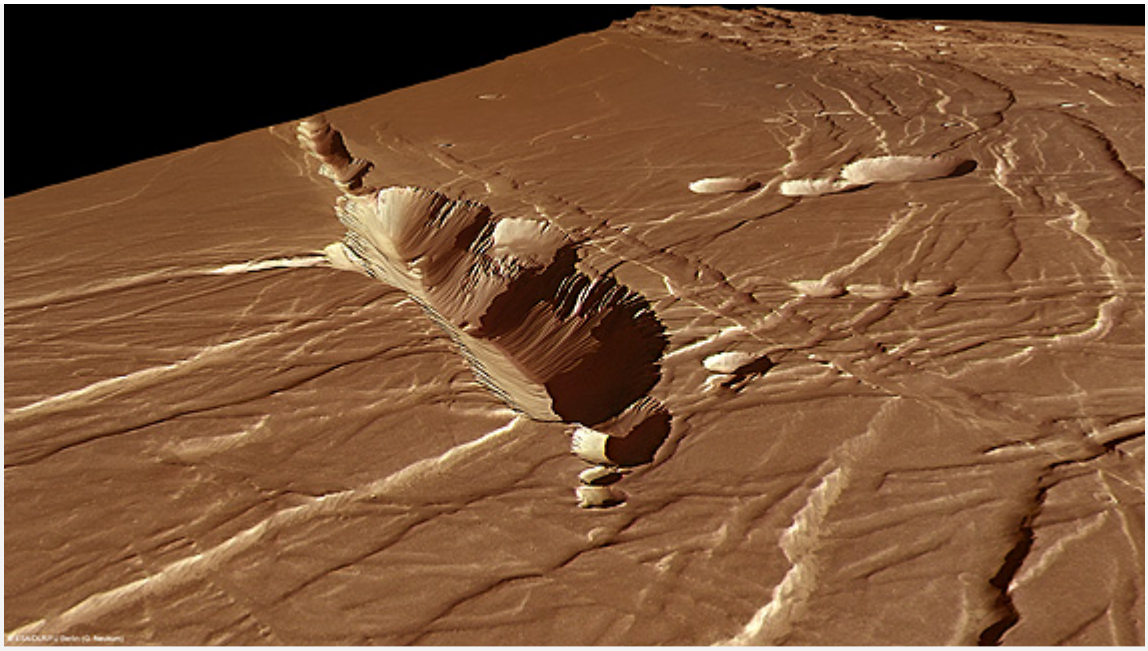
News Archive 2010

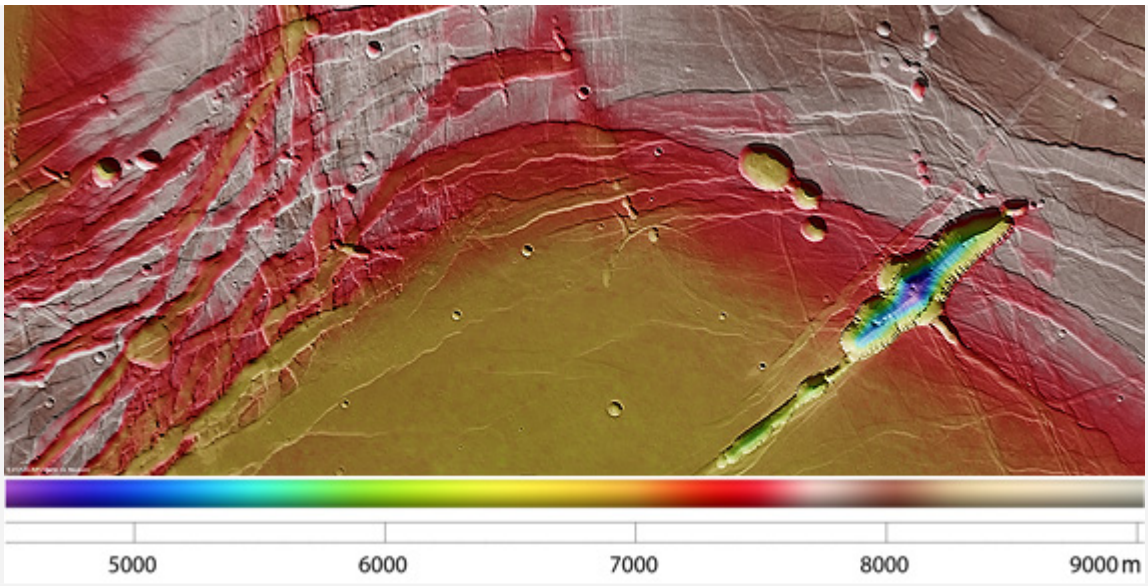
Light and dark in the Phoenix lake

12 November 2010



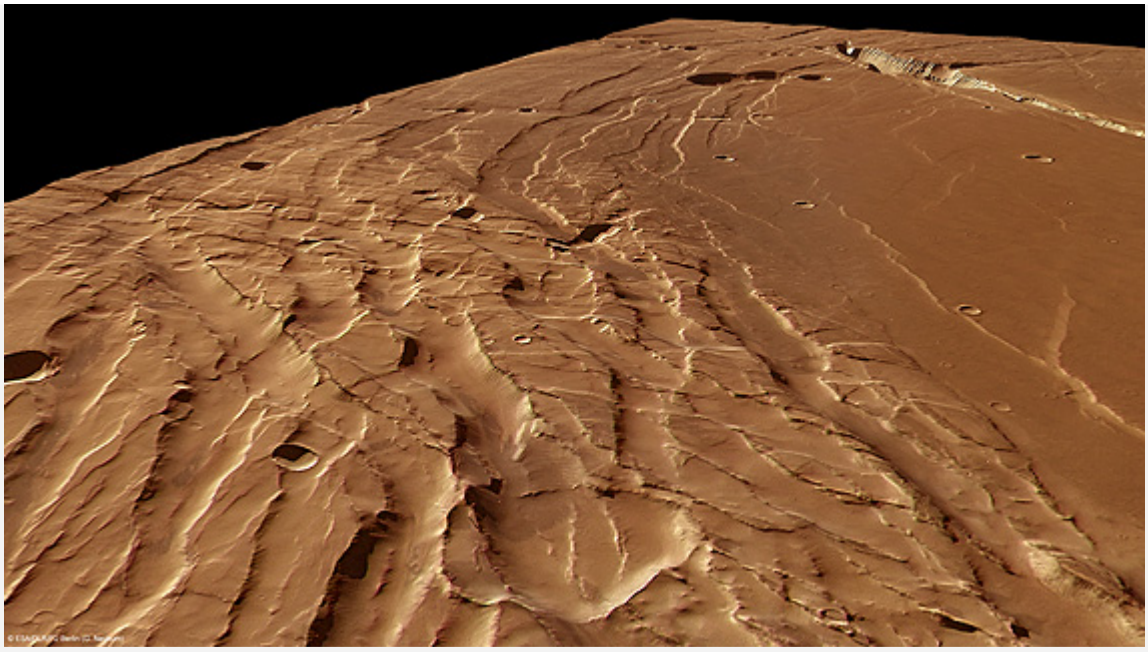
Phoenicis Lacus perspective view

They say you can't judge a book by its cover, but with planets, first impressions do count. New images from the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) operated High Resolution Stereo Camera on the European Space Agency's (ESA) Mars Express spacecraft show where complex fault lines in the Red Planet’s Phoenicis Lacus region have resulted in terrain with a distinctly contrasting appearance.

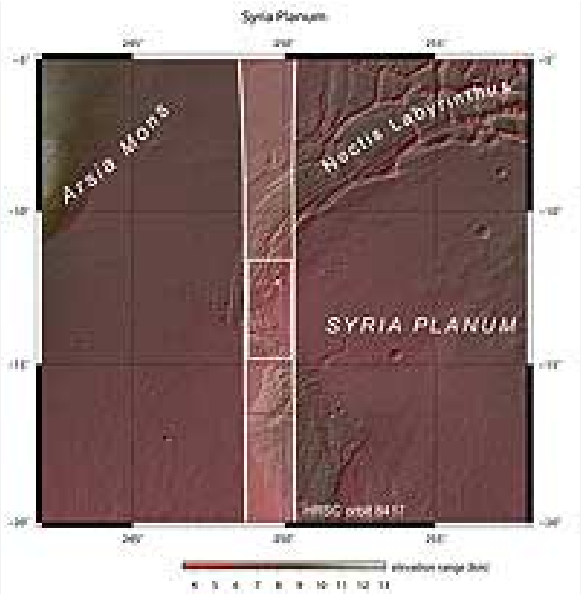


Elevation of Phoenicis Lacus region

Nineteenth-century astronomers were the first to see Phoenicis Lacus on Mars. They identified it as a dark spot, and thought that it resembled a sea. Now we know that it is not a body of water but the southwestern extension of the complex Noctis Labyrinthus system, which stretches away from the giant volcanoes of Mars's Tharsis region.



Phoenicis Lacus perspective view

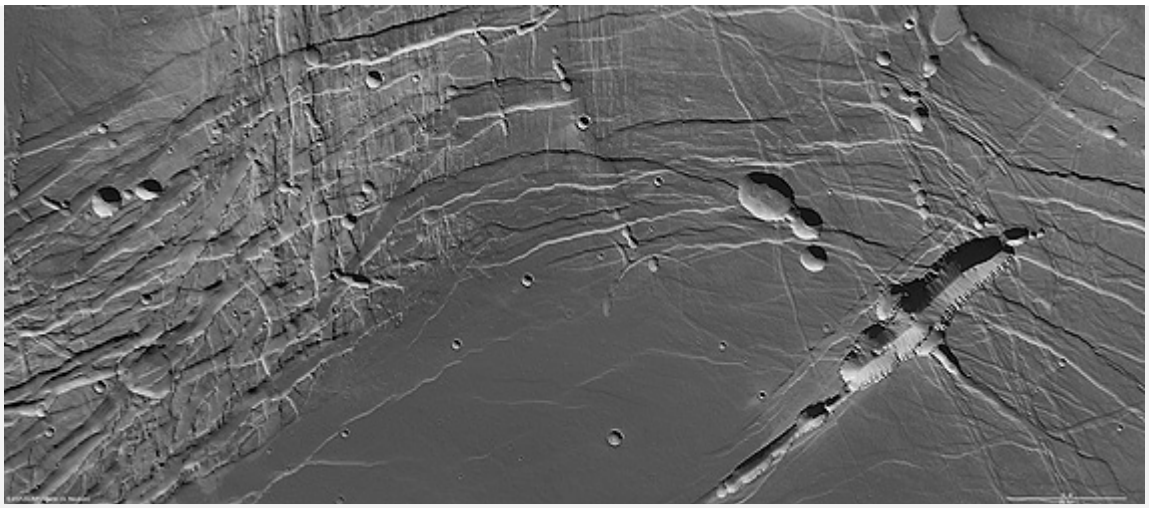


Phoenicis Lacus shown in context

Even today, the brightness of a surface feature is the first thing planetary astronomers notice. It is known as the albedo and is partly determined by the composition of the surface material; for example, ice is more reflective than rock. The texture of the surface also plays a part, with rough surfaces reflecting less sunlight and so appearing darker than smooth surfaces.

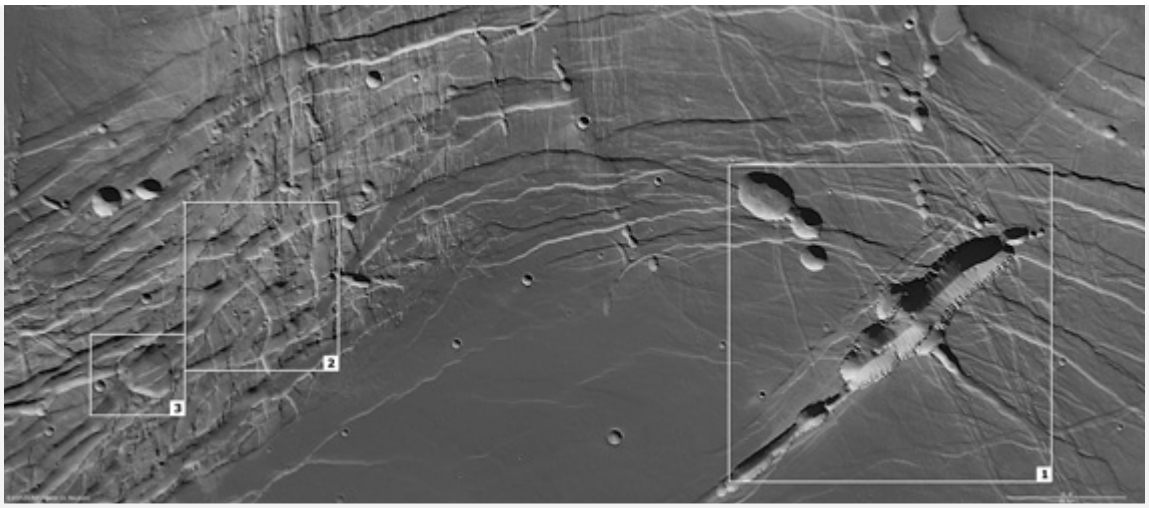
Phoenicis Lacus spans an area of 8100 square kilometres (59.5 x 136 kilometres), roughly the size of Corsica. Only a small portion of it appears in this image, which was obtained on 31 July 2010 using the High-Resolution Stereo Camera (HRSC) on ESA's Mars Express spacecraft.

Phoenicis Lacus was formed by the uplift of the Tharsis plateau. The continual episodes of strong volcanic activity in Tharsis not only lifted the plateau, but also deformed Phoenicis Lacus, creating blocks and multiple fault lines at different orientations. Extension has taken place here, resulting in this characteristic 'horst-and-graben' (cliffs and valleys) landscape.



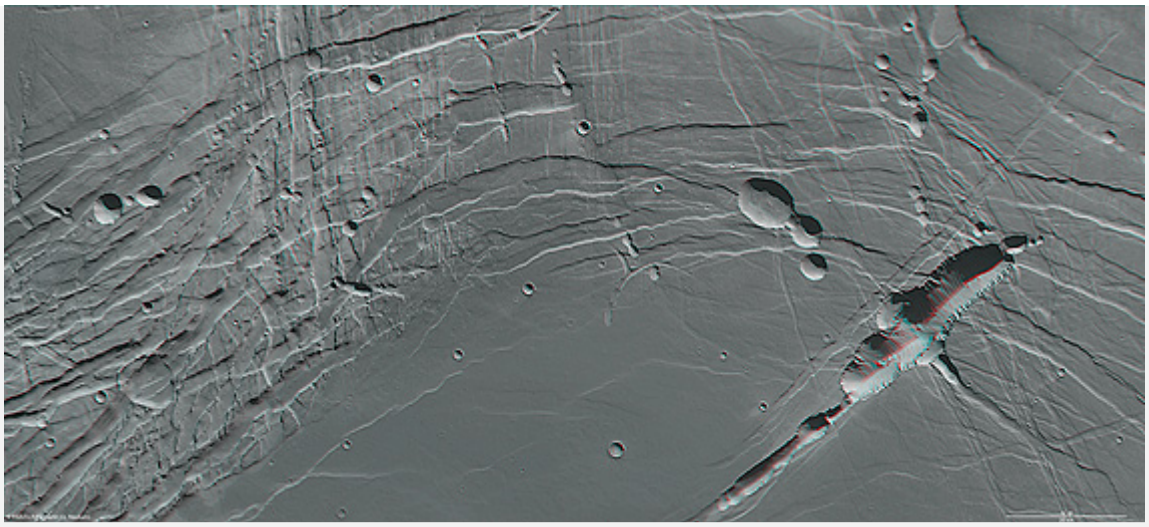
Phoenicis Lacus in high resolution

A prominent collapse feature is also visible in this region. It shows as a long pit and sinks to a depth of about 3 kilometres below the surrounding plains. Its walls give a glimpse of extensive basalt layers and a small field of sand dunes covers the floor.



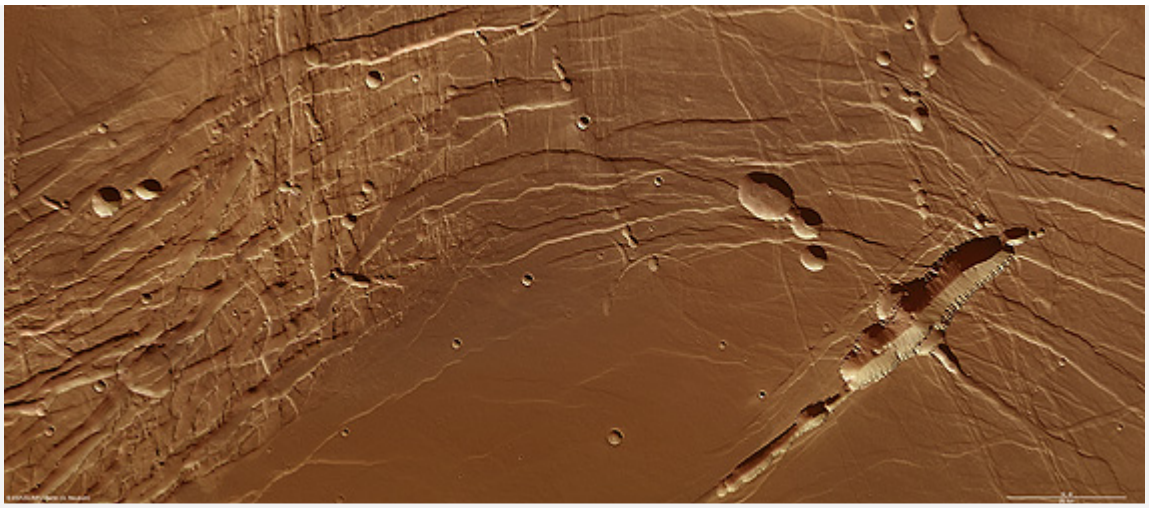
Features in Phoenicis Lacus

An impact crater can be seen on the left of the image. It was elongated during the spreading of the graben and evolved from a circular to an ellipsoidal form.



Phoenicis Lacus in 3D

The other large bowl-shaped structures in this image do not have distinct rims like impact craters, so they are most likely collapsed structures.



Phoenicis Lacus on Mars

The High Resolution Stereo Camera, HRSC, on the European Space Agency’s Mars Express mission is led by the Principal Investigator (PI) Prof. Dr Gerhard Neukum, who was also responsible for the technical design of the camera. The science team of 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 and it was built in cooperation with industrial partners EADS Astrium, Lewicki Microelectronic GmbH and Jena-Optronik GmbH. The instrument 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 Universität Berlin in cooperation with the DLR Institute of Planetary Research, Berlin.

Contact

Henning Krause
German Aerospace Center
Corporate Communications
Tel: +49 2203 601-2502
Fax: +49 2203 601-3249
E-Mail: henning.krause@dlr.de

Prof.Dr. Ralf Jaumann
German Aerospace Center
Institute of Planetary Research, Planetary Geology
Tel: +49 30 67055-400
Fax: +49 30 67055-402
E-Mail: Ralf.Jaumann@dlr.de

Ernst Hauber
German Aerospace Center
Institute of Planetary Research, Planetary Geology
Tel: +49 30 67055-325
E-Mail: Ernst.Hauber@dlr.de
