

Getting CRISM data

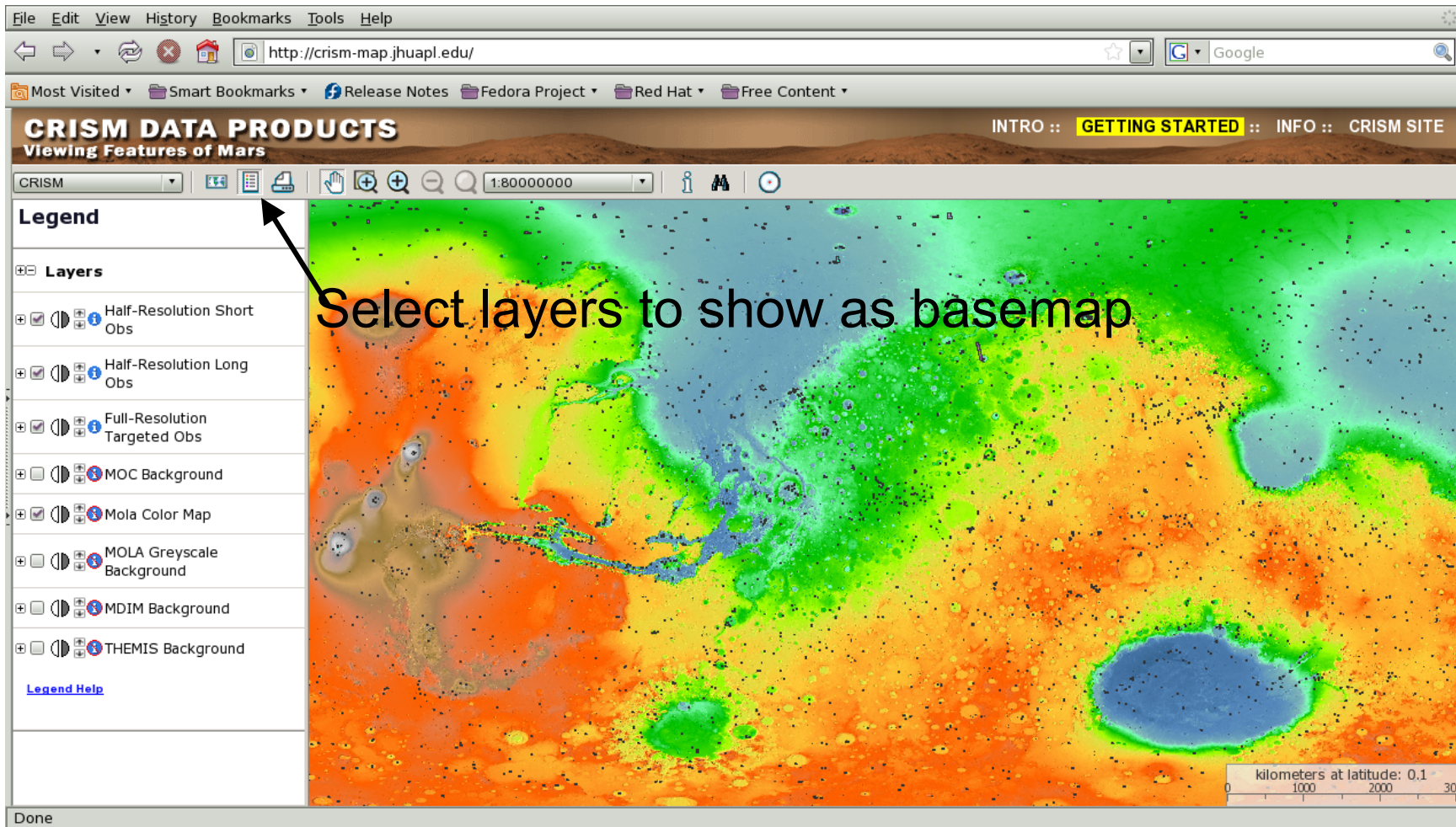
Hari Nair, Kim Seelos, Debra Buczkowski, Frank Morgan, Frank Seelos, Scott Murchie, and the
CRISM Science Operations Center
Johns Hopkins University Applied Physics Lab

Presented at the Mars Data Analysis Meeting
ISRO Headquarters, Bangalore
Feb 22-25, 2016



Accessing Data Via
<http://crism-map.jhuapl.edu/>

Each black spot is a CRISM targeted observation

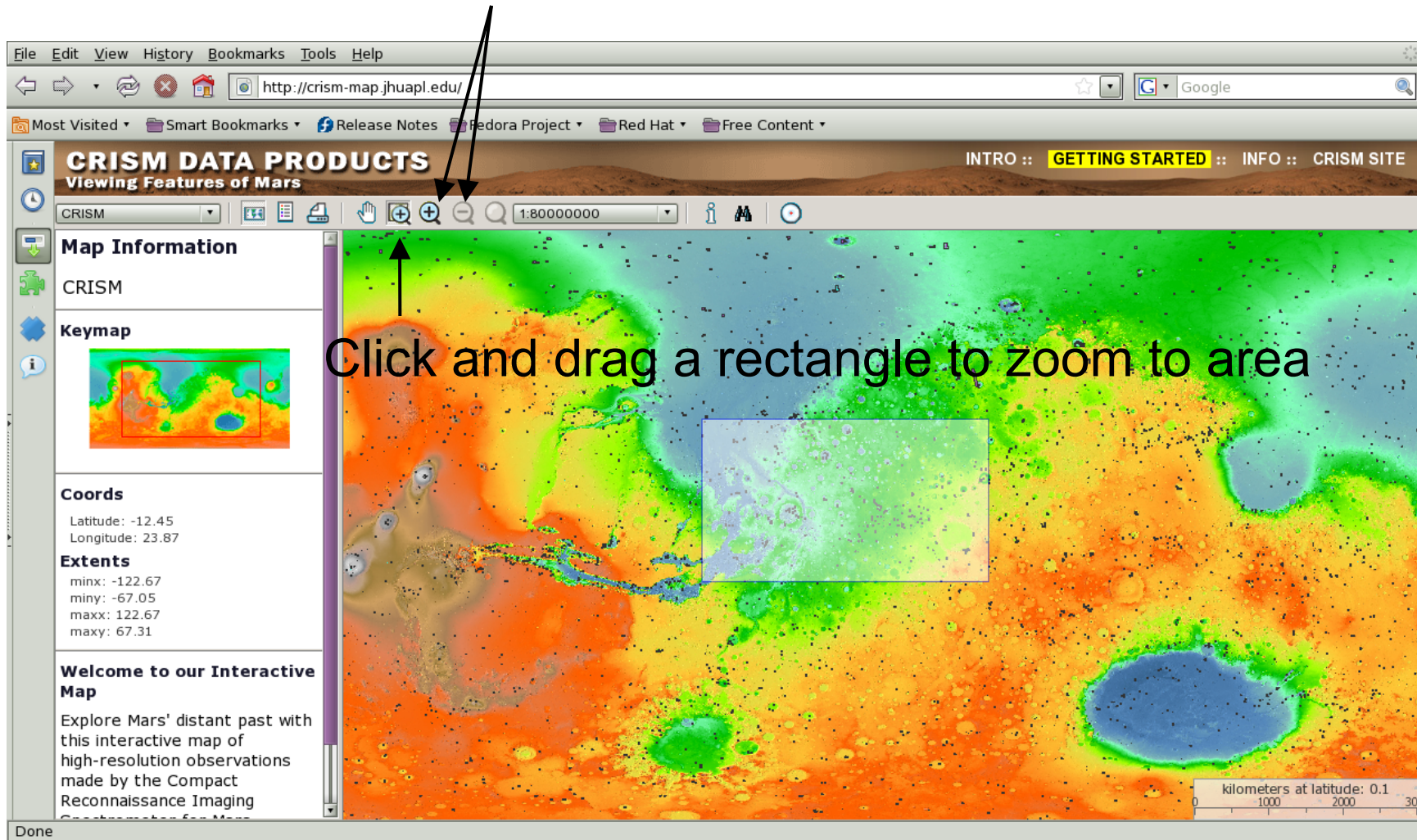


The screenshot shows a web browser window displaying the CRISM Data Products interface. The browser address bar shows <http://crism-map.jhuapl.edu/>. The page title is "CRISM DATA PRODUCTS" with a subtitle "Viewing Features of Mars". Navigation links include "INTRO :: GETTING STARTED :: INFO :: CRISM SITE". The interface includes a map of Mars with a color-coded topographic map and CRISM targeted observations (black spots). A legend on the left lists various layers:

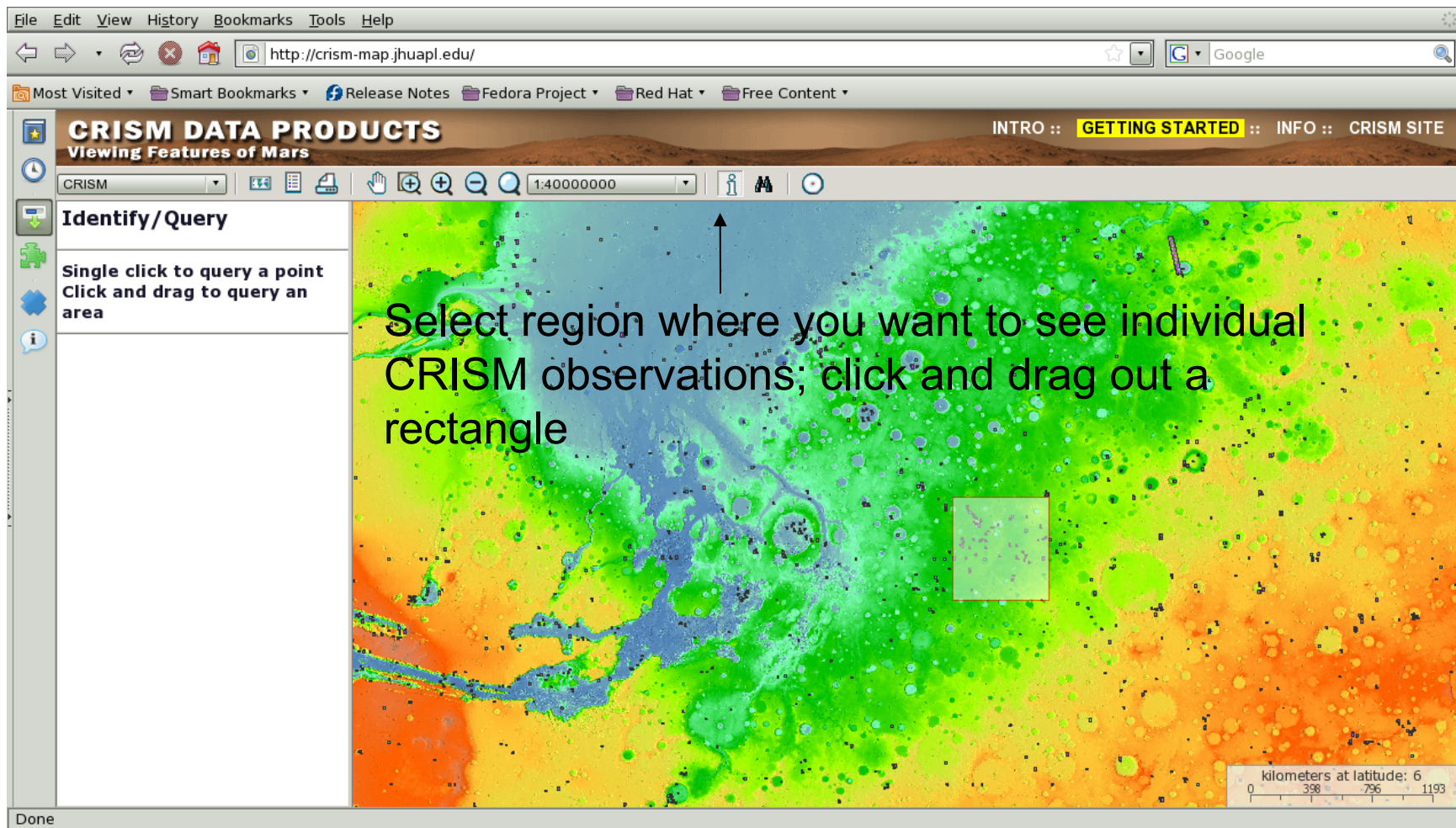
- Half-Resolution Short Obs
- Half-Resolution Long Obs
- Full-Resolution Targeted Obs
- MOC Background
- Mola Color Map
- MOLA Greyscale Background
- MDIM Background
- THEMIS Background

An arrow points to the legend with the text "Select layers to show as basemap". A scale bar at the bottom right indicates "kilometers at latitude: 0.1" with markers at 0, 1000, 2000, and 30. The browser status bar shows "Done".

Zoom in and out



The screenshot shows a web browser window displaying the CRISM Data Products interface. The browser address bar shows the URL <http://crism-map.jhuapl.edu/>. The page title is "CRISM DATA PRODUCTS" with the subtitle "Viewing Features of Mars". The navigation menu includes "INTRO :: GETTING STARTED :: INFO :: CRISM SITE". The main map area shows a color-coded topographic map of Mars with a scale of 1:80000000. A semi-transparent rectangular box highlights a specific region of interest on the map. A text overlay "Click and drag a rectangle to zoom to area" is positioned over the map, with an arrow pointing to the zoom controls in the toolbar. The left sidebar contains "Map Information" (CRISM), a "Keymap" showing the current view's location on the planet, "Coords" (Latitude: -12.45, Longitude: 23.87), and "Extents" (minx: -122.67, miny: -67.05, maxx: 122.67, maxy: 67.31). A "Welcome to our Interactive Map" section is also visible. The status bar at the bottom shows "Done".



File Edit View History Bookmarks Tools Help

http://crism-map.jhuapl.edu/

Most Visited Smart Bookmarks Release Notes Fedora Project Red Hat Free Content

CRISM DATA PRODUCTS Viewing Features of Mars

INTRO :: **GETTING STARTED** :: INFO :: CRISM SITE

CRISM

Identify/Query

Single click to query a point
Click and drag to query an area

Select region where you want to see individual CRISM observations; click and drag out a rectangle

kilometers at latitude: 6
0 398 796 1193

Done

File Edit View History Bookmarks Tools Help

http://crism-map.jhuapl.edu/

Most Visited Smart Bookmarks Release Notes Fedora Project Red Hat Free Content

CRISM DATA PRODUCTS INTRO :: **GETTING STARTED** :: INFO :: CRISM SITE

Viewing Features of Mars

CRISM 1:40000000

Identify/Query

Single click to query a point
Click and drag to query an area

Layer Name: **Full-Res Targeted Obs**

Observations (limited output): 10

Observation	Sensor	Zoom to Obs
000028A1	L	
000028C1	L	
0000334D	L	
00003CE0	L	
00003E24	L	
0000410F	L	
00004616	L	

Select "L" sensor to see browse version of the observation

kilometers at latitude: 6
0 398 796 1193

Done

NOTE: This will be extensively updated over the next 6-9 months

The screenshot shows a web browser window with the URL `http://crism-map.jhuapl.edu/details.php?data=frt_webmap_polygons&shape=398&x=-6.808425&y=8.08546`. The page title is "CRISM DATA PRODUCTS" and the subtitle is "Viewing Features of Mars".

BROWSE PRODUCTS

vnir_rgb
Enhanced visible color
red = 592nm
green = 533 nm
blue = 492nm
Downloads:
• PNG
• PNG w/ geo_grid
• Map/Stretch Info

ir_ira
IR surface brightness
gray level = brightness at 1330nm
Downloads:
• PNG
• PNG w/ geo_grid
• Map/Stretch Info

ABOUT BROWSE PRODUCTS

[Interpreting the Browse Products](#)
[Visible and Near-infrared \(VNIR\) Browse Products](#)
[Infrared \(IR\) Browse Products](#)

ACCESS TO MRO DATA IN THE PDS

The following links provide direct access to the PDS archive of calibrated CRISM data for this observation, as well as to CTX or HIRISE images coordinated with it.

[VNIR image data, calibrated to units of I/F](#)
[VNIR geometric information, in several units](#)
[IR image data, calibrated to units of I/F](#)
[IR geometric information, in several units](#)
[Accompanying CRISM emission phase function data, and CTX and HIRISE coordinated images](#)

OBSERVATION DETAILS

File	FRT000049CA_07_IF165S_TRR2.LBL
Comment	COORD Target - 2892 Faulted Layers in Impact Crater in Meridiani Planum
Year/Day of Year	2007_067
Observation Class	FRT
Observation Id	000049CA
Image Count within Observation Sequence	07
File Type	IF

Background on browse images

Link to data at the PDS

Link to coordinated HIRISE, CTX

“Browse” versions of data

Observation details

Accessing CRISM Data Via PDS Geosciences Node

- Planetary Data System (PDS) Geosciences Node - <http://geo.pds.nasa.gov/>
- PDS CRISM Archives: <http://geo.pds.nasa.gov/missions/mro/crism.htm>
- Orbital Data Explorer: <http://ode.rsl.wustl.edu/mars/>
 - Specialized PDS web tool
 - Allows users to:
 - search, retrieve, and order PDS products
 - search across missions and instruments (e.g. CRISM, HiRISE, CTX)
 - search across PDS nodes
 - search via maps and forms
 - search MRO coordinated observations

Mars Orbital Data Explorer PDS Geosciences Node
Washington University in St. Louis

Home Data Product Search Map Search Tools Data Set Browser Download Help & Resources

DATA PRODUCT SEARCH Reset Form

Planetary science data stored in PDS is organized by [data products](#) and [data sets](#). A data set is a collection of related data products, usually products acquired by a particular instrument and processed in a certain way. The data set also includes all documentation and supporting materials needed to understand and use the data products. A data product is a set of measurements resulting from a science observation, usually products acquired by a particular instrument and processed in a certain way.

STEP 1. SELECT DATA SETS TO SEARCH (A SELECTION IS REQUIRED)

- Select One or More Desired Data Sets (Released PDS Archives) (Show Options - 1 Parameter Set)
- Select Any Desired Special Product Data Sets (Non-PDS) *New Option* (Show Options - 0 Parameters Set)

STEP 2. SET ADDITIONAL FILTERING PARAMETERS (OPTIONAL)

- Select a Product ID or filter by a partial Product ID (Show Options - 0 Parameters Set)
- Filter by Existing and Proposed Landing Sites *New Option* (Show Options - 0 Parameters Set)
- Find by Product Location (Show Options - 0 Parameters Set)
- Filter by Time Range (Show Options - 0 Parameters Set)

STEP 3. PREVIEW SEARCH RESULTS SUMMARY (OPTIONAL)

Preview Search Results Summary

STEP 4. SUBMIT QUERY

View Results in Table Select Results on Map Display

Display Product Thumbnails on search results page

SEARCH for Products

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Washington University in St. Louis

Home Data Product Search Map Search Tools Data Set Browser Download Help & Resources

SEARCH RESULTS Output Results View on Map Back To Search Update Cart

Products Found: 71,027
 Display Product Thumbnails

Instrument	Type	Product ID	Obs Time
MRO CRISM	TRDR	FRT00004A6C_07_IF1655_TRR3	2007-03-11T08:41:14.880
MRO CRISM	DDR	FRT00004A76_07_DE164L_DDR1	2007-03-11T12:13:02.921
MRO CRISM	DDR	FRT00004A76_07_DE164S_DDR1	2007-03-11T12:13:02.956
MRO CRISM	TRDR	FRT00004A76_07_IF164L_TRR3	2007-03-11T12:13:02.920
MRO CRISM	TRDR	FRT00004A76_07_IF164S_TRR3	2007-03-11T12:13:02.955
MRO CRISM	DDR	FRT00004A9A_07_DE165L_DDR1	2007-03-11T21:41:45.806
MRO CRISM	DDR	FRT00004A9A_07_DE165S_DDR1	2007-03-11T21:41:45.838
MRO CRISM	TRDR	FRT00004A9A_07_IF165L_TRR3	2007-03-11T21:41:45.806
MRO CRISM	TRDR	FRT00004A9A_07_IF165S_TRR3	2007-03-11T21:41:45.837
MRO CRISM	TRDR	FRT00004AD4_07_DE163L_DDR1	2007-03-12T14:04:27.859
MRO CRISM	DDR	FRT00004AD4_07_DE163S_DDR1	2007-03-12T14:04:27.859
MRO CRISM	TRDR	FRT00004AD4_07_IF163L_TRR3	2007-03-12T14:04:27.859
MRO CRISM	TRDR	FRT00004AD4_07_IF163S_TRR3	2007-03-12T14:04:27.859
MRO CRISM	DDR	FRT00004AF3_07_DE163L_DDR1	2007-03-12T21:27:39.774
MRO CRISM	DDR	FRT00004AF3_07_DE163S_DDR1	2007-03-12T21:27:39.771
MRO CRISM	TRDR	FRT00004AF3_07_IF163L_TRR3	2007-03-12T21:27:39.773
MRO CRISM	TRDR	FRT00004AF3_07_IF163S_TRR3	2007-03-12T21:27:39.710
MRO CRISM	DDR	FRT00004AF7_07_DE164L_DDR1	2007-03-12T21:46:02.584
MRO CRISM	DDR	FRT00004AF7_07_DE164S_DDR1	2007-03-12T21:46:02.584
MRO CRISM	TRDR	FRT00004AF7_07_IF164L_TRR3	2007-03-12T21:46:02.583
MRO CRISM	TRDR	FRT00004AF7_07_IF164S_TRR3	2007-03-12T21:46:02.583
MRO CRISM	TRDR	FRT00004B08_07_DE165L_DDR1	2007-03-13T01:48:36.660
MRO CRISM	TRDR	FRT00004B08_07_DE165S_DDR1	2007-03-13T01:48:36.660
MRO CRISM	TRDR	FRT00004B08_07_IF165L_TRR3	2007-03-13T01:48:36.659
MRO CRISM	TRDR	FRT00004B08_07_IF165S_TRR3	2007-03-13T01:48:36.659
MRO CRISM	TRDR	FRT00004B13_07_DE163L_DDR1	2007-03-13T04:59:29.609

FRT00004AF7_07_IF164S_TRR3

Product Description: The detector is subsampled in [more...](#)

[More About This Product Type \(help page\)](#) [PDR Volume](#) [AARADME.TXT](#) [ERRATA.TXT](#) [Catalog Files](#) [Document Files](#) [Data Product Software Interface Specification \(PDF\)](#) [Archive Software Interface Specification Document \(PDF\)](#)

Browse Meta Data Label Related Products Map Context

Browse Image - the image below is not the actual data product

Add Product to Cart Remove Product from Cart Cart & Download Help

CRISM Instrument Team Web Site
[FRT00004AF7_07_IF164S_TRR3](#)

PDS Product Files **Derived Files**

Product Files & Labels	KB
frt00004af7_07_if164s_trr3.img	115,049
Product Data File	
frt00004af7_07_if164s_trr3.lbl	9
Product Label File	
frt00004af7_07_ra164s_hkp3.tab	513
Product Data File	
Referenced Files	KB

RETRIEVE and View Products

MAP Products

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Home Data Product Search Map Search Tools Data Set Browser Download Help & Resources

Mars ODE Map Interface - North Polar

Zoom In Zoom Out Full Extent Prev Extent Next Extent Pan Select Products By Area Remove Area Selection Select Projection Map Help

Map Display Controls

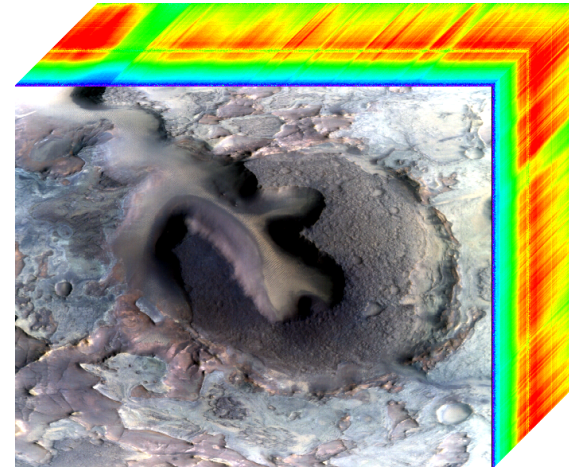
Select Layers Set Filters (Optional) View Selection Results

Instrument	Product ID
MRO CRISM	FRT0000A972_07_DE164L_DDR1
MRO CRISM	FRT0000A972_07_DE164S_DDR1
MRO CRISM	FRT0000A972_07_IF164L_TRR3
MRO CRISM	FRT0000A972_07_IF164S_TRR3
MRO CRISM	FRT0000B08_07_DE165L_DDR1
MRO CRISM	FRT0000B08_07_DE165S_DDR1
MRO CRISM	FRT0000B08_07_IF165L_TRR3
MRO CRISM	FRT0000B08_07_IF165S_TRR3
MRO CRISM	FRT0000C42_07_DE164L_DDR1
MRO CRISM	FRT0000C42_07_DE164S_DDR1
MRO CRISM	FRT0000C42_07_IF164L_TRR3
MRO CRISM	FRT0000C42_07_IF164S_TRR3
MRO CRISM	FRT0000D372_07_DE164L_DDR1
MRO CRISM	FRT0000D372_07_DE164S_DDR1
MRO CRISM	FRT0000D372_07_IF164L_TRR3
MRO CRISM	FRT0000D372_07_IF164S_TRR3

Click to view New Search Results [close]

40 km
Lon: -90.256 Lat: 84.929

- **FRT** = Class Type
 - FRT (Full Resolution Targeted Observation)
 - HRL (Half Resolution Long Targeted Observation)
 - HRS (Half Resolution Short Targeted Observation)
 - EPF (Atmospheric Survey EPF)
 - LMB (Limb Scan)
 - TOD (Tracking Optical Depth Observation)
- Mapping:
 - MSP (Multispectral Survey, VNIR+IR, 200 m/pix)
 - HSP (Hyperspectral Survey, VNIR+IR, 200 m/pix)
 - HSV (Hyperspectral Survey, VNIR only, 200 m/pix)
 - MSW (Multispectral Window, VNIR+IR, 100 m/pix)
 - MSV (Hyperspectral Window, VNIR only, 100 m/pix)
- **00003E12** = 8-digit hexadecimal Observation ID
- **07** = Hex counter for image within observation
- **IF166** = Processing, internal command macro used
 - RAnnn – Radiance / Macro#
 - IFnnn – I/F / Macro#
- **L** = Sensor ID
 - S for VNIR
 - L for IR
- **TRR3** = TRDR, current version = 3
- **IMG** = file extension
 - IMG for binary image data
 - LBL for detached ASCII PDS label
 - TAB for detached ASCII table of housekeeping



Full-resolution targeted
Observation 3E12
Counter
Calibrated to I/F
IR detector
Software version 3

FRT00003E12_07_IF166L_TRR3:

The file name fully describes the type of data, which detector it comes from, the version of the processing, and gives the unique ID and counter

Backplanes = DDRs*

Separate VNIR and IR DDRs

- Geometric information for every pixel of an image including lat, lon, i, e, and g. For map projection, photometric correction.
- Additional information includes elevation, slope magnitude and azimuth, and TES bolometric albedo and thermal inertia. Used for data analysis.

Backplanes, various units



Multiband images of backplanes; one-for-one correspondence with spatial position in TRDR

* Derived Data Records

```

TARGET_CENTER_DISTANCE = 3633.060355 <KM>
                        /* distance to Mars center at first frame */
SOLAR_DISTANCE          = 212192706.948812 <KM>
SOLAR_LONGITUDE        = 204.982066 <DEGREES>
MRO:FRAME_RATE         = 3.75 <HZ>
PIXEL_AVERAGING_WIDTH  = 10
MRO:INSTRUMENT_POINTING_MODE = "DYNAMIC POINTING"
SCAN_MODE_ID           = "LONG"

/* This DDR label describes one data file:
/* 1. A multiple-band backplane image file with wavelength-independent,
/* spatial pixel-dependent geometric and timing information.

/* See the CRISM Data Products SIS for more detailed description.

OBJECT = FILE
^IMAGE = "FRT00010DFE_0A_DE157L_DDR1.IMG"
RECORD_TYPE = FIXED_LENGTH
RECORD_BYTES = 256
FILE_RECORDS = 210

OBJECT = IMAGE
LINES = 15
LINE_SAMPLES = 64
SAMPLE_TYPE = PC_REAL
SAMPLE_BITS = 32
BANDS = 14
BAND_STORAGE_TYPE = BAND_SEQUENTIAL
BAND_NAME = ("INA at areoid, deg",
             "EMA at areoid, deg",
             "Phase angle, deg",
             "Latitude, areocentric, deg N",
             "Longitude, areocentric, deg E",
             "INA at surface from MOLA, deg",
             "EMA at surface from MOLA, deg",
             "Slope magnitude from MOLA, deg",
             "MOLA slope azimuth, deg clkwise from N",
             "Elevation, meters relative to MOLA",
             "Thermal inertia, J m^-2 K^-1 s^-0.5",
             "Bolometric albedo",
             "Local solar time, hours",
             "Spare")

END_OBJECT = IMAGE
END_OBJECT = FILE
    
```

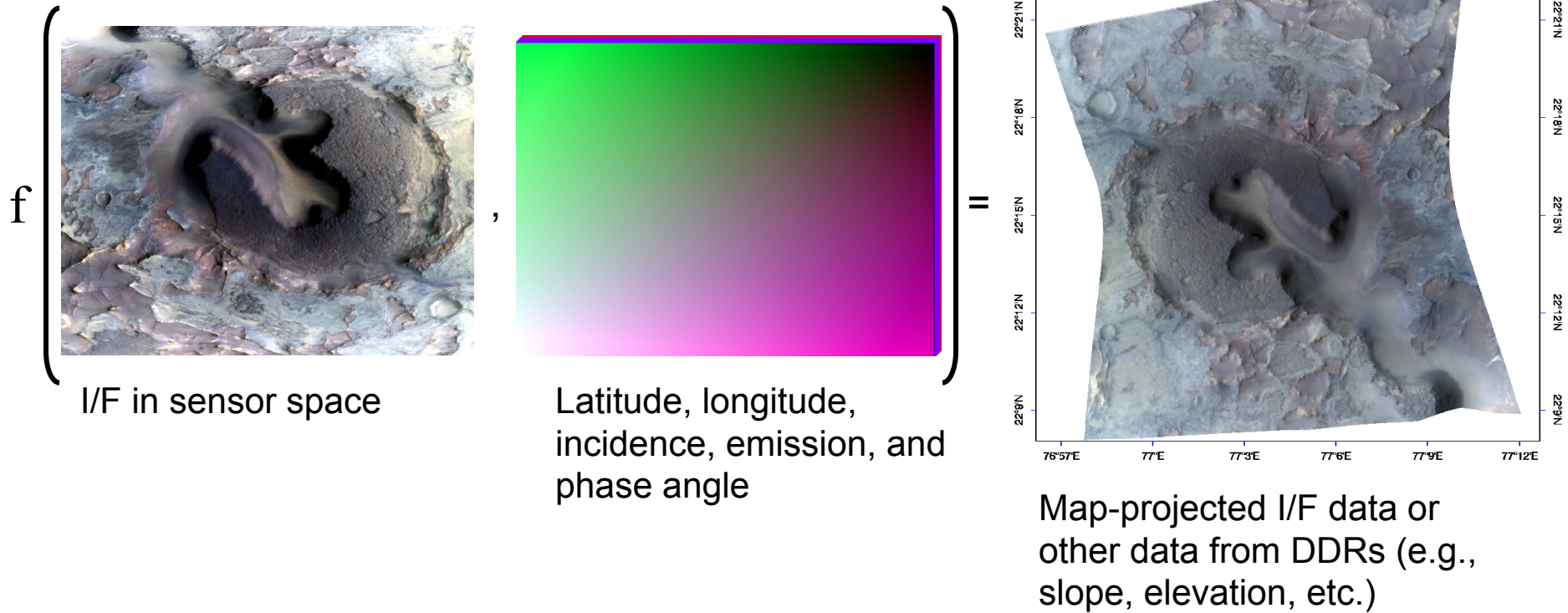
A detached PDS label gives the companion observation, its time and setup, and describes each layer of the DDR

- **FRT** = Class Type
 - FRT (Full Resolution Targeted Observation)
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 - HRS (Half Resolution Short Targeted Observation)
 - EPF (Atmospheric Survey EPF)
 - LMB (Limb Scan)
 - TOD (Tracking Optical Depth Observation)
- Mapping:
 - MSP (Multispectral Survey, VNIR+IR, 200 m/pix)
 - HSP (Hyperspectral Survey, VNIR+IR, 200 m/pix)
 - HSV (Hyperspectral Survey, VNIR only, 200 m/pix)
 - MSW (Multispectral Window, VNIR+IR, 100 m/pix)
 - MSV (Hyperspectral Window, VNIR only, 100 m/pix)
- **00003E12** = 8-digit hexadecimal Observation ID
- **07** = Hex counter for image within observation
- **DE166** = Processing, internal command macro used
 - DE n – Derived information / Macro#
- **L** = Sensor ID
 - S for VNIR
 - L for IR
- **DDR1** = DDR, current version = 1
- **IMG** = file extension
 - IMG for binary image data
 - LBL for detached ASCII PDS label




Full-resolution targeted
Observation 3E12
Counter
Derived information
IR detector
Software version 1

FRT00003E12_07_DE166L_DDR1:



Note: Map convention is planetocentric, positive east longitude

<http://ode.rsl.wustl.edu/mars/>




Mars Orbital Data Explorer

PDS Geosciences Node
Washington University in St. Louis

Home
Data Product Search
Map Search
Tools
Data Set Browser
Download
Help & Resources

WELCOME TO THE MARS ORBITAL DATA EXPLORER

The **PDS Geosciences Node Mars Orbital Data Explorer (ODE)** provides search, display, and download tools for the PDS science data archives and other data sets from the Mars Reconnaissance Orbiter (MRO), the Mars Global Surveyor, and the European Space Agency's Mars Express missions. ODE also includes selected non-PDS data contributed by the science community to support landing site selection. **Choose one of the above tabs to start using ODE.**




Currently Updating Data Sets
MRO CRISM TRDR

What does this mean?


- New PDS data products are being loaded into the website or current content is being updated.
- New PDS data products may be available through the product search page, but have not been loaded into the map services.

[click for more detail](#)




Data Product Search

Search for orbital science products across missions, instruments, and data sets via time, location, and product ids.




What's New

See what's new with ODE




Additional Tools

- [MRO Coordinated Observations](#)
- [MOLA PEDR Query](#)
- [Product Type Coverage](#)




Help & Resources

Access the ODE help, find additional resources, and see what's coming




Data Set Browser

Browse through the orbital data set files stored in the PDS archives




Available Data Sets

A full list of mission, instrument, and product types available in Mars ODE




Download Cart


Download products added to the cart from the product search




Mars ODE



Lunar ODE



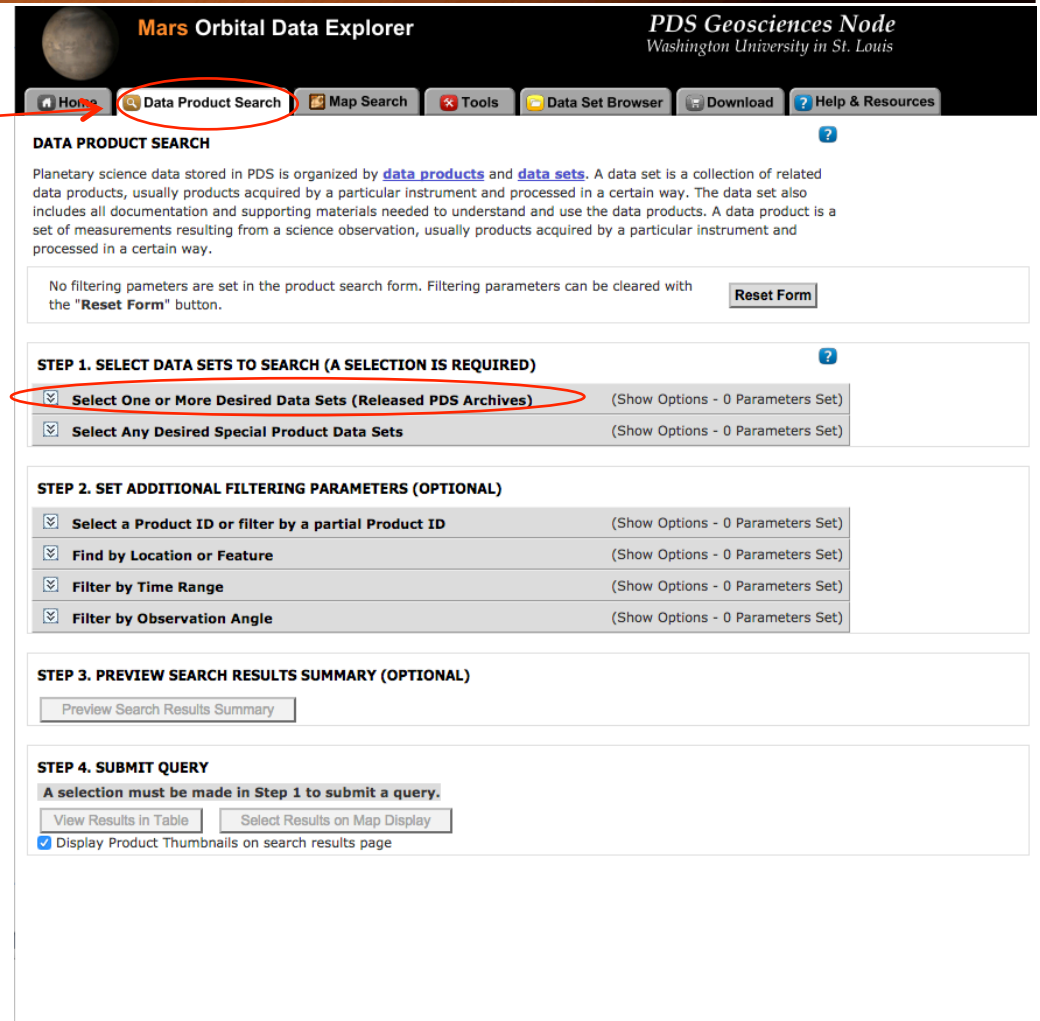
Mercury ODE



Venus ODE

The Mars Orbital Data Explorer is produced by the [PDS Geosciences Node](#) at Washington University in St. Louis. Send comments to ode@wunder.wustl.edu.

- Select “Data Product Search”
- Open “Select One or More Desired Data Sets (Released PDS Archives)”



Mars Orbital Data Explorer PDS Geosciences Node
Washington University in St. Louis

Home **Data Product Search** Map Search Tools Data Set Browser Download Help & Resources

DATA PRODUCT SEARCH

Planetary science data stored in PDS is organized by [data products](#) and [data sets](#). A data set is a collection of related data products, usually products acquired by a particular instrument and processed in a certain way. The data set also includes all documentation and supporting materials needed to understand and use the data products. A data product is a set of measurements resulting from a science observation, usually products acquired by a particular instrument and processed in a certain way.

No filtering parameters are set in the product search form. Filtering parameters can be cleared with the "Reset Form" button. [Reset Form](#)

STEP 1. SELECT DATA SETS TO SEARCH (A SELECTION IS REQUIRED)

- Select One or More Desired Data Sets (Released PDS Archives)** (Show Options - 0 Parameters Set)
- Select Any Desired Special Product Data Sets** (Show Options - 0 Parameters Set)

STEP 2. SET ADDITIONAL FILTERING PARAMETERS (OPTIONAL)

- Select a Product ID or filter by a partial Product ID** (Show Options - 0 Parameters Set)
- Find by Location or Feature** (Show Options - 0 Parameters Set)
- Filter by Time Range** (Show Options - 0 Parameters Set)
- Filter by Observation Angle** (Show Options - 0 Parameters Set)

STEP 3. PREVIEW SEARCH RESULTS SUMMARY (OPTIONAL)

[Preview Search Results Summary](#)

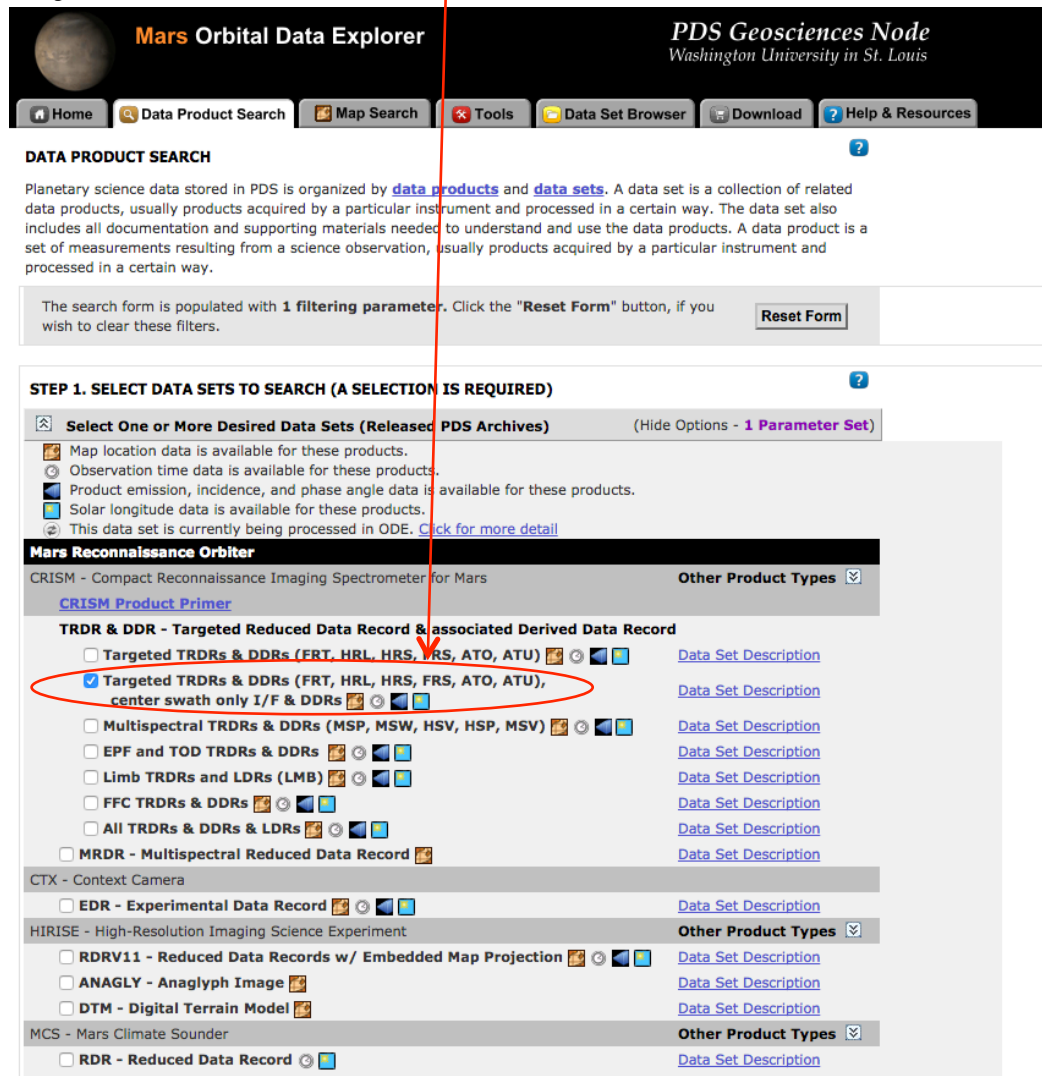
STEP 4. SUBMIT QUERY

A selection must be made in Step 1 to submit a query.

[View Results in Table](#) [Select Results on Map Display](#)

Display Product Thumbnails on search results page

- Select “Targeted TRDRs & DDRs (FRT, HRL, FRS, ATO, ATU), center swath only I/F & DDRs”



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Home Data Product Search Map Search Tools Data Set Browser Download Help & Resources

DATA PRODUCT SEARCH

Planetary science data stored in PDS is organized by [data products](#) and [data sets](#). A data set is a collection of related data products, usually products acquired by a particular instrument and processed in a certain way. The data set also includes all documentation and supporting materials needed to understand and use the data products. A data product is a set of measurements resulting from a science observation, usually products acquired by a particular instrument and processed in a certain way.

The search form is populated with **1 filtering parameter**. Click the "Reset Form" button, if you wish to clear these filters. Reset Form

STEP 1. SELECT DATA SETS TO SEARCH (A SELECTION IS REQUIRED)

Select One or More Desired Data Sets (Released PDS Archives) (Hide Options - 1 Parameter Set)

- Map location data is available for these products.
- Observation time data is available for these products.
- Product emission, incidence, and phase angle data is available for these products.
- Solar longitude data is available for these products.
- This data set is currently being processed in ODE. [Click for more detail](#)

Mars Reconnaissance Orbiter

CRISM - Compact Reconnaissance Imaging Spectrometer for Mars Other Product Types

[CRISM Product Primer](#)

TRDR & DDR - Targeted Reduced Data Record & associated Derived Data Record

- Targeted TRDRs & DDRs (FRT, HRL, HRS, FRS, ATO, ATU) [Data Set Description](#)
- Targeted TRDRs & DDRs (FRT, HRL, HRS, FRS, ATO, ATU), center swath only I/F & DDRs [Data Set Description](#)
- Multispectral TRDRs & DDRs (MSP, MSW, HSV, HSP, MSV) [Data Set Description](#)
- EPF and TOD TRDRs & DDRs [Data Set Description](#)
- Limb TRDRs and LDRs (LMB) [Data Set Description](#)
- FFC TRDRs & DDRs [Data Set Description](#)
- All TRDRs & DDRs & LDRs [Data Set Description](#)
- MRDR - Multispectral Reduced Data Record [Data Set Description](#)

CTX - Context Camera

- EDR - Experimental Data Record [Data Set Description](#)

HIRISE - High-Resolution Imaging Science Experiment Other Product Types

- RDRV11 - Reduced Data Records w/ Embedded Map Projection [Data Set Description](#)
- ANAGLY - Anaglyph Image [Data Set Description](#)
- DTM - Digital Terrain Model [Data Set Description](#)

MCS - Mars Climate Sounder Other Product Types

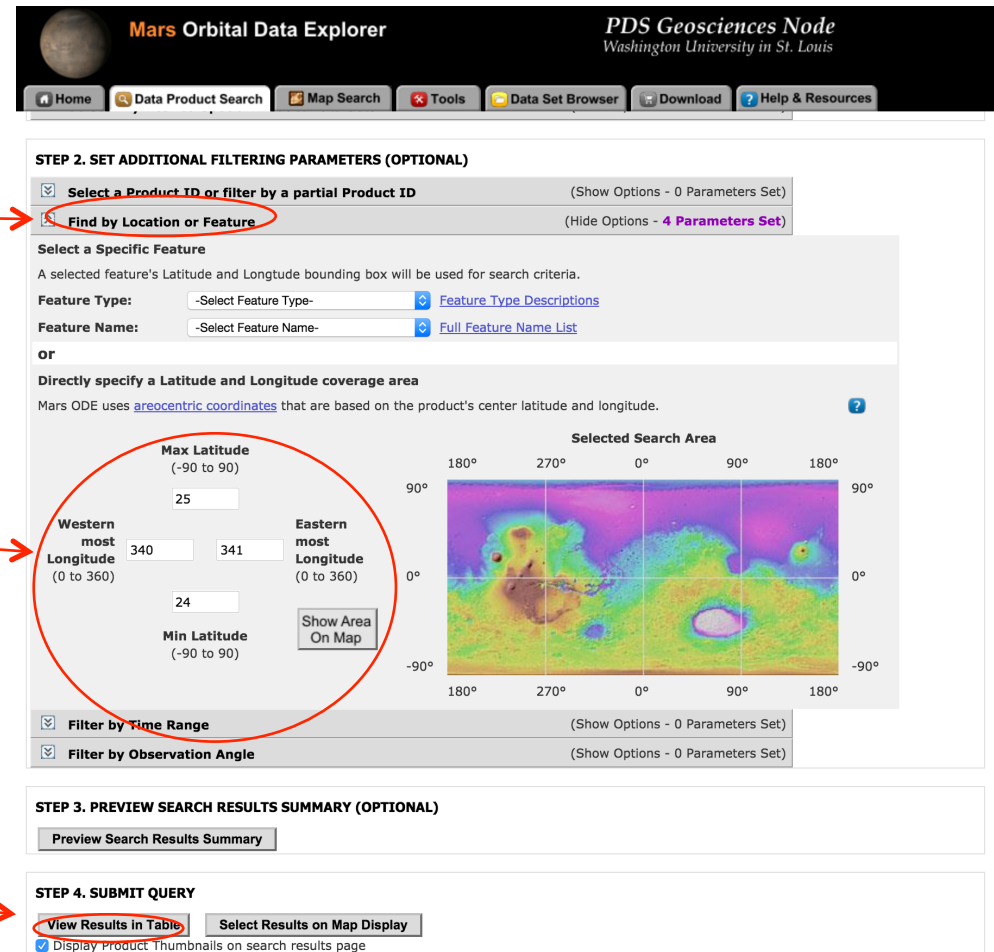
- RDR - Reduced Data Record [Data Set Description](#)

- Scroll down and expand “Find by Location or Feature”

- Enter a location range:
 - Latitude range 24 to 25
 - Longitude range 340 to 341

- Select “View Results in Table”

- Search can be further refined by constraints on time and illumination geometry if desired.



The screenshot shows the Mars Orbital Data Explorer (ODE) interface. At the top, there is a navigation bar with links for Home, Data Product Search, Map Search, Tools, Data Set Browser, Download, and Help & Resources. The main content area is titled "STEP 2. SET ADDITIONAL FILTERING PARAMETERS (OPTIONAL)".

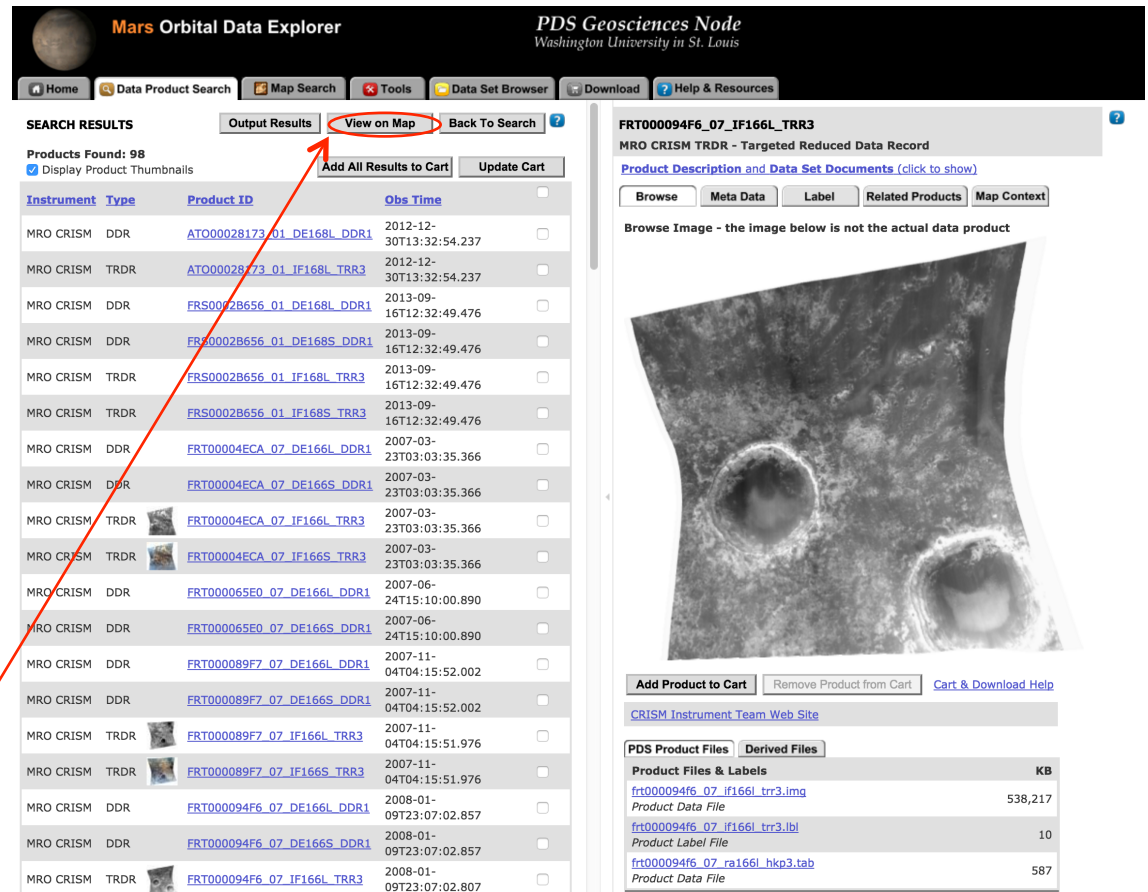
Under "STEP 2", there are two main options: "Select a Product ID or filter by a partial Product ID" (with 0 parameters set) and "Find by Location or Feature" (with 4 parameters set). The "Find by Location or Feature" option is selected and circled in red. Below it, there is a section for "Select a Specific Feature" with dropdown menus for "Feature Type" and "Feature Name".

Alternatively, there is an option to "Directly specify a Latitude and Longitude coverage area". This section includes input fields for "Max Latitude" (set to 25), "Western most Longitude" (set to 340), "Eastern most Longitude" (set to 341), and "Min Latitude" (set to 24). A "Show Area On Map" button is also present. To the right of these fields is a map of Mars showing the "Selected Search Area" with a bounding box around the equatorial region.

Below the location selection, there are checkboxes for "Filter by Time Range" and "Filter by Observation Angle", both currently unchecked.

At the bottom, there is a section for "STEP 3. PREVIEW SEARCH RESULTS SUMMARY (OPTIONAL)" with a "Preview Search Results Summary" button. Below that is "STEP 4. SUBMIT QUERY" with two buttons: "View Results in Table" (circled in red) and "Select Results on Map Display". There is also a checked checkbox for "Display Product Thumbnails on search results page".

- 98 Results found (on Jan 21, 2016)
- Selecting a link displays a summary of the product on the right side.
- You can select products to download here, or to choose observations using a map, select “View on Map”



Mars Orbital Data Explorer PDS Geosciences Node
Washington University in St. Louis

Home | Data Product Search | Map Search | Tools | Data Set Browser | Download | Help & Resources

SEARCH RESULTS Output Results | **View on Map** | Back To Search

Products Found: 98
 Display Product Thumbnails
[Add All Results to Cart](#) [Update Cart](#)

Instrument	Type	Product ID	Obs Time
MRO CRISM	DDR	ATO00028173_01_DE168L_DDR1	2012-12-30T13:32:54.237
MRO CRISM	TRDR	ATO00028173_01_IF168L_TRR3	2012-12-30T13:32:54.237
MRO CRISM	DDR	FRS00028656_01_DE168L_DDR1	2013-09-16T12:32:49.476
MRO CRISM	DDR	FRS00028656_01_DE168S_DDR1	2013-09-16T12:32:49.476
MRO CRISM	TRDR	FRS00028656_01_IF168L_TRR3	2013-09-16T12:32:49.476
MRO CRISM	TRDR	FRS00028656_01_IF168S_TRR3	2013-09-16T12:32:49.476
MRO CRISM	DDR	FRT00004ECA_07_DE166L_DDR1	2007-03-23T03:03:35.366
MRO CRISM	DDR	FRT00004ECA_07_DE166S_DDR1	2007-03-23T03:03:35.366
MRO CRISM	TRDR	FRT00004ECA_07_IF166L_TRR3	2007-03-23T03:03:35.366
MRO CRISM	TRDR	FRT00004ECA_07_IF166S_TRR3	2007-03-23T03:03:35.366
MRO CRISM	DDR	FRT000065E0_07_DE166L_DDR1	2007-06-24T15:10:00.890
MRO CRISM	DDR	FRT000065E0_07_DE166S_DDR1	2007-06-24T15:10:00.890
MRO CRISM	DDR	FRT000089F7_07_DE166L_DDR1	2007-11-04T04:15:52.002
MRO CRISM	DDR	FRT000089F7_07_DE166S_DDR1	2007-11-04T04:15:52.002
MRO CRISM	TRDR	FRT000089F7_07_IF166L_TRR3	2007-11-04T04:15:51.976
MRO CRISM	TRDR	FRT000089F7_07_IF166S_TRR3	2007-11-04T04:15:51.976
MRO CRISM	DDR	FRT000094F6_07_DE166L_DDR1	2008-01-09T23:07:02.857
MRO CRISM	DDR	FRT000094F6_07_DE166S_DDR1	2008-01-09T23:07:02.857
MRO CRISM	TRDR	FRT000094F6_07_IF166L_TRR3	2008-01-09T23:07:02.807

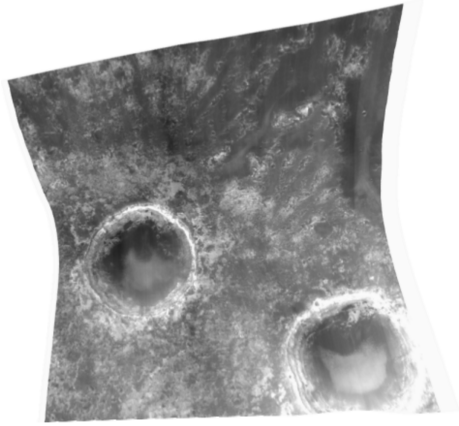
FRT000094F6_07_IF166L_TRR3

MRO CRISM TRDR - Targeted Reduced Data Record

[Product Description and Data Set Documents \(click to show\)](#)

[Browse](#) [Meta Data](#) [Label](#) [Related Products](#) [Map Context](#)

Browse Image - the image below is not the actual data product



[Add Product to Cart](#) [Remove Product from Cart](#) [Cart & Download Help](#)

[CRISM Instrument Team Web Site](#)

PDS Product Files **Derived Files**

Product Files & Labels	KB
frt000094f6_07_if166l_trr3.img Product Data File	538,217
frt000094f6_07_if166l_trr3.lbl Product Label File	10
frt000094f6_07_ra166l_hkp3.tab Product Data File	587

Mars ODE Map Interface - Cylindrical Center 0

[Zoom In](#)
[Zoom Out](#)
[Full Extent](#)
[Prev Extent](#)
[Next Extent](#)
[Pan](#)
[Select Products By Area](#)
[Remove Area Selection](#)
[Select Projection](#)
[Map Help](#)

Map Display Controls

[Select Layers](#)
[Set Filters \(Optional\)](#)
[View Selection Results](#)



SELECTION RESULTS SUMMARY

Product Type	Search Results Count
MRO CRISM DDR	50
MRO CRISM TRDR	48
Total Products Found	98

SELECTION RESULTS LIST

[Output Results](#)
[View in Table](#)
[Add All Results to Cart](#)
[Update Cart](#)

Products Found: 98
 Display Product Thumbnails

Instrument	Product ID	
MRO CRISM DDR	ATO00028173_01_DE168L_DDR1	<input type="checkbox"/>
MRO CRISM TRDR	ATO00028173_01_IF168L_TRR3	<input type="checkbox"/>
MRO CRISM DDR	FRS0002B656_01_DE168L_DDR1	<input type="checkbox"/>
MRO CRISM DDR	FRS0002B656_01_DE168S_DDR1	<input type="checkbox"/>
MRO CRISM TRDR	FRS0002B656_01_IF168L_TRR3	<input type="checkbox"/>
MRO CRISM TRDR	FRS0002B656_01_IF168S_TRR3	<input type="checkbox"/>
MRO CRISM DDR	FRT00004ECA_07_DE166L_DDR1	<input type="checkbox"/>
MRO CRISM DDR	FRT00004ECA_07_DE166S_DDR1	<input type="checkbox"/>
MRO CRISM TRDR	 FRT00004ECA_07_IF166L_TRR3	<input type="checkbox"/>
MRO CRISM TRDR	 FRT00004ECA_07_IF166S_TRR3	<input type="checkbox"/>
MRO CRISM DDR	FRT00006550_07_DE166L_DDR1	<input type="checkbox"/>

Choose geographic region interactively

Mars ODE Map Interface - Cylindrical Center 0

[Zoom In](#)
[Zoom Out](#)
[Full Extent](#)
[Prev Extent](#)
[Next Extent](#)
[Pan](#)
[Select Products By Area](#)
[Remove Area Selection](#)
[Select Projection](#)
[Map Help](#)

Map Display Controls

[Select Layers](#)
[Set Filters \(Optional\)](#)
[View Selection Results](#)

SELECTION RESULTS SUMMARY

Product Type	Search Results Count
MRO CRISM DDR	50
MRO CRISM TRDR	48
Total Products Found	98

SELECTION RESULTS LIST

[Output Results](#)
[View in Table](#)
[Add All Results to Cart](#)
[Update Cart](#)

Products Found: 98
 Display Product Thumbnails







Instrument	Product ID	
MRO CRISM DDR	ATO00028173_01_DE168L_DDR1	<input type="checkbox"/>
MRO CRISM TRDR	ATO00028173_01_IF168L_TRR3	<input type="checkbox"/>
MRO CRISM DDR	FRS0002B656_01_DE168L_DDR1	<input type="checkbox"/>
MRO CRISM DDR	FRS0002B656_01_DE168S_DDR1	<input type="checkbox"/>
MRO CRISM TRDR	FRS0002B656_01_IF168L_TRR3	<input type="checkbox"/>
MRO CRISM TRDR	FRS0002B656_01_IF168S_TRR3	<input type="checkbox"/>
MRO CRISM DDR	FRT00004ECA_07_DE166L_DDR1	<input type="checkbox"/>
MRO CRISM DDR	FRT00004ECA_07_DE166S_DDR1	<input type="checkbox"/>
MRO CRISM TRDR	FRT00004ECA_07_IF166L_TRR3	<input type="checkbox"/>
MRO CRISM TRDR	FRT00004ECA_07_IF166S_TRR3	<input type="checkbox"/>
MRO CRISM DDR	FRT00006550_07_DE166L_DDR1	<input type="checkbox"/>

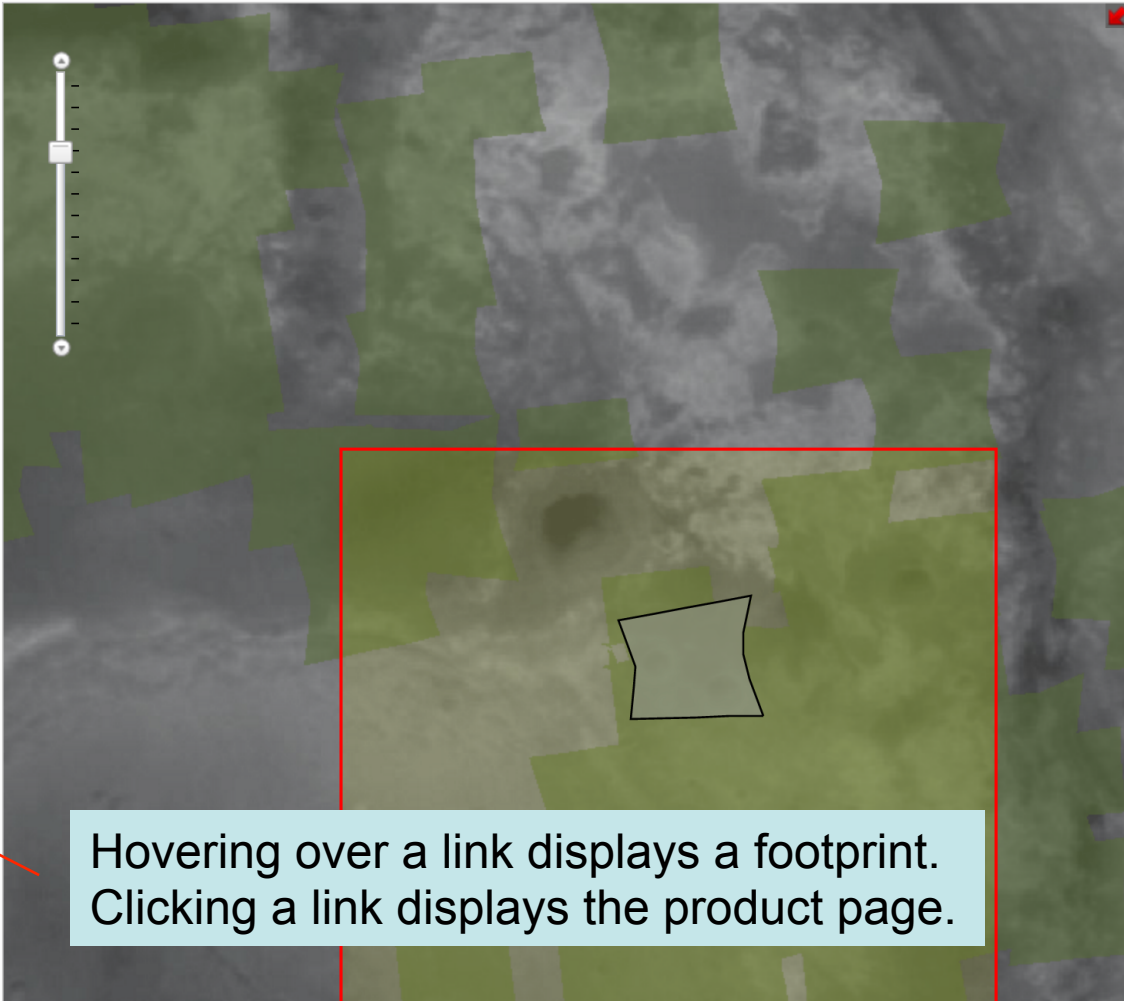
Mars ODE Map Interface - Cylindrical Center 0

[Zoom In](#)
[Zoom Out](#)
[Full Extent](#)
[Prev Extent](#)
[Next Extent](#)
[Pan](#)
[Select Products By Area](#)
[Remove Area Selection](#)
[Select Projection](#)
[Map Help](#)

Map Display Controls

Select Layers | Set Filters (Optional) | View Selection Results

MRO CRISM DDR	FRS00032B2A_01_DE168L_DDR1	<input type="checkbox"/>
MRO CRISM DDR	FRS00032B2A_01_DE168S_DDR1	<input type="checkbox"/>
MRO CRISM TRDR	FRS00032B2A_01_IF168L_TRR3	<input type="checkbox"/>
MRO CRISM TRDR	FRS00032B2A_01_IF168S_TRR3	<input type="checkbox"/>
MRO CRISM DDR	FRT000065E0_07_DE166L_DDR1	<input type="checkbox"/>
MRO CRISM DDR	FRT000065E0_07_DE166S_DDR1	<input type="checkbox"/>
MRO CRISM DDR	FRT0000848D_07_DE166L_DDR1	<input type="checkbox"/>
MRO CRISM DDR	FRT0000848D_07_DE166S_DDR1	<input type="checkbox"/>
MRO CRISM TRDR	FRT0000848D_07_IF166L_TRR3	<input type="checkbox"/>
MRO CRISM TRDR	FRT0000848D_07_IF166S_TRR3	<input type="checkbox"/>
MRO CRISM DDR	FRT000089F7_07_DE166L_DDR1	<input type="checkbox"/>
MRO CRISM DDR	FRT000089F7_07_DE166S_DDR1	<input type="checkbox"/>
MRO CRISM TRDR	 FRT000089F7_07_IF166L_TRR3	<input type="checkbox"/>
MRO CRISM TRDR	 FRT000089F7_07_IF166S_TRR3	<input type="checkbox"/>
MRO CRISM DDR	FRT000094F6_07_DE166L_DDR1	<input type="checkbox"/>
MRO CRISM DDR	FRT000094F6_07_DE166S_DDR1	<input type="checkbox"/>
MRO CRISM TRDR	 FRT000094F6_07_IF166L_TRR3	<input type="checkbox"/>
MRO CRISM TRDR	 FRT000094F6_07_IF166S_TRR3	<input type="checkbox"/>
MRO CRISM DDR	FRT0000A12A_07_DE166L_DDR1	<input type="checkbox"/>
MRO CRISM DDR	FRT0000A12A_07_DE166S_DDR1	<input type="checkbox"/>
MRO CRISM TRDR	 FRT0000A12A_07_IF166L_TRR3	<input type="checkbox"/>
MRO CRISM TRDR	 FRT0000A12A_07_IF166S_TRR3	<input type="checkbox"/>








Hovering over a link displays a footprint. Clicking a link displays the product page.

Mars ODE Map Interface - Cylindrical Center 0

 Zoom In
  Zoom Out
  Full Extent
  Prev Extent
  Next Extent
  Pan
  Select Products By Area
  Remove Area Selection
 Select Projection ▾
  Map Help

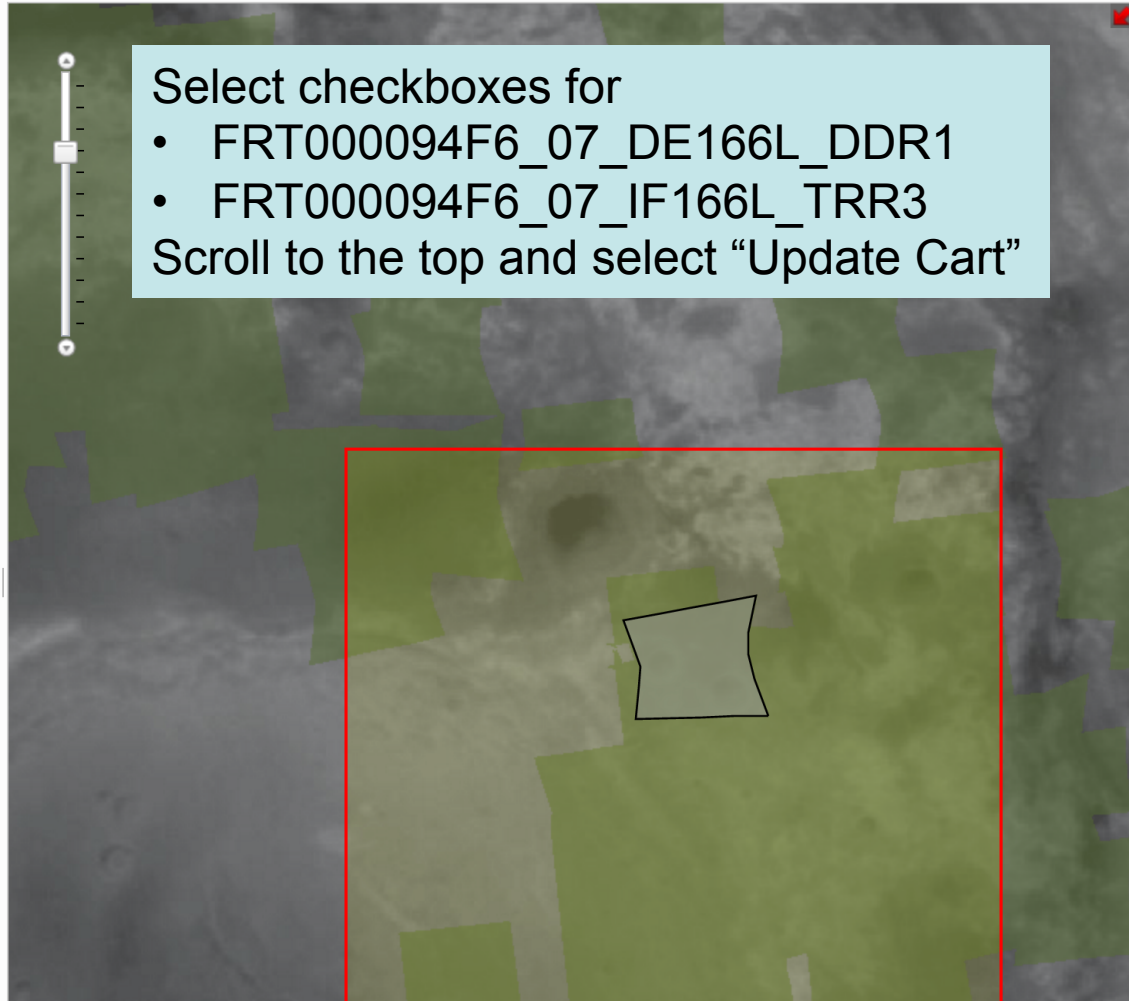
Map Display Controls

Select Layers	Set Filters (Optional)	View Selection Results
MRO CRISM DDR	FRS00032B2A_01_DE168L_DDR1	<input type="checkbox"/>
MRO CRISM DDR	FRS00032B2A_01_DE168S_DDR1	<input type="checkbox"/>
MRO CRISM TRDR	FRS00032B2A_01_IF168L_TRR3	<input type="checkbox"/>
MRO CRISM TRDR	FRS00032B2A_01_IF168S_TRR3	<input type="checkbox"/>
MRO CRISM DDR	FRT000065E0_07_DE166L_DDR1	<input type="checkbox"/>
MRO CRISM DDR	FRT000065E0_07_DE166S_DDR1	<input type="checkbox"/>
MRO CRISM DDR	FRT0000848D_07_DE166L_DDR1	<input type="checkbox"/>
MRO CRISM DDR	FRT0000848D_07_DE166S_DDR1	<input type="checkbox"/>
MRO CRISM TRDR	FRT0000848D_07_IF166L_TRR3	<input type="checkbox"/>
MRO CRISM TRDR	FRT0000848D_07_IF166S_TRR3	<input type="checkbox"/>
MRO CRISM DDR	FRT000089F7_07_DE166L_DDR1	<input type="checkbox"/>
MRO CRISM DDR	FRT000089F7_07_DE166S_DDR1	<input type="checkbox"/>
MRO CRISM TRDR	 FRT000089F7_07_IF166L_TRR3	<input type="checkbox"/>
MRO CRISM TRDR	 FRT000089F7_07_IF166S_TRR3	<input type="checkbox"/>
MRO CRISM DDR	FRT000094F6_07_DE166L_DDR1	<input type="checkbox"/>
MRO CRISM DDR	FRT000094F6_07_DE166S_DDR1	<input type="checkbox"/>
MRO CRISM TRDR	 FRT000094F6_07_IF166L_TRR3	<input type="checkbox"/>
MRO CRISM TRDR	 FRT000094F6_07_IF166S_TRR3	<input type="checkbox"/>
MRO CRISM DDR	FRT0000A12A_07_DE166L_DDR1	<input type="checkbox"/>
MRO CRISM DDR	FRT0000A12A_07_DE166S_DDR1	<input type="checkbox"/>
MRO CRISM TRDR	 FRT0000A12A_07_IF166L_TRR3	<input type="checkbox"/>

Select checkboxes for

- FRT000094F6_07_DE166L_DDR1
- FRT000094F6_07_IF166L_TRR3

Scroll to the top and select "Update Cart"





- Select “Download” Tab

- (Optional) Select “Create Mini-Archive”. This will include all archive documentation, catalog files, extras found in the product’s PDS Archive.

- Select “Continue”

CART CHECKOUT ?

PDS Data products are **freely available to the public.**

STEP 1. REVIEW PRODUCTS SELECTED Empty the Cart

Products Selected for Download: **2**
Size of current cart selections: **556 MB**

View Products Selected for Download (Hide Selection List - 2 Products)

Display Individual Files of the Products Remove Unchecked Products from the Cart

Instrument	Type	Product ID	Obs Time	<input type="checkbox"/>	
MRO CRISM	DDR	FRT000094F6_07_DE166L_DDR1	2008-01-09T23:07:02.857	✓	In Cart
MRO CRISM	TRDR	FRT000094F6_07_IF166L_TRR3	2008-01-09T23:07:02.807	✓	In Cart

STEP 2. SELECT ADDITIONAL COMPONENTS

You have the option to include additional files that are associated with your selected products.

Derived Files Derived files: **6**

Map projected shapefiles and KML files for products in the cart Size of derived files: **< 1 MB**

Mini-Archive Files Files from Mini-Archive selections: **23**

Related files from the PDS Archive including: documentation, software, errata, extras, catalogs, and indexes Size of Mini-Archive files: **< 1 MB**

SELECTION TOTALS

Products Selected for Download: **2**
Files from selections: **6**
Size of current cart selections: **556 MB**

CONTINUE WITH CHECKOUT

This cart selection should be available for download in approximately: **0.29 hours.**

[Advanced user options](#) - output a list of file URLs from the cart for manual download. You will still have the option to return to this page.

Mars Orbital Data Explorer

PDS Geosciences Node
Washington University in St. Louis

[Home](#)
[Data Product Search](#)
[Map Search](#)
[Tools](#)
[Data Set Browser](#)
[Download](#)
[Help & Resources](#)

DOWNLOAD SETUP

[< Back](#) ?

The Geosciences Node will retrieve the files you have requested and place them in a user specific FTP folder for your download. After the completion and submission of this form, an automated system will prepare the FTP site for you to download the selected files from. You will receive an email when the files are ready for download. The email will include the FTP address and username.

3. SELECT PACKAGING FORMAT

Zip
 Tar
 Tar.Gz
 No Compression

[Help me choose](#)

4. SELECT FILE ORGANIZATION

Maintain original PDS archive directory structure

Example:

```

VolumeID1
|-Calibration
|-Data
|-Documents
|-Derived files
VolumeID2
|-Data
|- ...
    
```

Place all data in one directory

(Mini-archive and derived files will be in subdirectories)

Example:

```

Cart Order
|-Data
|-Derived files
|-Archive files
|-VolumeID1
|-VolumeID2
    
```

COMPLETE THE PROCESS

Terms and Conditions

PDS data products and data set files are freely available to the public.

Policy for Citations of PDS Data [click here for a new window](#)

Your email:

(A notification will be sent to this email address when the files are ready for download.)

Submit Request

Please only click this button once. Multiple clicks may result in problems with your request.

Select format.

Select directory organization. Original PDS archive is better for lots of data, one directory is convenient for just a few files.

Enter your email address and submit request.

You will receive an email when files are ready for download:

The files that you have requested from the PDS Geosciences Node have been placed in an FTP folder for you.

Your requested files are located at the following FTP address:

<ftp://geoftp.wustl.edu/20151130T103952103>

Username: geoftp

Password: Odeuser1

The files will remain on the FTP site for 7 days. If you experience problems with our FTP site, contact

odewebmaster@wunder.wustl.edu

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