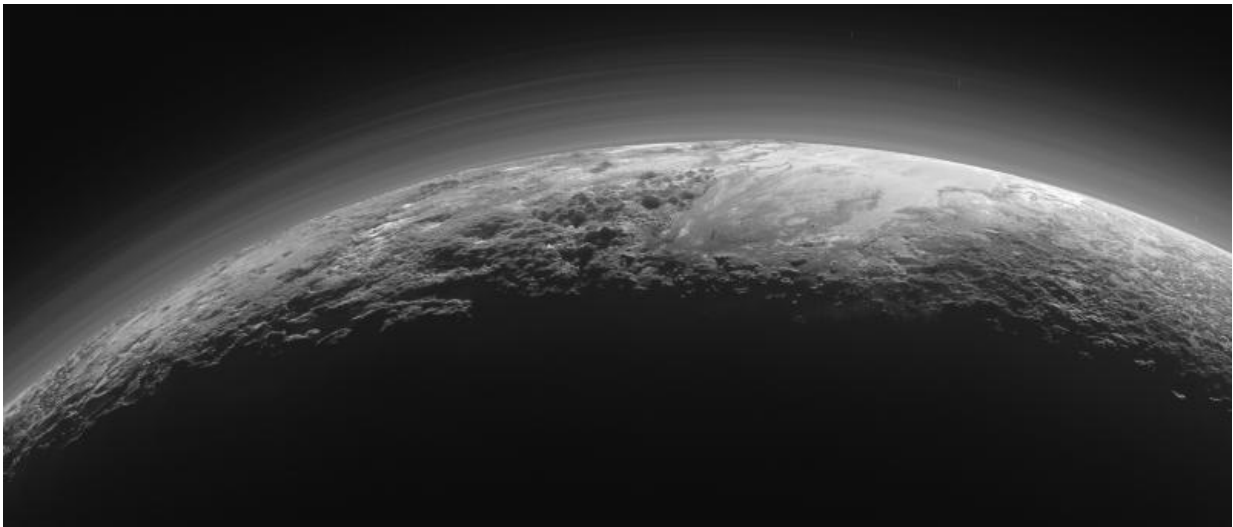


Pluto stuns in spectacular new backlit panorama

September 18 2015



Just 15 minutes after its closest approach to Pluto on July 14, 2015, NASA's New Horizons spacecraft looked back toward the sun and captured this near-sunset view of the rugged, icy mountains and flat ice plains extending to Pluto's horizon. The smooth expanse of the informally named icy plain Sputnik Planum (right) is flanked to the west (left) by rugged mountains up to 11,000 feet (3,500 meters) high, including the informally named Norgay Montes in the foreground and Hillary Montes on the skyline. To the right, east of Sputnik, rougher terrain is cut by apparent glaciers. The backlighting highlights more than a dozen layers of haze in Pluto's tenuous but distended atmosphere. The image was taken from a distance of 11,000 miles (18,000 kilometers) to Pluto; the scene is 780 miles (1,250 kilometers) wide. Credit: NASA/Johns Hopkins University Applied Physics Laboratory/Southwest Research Institute

The latest images from NASA's New Horizons spacecraft have scientists stunned – not only for their breathtaking views of Pluto's majestic icy mountains, streams of frozen nitrogen and haunting low-lying hazes, but also for their strangely familiar, arctic look.

This new view of Pluto's crescent – taken by New Horizons' wide-angle Ralph/Multispectral Visual Imaging Camera (MVIC) on July 14 and downlinked to Earth on Sept. 13 – offers an oblique look across Plutonian landscapes with dramatic backlighting from the sun. It spectacularly highlights Pluto's varied terrains and extended atmosphere. The scene measures 780 miles (1,250 kilometers) across.

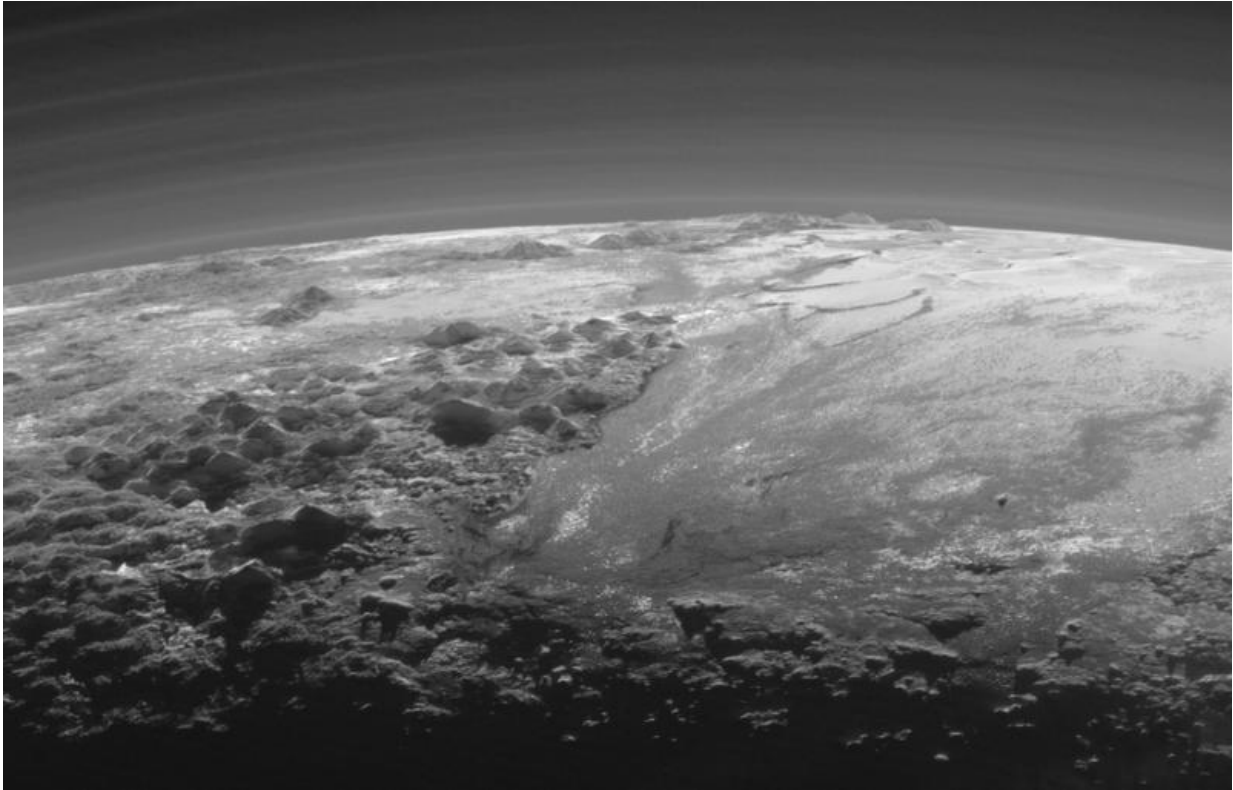
"This image really makes you feel you are there, at Pluto, surveying the landscape for yourself," said New Horizons Principal Investigator Alan Stern, of the Southwest Research Institute, Boulder, Colorado. "But this image is also a scientific bonanza, revealing new details about Pluto's atmosphere, mountains, glaciers and plains."

Owing to its favorable backlighting and high resolution, this MVIC image also reveals new details of hazes throughout Pluto's tenuous but extended nitrogen atmosphere. The image shows more than a dozen thin haze layers extending from near the ground to at least 60 miles (100 kilometers) above the surface. In addition, the image reveals at least one bank of fog-like, low-lying haze illuminated by the setting sun against Pluto's dark side, raked by shadows from nearby mountains.

"In addition to being visually stunning, these low-lying hazes hint at the weather changing from day to day on Pluto, just like it does here on Earth," said Will Grundy, lead of the New Horizons Composition team from Lowell Observatory, Flagstaff, Arizona.

Combined with other recently downloaded pictures, this new image also provides evidence for a remarkably Earth-like "hydrological" cycle on

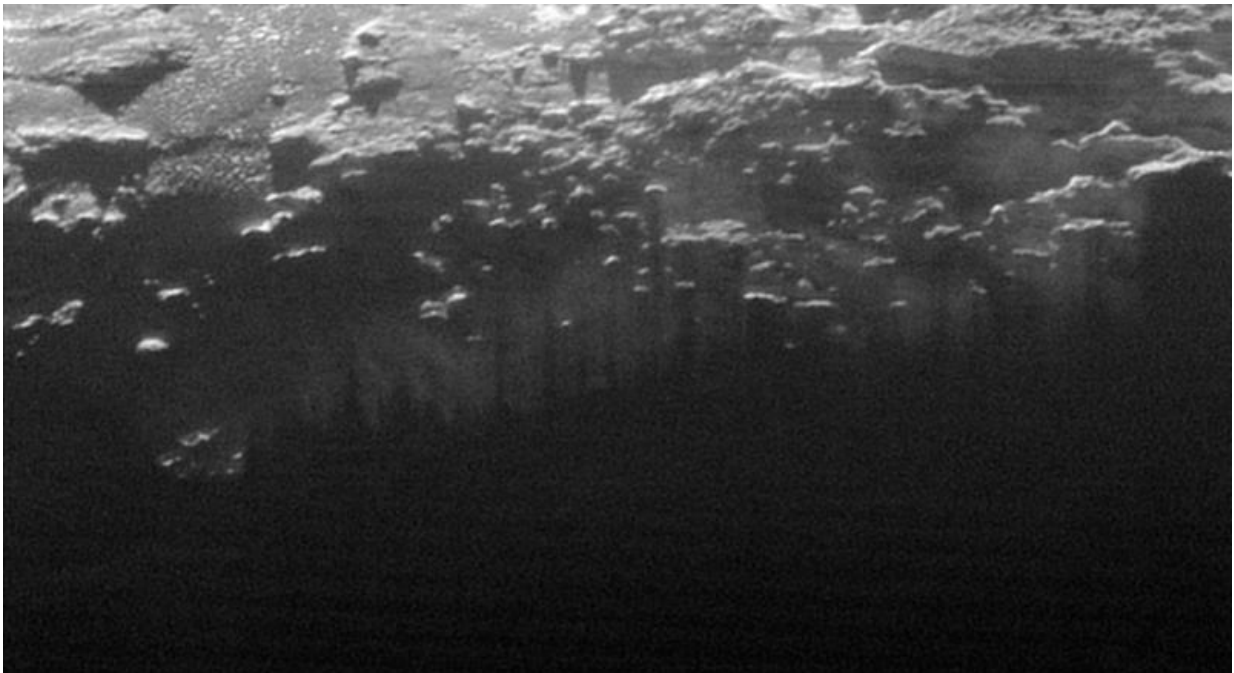
Pluto – but involving soft and exotic ices, including nitrogen, rather than water ice.



Just 15 minutes after its closest approach to Pluto on July 14, 2015, NASA's New Horizons spacecraft looked back toward the sun and captured a near-sunset view of the rugged, icy mountains and flat ice plains extending to Pluto's horizon. The smooth expanse of the informally named Sputnik Planum (right) is flanked to the west (left) by rugged mountains up to 11,000 feet (3,500 meters) high, including the informally named Norgay Montes in the foreground and Hillary Montes on the skyline. The backlighting highlights more than a dozen layers of haze in Pluto's tenuous but distended atmosphere. The image was taken from a distance of 11,000 miles (18,000 kilometers) to Pluto; the scene is 230 miles (380 kilometers) across. Credit: NASA/Johns Hopkins University Applied Physics Laboratory/Southwest Research Institute

Bright areas east of the vast icy plain informally named Sputnik Planum appear to have been blanketed by these ices, which may have evaporated from the surface of Sputnik and then been redeposited to the east. The new Ralph imager panorama also reveals glaciers flowing back into Sputnik Planum from this blanketed region; these features are similar to the frozen streams on the margins of ice caps on Greenland and Antarctica.

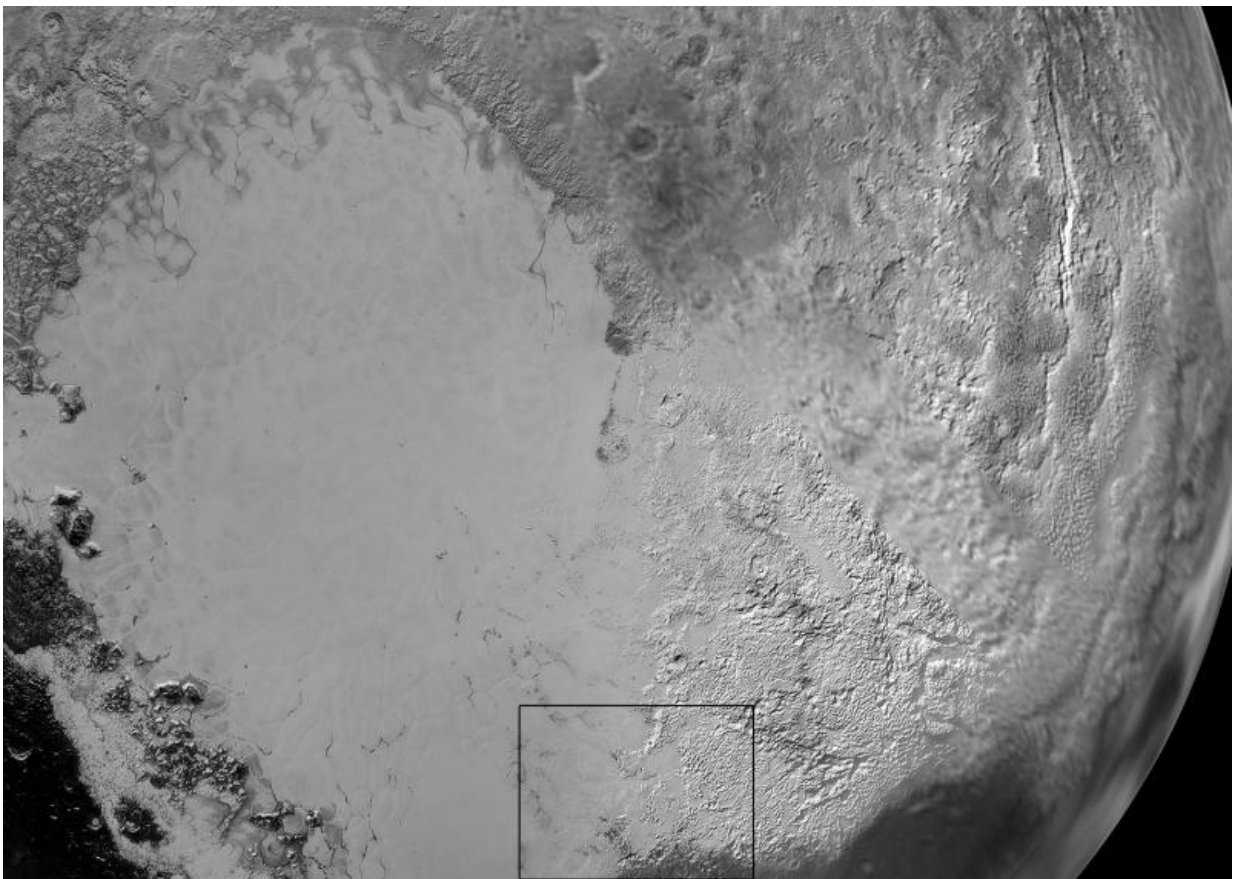
"We did not expect to find hints of a nitrogen-based glacial cycle on Pluto operating in the frigid conditions of the outer solar system," said Alan Howard, a member of the mission's Geology, Geophysics and Imaging team from the University of Virginia, Charlottesville. "Driven by dim sunlight, this would be directly comparable to the hydrological cycle that feeds ice caps on Earth, where water is evaporated from the oceans, falls as snow, and returns to the seas through glacial flow."



In this small section of the larger crescent image of Pluto, taken by NASA's New

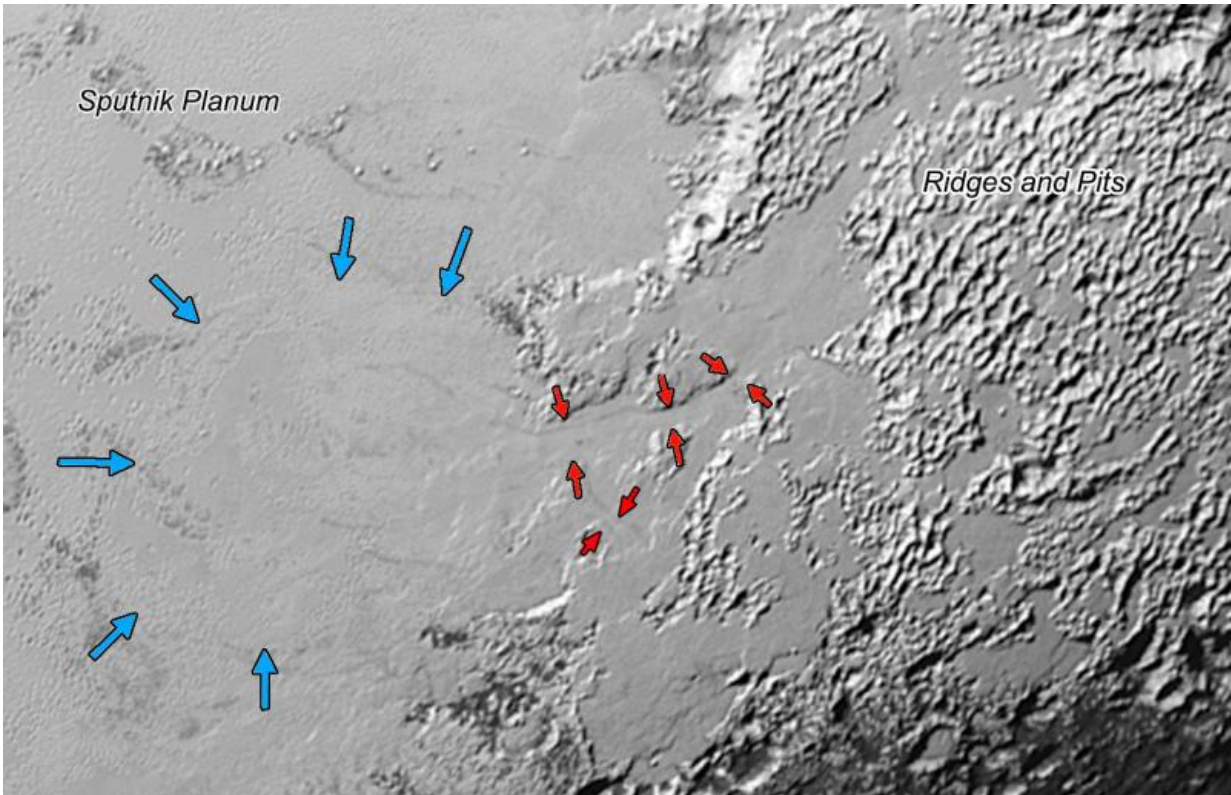
Horizons just 15 minutes after the spacecraft's closest approach on July 14, 2015, the setting sun illuminates a fog or near-surface haze, which is cut by the parallel shadows of many local hills and small mountains. The image was taken from a distance of 11,000 miles (18,000 kilometers), and the width of the image is 115 miles (185 kilometers). Credit: NASA/Johns Hopkins University Applied Physics Laboratory/Southwest Research Institute

"Pluto is surprisingly Earth-like in this regard," added Stern, "and no one predicted it."

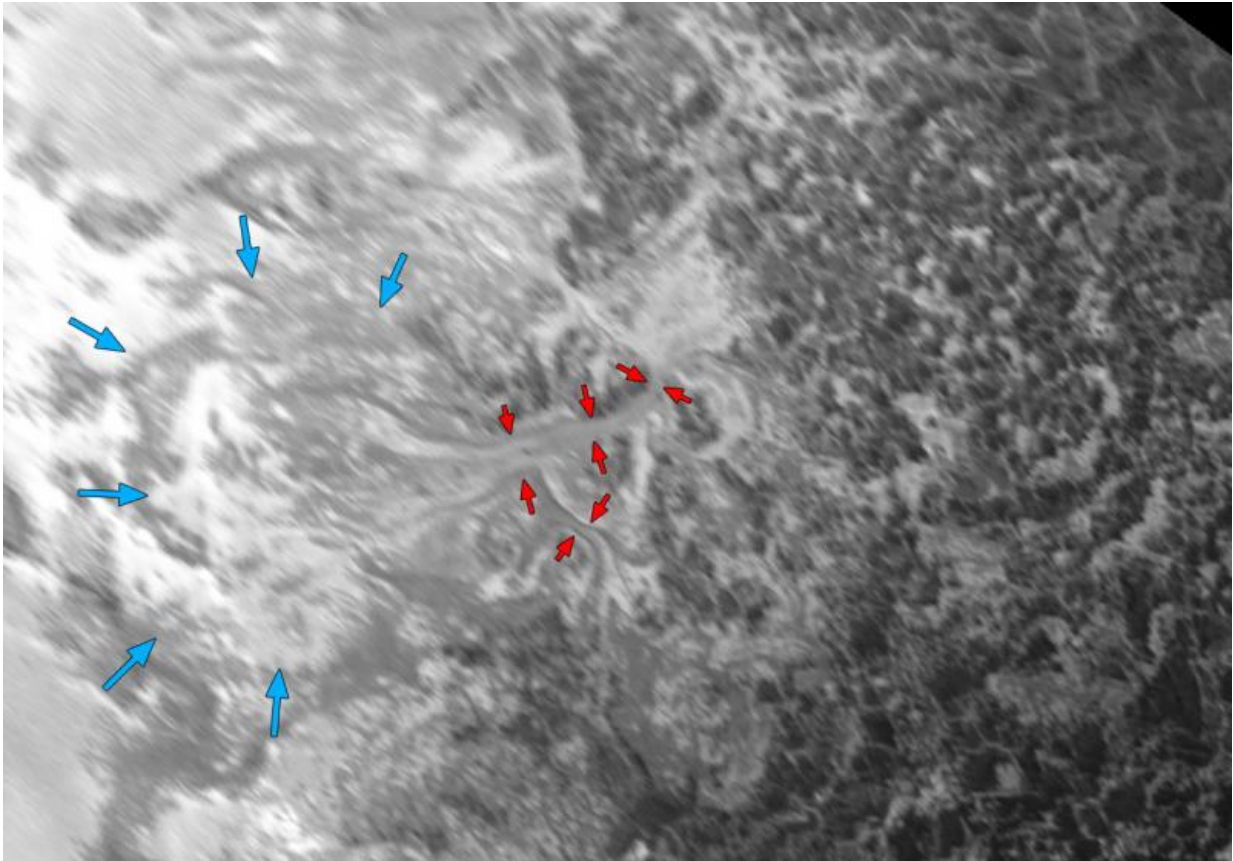


Sputnik Planum is the informal name of the smooth, light-bulb shaped region on the left of this composite of several New Horizons images of Pluto. The

brilliantly white upland region to the right may be coated by nitrogen ice that has been transported through the atmosphere from the surface of Sputnik Planum, and deposited on these uplands. Credit: NASA/Johns Hopkins University Applied Physics Laboratory/Southwest Research Institute



Ice (probably frozen nitrogen) that appears to have accumulated on the uplands on the right side of this 390-mile (630-kilometer) wide image is draining from Pluto's mountains onto the informally named Sputnik Planum through the 2- to 5-mile (3- to 8- kilometer) wide valleys indicated by the red arrows. The flow front of the ice moving into Sputnik Planum is outlined by the blue arrows. The origin of the ridges and pits on the right side of the image remains uncertain. Credit: NASA/Johns Hopkins University Applied Physics Laboratory/Southwest Research Institute



This image covers the same region as the image above, but is re-projected from the oblique, backlit view shown in the new crescent image of Pluto. The backlighting highlights the intricate flow lines on the glaciers. The flow front of the ice moving into the informally named Sputnik Planum is outlined by the blue arrows. The origin of the ridges and pits on the right side of the image remains uncertain. This image is 390 miles (630 kilometers) across. Credit: NASA/Johns Hopkins University Applied Physics Laboratory/Southwest Research Institute

Provided by Johns Hopkins Applied Physics Laboratory

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