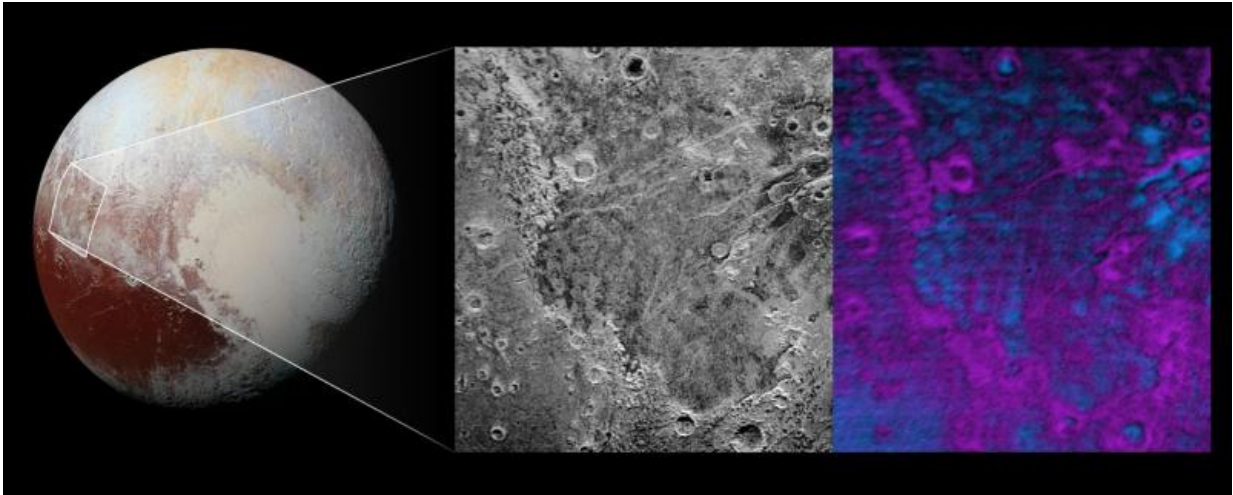


What's eating at Pluto?

March 14 2016

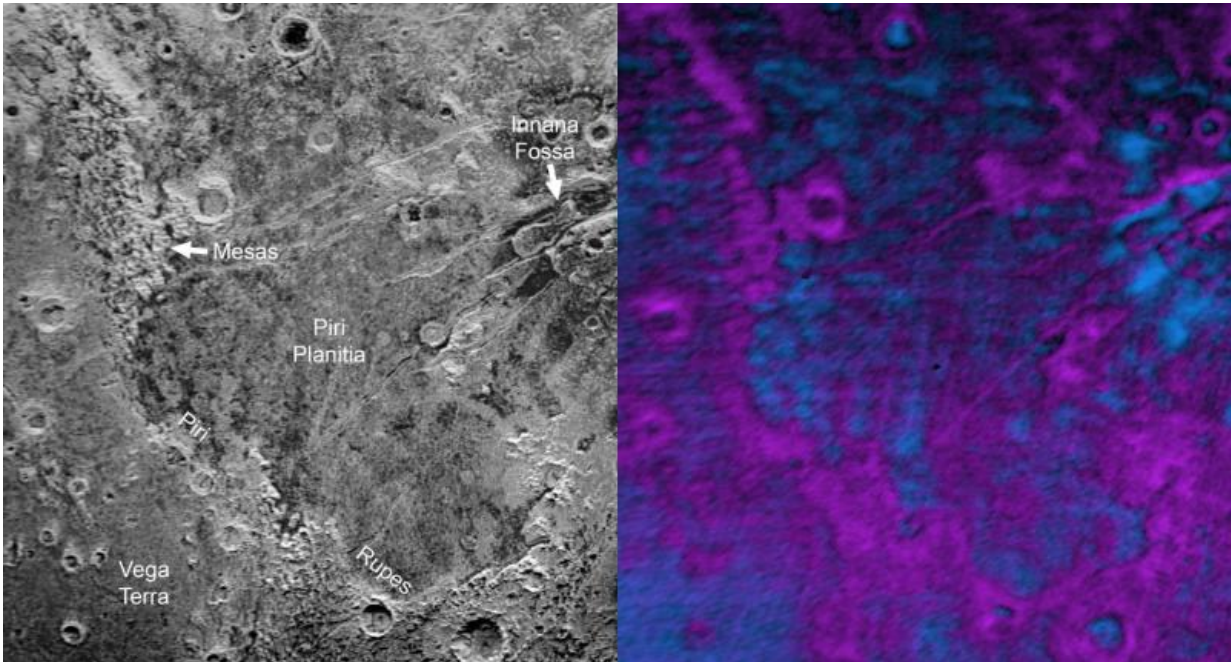


Credit: NASA/JHUAPL/SwRI

Far in the western hemisphere, scientists on NASA's New Horizons mission have discovered what looks like a giant "bite mark" on Pluto's surface. They suspect it may be caused by a process known as sublimation—the transition of a substance from a solid to a gas. The methane ice-rich surface on Pluto may be sublimating away into the atmosphere, exposing a layer of water-ice underneath.

In this image, north is up. The southern portion of the left inset above shows the cratered plateau uplands informally named Vega Terra (note that all feature names are informal). A jagged scarp, or wall of cliffs, known as Piri Rupes borders the young, nearly crater-free plains of Piri

Planitia. The cliffs break up into isolated mesas in several places.



Credit: NASA/JHUAPL/SwRI

Cutting diagonally across the mottled plains is the long extensional fault of Inanna Fossa, which stretches eastward 370 miles (600 kilometers) from here to the western edge of the great nitrogen ice plains of Sputnik Planum.

Compositional data from the New Horizons spacecraft's Ralph/Linear Etalon Imaging Spectral Array (LEISA) instrument, shown in the right inset, indicate that the plateau uplands south of Piri Rupes are rich in [methane](#) ice (shown in false color as purple). Scientists speculate that sublimation of methane may be causing the plateau material to erode along the face of the cliffs, causing them to retreat south and leave the

plains of Piri Planitia in their wake.

Compositional data also show that the surface of Piri Planitia is more enriched in [water ice](#) (shown in false color as blue) than the higher plateaus, which may indicate that Piri Planitia's surface is made of water ice bedrock, just beneath a layer of retreating methane ice. Because the surface of Pluto is so cold, the water ice is rock-like and immobile. The light/dark mottled pattern of Piri Planitia in the left inset is reflected in the composition map, with the lighter areas corresponding to areas richer in methane – these may be remnants of methane that have not yet sublimated away entirely.

The inset at left shows about 650 feet (200 meters) per pixel; the image measures approximately 280 miles (450 kilometers) long by 255 miles (410 kilometers) wide. It was obtained by New Horizons at a range of approximately 21,100 miles (33,900 kilometers) from Pluto, about 45 minutes before the spacecraft's closest approach to Pluto on July 14, 2015.

The LEISA data at right was gathered when the spacecraft was about 29,000 miles (47,000 kilometers) from Pluto; best resolution is 1.7 miles (2.7 kilometers) per pixel.

Provided by NASA

Citation: What's eating at Pluto? (2016, March 14) retrieved 10 April 2024 from <https://phys.org/news/2016-03-pluto.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.
