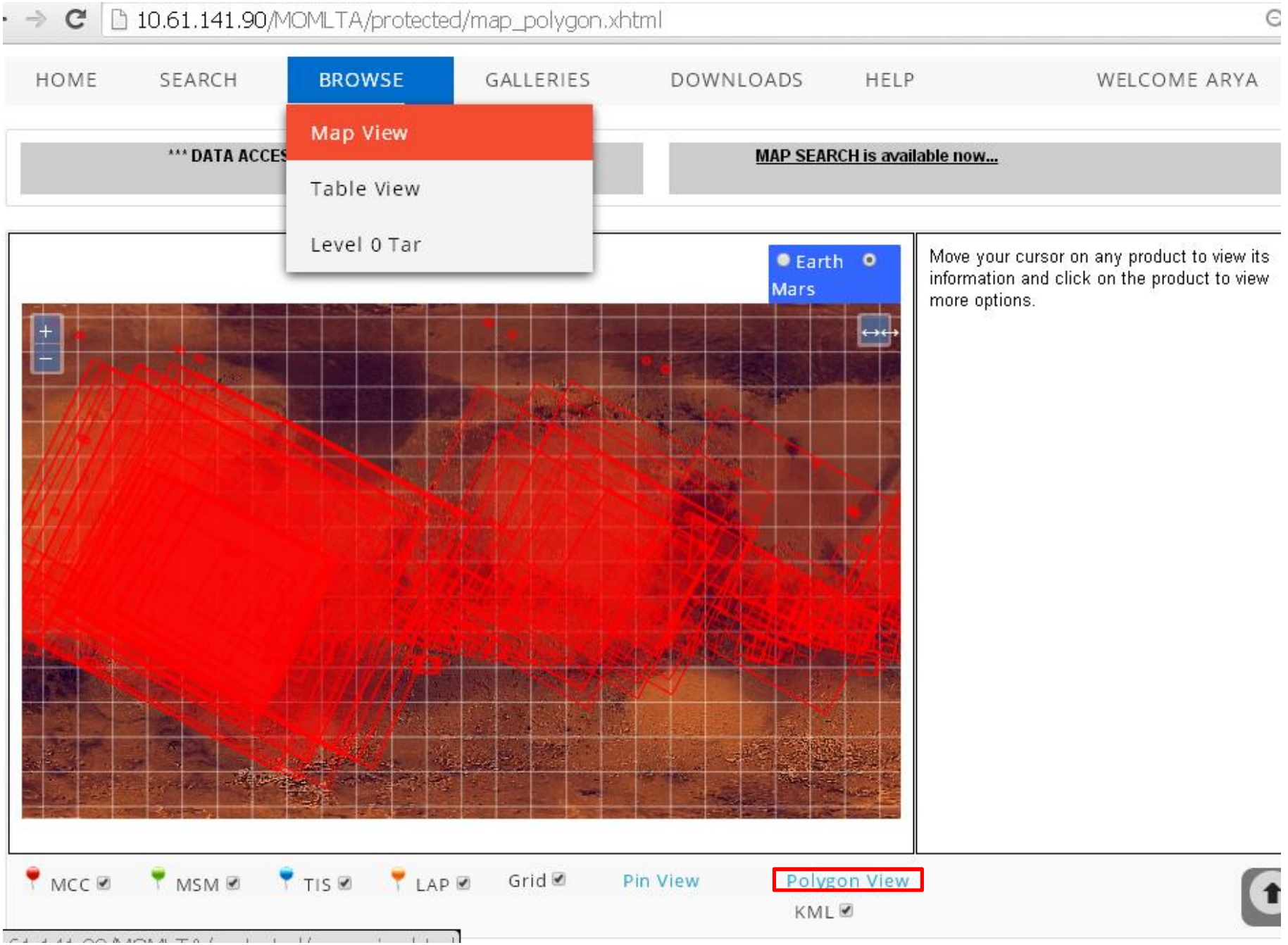
*** DATA ACCESS ONLY FOR
MAP SEARCH is available now...
ve Archive Products
S. No.
Product ID
Start Date
Stop Date
Altitude
Integratio
Orbit No.
OD
Location
Images
Label
1 MCC_MRD_20150509T161123625_D_D32 2015-05-09 16:11:23.0 2015-05-09 534.67145 0.8 ms 000105 PRE
2 MCC_MRD_20150509T161123625_D_D32 2015-05-09 16:11:23.0 2015-05-09 534.67145 0.8 ms 000105 POST
3 MCC_MRD_20150509T160922623_D_D32 2015-05-09 16:09:22.0 2015-05-09 617.12915 0.8 ms 000105 PRE
4 MCC_MRD_20150509T160922623_D_D32 2015-05-09 16:09:22.0 2015-05-09 617.12915 0.8 ms 000105 POST
5 MCC_MRD_20150509T160721620_D_D32 2015-05-09 16:07:21.0 2015-05-09 732.0839 0.8 ms 000105 PRE
5
(1 of 148)
No. of products : 737
Export as XLS
Custom View
View Selected Products on map
Product Type :
RAW ONLY
RAD ONLY
RAD + AREO*
Type this :
en7n4
*AREO is valid for available MCC datasets only.

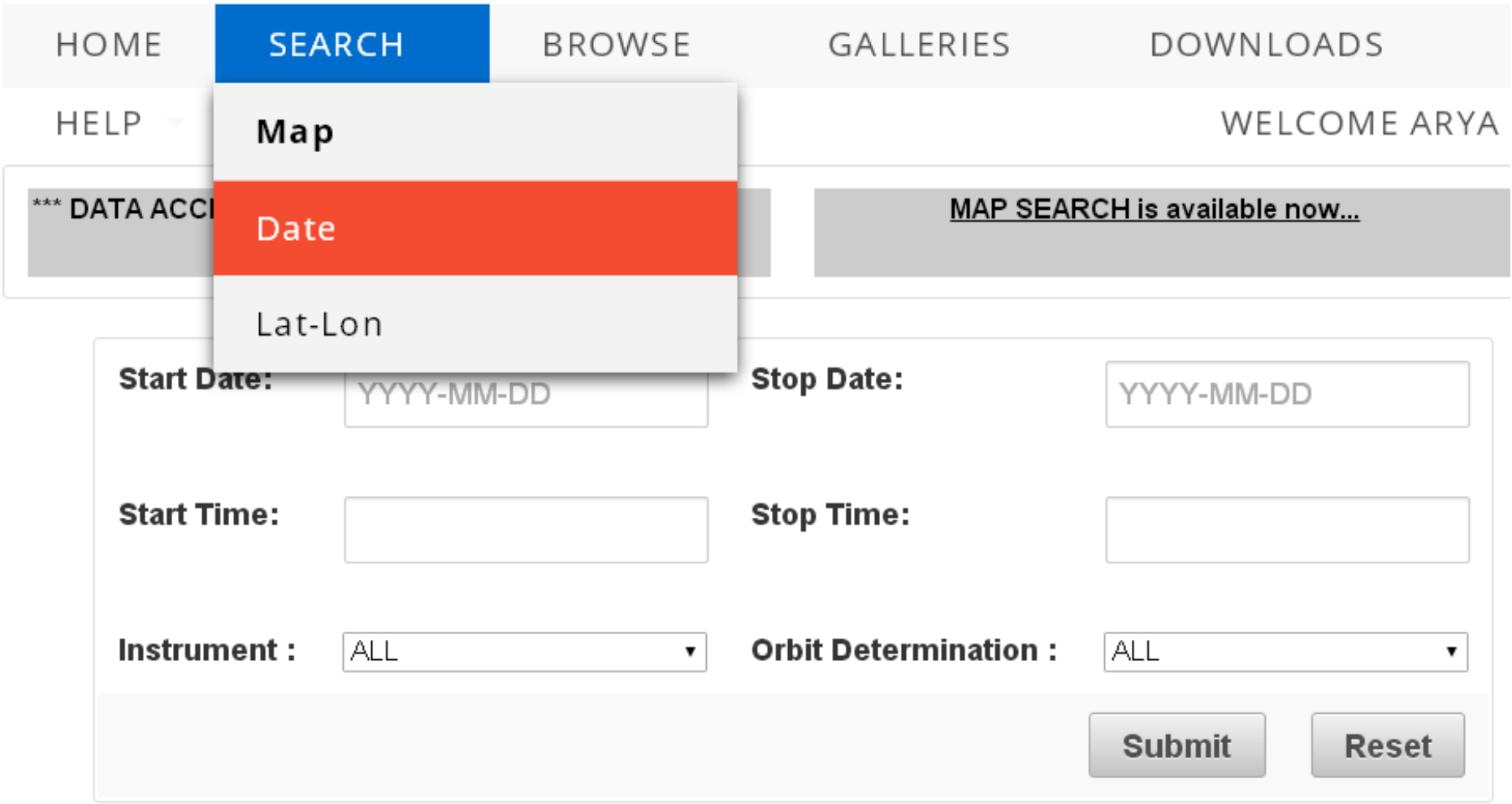
MAP view of MCC data coverage : Pin view



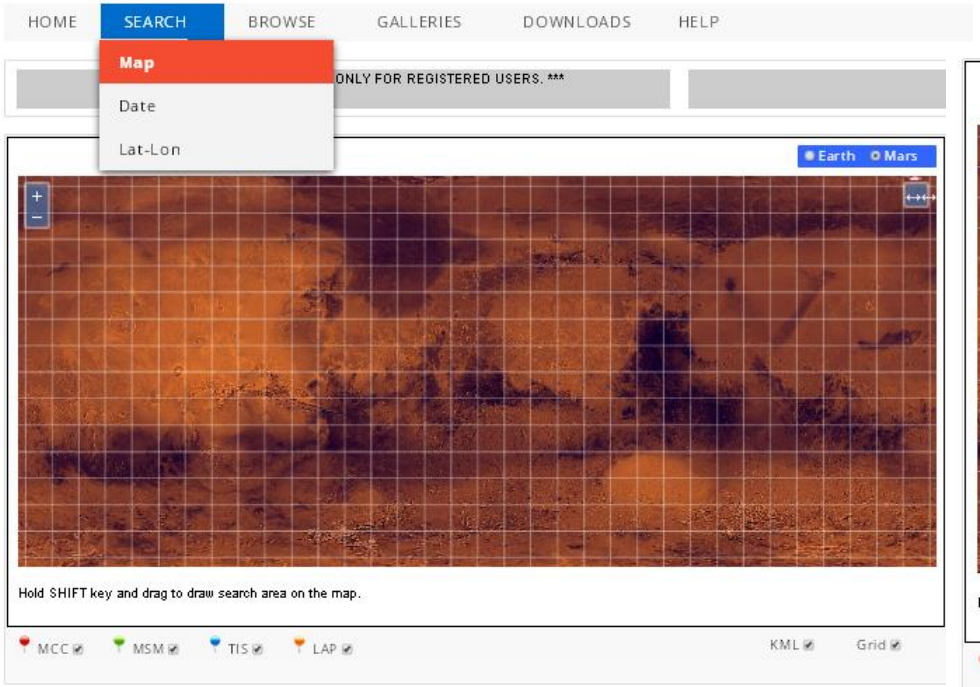
MAP view of MCC data coverage : Polygon view

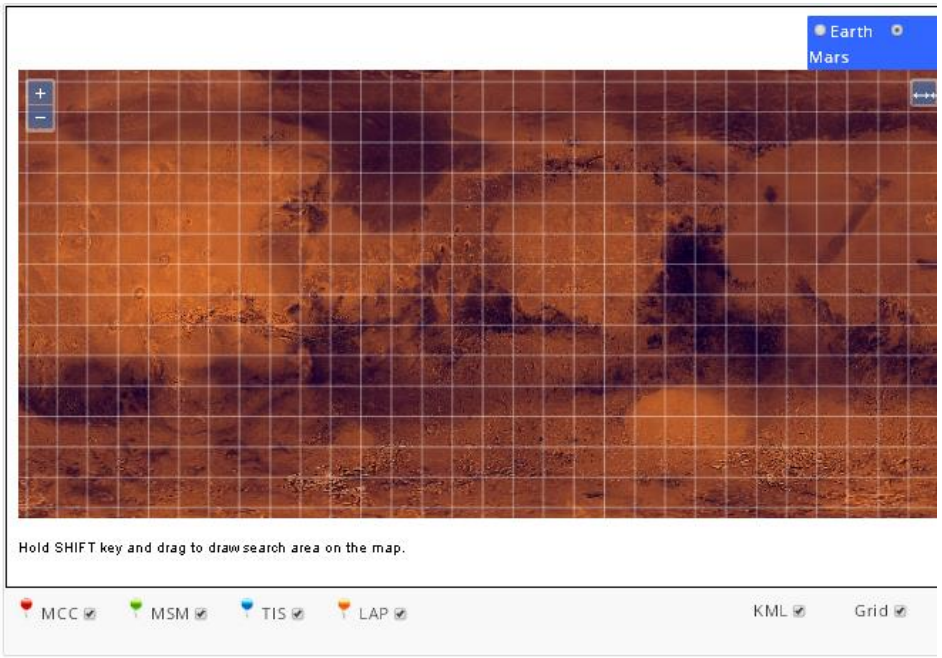


MCC data search by Date

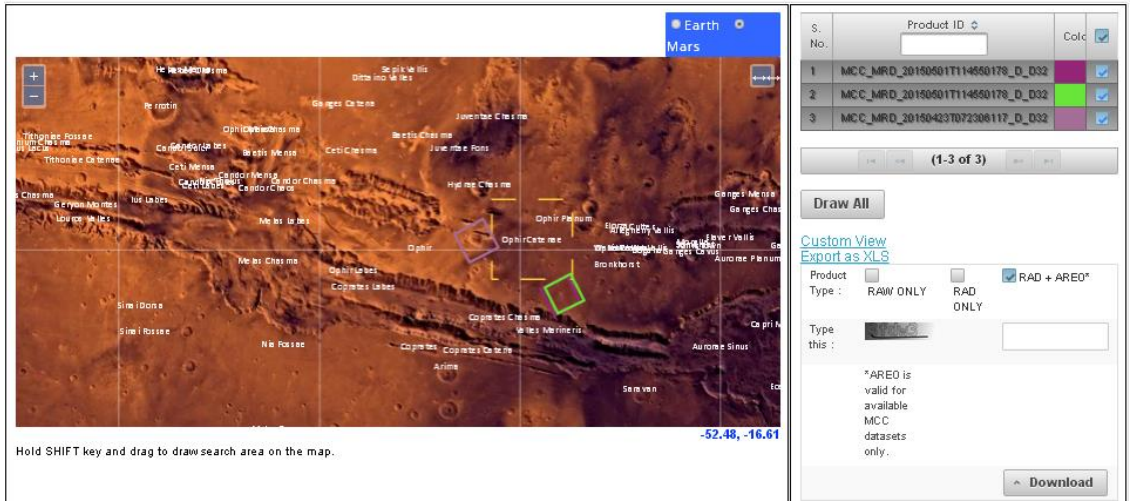


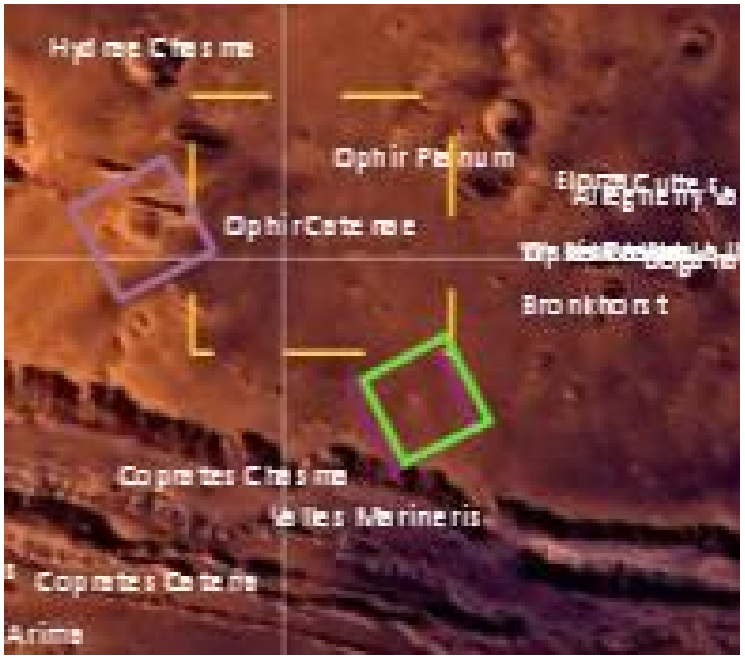
MCC data browse using Map search
Case study: Ophir Catena from Valles Marineris region

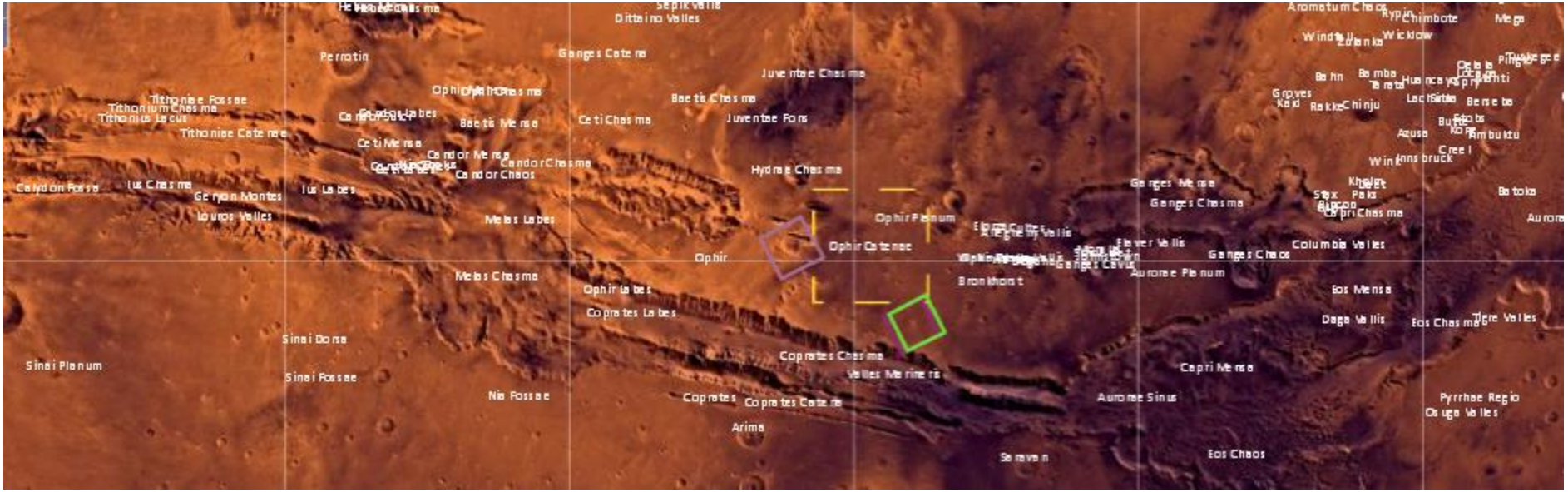




MCC data browse using Map search
Case study: Ophir Catena from Valles Marineris region

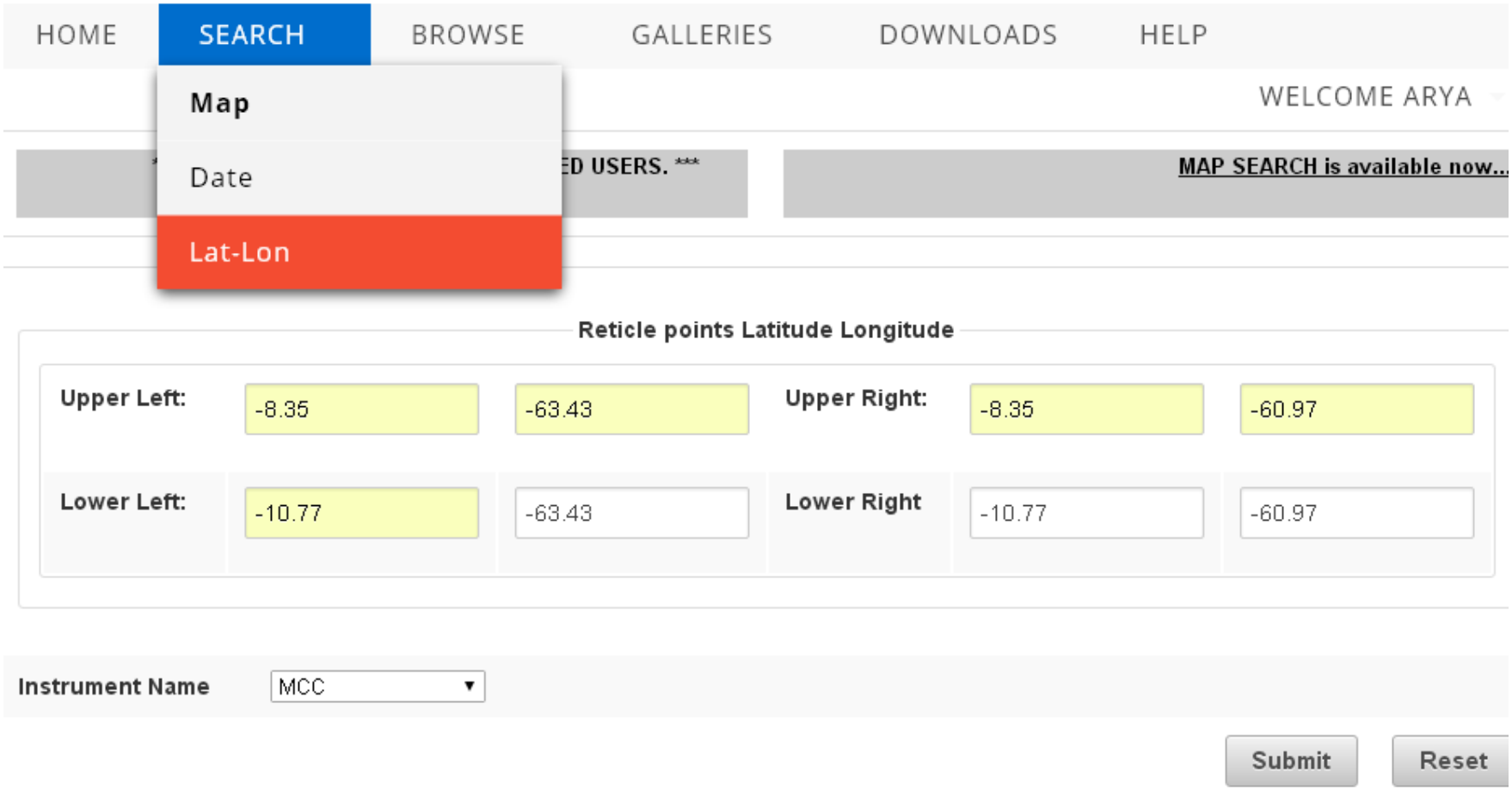






MCC data search by giving Longitude and Latitude extent of Region of Interest

Case study: Pital crater from Valles Marineris region



Lat-Lon Query Results

S.	Product ID	Upper Left (	Upper Right	Lower Left (	Lower Right	Altitude	Location	Images	Label	
1	MCC_MRD_20150423T072306117_D_D32	-9.189713 ,	-8.433133 ,	-10.618603	-9.864509 ,	852.4337				
2	MCC_MRD_20141110T172436240_D_GDS	5.791166 , -	-4.6945224	-13.399525	-24.449337	11992.824				
3	MCC_MRD_20141110T172436240_D_GDS	5.9195805 ,	-4.5663285	-13.27576 ,	-24.314198	11990.726				

No. of products : 3

Export as XLS Custom View View Selected Products on map

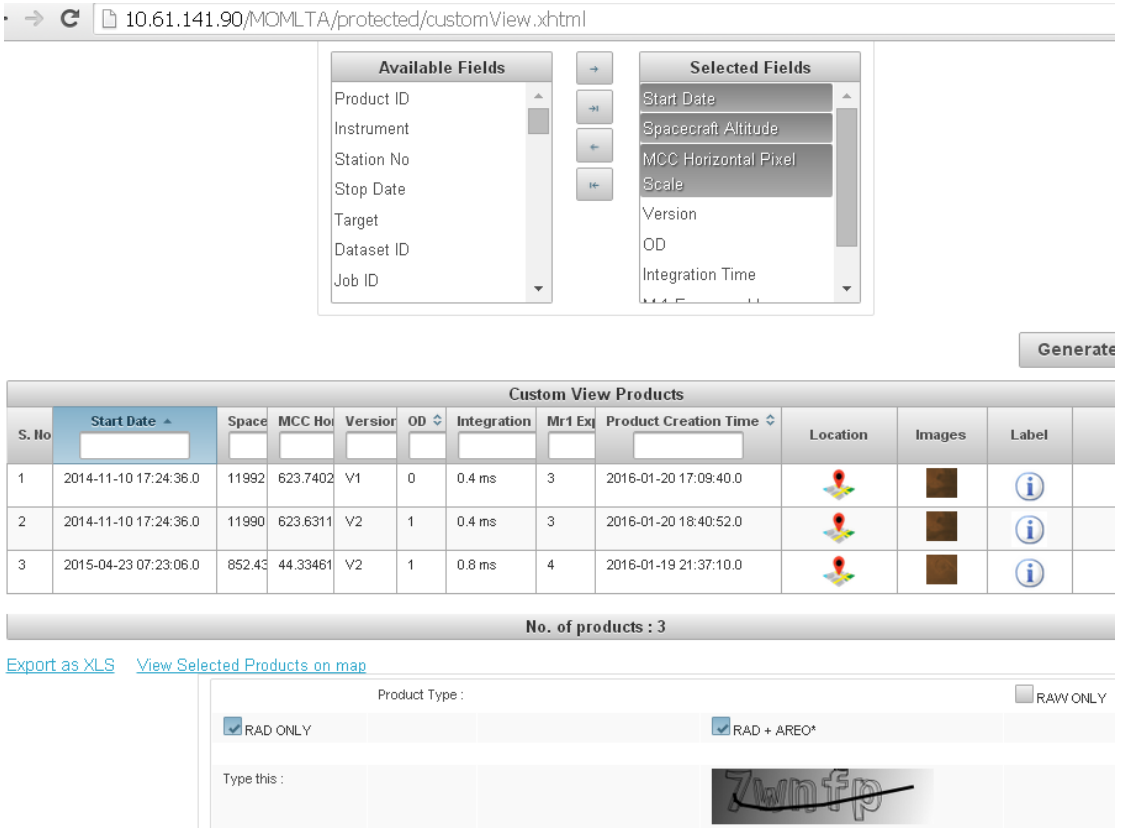
Product Type : RAW ONLY RAD ONLY RAD + AREO*

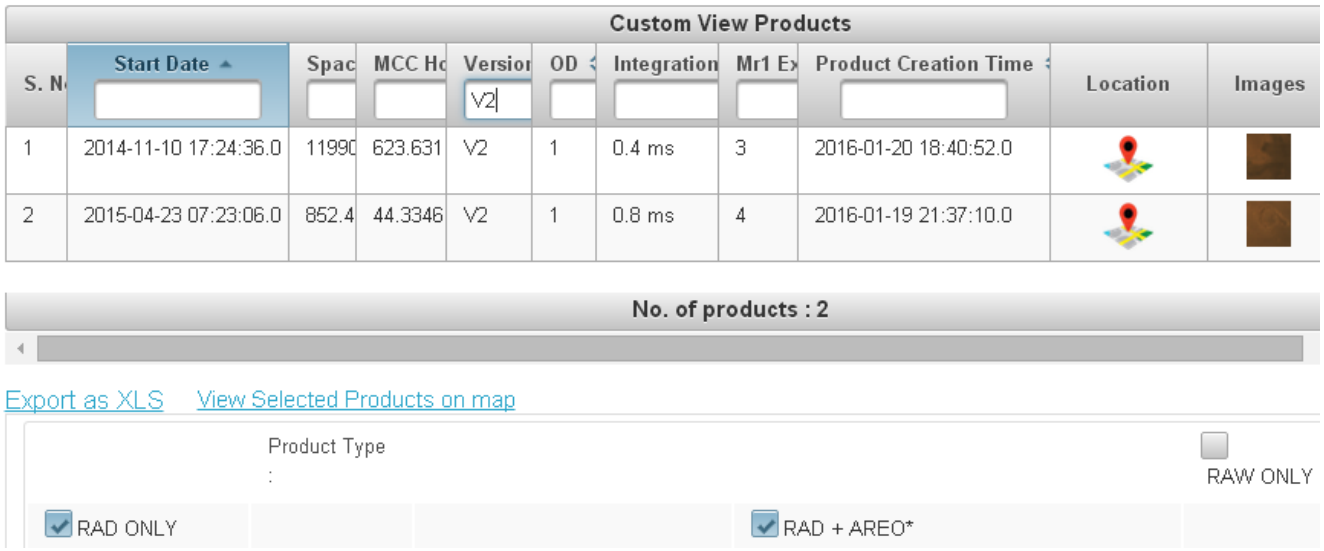
Type this : 72haw

*AREO is valid for available MCC datasets only.

Download

Select Post OD (1)





Custom View Products

S. No	Start Date	Space	MCC H	Version	OD	Integration	Mr1 Ex	Product Creation Time	Location	Images	Label	
				V2								
1	2014-11-10 17:24:36.(	11990	623.63	V2	1	0.4 ms	3	2016-01-20 18:40:52.0				
2	2015-04-23 07:23:06.(	852.43	44.334	V2	1	0.8 ms	4	2016-01-19 21:37:10.0				

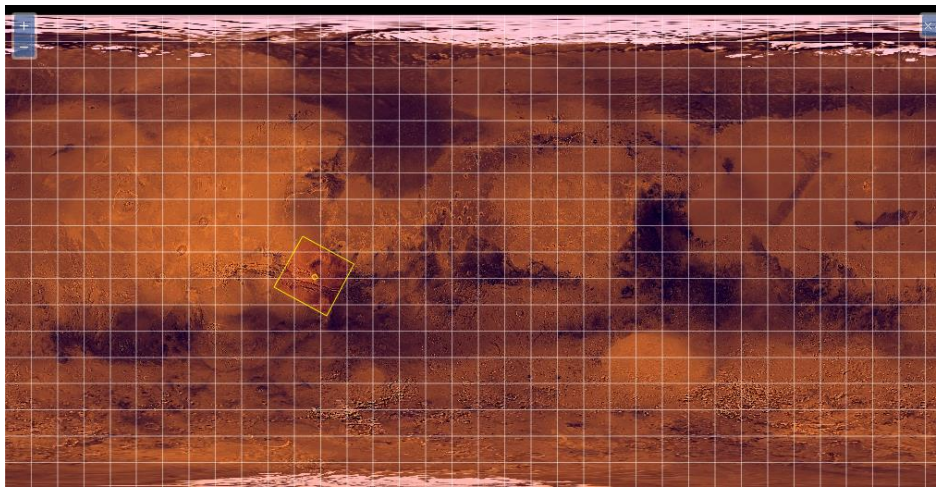
No. of products : 2

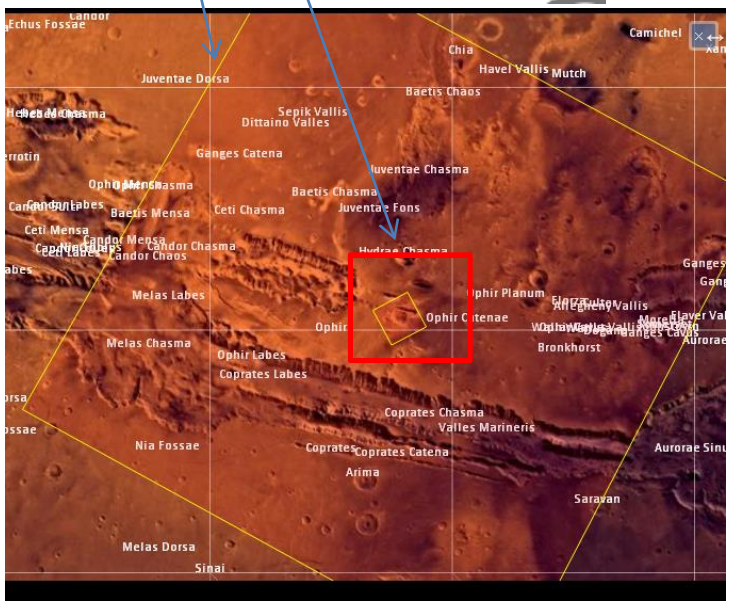
Export as XLS View Selected Products on map

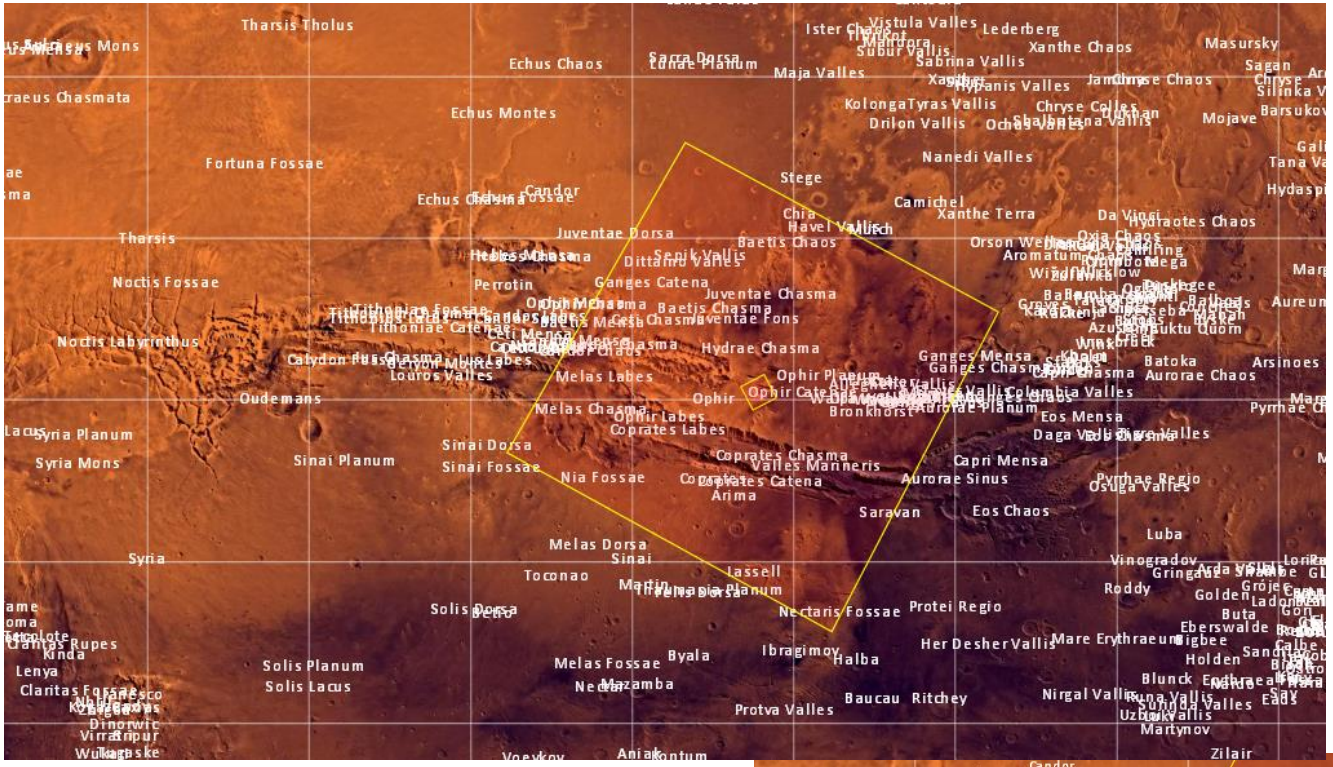
Product Type : RAW ONLY

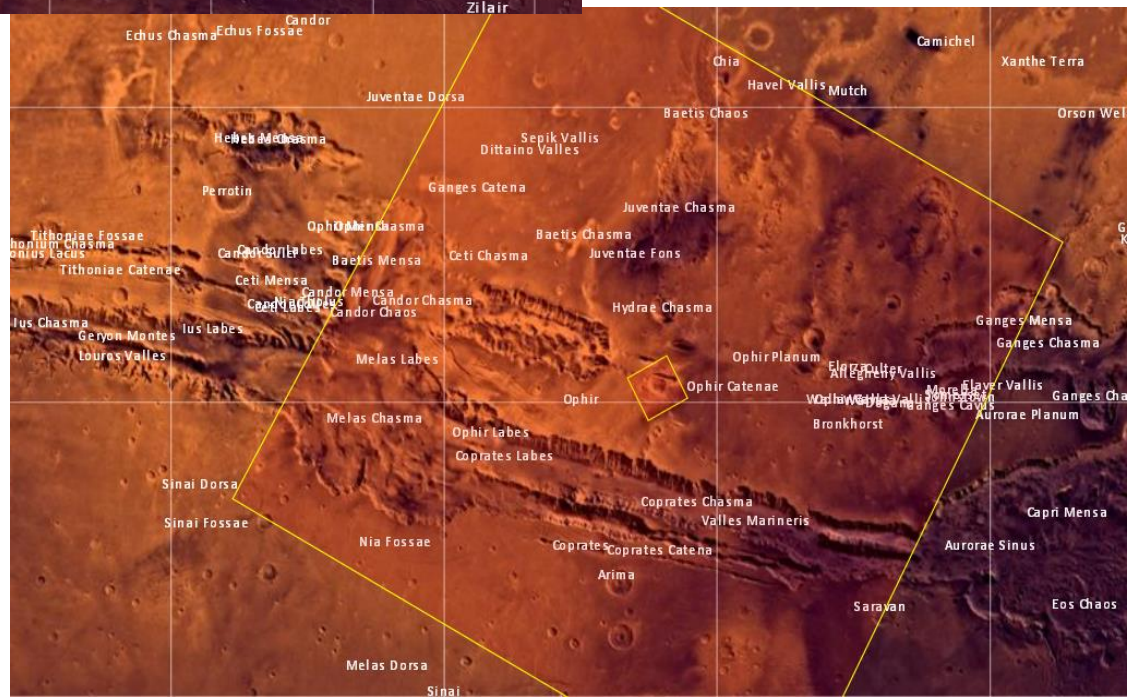
RAD ONLY RAD + AREO*

Type this :









Footprints of Mars Color Camera data sets over Pital crater in ophir planum region

This region having both high and coarse resolution data sets of MCC

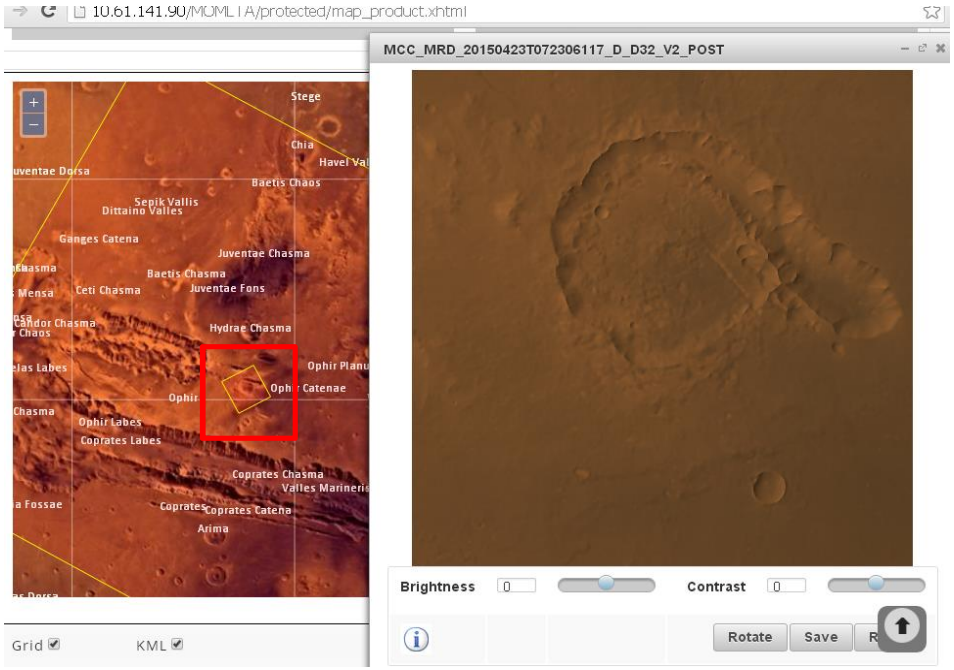
Custom View Products

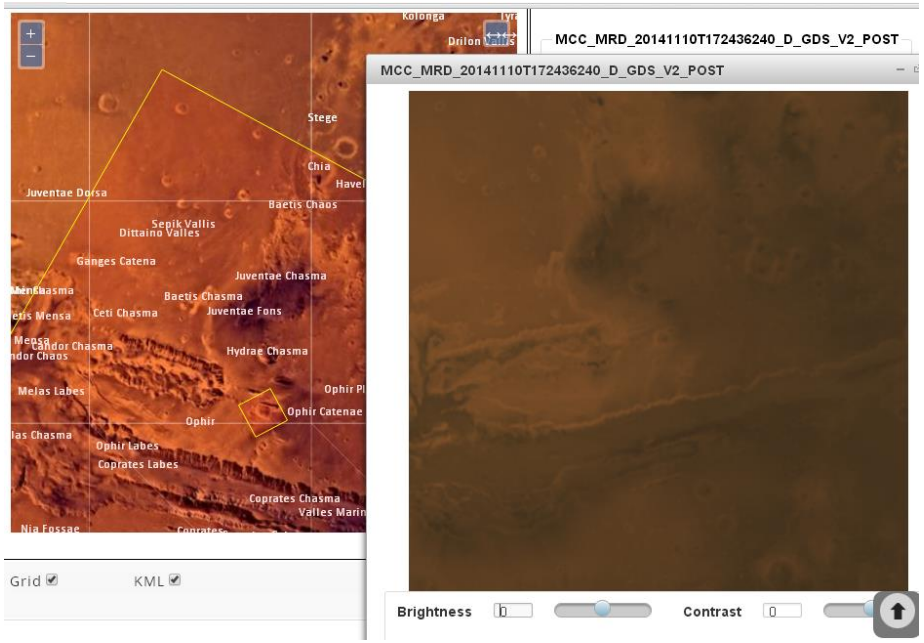
S. No	Start Date	Space	MCC H	Version	OD	Integration	Mr1 Ex	Product Creation Time	Location	Images	Label	
				V2								
1	2014-11-10 17:24:36.(	11990	623.63	V2	1	0.4 ms	3	2016-01-20 18:40:52.0				
2	2015-04-23 07:23:06.(	852.43	44.334	V2	1	0.8 ms	4	2016-01-19 21:37:10.0				

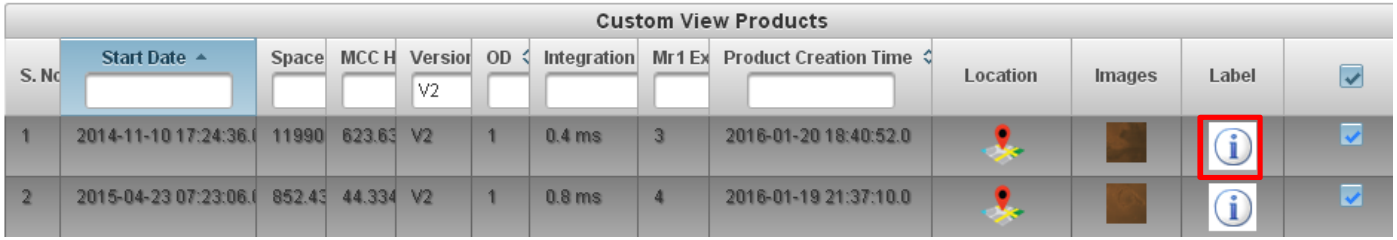
No. of products : 2

Export as XLS View Selected Products on map

Product Type : RAW ONLY







Meta information about data: **Details about mission phase, start time and Exposure ID, integration time**

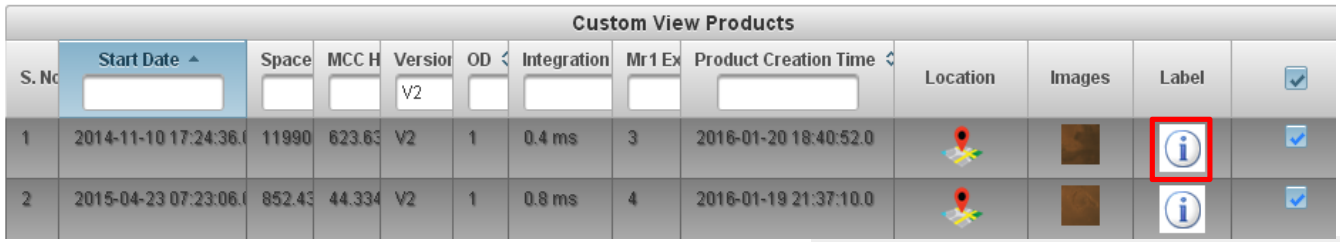
MCC_MRD_20141110T172436240_D_GDS_V2_POST

```
PDS_VERSION_ID              = PDS3
LABEL_REVISION_NOTE         = "2013-04-22, MR1-ISRO-SAC-DP-TEAM"
/* FILE CHARACTERISTICS */
FILE_NAME                   = "MCC_MRD_20141110T172436240_D_GDS.IMG"
RECORD_TYPE                 = FIXED_LENGTH
RECORD_BYTES                = 8192
FILE_RECORDS                = 2048
/* POINTERS TO DATA OBJECTS */
^IMAGE                      = "MCC_MRD_20141110T172436240_D_GDS.IMG"
/* IDENTIFICATION DATA ELEMENTS */
RELEASE_ID                  = 1
DATA_SET_ID                 = "MR1ORB-M-MCC-3-MOP-RDR-RAD-V1.0"
DATA_SET_NAME               = "MR1 ORBITER MARS MCC 3 MOP RDR RAD V1.0
PRODUCT_ID                  = MCC_MRD_20141110T172436240_D_GDS
PRODUCT_TYPE                = "RDR"
PRODUCER_ID                 = "MR1-ISRO-SAC-DP-TEAM"
PRODUCT_CREATION_TIME       = 2016-01-20T18:40:52.052
PRODUCER_FULL_NAME          = "MARS 1 ISRO SAC DATA PROCESSING
TEAM"
PRODUCER_INSTITUTION_NAME   = "
 SPACE APPLICATIONS CENTRE ISRO, AHMEDABAD INDIA
 "
PROCESSING_LEVEL_ID         = "3"
PROCESSING_LEVEL_DESC       = "2 Experiment Data Record,
                              3 Reduced Data Record"
MISSION_ID                  = "MR1"
MISSION_NAME                = "MARS 1"
MISSION_PHASE_NAME          = "MARS ORBITAL PHASE"
SPACECRAFT_ORIENTATION      = 0
SPACECRAFT_ORIENTATION_DESC = "0 means descending,
                              1 means ascending"
SPACECRAFT_POINTING_MODE    = NULL
```

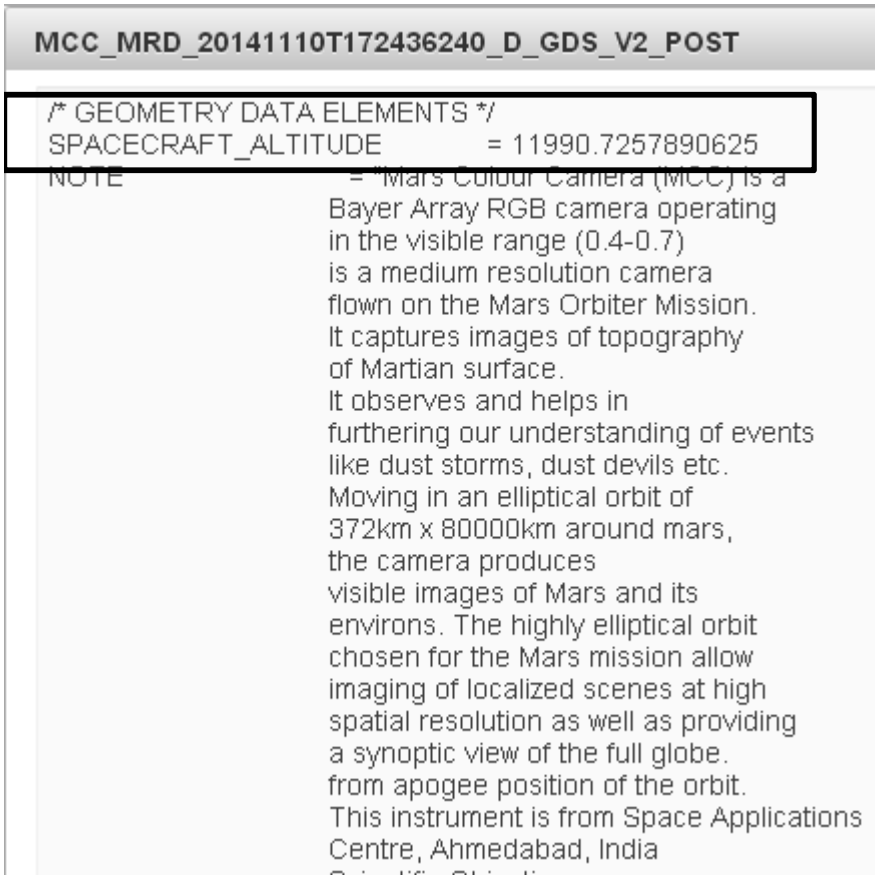
_MCC_MRD_20141110T172436240_D_GDS_V2_POST

```
INSTRUMENT_HOST_ID          = "MR1ORB"
INSTRUMENT_HOST_NAME        = "MR1 ORBITER"
TARGET_NAME                 = "MARS"
TARGET_TYPE                 = "PLANET"
DSN_STATION_NUMBER          = GDS
START_TIME                  = 2014-11-10T17:24:36.240
STOP_TIME                   = 2014-11-10T17:24:36.240
START_ORBIT_NUMBER          = 000039
STOP_ORBIT_NUMBER           = 000039
IMAGE_OBSERVATION_TYPE      = "REGULAR"
/* DESCRIPTIVE DATA ELEMENTS */
INSTRUMENT_ID               = "MCC"
INSTRUMENT_NAME             = "MARS COLOUR CAMERA"
INSTRUMENT_TYPE             = "IMAGING CAMERA"
INSTRUMENT_PARAMETER_NAME   = "RADIANCE"
INSTRUMENT_PARAMETER_UNIT   = "
 MILLIWATT_CENTIMETER**-2_STERADIAN**-1_MICROMETER**-1
 "
INST_CMPRS_NAME             = "ISRO PROPRIETRY"
FILTER_NAME                 = "BAYER FILTER"
FILTER_NUMBER               = "3"
FILTER_TEMPERATURE          = "N/A"
FILTER_TYPE                 = "ORGANIC"
CENTER_FILTER_WAVELENGTH    = "N/A"
MR1:EXPOSURE_ID             = 3
LINE_EXPOSURE_DURATION      = "0.4 <ms>"
FOCAL_PLANE_TEMPERATURE     = "N/A"
DETECTOR_ID                 = "CMV4000"
DETECTOR_DESC               = "
 CMV4000 - a high resolution, high speed snapshot colour CMOS image sensor
 "
DETECTOR_TYPE               = "CMOS IMAGE SENSOR"
```

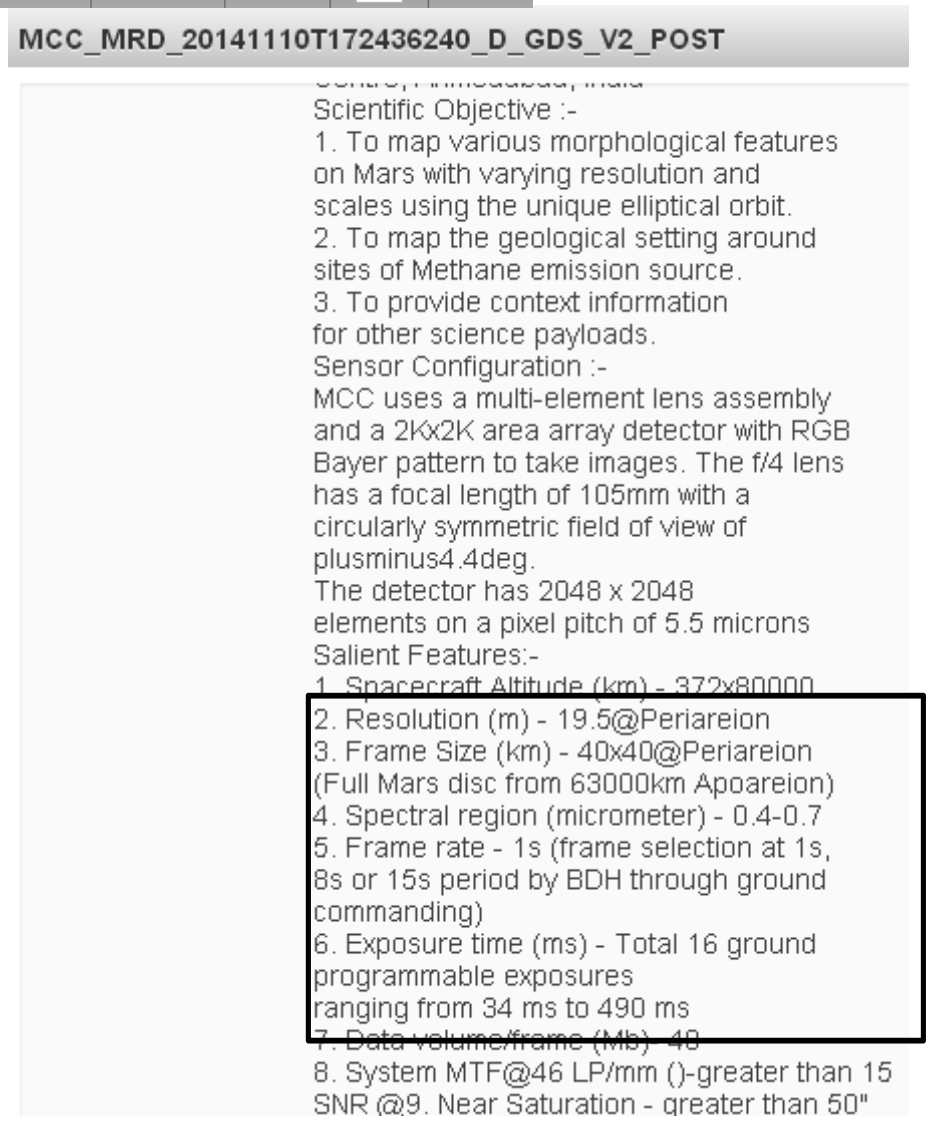
Continue....



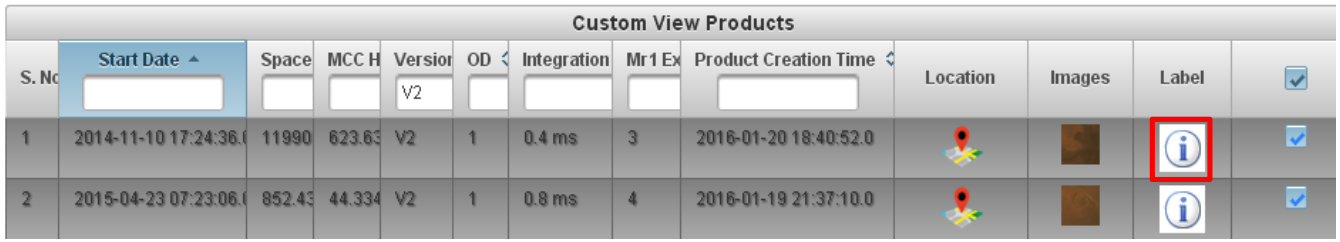
.....Continue



Information about S/C Altitude in km



Information about Sensor parameters



.....Continue

MCC_MRD_20141110T172436240_D_GDS_V2_POST

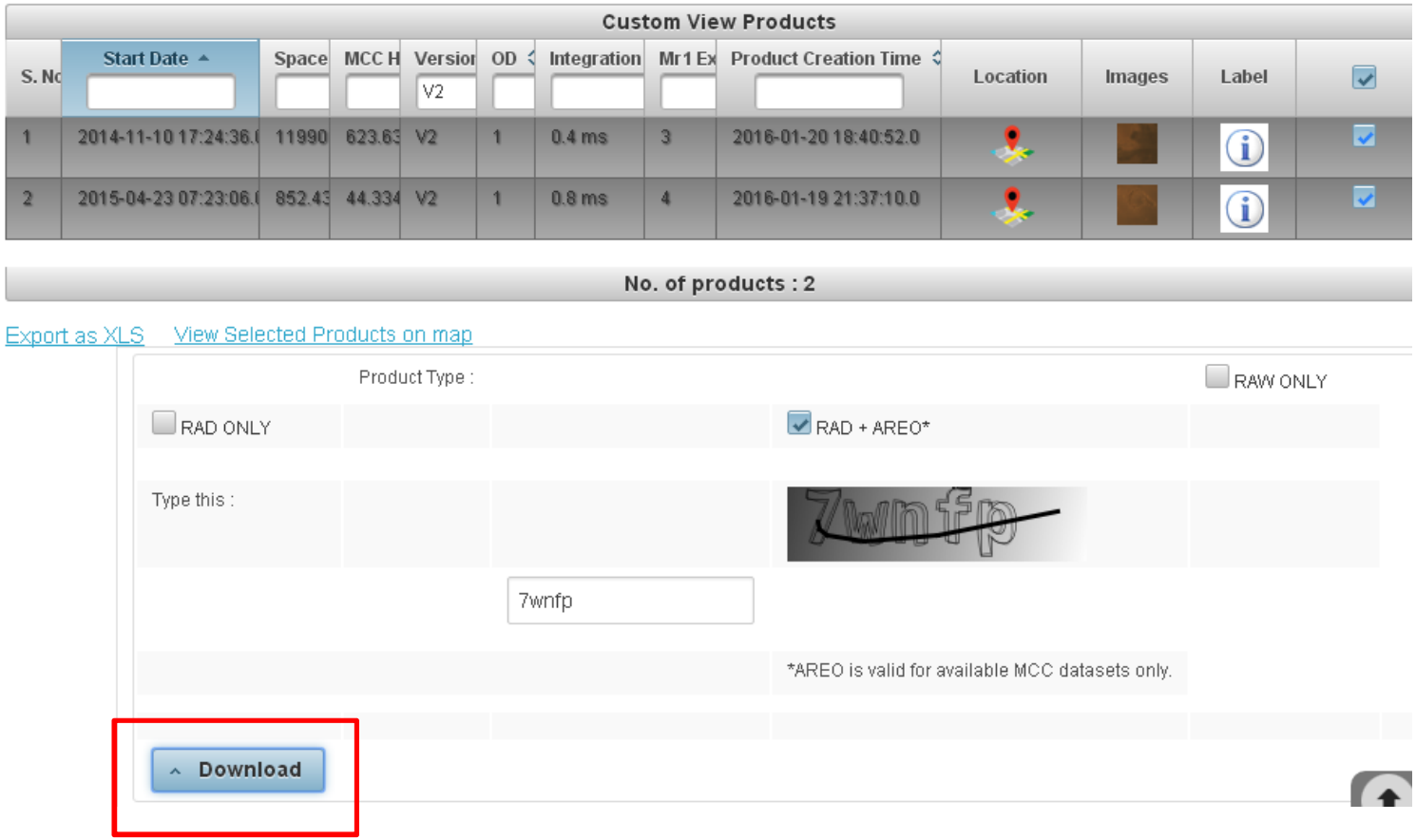
```
/* RETICLE POINT LAT-LON INFORMATION  */
GROUP                  = UPPER_LEFT_RETICLE_POINT
RETICLE_POINT_NUMBER         = "1"
RETICLE_POINT_LATITUDE       = 5.9195803098
RETICLE_POINT_LONGITUDE      = 293.2748978860
END_GROUP                = UPPER_LEFT_RETICLE_POINT
GROUP                  = UPPER_MID_RETICLE_POINT
RETICLE_POINT_NUMBER         = "2"
RETICLE_POINT_LATITUDE       = 0.6240662605
RETICLE_POINT_LONGITUDE      = 302.5348472431
END_GROUP                = UPPER_MID_RETICLE_POINT
GROUP                  = UPPER_RIGHT_RETICLE_POINT
RETICLE_POINT_NUMBER         = "3"
RETICLE_POINT_LATITUDE       = -4.5663286733
RETICLE_POINT_LONGITUDE      = 312.6550636945
END_GROUP                = UPPER_RIGHT_RETICLE_POINT
GROUP                  = MID_LEFT_RETICLE_POINT
RETICLE_POINT_NUMBER         = "4"
RETICLE_POINT_LATITUDE       = -3.8308795682
RETICLE_POINT_LONGITUDE      = 288.0341674576
END_GROUP                = MID_LEFT_RETICLE_POINT
GROUP                  = MIDDLE_MID_RETICLE_POINT
RETICLE_POINT_NUMBER         = "5"
RETICLE_POINT_LATITUDE       = -9.0632666903
RETICLE_POINT_LONGITUDE      = 297.2905208339
END_GROUP                = MIDDLE_MID_RETICLE_POINT
GROUP                  = MID_RIGHT_RETICLE_POINT
RETICLE_POINT_NUMBER         = "6"
RETICLE_POINT_LATITUDE       = -14.3816647885
RETICLE_POINT_LONGITUDE      = 307.4626898715
END_GROUP                = MID_RIGHT_RETICLE_POINT
GROUP                  = LOWER_LEFT_RETICLE_POINT
```

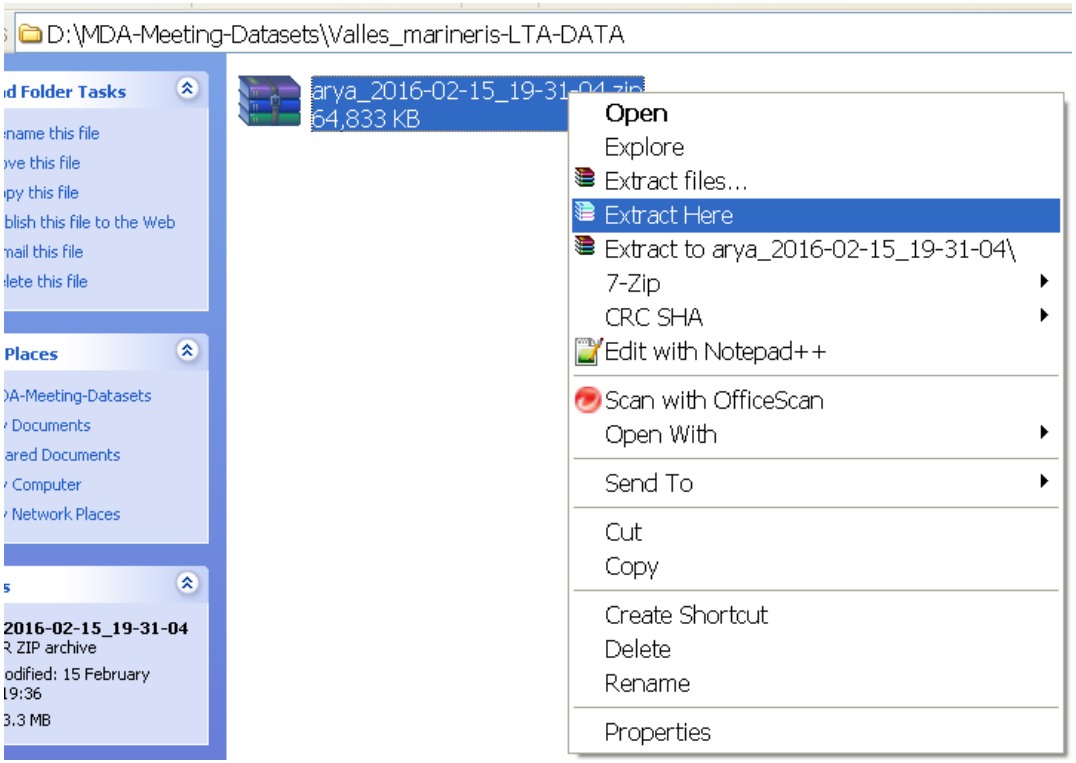
MCC_MRD_20141110T172436240_D_GDS_V2_POST

```
RETICLE_POINT_NUMBER         = "9"
RETICLE_POINT_LATITUDE       = -24.3141984835
RETICLE_POINT_LONGITUDE      = 302.3444278499
END_GROUP                = LOWER_RIGHT_RETICLE_POINT
/* IMAGE DATA OBJECT DESCRIPTION */
OBJECT                   = IMAGE
LINES                  = 2048
LINE_SAMPLES                 = 2048
SAMPLE_TYPE                  = PC_REAL
SAMPLE_BITS                = 32
SAMPLE_BIT_MASK              = "<2#11111111111111111111111111111111>"
MAXIMUM                  = "6.390226,4.977305,3.245738"
MINIMUM                  = "2.785033,1.877015,0.556306"
MEAN                   = "4.201804,2.556782,1.186578"
STANDARD_DEVIATION           = "0.752628,0.348577,0.127541"
LINE_DISPLAY_DIRECTION       = "DOWN"
SAMPLE_DISPLAY_DIRECTION     = "RIGHT"
HORIZONTAL_PIXEL_SCALE       = "623.6311285092 <m/pixel>"
VERTICAL_PIXEL_SCALE         = "623.6311285092 <m/pixel>"
CHECKSUM                 = 2355130669
BANDS                  = 3
BAND_SEQUENCE                = "RED, GREEN, BLUE"
BAND_STORAGE_TYPE            = "BAND_SEQUENTIAL"
MR1:MCC_RED_RADIANCE_MAX     = 10.292755
MR1:MCC_RED_RADIANCE_MIN     = -0.237878
MR1:MCC_GREEN_RADIANCE_MAX   = 9.529778
MR1:MCC_GREEN_RADIANCE_MIN   = -0.266681
MR1:MCC_BLUE_RADIANCE_MAX    = 8.805314
MR1:MCC_BLUE_RADIANCE_MIN    = -0.230326
END_OBJECT               = IMAGE
END
```

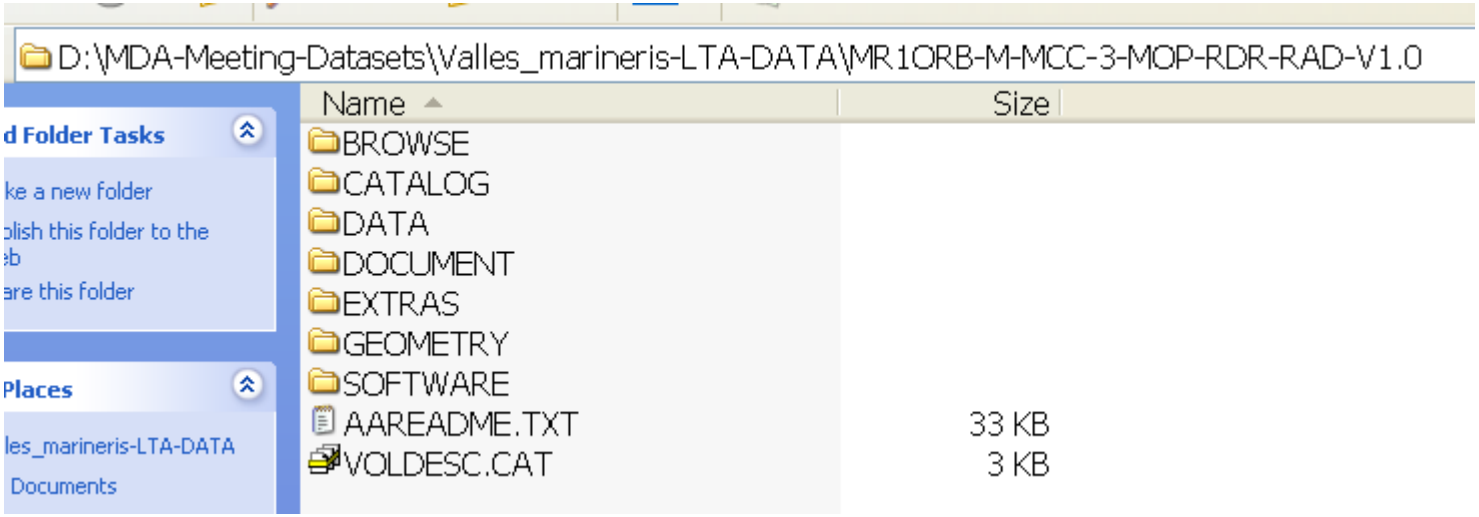
Information about 9 Corner co-ordinates, Spatial resolution

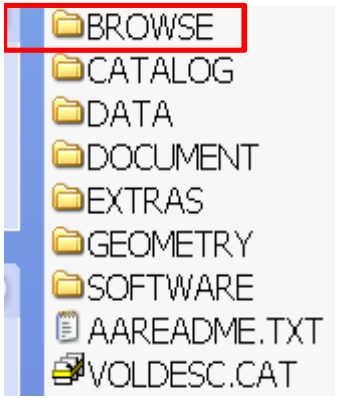
Downloading of selected data sets



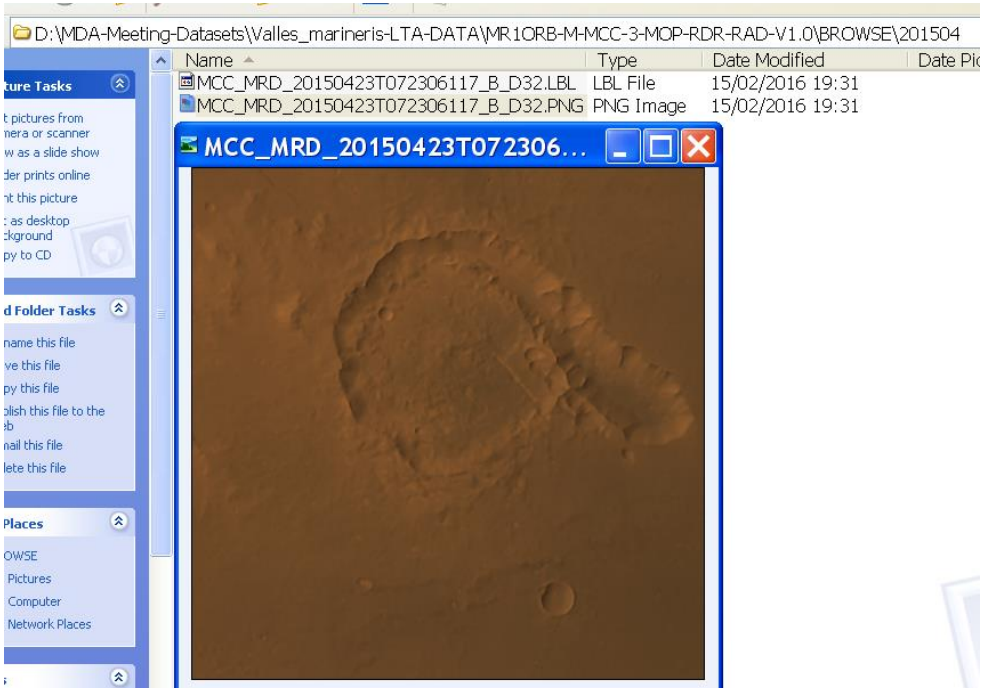


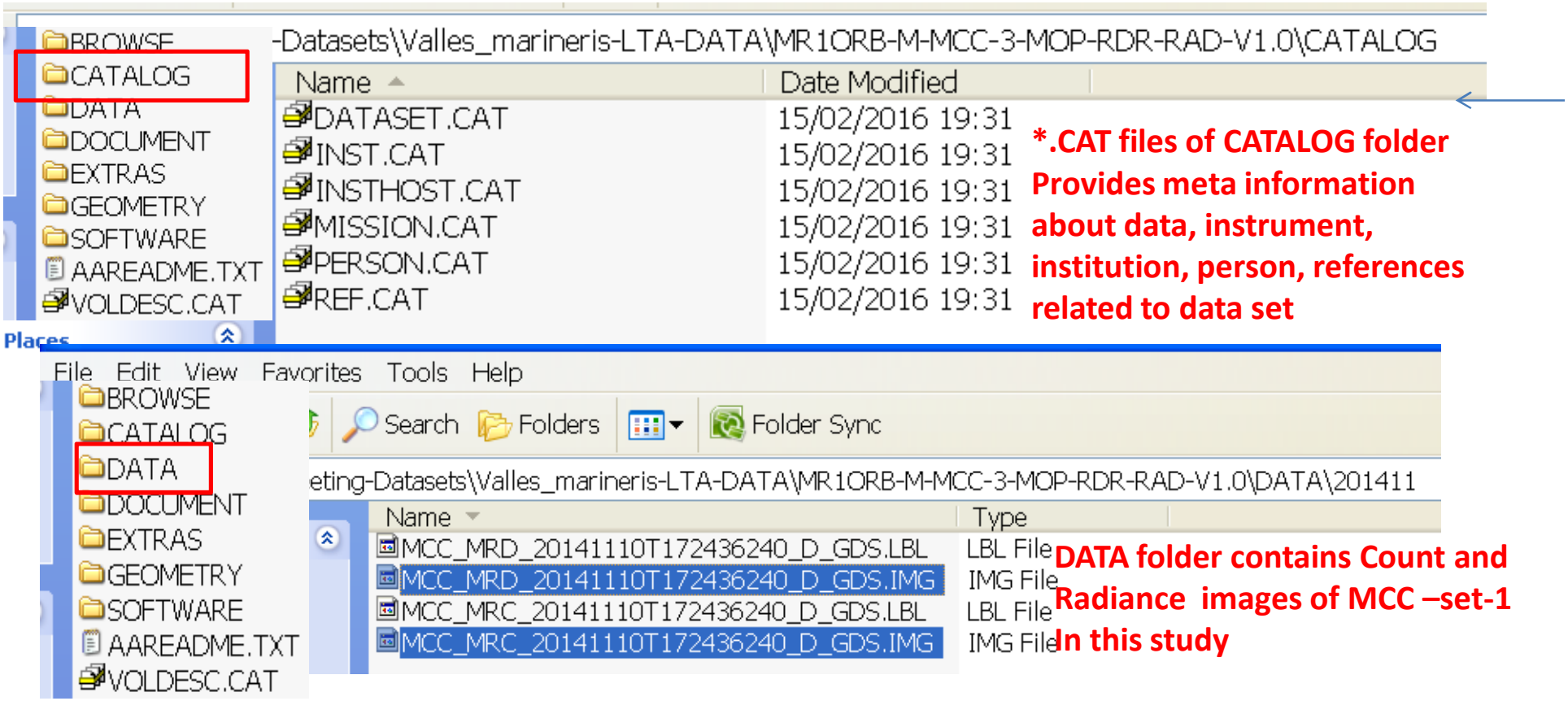
Extracting MCC data from *.tar file





Preview of *.PNG file in **BROWSE** folder




BROWSE
CATALOG
DATA
DOCUMENT
EXTRAS
GEOMETRY
SOFTWARE
AAREADME.TXT
VOLDESC.CAT
-Datasets\Valles_marineris-LTA-DATA\MR1ORB-M-MCC-3-MOP-RDR-RAD-V1.0\CATALOG
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Date Modified
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REF.CAT 15/02/2016 19:31
*.CAT files of CATALOG folder
Provides meta information
about data, instrument,
institution, person, references
related to data set
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eting-Datasets\Valles_marineris-LTA-DATA\MR1ORB-M-MCC-3-MOP-RDR-RAD-V1.0\DATA\201411
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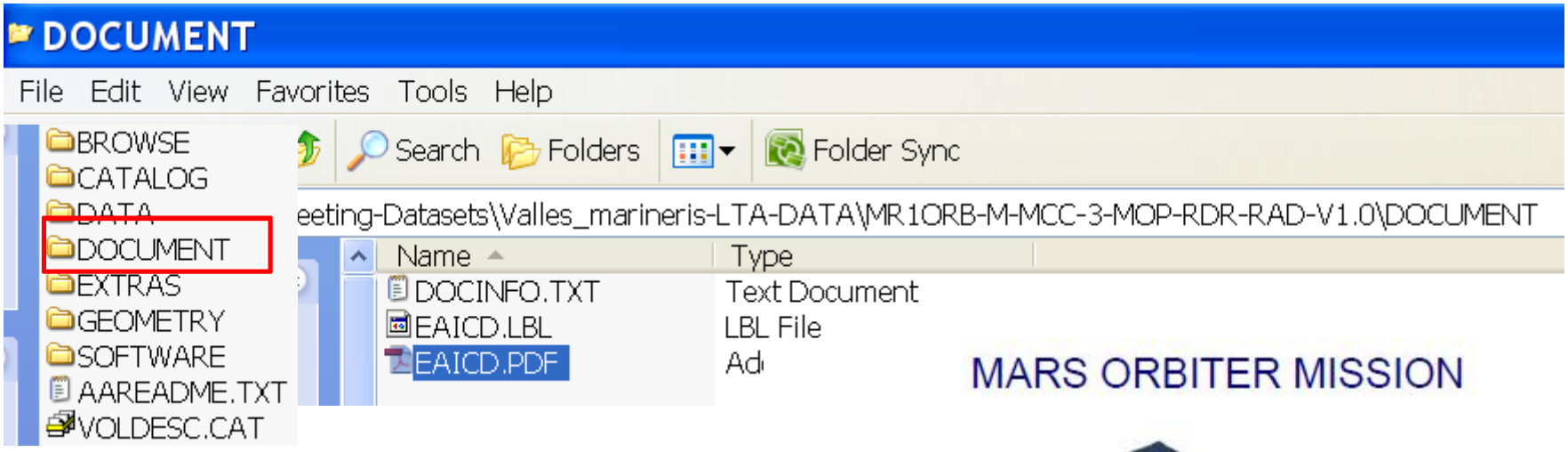
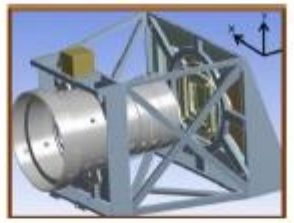
Type
MCC_MRD_20141110T172436240_D_GDS.LBL LBL File
MCC_MRD_20141110T172436240_D_GDS.IMG IMG File
MCC_MRC_20141110T172436240_D_GDS.LBL LBL File
MCC_MRC_20141110T172436240_D_GDS.IMG IMG File
DATA folder contains Count and
Radiance images of MCC –set-1
In this study



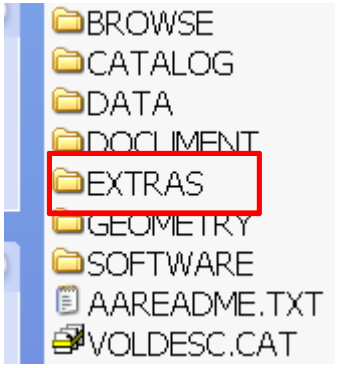
MARS ORBITER MISSION

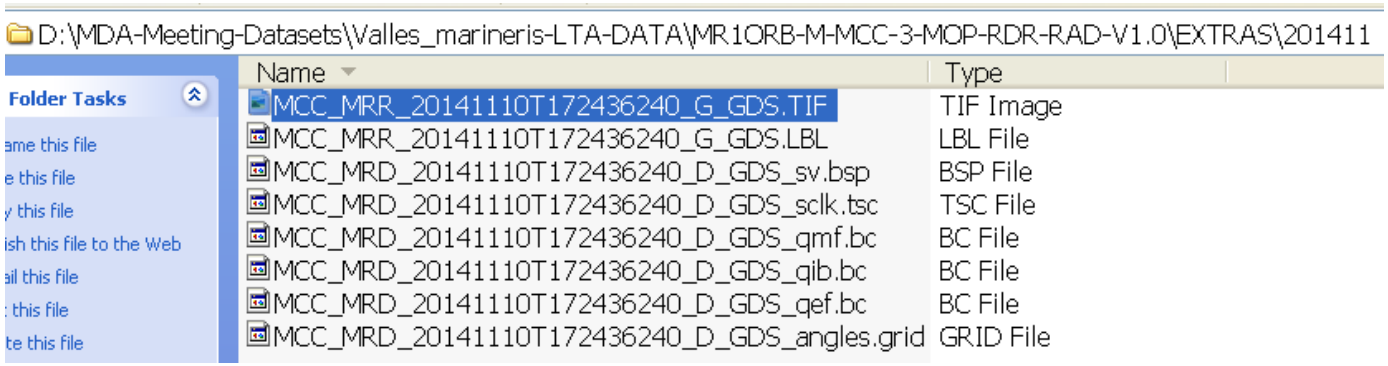
Mars Colour Camera (MCC)



Experimenter to Archive Interface Control Document [EAICD]

ISRO Science Data Archive



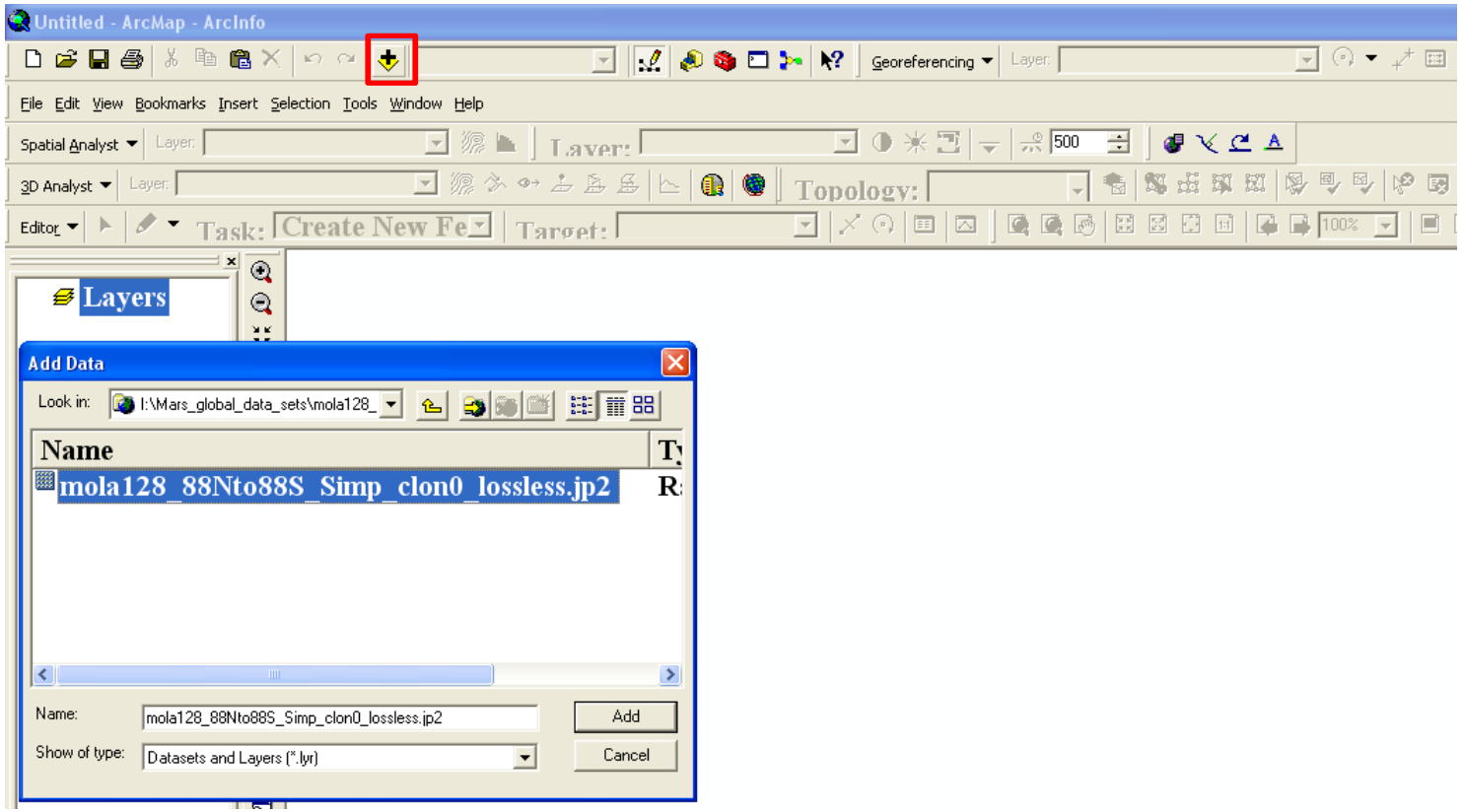


EXTRAS foler consists of areo-refenced image (*.TIF) and SPICE related parameters for set-1 in this study

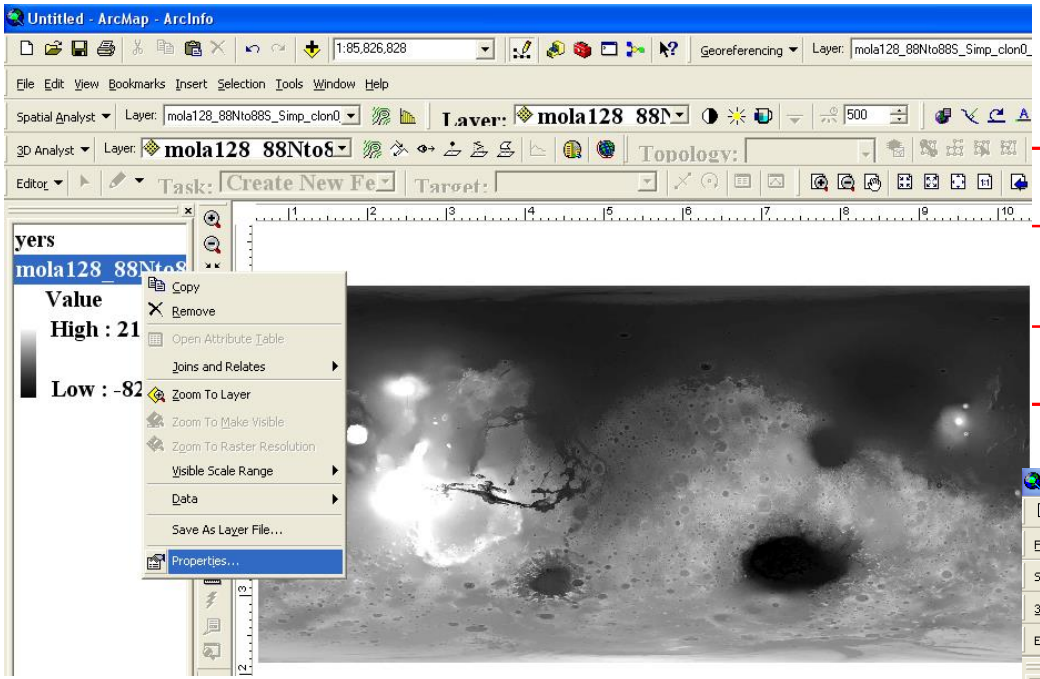
Base map Preparation in ARC GIS software

1) Loading of global MOLA topography data using Add Data button

(for Seamless compatibility over various data source)

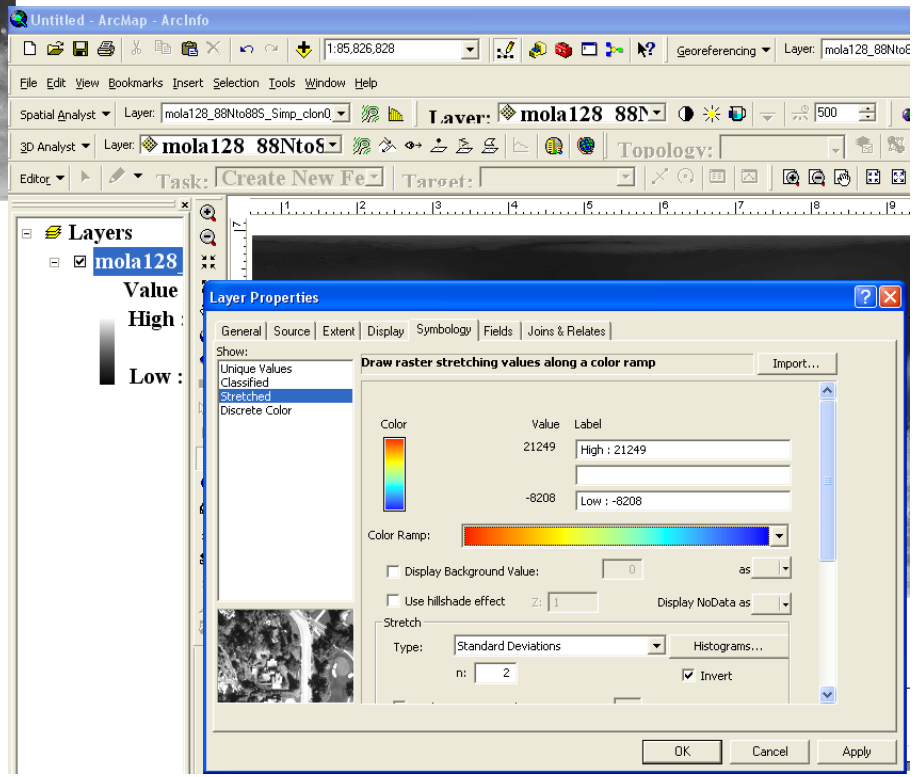


2) Changing color palette of topography map

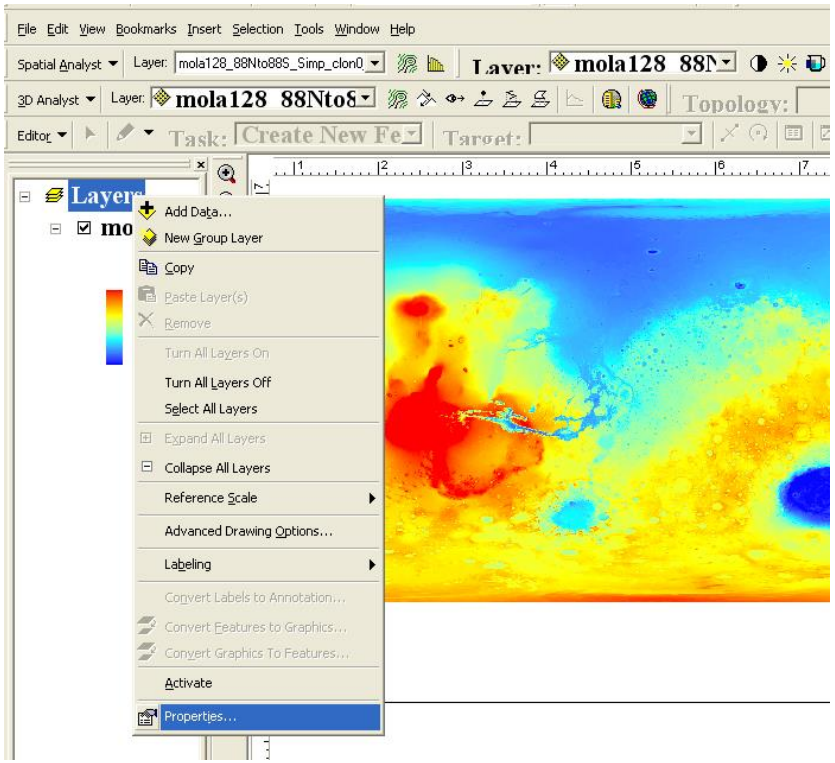


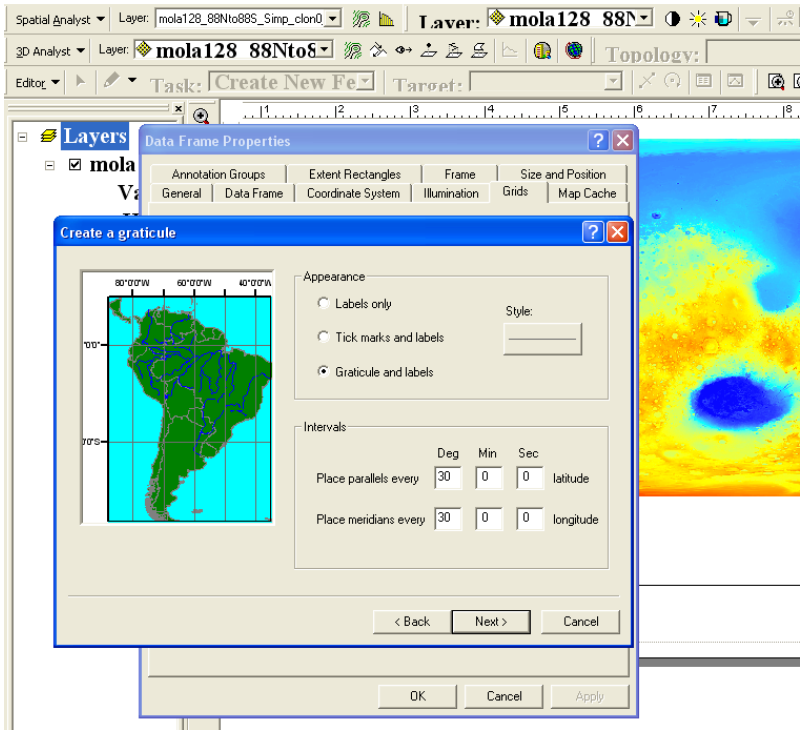
Right click on “MOLA topography” layer

Select the color pallete

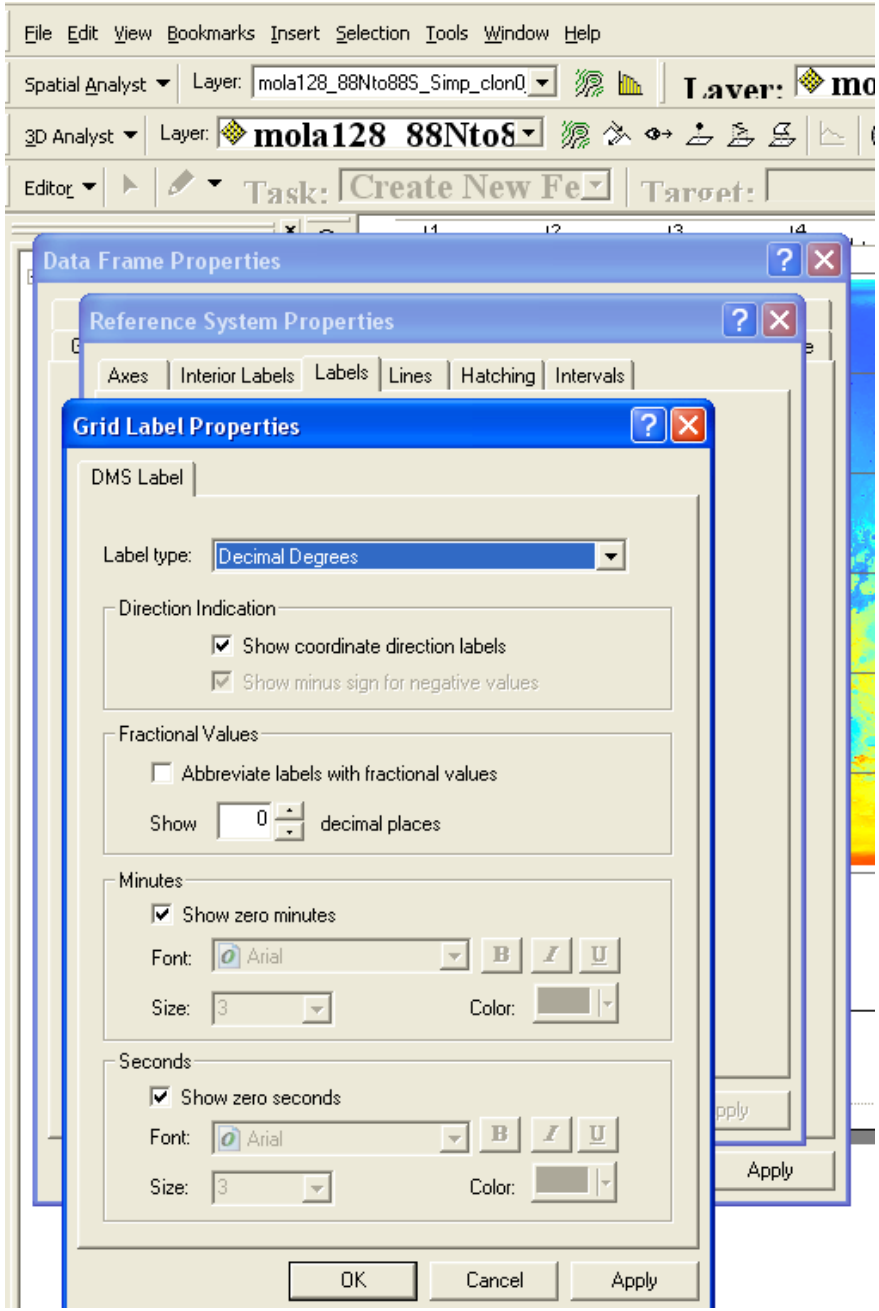


3) Adding Grid lines and annotations to map

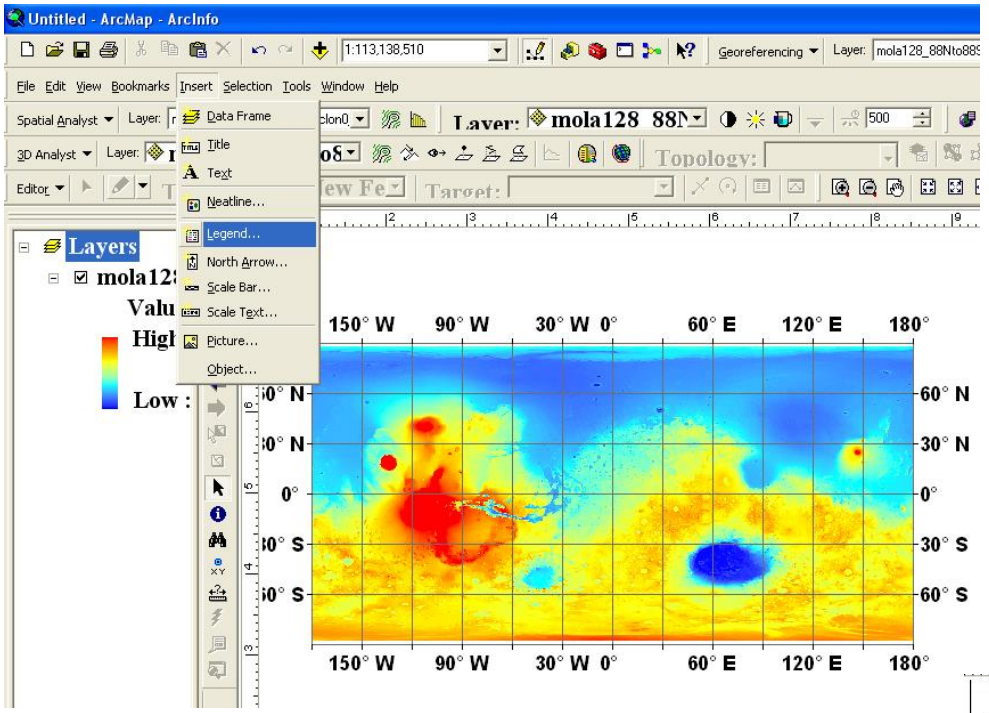


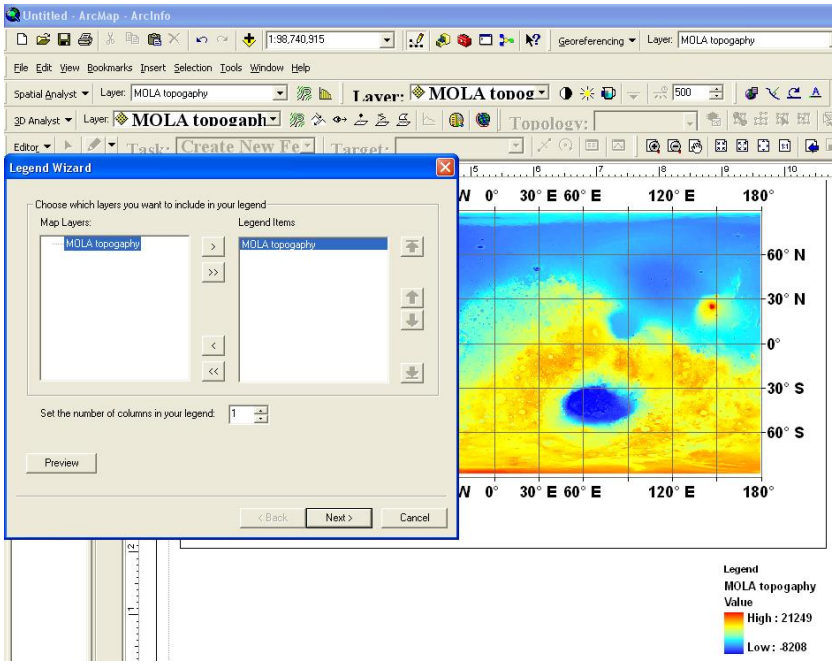


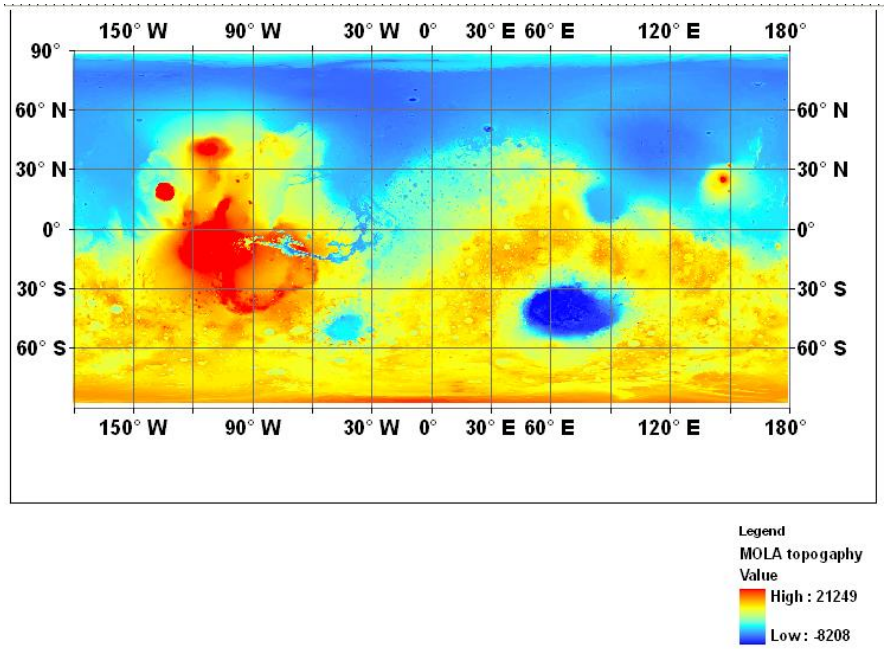
Changing the style of annotations/Labels of map



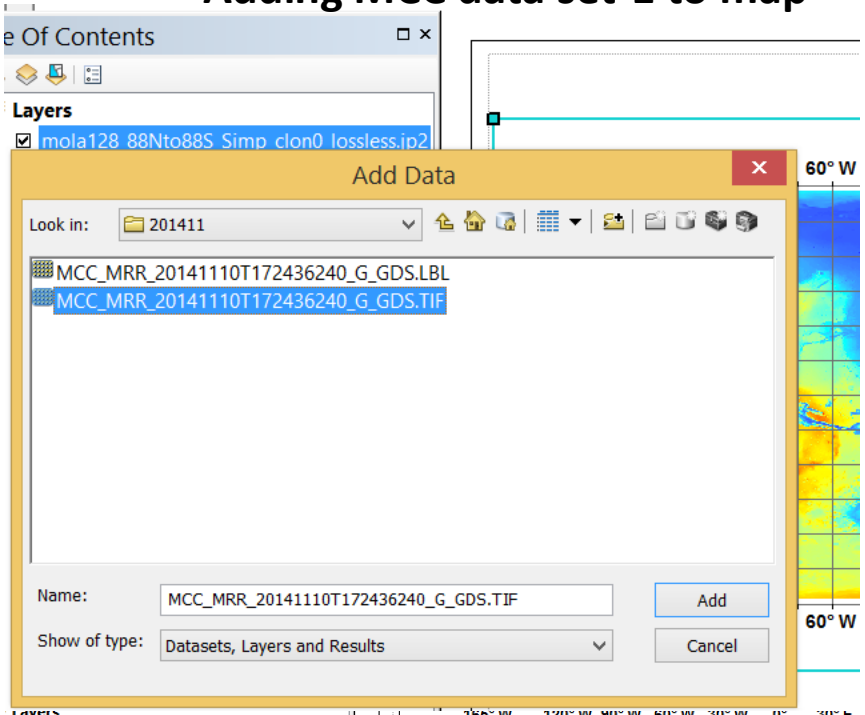
Adding Legend to map

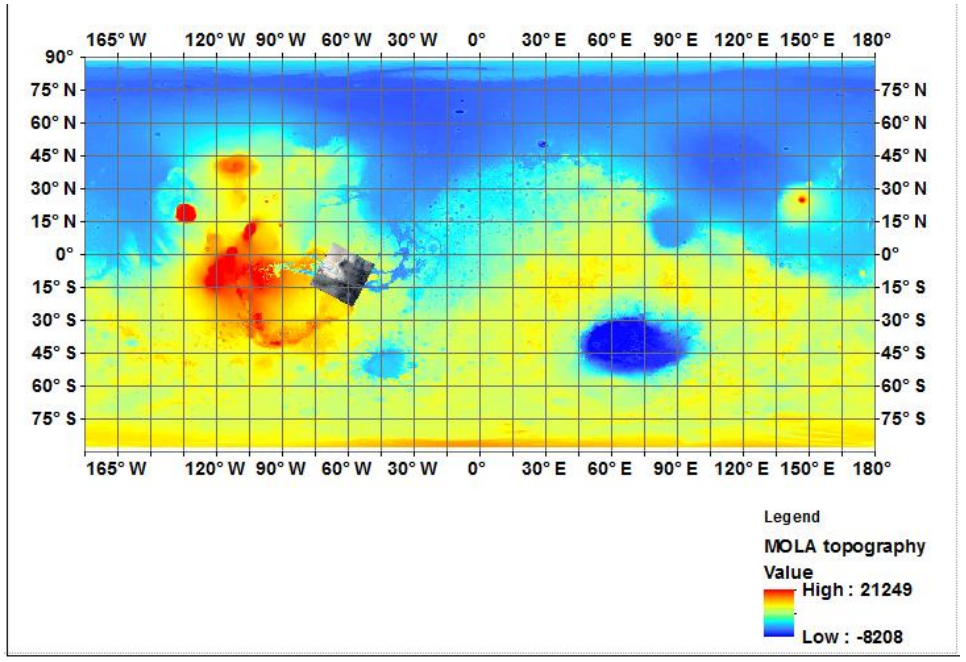


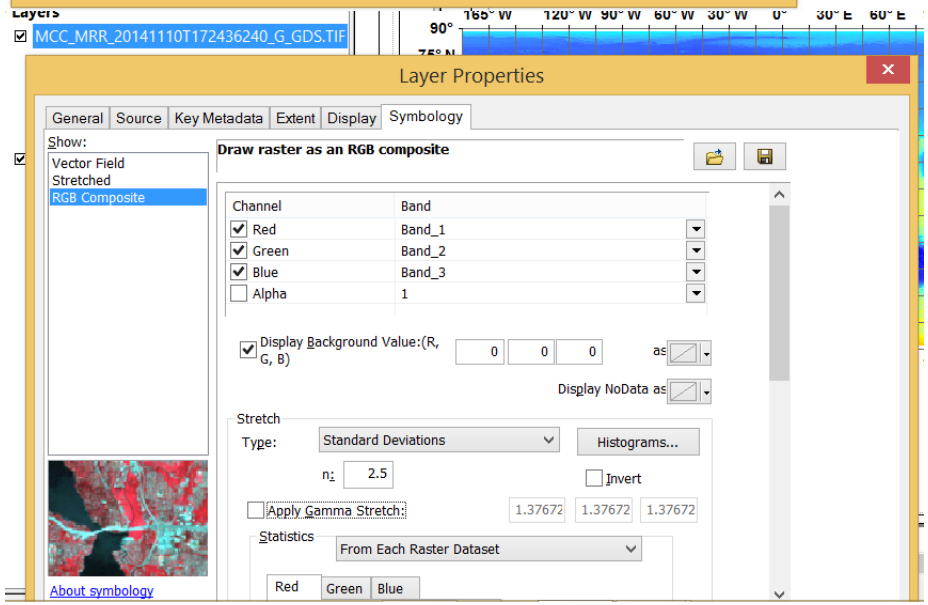


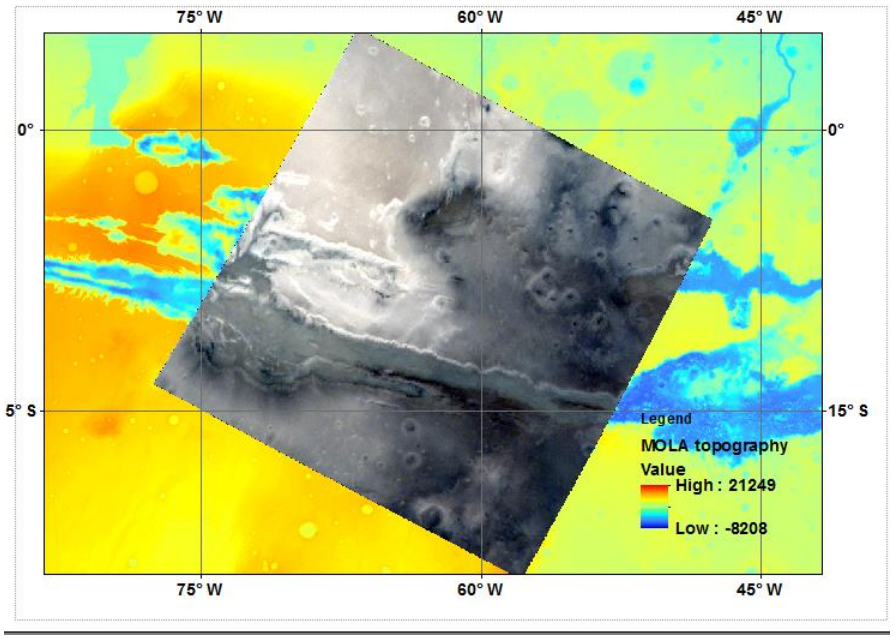


Adding MCC data set-1 to map

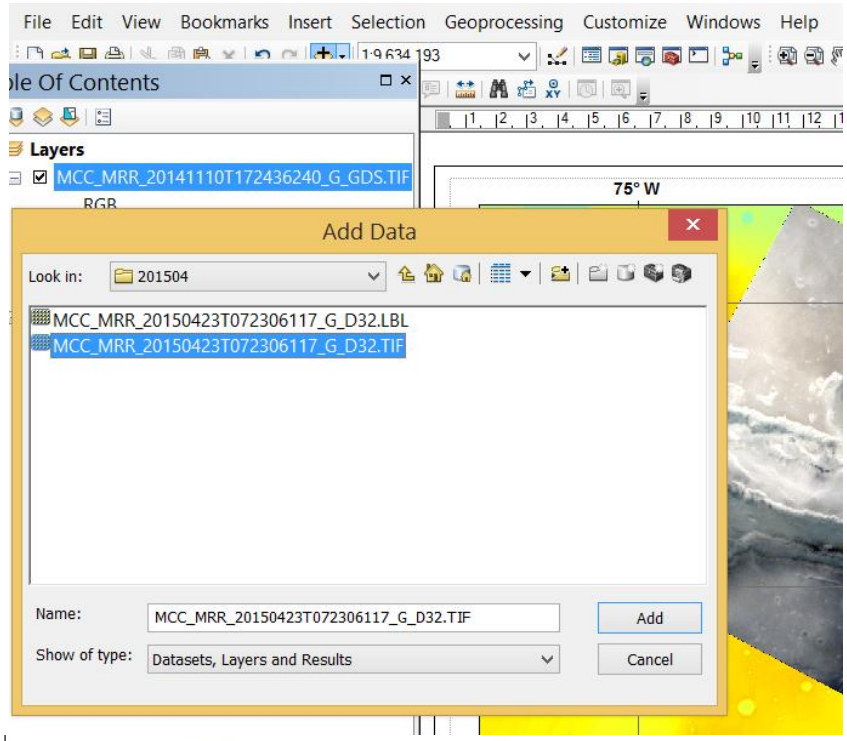


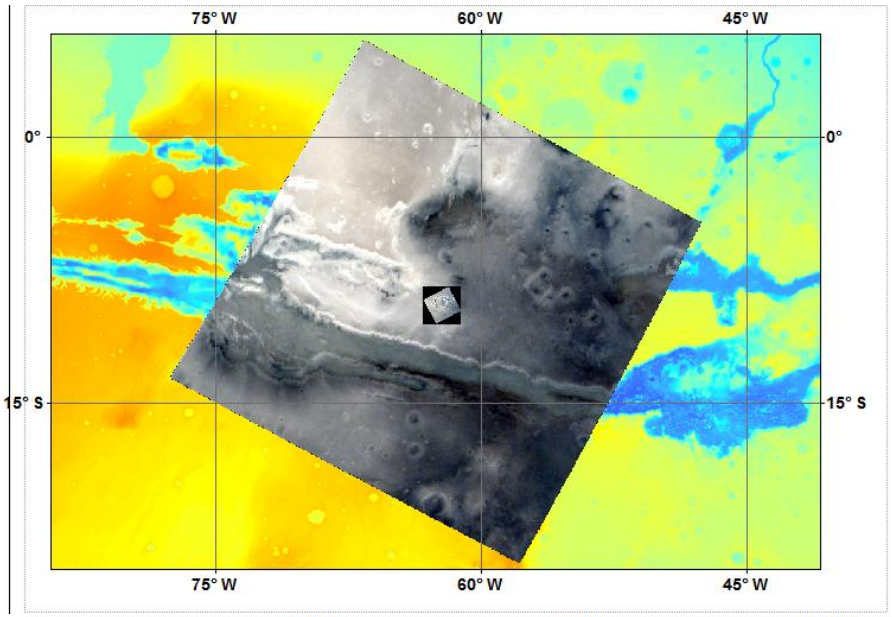


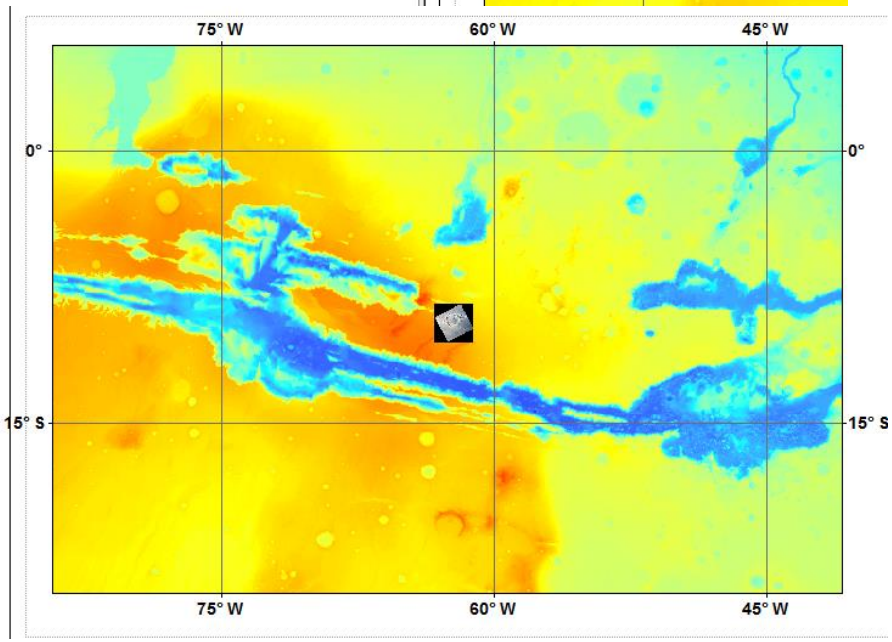


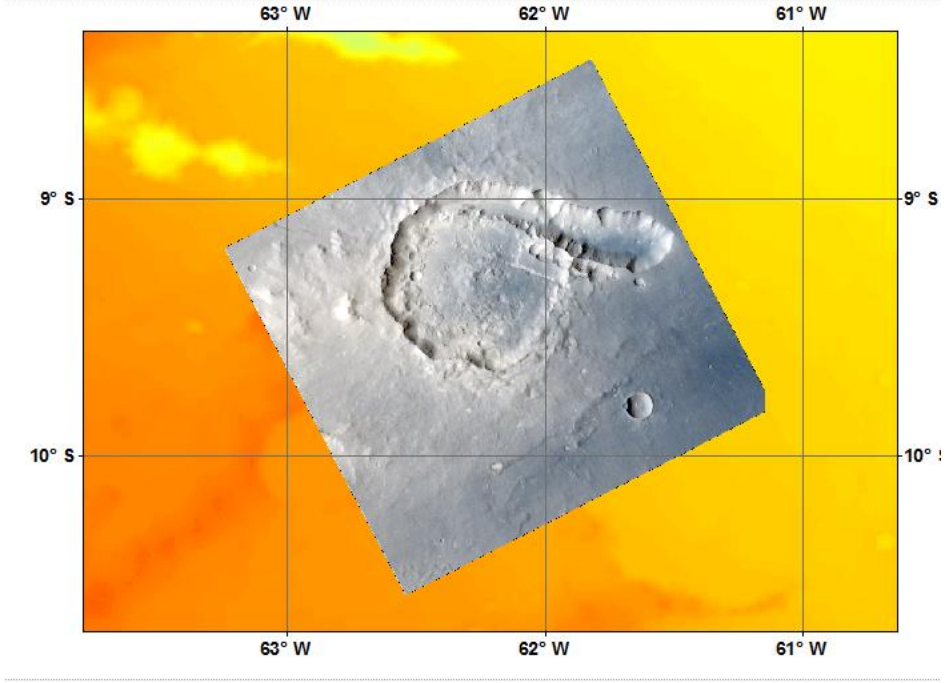


Adding MCC data set-2 of high spatial resolution

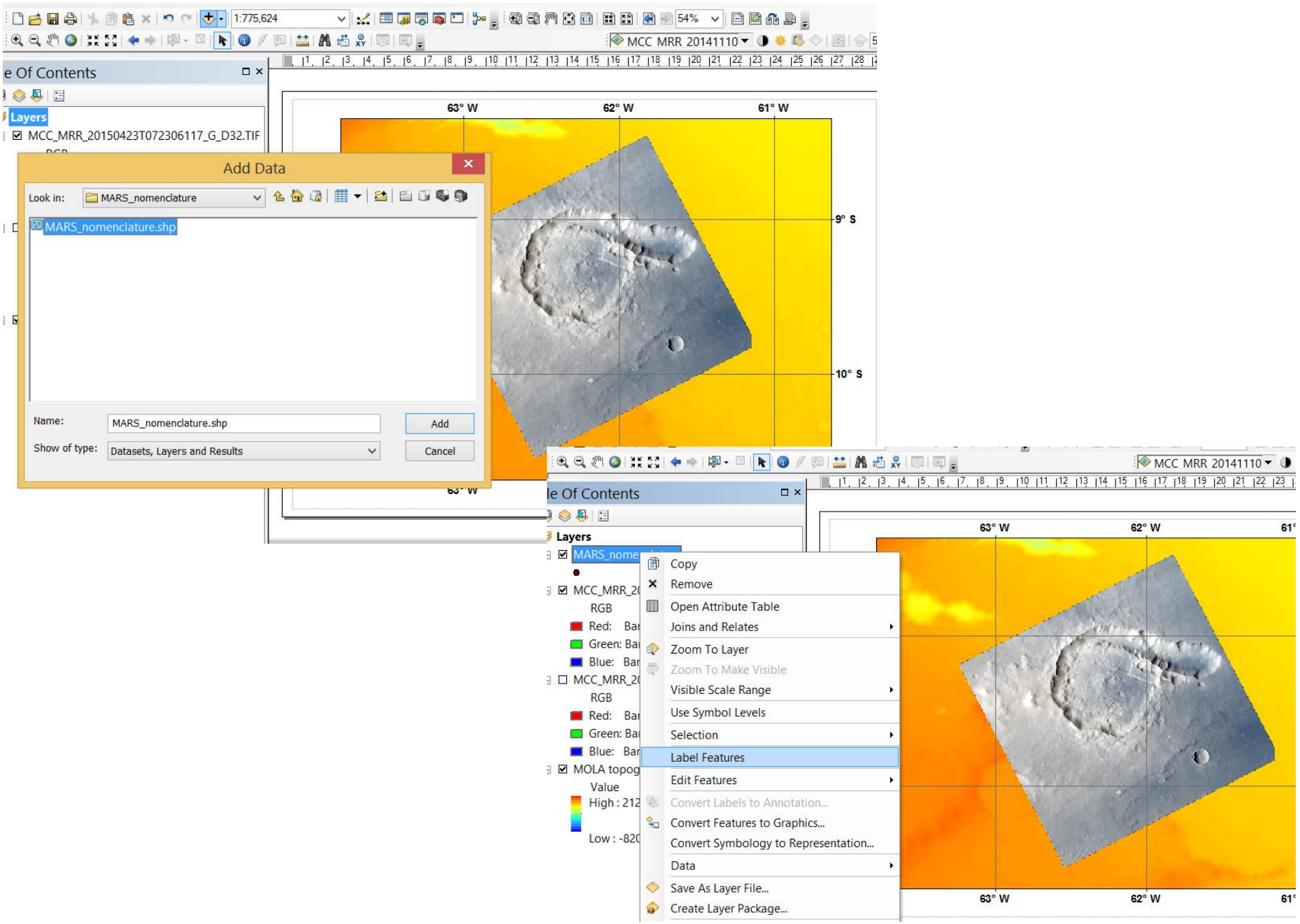




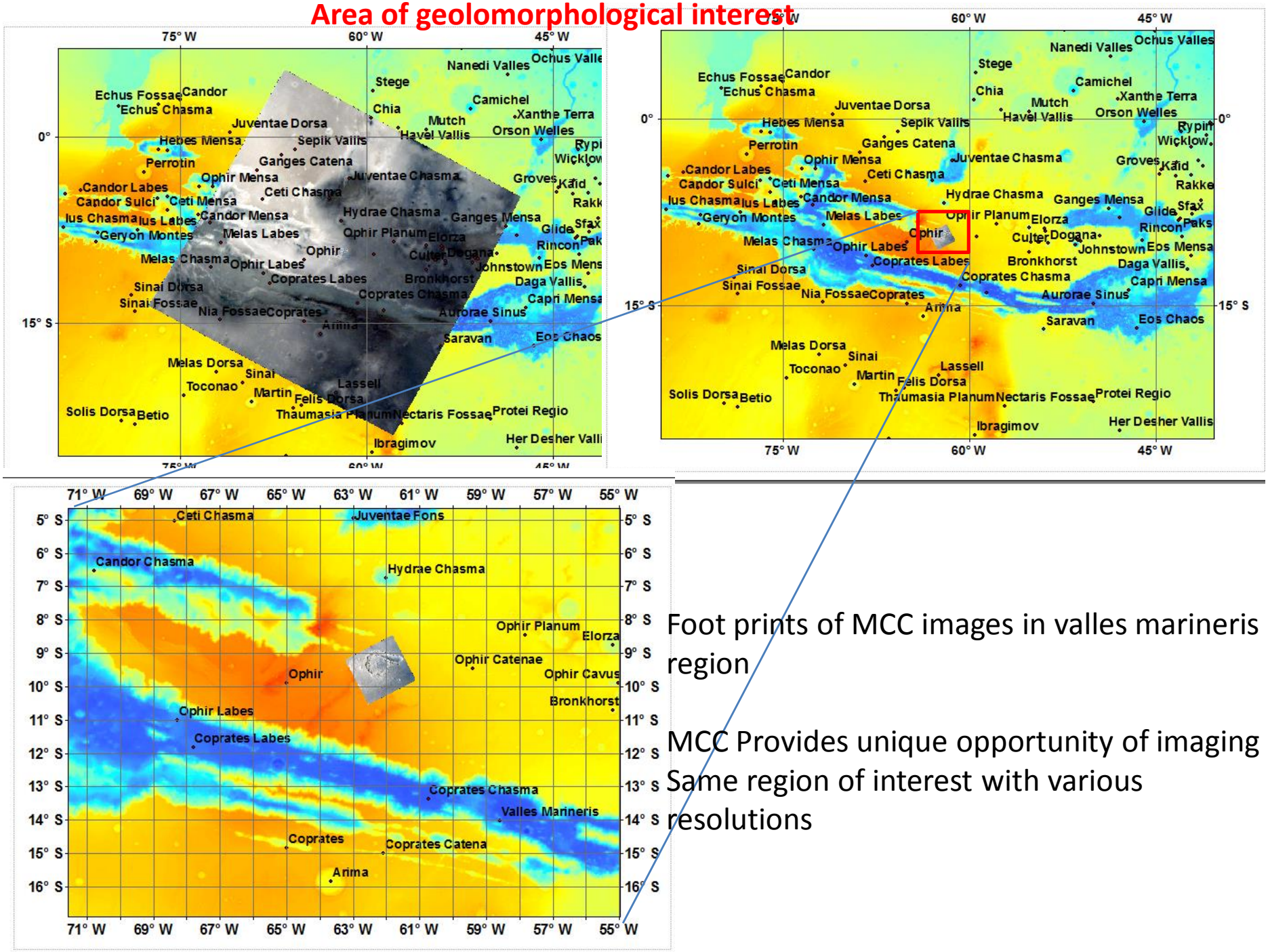




Adding Mars Nomenclature file to map

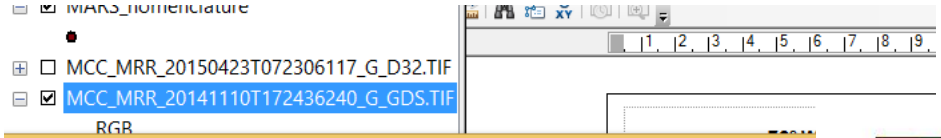


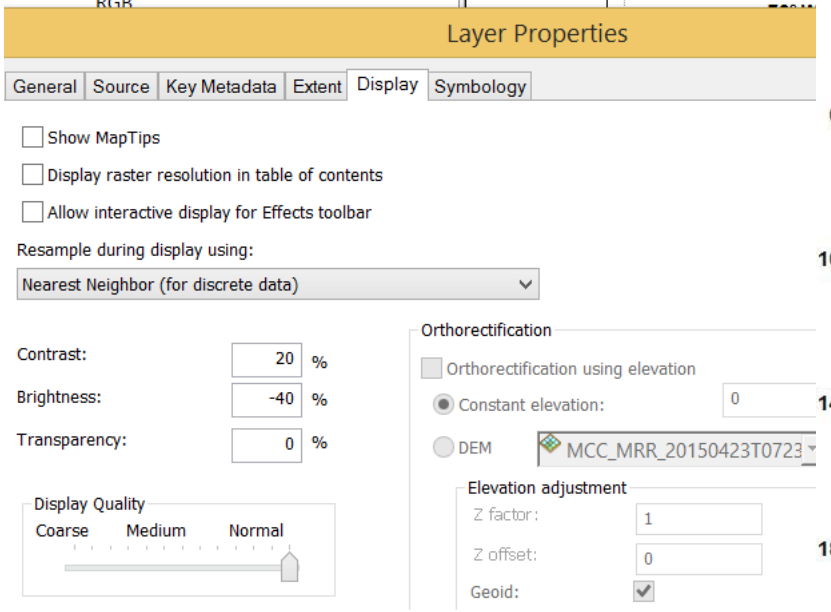
Area of geolomorphological interest

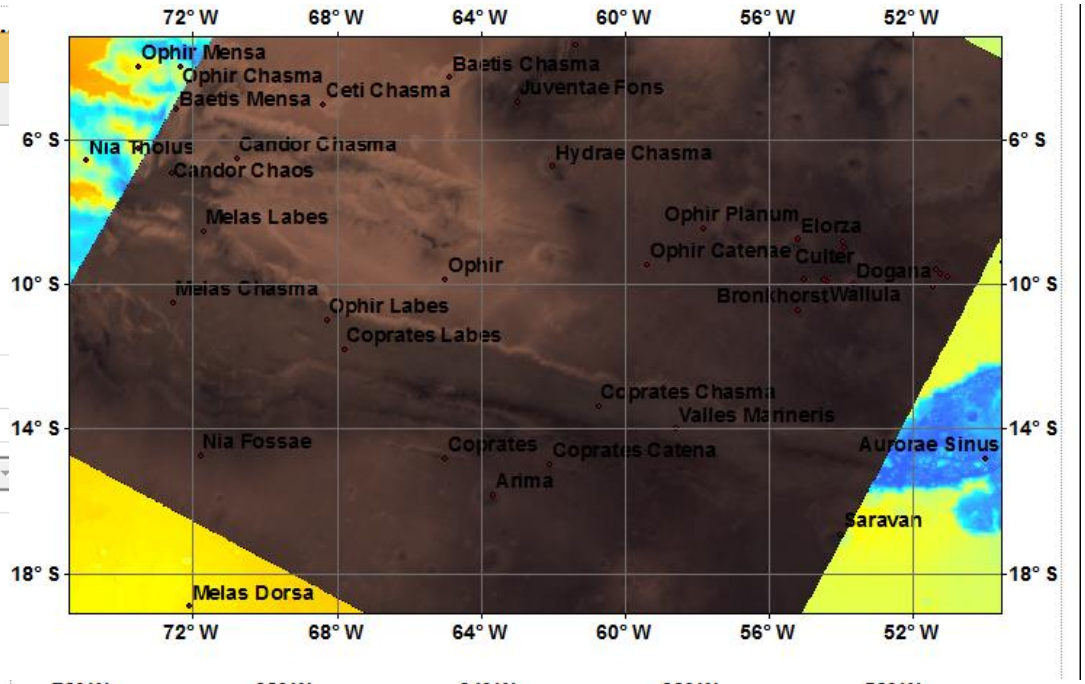


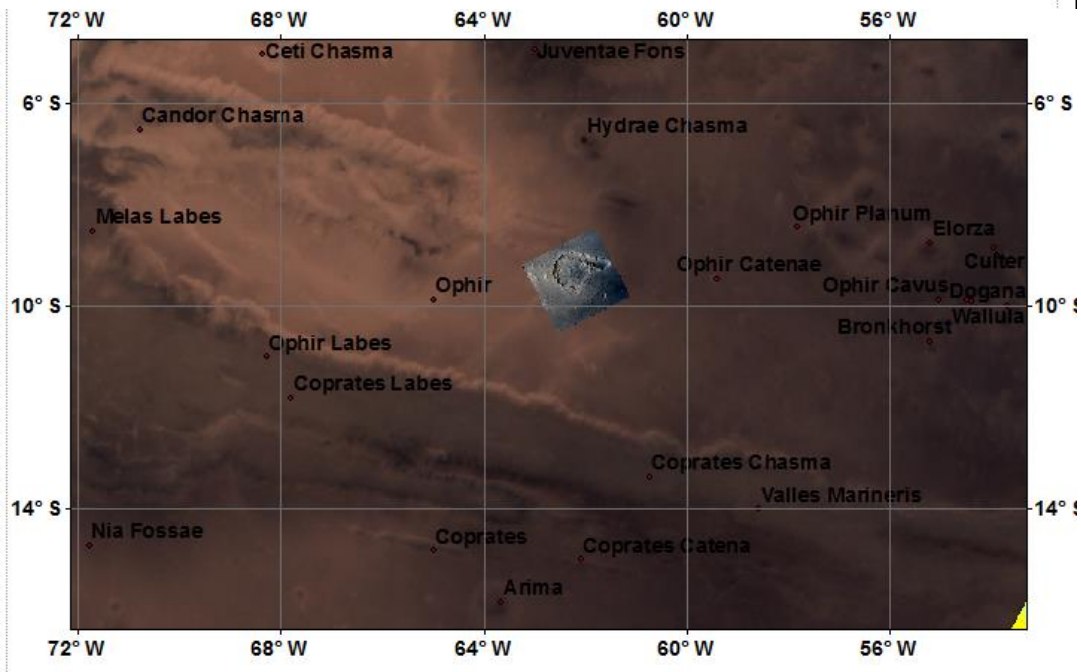
Foot prints of MCC images in valles marineris region

MCC Provides unique opportunity of imaging Same region of interest with various resolutions



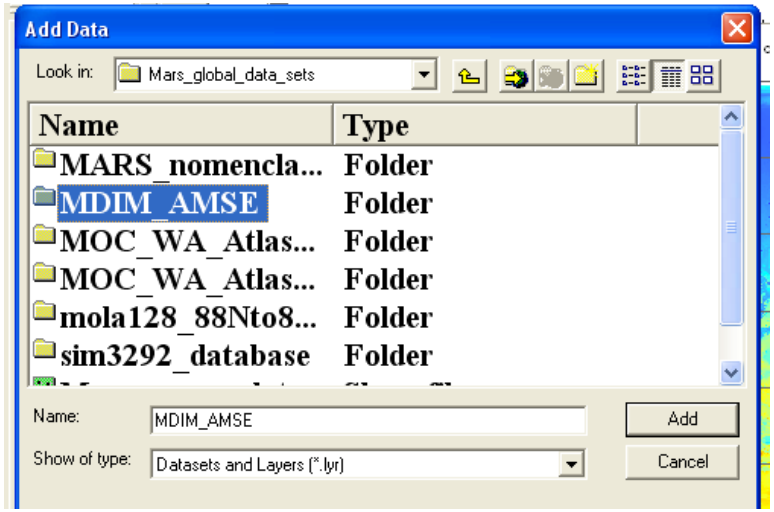


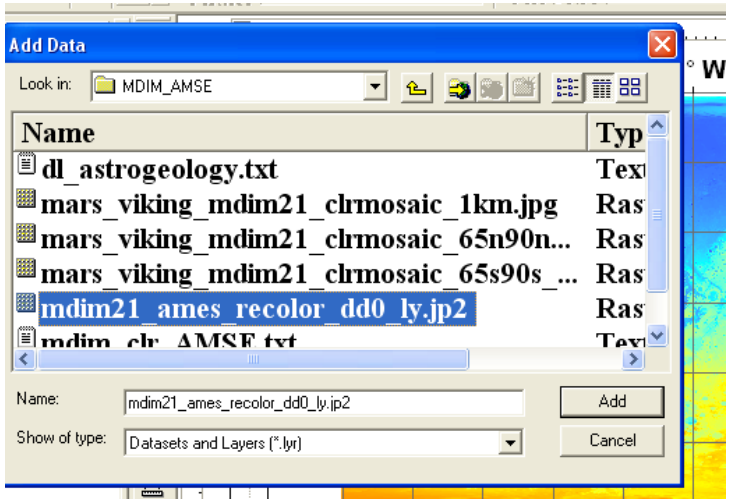


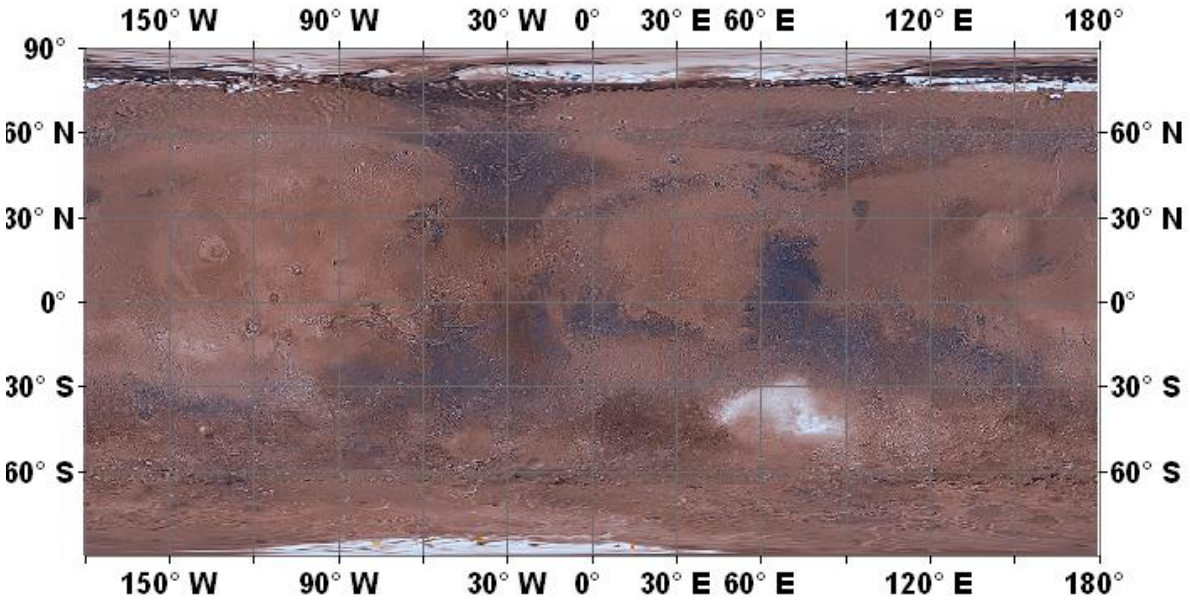


Enhance / Contrast controls

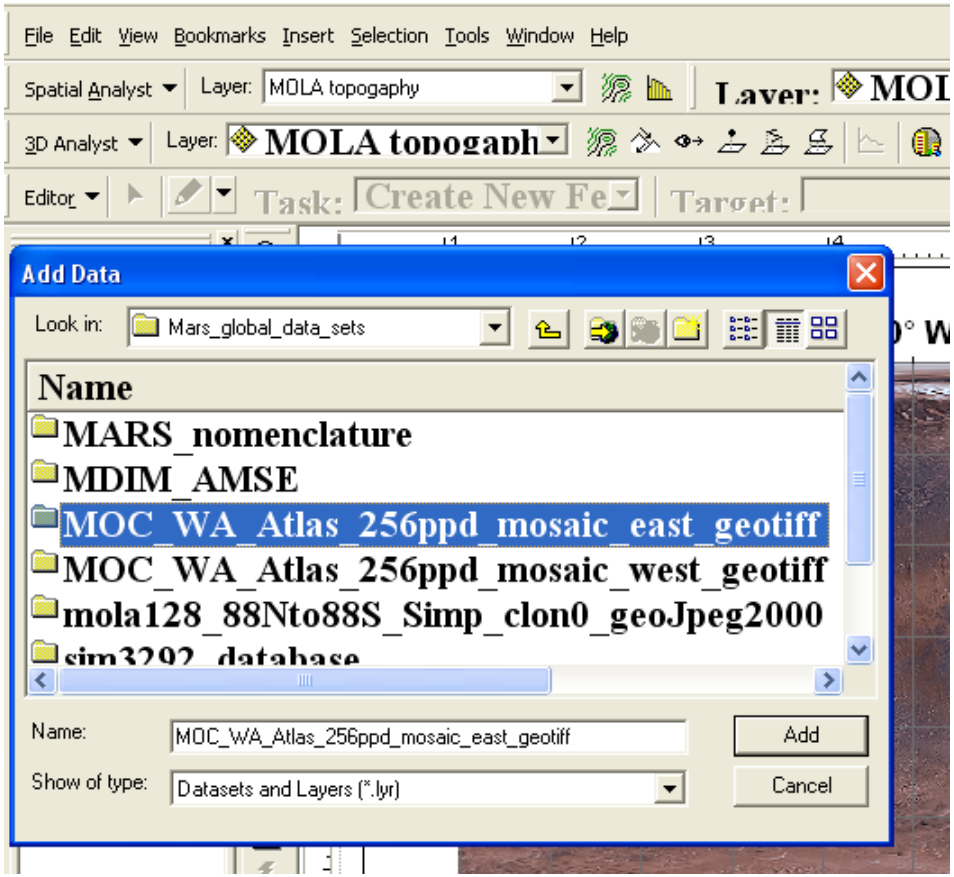
Adding ``Mars Digital Image Mosaic'' (MDIM-2.1) as a reference image

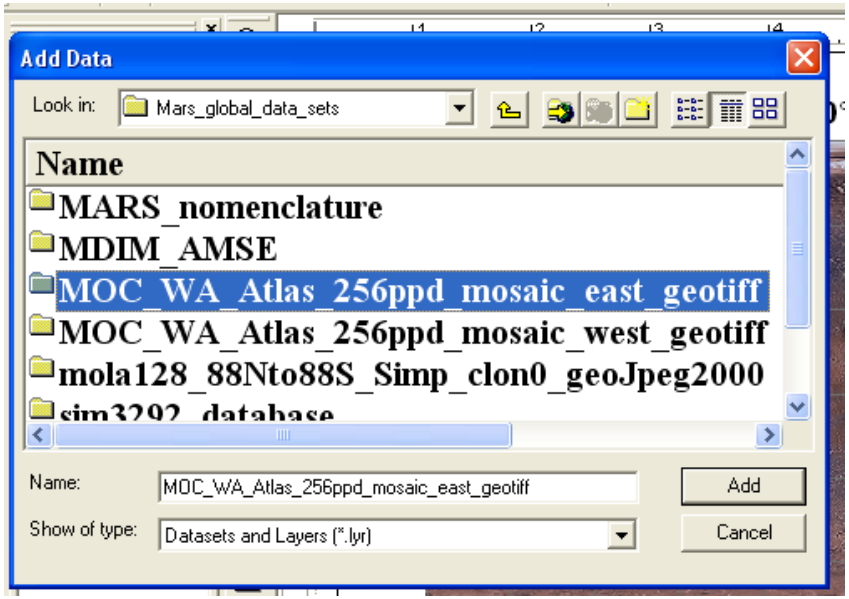


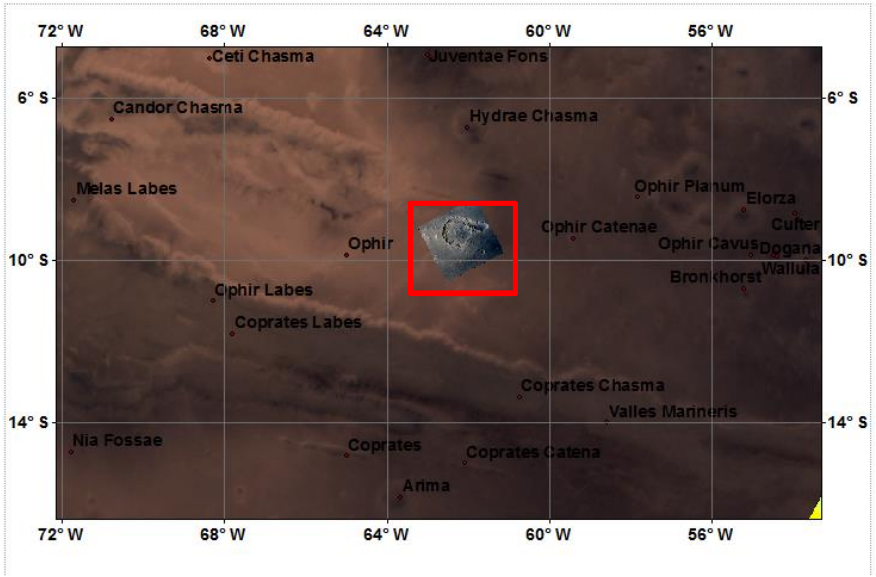




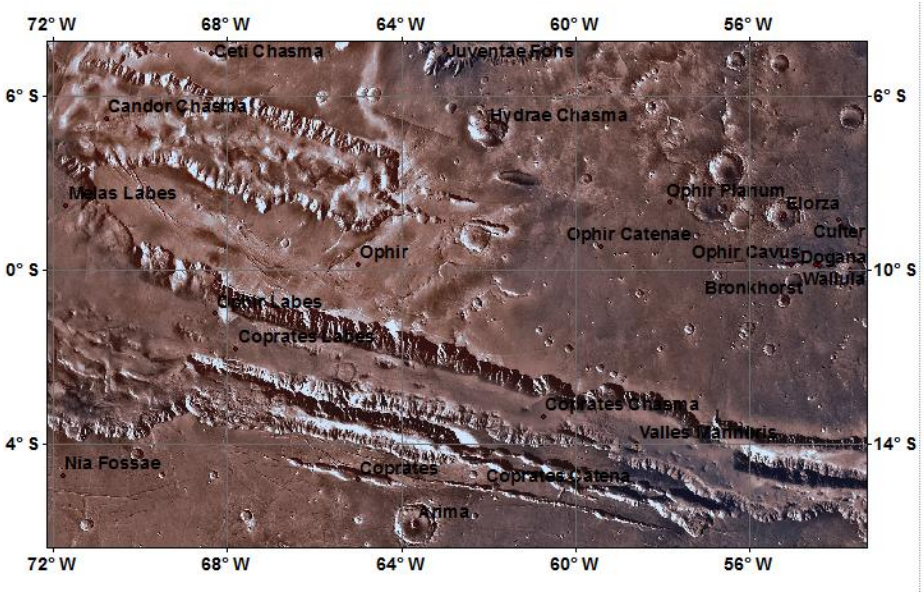
Loading MOC-WA data in ARCMAP as a reference image



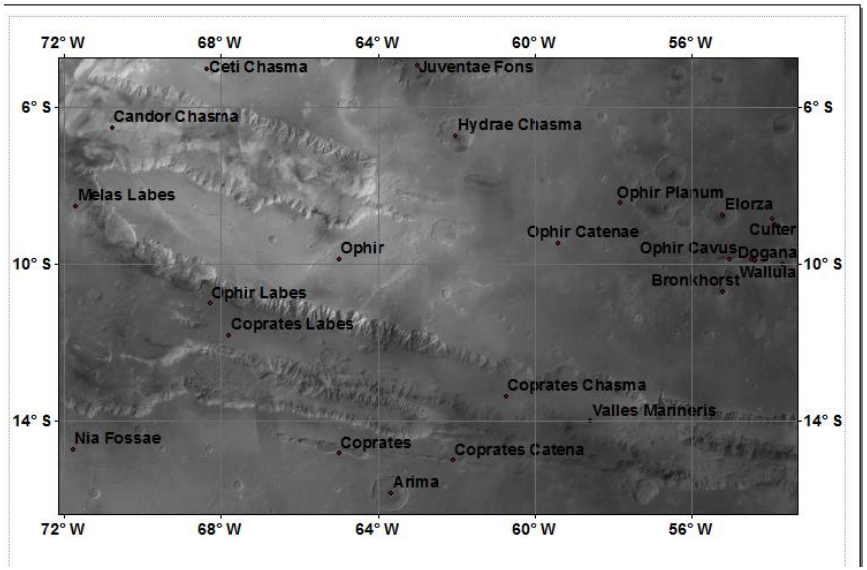




MCC: 623 meter,44 m/pixel

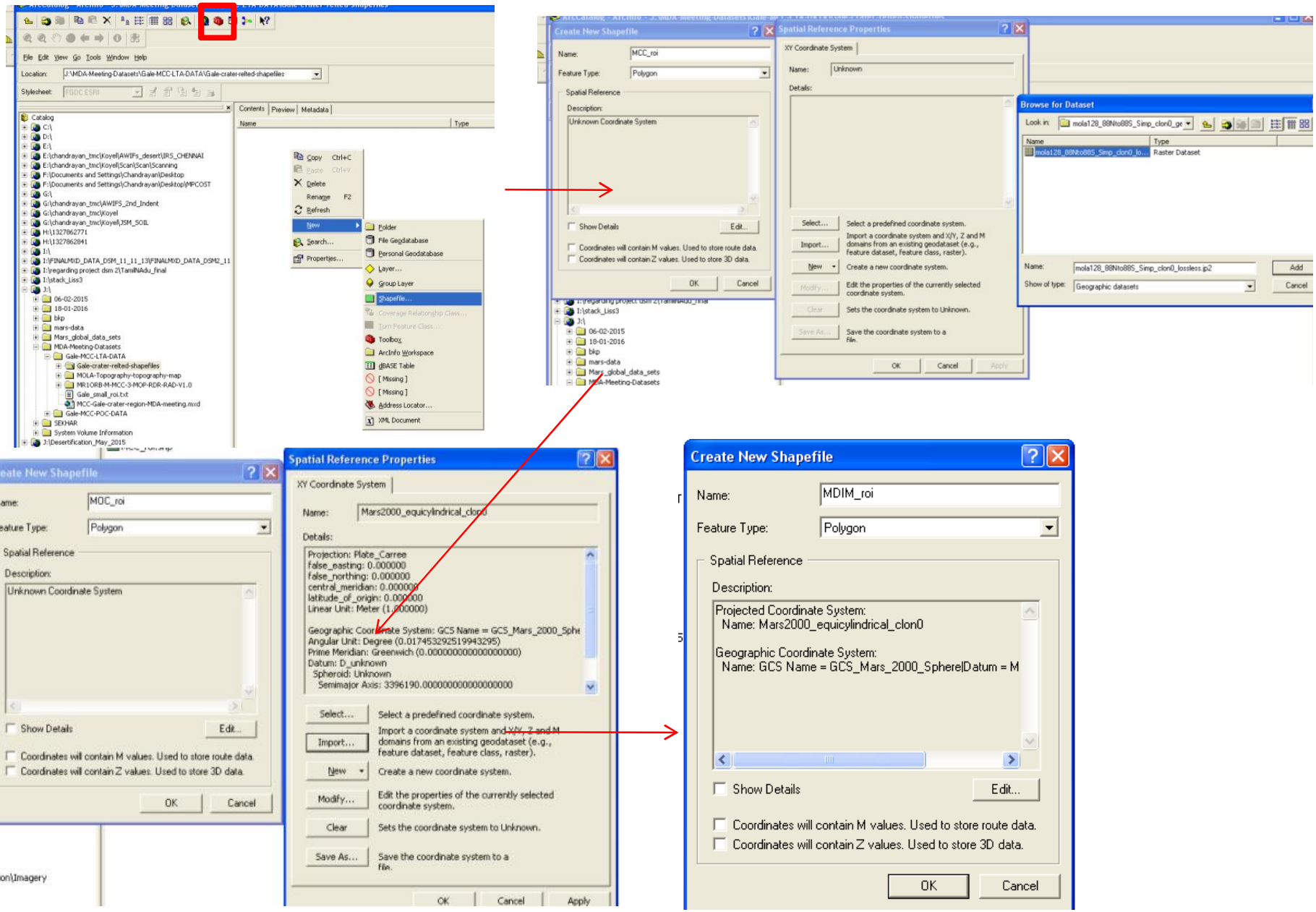


MDIM:231 m/pixel

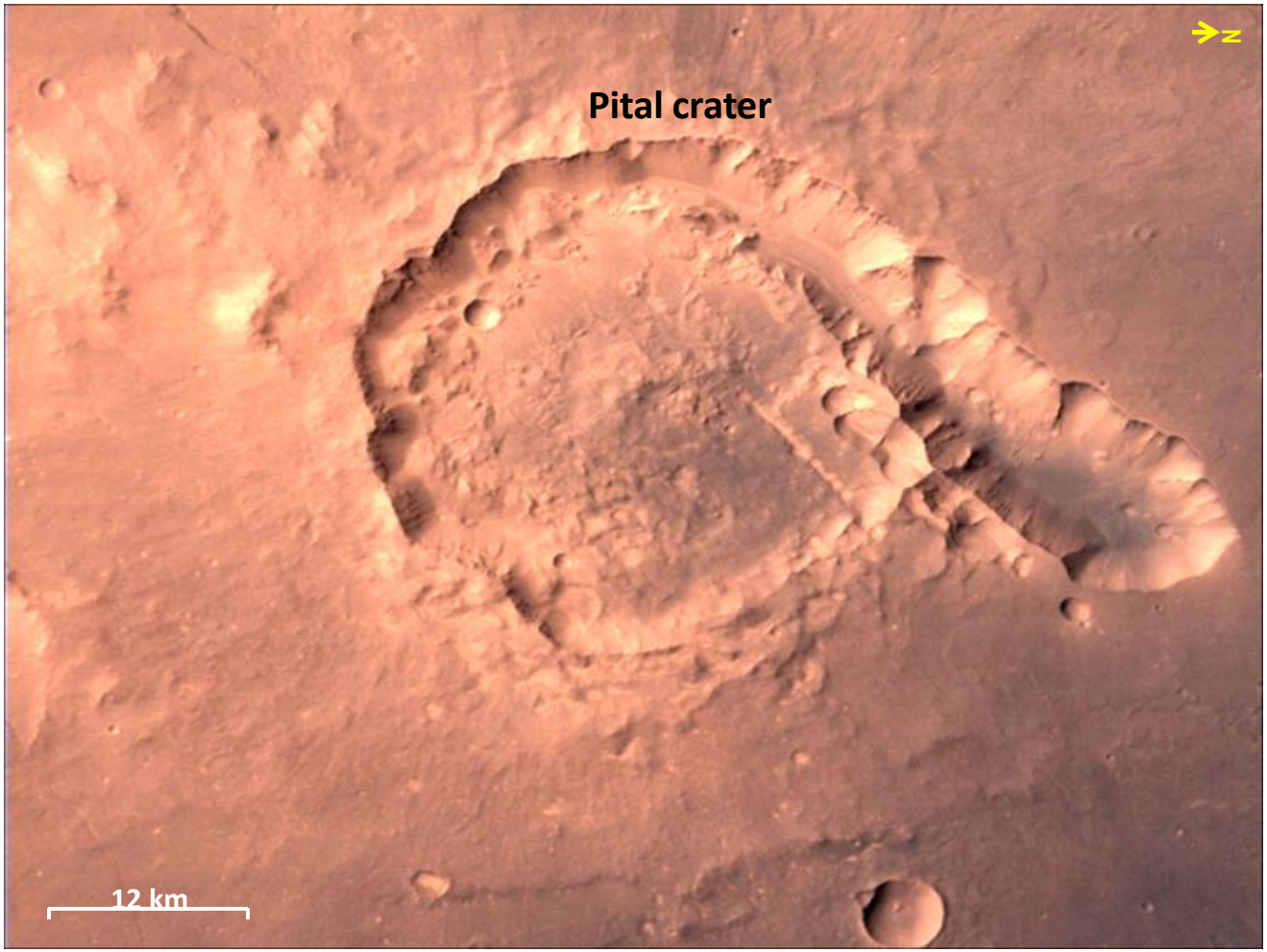


MOC: resolution 231 meters

Creating shapefiles (Polygons) for digitization of areas from MCC,MOC, MDIM images using Arc catalogue



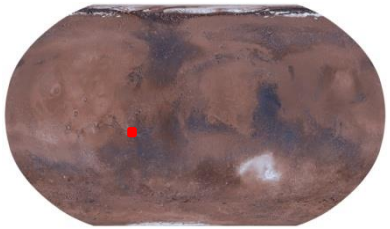
High resolution image of Pital crater in Ophir Planum region



Pital crater is an impact crater having a diameter of ~40 km and located at 9^0S, 62^0 W.

Wall of the crater and chain of small impact craters are clearly seen in this image.

Date of Acquisition: 23-04-2015
Space craft Altitude: 800 km
Spatial resolution: 44m.

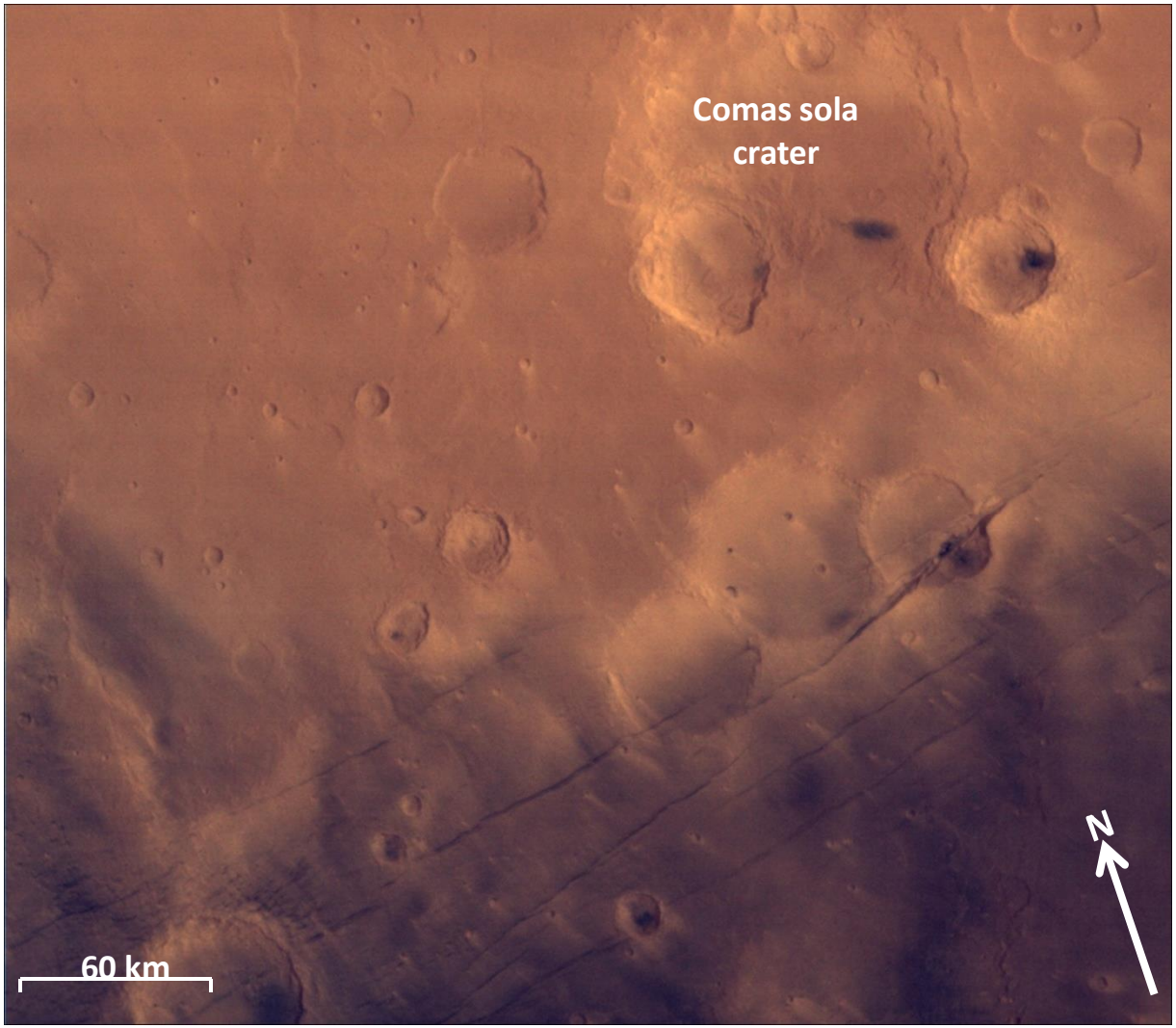


High resolution images of Impact crater SE of Bernard crater in Terra Sirenum region

A concentric crater (1) super imposed over graben is also seen in this high resolution image. The relative position of this crater with respect to graben indicates that crater is younger than graben system. Larger crater having the diameter of 6 km. Three NE-SW trending grabens, and craters of various dimensions are clearly seen in this image. Part of regional graben system (2) of length 600 km is seen in this image.

Date of Acquisition: 13-03-2015
Space craft Altitude: 442 km
Spatial resolution: 23m.

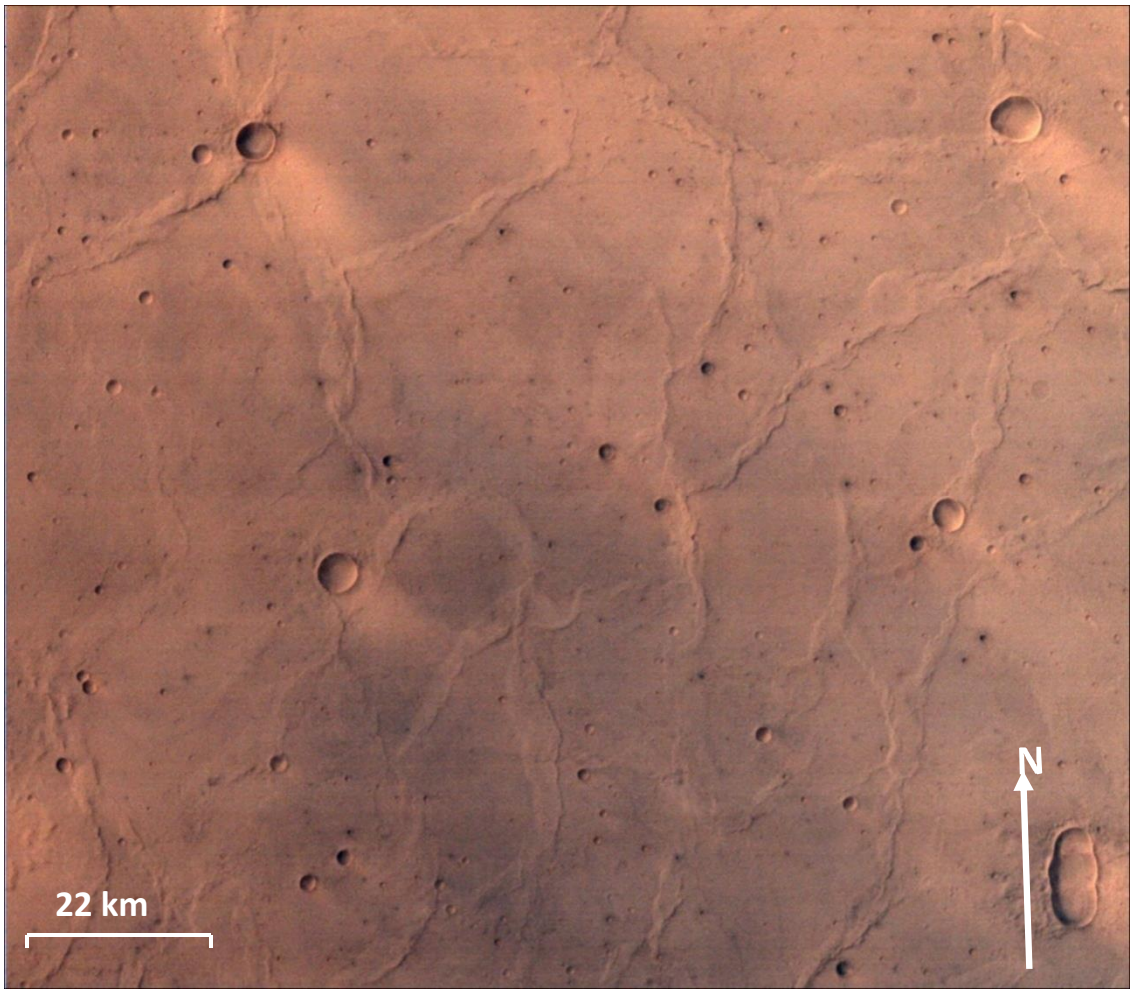
Tectonic features: Regional faults cutting across craters in the Region around Comas Sola crater



A set of regional faults cutting across various craters, south of Comas sola crater are seen clearly in this image. Craters of various dimensions and wind streaks in bottom right side portion of the image are also clearly seen.

Date of Acquisition: 13-03-2015
Space craft Altitude: 3453 km
Spatial resolution: 179 m

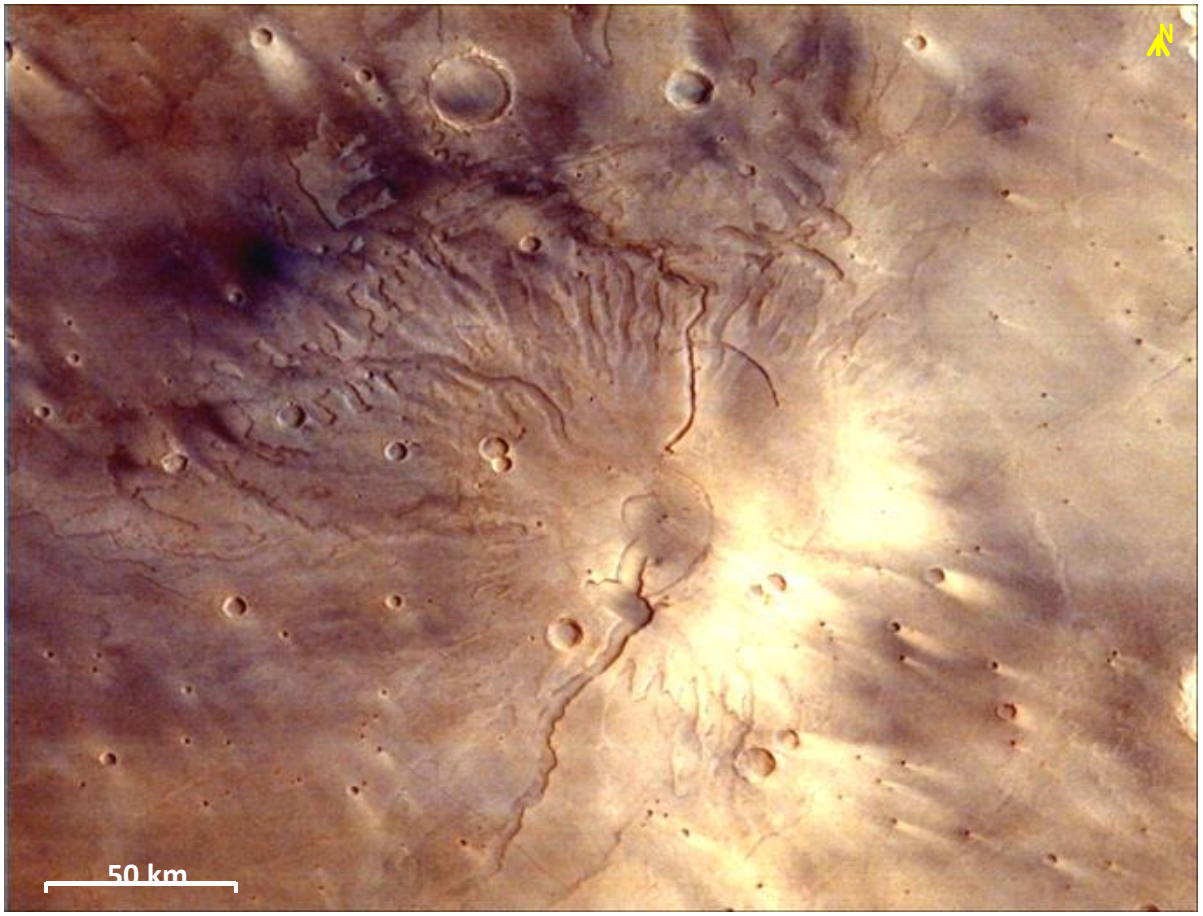
Tectonic features: Wrinkle ridges Hesperia Planum region



Wrinkle ridges and craters of smaller diameters are clearly seen in this image.
Wrinkle ridges on planetary surface are formed due to compressional stress regime. Ridge means linear/ curvilinear elongated raised structure.

Date of Acquisition: 31-01-2015
Space craft Altitude: 1132km.
Spatial resolution: 58m

Volcanic features: Tyrrhenus Mons Hesperia Planum region



Tyrrhenus Mons is a volcano present in the Hesperin planum, located at ~21^{0}S, 106^0 E on Mars. Tyrrhenus Mons is having base diameter ~269 km..]

Volcanism in Tyrrhenus Mons region occured around ~3.9 billion years ago. Concentric fractures systems seen in the MCC images are possibly formed by extensional stresses within the surface of Mars.

Impressions of wind streaks can also be seen in this image.

Date of Acquisition: 25-02-2015
Space craft Altitude: 3192 km.
Spatial resolution: 166 m

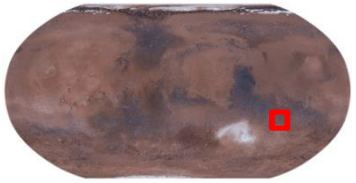
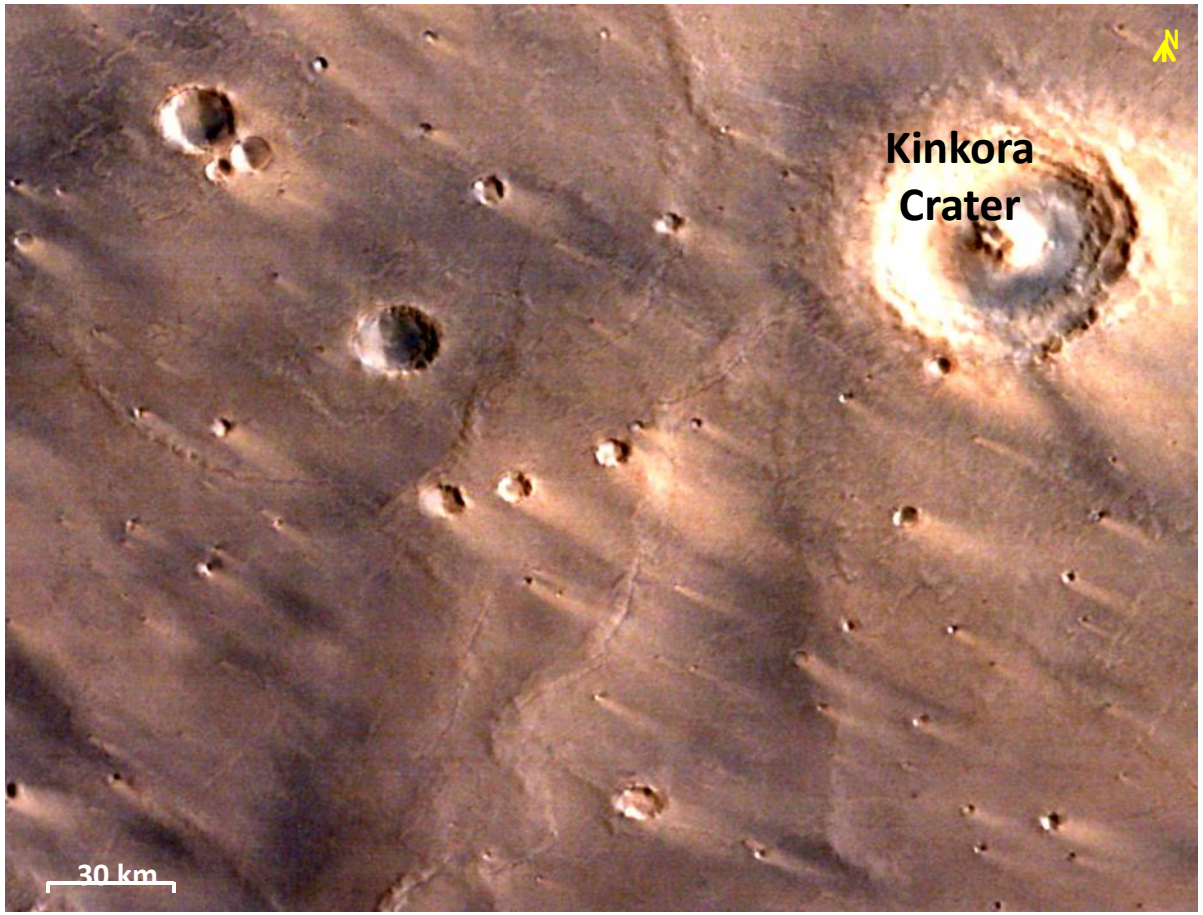


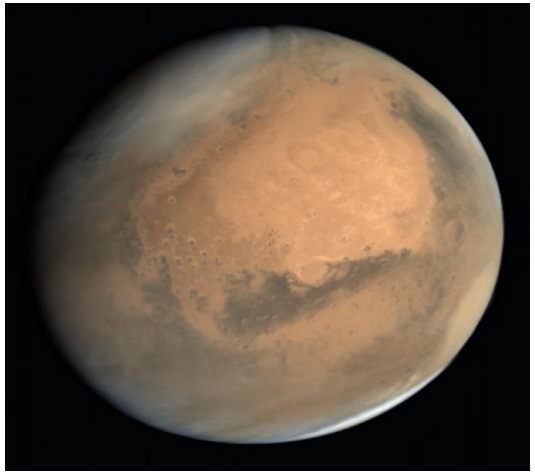
Image of Wind streaks near to Kinkora crater observed by MCC



Wind streaks aligned along NW-SE direction are seen in this image. NE-SW aligned wrinkle ridge system to the west of Kinkora crater is also seen in this image.

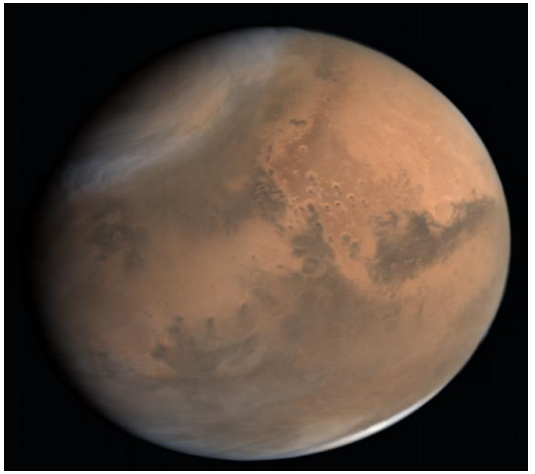
Date of Acquisition: 16-02-2015
Space craft Altitude: 2286 km
Spatial resolution: 119 m
Location: 25^0S, 112^0 E.

Global views of Mars captured during apo-imaging

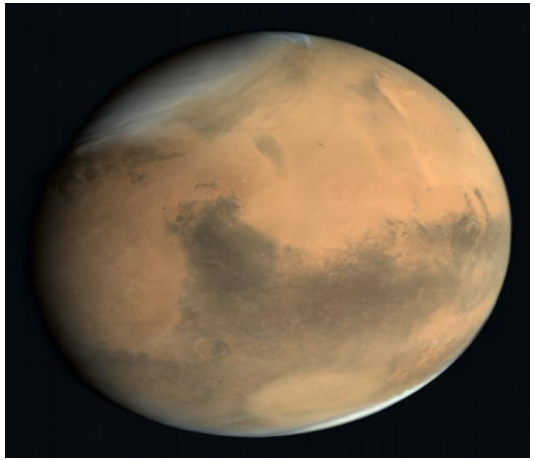


28-09-2014

30-09-2014

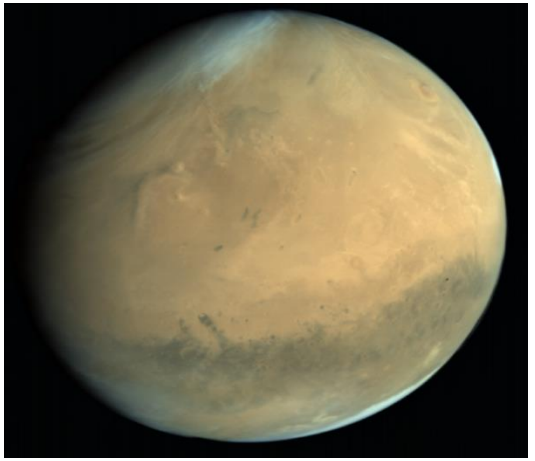


1-10-2014



4-10-2014

4-10-2014



7-10-2014

Thank You

Remote sensing data sets of Mars

sno	Instrument	horizontal resolution	DEM vertical resolutio	Satellite/Mi sson	Mission launch date	Martian orbit	Coverage
1	Mars Orbiter Laser Altimeter	128 pixel per degree (460 m) for equatorial regions	1m	Mars Global Surveyor	07-Nov-96	March,1999-june30,2001)	Full globe coverage
2	Viking Orbiter 1,2 Digital image mosaics	925 meters/pixel		Viking Orbiter		1976-1980	part of the globe
3	Mars Orbiter Camera (MOC) Wide angle camera	red and blue wide angle cameras for context (240 m per pixel)		Mars Global Surveyor	07-NOV-96	September 1997 and November 2006	Full globe coverage
3	Mars Orbiter Camera (MOC) Narrow angle camera	grayscale (black-and-white) high resolution images (typically 1.5 to 12 m per pixel)		Mars Global Surveyor	07-NOV-96	September 1997 and November 2006	Full globe coverage
4	High resolution Stereo Camera (HRSC) Digital Elevation Model (DEM)	Ortho images:12.5/25 /50m; DTM: 50m/75m/100m	1 m	Mars Express	02-07-2003	December,2003 to till date	part of the globe
5	High resolution Imaging Science Experiment (HiRISE)	images:25-30 cm/pixel DTM: 50m/pixel	1m	Mars Reconnaissance Orbiter	12-Aug-05	Dec. 7, 2006 till date	part of the globe
6	Compact Reconnaissance Imaging Spectrometer from Mars (CRISM)	18m/pixel		Mars Reconnaissance Orbiter	12-Aug-05	Dec. 7, 2006 till date	Part of the Globe

Viking MDIM2.1 Colorized Global Mosaic 232m
This global image map of Mars has a resolution of 256 pixels/degree (scale approximately 231 m/pixel at the equator). The colorized mosaic was completed by NASA
AMES which warped the original Viking colorized mosaic and blended over the lastest black/white mosaic (MDIM 2.1). The positional accuracy of features in MDIM 2.1 is estimated to be roughly one pixel (200 m), compared to 3 km for MDIM 2.0 released in 2001 and >6 km for MDIM 1.0 released in 1991

Details of Global data sets of Mars

MGS MOC WA Atlas Mosaic (MSSS)

This mosaic was generated by MSSS and ASU using Mars Global Surveyor (MGS) Mars Orbiter Camera (MOC) Wide Angle red images.
For more details see:
ftp://pdsimage2.wr.usgs.gov/pub/pigpen/mars/moc/msss_atlas_ocentric/MOC_WA_Atlas_256ppd_readme.txt
Data Source:
ftp://pdsimage2.wr.usgs.gov/pub/pigpen/mars/moc/

MGS MOLA Shaded Relief

This is a shaded relief map from Mars Global Surveyor (MGS) MOLA instrument.
Data Source:
ftp://pdsimage2.wr.usgs.gov/pub/pigpen/mars/mola/Colorshade_global_megt128ppd_merged64ppd/

MGS MOLA Topography (Goddard)

This basemap layer was generated from Mars Global Surveyor (MGS) MOLA instrument data. For more details see:
ftp://pdsimage2.wr.usgs.gov/pub/pigpen/mars/mola/mola128_88Nto88S_Simp_clon0.txt
Data Source:
ftp://pdsimage2.wr.usgs.gov/pub/pigpen/mars/mola/mola128_88Nto88S_Simp_clon0.zip

MGS TES Global Albedo

This basemap layer is a Mars Global Surveyor (MGS) TES bolometric albedo global map by Christensen.
For more details see:
ftp://pdsimage2.wr.usgs.gov/pub/pigpen/mars/tes/tes_global_albedo_simp0.txt
Data Source:
ftp://pdsimage2.wr.usgs.gov/pub/pigpen/mars/tes/tes_global_albedo_simp0.zip

MGS TES Thermal Inertia Day (Putzig et al.)

This basemap users thermal inertia maps derived from Mars Global Surveyor (MGS) Thermal Emission Spectrometer (TES) observations of the surface temperatures of Mars taken over three Mars-years from orbit 1583 to 24346. The maps were produced by Nathaniel E. Putzig at University of Colorado.

For more details see:
ftp://pdsimage2.wr.usgs.gov/pub/pigpen/mars/tes/putzig_thermal_inertia/TES_Thermal_Intertia_Putzig2007_Readme.txt
Data Source:
ftp://pdsimage2.wr.usgs.gov/pub/pigpen/mars/tes/putzig_thermal_inertia/

Odyssey THEMIS Day IR Global Mosaic

This global mosaic was generated by THEMIS team/ASU using Mars Odyssey THEMIS IR data.
ftp://pdsimage2.wr.usgs.gov/pub/pigpen/mars/themis/themis_ir_global_mosaic/Global_IRday_512ppd/PGM_THEMIS_IRday_clon0_worldfiles_README.txt
Data Source:
ftp://pdsimage2.wr.usgs.gov/pub/pigpen/mars/themis/themis_ir_global_mosaic/Global_IRday_512ppd/

MOC_WA_Atlas_256ppd_mosaic_west_geotiff

Original MSSS Text:

This mosaic was assembled from Wide Angle red images (primarily those acquired in May-June 1999) from the Mars Orbiter Camera.

The mosaic has been produced at 64 and 256 pixels/degree. All quadrangles are complete except for the polar regions (MC-01 and MC-30) and areas on quads MC-24 through MC-29 south of 60S; these should be completed by early 2002.

Processing Flow
This mosaic is built entirely from MOC images, most acquired during the Geodesy Campaign (mapping cycle M01) and some in mapping cycles M00, M02, and M03. Where possible, nadir-looking images were used; some remaining gaps needed to be filled with off-nadir images. South polar coverage is provided by images taken in mapping cycles M10-M11. Additional south polar coverage will be acquired during the 2002 summer solstice.

Each image was systematically processed by removing pixel-to-pixel variation and matching brightness to a low-resolution base map built by hand from MOC daily global map swaths. It was then map-projected, using the MOLA Digital Terrain Model to provide "orthophoto" topographic control (control sampling of 16 pixel/degree). Images with downlink data loss or corruption were processed with and without all corrupted fragments replaced by black, and the versions with errors present added to the mosaic only at the end.

Mosaicking was performed in two steps. In the first step, large barely-overlapping image swaths were mosaicked using linear blending of the overlap regions to reduce the visual impact of the seam. In the second step, smaller fill images were added only in regions without coverage from the first step.

Finally, the small gaps between adjacent swaths caused by slight timing mismatches between the end of one image and the start of the next on the same orbit were filled by linear interpolation.

All of this processing was performed automatically by software written at MSSS. Once the images were selected, processing required less than 48 hours on a Sun SunBlade 1000 system with dual 750-Mhz UltraSPARC III processors and 4 GB of RAM.