

CRISM MSL CDP Overview

3rd MSL Landing Site Selection Workshop

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- Systematic development of CRISM analysis products for the MSL candidate landing sites
 - Consistent data processing and product generation provides framework for detailed spectral investigations
- CDP pipeline processing
 - CRISM targeted observations within 0.5° of each candidate ellipse center
 - Simple photometric and atmospheric correction
 - Includes application of time-dependent empirical atmospheric transmission spectrum
 - Robust data filtering
 - Calculation of hyperspectral summary parameters
 - Includes use of detector wavelength array where appropriate (spectral smile)
 - Evaluation of summary parameter cumulative statistics
 - MSL CDP observation set
 - Site-specific
 - Observation-specific
 - Rendering of browse products (RGB summary parameter composites) and enhanced band composites (RGB and grayscale)
 - Map projection – ellipse center projection origin

http://crism.jhuapl.edu/msl_landing_sites/



MRO CRISM - MSL Landing Site Selection

This web site contains links to CRISM browse products, pre-PDS release data products, reference information, and resources related to CRISM data acquisition and analysis in support of MSL landing site selection.

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(1) MRO Support of MSL Landing Site Selection:

The [MRO](#) project and the [CRISM](#), [HIRISE](#), and [CTX](#) science and operations teams support the [MSL landing site selection process](#) through the acquisition of high resolution panchromatic, multispectral, and hyperspectral orbital remote sensing data. The first MSL [landing site selection workshop](#) was held in May, 2006. At that workshop [30+ candidate landing sites](#) were proposed by the Mars science community. Following the [second MSL landing site selection workshop](#) held in October 2007, the number of sites considered has been reduced to [10 sites](#). Here, we present CRISM observations of these 10 candidate sites in preparation for the 3rd MSL landing site selection workshop, to be held September 15-17, 2008.

(2) An Overview of CRISM Observations of the Candidate MSL Landing Sites:

The characteristics of the [standard CRISM data acquisition modes](#) and resulting data products are listed in the table below. The MSL candidate landing site survey campaign has resulted in the acquisition of at least one high quality Full Resolution Targeted (FRT) observation for each of the initial candidate sites. Many of the candidate sites are of great scientific interest irrespective of the MSL landing site selection process. As a result additional CRISM hyperspectral coverage is clustered around those sites with previously known mineralogical diversity.

CRISM also acquires multispectral survey data of the candidate landing sites as a natural consequence of the ongoing global mapping (multispectral survey) campaign, which have subsequently been made into a mosaic to generate an excellent overview of the mineral diversity at each one of these sites.

Type	Observation Mode	Spatial Resolution	Footprint Dimensions
FRT	Hyperspectral/Gimbaled (545 channels)	~20 m/pix	~10x10 km
HRL	Hyperspectral/Gimbaled (545 channels)	~40 m/pix	~10x20 km
HRS	Hyperspectral/Gimbaled (545 channels)	~40 m/pix	~10x10 km
MSW	Multispectral/Push-Broom (73 channels)	~100 m/pix	~10x45, 180, or 540 km
MSP	Multispectral/Push-Broom (73 channels)	~200 m/pix	~10x45, 180, or 540 km

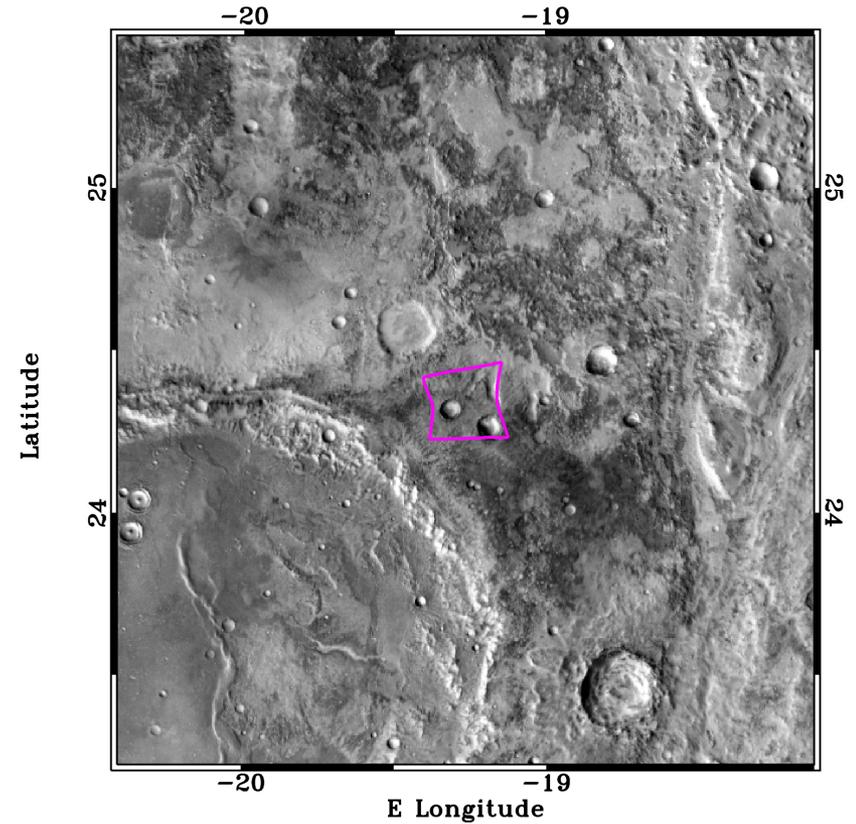
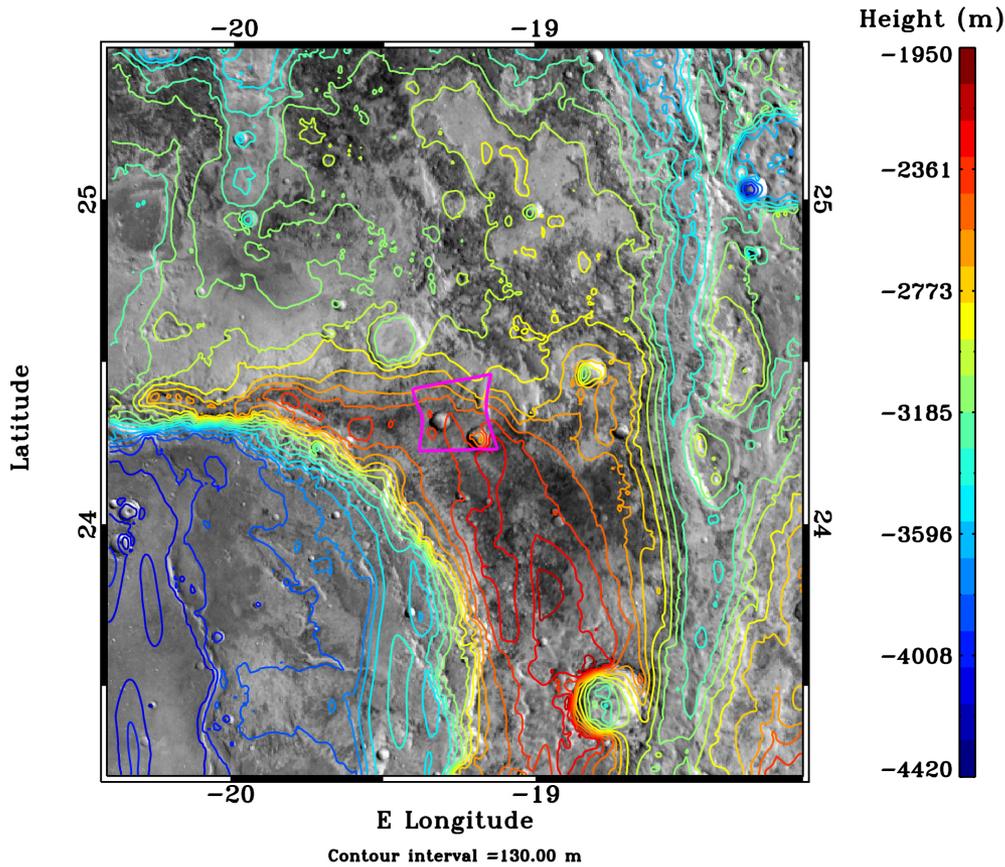


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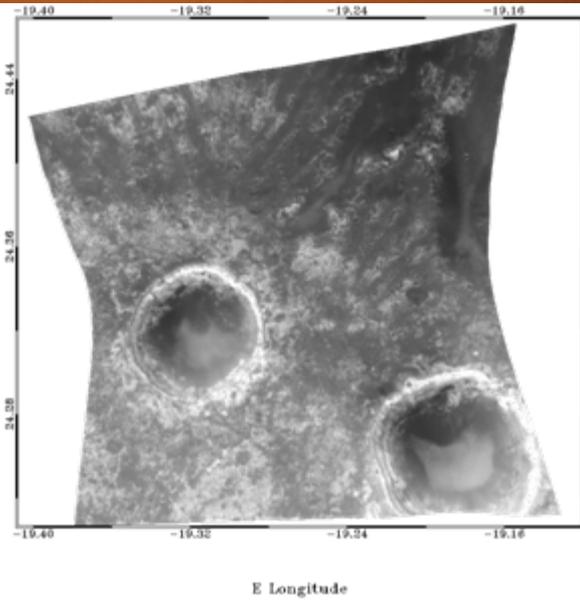
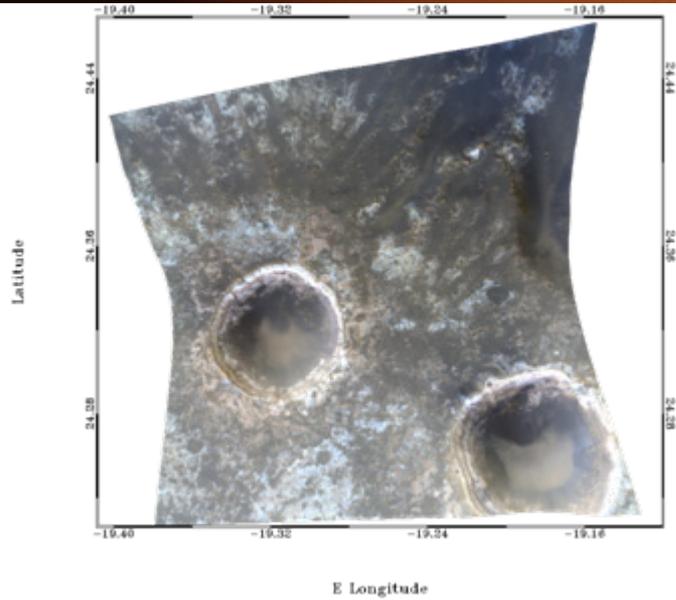
[Return to Candidate MSL Landing Sites List >](#)

MSL Landing Site Selection - Mawrth Vallis Site 2

	FRT000089F7	FRT000094F6	FRT0000A600	FRT0000B141	FRT0000B643	FRT0000BB59
Context Image      	View Details	View Details	View Details	View Details	View Details	View Details
VNIR_RGB Enhanced visible color red = 592nm green = 533 nm blue = 492nm						
	View Details	View Details	View Details	View Details	View Details	View Details
VNIR_FEM Oxidized iron minerals red = BD530 (ferric minerals) green = SH600 nm (coatings) blue = BD1000nm (variety of iron minerals)						
	View Details	View Details	View Details	View Details	View Details	View Details
VNIR_VNA VNIR surface brightness gray level = brightness at 770nm.						
	View Details	View Details	View Details	View Details	View Details	View Details
IR_RGB Enhanced visible color						
	View Details	View Details	View Details	View Details	View Details	View Details

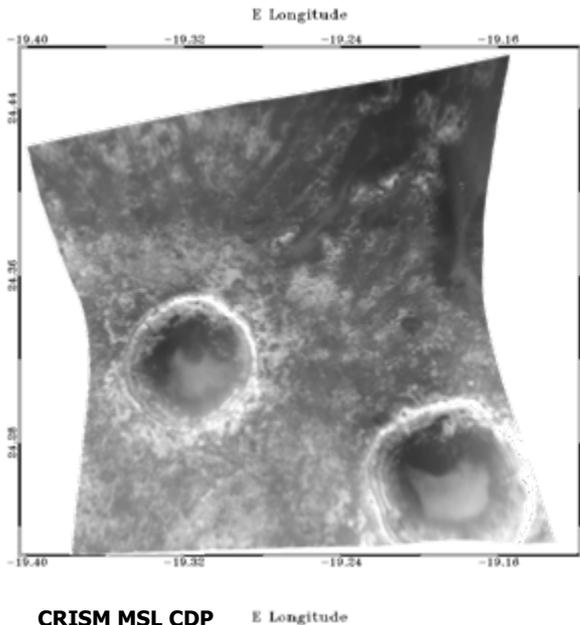
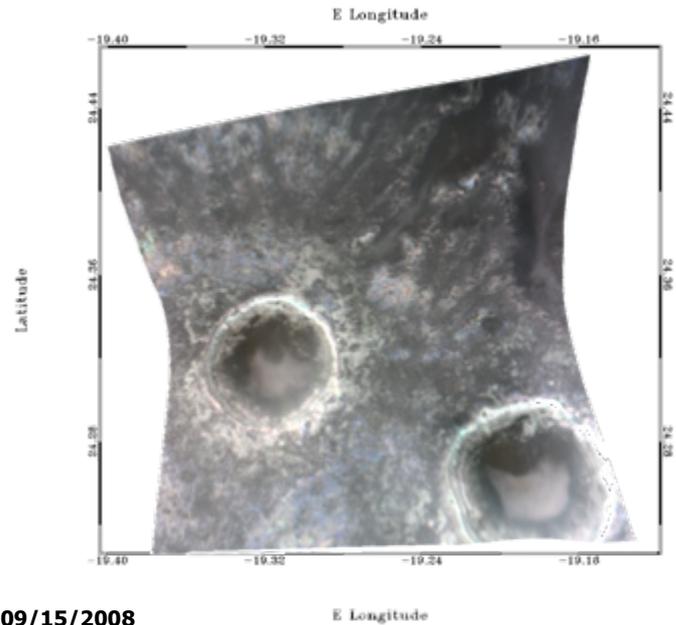


Observation Context Maps – THEMIS Day IR w/ and w/o MOLA contours



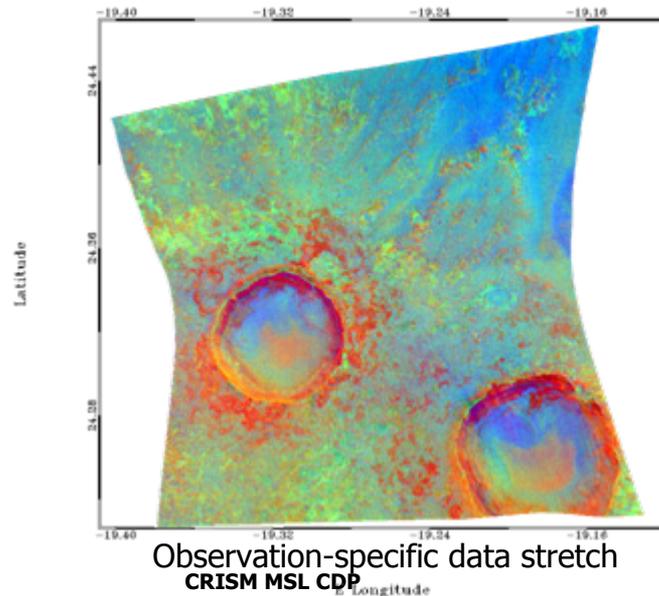
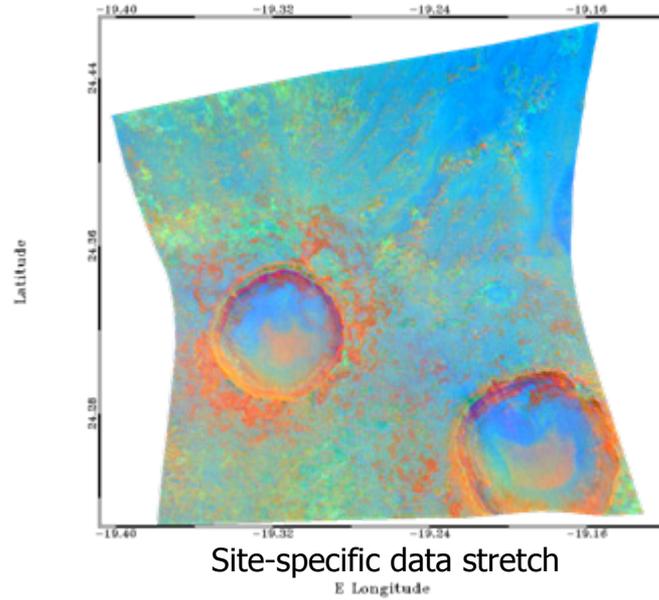
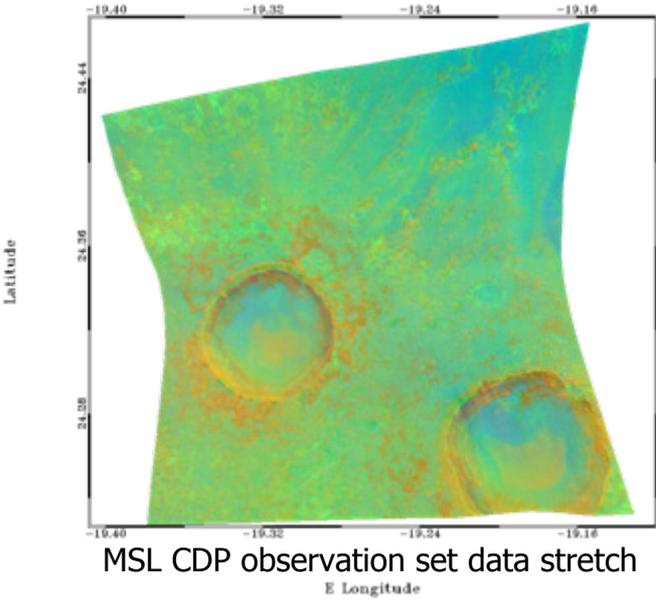
VNIR RGB
R: 710 nm
G: 600 nm
B: 535 nm

Grayscale: 770 nm



IR RGB
R: 2500 nm
G: 1500 nm
B: 1080 nm

Grayscale: 1330 nm



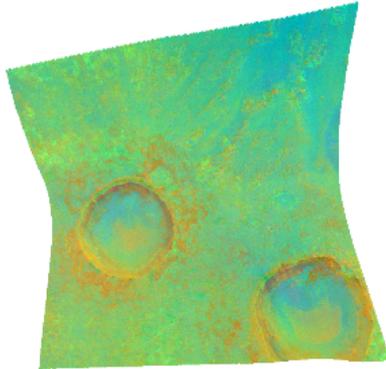
FEM

R: BD530 - 530 nm band depth;
crystalline ferric mineralogy

G: SH600 – 600 nm shoulder;
selected ferric mineralogy

B: BD1000VIS – 1000 nm
integrated band depth; ferrous
mineralogy

UNIFORM STRETCH ACROSS ALL SITES



ACCESS TO MRO DATA IN THE PDS

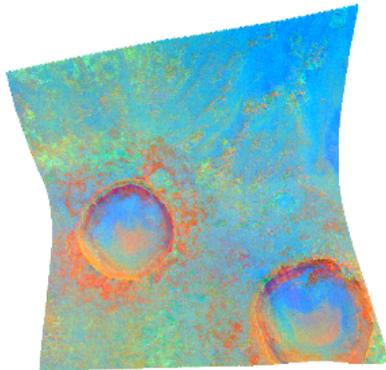
The following links provide direct access to the PDS archive of calibrated CRISM data for this observation, as well as to CTX or HIRISE images coordinated with it.

- [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](#)

DOWNLOADS

- [Uniform PNG](#)
- [Uniform PNG w/ geo. grid](#)
- [Site Stretch PNG](#)
- [Site Stretch PNG w/ geo. grid](#)
- [Observation Stretch PNG](#)
- [Observation Stretch PNG w/ geo. grid](#)
- [Lat/Lon](#)

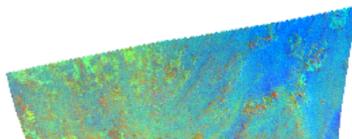
SITE STRETCH

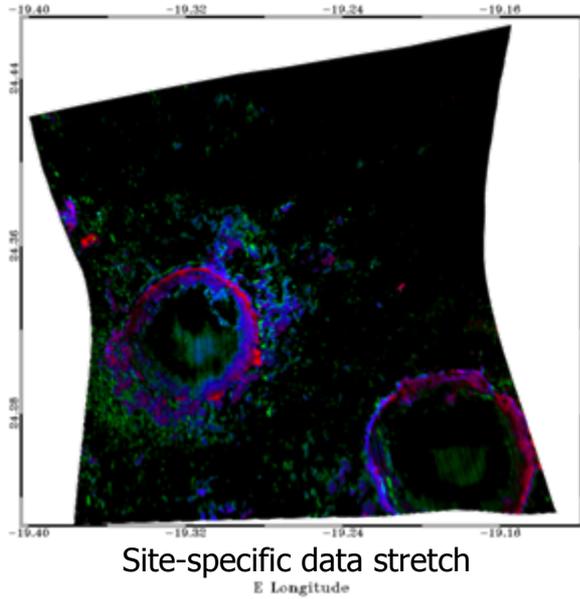
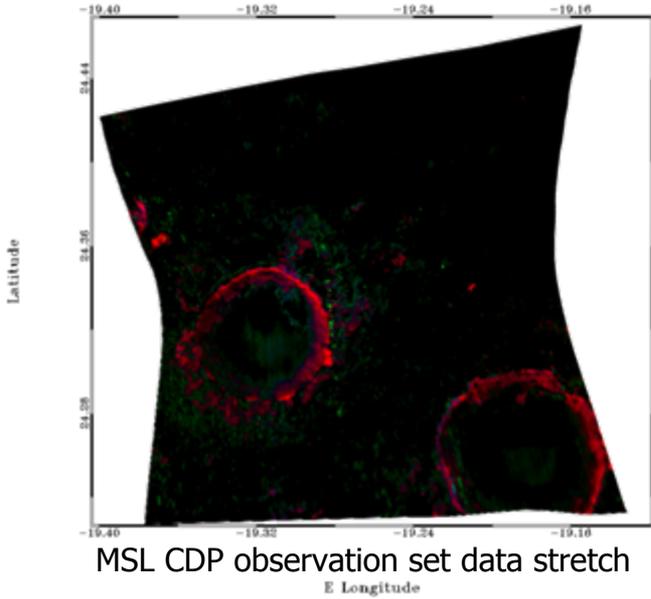


OBSERVATION DETAILS

File	FRT000094F6_07_IF166S_TRR2.LBL
Comment	Stratigraphy of Mawrth Vallis 4 km crater
Year/Day of Year	2008_009
Observation Class	FRT
Observation Id	000094F6
Image Count within Observation Sequence	07
File Type	IF
Macro Number	166
Sensor Id	0
Solar Longitude	15.261
Incidence Angle	39.4
Emission Angle	21.7
Phase Angle	50.5
Lines	480
Samples	640
Image Start Time	2008-01-09T23:05:58.990
Image Stop Time	2008-01-09T23:08:06.725
Start Spacecraft Clock Count	"3/0884387178.47060"
Stop Spacecraft Clock Count	"3/0884387306.29644"

OBSERVATION STRETCH



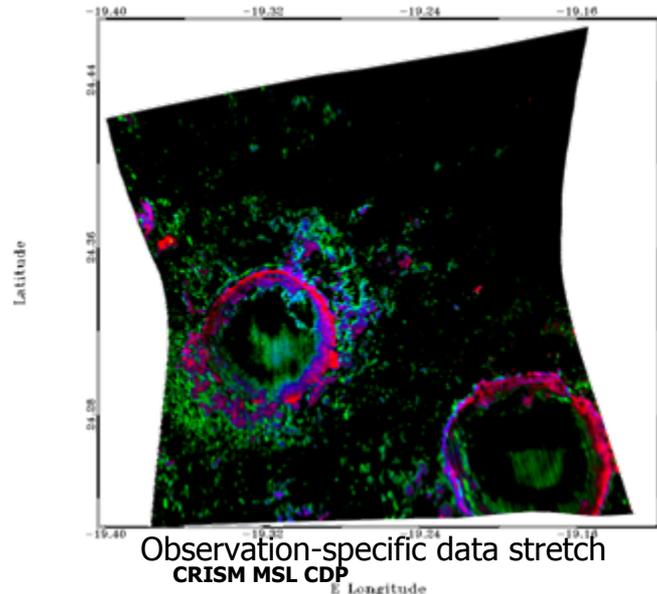


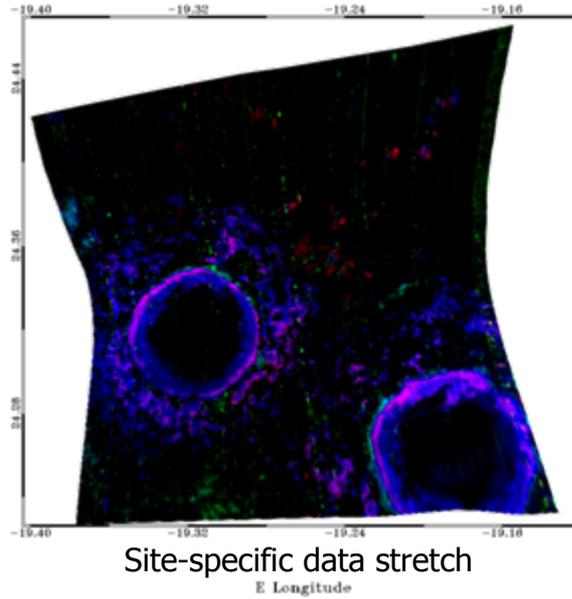
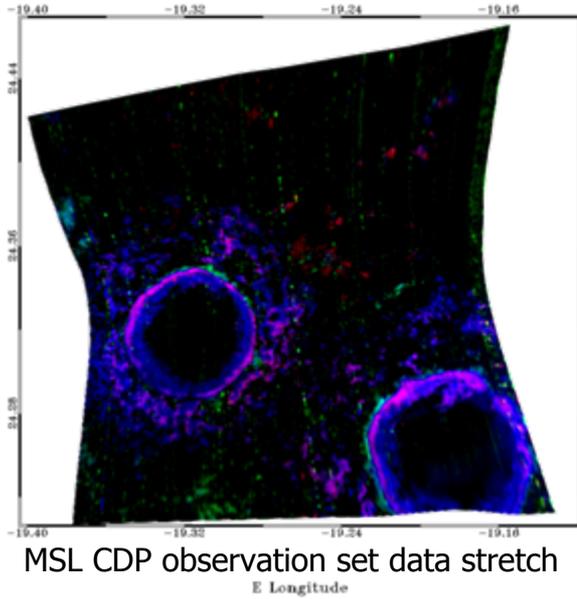
MAF

R: OLINDEX - 1 μ m band
depth/shape; keyed to fayalite

G: LCPINDEX – 2 μ m band
depth/shape

B: HCPINDEX – 2 μ m band
depth/shape



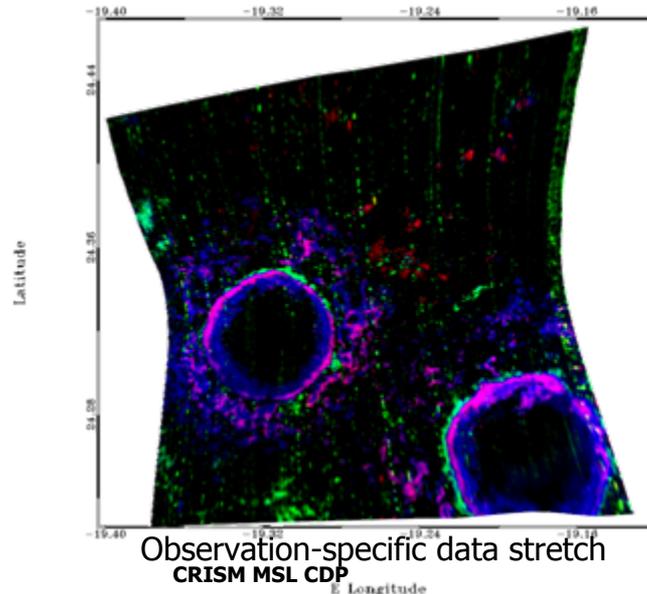


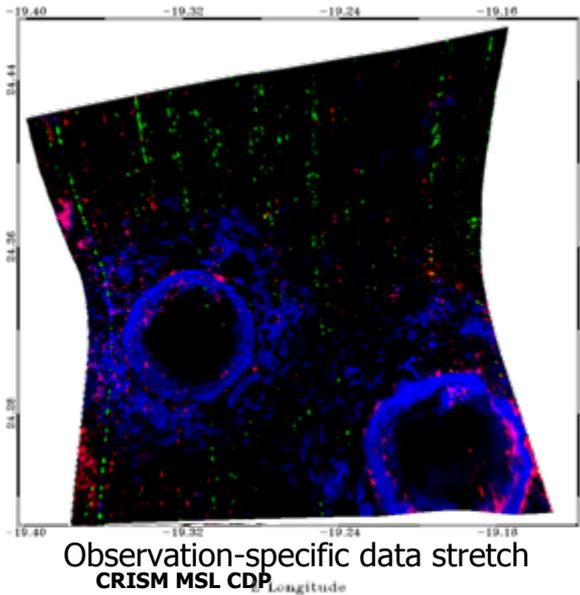
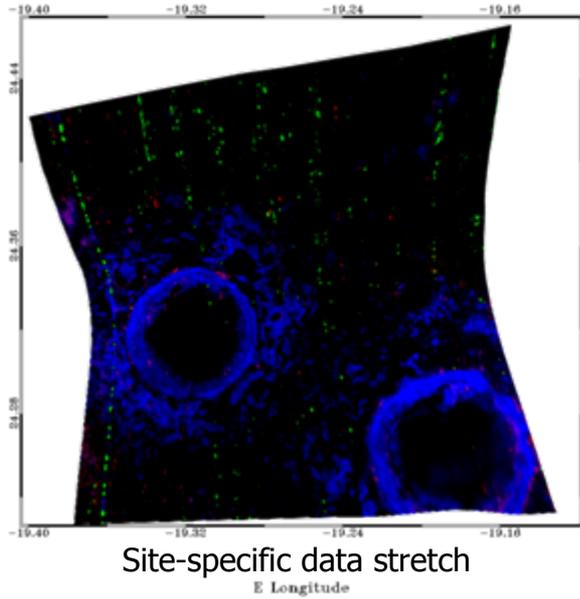
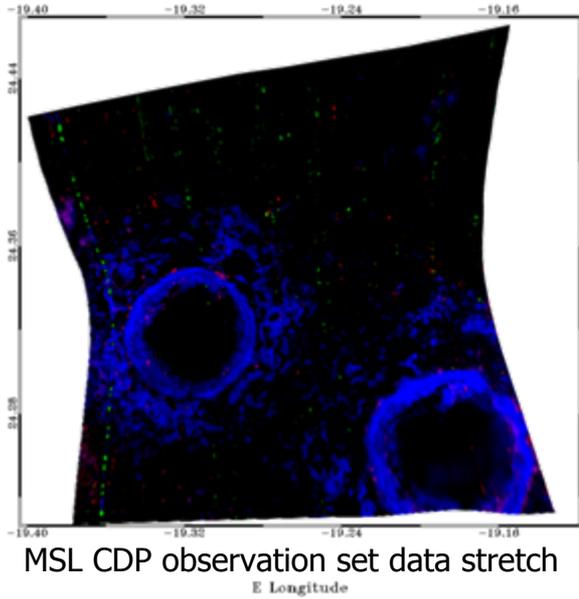
PHY

R: D2300 – Spectral drop-off at 2300 nm; Fe-Mg phyllosilicates

G: BD2200 – 2200 nm band depth; Al-OH / Si-OH mineralogy

B: BD1900 – 1900 nm band depth; hydration





HYD

R: SINDEXT – Spectral convexity
from 2100 nm to 2400 nm;
Hydrated sulfate mineralogy

G: BD2100 – 2100 nm band
depth; monohydrated mineralogy

B: BD1900 – 1900 nm band
depth; hydration

