

NASA releases Pluto's Moon Charon in eye-catching Detail

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Washington: NASA's New Horizons spacecraft has returned the best colour and the highest resolution images yet of Pluto's largest moon, Charon, which show a surprisingly complex and violent history.

The image combines blue, red and infrared images taken by the spacecraft's Ralph/Multispectral Visual Imaging Camera (MVIC); the colours are processed to best highlight the variation of surface properties across Charon.

Charon's colour palette is not as diverse as Pluto's; most striking is the reddish north polar region, informally named Mordor Macula, NASA said.

Charon is 1,214 kilometres across. The image resolves details as small as 2.9 kilometres.

At half the diameter of Pluto, Charon is the largest satellite relative to its planet in the solar system.

Charon's cratered uplands at the top are broken by series of canyons, and replaced on the bottom by the rolling plains of the informally named Vulcan Planum.

The scene covers Charon's width of 1,214 kilometres and resolves details as small as 0.8 kilometres.

Another image shows the details of a belt of fractures and canyons just north of the moon's equator.

This great canyon system stretches more than 1,600 kilometres across the entire face of Charon and likely around onto Charon's far side.

Four times as long as the Grand Canyon, and twice as deep in places, these faults and canyons indicate a titanic geological upheaval in Charon's past.

"With respect to its size relative to Charon, this feature is much like the vast Valles Marineris canyon system on Mars," said John Spencer, deputy lead for New Horizons Geology, Geophysics and Imaging (GGI) at the Southwest Research Institute in Colorado.

A composite of enhanced colour images of Pluto and Charon highlights the striking differences between Pluto and Charon.

The colour and brightness of both Pluto and Charon have been processed identically to allow direct comparison of their surface properties, and to highlight the similarity between Charon's polar red terrain and Pluto's equatorial red terrain.

The team has also discovered that the plains south of the Charon's canyon - informally referred to as Vulcan Planum - have fewer large craters than the regions to the north, indicating that they are noticeably younger.

The smoothness of the plains, as well as their grooves and faint ridges, are clear signs of wide-scale resurfacing.

One possibility for the smooth surface is a kind of cold volcanic activity, called cryovolcanism.

"The team is discussing the possibility that an internal water ocean could have frozen long ago, and the resulting volume change could have led to Charon cracking open, allowing water-based lavas to reach the surface at that time," said Paul Schenk, a New Horizons team member from the Lunar and Planetary Institute in Houston.

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