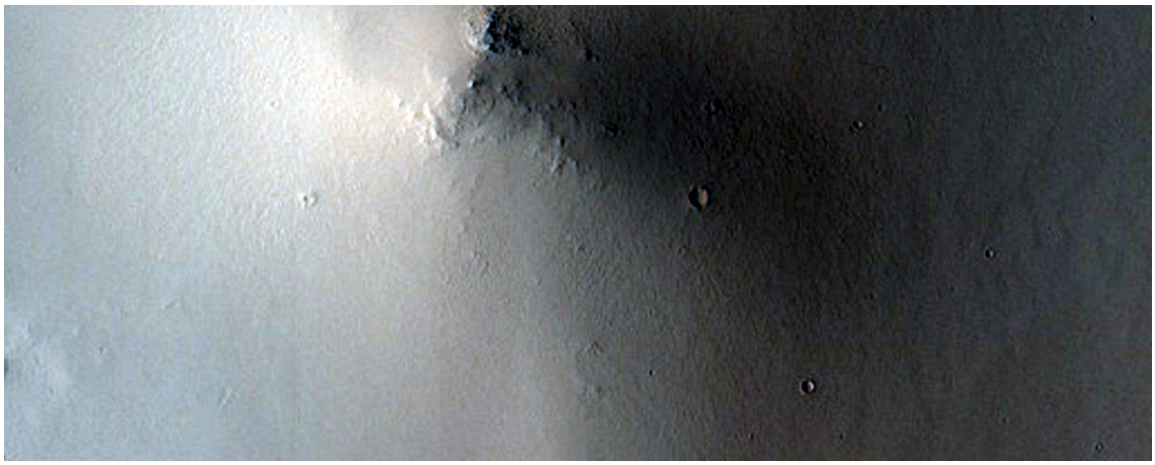


NASA/JPL-Caltech/UArizona

Bolide Breakup and Impact

ESP_011618_1885 Science Theme: Impact Processes

Greek Italian Spanish

WALLPAPER
1280
1920
2560

The MRO Context Imager (CTX) team has been discovering many new impact events on Mars, and then they request HiRISE follow-up imaging to confirm an impact origin and to identify and measure the craters.

Crater clusters are common as these small (typically less than 1 meter diameter) objects break up in the thin Martian air and separate a little bit to make crater clusters up to a few hundred meters wide. The example shown here is the result of an impact that occurred between May 2003 and September 2007. It was first discovered as a dark spot in a CTX image acquired in March 2008, but later found to be partly visible at the very edge of a CTX image acquired in September 2007.

A dark spot is not present in the previous image of this location with sufficient resolution to have detected it, acquired by the visible THEMIS camera on Mars Odyssey in May 2003. Thus the impact might have formed anytime between May 2003 and September 2007. The dark markings are created by removing or disturbing the surface dust cover, and so far new impact sites have been discovered only in dust-covered regions of Mars.

because there is a dark line between the two largest craters. We hypothesize that atmospheric breakup coincidentally made two nearly equal-size objects that impacted close together in space and time so the air blasts interacted with each other to disturb the dust along this line.

Hundreds of these small objects (mostly asteroid fragments) impact Mars per year. A comparable number of small objects impact Earth each year, but explode in the upper reaches of our atmosphere and have no effect on the surface, fortunately for those of us who live here.

Written by: Alfred McEwen (4 February 2009)

Acquisition date
17 January 2009

Local Mars time
15:46

Latitude (centered)
8.612°

Longitude (East)
46.837°

Spacecraft altitude
272.2 km (169.2 miles)

Original image scale range
27.4 cm/pixel (with 1 x 1 binning) so objects ~82 cm across are resolved

Map projected scale
25 cm/pixel and North is up

Map projection
Equirectangular

Emission angle
5.9°

Phase angle
64.1°

Solar incidence angle
58°, with the Sun about 32° above the horizon

Solar longitude

JPEG
Black and white
map projected non-map

IRB color
map projected non-map

Merged IRB
map projected

Merged RGB
map projected

RGB color
non-map projected

JP2
Black and white
map-projected (367MB)

IRB color
map-projected (181MB)

JP2 EXTRAS
Black and white
map-projected (155MB)
non-map (205MB)

IRB color
map projected (55MB)
non-map (188MB)

Merged IRB
map projected (92MB)

Merged RGB
map-projected (87MB)

ANAGLYPHS
Map-projected, reduced-resolution
Full resolution JP2 download
Anaglyph details page

ADDITIONAL INFORMATION
B&W label
Color label
Merged IRB label
Merged RGB label
EDR products
HiView

NB
IRB: infrared-red-blue
RGB: red-green-blue
About color products (PDF)

Black & white is 5 km across; enhanced color about 1 km
For scale, use JPEG/JP2 black & white map-projected images

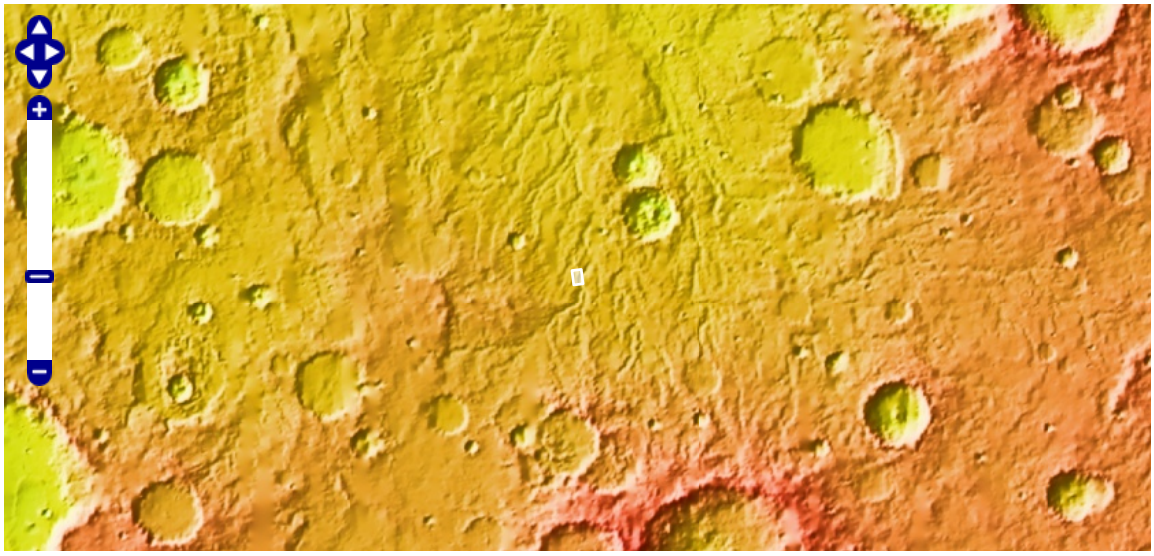
USAGE POLICY

POSTSCRIPT
NASA's Jet Propulsion Laboratory, a division of the California Institute of

For non-map projected images
North azimuth: 97°
Sub-solar azimuth: 353.2°

non map (173MB)

Orbiter for NASA's Science Mission Directorate, Washington. The HiRISE camera was built by Ball Aerospace and Technology Corporation and is operated by the University of Arizona.



High Resolution Imaging Science Experiment
HiRISE Operations Center
1541 E. University Blvd
Tucson, Arizona 85721