News Archive 2008

Icy Promethei Planum

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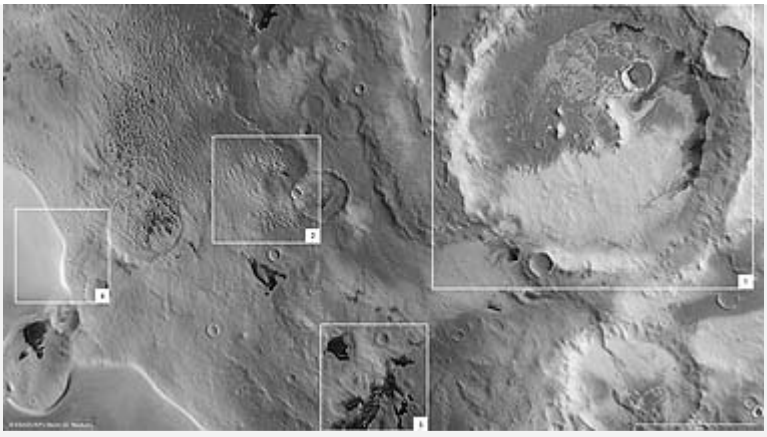
Promethei Planum, perspective view

Promethei Planum, an area seasonally covered with a more than 3500-m-thick layer of ice in the martian south polar region, was the subject of the High Resolution Stereo Camera's focus on 22 September 2005 as Mars Express was in orbit above the Red Planet.

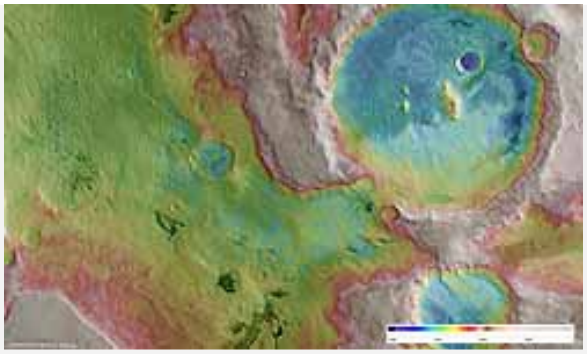


Overview map of Promethei Planum

Promethei Planum lies at approximately 76° south and 105° east on the Red Planet. The image data acquired in the region has a ground resolution of approximately 40 m/pixel.

An approximately 100 km-large and 800 m-deep impact crater is visible in the northern part of the image. The crater’s interior is partly covered in ice.

Colour view of Promethei Planum



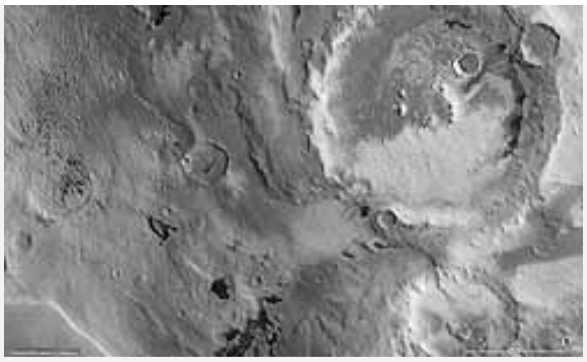
Topographical map of the Promethei Planum region

In the centre of the image are structures that may have been created by basaltic lava flow from a volcano. This area is covered in ice. The dark dunes towards the bottom of the image are most likely made up of dust originating from this lava flow or volcanic ash.

Promethei Planum, perspective view

A broad sheet of ice, which is an extension of the south polar ice cap is located south of the lava flow, to the left in the (nadir) image. The steep flanks clearly show white, clean ice. The thickness of the ice is between 900 and 1100 m.

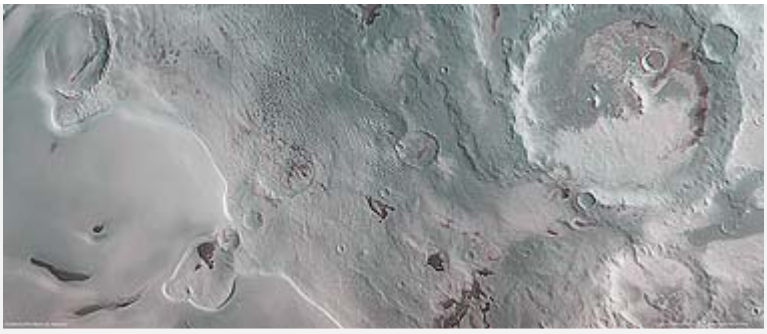
Latest results from the Mars Advanced Radar for Ionosphere and Subsurface Sounding (MARSIS) onboard Mars Express have revealed that the thickness of this extension of the south polar ice cap exceeds 3500 m. The total amount of water ice contained at both the south and north poles of Mars makes up the largest water reservoir on the planet today.



Black and white nadir view of Promethei Planum

If the polar ice caps on Mars melted, the entire surface of the planet would be covered by an 11-metre-deep ocean.

The colour scenes have been derived from the three High Resolution Stereo Camera (HRSC) - colour channels and the nadir channel. The perspective views have been calculated from the digital terrain model derived from the stereo channels. The anaglyph image was calculated from the nadir and one stereo channel, stereoscopic glasses are required to view it. The black and white high resolution images were derived form the nadir channel which provides the highest detail of all channels.



Promethei Planum in 3D

Context map of Promethei Planum

The High Resolution Stereo Camera (HRSC) experiment on the ESA Mars Express Mission is led by the Principal Investigator (PI) Prof. Dr Gerhard Neukum who also designed the camera technically.

The science team for the experiment consists of 45 Co-Investigators from 32 institutions and 10 nations. The camera was developed at the German Aerospace Center (DLR) under the leadership of the PI G. Neukum and built in cooperation with industrial partners (EADS Astrium, Lewicki Microelectronic GmbH and Jena-Optronik GmbH). The experiment on Mars Express is operated by the DLR Institute of Planetary Research, through ESA/ESOC. The systematic processing of the HRSC image data is carried out at DLR.

The scenes shown here were processed by the PI-group at the Institute for Geosciences of the Freie Universitaet Berlin in cooperation with the German Aerospace Center (DLR), Institute of Planetary Research, Berlin.

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