

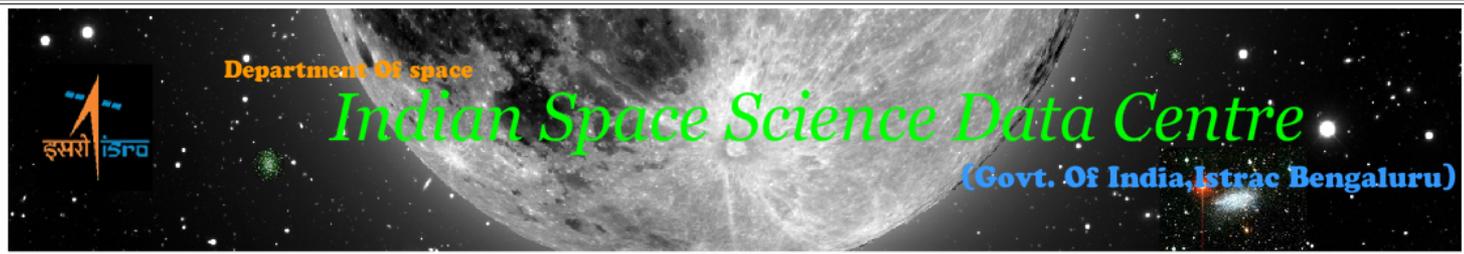
Agency' s Report (ISRO Science Data Archive)

B Gopala Krishna
Deputy Director, DPPA & WAA
National Remote Sensing (ISRO)
Hyderabad, INDIA
bgk@nrsc.gov.in

Status of archive effort and upcoming mission support



- Chandrayaan-1
- Mars Orbiter Mission (Current)
- Astrosat (future)
- Chandrayaan-2 (future)



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- [Meghatropiques](#) **new!**
- [MARS Orbiter Mission](#) **NEW!**
- [Youthsat](#)
- [RS-2/AIS-SB](#)
- [Chandrayaan-1](#) **NEW!**
- [Chandrayaan-2](#)
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- [ISRO Science Data Archive \(ISDA\)](#) **new!**
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* Indian Space Science Data Center (ISSDC) is the primary data center for the payload data archives of Indian Space Science Missions

* This data center, located at the IDSN campus in Bangalore, is responsible for the Ingest, Archive, and Dissemination of the payload data and related ancillary data for Space Science missions like Chandrayaan, Astrosat etc

* The primary users of this facility will be the principal investigators of the science payloads. In addition to them, the data will be made accessible to scientists from other institutions and also to the general public.

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Best viewed with resolution 1024x768 in Internet Explorer

Current News

- Peer Reviewed CH1 Long Term Archive (LTA) for TMC, HySI, SARA, M3 and MiniSAR released

[Chandrayaan-1](#)

19th April 2013
- Updated and New Digital Elevation Models (DEM) and Orthoimages released

[Chandrayaan-1](#)

19th April 2013
- Updated Samples of Chandrayaan-1 Lunar Atlas released

[Megha-Tropiques](#)

29th May 2012
- ROSA Nine products hosted at MT1 Data Portal

[Megha-Tropiques](#)

April 2012
- Samples of MADRAS, SAPHIR and SCARAB products hosted at MT1 Data Portal

[Chandrayaan-1](#)

29th February 2012
- Peer Review PDS Data Sets hosted

[Chandrayaan-1](#)

22nd October 2011
- Lunar DEM (Digital Elevation Model (DEM) released

[Megha-Tropiques](#)

Megha-Tropiques launched successfully on 12th Oct 2011

[Youthsat-1 Science Data Utilization Workshop](#)
Youthsat-1 Science Data



Lunar DEM generated from Chandrayaan-1 TMC stereo imagery and Lunar Map sheets are now available.

[HOME](#) [ISSDC](#) [DISCLAIMER](#) [SITE MAP](#) [FEEDBACK](#) [CONTACT US](#) [ACKNOWLEDGEMENT](#)

UserName:

Password:

- CHANDRAYAAN-1
- SAMPLES OF CH1 LUNAR ATLAS
- ACKNOWLEDGEMENT

Chandrayaan-1 Long Term Archive Release

Chandrayaan-1, the maiden Indian mission to Moon was launched during October-2008. The main objective of the mission is the photo-selenological and chemical mapping of the Moon. It carried 11 instruments onboard including SAC developed Terrain Mapping Camera (TMC) & Hyper Spectral Imager (HySI). TMC is the prime imaging payload to collect stereoscopic data of lunar surface. It has 5m spatial resolution and 20 km swath operating in panchromatic band (500-880 nm), is an optical imaging payload comprising three cameras with different view angles viz., fore, aft and nadir, accomplished through the use of suitably displaced linear arrays in the focal plane of a single lens. The Hyper Spectral Imager (HySI), operating in the visible and near Infrared spectral region, is one of the three imaging instruments onboard Chandrayaan-1 spacecraft for mineralogical study of the Moon. HySI is designed to map entire lunar surface in 64 contiguous bands in the visible and near infrared (VNIR: 421-964 nm) with a spatial sampling of 80m. A wedge filter is employed for the spectral separation and the image is mapped on an area detector.

1. Chandrayaan-1 Long Term Archive (LTA)

(<http://www.issdc.gov.in/>)

The data acquired at various phases of the Chandrayaan-1 mission from TMC, HySI, M3, SARA and MiniSAR are processed as per the processing level definitions and provided with Planetary Data System (PDS) standards for archival. The instrument data in PDS has gone through a peer review process (as per the standard guidelines of PDS) by the expert reviewers from various global archive agencies and a Long Term Archive (LTA) is prepared for TMC, HySI and SARA. The peer review for M3 and MiniSAR has been carried out by their respective agencies and the data has been submitted to Indian Science Data Archive (ISDA) at ISSDC. ISDA holds the science data for all the Indian science missions, and is responsible for data archival and dissemination.

The LTA can be accessed from the current site <http://www.issdc.gov.in/>. This site has the facility to browse through the available datasets of TMC, HYSI, MiniSAR, M3 and SARA and download the required data. TMC, HySI and SARA datasets can be downloaded on the request basis currently. Users can view M3 and MiniSAR and download the full data archives from the <http://ode.rsl.wustl.edu/moon/indexDataSets.aspx>. The PDS data once downloaded can be viewed by the PDS viewers available from ISSDC or by any other standard viewers. User needs to register once to browse and to get access to the data. The procedure is self explanatory for browse and data access, when the user goes to the site and logs in. A sample screen shot of TMC browse is shown in **Figure-1. Table-1** gives the instrument wise data archive information of LTA in the current version.

Browse application provides a user interface to the user which allows the user to search for the available TMC, HySI, HySI Band to Band Registered (BBR) and Digital Elevation Model (DEM) on the basis of date of pass, orbit_number and latitude/ longitude. The user can view the Thumbnails (JPEG) of all the datasets along with metadata. It also showcases the peer-reviewed SARA, M3 and MiniSAR datasets. The PDS data contains relevant documentation in the Document directory. More information about the data can be found out in these documents.

Chandrayaan-1 Archive

- Chandrayaan-1 LTA for the following payloads are released on 19th April 2013 from ISSDC (<http://www.issdc.gov.in/>)
 - TMC
 - HySI
 - SARA
 - M3 and MiniSAR
- TMC Digital Elevation Model (Higher Level Products) for the possible passes and samples of Lunar mapsheets generated at Space Applications Center (SAC) are also released on the same day



Chandrayaan-1 Archive

- Hosting of the Data Compressed PDS (DC-PDS) was proposed in 2014, Subsequently all the PDS data sets were generated and DC-PDS was prepared & verified. **Achieved around 75% compression thus Enabling faster download.**
- LLRI and SPICE data sets hosted in June 2015
- **Upgraded the CH1 Browse application to enable Instantaneous Access & Download provision at ISDA,ISSDC in July 2015**

Welcome
himanshu

- CHANDRAYAAN-1** 
- SAMPLES OF CH1 LUNAR ATLAS
- SEARCH (TMC & HYSI)
- AO PAYLOADS SEARCH
- DEM SEARCH
- ATLAS CATALOGUE 
- SPIICE DATA 
- LLRI DATA 
- MOSAIC** 
- TMC North Pole Mosaic
- TMC South Pole Mosaic
- TMC North Pole DEM Overlay
- TMC South Pole DEM Overlay
- TMC Mosaic (without Poles)
- HYSI North Pole Mosaic
- HYSI South Pole Mosaic
- GLOBE VIEW** 
- TMC Mosaic
- TMC DEM
- TMC MAPSHEETS
- HYSI
- M3 First Season
- DOWNLOADS**
- M3 & MINISAR DATA**
- ACKNOWLEDGEMENT**

PRODUCT
SELECT CAMERA VIEW
ORBIT NO
DATE OF PASS #
SELECT LATITUDE
SELECT LONGITUDE

TMC LEVEL-3

NADIR VIEW

ORBIT NO

DATE OF PASS #
From  To 

(e.g., 10.5)
(the value should be between -90 to 90)

(e.g., 280)
(the value should be between 0 to 360)

Note:

Current Chandrayaan-1 data sets in this release are Peer Reviewed. The TMC and HySI data sets are based on the latest version of SPIICE generated for the full mission except for the period from 14th Nov2008 to 02nd Dec. 2008.

The accuracy of orbit information provided as navigation kernels can vary between 1-20 km. However, user can identify his area of interest on the browse with accuracy better than 1 km (due to the improved corners) for TMC and HySI. But in some cases of HySI it can go up to 20 km. Data losses can be present in a few products, wherein the position of data losses can vary in different bands of HySI. Saturation can be observed in few orbits of HySI. The number of Level-1b HySI products will not match with the number of Level-1a, due to the issues of mis-registration of bands. In some cases of the existing Level-1b products, mis-registration may exist between some bands.

CH1 Browse Features Available at ISSDC

Chandrayaan-1 PDAP Implementation

- **IPDA project**

- Currently metadata access services along with data retrieval are available for TMC datasets. It is being extended for HySI and SARA data
- Metadata Services are added to the IPDA Registry Services
- Currently map based Search services are getting implemented

Science Data Archival Activities at ISSDC

Youthsat & MeghaTropiques

- Data Sets for Youthsat and Megha Tropiques missions are generated in Standard formats –
 - **Youthsat**: Mission Completed with 8900 Orbits
Payloads: LivHySI: H5, Rabbit (Tomograms)
 - **Megha Tropiques**: (in Orbit Mission)
Payload: Madras, Scarab & Sapphire: H5
ROSA: NetCDF
- Peer Review to be conducted to host the YS1 data set in public domain
- MeghaTropiques: L1 Products are hosted for access by Authorised Users at ISSDC and L2 Products are hosted in public domain at MOSDAC at Ahmedabad

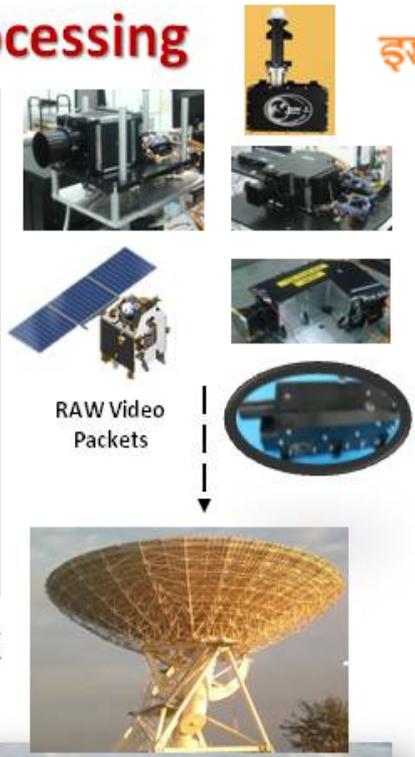
Mars Orbiter Mission (MOM)



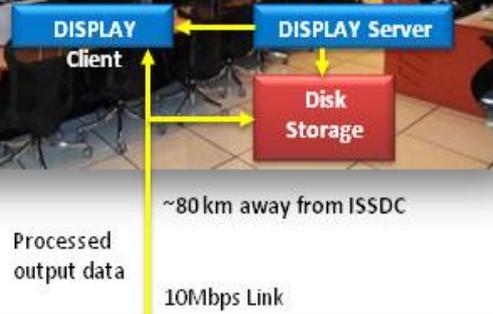
- Mars Orbiter Mission is India's first interplanetary mission and second planetary mission after Chandrayaan-1
- Launched on 5th November 2013 and reached Mars in September 2014
- Carries five payloads
 - Mars Color Camera (MCC) to map various morphological features on Mars with optical imaging
 - Methane Sensor for Mars (MSM) to detect the presence of methane in the Martian atmosphere
 - Thermal Infrared Imaging Spectrometer (TIS) to map surface composition & mineralogy
 - Mars Exospheric Neutral Composition Analyser (MENCA) to study the neutral composition of the Martian upper atmosphere
 - Lyman Alpha Photometer (LAP) to investigate the escape processes of Mars upper atmosphere through Deuterium / Hydrogen



Mars Orbiter Mission Data Reception & Processing



MARS COLOR CAMERA IMAGE



~80 km away from ISSDC

Processed output data

10Mbps Link



DISPLAY Clients

DISPLAY Server

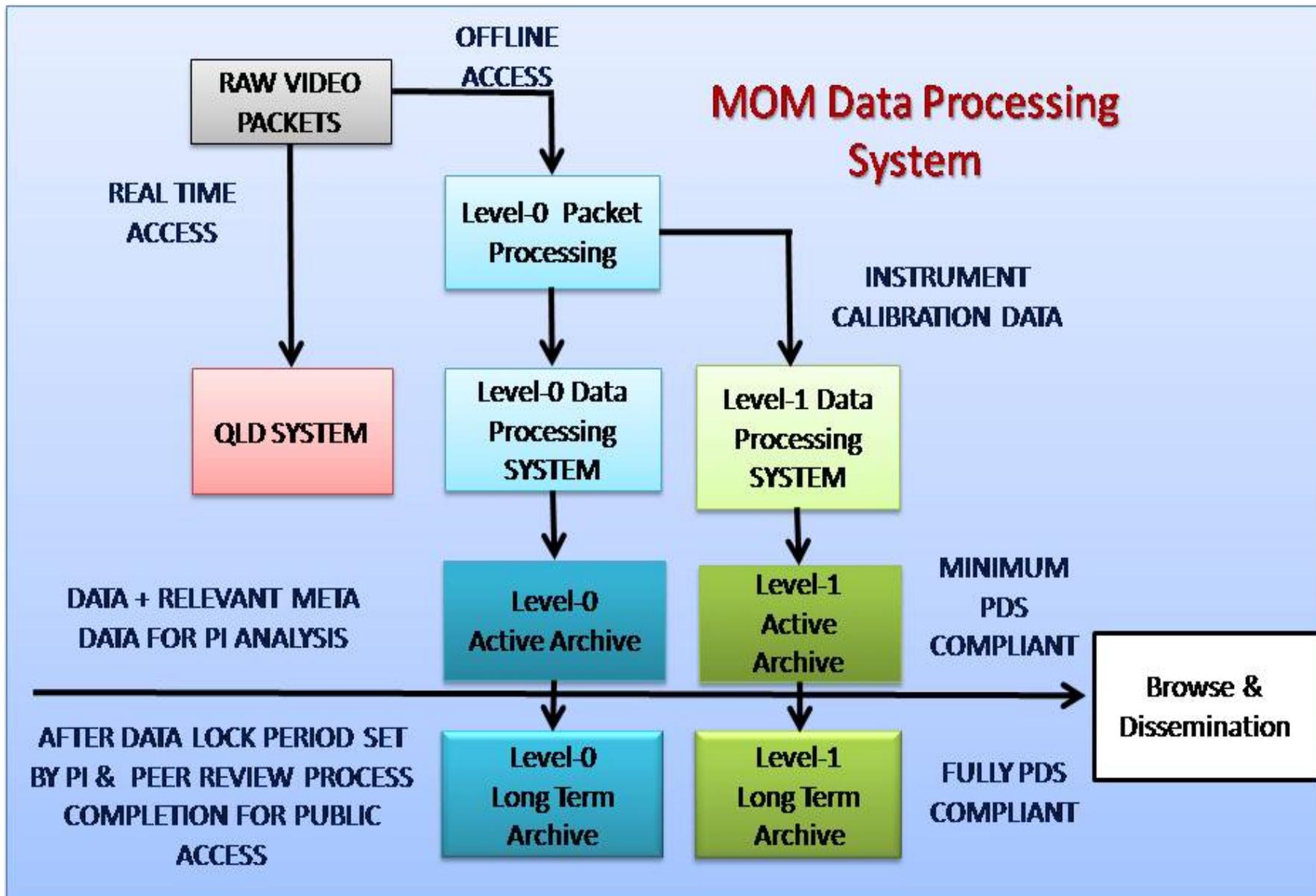


Disk Storage

PACQ

Offline file

Real-time UDP Packets

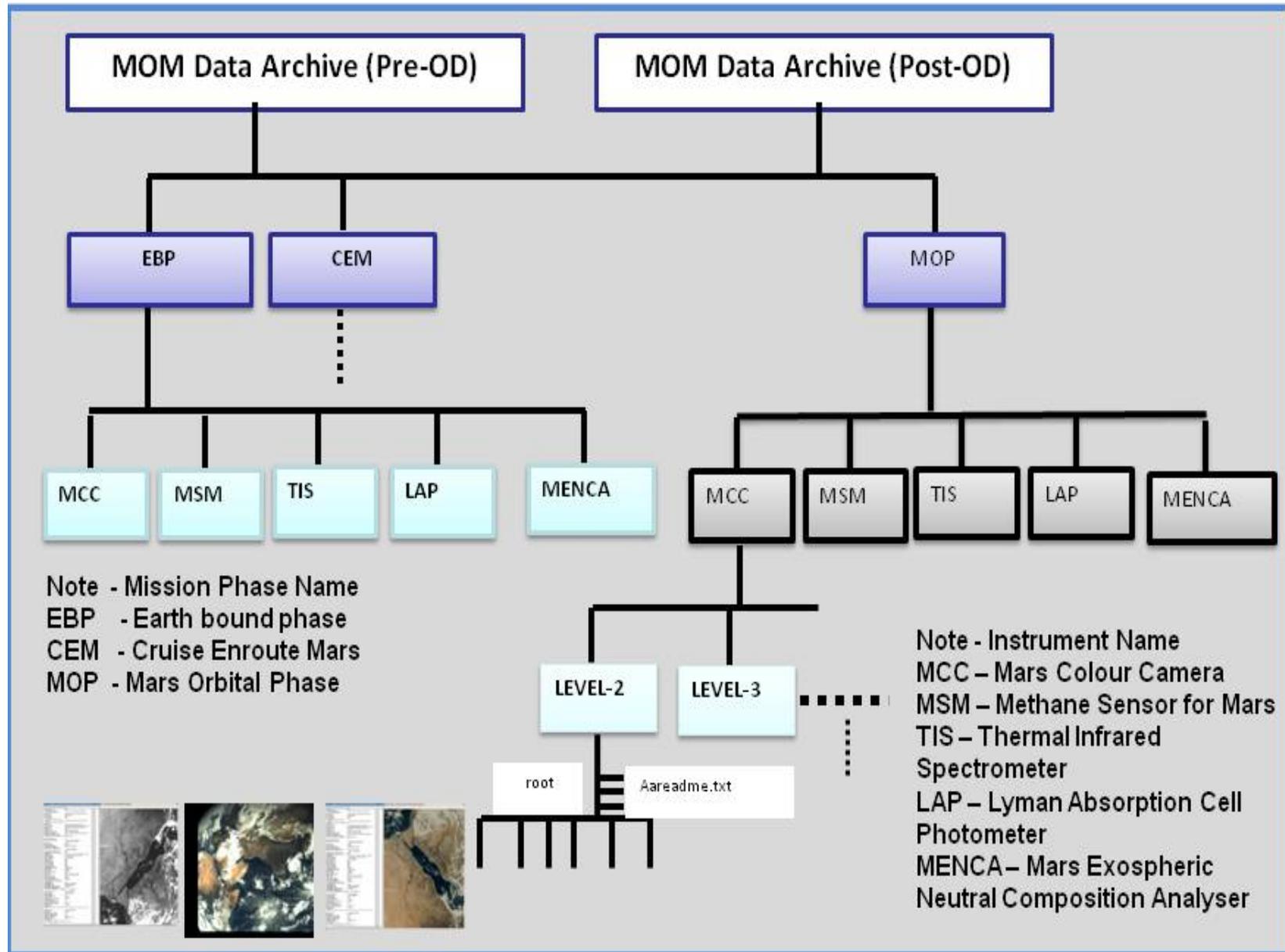


PDS Archive for MOM

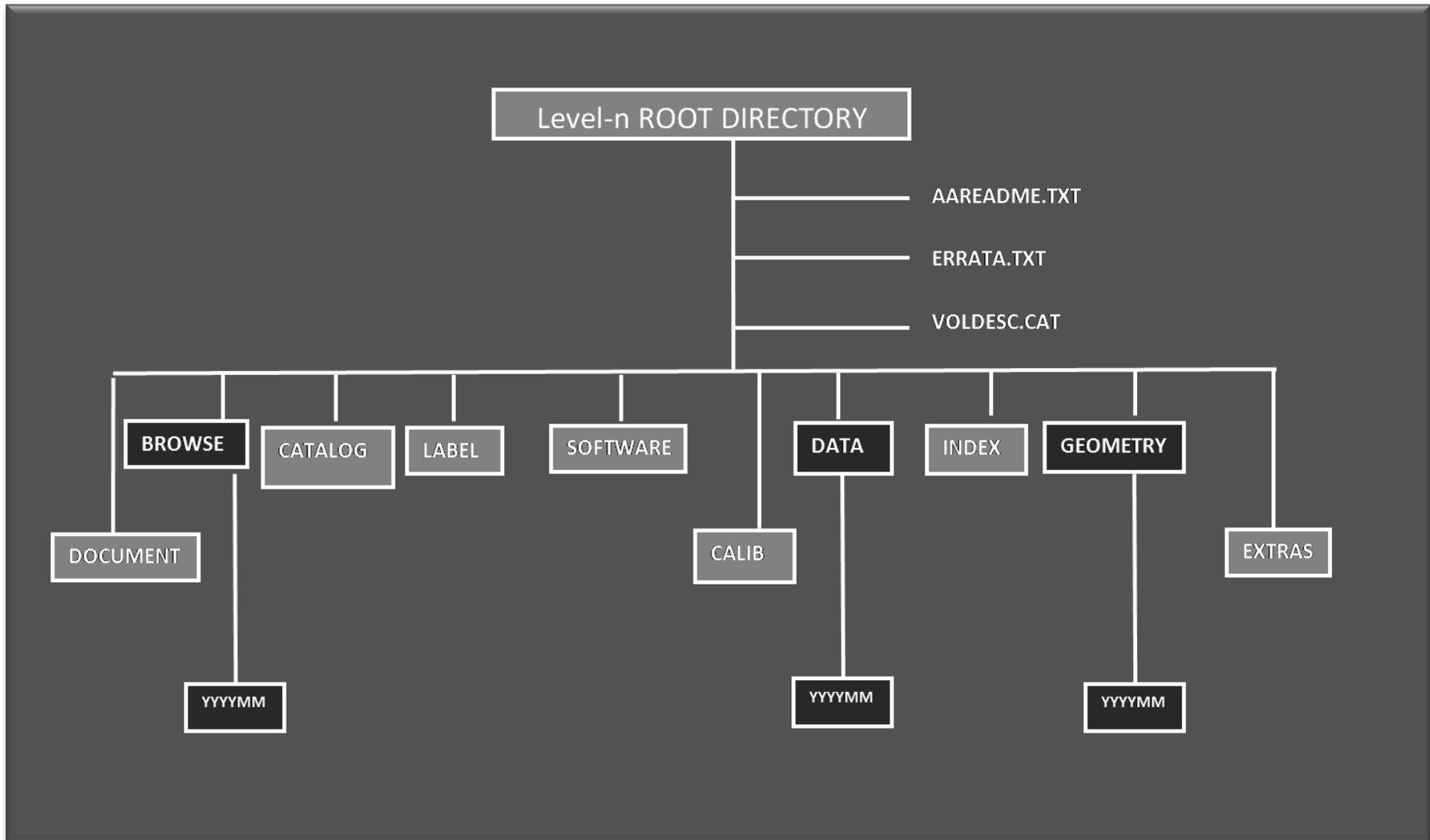


- ISDA (ISRO Science Data Archive) adopted PDS 3 Archive standard for Mars Orbiter Mission
- PDS Data Archive Pipeline is designed and developed
- Active archive in PDS is being generated on regular basis for Pre & Post OD Data sets.
- Every instrument data has been modeled into an appropriate PDS object listed in Table-1

Planetary Data Archive architecture for Mars orbiter Mission



Instrument wise Archive Structure



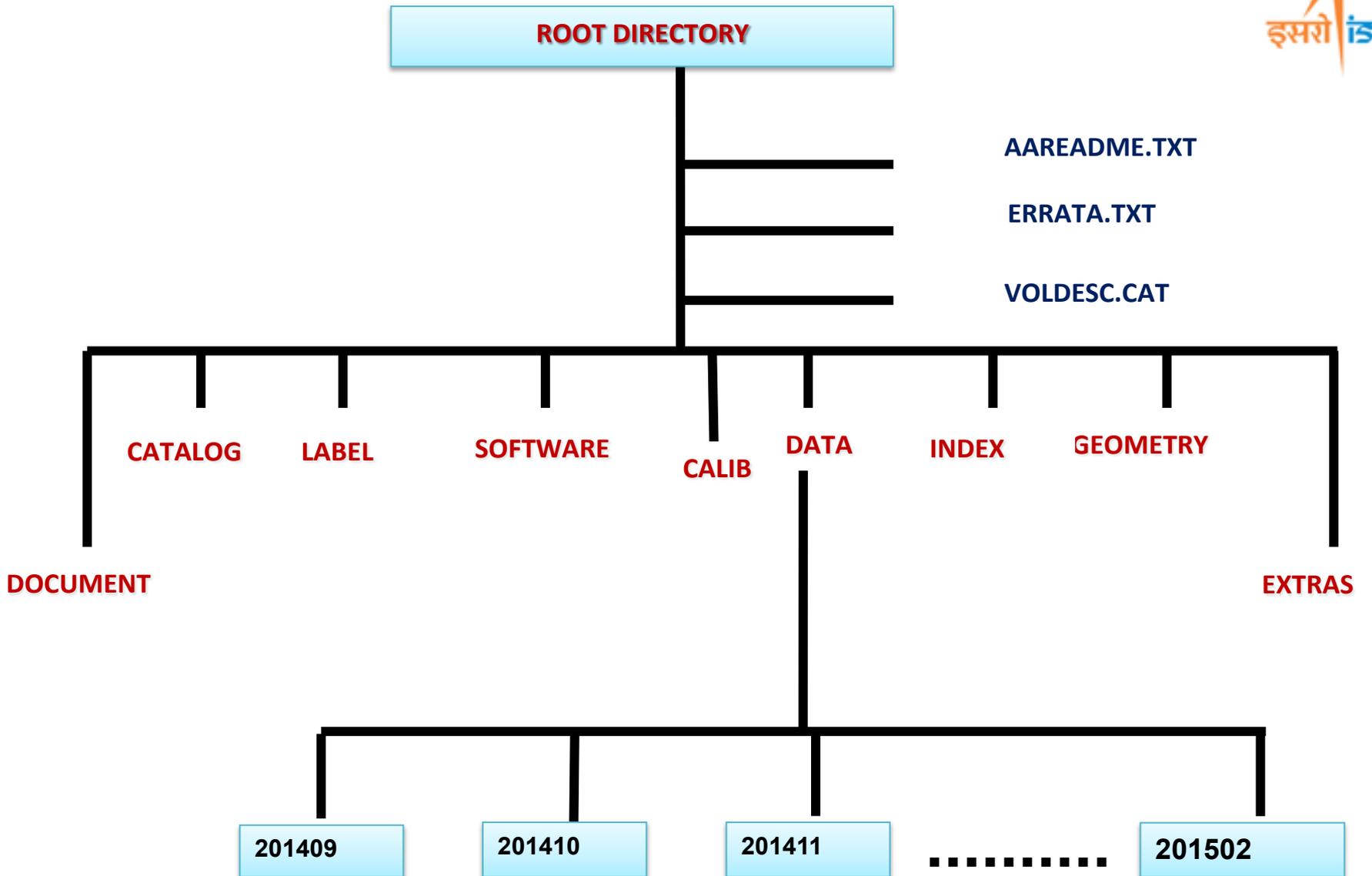
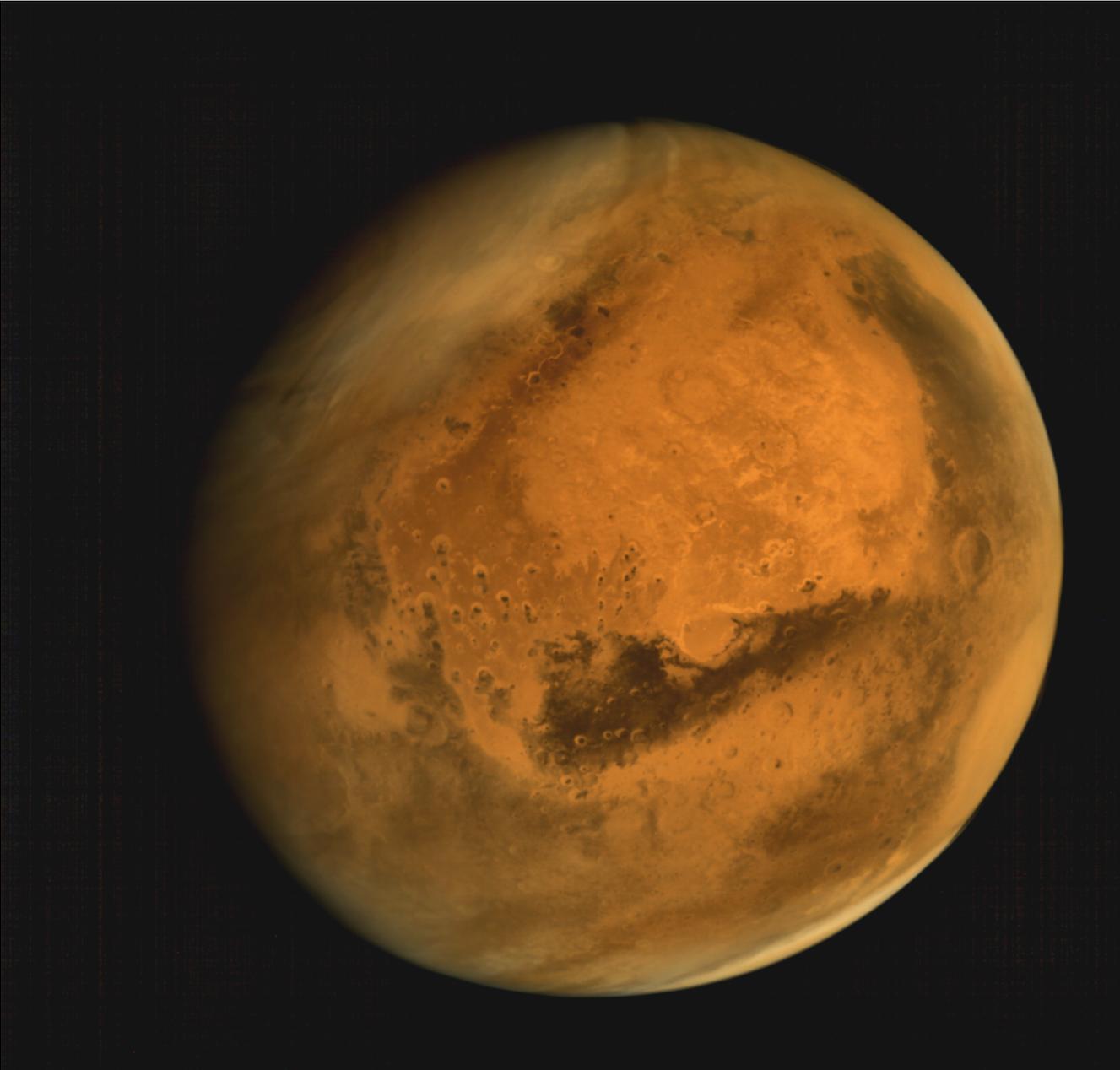


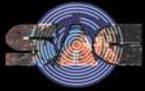
Table-1: MOM Instruments' Data Types



Instrument	Description	PDS Data Object
MCC	Mars color camera (MCC) is a CMOS image sensor of 2K×2K area array. It provides a high resolution, high speed color snapshot of the imaged scene.	BINARY IMAGE
TIS	A Thermal Infrared grating spectrometer (TIS) Makes use of an un-cooled micro-bolometer array as the detector. Suitable for moderate to coarse spatial and spectral resolutions.	BINARY QUBE
MSM	Methane Sensor for Mars (MSM) is a differential radiometer based on Fabry-Perot Etalon filters which measures reflected solar radiance in two channels in the SWIR spectral region	ASCII TABLE
MENCA	In-situ measurement of neutral composition and distribution of the Martian exosphere (500 km & beyond). If possible, to provide first-ever limits to neutral gas distribution around Mars' s moon Phobos	ASCII ARRAY
LAP	Measurement of “Deuterium/Hydrogen Ratio” in the Martian upper atmosphere. Works on the principle of “Resonant Scattering and at Lyman-a wavelengths corresponding to H and D. Resonant Absorption” at Lyman-a wavelengths corresponding to H and D.	ASCII SPREADSHEET



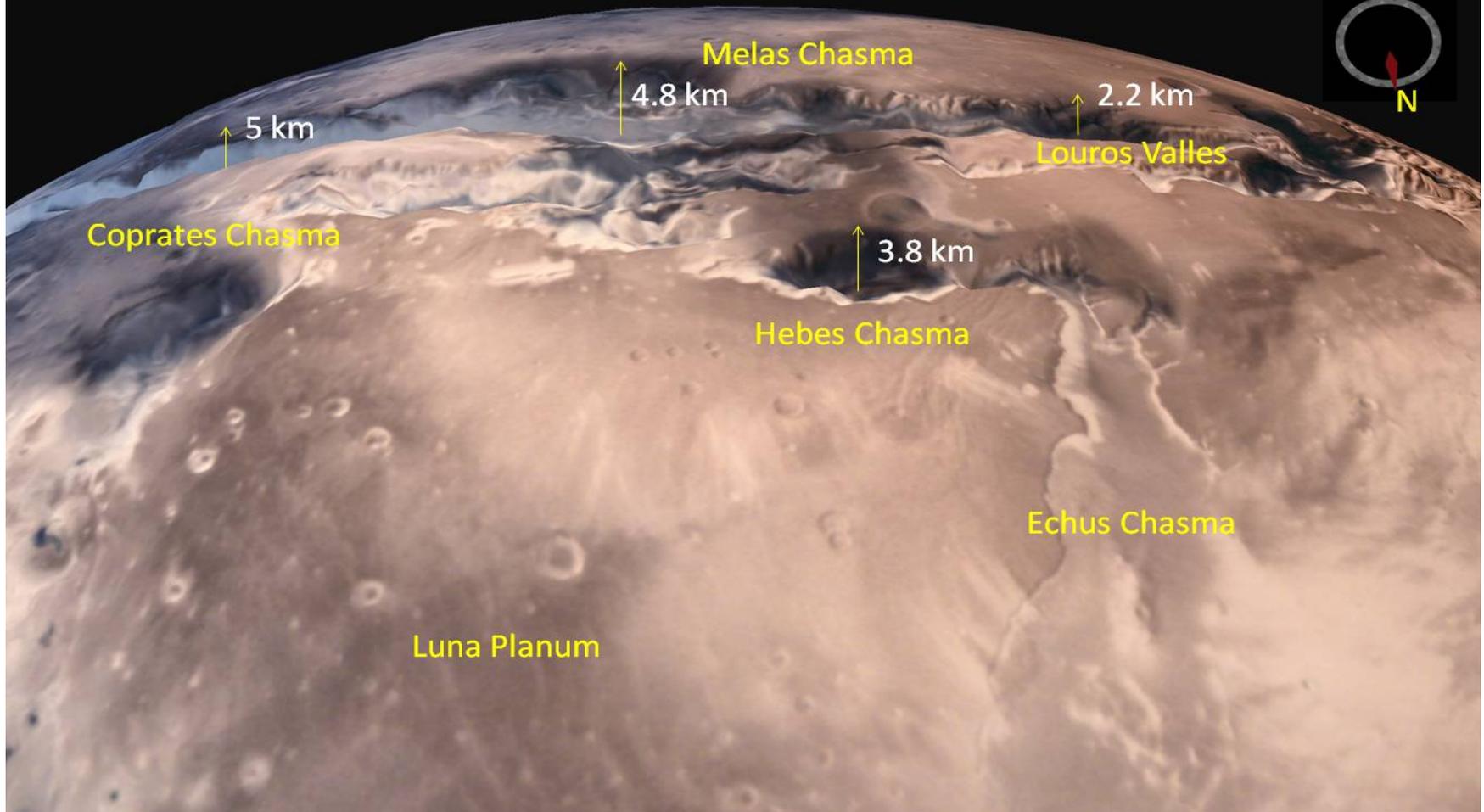
10th Meeting of IPDA Steering Committee
at ISAS/JAXA, Tokyo, July 22-24, 2015



MARS ORBITER MISSION : VALLES OF MARINERIS USING MCC IMAGES



DRAPED OVER MOLA DEM





10th Meeting of IPDA Steering Committee
at ISAS/JAXA, Tokyo, July 22-24, 2015

Astrosat

- India's first dedicated astronomical satellite, expected to be launched during September 2015.
- For study of cosmic sources, using multi-wavelength/ Broad band X-ray studies (Spectra, Variability) UV to X-rays
- Five payloads: UVIT, CZTI, SXT, LAXPC and SSM
- Datasets to be archived in FITS Format
- Two processing levels (Level-1 and Level-2) are identified for all instruments of Astrosat for archival at ISSDC
- Software development for Astrosat data archive and dissemination is completed
- Astrosat Archive is planned to be VO Compliant



Chandrayaan-2



- Configured as a two module system comprising of an Orbiter Craft module (OC) and a Lander Craft module (LC) carrying the Rover.
- Orbiter carries five payloads
- The Lander Craft with scientific payloads will soft land on the lunar surface at a predetermined location on the lunar surface
- The Rover will be released by the Lander Craft and has the mission objective of performing mobility activities on low gravity and vacuum of Moon surface with Semi-Autonomous navigation and hazard avoidance capability
- Data archive for Chandrayaan-2 is planned to be in PDS

Thank You