Learn all about Pluto, the most famous dwarf planet

February 18 2015, by Elizabeth Howell

Artist's impression of New Horizons' encounter with Pluto and Charon. Credit: NASA/Thierry Lombry

As the New Horizons spacecraft gathers information about Pluto before and after its July 2015 close encounter, practically every day we're learning more about this dwarf planet.

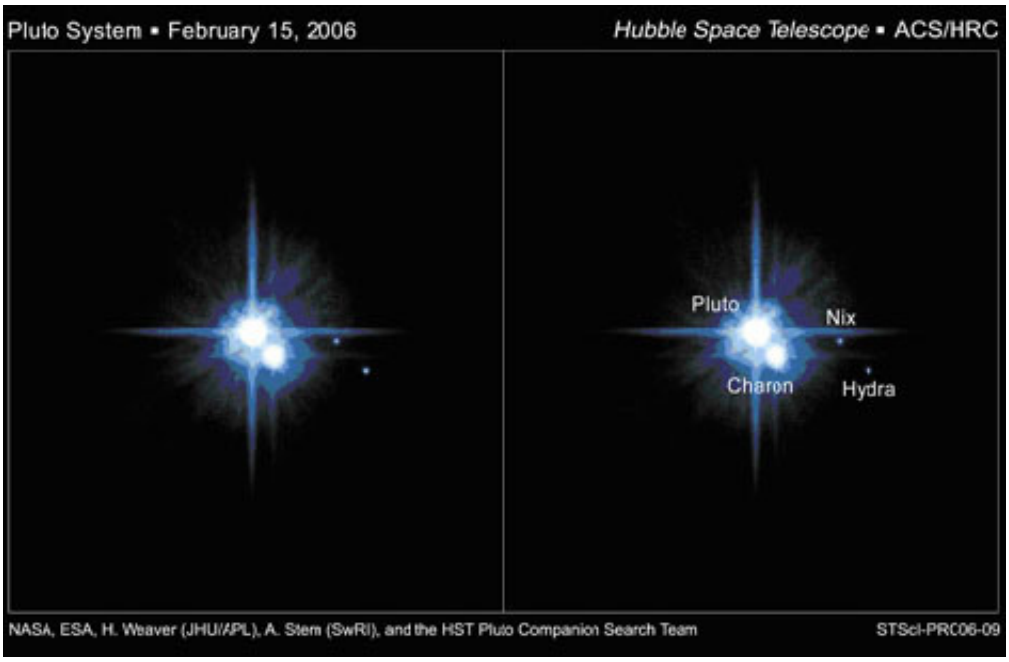
Pluto is now becoming more to the public than just the planet that no longer was; before long, we'll be able to understand much about its atmosphere, its moons and how it fits into the story of the Solar System's history. Here are some of the most interesting things we know about Pluto so far.

1. Its definition of "dwarf planet" is controversial.

Back in 2006, the International Astronomical Union deemed Pluto is a dwarf planet and not a planet. The reasoning came after a few other objects were discovered far out in the Solar System that are close to Pluto's size. That said, the principal investigator for New Horizons, Alan Stern, does not agree with the definition. At the time of the vote, he pointed out that the IAC's definition of planet was not completely true of any larger body; for example, Earth does not clear the entire neighborhood of debris, which is one of the parts of the definition.

2. Pluto has several moons.

For decades, astronomers knew of Pluto and its moon, Charon. The two are so close in size that some people considered the system a double planet, but now that's thrown in doubt with the dwarf planet designation. In any case, in the last decade humanity has discovered several more moons as telescope resolution and observing techniques improved. The other moons are called Nix, Hydra, Kerberos and Styx. For now we don't know much about these smaller moons because it's so difficult to resolve features on their tiny size.



HST Image of Pluto-Charon system. Also shown are Nix and Hydra. Image Credit: NASA/ESA

3. Charon might have an ocean on it.

It seems unbelieveable that Charon could have an ocean given it's so far away from the Sun, but at least one study suggests that it could be possible. Essentially, the tidal force imparted by Pluto's gravity early in Charon's history could have stretched the moon's insides and warmed them up enough to create liquid. That said, it's also possible that the ocean is now frozen as Charon's orbit is not as eccentric as it was in the past.

4. Charon's formation could have spawned the other moons.

As with our own Moon, some scientists believe Charon was created after a large object smashed into Pluto billions of years ago. This would have created a chain of debris circling the dwarf planet, which eventually coalesced into Charon. However, the other moons we know of near Pluto have almost exact resonances with Charon. This suggests that they also formed from the debris, one study says.

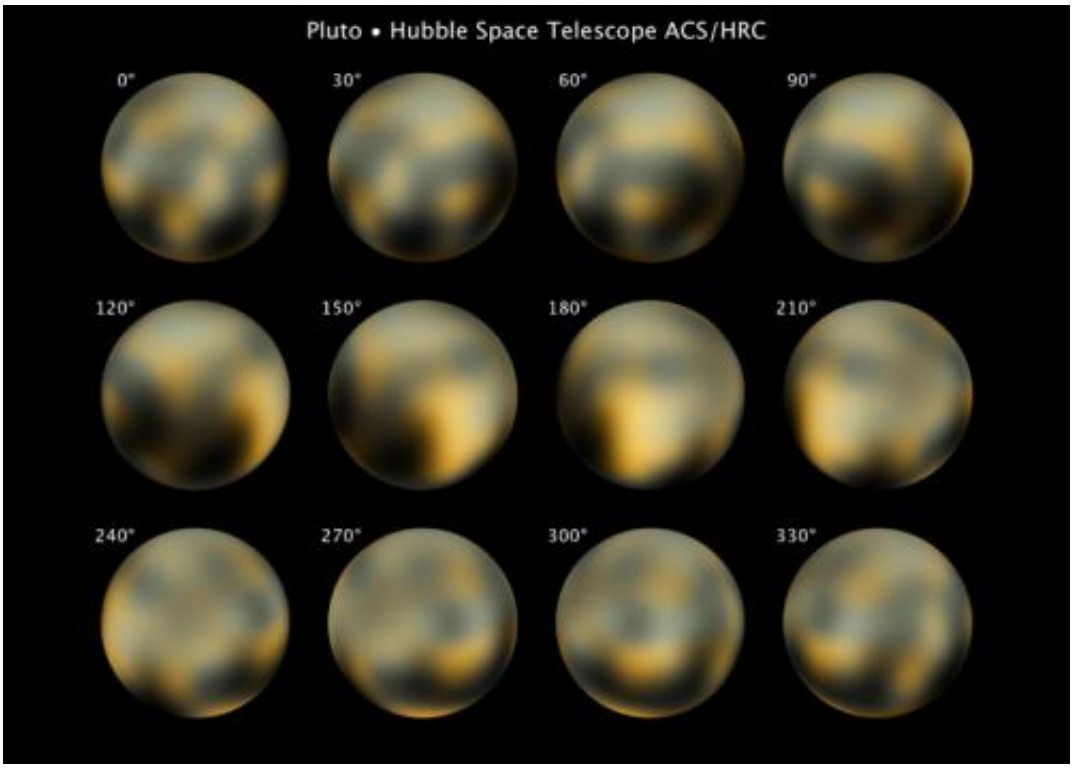
This "movie" of Pluto and its largest moon, Charon b yNASA's New Horizons spacecraft taken in July 2014 clearly shows that the barycenter -center of mass of the two bodies – resides outside (between) both bodies. The 12 images that make up the movie were taken by the spacecraft's best telescopic camera – the Long Range Reconnaissance Imager (LORRI) – at distances ranging from about 267 million to 262 million miles (429 million to 422 million kilometers). Charon is orbiting approximately 11,200 miles (about 18,000 kilometers) above Pluto's surface. Credit: NASA/Johns Hopkins University Applied Physics Laboratory/Southwest Research Institute

5. Pluto has an atmosphere.

Pluto is a tiny world, but like the Moon and Mercury it does have a very tenuous atmosphere that is called an "exosphere." Astronomers first spotted signs of it in 1985. As Pluto passed in front of a star, they saw the star very slightly dim before Pluto completely blocked the star. The composition of this atmosphere is mostly made up of nitrogen and methane, and it freezes when Pluto is furthest from the Sun.

6. Pluto can get closer to the Sun than Neptune.

We used to think of Pluto as the furthest planet from the Sun, but in reality its orbit is so eccentric that it comes closer to the Sun than Neptune. According to NASA, its average distance from the Sun is 39.5 astronomical units (Earth-Sun distances), but it can come as close as 29.7 AU and as far away as 49.7 AU. It was last "inside" Neptune's orbit between 1979 and 1999.



Pluto's surface as viewed from the Hubble Space Telescope in several pictures taken in 2002 and 2003. Though the telescope is a powerful tool, the dwarf planet is so small that it is difficult to resolve its surface. Astronomers noted a bright spot (180 degrees) with an unusual abundance of carbon monoxide frost. Credit: NASA

7. Astronomers think Pluto looks a lot like Neptune's moon, Triton.

Let's be clear that Triton and Pluto have very different histories; for example, Triton was likely captured by Neptune long ago, an event that drastically altered its surface and its insides. But Pluto and Triton likely do have some similarities: the frozen volatiles (elements with low boiling points), the faint nitrogen atmospheres, and their similar composition of

ice and rock. Scientists are pulling out old Voyager 2 pictures to make the comparisons as Pluto pictures arrive from New Horizons.

8. Pluto could have a ring system.

It's not a guarantee, but at least one research team suggests that debris floating around Pluto could coalesce into a faint ring system. This wouldn't be a large surprise, by the by, as we already know of at least one asteroid that has rings—so it is possible. Researchers on New Horizons will also be on the lookout for more moons and interesting features on Pluto's surface such as cracks.

Source: Universe Today

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