

Our Sky in September 2016

Saturn and Mars will have set in the west by 2200 in the middle of the month, while Venus sets by 2000 after sunset. The winter constellations will be making a “welcome” reappearance in the East about midnight on, and will appear earlier each night as autumn progresses. The Milky way is almost overhead, and repays a scan with binoculars to reveal the thousands of stars that are mostly invisible to the unaided eye. Truly a treasure chest!

The New Horizons spacecraft to Pluto and the Kuiper Belt has exceeded all expectations, and has returned almost 80% of the data it recorded in its fleeting flyby. The photographs are truly outstanding, and well worth a visit to the New Horizons NASA web site to see the latest images, see www.nasa.gov/mission_pages/newhorizons/main/index.html

New Horizons Principal Investigator Alan Stern, lists the mission’s most surprising and amazing findings from Pluto (so far):

- The complexity of Pluto and its satellites is far beyond what we expected.
- The degree of current activity on Pluto’s surface and the youth of some surfaces on Pluto are simply astounding.
- Pluto’s atmospheric hazes and lower-than-predicted atmospheric escape rate upended all of the pre-flyby models.
- Pluto’s largest moon Charon’s enormous equatorial tectonic belt hints at the freezing of a former water ice ocean *inside* Charon in the distant past. Other evidence found by New Horizons indicates Pluto could well have an internal water-ice ocean today.
- All of Pluto’s moons that can be age-dated by surface craters have the same, ancient age—adding weight to the theory that they were formed together in a single collision between Pluto and another planet in the Kuiper Belt long ago.
- Charon’s dark, red polar cap is unprecedented in the solar system and may be the result of atmospheric gases that escaped Pluto and then accreted on Charon’s surface.
- Pluto’s vast 1,000-kilometer-wide heart-shaped nitrogen glacier (informally called Sputnik Planum) that New Horizons discovered, is the largest known glacier in the solar system.
- Pluto shows evidence of vast changes in atmospheric pressure and, possibly, the presence of running or standing liquid volatiles on its surface in the past – something only seen elsewhere on Earth, Mars and Saturn’s moon Titan in our solar system.
- The lack of additional Pluto satellites, beyond what was discovered before New Horizons, was unexpected.
- Pluto’s atmosphere is blue. Who knew?

- It's strange to think that only a year ago, we still had no real idea of what the Pluto system was like," said Hal Weaver, New Horizons project scientist. "But it didn't take long for us to realize Pluto was something special, and like nothing we ever could have expected. We've been astounded by the beauty and complexity of Pluto and its moons and we're excited about the discoveries still to come."

New Horizons is now nearly 300 million miles beyond Pluto, speeding to its next destination deeper into the Kuiper Belt, following NASA approval of an extended mission. About 80 percent of the data stored on the spacecraft's recorders has been sent to Earth; transmission of the remainder will be complete by October. I will continue to keep you informed about this amazing spacecraft.

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